

# ITU-T

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

## Q.1741.9

(06/2015)

SERIES Q: SWITCHING AND SIGNALLING

Signalling requirements and protocols for IMT-2000

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**IMT-2000 references to Release 11 of GSM  
evolved UMTS core network**

Recommendation ITU-T Q.1741.9

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**SWITCHING AND SIGNALLING**

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## Recommendation ITU-T Q.1741.9

### IMT-2000 references to Release 11 of GSM evolved UMTS core network

#### Summary

Recommendation ITU-T Q.1741.9 identifies a release of the IMT-2000 family member, "GSM evolved UMTS Core Network". This release of the family member is known to the standards development organizations (i.e., ARIB, CCSA, ETSI, ATIS, TTA, TTC) as the "3GPP Release 11". Earlier releases, known as "3GPP Release 99", "3GPP Release 4", "3GPP Release 5", "3GPP Release 6", "3GPP Release 7", "3GPP Release 8", "3GPP Release 9" and "3GPP Release 10", of this family member are specified in Recommendations ITU-T Q.1741.1, Q.1741.2, Q.1741.3, Q.1741.4, Q.1741.5, Q.1741.6, Q.1741.7 and Q.1741.8, respectively, while other IMT-2000 family members are specified in other ITU T Recommendations in the ITU-T Q.174x series.

This Recommendation combines and associates the relevant standards from a number of standards development organizations for the core network for this IMT-2000 family member into a global Recommendation.

#### History

| Edition | Recommendation | Approval   | Study Group | Unique ID*  |
|---------|----------------|------------|-------------|---|
| 1.0     | ITU-T Q.1741.9 | 2015-06-29 | 13          | <a href="http://handle.itu.int/11.1002/1000/12508">11.1002/1000/12508</a> |

#### Keywords

Core network, GSM, IMT-2000, IMT-Advanced, Release 11, UMTS.

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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# Recommendation ITU-T Q.1741.9

## IMT-2000 references to Release 11 of GSM evolved UMTS core network

### 1 Scope

This Recommendation identifies the IMT-2000 family member, "GSM evolved UMTS Core Network". This release of the family member is known to the standards development organizations (i.e., ARIB, CCSA, ETSI, ATIS, TTA, TTC) as the "3GPP Release 11". The IMT core network specifications for the 3GPP evolved UMTS network in support of LTE-Advanced.

The core network interfaces identified in this Recommendation and the radio interfaces and radio access interfaces which are identified in [ITU-R M.1457-12] constitute a complete system specification for the 3rd generation mobile system for terrestrial usage of this IMT-2000 family member.

It is the intent of the ITU-T that the references in this Recommendation are only to specifications that specify the network aspects of this IMT-2000 family member. In the event that a referenced specification also includes material that specifies any of the radio aspects of this IMT-2000 family member, [ITU-R M.1457-12] shall take precedence.

NOTE – The structure and content of this Recommendation have been organized for ease of use by those familiar with the original source material; as such, the usual style of ITU-T Recommendations has not been applied.

### 2 References<sup>1</sup>

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

#### 2.1 Normative references

|               |   |
|---------------|---|
| [ITU-T E.164] | Recommendation ITU-T E.164 (2005), <i>The international public telecommunication numbering plan</i> . |
| [ITU-T F.703] | Recommendation ITU-T F.703 (2000), <i>Multimedia conversational services</i> .                        |

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<sup>1</sup> Technical documents of Standards Development Organizations recognized under the provisions of Recommendation ITU-T A.5 can be found under:

|      |  |
|------|--|
| ARIB | at <a href="http://www.arib.or.jp/english/index.html">http://www.arib.or.jp/english/index.html</a>       |
| CCSA | at <a href="http://www.ccsa.org.cn">http://www.ccsa.org.cn</a>   |
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| TTA  | at <a href="http://www.tta.or.kr/English/main/index.htm">http://www.tta.or.kr/English/main/index.htm</a> |
| TTC  | at <a href="http://www.ttc.or.jp/e/index.html">http://www.ttc.or.jp/e/index.html</a>                     |
| IETF | at <a href="http://www.ietf.org/">http://www.ietf.org/</a>   |

|                 |   |
|-----------------|---|
| [ITU-T G.711]   | Recommendation ITU-T G.711 (1988), <i>Pulse code modulation (PCM) of voice frequencies.</i>   |
| [ITU-T G.723.1] | Recommendation ITU-T G.723.1 (2006), <i>Dual rate speech coder for multimedia communications transmitting at 5.3 and 6.3 kbit/s.</i>  |
| [ITU-T H.245]   | Recommendation ITU-T H.245 (2008), <i>Control protocol for multimedia communication.</i>  |
| [ITU-T H.248.1] | Recommendation ITU-T H.248.1 (2005), <i>Gateway control protocol: Version 3.</i>  |
| [ITU-T H.263]   | Recommendation ITU-T H.263 (2005), <i>Video coding for low bit rate communication.</i>  |
| [ITU-T H.323]   | Recommendation ITU-T H.323 (2006), <i>Packet-based multimedia communications systems.</i>   |
| [ITU-T H.324]   | Recommendation ITU-T H.324 (2009), <i>Terminal for low bit-rate multimedia communication.</i>   |
| [ITU-T I.112]   | Recommendation ITU-T I.112 (1993), <i>Vocabulary of terms for ISDNs.</i>  |
| [ITU-T I.113]   | Recommendation ITU-T I.113 (1997), <i>Vocabulary of terms for broadband aspects of ISDN.</i>  |
| [ITU-T I.130]   | Recommendation ITU-T I.130 (1988), <i>Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN.</i>             |
| [ITU-T I.210]   | Recommendation ITU-T I.210 (1993), <i>Principles of telecommunication services supported by an ISDN and the means to describe them.</i>                                       |
| [ITU-T I.350]   | Recommendation ITU-T I.350 (1993), <i>General aspects of quality of service and network performance in digital networks, including ISDNs.</i>                                 |
| [ITU-T I.363.2] | Recommendation ITU-T I.363.2 (2000), <i>B-ISDN ATM Adaptation Layer specification: Type 2 AAL.</i>  |
| [ITU-T I.420]   | Recommendation ITU-T I.420 (1988), <i>Basic user-network interface.</i>   |
| [ITU-T I.460]   | Recommendation ITU-T I.460 (1999), <i>Multiplexing, rate adaption and support of existing interfaces.</i>   |
| [ITU-T I.461]   | Recommendation ITU-T I.461/X.30 (1993), <i>Support of X.21, X.21 bis and X.20 bis based Data Terminal Equipments (DTEs) by an Integrated Services Digital Network (ISDN).</i> |
| [ITU-T I.462]   | Recommendation ITU-T I.462/X.31 (1995), <i>Support of packet mode terminal equipment by an ISDN.</i>  |
| [ITU-T I.463]   | Recommendation ITU-T I.463/V.110 (2000), <i>Support by an ISDN of data terminal equipments with V-series type interfaces.</i>   |
| [ITU-T M.3020]  | Recommendation ITU-T M.3020 (2009), <i>Management interface specification methodology.</i>  |

|                   |  |
|-------------------|--|
| [ITU-T Q.65]      | Recommendation ITU-T Q.65 (2000), <i>The unified functional methodology for the characterization of services and network capabilities including alternative object oriented techniques.</i>        |
| [ITU-T Q.761]     | Recommendation ITU-T Q.761 (1999), <i>Signalling System No. 7 – ISDN User Part functional description.</i>   |
| [ITU-T Q.762]     | Recommendation ITU-T Q.762 (1999), <i>Signalling System No. 7 – ISDN User Part general functions of messages and signals.</i>  |
| [ITU-T Q.763]     | Recommendation ITU-T Q.763 (1999), <i>Signalling System No. 7 – ISDN User Part formats and codes.</i>  |
| [ITU-T Q.764]     | Recommendation ITU-T Q.764 (1999), <i>Signalling System No. 7 – ISDN User Part signalling procedures.</i>  |
| [ITU-T Q.92x]     | Recommendation ITU-T Q.92x-series (in force), <i>ISDN user-network interface – data link layer.</i>  |
| [ITU-T Q.920]     | Recommendation ITU-T Q.920/I.440 (1993), <i>ISDN user-network interface data link layer – General aspects.</i>   |
| [ITU-T Q.921]     | Recommendation ITU-T Q.921/I.441 (1997), <i>ISDN user-network interface – Data link layer specification.</i>   |
| [ITU-T Q.921 bis] | Recommendation ITU-T Q.921 bis (1993), <i>Abstract test suite for LAPD conformance testing.</i>  |
| [ITU-T Q.922]     | Recommendation ITU-T Q.922 (1992), <i>ISDN data link layer specification for frame mode bearer services.</i>   |
| [ITU-T Q.1001]    | Recommendation ITU-T Q.1001 (1988), <i>General aspects of public land mobile networks.</i>   |
| [ITU-T Q.1214]    | Recommendation ITU-T Q.1214 (1995), <i>Distributed functional plane for intelligent network CS-1.</i>  |
| [ITU-T Q.1742.10] | Recommendation ITU-T Q.1742.10 (2013), <i>IMT 2000 References (approved as of 31 December 2011) to ANSI-41 evolved Core Network with cdma2000 Access Network.</i>                                  |
| [ITU-T Q.1902.1]  | Recommendation ITU-T Q.1902.1 (2001), <i>Bearer Independent Call Control Protocol (Capability Set 2): Functional description.</i>  |
| [ITU-T Q.1902.2]  | Recommendation ITU-T Q.1902.2 (2001), <i>Bearer Independent Call Control Protocol (Capability Set 2) and Signalling System No. 7 ISDN user part: General functions of messages and parameters.</i> |
| [ITU-T Q.1902.3]  | Recommendation ITU-T Q.1902.3 (2001), <i>Bearer Independent Call Control Protocol (Capability Set 2) and Signalling System No. 7 ISDN user part: Formats and codes.</i>                            |
| [ITU-T Q.1902.4]  | Recommendation ITU-T Q.1902.4 (2001), <i>Bearer Independent Call Control Protocol (Capability Set 2): Basic call procedures.</i>   |

|                  |   |
|------------------|---|
| [ITU-T Q.1902.5] | Recommendation ITU-T Q.1902.5 (2001), <i>Bearer Independent Call Control Protocol (Capability Set 2): Exceptions to the Application transport mechanism in the context of BICC.</i>   |
| [ITU-T Q.1902.6] | Recommendation ITU-T Q.1902.6 (2001), <i>Bearer Independent Call Control protocol (Capability Set 2): Generic signalling procedures for the support of the ISDN user part supplementary services and for bearer redirection.</i>                  |
| [ITU-T Q.1912.5] | Recommendation ITU-T Q.1912.5 (2004), <i>Interworking between Session Initiation Protocol (SIP) and Bearer Independent Call Control protocol or ISDN User Part.</i>   |
| [ITU-T T.31]     | Recommendation ITU-T T.31 (1995), <i>Asynchronous facsimile DCE control – Service Class 1.</i>  |
| [ITU-T T.32]     | Recommendation ITU-T T.32 (1995), <i>Asynchronous facsimile DCE control – Service Class 2.</i>  |
| [ITU-T T.140]    | Recommendation ITU-T T.140 (1998), <i>Protocol for multimedia application text conversation.</i>  |
| [ITU-T V.14]     | Recommendation ITU-T V.14 (1993), <i>Transmission of start-stop characters over synchronous bearer channels.</i>  |
| [ITU-T V.18]     | Recommendation ITU-T V.18 (2000), <i>Operational and interworking requirements for DCEs operating in the text telephone mode.</i>   |
| [ITU-T V.21]     | Recommendation ITU-T V.21 (1988), <i>300 bits per second duplex modem standardized for use in the general switched telephone network.</i>   |
| [ITU-T V.22]     | Recommendation ITU-T V.22 (1988), <i>1200 bits per second duplex modem standardized for use in the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits.</i>  |
| [ITU-T V.22 bis] | Recommendation ITU-T V.22 bis (1988), <i>2400 bits per second duplex modem using the frequency division technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits.</i> |
| [ITU-T V.24]     | Recommendation ITU-T V.24 (2000), <i>List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE).</i>   |
| [ITU-T V.25 bis] | Recommendation ITU-T V.25 bis (1996), <i>Synchronous and asynchronous automatic dialling procedures on switched networks.</i>   |
| [ITU-T V.25 ter] | Recommendation ITU-T V.25 ter (1997), <i>Serial asynchronous automatic dialling and control.</i>  |

|                          |   |
|--------------------------|---|
| [ITU-T V.26 <i>ter</i> ] | Recommendation ITU-T V.26 <i>ter</i> (1988), <i>2400 bits per second duplex modem using the echo cancellation technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits.</i>   |
| [ITU-T V.32]             | Recommendation ITU-T V.32 (1993), <i>A family of 2-wire, duplex modems operating at data signalling rates of up to 9600 bit/s for use on the general switched telephone network and on leased telephone-type circuits.</i>  |
| [ITU-T V.80]             | Recommendation ITU-T V.80 (1996), <i>In-band DCE control and synchronous data modes for asynchronous DTE.</i>   |
| [ITU-T V.250 Sup.1]      | Recommendation ITU-T V.250 Supplement 1 (2001), <i>Various extensions to V.250 basic command set.</i>   |
| [ITU-T X.21 <i>bis</i> ] | Recommendation ITU-T X.21 <i>bis</i> (1988), <i>Use on public data networks of Data Terminal Equipment (DTE) which is designed for interfacing to synchronous V-Series modems.</i>  |
| [ITU-T X.25]             | Recommendation ITU-T X.25 (1996), <i>Interface between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit.</i>  |
| [ITU-T X.32]             | Recommendation ITU-T X.32 (1996), <i>Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and accessing a Packet-Switched Public Data Network through a public switched telephone network or an Integrated Services Digital Network or a Circuit-Switched Public Data Network.</i> |
| [ITU-T X.140]            | Recommendation ITU-T X.140 (1992), <i>General quality of service parameters for communication via public data networks.</i>   |
| [ITU-T X.200]            | Recommendation ITU-T X.200 (1994)   ISO/IEC 7498-1:1994, <i>Information processing systems – Open Systems Interconnection – Basic Reference Model: The Basic Model.</i>   |
| [ITU-T X.212]            | Recommendation ITU-T X.212 (1995)   ISO/IEC 8886:1996, <i>Information technology – Open Systems Interconnection – Data link service definition.</i>   |
| [ITU-T X.213]            | Recommendation ITU-T X.213   ISO/IEC 8348 (2001), <i>Information technology – Open Systems Interconnection – Network service definition.</i>  |
| [ITU-R M.1457-12]        | Recommendation ITU-R M.1457-12 (2014), <i>Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications-2000 (IMT-2000).</i>   |
| [ATIS 3GPP 23.002]       | ATIS 3GPP 23.002 (2014), <i>Network architecture (Release 11).</i>  |
| [ATIS 3GPP 23.234]       | ATIS 3GPP 23.234 (2014), <i>3GPP system to Wireless Local Area Network (WLAN) interworking; System description (Release 11).</i>  |

|                     |   |
|---------------------|---|
| [ATIS 3GPP 23.271]  | ATIS 3GPP 23.271 (2014), <i>Functional stage 2 description of location services (LCS)</i> .   |
| [ATIS 3GPP 23.327]  | ATIS 3GPP 23.327 (2014), <i>Mobility between 3GPP-Wireless Local Area Network (WLAN) interworking and 3GPP systems (Release 11)</i> .   |
| [ATIS 3GPP 23.682]  | ATIS 3GPP 23.682 (2014), <i>Architecture enhancements to facilitate communications with packet data networks and applications</i> .   |
| [CCSA-TSD-123 002]  | CCSA-TSD-123 002 (2012), <i>Network architecture (Release 10)</i> .   |
| [CCSA-TSD-123 234]  | CCSA-TSD-123 234 (2012), <i>3GPP system to Wireless Local Area Network (WLAN) interworking; System description (Release 10)</i> .   |
| [CCSA-TSD-123 271]  | CCSA-TSD-123 271 (2012), <i>Functional stage 2 description of Location Services (LCS)</i> .   |
| [CCSA-TSD-123 327]  | CCSA-TSD-123 327 (2012), <i>Mobility between 3GPP-Wireless Local Area Network (WLAN) interworking and 3GPP systems (Release 10)</i> .   |
| [ETSI TS 102 241]   | ETSI TS 102 241 (2008), <i>Smart Cards; UICC Application Programming Interface (UICC API) for Java Card™, Release 7</i> .   |
| [ETSI TS 102 484]   | ETSI TS 102 484 V7.0.0 (2007), <i>Smart Cards: Secure channel between a UICC and an end-point terminal (Release 7)</i> .  |
| [ETSI TS 123 002]   | ETSI TS 123 002 (2013), <i>Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Network architecture (Release 11)</i> .   |
| [ETSI TS 123 234]   | ETSI TS 123 234 (2012), <i>Universal Mobile Telecommunications System (UMTS); LTE; 3GPP system to Wireless Local Area Network (WLAN) interworking; System description (Release 11)</i> .  |
| [ETSI TS 123 271]   | ETSI TS 123 271 (2013), <i>Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Functional stage 2 description of location services (LCS)</i> .   |
| [ETSI TS 123 327]   | ETSI TS 123 327 (2012), <i>Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Mobility between 3GPP-Wireless Local Area Network (WLAN) interworking and 3GPP systems (Release 11)</i> . |
| [ETSI EN 301 140-1] | ETSI EN 301 140-1 (1999), <i>Intelligent Network (IN); Intelligent network Application Protocol (INAP); Capability Set 2 (CS2); Part 1: Protocol Specification</i> .  |
| [ETSI ES 201 296]   | ETSI ES 201 296 (V1.3.1), <i>Integrated Services Digital Network (ISDN); Signalling System No.7 (SS7); ISDN User Part (ISUP); Signalling aspects of charging</i> .  |

|                       |   |
|-----------------------|---|
| [ETSI ETS 300 356-18] | ETSI ETS 300 356-18 (1995), <i>ISDN User Part (ISUP) version 2 for the international interface; Part 18: Completion of Calls to Busy Subscriber (CCBS) supplementary service.</i>         |
| [ETSI TS 123 682]     | ETSI TS 123 682 (2013), <i>Architecture enhancements to facilitate communications with packet data networks and applications.</i>   |
| [IETF RFC 768]        | IETF RFC 768 (1980), <i>User Datagram Protocol.</i>   |
| [IETF RFC 1889]       | IETF RFC 1889 (1996), <i>RTP: A Transport Protocol for Real-Time Applications.</i>  |
| [IETF RFC 3261]       | IETF RFC 3261 (2002), <i>SIP: Session Initiation Protocol.</i>  |
| [IETF RFC 3588]       | IETF RFC 3588 (2003), <i>Diameter Base Protocol.</i>  |
| [IETF RFC 4566]       | IETF RFC 4566 (2006), <i>SDP: Session Description Protocol.</i>   |
| [IETF RFC 4825]       | IETF RFC 4825 (2007), <i>The Extensible Markup Language (XML); Configuration Access Protocol (XCAP).</i>  |
| [IETF RFC 5094]       | IETF RFC 5094 (2007), <i>Mobile IPv6 Vendor Specific Option.</i>  |
| [IETF RFC 5213]       | IETF RFC 5213 (2008), <i>Proxy Mobile IPv6.</i>   |
| [IETF RFC 5555]       | IETF RFC 5555 (2009), <i>Mobile IPv6 Support for Dual Stack Hosts and Routers (DSMIPv6).</i>  |
| [ISO/IEC 3309]        | ISO/IEC 3309:1993, <i>Information technology – Telecommunication and information exchange between systems – High-level data link control (HDLC) procedures – Frame structure.</i>         |
| [ISO/IEC 4335]        | ISO/IEC 4335:1993, <i>Information technology – Telecommunications and information exchange between systems – High-level data link control (HDLC) procedures – Elements of procedures.</i> |
| [ISO/IEC 7809]        | ISO/IEC 7809:1993, <i>Information technology – Telecommunication and information exchange between systems – High-level data link control (HDLC) procedures – Classes of procedures.</i>   |
| [TTA TTAT.3G-23.002]  | TTA TTAT.3G-23.002 (2013), <i>Network architecture (Release 11).</i>  |
| [TTA TTAT.3G-23.234]  | TTA TTAT.3G-23.234 (2013), <i>3GPP system to Wireless Local Area Network (WLAN) interworking; System description (Release 11).</i>  |
| [TTA TTAT.3G-23.271]  | TTA TTAT.3G-23.271 (2013), <i>Functional stage 2 description of location services (LCS).</i>  |
| [TTA TTAT.3G-23.327]  | TTA TTAT.3G-23.327 (2013), <i>Mobility between 3GPP-Wireless Local Area Network (WLAN) interworking and 3GPP systems (Release 11).</i>  |
| [TTA TTAT.3G-23.682]  | TTA TTAT.3G-23.682 (2013), <i>Architecture enhancements to facilitate communications with packet data networks and applications.</i>  |

|                     |  |
|---------------------|--|
| [TTC TS-3GA-23.002] | TTC TS-3GA-23.002 (2013), <i>Network architecture (Release 11)</i> .   |
| [TTC TS-3GA-23.234] | TTC TS-3GA-23.234 (2013), <i>3GPP system to Wireless Local Area Network (WLAN) interworking; System description (Release 11)</i> .     |
| [TTC TS-3GA-23.271] | TTC TS-3GA-23.271 (2013), <i>Functional stage 2 description of location services (LCS)</i> .   |
| [TTC TS-3GA-23.327] | TTC TS-3GA-23.327 (2013), <i>Mobility between 3GPP-Wireless Local Area Network (WLAN) interworking and 3GPP systems (Release 11)</i> . |
| [TTC TS-3GA-23.682] | TTC TS-3GA-23.682 (2013), <i>Architecture enhancements to facilitate communications with packet data networks and applications</i> .   |

## 2.2 Informative references

|                       |  |
|-----------------------|--|
| [ITU-T G.722]         | Recommendation ITU-T G.722 (1988), <i>7 kHz audio-coding within 64 kbit/s</i> .  |
| [ITU-T G.729]         | Recommendation ITU-T G.729 (2007), <i>Coding of speech at 8 kbit/s using conjugate-structure algebraic-code-excited linear prediction (CS-ACELP)</i> .                             |
| [ARIB TR-T12-21.905]  | ARIB TR-T12-21.905 (2012), <i>Vocabulary for 3GPP Specifications</i> .   |
| [ATIS 3GPP TR 21.905] | ATIS 3GPP TR 21.905 (2014), <i>Vocabulary for 3GPP Specifications</i> .  |
| [CCSA-TSD-121 905]    | CCSA-TSD-121 905 (2012), <i>Vocabulary for 3GPP Specifications</i> .   |
| [ETSI TR 121 905]     | ETSI TR 121 905 (2013), <i>Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Vocabulary for 3GPP Specifications</i> . |
| [TTA TR-3GA-21.905]   | TTA TTAT.3G-21.905 (2013), <i>Vocabulary for 3GPP Specifications</i> .   |
| [TTC TR-3GA-21.905]   | TTC TR-3GA-21.905 (2013), <i>Vocabulary for 3GPP Specifications</i> .  |

## 3 Definitions

The following text is based on references given in clause 2.2.

This Recommendation defines the following terms:

**3.0 3GPP Generic User Profile (GUP):** The 3GPP Generic User Profile is the collection of user related data which affects the way in which an individual user experiences services and which may be accessed in a standardised manner.

**3.1 A/Gb mode:** Mode of operation of the MS when connected to the core network via GERAN and the A and/or Gb interfaces.

**3.2 applet:** A small program that is intended not to be run on its own, but rather to be embedded inside another application



- 3.3 application:** An application is a service enabler deployed by service providers, manufacturers or users. Individual applications will often be enablers for a wide range of services.
- 3.4 application interface:** Standardized interface used by application/clients to access service capability features.
- 3.5 application protocol:** The set of procedures required by the application.
- 3.6 authentication:** A property by which the correct identity of an entity or party is established with a required assurance. The party being authenticated could be a user, subscriber, home environment or serving network.
- 3.7 base station:** A base station is a network element in radio access network responsible for radio transmission and reception in one or more cells to or from the user equipment. A base station can have an integrated antenna or be connected to an antenna by feeder cables. In UTRAN, it terminates the I<sub>ub</sub> interface towards the RNC. In GERAN, it terminates the Abis interface towards the BSC.
- 3.8 base station subsystem:** Either a full network or only the access part of a GERAN offering the allocation, release and management of specific radio resources to establish means of connection between an MS and the GERAN. A base station subsystem is responsible for the resources and transmission/reception in a set of cells.
- 3.9 baseline capabilities:** Capabilities which are required for a service-less UE to operate within a network. The baseline capabilities for a UE include the capabilities to search for, synchronize with and register (with authentication) to a network. The negotiation of the UE and the network capabilities, as well as the maintenance and termination of the registration are also part of the required baseline capabilities.
- 3.10 baseline implementation capabilities:** Set of Implementation capabilities, in each technical domain, required to enable a UE to support the required Baseline capabilities.
- 3.11 basic telecommunication service:** This term is used as a common reference to both bearer services and teleservices.
- 3.12 bearer:** An information transmission path of defined capacity, delay and bit error rate, etc.
- 3.13 bearer capability:** A transmission function, which the UE requests to the network.
- 3.14 bearer independent protocol:** (UICC) Mechanism by which the ME provides the (U)SIM applications on the UICC with access to the data bearers supported by the ME and the network.
- 3.15 bearer service:** A type of telecommunication service that provides the capability of transmission of signals between access points.
- 3.16 billing:** A function whereby CDRs generated by the charging function are transformed into bills requiring payment.
- 3.17 broadcast:** A value of the service attribute "communication configuration", which denotes unidirectional distribution to all users (source: [ITU-T I.113]).
- 3.18 byte code:** (UICC) A hardware machine-independent representation of a primitive computer operation that serves as an instruction to a software program called an interpreter or a virtual machine that simulates the hypothetical computer's central processing unit. Code generated by a Java compiler and executed by the Java interpreter.
- 3.19 call:** A logical association between several users (this could be connection-oriented or connectionless).
- 3.20 charging data record (CDR):** A formatted collection of information about a chargeable event (e.g., time of call set-up, duration of the call, amount of data transferred, etc.) for use in billing

and accounting. For each party to be charged for parts of or all charges of a chargeable event, a separate CDR shall be generated, i.e., more than one CDR may be generated for a single chargeable event, e.g., because of its long duration, or because more than one charged party is to be charged.

**3.21 cell:** Radio network object that can be uniquely identified by a user equipment from a (cell) identification that is broadcasted over a geographical area from one UTRAN or GERAN access point. A Cell in UTRAN is either FDD or TDD mode.

**3.22 cellular text telephone modem (CTM):** A modulation and coding method intended for transmission of text in voice channels for the application of real-time text conversation.

**3.23 charging:** A function whereby information related to a chargeable event is formatted and transferred in order to make it possible to determine usage for which the charged party may be billed.

**3.24 cipher key:** A code used in conjunction with a security algorithm to encode and decode user and/or signalling data.

**3.25 closed user group:** A group with a predefined set of members. Only defined members may participate in a closed group.

**3.26 confidentiality:** The avoidance of disclosure of information without the permission of its owner.

**3.27 connection:** A communication channel between two or more end-points (e.g., terminal, server, etc.).

**3.28 connectionless (for a bearer service):** In a connectionless bearer, no connection is established beforehand between the source and the destination entities; the source and destination network addresses need to be specified in each message. Transferred information cannot be guaranteed of ordered delivery. Connectionless bearer services lifetime is reduced to the transport of one message.

**3.29 connectionless service:** A service, which allows the transfer of information among service users without the need for end-to-end call establishment procedures (source: [ITU-T I.113]).

**3.30 control channel:** A logical channel that carries system control information.

**3.31 core network:** An architectural term relating to the part of a 3G system, which is independent of the connection technology of the terminal (e.g., radio, wired).

**3.32 core network operator:** Operator that offers core network services.

**3.33 corporate code:** Code which, when combined with the network and SP codes, refers to a unique corporate. The code is provided in the GID2 file on the (U)SIM (see clause A.1) and is correspondingly stored on the ME.

**3.34 corporate code group:** Combination of the Corporate code and the associated SP and network codes.

**3.35 corporate personalization:** Allows a corporate customer to personalize MEs that he provides for his employees or customers use so that they can only be used with the company's own (U)SIMs.

**3.36 coverage area (of a mobile cellular system):** An area where mobile cellular services are provided by that mobile cellular system to the level required of that system.

**3.37 coverage area:** Area over which a 3G system service is provided with the service probability above a certain threshold.

**3.38 current directory:** The latest MF or DF selected on the UICC.

**3.39 current EF:** The latest EF selected.

**3.40 current serving cell:** This is the cell on which the MS is camped.

- 3.41 data object:** Information coded as TLV objects, i.e., consisting of a tag, a length and a value part.
- 3.42 dedicated channel:** A channel dedicated to a specific UE.
- 3.43 de-personalization:** The process of deactivating the personalization so that the ME ceases to carry out the verification checks.
- 3.44 dedicated file (DF):** A file containing access conditions and, optionally, elementary files (EFs) or other dedicated files (DFs).
- 3.45 delivered QoS:** Actual QoS parameter values with which the content was delivered over the lifetime of a QoS session.
- 3.46 demand service:** A type of telecommunication service in which the communication path is established almost immediately, in response to a user request effected by means of user-network signalling (source: [ITU-T I.112]).
- 3.47 dependability:** A performance criterion that describes the degree of certainty (or surety) with which a function is performed regardless of speed or accuracy, but within a given observational interval (source: [ITU-T I.350]).
- 3.48 destination user:** Entity to which calls to the general packet radio service (GPRS) are directed.
- 3.49 directory:** General term for the MF and/or a DF on the UICC.
- 3.50 directory number:** A string consisting of one or more of the characters from the set {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, \*, #, a, b, c} associated with a nature of address indicator and number plan indicator. When using the public MMI for the control of supplementary services however, \* and # cannot be part of any SC or SI field.
- NOTE 1 – No such restriction on the SC and SI fields exists when using other (e.g., menu-driven) MMI for the control of supplementary services.
- NOTE 2 – When using the public MMI, certain limitations on the use of one- and two-digit directory numbers may apply. The use of other MMI can remove these restrictions.
- NOTE 3 – This definition is not intended to require the support of all these characters in the MMI itself.
- 3.51 distribution service:** Service characterized by the unidirectional flow of information from a given point in the network to other (multiple) locations (source: [ITU-T I.113]).
- 3.52 domain:** The highest-level group of physical entities. Reference points are defined between domains.
- 3.53 donor network:** The subscription network from which a number is ported in the porting process. This may or may not be the number range owner network.
- 3.54 downlink:** Unidirectional radio link for the transmission of signals from a UTRAN access point to a UE. Also in general the direction from network to UE.
- 3.55 drift RNS:** The role an RNS can take with respect to a specific connection between a UE and UTRAN. An RNS that supports the serving RNS with radio resources when the connection between the UTRAN and the user equipment needs to use cell(s) controlled by this RNS is referred to as "Drift RNS".
- 3.56 element manager:** Provides a package of end-user functions for management of a set of closely related types of network elements. These functions can be divided into two main categories.
- 3.57 elementary file (EF):** A file containing access conditions and data and no other files on the UICC.

- 3.58 end-user:** An end-user is an entity (typically a user), associated with one or multiple subscriptions through identities (e.g., IMSIs, MSISDNs, IMPIs, IMPUs and application-specific identities). In the 3GPP system an end-user is characterized by an end-user identity.
- 3.59 end-user identity (EUI):** An end-user identity is an identity that uniquely characterizes an end-user in the 3GPP system. An End-User Identity is mainly intended for administration purposes of the operator.
- 3.60 enterprise systems:** Information systems that are used in the telecommunication organization but are not directly or essentially related to the telecommunications aspects (call centres, fraud detection and prevention systems, invoicing, etc.).
- 3.61 essential UE requirement (conditional):** Requirement which has to be implemented under certain service conditions, e.g., AMR codec in UE which supports speech service.
- 3.62 essential UE requirement (unconditional):** Requirement which has to be implemented in any 3G UE in order to exist in and communicate with the 3G network (e.g., chip rate of 3.84 Mcps).
- 3.63 evolved packet core:** A framework for an evolution or migration of the 3GPP system to a higher-data-rate, lower-latency, packet-optimized system that supports, multiple RATs.
- 3.64 evolved packet systems:** An evolution of the 3G UMTS characterized by higher-data-rate, lower-latency, packet-optimized system that supports multiple RATs. The Evolved Packet System comprises the Evolved Packet Core together with the evolved radio access network (E-UTRA and E-UTRAN).
- 3.65 evolved UTRA:** Evolved UTRA is an evolution of the 3G UMTS radio-access technology towards a high-data-rate, low-latency and packet-optimized radio-access technology.
- 3.66 evolved UTRAN:** Evolved UTRAN is an evolution of the 3G UMTS radio-access network towards a high-data-rate, low-latency and packet-optimized radio-access network.
- 3.67 explicit diversity gain (dB):** The effective gain achieved using diversity techniques.
- 3.68 extra SDU delivery probability:** The ratio of total (unrequested) extra service data units (SDUs) to total service data units received by a destination user in a specified sample (source: Recommendation ITU-T X.140).
- 3.69 file:** A named and hierarchically-classified data set on the UICC.
- 3.70 file identifier (FID):** The 2-byte name of a file or a directory on the UICC.
- 3.71 fixed network user rate:** The user rate between IWF and the fixed network.
- 3.72 flow control (FC):** A set of mechanisms used to prevent the network from becoming overloaded by regulating the input rate transmissions.
- 3.73 flexible layer one (FLO):** GERAN feature that allows the channel coding of the layer one to be configured at call set-up.
- 3.74 framework:** A framework defines a set of application programming interface (API) classes for developing applications and for providing system services to those applications.
- 3.75 functional group:** A set of functions that may be performed by a single equipment (source: [ITU-T I.112]).
- 3.76 geographical routing:** The conversion of the PDU's geographical area definition, which specifies the area in which the PDU will be broadcast, into an equivalent radio coverage map.
- 3.77 GERAN radio network temporary identifier (G-RNTI):** An MS identifier which is allocated by the serving BSC and is unique within this SBSC. It is allocated for all MSs having an RRC connection. The G-RNTI is always reallocated when the Serving BSC for the RRC connection

is changed and deallocated when the RRC connection is released. The G-RNTI is also used at RLC/MAC during contention resolution.

**3.78 GPRS MS:** An MS capable of GPRS services.

**3.79 group:** A set of members allowed to participate in the group call service. The group is defined by a set of rules that identifies a collection of members implicitly or explicitly. These rules may associate members for the purpose of participating in a group call, or may associate members who do not participate in data transfer but do participate in management, security, control, or accounting for the group.

**3.80 group call:** The relationship that exists between the members of a group for the purpose of transferring data. More than one group call may exist in a group. A group call establishes an active group.

**3.81 group call initiator:** A member (or third party) authorized to initiate a group call. More than one member may initiate group calls.

**3.82 group call participant:** A member of a group participating in a particular group call at a given time.

**3.83 group call server:** A logical entity that provides the group call service to the members.

**3.84 group call service:** A PTM service in which a relationship exists between participants of the group, and in which a single data unit transmitted by a source participant is received by multiple destination participants; it is a one-in, many-out service.

**3.85 group controller:** The member (or third party) responsible for the group creation and membership control.

**3.86 GSM/EDGE radio access network (GERAN):** A conceptual term identifying that part of the network which consists of BSCs and BTSs between A/Gb or Iu and Um interfaces.

**3.87 GSM BSS:** Refers in this Recommendation to the GSM/GPRS access network.

**3.88 GSM core network:** Refers in this Recommendation to the GSM NSS and GPRS backbone infrastructure.

**3.89 GSM coverage:** An area where mobile cellular services are provided in accordance with GSM standards.

**3.90 GSM session:** That part of the card session dedicated to the GSM operation.

**3.91 guaranteed service:** A service model which provides highly reliable performance, with little or no variance in the measured performance criteria.

**3.92 handoff gain/loss (dB):** This is the gain/loss factor (+ or –) brought by handoff to maintain specified reliability at the cell boundary.

**3.93 handover:** The transfer of a user's connection from one radio channel to another (can be the same or different cell).

**3.94 handover:** The process in which the radio access network changes the radio transmitters or radio access mode or radio system used to provide the bearer services, while maintaining a defined bearer service QoS.

**3.95 hard handover:** A category of handover procedures where all the old radio links in the UE are abandoned before the new radio links are established.

**3.96 heterogeneous network:** A 3GPP access network consisting of multiple cells with different characteristics (e.g., for the case of E-UTRA: a variety of e-NodeBs, Home e-NodeBs, e-UTRA relays).

- 3.97 home environment:** Responsible for overall provision and control of the personal service environment of its subscribers.
- 3.98 home environment value-added service provider (HE-VASP):** This is a VASP that has an agreement with the home environment to provide services. The home environment provides services to the user in a managed way, possibly by collaborating with HE-VASPs, but this is transparent to the user. The same service could be provided by more than one HE-VASP and each HE-VASP can provide more than one service.
- 3.99 home PLMN:** PLMN where the mobile country code (MCC) and mobile network code (MNC) of the PLMN identity are the same as the MCC and MNC of the IMSI.
- 3.100 IC card:** A card holding an integrated circuit containing subscriber, end-user, authentication and/or application data for one or more applications.
- 3.101 idle mode:** The state of UE switched on but which does not have any established RRC connection.
- 3.102 implementation capability:** A capability that relates to a particular technical domain. Examples: a spreading factor of 128 (in the domain of the physical layer); the A5 algorithm; a 64-bit key length (in the domain of security); a power output of 21 dBm (in the domain of transmitter performance); support of AMR codec (in the domain of the codec); support of CHV1 (in the domain of the USIM).
- 3.103 implementation conformance statement (ICS):** A statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented. The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.
- 3.104 information data rate:** Rate of the user information, which must be transmitted over the air interface. For example, output rate of the voice codec.
- 3.105 initial paging information:** This information indicates if the UE needs to continue to read more paging information and eventually receive a page message.
- 3.106 initial paging occasion:** The paging occasion the UE uses as starting point for its paging DRX cycle.
- 3.107 integrity:** (in the context of security) The avoidance of unauthorized modification of information.
- 3.108 inter-cell handover:** A handover between different cells. An inter-cell handover requires network connections to be altered.
- 3.109 inter-PLMN handover:** Handover between different PLMNs, i.e., having different MCC-MNC.
- 3.110 inter-system handover:** Handover between networks using different radiosystems, e.g., UMTS – GSM.
- 3.111 interactive service:** A service which provides the means for bidirectional exchange of information between users. Interactive services are divided into three classes of services: conversational services, messaging services and retrieval services (source: [ITU-T I.113]).
- 3.112 interface:** The common boundary between two associated systems (source: [ITU-T I.112]).
- 3.113 international mobile station equipment identity (IMEI):** An "International Mobile Station Equipment Identity" is a unique number, which shall be allocated to each individual mobile station equipment in the PLMN and shall be unconditionally implemented by the MS manufacturer.
- 3.114 international mobile user number (IMUN):** The international mobile user number is a diallable number allocated to a 3GPP system user.

- 3.115 interpreter:** A software program that simulates a hypothetical computer by performing the operations defined by the instructions of this computer. (See also "byte code" and "virtual machine").
- 3.116 interworking WLAN (I-WLAN):** A WLAN that interworks with a 3GPP system.
- 3.117 intra-cell handover:** A handover within one sector or between different sectors of the same cell. An intra-cell handover does not require network connections to be altered.
- 3.118 intra-PLMN handover:** Handover within the same network, i.e., having the same MCC-MNC regardless of radio access system.
- NOTE – This includes the case of UMTS <> GSM handover where MCC-MNC are the same in both cases.
- 3.119 inter-system change:** A change of radio access between different radio access technologies such as GSM and UMTS.
- 3.120 IMS multimedia telephony:** A service that allows multimedia conversational communications between two or more users. It provides real time bidirectional conversational transfer of media, e.g., speech, video, text or other types of data. The IMS multimedia telephony service includes Supplementary Services and takes account of regulatory requirements.
- 3.121 IMS SIM (ISIM):** An application residing on the UICC that provides access to IP multimedia services.
- 3.122 IP-connectivity access network (IP-CAN):** The collection of network entities and interfaces that provides the underlying IP transport connectivity between the UE and the IMS entities. An example of an "IP-Connectivity Access Network" is GPRS.
- 3.123 IP-connectivity access network bearer (IP-CAN bearer):** The data communications bearer provided by the IP-connectivity access network. When using GPRS, the IP-connectivity access network bearers are provided by PDP Contexts.
- 3.124 IRP information model:** An IRP information model consists of an IRP information service and a network resource model (see below for definitions of "IRP Information Service" and "Network Resource Model").
- 3.125 IRP information service:** An IRP information service describes the information flow and support objects for a certain functional area, e.g., the alarm information service in the fault management area. As an example of support objects, for the alarm IRP there is the alarm record and alarm list.
- 3.126 IRP solution set:** An IRP solution set is a mapping of the IRP information service to one of several technologies (CORBA/IDL, SNMP/SMI, CMIP/GDMO, etc.). An IRP information service can be mapped to several different IRP solution sets. Different technology selections may be done for different IRPs.
- 3.127 Iu:** Interconnection point between an RNC and a core network. It is also considered as a reference point.
- 3.128 Iu-flex:** Routing functionality for intradomain connection of RAN nodes to multiple CN nodes.
- 3.129 Iu mode:** Mode of operation of the MS when connected to the Core Network via GERAN or UTRAN and the Iu interface.
- 3.130 Iub:** Interface between an RNC and a Node B.
- 3.131 Iur:** A logical interface between two RNC. Whilst logically representing a point-to-point link between RNC, the physical realization may not be a point-to-point link.
- 3.132 key pair:** Key pairs are matching private and public keys. If a block of data is encrypted using the private key, the public key from the pair can be used to decrypt it. The private key is never divulged to any other party, but the public key is available, e.g., in a certificate.

**3.133 local service:** Services, which are provided by current roamed to network that are not HE services. The same service can be provided by a network as a local service to inbound roamers and as a HE service to the subscribers of this network.

**3.134 local IP address:** Allows an IP-capable UE connected via a H(e)NB direct access to other IP-capable devices in the local residential/corporate IP network.

**3.135 localized service area (LSA):** An operator-defined group of cells, for which specific access conditions apply. This may correspond to an area in which the core network offers specific services. A LSA may be defined within a PLMN or globally. Therefore, a LSA may offer a non-contiguous radio coverage.

**3.136 location registration (LR):** The UE registers its presence in a registration area, for instance regularly or when entering a new registration area.

**3.137 logical channel:** A logical channel is an information stream dedicated to the transfer of a specific type of information over the radio interface. Logical channels are provided on top of the MAC layer.

**3.138 logical channel (UICC):** A command/response communication context multiplexed on the physical channel between the ME and the UICC.

**3.139 logical model:** A logical model defines an abstract view of a network or network element by means of information objects representing network element, aggregations of network elements, the topological relationship between the elements, endpoints of connections (termination points), and transport entities (such as connections) that transport information between two or more termination points.

The information objects defined in the logical model are used, among others, by connection management functions. In this way, a physical implementation independent management is achieved.

**3.140 logical O&M:** The signalling associated with the control of logical resources (channels, cells) owned by the RNC but physically implemented in the Node B. The RNC controls these logical resources. A number of O&M procedures physically implemented in Node B impact on the logical resources and therefore require an information exchange between RNC and Node B. All messages needed to support this information exchange are classified as Logical O&M forming an integral part of NBAP.

**3.141 LSA exclusive access cell:** A UE may only camp on this cell if the cell belongs to the LSAs to which the user has subscribed. Nevertheless, if no other cells are available, the UE of non-LSA users may originate emergency calls from this cell.

**3.142 LSA only access:** When LSA only access applies to the user, the UE can only access cells that belong to the LSAs to which the user has subscribed. Outside the coverage area of the subscribed LSAs, the UE may camp on other cells and limited services apply.

**3.143 LSA preferential access cell:** A LSA preferential access cell is a cell which is part of the LSA. UEs of users that have subscribed to a LSA of a LSA-preferential-access cell have higher priority to resources than non-LSA users in the same cell.

**3.144 macro cells:** "Macro cells" are outdoor cells with a large cell radius.

**3.145 macro diversity handover:** "Macro diversity" is an operation state in which a user equipment simultaneously has radio links with two or more UTRAN access points for the sole aim of improving quality of the radio connection or providing seamless handover to the BS with the highest quality connection.

**3.146 management infrastructure:** The collection of systems (computers and telecommunications) a 3GPP System Organization has in order to manage a 3GPP System.



- 3.147 mandatory UE requirement:** Regulatory requirement which is applicable to 3G UEs. It is determined by each country/region and beyond the scope of 3GPP specification (e.g., spurious emission in UK).
- 3.148 master file (MF):** The root directory of the file system hierarchy on the UICC.
- 3.149 maximum output power:** For UE, this is a measure of the maximum power supported by the UE (i.e., the actual power as would be measured assuming no measurement error) (TS 25.101). For FDD BS, the mean power level per carrier of the base station measured at the antenna connector in a specified reference condition (TS 25.104). For TDD BS, this refers to the measure of power when averaged over the transmit timeslot at the maximum power setting (TS 25.105).
- 3.150 maximum possible AIUR:** The highest possible AIUR that the multiple TCH/F can provide, e.g., 2 TCH/F using TCH/F9.6 provides a maximum possible AIUR of 19.2 kbit/s.
- 3.151 maximum transmitter power per traffic channel (dBm):** The maximum power at the transmitter output for a single traffic channel.
- 3.152 mean bit rate:** A measure of throughput. The average (mean) bit rate available to the user for the given period of time (source: [ITU-T I.210]).
- 3.153 mean transit delay:** The average transit delay experienced by a (typically) large sample of PDUs within the same service category.
- 3.154 medium access control:** A sub-layer of radio interface layer 2 providing unacknowledged data transfer service on logical channels and access to transport channels.
- 3.155 messaging service:** An interactive service, which offers user-to-user communication between individual users via storage units with store-and-forward, mailbox and/or message handling (e.g., information editing, processing and conversion) functions (source: [ITU-T I.113]).
- 3.156 MExE classmark:** A MExE classmark identifies a category of MExE UE supporting MExE functionality with a minimum level of processing, memory, display, and interactive capabilities. Several MExE classmarks may be defined to differentiate between the functionalities offered by different MExE UEs. A MExE application or applet defined as being of a specific MExE classmark indicates that it is supportable by a MExE UE of that classmark.
- 3.157 MExE executable:** An executable is an applet, application, or executable content, which conforms to the MExE specification and may execute on the ME.
- 3.158 MExE server:** A node supporting MExE services in the MExE service environment.
- 3.159 MExE service:** A service enhanced (or made possible) by MExE technology.
- 3.160 MExE service environment:** Depending on the configuration of the PLMN, the operator may be able to offer support to MExE services in various ways. Examples of possible sources are from traditional GSM nodes, IN nodes, operator-specific nodes, operator franchised nodes and services provider nodes, together with access to nodes external (i.e., vendor-specific) to the PLMN depending on the nature of the MExE service. These nodes are considered to constitute the MExE service environment. The MExE service environment shall support direct MExE UE to MExE UE interaction of MExE services.
- 3.161 MExE SIM:** A (U)SIM application that is capable of storing a security certificate that is accessible using standard mechanisms.
- 3.162 MExE subscriber:** The owner of a subscription who has entered into an agreement with a MExE service provider for MExE services.
- 3.163 micro cells:** "Micro cells" are small cells.

**3.164 minimum transmit power:** The minimum controlled output power of the TDD BS is when the power control setting is set to a minimum value. This is when the power control indicates a minimum transmit output power is required (TS 25.105).

**3.165 mobile evaluated handover (MEHO):** A type of handover triggered by an evaluation made in the mobile. The mobile evaluates the necessity of handover based on the measured radio environment and based on criteria, defined by the network. When the evaluation meets the hand-off criteria the necessary information is sent from the mobile to the network. The network then decides on the necessity of the handover based on the reported evaluation result and other conditions, e.g., uplink radio environment and/or availability of network resources; the network may then execute the handover.

**3.166 mobile number portability:** The ability for a mobile subscriber to change subscription network within the same country whilst retaining their original MSISDN(s).

**3.167 mobile termination:** The mobile termination is the component of the mobile station which supports functions specific to management of the radio interface (Um).

**3.168 mobility:** The ability for the user to communicate whilst moving independent of location.

**3.169 mobility management:** A relation between the mobile station and the UTRAN that is used to set up, maintain and release the various physical channels.

**3.170 multi-mode terminal:** UE that can obtain service from at least one UTRA radio access mode, and one or more different systems such as GSM bands or possibly other radio systems such as IMT-2000 family members.

**3.171 multicast service:** A unidirectional PTM service in which a message is transmitted from a single source entity to all subscribers currently located within a geographical area. The message contains a group identifier indicating whether the message is of interest to all subscribers or to only the subset of subscribers belonging to a specific multicast group.

**3.172 multipoint:** A value of the service attribute "communication configuration", which denotes that the communication involves more than two network terminations (source: [ITU-T I.113]).

**3.173 multimedia service:** Services that handle several types of media such as audio and video in a synchronized way from the user's point of view. A multimedia service may involve multiple parties, multiple connections, and the addition or deletion of resources and users within a single communication session.

**3.174 name:** A name is an alphanumeric label used for identification of end users and may be portable.

**3.175 narrow TDD (NTDD):** The 1.28 Mcps chip rate UTRA-TDD option.

**3.176 negotiated QoS:** In response to a QoS request, the network shall negotiate each QoS attribute to a level that is in accordance with the available network resources. After QoS negotiation, the bearer network shall always attempt to provide adequate resources to support all of the negotiated QoS profiles.

**3.177 network code:** MCC and MNC.

**3.178 network code group:** Same as "network code".

**3.179 network connection:** An association established by a network layer between two users for the transfer of data, which provides explicit identification of a set of network data transmissions and agreement concerning the services to be provided by the set (source: [ITU-T X.213]).

**3.180 network element:** A discrete telecommunications entity, which can be managed over a specific interface, e.g., the RNC.

- 3.181 network manager:** Provides a package of end-user functions with the responsibility for the management of a network, mainly as supported by the EM(s) but it may also involve direct access to the network elements. All communication with the network is based on open and well-standardized interfaces supporting management of multi-vendor and multi-technology network elements.
- 3.182 network operator:** See "PLMN operator".
- 3.183 network personalization:** Allows the network operator to personalize a ME so that it can only be used with that particular network operator's (U)SIMs.
- 3.184 network resource model:** A protocol-independent model describing managed objects representing network resources, e.g., an RNC or Node B.
- 3.185 network service data unit (NSDU):** A unit of data passed between the user and the GPRS network across a network service access point (NSAP).
- 3.186 network subset code:** Digits 6 and 7 of the IMSI.
- 3.187 network subset personalization:** A refinement of network personalization, which allows network operators to limit the usage of a ME to a subset of (U)SIMs.
- 3.188 network termination:** A functional group on the network side of a user-network interface (source: [ITU-T I.112]).
- 3.189 nomadic operating mode:** Mode of operation where the terminal is transportable but being operated while stationary and may in addition require user cooperation (e.g., close to open spaces, antenna set-up, etc.).
- 3.190 nominal maximum output power:** This is the nominal power defined by the UE power class.
- 3.191 non-access stratum:** Protocols between UE and the core network that are not terminated in the UTRAN.
- 3.192 normal GSM operation:** Relating to general, CHV-related, GSM security-related and subscription-related procedures.
- 3.193 normal mode of operation:** The mode of operation into which the ME would have gone if it had no personalization checks to process.
- 3.194 number:** A string of decimal digits that uniquely indicates the public network termination point. The number contains the information necessary to route the call to this termination point.
- A number can be in a format determined nationally or in an international format. The international format is known as the international public telecommunication number which includes the country code and subsequent digits, but not the international prefix.
- 3.195 number portability:** Where the provision of diallable numbers is independent of home environment and/or serving network.
- 3.196 off-line charging:** A charging process where charging information does not affect, in real time, the service rendered.
- 3.197 on-line charging:** A charging process where charging information can affect, in real time, the service rendered and therefore directly interacts with the session/service control.
- 3.198 one stop billing:** One bill for all charges incurred using the 3GPP System.
- 3.199 open group:** A group that does not have a pre-defined set of members. Any user may participate in an open group.
- 3.200 open service access:** Concept for introducing a vendor independent means for introduction of new services.

- 3.201 open service architecture:** Concept for introducing a vendor-independent means for introduction of new services.
- 3.202 operations system:** This term indicates a generic management system, independent of its location level within the management hierarchy.
- 3.203 OSA interface:** Standardized interface used by application/clients to access service capability features.
- 3.204 packet:** An information unit identified by a label at layer 3 of the OSI reference model (source: [ITU-T I.113]). A network protocol data unit (NPDU).
- 3.205 packet data protocol (PDP):** Any protocol, which transmits data as discrete units known as packets, e.g., IP, or [ITU-T X.25].
- 3.206 packet transfer mode:** Also known as "packet mode". A transfer mode in which the transmission and switching functions are achieved by packet-oriented techniques, so as to dynamically share network transmission and switching resources between a multiplicity of connections (source: [ITU-T I.113]).
- 3.207 padding:** One or more bits appended to a message in order to cause the message to contain the required number of bits or bytes.
- 3.208 paging:** The act of seeking a user equipment.
- 3.209 paging occasion:** The frame where the UE monitors in FDD or the paging block, which consists of several frames, for TDD. For paging blocks, the value of paging occasion is equal to the first frame of the paging block.
- 3.210 peak bit rate:** A measure of throughput. The maximum bit rate offered to the user for a given time period (to be defined) for the transfer of a bursty signal (source: [ITU-T I.210]). (The maximum user information transfer rate achievable by a user for a single service data unit transfer.)
- 3.211 performance:** The ability to track service and resource usage levels and to provide feedback on the responsiveness and reliability of the network.
- 3.212 personal service environment:** Contains personalized information defining how subscribed services are provided and presented towards the user. Each subscriber of the home environment has her own personal service environment. The personal service environment is defined in terms of one or more user profiles.
- 3.213 personalization:** The process of storing information in the ME and activating the procedures, which verify this information against the corresponding information stored in the SIM whenever the ME is powered up or a SIM is inserted, in order to limit the SIMs with which the ME will operate.
- 3.214 personalization entity:** Network, network subset, SP, Corporate or (U)SIM to which the ME is personalized.
- 3.215 phonebook:** A dataset of personal or entity attributes. The simplest form is a set of name-subscriber phone number pairs as supported by GSM (U)SIMs.
- 3.216 physical channel:** In FDD mode, a physical channel is defined by code, frequency and, in the uplink, relative phase (I/Q). In TDD mode, a physical channel is defined by code, frequency, and time-slot.
- 3.217 physical channel data stream:** In the uplink, a data stream that is transmitted on one physical channel. In the downlink, a data stream that is transmitted on one physical channel in each cell of the active set.
- 3.218 pico cells:** "Pico cells" are cells, mainly indoor cells, with a radius typically less than 50 metres.

- 3.219 PICH monitoring occasion:** The time instance where the UE monitors PICH within paging occasion.
- 3.220 PLMN area:** The geographical area in which a PLMN provides communication services according to the specifications to mobile users. In the PLMN area, the mobile user can set up calls to a user of a terminating network. The terminating network may be a fixed network, the same PLMN, another PLMN or other types of PLMN. Terminating network users can also set up calls to the PLMN. The PLMN area is allocated to a PLMN. It is determined by the service and network provider in accordance with any provisions laid down under national law. In general, the PLMN area is restricted to one country. It can also be determined differently, depending on the different telecommunication services, or type of MS. If there are several PLMNs in one country, their PLMN areas may overlap. In border areas, the PLMN areas of different countries may overlap. Administrations will have to take precautions to ensure that cross border coverage is minimized in adjacent countries unless otherwise agreed.
- 3.221 public land mobile network operator (PLMN operator):** The entity which offers telecommunications services over an air interface.
- 3.222 point-to-multipoint service:** A service type in which data is sent to "all service subscribers or a predefined subset of all subscribers" within an area defined by the service requester.
- 3.223 point-to-point:** A value of the service attribute "communication configuration", which denotes that the communication involves only two network terminations.
- 3.224 point-to-point service:** A service type in which data is sent from a single network termination to another network termination.
- 3.225 port:** A particular interface, of the specified equipment (apparatus), with the electromagnetic environment. For example, any connection point on equipment intended for connection of cables to or from that equipment is considered as a port.
- 3.226 ported number:** A MSISDN that has undergone the porting process.
- 3.227 ported subscriber:** The subscriber of a ported number.
- 3.228 porting process:** A description of the transfer of a number between network operators.
- 3.229 postpay billing:** Billing arrangement between customer and operator/service provider where the customer periodically receives a bill for service usage in the past period.
- 3.230 power control dynamic range:** The difference between the maximum and the minimum total transmit output power for a specified reference condition (TS 25.104).
- 3.231 predictive service:** A service model which provides reliable performance, but allowing a specified variance in the measured performance criteria.
- 3.232 prepay billing:** Billing arrangement between customer and operator/service provider where the customer deposits an amount of money in advance, which is subsequently used to pay for service usage.
- 3.233 proactive SIM:** A SIM which is capable of issuing commands to the terminal. Part of SIM application toolkit.
- 3.234 protocol:** A formal set of procedures that are adopted to ensure communication between two or more functions within the same layer of a hierarchy of functions (source: [ITU-T I.112]).
- 3.235 public land mobile network:** A telecommunications network providing mobile cellular services.
- 3.236 QoS profile:** A QoS profile comprises a number of QoS parameters. A QoS profile is associated with each QoS session. The QoS profile defines the performance expectations placed on the bearer network.

**3.237 QoS session:** Lifetime of PDP context. The period between the opening and closing of a network connection whose characteristics are defined by a QoS profile. Multiple QoS sessions may exist, each with a different QoS profile.

**3.238 quality of service:** The collective effect of service performances, which determine the degree of satisfaction of a user of a service. It is characterized by the combined aspects of performance factors applicable to all services, such as:

- service operability performance;
- service accessibility performance;
- service retainability performance;
- service integrity performance; and
- other factors specific to each service.

**3.239 radio access bearer:** The service that the access stratum provides to the non-access stratum for transfer of user data between user equipment and CN.

**3.240 radio access mode:** Mode of the cell, FDD or TDD.

**3.241 radio access network application part:** Radio network signalling over the Iu.

**3.242 radio access network operator:** Operator that offers radio access to one or more core network operators.

**3.243 radio access network technology:** UTRAN, GERAN, etc.

**3.244 radio interface:** The "radio interface" is the tetherless interface between user equipment and a UTRAN access point. This term encompasses all the functionality required to maintain such interfaces.

**3.245 radio link:** A "radio link" is a logical association between single user equipment and a single UTRAN access point. Its physical realization comprises one or more radio bearer transmissions.

**3.246 radio link control:** A sublayer of radio interface layer 2 providing transparent, unacknowledged and acknowledged data transfer service.

**3.247 radio network controller:** This equipment in the RNS is in charge of controlling the use and the integrity of the radio resources.

**3.248 radio network subsystem:** Either a full network or only the access part of a UTRAN offering the allocation and the release of specific radio resources to establish means of connection in between an UE and the UTRAN. A radio network subsystem is responsible for the resources and transmission/reception in a set of cells.

**3.249 radio system:** The selected 2nd or 3rd generation radio access technology.

**3.250 RAN sharing:** Two or more CN operators share the same RAN, i.e., a RAN node (RNC or BSC) is connected to multiple CN nodes (SGSNs and MSC/VLRs) belonging to different CN operators.

**3.251 real time:** Time, typically in number of seconds, to perform the online mechanism used for fraud control and cost control.

**3.252 received signal code power:** Given only signal power is received, the average power of the received signal after despreading and combining.

**3.253 receiver antenna gain (dBi):** The maximum gain of the receiver antenna in the horizontal plane (specified as dB relative to an isotropic radiator).

**3.254 receiver noise figure (dB):** The noise figure of the receiving system referenced to the receiver input.

- 3.255 receiver sensitivity (dBm):** This is the signal level needed at the receiver input that just satisfies the required  $E_b/(N_o+I_o)$ .
- 3.256 recipient network:** The network which receives the number in the porting process. This network becomes the subscription network when the porting process is complete.
- 3.257 record:** A string of bytes within an EF handled as a single entity (see clause 6).
- 3.258 record number:** The number which identifies a record within an EF.
- 3.259 record pointer:** The pointer which addresses one record in an EF.
- 3.260 reference configuration:** A combination of functional groups and reference points that shows possible network arrangements (source: [ITU-T I.112]).
- 3.261 reference point:** A conceptual point at the conjunction of two non-overlapping functional groups (source: [ITU-T I.112]).
- 3.262 regionally provided service:** A service entitlement to only certain geographical part(s) of a PLMN, as controlled by the network operator.
- 3.263 registration:** This is the process of camping on a cell of the PLMN and doing any necessary LR.s.
- 3.264 registered PLMN (RPLMN):** This is the PLMN on which the UE has performed a location registration successfully.
- 3.265 registration area:** A (NAS) registration area is an area in which the UE may roam without a need to perform location registration, which is a NAS procedure.
- 3.266 relay:** Terminal devices capable of ODMA relay communications.
- 3.267 relay/seed gateway:** Relay or seed that communicates with the UTRAN, in either TDD or FDD mode.
- 3.268 relaylink:** Relaylink is a communications link between two ODMA relay nodes.
- 3.269 release 99:** A particular version of the 3G System standards produced by the 3GPP project. Also: Release 4, Release 5, Release 6, Release 7, Release 8, Release 9, Release 10, etc.
- 3.270 repeater:** A radio transceiver used to extend the transmission of a base station beyond its normal range.
- 3.271 requested QoS:** A QoS profile is requested at the beginning of a QoS session. QoS modification requests are also possible during the lifetime of a QoS session.
- 3.272 required  $E_b/(N_o+I_o)$  (dB):** The ratio between the received energy per information bit to the total effective noise and interference power density needed to satisfy the quality objectives.
- 3.273 residual error rate:** A parameter describing service accuracy. The frequency of lost SDUs and of corrupted or duplicated network SDUs delivered at the user-network interface.
- 3.274 retrieval service:** An interactive service which provides the capability of accessing information stored in database centres. The information will be sent to the user on demand only. The information is retrieved on an individual basis, i.e., the time at which an information sequence is to start is under the control of the user (source [ITU-T I.113]).
- 3.275 roaming:** The ability for a user to function in a serving network different from the home network.
- 3.276 root relay:** ODMA relay node where communications originate or terminate.
- 3.277 RRC connection:** A point-to-point bidirectional connection between RRC peer entities on the UE and the UTRAN sides, respectively. An UE has either zero or one RRC connection.

**3.278 SDU error probability:** The ratio of total incorrect service data units (SDUs) to total successfully transferred service data units plus incorrect service data units in a specified sample (source: [ITU-T X.140]).

NOTE – The source document term "user information unit" has been replaced by the term "service data unit".

**3.279 SDU loss probability:** The ratio of total lost service data units (SDUs) to total transmitted service data units in a specified sample (source: [ITU-T X.140]).

NOTE – The source document term "user information unit" has been replaced by the term "service data unit".

**3.280 SDU misdelivery probability:** The ratio of total misdelivered service data units (SDUs) to total service data units transferred between a specified source and destination user in a specified sample (source: [ITU-T X.140]).

NOTE – The source document term "user information unit" has been replaced by the term "service data unit".

**3.281 SDU transfer delay:** The value of elapsed time between the start of transfer and successful transfer of a specified service data unit (SDU) (source: [ITU-T X.140]).

NOTE – The source document term "user information unit" has been replaced by the term "service data unit".

**3.282 SDU transfer rate:** The total number of successfully transferred service data units (SDUs) in a transfer sample divided by the input/output time for that sample. The input/output time is the larger of the input time or the output time for the sample (source: [ITU-T X.140]).

NOTE – The source document term "user information unit" has been replaced by the term "service data unit".

**3.283 seamless handover:** A handover without perceptible interruption of the radio connection.

**3.284 sector:** A sub-area of a cell. All sectors within one cell are served by the same base station. A radio link within a sector can be identified by a single logical identification belonging to that sector.

**3.285 secured packet:** The information flow on top of which the level of required security has been applied. An application message is transformed with respect to a chosen transport layer and chosen level of security into one or more secured packets.

**3.286 security:** The ability to prevent fraud as well as the protection of information availability, integrity and confidentiality.

**3.287 seed:** Deployed ODMA relay node with or without a display/keypad.

**3.288 selected IT traffic offload:** Offload of selected types of IP traffic (e.g., internet traffic) towards a defined IP network close to the UE's point of attachment to the access network. SIPTO is applicable to traffic offload for the macro-cellular access network and for the H(e)NB subsystem.

**3.289 selected PLMN:** This is the PLMN that has been selected by the non-access stratum, either manually or automatically.

**3.290 service:** A component of the portfolio of choices offered by service providers to a user, a functionality offered to a user.

**3.291 service-less UE:** A UE that has only the baseline capabilities.

**3.292 service access point:** A conceptual point where a protocol layer offers access to its services to upper layer.

**3.293 service area:** The service area is defined in the same way as the service area according to [ITU-T Q.1001]. In contrast to the PLMN area, it is not based on the coverage of a PLMN. Instead, it is based on the area in which a fixed network user can call a mobile user without knowing his location. The service area can therefore change when the signalling system is being extended, for example.

**3.294 service attributes:** A specified characteristic of a telecommunication service ([ITU-T I.112]).



NOTE – The value(s) assigned to one or more service attributes may be used to distinguish a particular telecommunications service from others.

**3.295 service bit rate:** The bit rate that is available to a user for the transfer of user information ([ITU-T I.113]).

**3.296 service capabilities:** Bearers defined by parameters, and/or mechanisms needed to realize services. These are within networks and under network control.

**3.297 service capability feature:** Functionality offered by service capabilities that are accessible via the standardized application interface.

**3.298 service capability server:** Network functionality providing open interfaces towards the functionality offered by 3G System service capabilities.

**3.299 service category or service class:** A service offered to the users described by a set of performance parameters and their specified values, limits or ranges. The set of parameters provides a comprehensive description of the service capability.

**3.300 service continuity:** The uninterrupted user experience of a service that is using an active communication (e.g., an ongoing voice call) when a UE undergoes a radio access technology change or a CS/PS domain change without, as far as possible, the user noticing the change.

NOTE – In particular service continuity encompasses the possibility that after a RAT / domain change the user experience is maintained by a different telecommunication service (e.g., tele- or bearer service) than before the RAT / domain change.

**3.301 service control:** The ability of the user, home environment or serving environment to determine what a particular service does, for a specific invocation of that service, within the limitations of that service.

**3.302 service delay:** The time elapsed from the invocation of the service request, to the corresponding service request indication at the Service Receiver, indicating the arrival of application data.

**3.303 service enabler:** A capability which may be used, either by itself or in conjunction with other service enablers, to provide a service to the end user.

**3.304 service execution environment:** A capability which may be used, either by itself or in conjunction with other service enablers, to provide a service to the end user.

**3.305 service feature:** A capability which may be used, either by itself or in conjunction with other service enablers, to provide a service to the end user.

**3.306 service implementation capabilities:** A capability which may be used, either by itself or in conjunction with other service enablers, to provide a service to the end user.

**3.307 service model:** A capability which may be used, either by itself or in conjunction with other service enablers, to provide a service to the end user.

**3.308 service provider:** A capability which may be used, either by itself or in conjunction with other service enablers, to provide a service to the end user.

**3.309 service receiver:** A capability which may be used, either by itself or in conjunction with other service enablers, to provide a service to the end user.

**3.310 service relationship:** A capability which may be used, either by itself or in conjunction with other service enablers, to provide a service to the end user.

**3.311 service request:** This is defined as being one invocation of the service through a service request primitive.

**3.312 service requester:** The entity which requests the initiation of a GPRS operation, through a service request.

- 3.313 service subscriber:** The entity which subscribes to the general packet radio service (GPRS) service.
- 3.314 services (of a mobile cellular system):** The set of functions that the mobile cellular system can make available to the user.
- 3.315 serving network:** The serving network provides the user with access to the services of home environment.
- 3.316 settlement:** Payment of amounts resulting from the accounting process.
- 3.317 shared network:** When two or more network operators share network elements.
- 3.318 signalling:** When two or more network operators share network elements.
- 3.319 signalling connection:** When two or more network operators share network elements.
- 3.320 signalling link:** When two or more network operators share network elements.
- 3.321 (U)SIM personalization:** Enables a user to personalize a ME so that it may only be used with particular (U)SIM(s).
- 3.322 soft handover:** A performance criterion that describes the time interval required to perform a function or the rate at which the function is performed. (The function may or may not be performed with the desired accuracy.) (source: [ITU-T I.350]).
- 3.323 speed:** A performance criterion that describes the time interval required to perform a function or the rate at which the function is performed. (The function may or may not be performed with the desired accuracy.) (source: [ITU-T I.350]).
- 3.324 SRNC radio network temporary identifier (S-RNTI):** A UE identifier which is allocated by the serving RNC and unique within this SRNC. It is allocated for all UEs having a RRC connection. S-RNTI is reallocated always when the serving RNC for the RRC connection is changed and deallocated when the RRC connection is released.
- 3.325 SRNS relocation:** The change of Iu instance and transfer of the SRNS role to another RNS.
- 3.326 stratum:** Grouping of protocols related to one aspect of the services provided by one or several domains.
- 3.327 sub-network management functions:** Set of functions that are related to a network model for a set of network elements constituting a clearly defined sub-network, which may include relations between the network elements. This model enables additional functions on the sub-network level (typically in the areas of network topology presentation, alarm correlation, service impact analysis and circuit provisioning).
- 3.328 subscribed QoS:** The network will not grant a QoS greater than the subscribed QoS. The QoS profile subscription parameters are held in the HLR. An end user may have several QoS subscriptions. For security and the prevention of damage to the network, the end user cannot directly modify the QoS subscription profile data.
- 3.329 subscriber:** An entity (associated with one or more users) that is engaged in a subscription with a service provider. The subscriber is allowed to subscribe and unsubscribe services, to register a user or a list of users authorized to enjoy these services, and also to set the limits relative to the use that associated users make of these services.
- 3.330 subscription:** A subscription describes the commercial relationship between the subscriber and the service provider.
- 3.331 subscription management (SuM):** Set of capabilities that allow operators, service providers, and indirectly subscribers, to provision, control, monitor the subscription profile.
- 3.332 suitable cell:** This is a cell on which an UE may camp. It must satisfy certain conditions.

**3.333 supplementary service:** A service which modifies or supplements a basic telecommunication service. Consequently, it cannot be offered to a user as a stand-alone service. It must be offered together with or in association with a basic telecommunication service. The same supplementary service may be common to a number of basic telecommunication services.

**3.334 system area:** The group of PLMN areas accessible by MSs. Interworking of several PLMNs and interworking between PLMNs and fixed network(s) permit public land mobile communication services at international level.

**3.335 telecommunication service:** What is offered by a PLMN operator or service provider to its customers in order to satisfy a specific telecommunication requirement. (source: [ITU-T I.112]). Telecommunication services are divided into two broad families: bearer services and teleservices (source: [ITU-T I.210]).

**3.336 teleservice:** A type of telecommunication service that provides the complete capability, including terminal equipment functions, for communication between users according to standardized protocols and transmission capabilities established by agreement between operators.

**3.337 text conversation:** Real-time transfer of text between users in at least two locations.

**3.338 text telephony:** An audiovisual conversation service providing bidirectional real-time transfer of text and optionally audio between users in two locations. Audio may be transmitted alternating with text or simultaneously with text (source: [ITU-T F.703]).

**3.339 throughput:** A parameter describing service speed. The number of data bits successfully transferred in one direction between specified reference points per unit time (source: [ITU-T I.113]).

**3.340 toolkit applet:** An application on the UICC that generates proactive commands to the ME.

**3.341 total conversation:** An audiovisual conversation service providing bidirectional symmetric real-time transfer of motion video, text and voice between users in two or more locations (source: [ITU-T F.703]).

**3.342 total power dynamic range:** The difference between the maximum and the minimum total transmit output power for a specified reference condition (TS 25.104).

**3.343 traffic channel:** A logical channel, which carries user information.

**3.344 transit delay:** A parameter describing service speed. The time difference between the instant at which the first bit of a protocol data unit (PDU) crosses one designated boundary (reference point), and the instant at which the last bit of the PDU crosses a second designated boundary (source: [ITU-T I.113]).

**3.345 transmission time interval:** The inter-arrival time of transport block sets, i.e., the time it shall take to transmit a transport block set.

**3.346 transmitter antenna gain (dBi):** The maximum gain of the transmitter antenna in the horizontal plane (specified as dB relative to an isotropic radiator).

**3.347 transport block:** The basic data unit exchanged between L1 and MAC. An equivalent term for transport block is "MAC PDU".

**3.348 transport block set:** A set of transport blocks that is exchanged between L1 and MAC at the same time instance using the same transport channel. An equivalent term for transport block set is "MAC PDU Set".

**3.349 transport block set size:** The number of bits in a transport block set.

**3.350 transport block size:** The size (number of bits) of a transport block.

**3.351 transport channel:** The channels offered by the physical layer to Layer 2 for data transport between peer L1 entities are denoted as transport channels. Different types of transport channels are

defined by how and with which characteristics data is transferred on the physical layer, e.g., whether using dedicated or common physical channels.

**3.352 transport format:** A format offered by L1 to MAC for the delivery of a transport block set during a transmission time interval on a transport channel. The transport format constitutes of two parts – one dynamic part and one semi-static part.

**3.353 transport format combination:** The combination of currently valid transport formats on all transport channels of an UE, i.e., containing one transport format from each transport channel.

**3.354 transport format combination set:** A set of transport format combinations to be used by an UE.

**3.355 transport format combination indicator (TFCI):** A representation of the current transport format combination.

**3.356 transport format identification (TFI in UTRAN, TFIN in GERAN):** A label for a specific transport format within a transport format set.

**3.357 transport format set:** A set of transport formats. For example, a variable rate DCH has a transport format set (one transport format for each rate), whereas a fixed rate DCH has a single transport format.

**3.358 UE service capabilities:** Capabilities that can be used either singly or in combination to deliver services to the user. The characteristic of UE service capabilities is that their logical function can be defined in a way that is independent of the implementation of the 3GPP System (although all UE service capabilities are of course constrained by the implementation of the 3GPP System). Examples: a data bearer of 144 kbit/s; a high-quality speech teleservice; an IP teleservice; a capability to forward a speech call.

**3.359 universal IC card (UICC):** A physically secure device, an IC card (or 'smart card'), that can be inserted and removed from the terminal equipment. It may contain one or more applications. One of the applications may be a USIM.

**3.360 universal subscriber identity module (USIM):** An application residing on the UICC used for accessing services provided by mobile networks, which the application is able to register on with the appropriate security.

**3.361 uplink:** A unidirectional radio link for the transmission of signals from a UE to a base station, from a mobile station to a mobile base station or from a mobile base station to a base station.

**3.362 URA updating:** A family of procedures that updates the UTRAN registration area of a UE when a RRC connection exists and the position of the UE is known on URA level in the UTRAN.

**3.363 user:** An entity, not part of the 3G System, which uses 3G System services. Example: a person using a 3G System mobile station as a portable telephone.

**3.364 user access or user network access:** The means by which a user is connected to a telecommunication network in order to use the services and/or facilities of that network (source: [ITU-T I.112]).

**3.365 user equipment:** A device allowing a user access to network services. For the purpose of 3G specifications, the interface between the UE and the network is the radio interface. A user equipment can be subdivided into a number of domains, the domains being separated by reference points. Currently defined domains are the USIM and ME Domains. The ME Domain can further be subdivided into several components showing the connectivity between multiple functional groups. These groups can be implemented in one or more hardware devices. An example of such a connectivity is the TE-MT interface. Further, an occurrence of a user equipment is an MS for GSM.

**3.366 user profile:** The set of information necessary to provide a user with a consistent, personalized service environment, irrespective of the user's location or the terminal used (within the limitations of the terminal and the serving network).

**3.367 UTRA radio access mode:** The selected UTRA radio access mode, i.e., UTRA-FDD; UTRA-TDD.

**3.368 UTRA-TDD:** Time division duplex UTRA radio access mode.

**3.369 UTRA-WTDD:** Time division duplex UTRA access mode 3.84 Mcps option.

**3.370 UTRAN access point:** A conceptual point within the UTRAN performing radio transmission and reception. A UTRAN access point is associated with one specific cell, i.e., there exists one UTRAN access point for each cell. It is the UTRAN-side endpoint of a radio link.

**3.371 UTRAN registration area:** An area covered by a number of cells. The URA is only internally known in the UTRAN.

**3.372 UTRAN radio network temporary identifier:** The U-RNTI is a unique UE identifier that consists of two parts, an SRNC identifier and a C-RNTI. U-RNTI is allocated to an UE having a RRC connection. It identifies the UE within UTRAN and is used as an UE identifier in cell update, URA update, RRC connection reestablishment and (UTRAN originated) paging messages and associated responses on the radio interface.

**3.373 Uu:** The Radio interface between UTRAN and the user equipment.

**3.374 value-added service provider:** Provides services other than basic telecommunications service for which additional charges may be incurred.

**3.375 variable bit rate service:** A type of telecommunication service characterized by a service bit rate specified by statistically expressed parameters which allow the bit rate to vary within defined limits (source: [ITU-T I.113]).

**3.376 virtual home environment:** A concept for personal service environment portability across network boundaries and between terminals.

**3.377 virtual machine:** A software program that simulates a hypothetical computer central processing unit. The programs executed by a virtual machine are represented as byte codes, which are primitive operations for this hypothetical computer.

**3.378 visited PLMN of home country:** This is a PLMN, different from the home PLMN, where the MCC part of the PLMN identity is the same as the MCC of the IMSI.

**3.379 wide TDD (WTDD):** The 3.84 Mcps chip rate UTRA-TDD option.

**3.380 WLAN user equipment (WLAN UE):** A UE (equipped with UICC card including (U)SIM) utilized by a subscriber capable of accessing a WLAN network. A WLAN UE may include entities whose configuration, operation and software environment are not under the exclusive control of the 3GPP system operator, such as a laptop computer or PDA with a WLAN card, UICC card reader and suitable software applications.

## **4 Abbreviations and acronyms**

This Recommendation uses the following abbreviations:

|      |  |
|------|--|
| 2G   | Second Generation                            |
| 3G   | Third Generation                             |
| 3GMS | Third Generation Mobile communication System |
| 3GPP | Third Generation Partnership Project         |

|            |  |
|------------|--|
| AAL 2      | ATM Adaptation Layer type 2  |
| AAM        | Advanced Alarm Management  |
| AC         | Access Class, Access Condition, Application Context  |
| ACC        | Automatic Congestion Control   |
| ACELP      | Algebraic Code-Excited Linear Prediction   |
| ACTF       | Access Transfer Control Function   |
| AES        | Advanced Encryption Standard   |
| AF         | Application Function   |
| A-GNSS     | Advanced Global Navigation Satellite System  |
| AGW        | Access Gateway   |
| AID        | Application Identifier   |
| AIM        | Application Information Model  |
| AKA        | Authentication and Key Agreement   |
| AKI        | Asymmetric Key Index   |
| ALG        | Application Level Gateway  |
| AMF        | Authentication Management Field  |
| AMR        | Adaptive Multi Rate (also appears as "Adaptive Multi-Rate")  |
| AMR-WB     | Adaptive Multi Rate WideBand   |
| ANDSF      | Access Network Discovery and Selection Function  |
| ANP        | Access Network Provider  |
| AoC        | Advice of Charge   |
| AoCC       | Advice of Charge Charging (also appears as "Advice of Charge (Charging)")                          |
| AoCI       | Advice of Charge Information (also appears as "Advice of Charge (Information)")                    |
| API        | Application Programming Interface  |
| ARQ        | Automatic Repeat reQuest   |
| AS         | Application Server   |
| ASE        | Application Service Element  |
| ASQ        | Automatic Repeat ReQuest   |
| ATCF       | Access Transfer Control Function   |
| AT-command | Attention Command  |
| ATGW       | Access Transfer Gateway  |
| ATM        | Asynchronous Transfer Mode   |
| AuC        | Authentication Centre  |
| B2BUA      | Back-to-Back User Agent  |
| BAIC       | Barring of All Incoming Calls supplementary service (also appears without "supplementary service") |

|           |   |
|-----------|---|
| BAOC      | Barring of All Outgoing Calls supplementary service (also appears without "supplementary service")                      |
| BBERF     | Bearer Binding and Event Reporting Function   |
| BER       | Bit Error Rate; Basic Encoding Rules (of ASN.1)   |
| BGCF      | Breakout Gateway Control Function   |
| BICC      | Bearer Independent Call Control   |
| BIC-Roam  | Barring of Incoming Calls when Roaming outside the home PLMN country  |
| BM-SC     | Broadcast Multicast Service Centre  |
| BOIC      | Barring of Outgoing International Calls   |
| BOIC-exHC | Barring of Outgoing International Calls except those directed to the Home PLMN Country                                  |
| BS        | Base Station  |
| BS        | Bearer Service  |
| BSC       | Base Station Controller   |
| BSS       | Base Station Subsystem  |
| BSSMAP    | Base Station Subsystem Management Application Part  |
| BTS       | Base Transceiver Station  |
| CAI       | Charge Advise Information   |
| CAMEL     | Customized Applications for Mobile network Enhanced Logic   |
| CAP       | CAMEL Application Part  |
| CAT       | Customized Alerting Tone  |
| CB        | Call Barring  |
| CBC       | Cell Broadcast Centre   |
| CBIM      | Common Baseline Information Model   |
| CBS       | Cell Broadcast Service  |
| CC        | Call Control  |
| CCBS      | Completion of Calls to Busy Subscriber (also appears as "Call Completion to Busy Subscriber")                           |
| CCNR      | Completion of Communications by No Reply  |
| CD        | Call Deflection   |
| CDIV      | Communication Diversion   |
| CDP       | Charge Determination Point  |
| CDR       | Charging Data Record  |
| CF        | Call Forwarding   |
| CFB       | Call Forwarding on mobile subscriber Busy   |
| CFNRc     | Call Forwarding on mobile subscriber Not Reachable supplementary service (also appears without "supplementary service") |

|         |  |
|---------|--|
| CFNRy   | Call Forwarding on No Reply supplementary service (also appears without "supplementary service") |
| CFU     | Call Forwarding Unconditional  |
| CGF     | Charging Gateway Function  |
| CGP     | Charge Generation Point  |
| CLI     | Calling Line Identity  |
| CLIP    | Calling Line Identification Presentation   |
| CLIR    | Calling Line Identification Restriction  |
| CM      | Configuration Management   |
| CMAS    | Commercial Mobile Alert System   |
| CMIP    | Common Management Information Protocol   |
| CN      | Core Network   |
| CNAP    | Calling Name Presentation  |
| CPM     | Converged IP Messaging   |
| COLP    | Connected Line identification Presentation   |
| COLR    | Connected Line identification Restriction  |
| CORBA   | Common Object Request Broker Architecture  |
| CS      | Circuit Switched   |
| CSCF    | Call Session Control Function  |
| CSE     | CAMEL Service Environment  |
| CSG     | Closed Subscriber Group  |
| CSICS   | Circuit Switched IMS Combinational Service   |
| CSIRP   | Communication Surveillance Integration Reference Point   |
| CS-MGW  | Circuit Switched Media GateWay   |
| CSS     | CSG Subscriber Server  |
| CTM     | Cellular Text telephone Modem  |
| CUG     | Closed User Group  |
| CW      | Call Waiting   |
| DCE     | Data Circuit-terminating Equipment   |
| DF      | Dedicated File   |
| DIMS    | Dynamic and Interactive Multimedia Scenes  |
| DM      | Device Management  |
| DRA     | Diameter Routing Agency  |
| DSMIPv6 | Dual Stack Mobile IPv6   |
| DTE     | Data Terminal Equipment  |
| DTMF    | Dual Tone Multiple Frequency   |
| DTX     | Discontinuous Transmission   |



|         |   |
|---------|---|
| ECT     | Explicit Call Transfer supplementary service  |
| EDGE    | Enhanced Data rates for GSM Evolution   |
| EF      | Elementary File   |
| EFR     | Enhanced Full Rate  |
| EGPRS   | Enhanced GPRS   |
| EIR     | Equipment Identity Register   |
| EM      | Element Manager   |
| eMLPP   | Enhanced Multi-Level Precedence and Pre-emption (also appears as "enhanced Multi-Level Precedence and Pre-emption service") |
| eMPS    | enhanced Multimedia Priority Service  |
| EP      | Elementary Procedure  |
| EP      | Entry Point   |
| EPC     | Evolved Packet Core   |
| EPS     | Evolved Packet System   |
| ETWS    | Earthquake and Tsunami Warning System   |
| EUI     | End-User Identity   |
| E-UTRAN | Evolved Universal Terrestrial Radio Access Network  |
| FC      | Flow Control  |
| FDD     | Frequency Division Duplex   |
| FM      | Fault Management  |
| FT      | File Transfer   |
| GAA     | Generic Authentication Architecture   |
| GAD     | Geographical Area Description   |
| GBA     | Generic Bootstrapping Architecture  |
| GBS     | General Bearer Services   |
| GCR     | Group Call Register   |
| GERAN   | GSM/EDGE Radio Access Network   |
| GGSN    | Gateway GPRS Support Node   |
| GLR     | Gateway Location Register   |
| GMLC    | Gateway Mobile Location Centre  |
| GMSC    | Gateway Mobile Switching Centre   |
| GPL     | Generic Push Layer  |
| GPRS    | General Packet Radio Service  |
| gprsSSF | GPRS Service Switching Function   |
| GPS     | Global Positioning System   |
| GSM     | Global System for Mobile communications   |
| GSME    | GSM Europe  |

|         |  |
|---------|--|
| GSM-EFR | GSM Enhanced Full Rate speech Codec                        |
| gsmSCF  | GSM Service Control Function                               |
| gsmSRF  | GSM Specialized Resource Function                          |
| gsmSSF  | GSM Service Switching Function                             |
| GSN     | GPRS Support Nodes   |
| GT      | Global Title   |
| GTP     | GPRS Tunnelling Protocol                                   |
| GTT     | Global Text Telephony                                      |
| GUP     | 3GPP Generic User Profile                                  |
| GW      | Gateway  |
| HA      | Home Agent   |
| HARQ    | Hybrid Automatic Repeat Request                            |
| HDLC    | High level Data Link Control                               |
| HE      | Home Environment   |
| HeMS    | HeNB Management System                                     |
| HeNB    | Home enhanced Node B                                       |
| HeNS    | Home enhanced Node B Subsystem                             |
| HE-VASP | Home Environment Value-Added Service Provider              |
| hlr     | Home Location Register                                     |
| HNB     | Home Node B  |
| HNS     | Home Node B Subsystem                                      |
| HPLMN   | Home Public Land Mobile Network                            |
| HRPD    | High Rate Packet Data                                      |
| HSCSD   | High Speed Circuit Switched Data                           |
| IBCF    | Interconnection Border Control Functions                   |
| IC      | Integrated Circuit (also appears as "Integrated Circuits") |
| ICC     | Integrated Circuit Card                                    |
| ICS     | IMS Centralized Services                                   |
| I-CSCF  | Interrogating Call Session Control Function                |
| IDL     | Interface Definition Language                              |
| IKE     | Internet Key Exchange                                      |
| IM      | IP Multimedia  |
| IMEI    | International Mobile Equipment Identity                    |
| IM-GSN  | Intermediate GPRS Serving Node                             |
| IM-MGW  | Intermediate Media Gateway                                 |
| IM-MSC  | Intermediate Mobile-services Switching Centre              |
| IMS     | IP Multimedia Subsystem                                    |

|          |  |
|----------|--|
| IMS-AGW  | IMS Access Gateway   |
| IMS ALG  | IMS Application Level Gateway  |
| IMSI     | International Mobile Subscriber Identity (also appears as "International Mobile Station Identity") |
| IMUN     | International Mobile User Number   |
| IN       | Intelligent Network  |
| INAP     | Intelligent Network Application Protocol   |
| IP       | Internet Protocol  |
| IP-CAN   | IP-Connectivity Access Network   |
| IPDL     | Idle Period Downlink   |
| IPLMN    | Interrogating PLMN   |
| IP-SM-GW | IP Short Message Gateway   |
| IrDA     | Infrared Data Association  |
| IRP      | Integration Reference Point  |
| IS       | Information Service  |
| ISC      | Internal Service Control   |
| ISDN     | Integrated Services Digital Network  |
| ISIM     | IP multimedia Services Identity Module   |
| ISUP     | ISDN User Part   |
| Itf-N    | Interface N  |
| IVS      | In-Vehicle System  |
| IWF      | InterWorking Function  |
| I-WLAN   | Interworking WLAN  |
| K        | Subscriber key   |
| LAN      | Local Area Network   |
| LCS      | Location Services  |
| LDAP     | Lightweight Directory Access Protocol  |
| LIPA     | Local IP Access  |
| LMA      | Local Mobility Anchor  |
| LMSI     | Local Mobile Station Identity  |
| LMU      | Location Measurement Unit  |
| LR       | Location Registration  |
| LSA      | Localized Service Area   |
| MAC      | Media Access Control   |
| MAC      | Message Authentication Code  |
| MAP      | Mobile Application Part  |
| MBMS     | Multimedia Broadcast/Multicast Service   |

|        |  |
|--------|--|
| MC     | Multicall  |
| MCE    | Multi-cell/Multicast Coordination Entity   |
| MCID   | Malicious Communication Identification   |
| ME     | Mobile Equipment   |
| MEHO   | Mobile Evaluated Handover  |
| MExE   | Mobile station application Execution Environment, (also known as Mobile Execution Environment) |
| MF     | Master File  |
| MGC    | Media Gateway Controller   |
| MGCF   | Media Gateway Control Function   |
| MGW    | Media Gateway  |
| MIM    | Management Information Model   |
| MIME   | Multipurpose Internet Mail Extensions  |
| MLC    | Mobile Location Centre   |
| MLP    | Mobile Location Protocol   |
| MM     | Mobility Management  |
| MME    | Mobility Management Entity   |
| MMI    | Man-Machine Interface  |
| MMS    | Multimedia Messaging Service   |
| MMTel  | Multimedia Telephony   |
| MNP    | Mobile Number Portability  |
| MO     | Mobile Originated  |
| MOBIKE | IKEv2 Mobility and multihoming protocol  |
| MO-LR  | Mobile Originating Location Request  |
| MPTY   | MultiParty   |
| MR     | Multi Rate<br>Media Resource   |
| MRFC   | Multimedia Resource Function Controller  |
| MRFP   | Multimedia Resource Function Processor   |
| MS     | Mobile Station   |
| MSC    | Mobile Switching Centre (also appears as "Mobile-services Switching Centre")                   |
| MSD    | Minimum Set of Data  |
| MSG    | (ETSI TC) Mobile Standards Group   |
| MSISDN | Mobile Subscriber ISDN number (also appears as "Mobile Station International ISDN Number(s)")  |
| MSP    | Multiple Subscriber Profile  |
| MSRN   | Mobile Station Roaming Number  |

|         |  |
|---------|--|
| MT      | Mobile Terminal  |
| MT      | Mobile Termination                                       |
| MTP     | Message Transfer Part                                    |
| MWI     | Message Waiting Indication                               |
| NE      | Network Element  |
| NITZ    | Network Identity and Time Zone                           |
| NL      | Notification Log   |
| NNSF    | NAS Node Selection Function                              |
| NM      | Network Manager  |
| NRM     | Network Resource Model                                   |
| NSDU    | Network Service Data Unit                                |
| NSPS    | National Security and Public Safety                      |
| NSS     | Network Subsystem  |
| NW      | Network  |
| OACSU   | Off-Air Call Set-Up                                      |
| OAM&P   | Operations, Administration, Maintenance and Provisioning |
| OCF     | Online Charging Function                                 |
| OCS     | Online Charging System                                   |
| ODB     | Operator Determined Barring                              |
| ODMA    | Opportunity Driven Multiple Access                       |
| OIP     | Originating Identity Presentation                        |
|         | Originating Identification Presentation                  |
| OIR     | Originating Identity Restriction                         |
|         | Originating Identification Restriction                   |
| OMA     | Open Mobile Alliance                                     |
| OoBTC   | Out of Band Transcoder Control                           |
| OP      | OPerator   |
| OS      | Operations System  |
| OSA     | Open Service Access                                      |
| OSA-API | Open Service Access Application Programming Interface    |
| OSI     | Open Systems Interconnection                             |
| OTDOA   | Observed Time Difference Of Arrival                      |
| PBS     | Personal Broadcast Service                               |
| PBX     | Private Branch exchange                                  |
| PCC     | Policy and Charging Control                              |
| PCM     | Pulse Code Modulation                                    |
| PCEF    | Policy and Charging Enforcement Function                 |

|         |  |
|---------|--|
| PCRF    | Policy and Charging Rules Function                               |
| PDC     | Personal Digital Communication                                   |
| PDC-EFR | ARIB PDC-EFR 6.7 kbit/s speech Codec                             |
| PDG     | Packet Data Gateway  |
| PDN     | Public Data Network  |
| PDP     | Packet Data Protocol   |
| PDU     | Protocol Data Unit   |
| PI      | Presentation Indicator   |
| PIX     | Proprietary application Identifier extension                     |
| PLMN    | Public Land Mobile Network                                       |
| PM      | Performance Management   |
| PMIP    | Proxy Mobile IP  |
| PNM     | Personal Network Management                                      |
| PP      | Point-to-Point   |
| PPC     | Policy Control and Charging                                      |
| PS      | Packet Switched  |
| PSAP    | Public Service Access Point                                      |
| PSE     | Personal Service Environment                                     |
| PSS     | Packet-switched Streaming Service                                |
| PSTN    | Public Switched Telephone Network                                |
| PUCI    | Protection against Unsolicited Communication for IMS             |
| PWS     | Public Warning System  |
| QCI     | QoS Class Identifier   |
| QoS     | Quality of Service   |
| RANAP   | Radio Access Network Application Part                            |
| RAND    | Random number (used for authentication)                          |
| RID     | Registered application provider Identifier                       |
| RLC/MAC | Radio Link Control/Media Access Control                          |
| RLP     | Radio Link Protocol  |
| RNC     | Radio Network Controller   |
| RNS     | Radio Network Subsystem (also appears as "Radio Network System") |
| RR      | Radio Resources  |
| RSS     | Radio Sub System   |
| RTP     | Real Time Protocol   |
| SAE     | System Architecture Evolution                                    |
| SAGE    | Security Algorithms Group of Experts                             |
| SAT     | SIM Application Toolkit  |

|        |   |
|--------|---|
| SC     | Service Centre (used for SMS)   |
| SCC    | Service Centralization and Continuity   |
| SCCP   | Signalling Connection Control Part  |
| SCF    | Service Control Function (IN context), Service Capability Feature (VHE/OSA context) |
| SCIM   | Service Capability Interaction Manager  |
| SCR    | Source Controlled Rate  |
| S-CSCF | Service Call Session Control Function   |
| SCTP   | Stream Control Transmission Protocol  |
| SDL    | Specification Description Language  |
| SFR    | Syndicated Feed Reception   |
| SGSN   | Serving GPRS Support Node   |
| SGW    | Signalling GateWay  |
| SID    | Silence Descriptor  |
| SIM    | GSM Subscriber Identity Module  |
|        | Specialised Information Model   |
| SIP    | Session Initiation Protocol   |
| SIPTO  | Selected IP Traffic Offload   |
| SLF    | Subscription Locator Function   |
| SM     | Session Management  |
| SM     | Short Message   |
| SMC    | Short Message Control   |
| SMIL   | Synchronized Multimedia Integration Language  |
| SMLC   | Serving Mobile Location Centre  |
| SM-RL  | Short Message Relay Layer   |
| SMS    | Short Message Service   |
| SMSIP  | Short Message Service over generic 3GPP Internet Protocol                           |
| SMTP   | Simple Mail Transfer Protocol   |
| SOAP   | Simple Object Access Protocol   |
| SON    | Self-Organising Networks  |
| SOR    | Support of Optimal Routing  |
| SP     | Service Provider  |
| SP     | Switching Point   |
| SPR    | Subscription Profile Repository   |
| SQN    | Sequence Number   |
| SRF    | Signalling Relay Function   |
|        | Speech Recognition Framework  |

|          |  |
|----------|--|
|          | Special Resource Function  |
|          | Specialized Resource Function  |
| SRNC     | Serving Radio Network Controller   |
| SRNS     | Serving RNS  |
| S-RNTI   | SRNC Radio Network Temporary Identifier  |
| SRTP     | Secure Real-time Transport Protocol  |
| SS       | Solution Set   |
| SS       | Supplementary Service  |
| SS7      | Signalling System No. 7  |
| SSAC     | Service Specific Access Control  |
| SSAP     | Supplementary Service Application Part   |
| SSF      | Service Switching Function   |
| STN      | Signalling Transport Network   |
| SuM      | Subscription Management  |
| SWM      | Software Management  |
| TA       | Terminal Adaptation  |
| TA       | Terminal Adapter   |
| TAF      | Terminal Adaptation Function   |
| T-BCSM   | Terminating Basic Call State Model   |
| TCAP     | Transaction Capabilities   |
| TCH/F    | A full rate Traffic CHannel  |
| TDD      | Time Division Duplex   |
| TDMA     | Time Division Multiple Access  |
| TDMA_EFR | TIA IS-641 Enhanced speech Codec   |
| TDMA_US1 | TIA TDMA-US1 (12.2 kbit/s Codec, similar to GSM-EFR)                                       |
| TE       | Terminal Equipment   |
| TFO      | Tandem Free Operation  |
| TFT      | Traffic Flow Template  |
| TIP      | Terminating Identification Presentation  |
|          | Terminating Identity Presentation  |
| TIR      | Terminating Identification Restriction   |
|          | Terminating Identity Restriction   |
| TMSI     | Temporary Mobile Subscriber Identity (also appears as "Temporary Mobile Station Identity") |
| TrFO     | Transcoder Free Operation  |
| TrGW     | Transition Gateway   |
| TUP      | Telephone User Part (SS7)  |



|           |  |
|-----------|--|
| UA        | User Agent   |
| UDC       | User Data Convergence  |
| UDP       | User Datagram Protocol   |
| UDR       | User Data Repository   |
| UE        | User Equipment   |
| UI        | User Interaction   |
| UI        | User Interface   |
| UICC      | Universal IC Card  |
| UIM       | User Identity Module   |
| UML       | Unified Modelling Language                                     |
| UMTS      | Universal Mobile Telecommunications System                     |
| USAT      | USIM Application Toolkit                                       |
| USIM      | Universal Subscriber Identity Module                           |
| USSD      | Unstructured Supplementary Service Data                        |
| UTRA      | Universal Terrestrial Radio Access                             |
| UTRA-FDD  | Universal Terrestrial Radio Access – Frequency Division Duplex |
| UTRAN     | Universal Terrestrial Radio Access Network                     |
| UTRA-TDD  | Universal Terrestrial Radio Access – Time Division Duplex      |
| UTRA-WTDD | Universal Terrestrial Radio – Wide Time Division Duplex        |
| UUS       | User-to-User Signalling  |
| VAD       | Voice Activity Detector  |
| VAS       | Value Added Services   |
| VAS4SMS   | Value-Added Services for Short Message Services                |
| VBS       | Voice Broadcast Service  |
| VCC       | Voice Call Continuity  |
| VGCS      | Voice Group Call Service                                       |
| VHE       | Virtual Home Environment                                       |
| VLR       | Visitor Location Register                                      |
| VMSC      | Visited Mobile Switching Centre                                |
| VPLMN     | Visited Public Land Mobile Network                             |
| WAG       | WLAN Access Gateway  |
| WAP       | Wireless Application Protocol                                  |
| WLAN      | Wireless Local Area Network                                    |
| WLAN UE   | WLAN User Equipment  |
| WSDL      | Web Service Description Language                               |
| WTDD      | Wide TDD   |
| XML       | extensible Markup Language                                     |

## 5 Introduction

The core network for this IMT-2000 family member, referred to as "3GPP Release 11", is based on an evolved core network from the 3rd generation releases 1999 through to Release 10. The Technical Specifications have been developed in a partnership project and transposed to the involved Standards development organizations (SDOs). The system will support different applications ranging from narrow-band to wideband communications capability with integrated personal and terminal mobility to meet the user and service requirements.

Release 11 is the ninth release of this 3rd generation of mobile communications technology. The core network interfaces identified in this Recommendation constitute a complete mobile core network system for this IMT-2000 family member. The core network of 3GPP Release 11 supports 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> generation radio access networks as options.

Refer to clause 10.2.40, Service principles, for more information.

The descriptions of the Technical Specifications listed in clause 10 are for informative purposes only. Normative information is in the table for the respective specification.

3GPP Release 11 introduces a range of new features under control of the 3GPP Work plan. At the March 2013 SA #59 plenary of 3GPP, the following feature set was approved:

- Advanced IP Interconnection of Services
- System Improvements to Machine-Type Communications
- Unstructured Supplementary Service Data (USSD) simulation service in IMS
- QoS Control Based on Subscriber Spending Limits
- Optimized Service Charging and Allocation of Resources in IMS whilst Roaming
- Inclusion of Media Resource Broker (Stage 2/3)
- Non Voice Emergency Services
- Support for 3GPP Voice Interworking with Enterprise IP-PBX
- Anonymous Call Rejection in the CS domain
- Support for BroadBand Forum Accesses Interworking
- Single Radio Voice Call Continuity (SRVCC) aspect of enhancements for Multimedia Priority Service
- Single Radio Video Call Continuity for 3G-CS
- Network Provided Location Information for IMS (NETLOC)
- Service Awareness and Privacy Policies
- VPLMN Autonomous CSG Roaming
- Data Identification in Access Network Discovery and Selection Function (ANDSF)
- Location-Based Selection of gATEways for WLAN
- Single Radio Voice Call Continuity from UTRAN/GERAN to E-UTRAN/HSPA
- S2a Mobility based On GTP and WLAN access to EPC
- Roaming Architecture for Voice over IMS with Local Breakout
- IMS Overload Control
- Lawful Interception in the 3GPP Rel-11
- ZUC EEA3 and EIA3 (new Encryption & Integrity EPS security Algorithms)
- Specification of Protection against Unsolicited Communication for IMS (produced TR-only)
- H(e)NB security features for UE mobility scenarios (Stage 2)
- Generic Bootstrapping Architecture (GBA) extensions for re-use of SIP Digest credentials

- Extensions of Acoustic Test Specifications in TS 26.131 and TS 26.132
- PSS, MMS, and MBMS Enhancements and Performance Improvements
- Mobile 3D Video Coding
- Network Infrastructure Management
  - IRP framework enhancements to support Management of Converged Networks
- Performance Management
  - IMS Performance Management enhancements
  - Enhanced Management of UE based network performance measurements
  - CN performance measurements enhancement
  - Management of Carrier Aggregation for LTE
- Self-Organizing Networks (SON) - OAM aspects
  - UTRAN Self-Organizing Networks (SON) management
  - LTE Self-Organizing Networks (SON) coordination management
  - Inter-RAT Energy Saving Management
- Charging Management small Enhancements
  - Add solutions for Rc - reference point within the Online Charging System
  - Charging for Policy Enhancements for Sponsored Connectivity
  - Unification of Charging session from SIP AS and SRVCC functions in IMS
- Transit Inter Operator Identifier for IMS Interconnection Charging in multi operator environment
- User Data Convergence - Data Model
- Definition of the UICC Application for Hosting Party Module
- Usability improvement of Inter-IMS Network to Network Interface (II-NNI) specification for inter-connection by means of Option Item list
- enhanced Nodes Restoration for EPC (Stage 2/3)
- Reference Location Information (Stage 3)
- IMS Stage 3 IETF Protocol Alignment – phase 5
- Service Identification for RRC Improvements in GERAN (Stage 2/3)
- SAE Protocol Development – Phase 2
- GCSMSC and GCR Redundancy for VGCS/VBS (Stage 2/3)
- Support of RFC 6140 in IMS
- Enhancements for Multimedia Priority Service (MPS) – Gateway Control Priority
- Inter-IMS Network to Network Interface (II-NNI) enhancements: SIP timers applicability (Stage 3)
- AT commands for Universal Resource Identifier (URI) support
- PS Additional Number (Stage 3)
- Generic IMS User Group Over Sh
- IMS Operator Determined Call Barring
- Enhanced T.38 FAX support (Stage 3)
- Deleted – Enhancement of the Protocols for SMS over SGs (Stage 3)
- Extending 850 MHz Upper Band (814-849 MHz)

- Further Self Optimizing Networks (SON) enhancements
- Enhancement of Minimization of Drive Tests for E-UTRAN and UTRAN
- Network Energy Saving for E-UTRAN
- E-UTRA medium range and MSR medium range/local area BS class requirements
- RF Requirements for Multi-Band and Multi-Standard Radio (MB-MSR) Base Station
- Further enhancements to H(e)NB mobility
- Network-Based Positioning Support in LTE
- Service continuity improvements for MBMS for LTE
- Further Enhanced Non CA-based ICIC for LTE
- New Band LTE Downlink FDD 716-728 MHz (Band 29, Carrier Aggregation of Band 2 and Band 29 and of Band 4 and Band 29)
- LTE RAN Enhancements for Diverse Data Applications
- LTE E850 - Lower Band for Region 2 (non-US), Band 27
- LTE for 700 MHz Digital Dividend
- Relays for LTE (part 2)
- Signalling and Procedure for Interference Avoidance for in-device coexistence
- Coordinated Multi-Point Operation for LTE
- Enhanced downlink control channel(s) for LTE Advanced
- Public Safety Broadband High Power UE for Band 14 for Region 2
- Improved Minimum Performance Requirements for E-UTRA: Interference Rejection
- Additional special subframe configuration for LTE TDD
- UE Over The Air (Antenna) conformance testing methodology – Laptop mounted equipment Free Space test
- Eight carrier HSDPA
- UE demodulation performance requirements under multiple-cell scenario for 1.28 Mcps TDD
- Uplink Transmit Diversity for HSPA
- Introduction of New Configuration for 4C-HSDPA
- Non-contiguous 4C-HSDPA operation
- Further Enhancements to CELL\_FACH
- HSDPA Multiflow Data Transmission
- Four Branch MIMO transmission for HSDPA
- MIMO with 64QAM for HSUPA
- HSDPA Dual-Band Multi-Carrier combinations
- Full Support of Multi-Operator Core Network by GERAN
- Medium range/local area requirements for multicarrier BTS
- Domain Specific Access Control in GERAN

## **6 Basic architecture for the UMTS IMT-2000 family member**

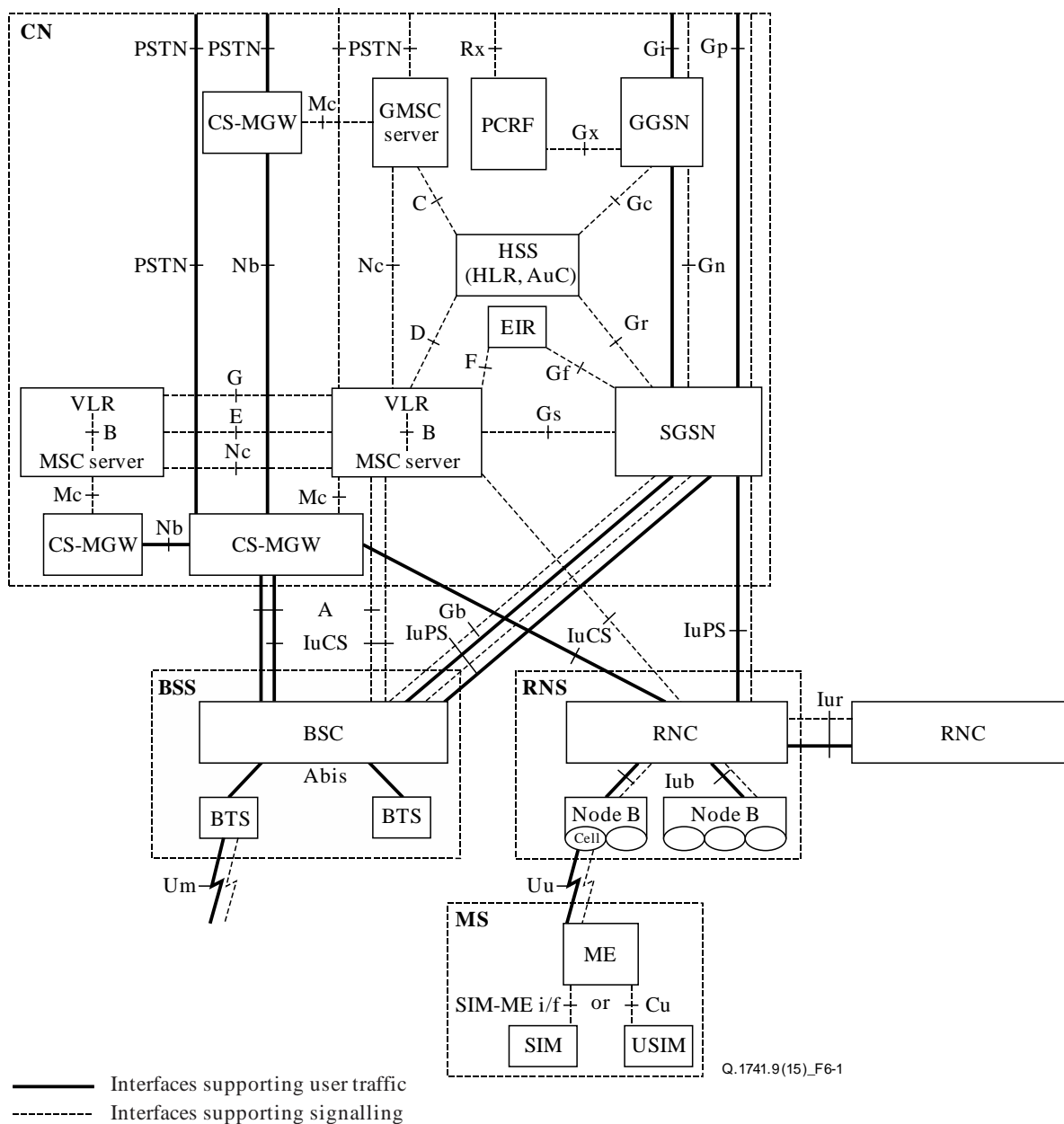
This text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.1.

The basic configuration of a public land mobile network (PLMN) supporting GPRS and the interconnection to the PSTN/ISDN and PDN is presented in Figure 6-1 and Figure 6-2. Whereas the basic configuration of a Public Land Mobile Network (PLMN) supporting PS Domain (both GPRS and EPC) and the interconnection to the PSTN/ISDN and PDN is presented in Figure 6-3. This configuration presents signalling and user traffic interfaces which can be found in a PLMN. Implementations may be different: some particular functions may be gathered in the same equipment and then some interfaces may become internal interfaces.

In the basic configuration presented in Figure 6-1, all the functions are considered implemented in different equipment. Therefore, all the interfaces within PLMN are external. This Recommendation will only describe the internal interfaces in the core network (CN) and the external interfaces to and from CN. Interfaces Iu, Iur and Iub are defined in the 25.7xx series of Technical Specifications, which are outside the scope of this Recommendation. Interfaces A and *Abis* are defined in the 48-series of Technical Specifications, which are also outside the scope of this Recommendation. Interfaces C, D, E, F and G need the support of the mobile application part of Signalling System No. 7 to exchange the data necessary to provide the mobile service. No protocols for the H-interface and for the I-interface are standardized. All the GPRS-specific interfaces (G-series) are defined in the 23-series and 24-series of Technical Specifications. Interfaces Mc, Nb, and Nc are defined in 23.705 and in the 29-series of Technical Specifications. The specifications for E-UTRAN interfaces S1 and X2 are specified in TS 36.4xx and NAS protocol is specified in 24.301 series of specifications. The interfaces S6a/d/S13 are specified in the specifications TS 29.272. The EPC specific S1/3/4/5/8/10/11/12/ series are specified in TS 29.274 for GTP based protocols and for PMIP based S5/8 interfaces are specified in TS 29.275.

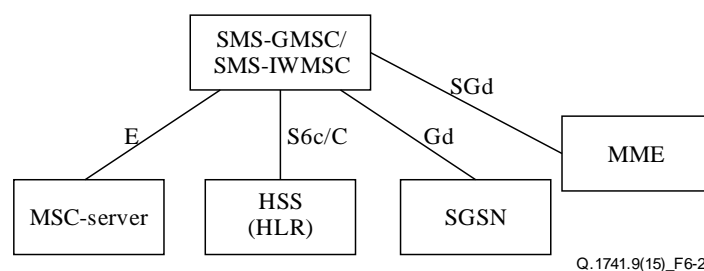
From this configuration, all the possible PLMN organizations can be deduced. In the case when some functions are contained in the same equipment, the relevant interfaces become internal to that equipment.

The configuration possibilities when using non-3GPP access technologies using EPS is not part of the scope of this specification. The architecture and details for non-3GPP access and mobility and interworking with non-3GPP access are described in 23.402 and the interfaces and protocols are specified in 3GPP 24-series and 29-series of specifications.

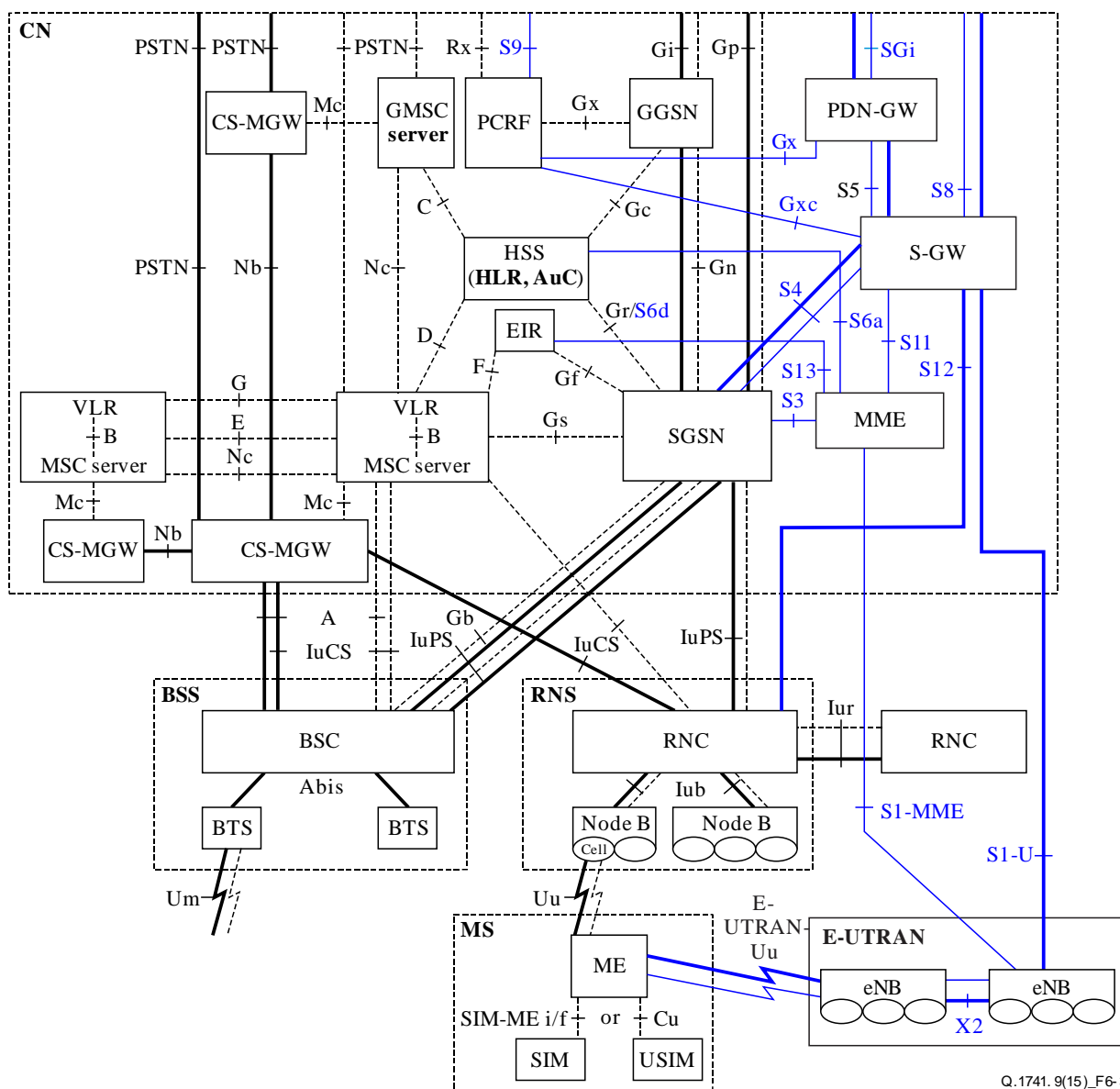


- NOTE 1 – The figure shows direct interconnections between the entities. The actual links may be provided by an underlying network (e.g., SS7 or IP); this needs further studies.
- NOTE 2 – When the MSC and the SGSN are integrated in a single physical entity, this entity is called UMTS MSC (UMSC).
- NOTE 3 – A (G)MSC server and associated CS-MGW can be implemented as a single node: the (G)MSC.
- NOTE 4 – The Gn interface (between two SGSNs) is also part of the reference architecture, but is not shown for layout purposes only.

**Figure 6-1 – Basic configuration of a PLMN supporting CS and PS (using GPRS) services and interfaces**



**Figure 6-2 – Configuration for short message service**

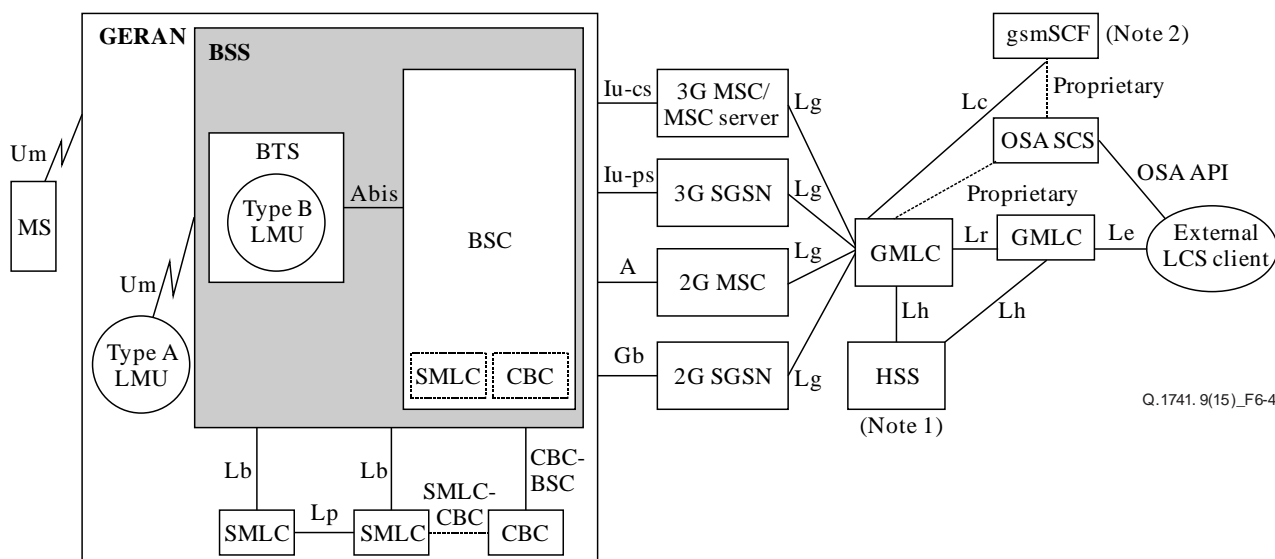


NOTE: – The interfaces in blue represent EPS functions and reference points.

**Figure 6-3 – Basic configuration of a 3GPP Access PLMN supporting CS and PS services (using GPRS and EPS) and interfaces**

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.2.1.

The configuration of LCS entities for GSM GERAN is presented in Figure 6-4. In the figure, all the functions are considered implemented in different logical nodes. If two logical nodes are implemented in the same physical equipment, the relevant interfaces may become internal to that equipment.



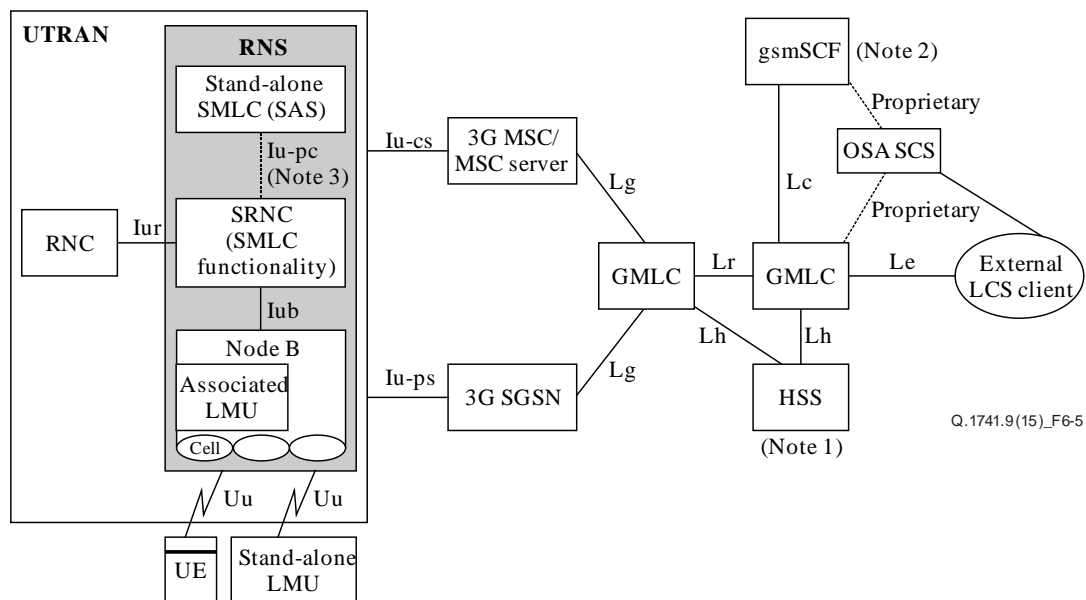
Q.1741.9(15)\_F6-4

**Figure 6-4 – Configuration of LCS entities for a GERAN PLMN**

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.2.2.

The basic configuration of UTRAN LCS is presented in Figure 6-5. The SMLC functionality is integrated in SRNC or, in case a stand-alone SMLC (SAS) entity is present, split between SRNC and SMLC.





NOTE 1 – HSS includes both 2G-HLR and 3G-HLR functionality.

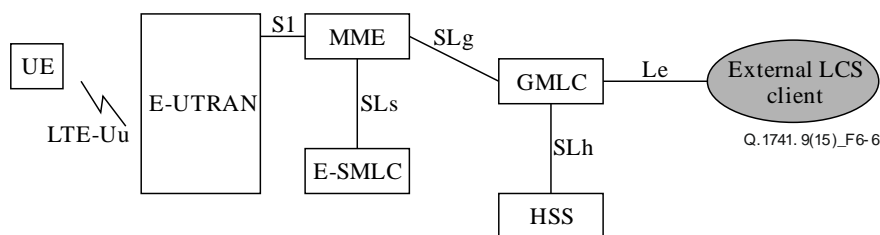
NOTE 2 – As one alternative the LCS client may get location information directly from GMLC, which may contain OSA Mobility SCS with support for the OSA user location interfaces.

NOTE 3 – The SMLC may be either a stand-alone network element (SAS) or an internal function of the RNC.

### Figure 6-5 – Configuration of LCS entities for a UTRAN PLMN

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.2.3.

The basic configuration of E-UTRAN LCS is presented in Figure 6-6.

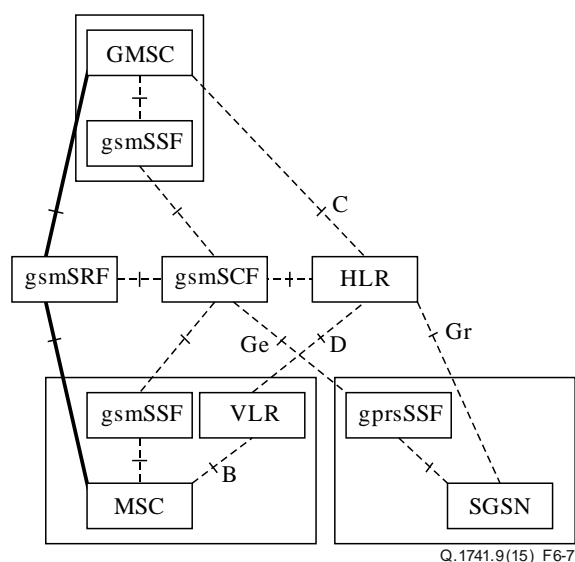


### Figure 6-6 – Configuration of LCS entities for an E-UTRAN PLMN

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clauses 4a.4 and 5.3.

Figure 6-7 shows the interconnection of the CAMEL-specific entities with the rest of the network. Only the interfaces specifically involved in CAMEL provisioning are shown, i.e., all the GMSC, MSC, SGSN and HLR interfaces depicted in Figure 6-7 are still supported by these entities even if not shown.

NOTE – Most CAMEL-specific interfaces have no particular name. They are designated by the name of the two entities they link together, e.g., "the gsmSSF-gsmSCF interfaces".

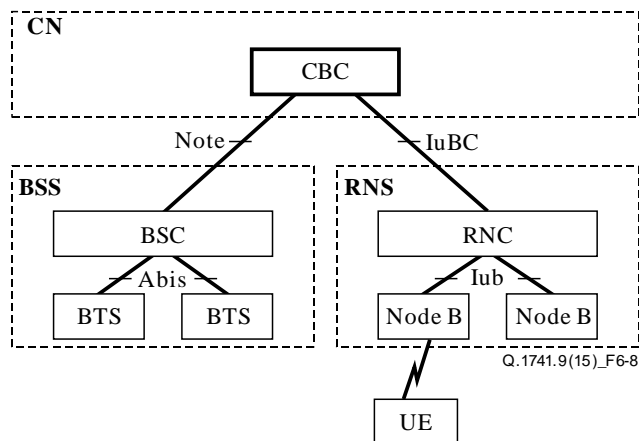


**Figure 6-7 – Configuration of CAMEL entities**

The bold lines are used for interfaces supporting user data only; the dashed lines are used for interfaces supporting signalling only.

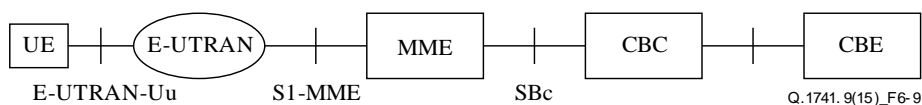
The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clauses 4a.5 and 5.4.

The cell broadcast service (CBS) is a teleservice, which enables an Information Provider to submit short messages for broadcasting to a specified area within the PLMN.



NOTE – Interface outside the scope of 3GPP/GSM.

**Figure 6-8 – Configuration of a PLMN supporting cell broadcast service entities for GERAN/UTRAN**



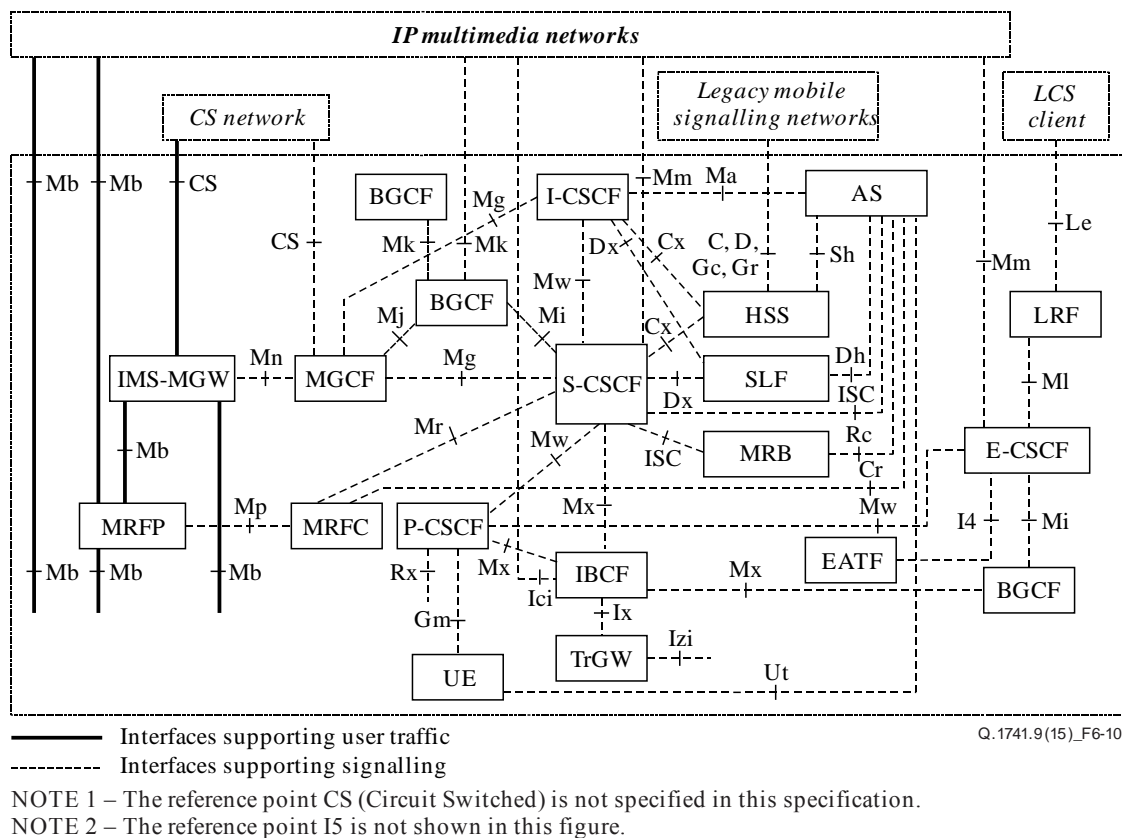
NOTE – The CBE and the interface between CBE and CBC are out of scope of 3GPP specifications.

**Figure 6-9 – Warning system architecture for E-UTRAN access**

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.5.

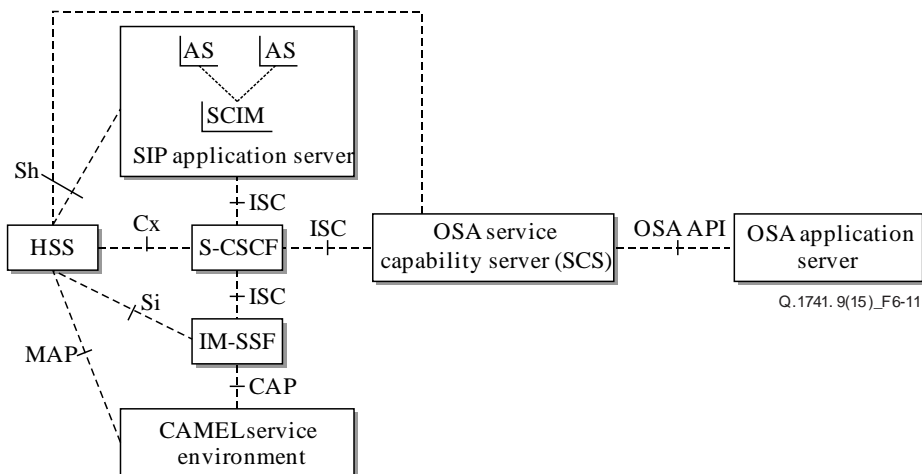
The configuration of IM CN subsystem entities is presented in Figure 6-10. In the figure, all the functions are considered implemented in different logical nodes. If two logical nodes are implemented in the same physical equipment, the relevant interfaces may become internal to that equipment.

Only the interfaces specifically linked to the IM subsystem are shown, i.e., all the SGSN, GGSN and HSS interfaces depicted in Figure 6-1 are still supported by these entities even if not shown.



**Figure 6-10 – Configuration of IM subsystem entities**

Figure 6-11 depicts an overall view of the functional architecture for services.



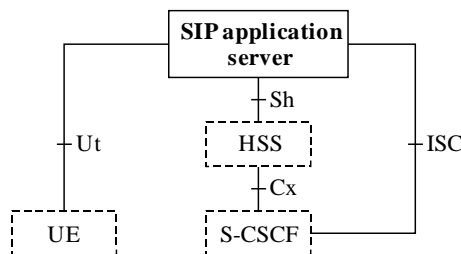
**Figure 6-11 – Functional architecture for the provision of service in the IMS**

The purpose of the IM SSF is to host the CAMEL network features (i.e., trigger detection points, CAMEL service switching finite state machine, etc.) and to interwork with CAP.

The IM SSF and the CAP interface support legacy services only.

The application server may contain "service capability interaction manager" (SCIM) functionality and other application servers. The SCIM functionality is an application which performs the role of interaction management. The internal components are represented by the "dotted boxes" inside the SIP application server. The internal structure of the application server is outside the standards. The Sh interface shall have sufficient functionality to enable this scenario.

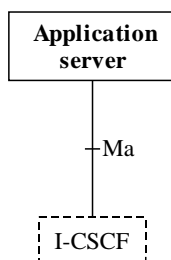
Figure 6-12 depicts an overall view of the functional architecture for enabling the management of the user's service related information via the Ut interface.



Q.1741.9(15)\_F6-12

**Figure 6-12 – Functional architecture for the management of the user's service related information**

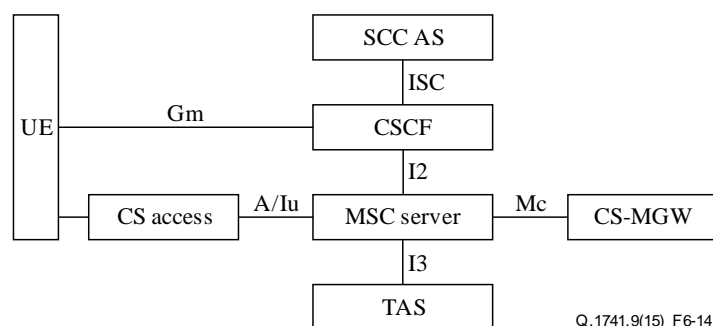
The figure below depicts an overall view of the functional architecture for routing SIP requests between I-CSCF and Application Server.



Q.1741.9(15)\_F6-13

**Figure 6-13 – Functional architecture for the routing of SIP requests between I-CSCF and AS**

Figure 6-14 depicts an overall view of the functional architecture for IMS services centralization and continuity.

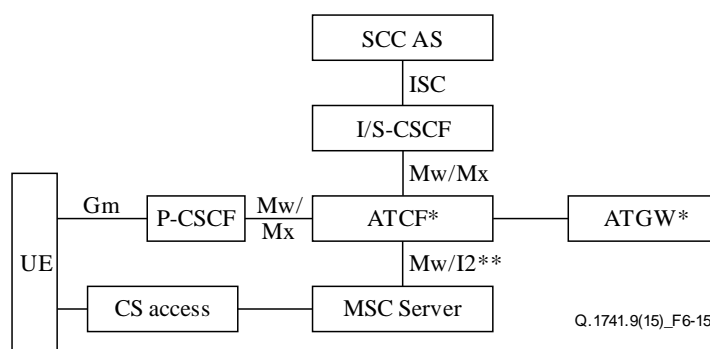


**Figure 6-14 – Functional architecture for IMS service centralization and continuity**

IMS service centralization, defined in TS 23.292 provides communication services such that all services, and service control, are based on IMS mechanisms and enablers. It enables IMS services when using CS access as bearer for the media.

IMS service continuity, defined in TS 23.237 provides Session Transfer mechanisms to maintain service continuity in the event of access transfer for the case when such events are not hidden from the IMS session layer and thus service continuity could not otherwise be maintained.

Figure 6-15 provides the reference architecture for SRVCC using the ATCF enhancements as defined in TS 23.237. The ATCF enhancements provide Session Transfer mechanisms in the serving network to maintain service continuity in the event of access transfer for SRVCC.



\* Location of functionality depends on deployment and collocation scenario.

\*\* Reference point dependent on MSC Server capability.

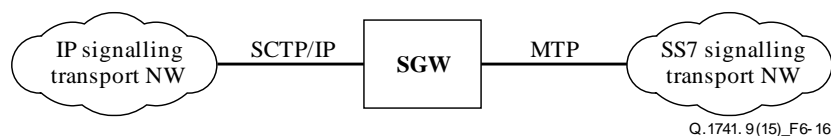
NOTE 1 – If neither the MSC Server is not enhanced for ICS, the interface between MSC Server and ATCF is Mw.

NOTE 2 – If the MSC Server is enhanced for ICS, the interface between MSC Server and ATCF is I2.

**Figure 6-15 – IMS service centralization and continuity reference architecture when using ATCF enhancements**

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.6.

The signalling gateway function is used to interconnect different signalling networks, i.e., SCTP/IP-based signalling networks and SS7 signalling networks. The application layer (e.g., ISUP, BICC, MAP or CAP) is not affected. The signalling gateway function may be implemented as a stand-alone entity or inside another entity.

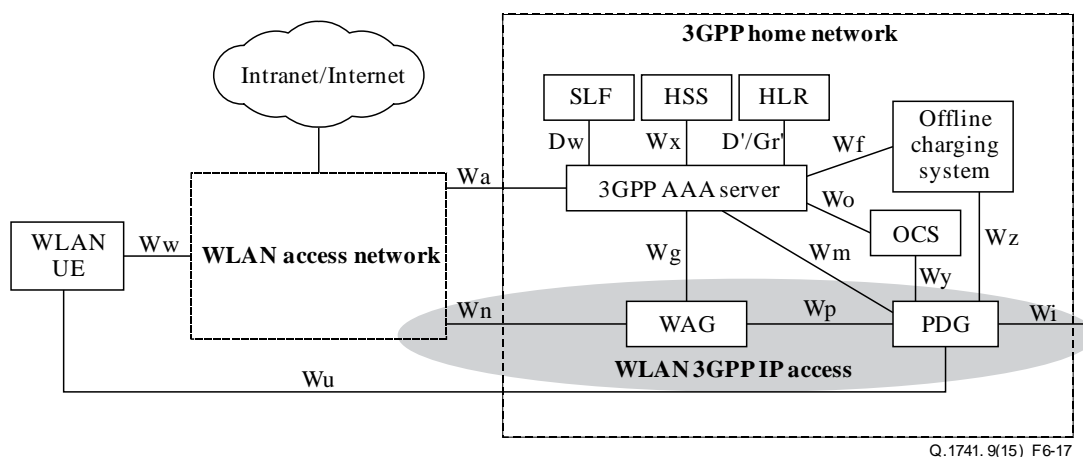


NOTE – SS7 application transport and SCTP/IP adaptation protocols are not shown.

**Figure 6-16 – Configuration of a signalling gateway function**

The following text is based on the text in references [ETSI TS 123 234], [TTC TS-3GA-23.234], [ATIS 3GPP 23.234], [TTA TTAT.3G-23.234] and [CCSA-TSD-123 234], clause 6.1.1 "Non Roaming WLAN Inter-working Reference Model".

The configuration of the 3GPP/WLAN interworking function is presented in Figure 6-17. The figure shows all network entities and reference points for the non-roaming scenario when a WLAN UE accesses PS-based services in the home network. Reference point Ww between WLAN UE and WLAN is outside the scope of 3GPP and is only shown for completeness.



NOTE – The shaded area refers to WLAN 3GPP IP access functionality.

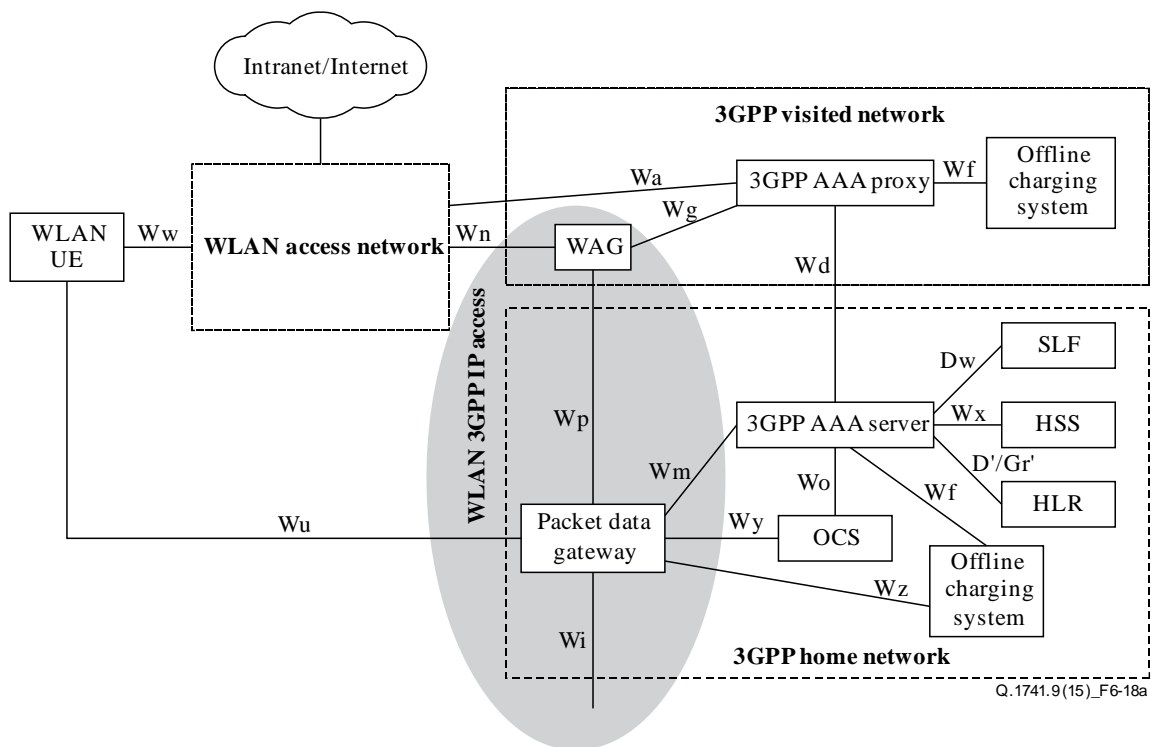
**Figure 6-17 – Configuration of a 3GPP/WLAN interworking function**

The following text is based on the text in references [ETSI TS 123 234], [TTC TS-3GA-23.234], [ATIS 3GPP 23.234], [TTA TTAT.3G-23.234] and [CCSA-TSD-123 234], clause 6.1.2 "Roaming WLAN Inter-working Reference Model".

The configuration of the roaming WLAN interworking is presented in Figure 6-18a and Figure 6-18b. The home network is responsible for access control. Charging records can be generated in the visited and/or the home 3GPP networks. The Wx and Wo reference points are intra-operator. The home 3GPP network interfaces to other 3GPP networks via the inter-operator Wd reference point.

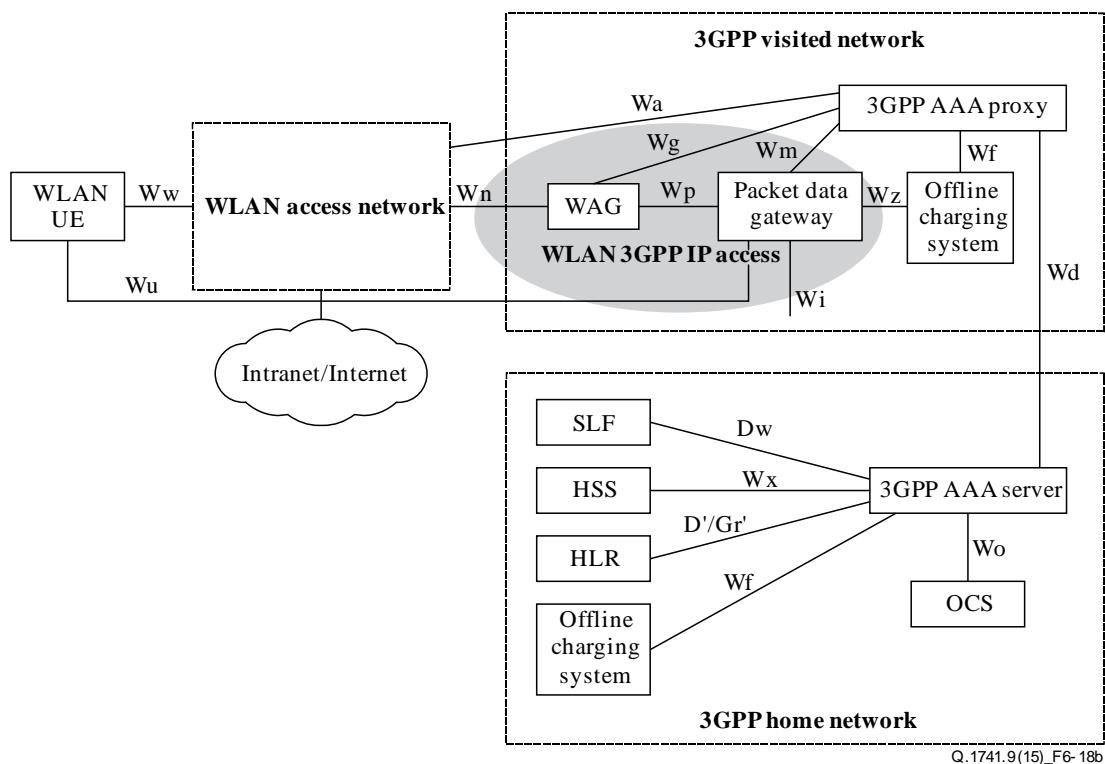
The 3GPP AAA proxy relays access control signalling and accounting information to the home 3GPP AAA server using the Wd reference point.

It can also issue charging records to the visited network offline charging system when required. The 3GPP network interfaces to WLAN access networks via the Wa reference point.



NOTE – The shaded area refers to WLAN 3GPP IP access functionality.

**Figure 6-18a – Roaming reference model - 3GPP PS based services provided via the 3GPP home network**

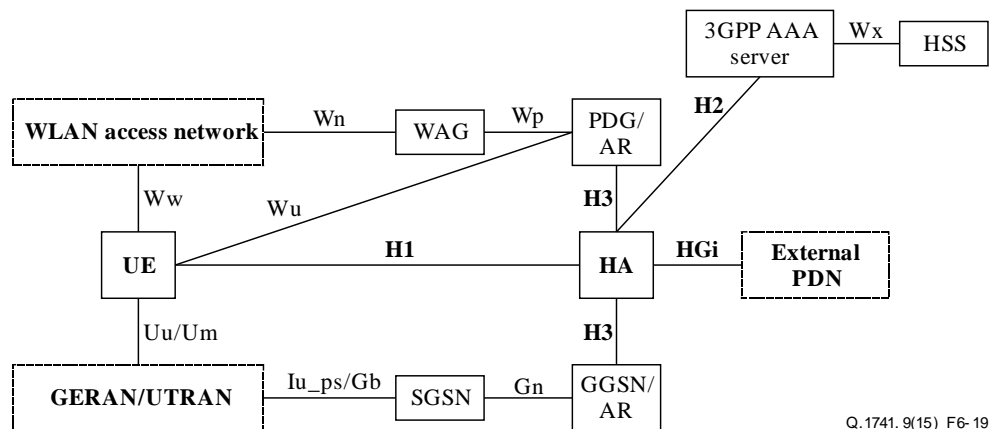


NOTE – The shaded area refers to WLAN 3GPP IP access functionality.

**Figure 6-18b – Roaming reference model - 3GPP PS based services provided via the 3GPP visited network**

The following text is based on the text in references [ETSI TS 123 327], [TTC TS-3GA-23.327], [ATIS 3GPP 23.327], [TTA TTAT.3G-23.327] and [CCSA-TSD-123 327], clause 5.2.1 "Home Mobility Service Architecture".

The home mobility service architecture is presented in Figure 6-19. The home mobility service architecture refers to the case where the home agent function is located in the HPLMN. Whether the user is roaming or not roaming in the underlying access system and/or whether the illustrated H3 reference point spans across different administrative domains is not relevant for this specification.



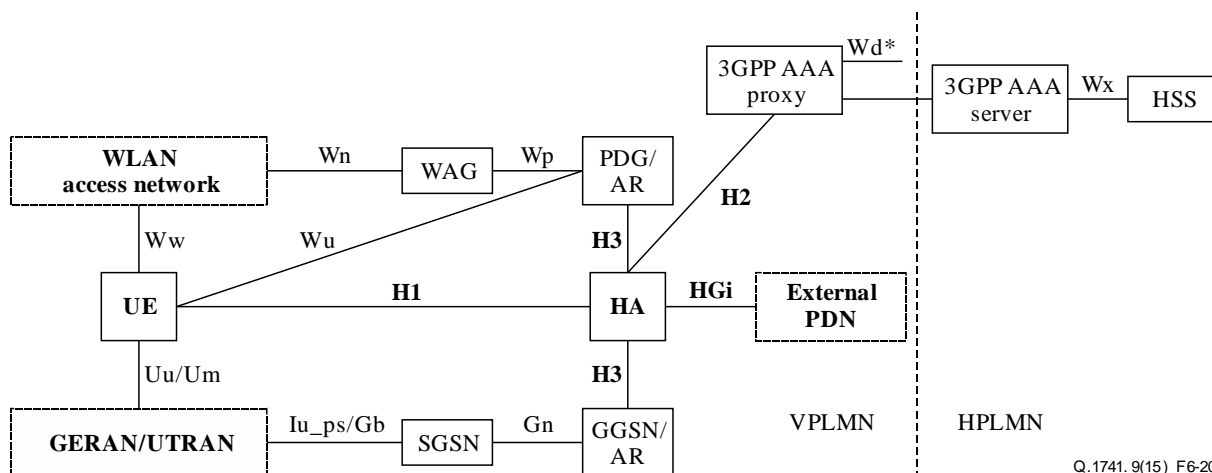
NOTE 1 – The architecture is compatible with pre-Release 8 PDG and GGSN.

NOTE 2 – H3 is an IP transport reference point to carry end-to-end UE-HA signalling and user data between the access router and HA. Since there are no direct signalling messages between these two entities, this is a simple IP transport reference point, which does not require additional specification.

**Figure 6-19 – Home mobility service architecture for I-WLAN mobility**

The following text is based on the text in references [ETSI TS 123 327], [TTC TS-3GA-23.327], [ATIS 3GPP 23.327], [TTA TTAT.3G-23.327] and [CCSA-TSD-123 327], clause 5.2.2 "Visited Mobility Service Architecture".

The visited mobility service architecture is presented in Figure 6-20. The visited mobility service architecture refers to the case where the home agent function locates outside of the HPLMN. Whether the user is roaming or not roaming in the underlying access system and/or whether the illustrated H3 reference point spans across different administrative domains is not relevant for this specification.



**Figure 6-20 – Visited mobility service architecture for I-WLAN mobility**

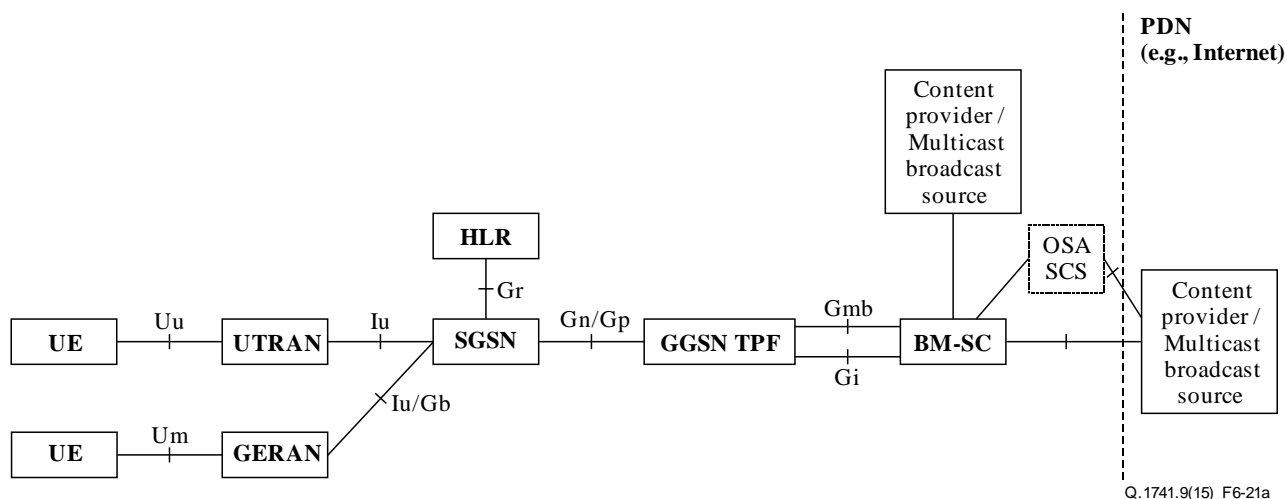


The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.8 "Configuration of Presence service".

The reference architecture model, the reference points and the functional entities to support the Presence Service are described in 3G TS 23.141.

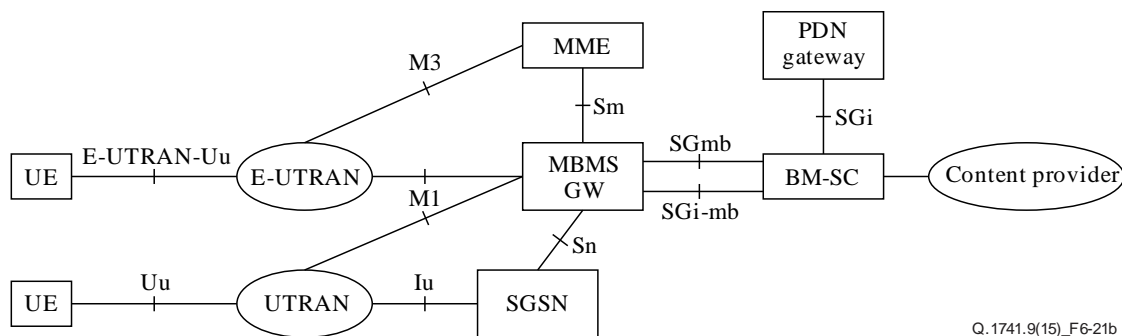
The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.9 "Configuration of MBMS entities".

The configuration of the MBMS entities for GPRS and EPS is represented in Figure 6-21a and Figure 6-21b, respectively. MBMS for GPRS supports UTRAN and GERAN. MBMS for EPS supports E-UTRAN and UTRAN.



**Figure 6-21a – Configuration of MBMS entities for GPRS**

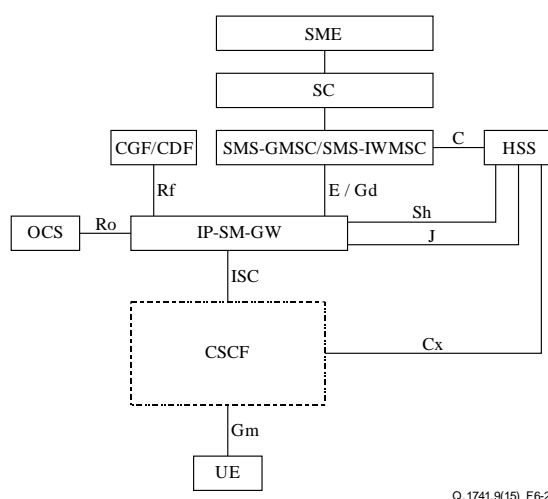
NOTE – The MCE (multi-cell/multicast coordination entity) is not shown in the figure. See TS 36.300.



**Figure 6-21b – Configuration of MBMS entities for Evolved Packet System**

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.10 "Configuration of Short Message Service over generic 3GPP Internet Protocol access (SMSIP) entities".

The configuration of the Short Message Service over generic 3GPP Internet Protocol access (SMSIP) entities is represented in Figure 6-22.



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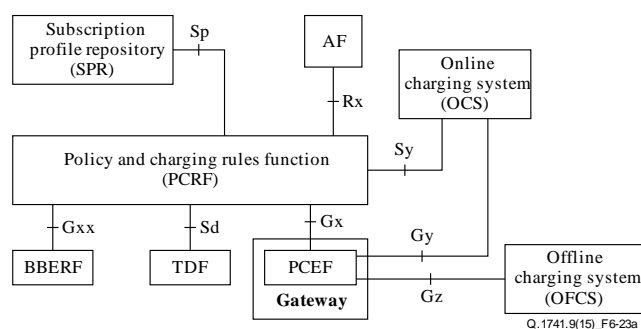
**Figure 6-22 – Configuration of SMSIP entities**

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.11 "Configuration of Policy Control and Charging entities".

The PCC functionality is comprised by the functions of the Policy and Charging Enforcement Function (PCEF), the Bearer Binding and Event Reporting Function (BBERF), the Policy and Charging Rules Function (PCRF), the Application Function (AF), the Online Charging System (OCS), the Offline Charging System (OFCS), the Traffic Detection Function (TDF) and the Subscription Profile Repository (SPR) or the User Data Repository (UDR). Figures 6-23a through 6-23d describe the non-roaming and roaming architecture for PCC.

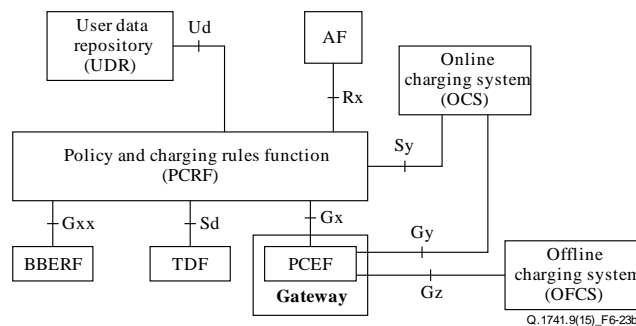
The PCC architecture extends the architecture of an IP-CAN, where the Policy and Charging Enforcement Function is a functional entity in the Gateway node implementing the IP access to the PDN. The allocation of the Bearer Binding and Event Reporting Function is specific to each IP-CAN type and specified in the TS 23.203.

PCC function makes it possible to apply policy and charging control to any kind of 3GPP IP CAN and any non-3GPP accesses connected via EPC complying with TS 23.402. Applicability of PCC to other IP CAN is not restricted; however, it shall be possible for the PCC architecture to base decisions upon the type of IP CAN used (e.g., GPRS, I-WLAN, etc.). Support for policy control and charging when local breakout and roaming are applied as specified in TS 23.401 and TS 23.402 is supported.

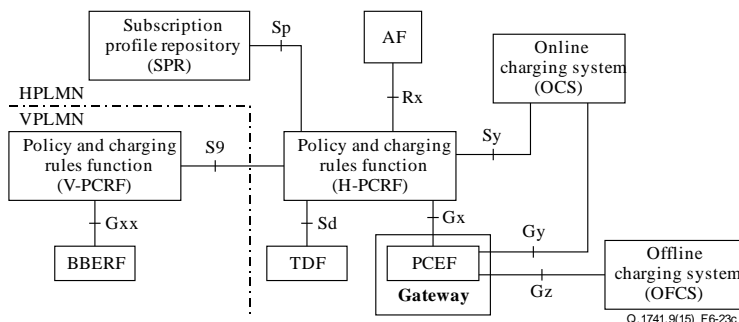


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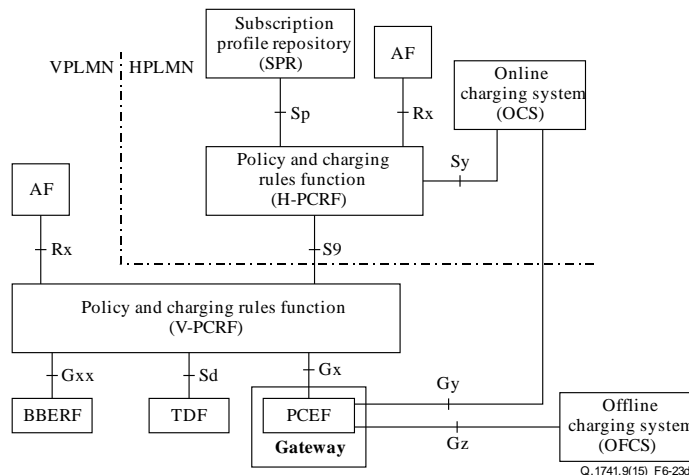
**Figure 6-23a – Overall PCC logical architecture (non-roaming) when SPR is used**



**Figure 6-23b – Overall PCC logical architecture (non-roaming) when UDR is used**



**Figure 6-23c – Overall PCC architecture (roaming with home routed access) when SPR is used**

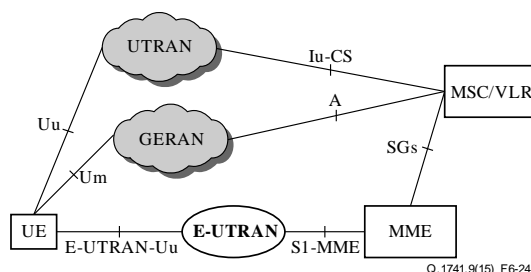


**Figure 6-23d – Overall PCC architecture for roaming with PCEF in visited network (local breakout) when SPR is used**

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.12 "Configuration of CSFB (CS Fallback)".

The CS fallback in EPS enables the provisioning of voice and other CS-domain services (e.g., CS UDI video/ SMS/ LCS/ USSD) by reuse of CS infrastructure when the UE is served by E-UTRAN. This function is only available in case E-UTRAN coverage is overlapped by either GERAN coverage or UTRAN coverage.

The configurations of the CSFB entities are represented in Figure 6-24.

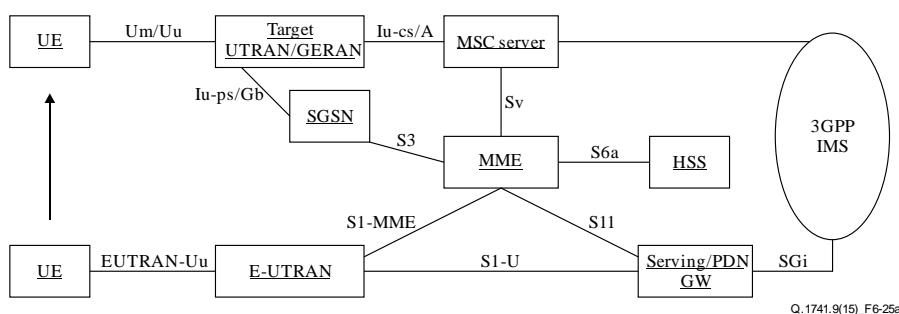


**Figure 6-24 – Configuration of CSFB**

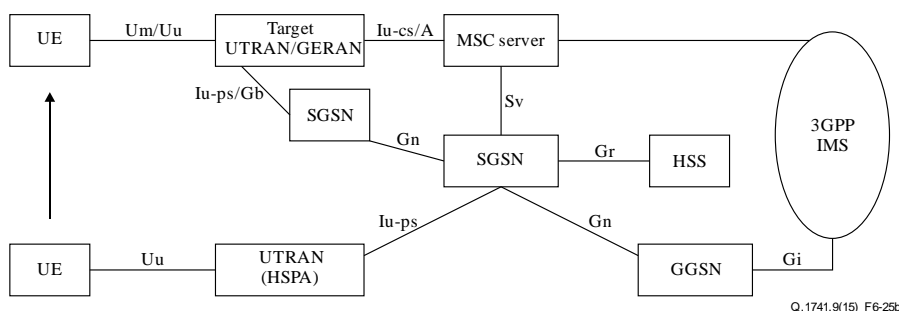
NOTE – The MGW is not shown in the Figure 6-24 since the CS fallback in EPS does not have any impacts to the User plane handling.

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.13 "Configuration of Single Radio Voice Call Continuity (SRVCC)".

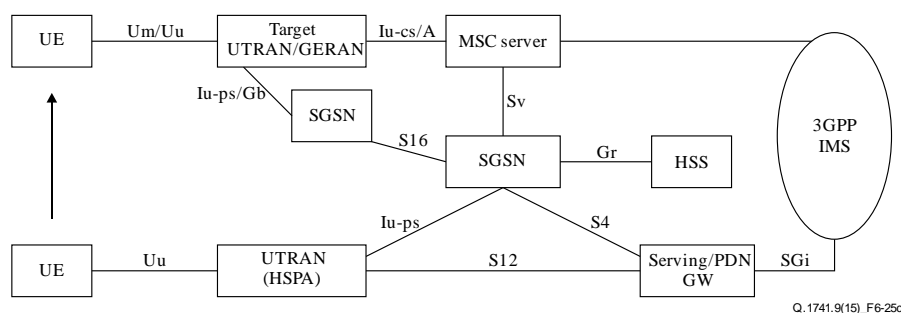
Single Radio Voice Call Continuity (PS to CS) refers to continuity between IMS over PS access and CS calls that are anchored in IMS when the UE is capable of transmitting/receiving on only one of those access networks at a given time. PS to CS SRVCC is specified in TS 23.216 . The following figures 6-25a, 6-25b and 6-25c show the entities involved in PS to CS SRVCC.



**Figure 6-25a – SRVCC architecture for E-UTRAN to 3GPP UTRAN/GERAN**



**Figure 6-25b – SRVCC architecture for UTRAN (HSPA) to 3GPP UTRAN/GERAN with Gn based SGSN**



**Figure 6-25c – SRVCC architecture for UTRAN (HSPA) to 3GPP UTRAN/GERAN with S4 based SGSN**

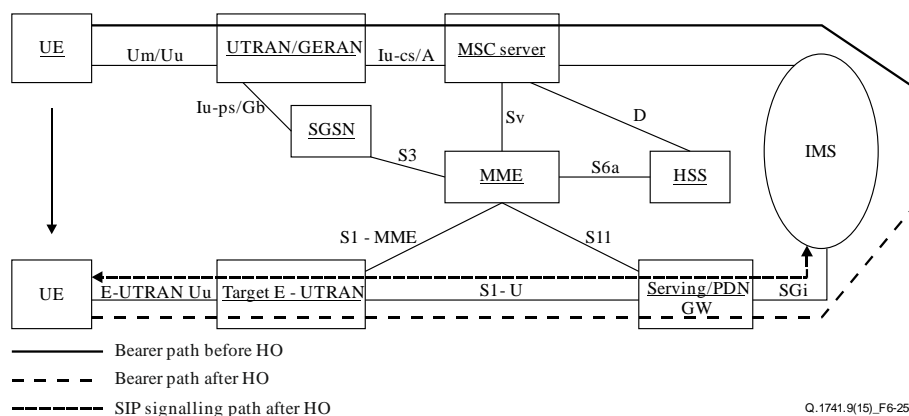
NOTE 1 – The above figures only show the necessary components related to MSC Server enhanced with SRVCC.

NOTE 2 – MSC Server shown in the above figures are enhanced for SRVCC.

NOTE 3 – This architecture also applies to roaming scenario (i.e., S8, S6a are not impacted due to SRVCC).

NOTE 4 – The MSC Server enhanced with SRVCC may not be the final target MSC which connects to the target cell.

CS to PS Single Radio Voice Call Continuity refers to continuity between a CS call and IMS call over PS access that are anchored in IMS when the UE is capable of transmitting/receiving on only one of those access networks at a given time. CS to PS SRVCC is specified in [TS 23.216]. The following Figures 6-25d, 6-25e and 6-25f show the entities involved in CS to PS SRVCC.

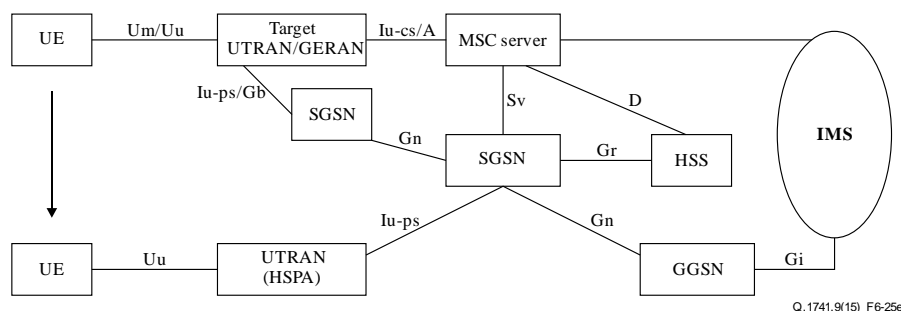


NOTE 1 – The above figure only shows the necessary components related to MSC Server enhanced for CS to PS SRVCC.

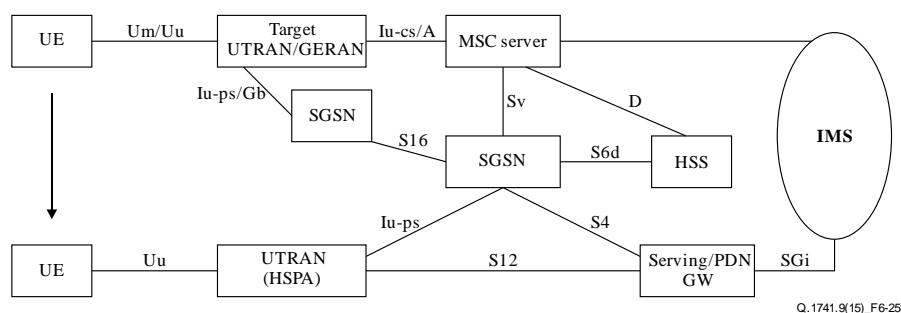
NOTE 2 – MSC Server shown in the figure is enhanced for CS to PS SRVCC.

NOTE 3 – This architecture also applies to roaming scenario (i.e., S8, S6a are not impacted due to CS to PS SRVCC).

**Figure 6-25d – CS to PS SRVCC architecture for UTRAN/GERAN to E-UTRAN**



**Figure 6-25e – CS to PS SRVCC architecture for UTRAN/GERAN to UTRAN (HSPA) with Gn based SGSN**



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NOTE 1 – The above figures only show the necessary components related to MSC Server enhanced with CS to PS SRVCC.

NOTE 2 – MSC Server shown in the above figures are enhanced for CS to PS SRVCC.

NOTE 3 – This architecture also applies to roaming scenario.

**Figure 6-25f – CS to PS SRVCC architecture for UTRAN/GERAN to UTRAN (HSPA) with S4 based SGSN**

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.14 "Configuration of Security".

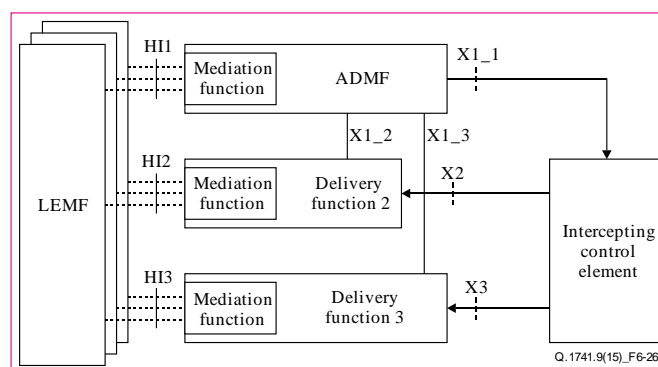
The reference architecture model, the reference points and the functional entities to support and provide security related functions to the users, devices and network entities when in the UTRAN access as well as using IMS are described in TS 33.1xx series and TS 33.2xx series.

The reference architecture model, the reference points and the functional entities to support security functions to the users, devices and network entities when in the EPC are described in TS 33.401 for 3GPP access and in TS 33.402 for non-3GPP accesses.

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.15 "Configuration of Lawful Intercept related entities".

The general configuration for Lawful Interception is shown in Figure 6-26. The definition of the LI functional entities and interfaces is provided in TS 33.107.

The reference configuration is only a logical representation of the entities involved in lawful interception and does not mandate separate physical entities. There is one Administration Function (ADMF) in the network. Every physical Intercepting Control Element (ICE) is linked by its own X1\_1-interface to the ADMF. Consequently, every single ICE performs interception (activation, deactivation, interrogation as well as invocation) independently from other ICEs.



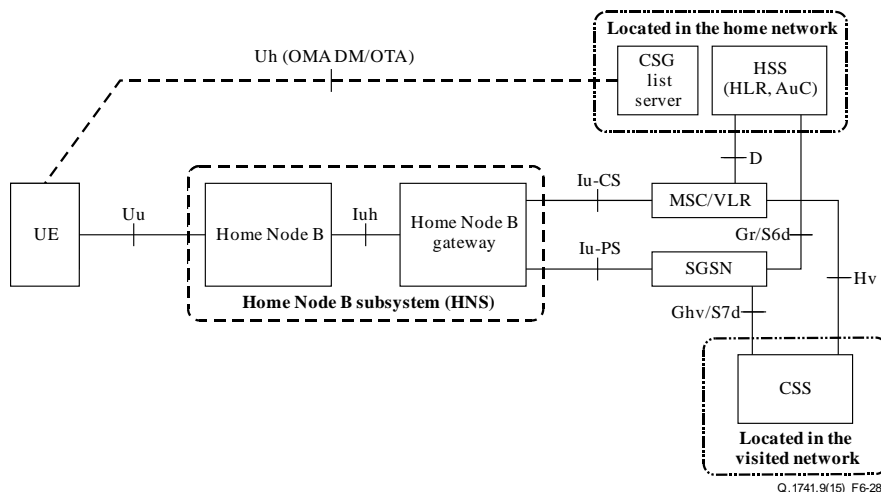
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**Figure 6-26 – General lawful interception architecture**



The Home NodeB Gateway may also be used only for the control plane of Iu-CS and/or Iu-PS interfaces. In this case, the user plane of Iu-CS and/or Iu-PS interfaces is directly between the Home NodeB and respectively the MSC/VLR and the SGSN/Serving GW/GGSN.

In case Direct Tunnel is established, the user plane is directly between the Home NodeB Subsystem and the GGSN or Serving GW nodes.



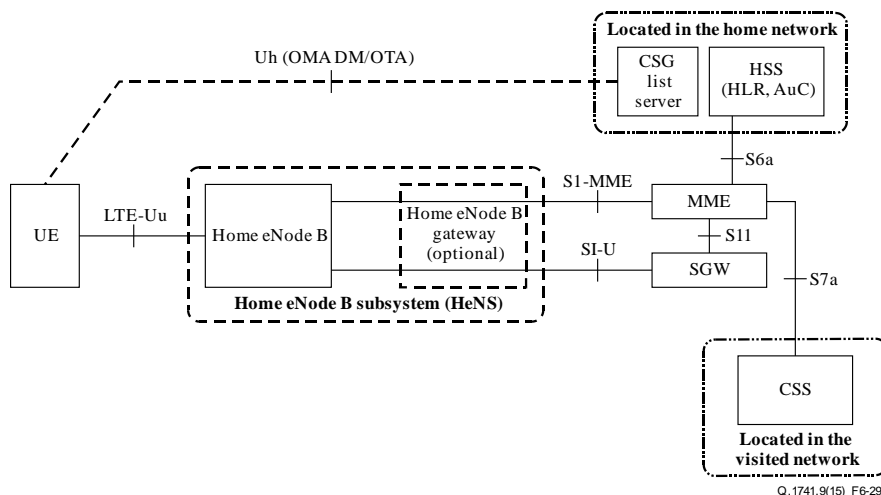
**Figure 6-28 – Configuration of PLMN supporting Home NodeB Subsystem**

The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 5.17.2 "Configuration of the Home eNodeB Subsystem".

The configuration of Home eNodeB Subsystem with a Home eNodeB Gateway present is shown in Figure 6-29. In the figure, all the functions are considered implemented in different logical nodes. If two logical nodes are implemented in the same physical equipment, the relevant interfaces may become internal to that equipment.

The presence of Home eNodeB Gateway in the configuration of Home eNodeB Subsystem is optional.

The Home eNodeB Gateway may also be used only for the S1-MME interface. In this case, the S1-U interface is directly between the Home eNodeB and the S-GW.



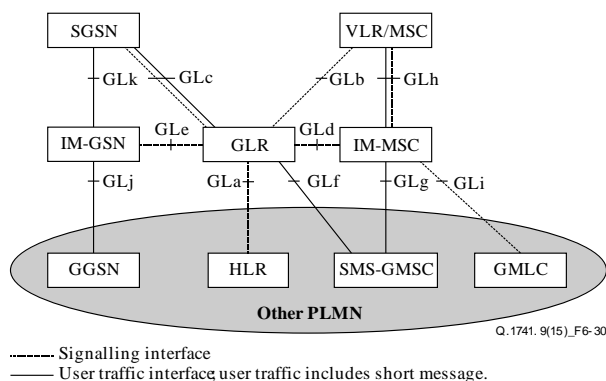
**Figure 6-29 – Configuration of PLMN supporting Home eNodeB Subsystem**



The following text is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], Annex A.

Gateway location register (GLR) is an optional functional entity to optimize signalling traffic between PLMNs. This entity handles location management of a roaming subscriber in the visited network without involving HLR. The location register function in the GLR stores subscription information and routing information for both CS services and PS services. This entity can be only located in a visited PLMN.

In the basic configuration with GLR introduction presented in Figure 6-30, all the functions related to GLR introduction are considered implemented in different equipment. Therefore, all the interfaces within PLMN are external. Interfaces GLa, GLb, GLc, GLd, GLf, GLg, GLh, and GLi need the support of the mobile application part of Signalling System No. 7 to exchange the data necessary to provide the mobile service. No protocols for the GLe interface are standardized. GLj and GLk need the support of the GPRS tunnelling protocol control to provide the packet domain services.



**Figure 6-30 – Configuration of a PLMN and interfaces with GLR**

The end-to-end communications, between the MTC application in the UE and the MTC application in the external network, uses services provided by the 3GPP system, and optionally services provided by a services capability server (SCS).

The MTC application in the external network is typically hosted by an application server (AS) and may make use of an SCS for additional value added services. The 3GPP system provides transport, subscriber management and other communication services including various architectural enhancements motivated by, but not restricted to, MTC (e.g., control plane device triggering).

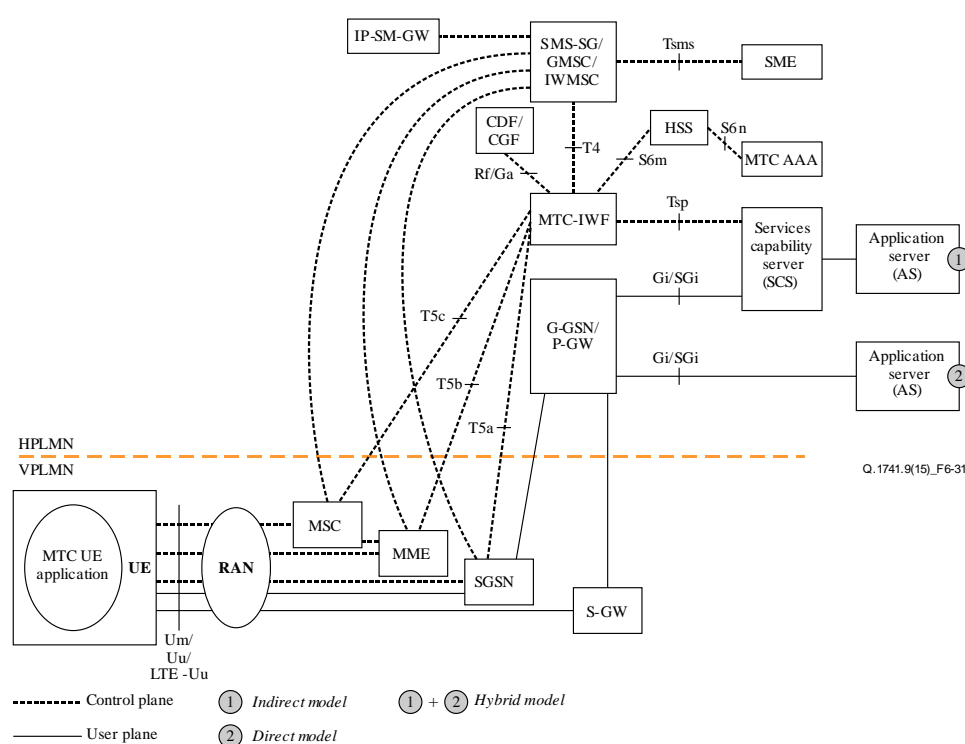
Different models are foreseen for machine type of traffic in what relates to the communication between the AS and the 3GPP system and based on the provider of the SCS. The different architectural models that are supported by the Architectural Reference Model include the following:

- Direct model – The AS connects directly to the operator network in order to perform direct user plane communications with the UE without the use of any external SCS. The Application in the external network may make use of services offered by the 3GPP system;
- Indirect model – The AS connects indirectly to the operator network through the services of a SCS in order to utilize additional value added services for MTC (e.g., control plane device triggering). The SCS is either:
  - MTC service provider controlled: The SCS is an entity that may include value added services for MTC, performing user plane and/or control plane communication with the UE. Tsp is regarded as an inter-domain interface for control plane communication; or
  - 3GPP network operator controlled: The SCS is a mobile operator entity that may include value added services for MTC and performs user plane and/or control plane communication with the UE, making Tsp a control plane interface internal to the PLMN;

- Hybrid model: The AS uses the direct model and indirect models simultaneously in order to connect directly to the operator's network to perform direct user plane communications with the UE while also using a SCS. From the 3GPP network perspective, the direct user plane communication from the AS and any value added control plane related communications from the SCS are independent and have no correlation to each other even though they may be servicing the same MTC Application hosted by the AS.
- When using the hybrid model, the MTC Service provider controlled SCS, and the 3GPP operator controlled SCS may offer different capabilities to the MTC Applications.

Since the different models are not mutually exclusive, but just complementary, it is possible for a 3GPP operator to combine them for different applications. This may include a combination of both MTC Service Provider and 3GPP network operator controlled SCSs communicating with the same PLMN.

The following figure shows the architecture for a UE used for MTC connecting to the 3GPP network (UTRAN, E-UTRAN, GERAN, etc.) via the Um/Uu/LTE-Uu interfaces. The architecture covers the various architectural models.



**Figure 6-31 – Architecture for machine-type communication**

## 7 Network entities

### 7.1 The gateway MSC (GMSC)

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.2.2.

If a network delivering a call to the PLMN cannot interrogate the home location register (HLR), the call is routed to an MSC. This MSC will interrogate the appropriate HLR and then route the call to the MSC where the mobile station is located. The MSC which performs the routing function to the actual location of the MS is called the Gateway MSC (GMSC).

The acceptance of an interrogation to an HLR is the decision of the operator.

The choice of which MSCs can act as gateway MSCs is for the operator to decide (i.e., all MSCs or some designated MSCs).

If the call is a voice group/broadcast call, it is routed directly from the GMSC to the VBS/VGCS Anchor MSC, based on information (VBS/VGCS call reference) contained in the dialled number.

When needed, the GMSC can be implemented in two different entities: the GMSC server, handling only signalling, as defined below, and the CS-MGW, defined below. A GMSC server and a CSMGW make up the full functionality of a GMSC.

#### **7.1.1 Gateway MSC server (GMSC server)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.2.2.1.

The GMSC server mainly comprises the call control and mobility control parts of a GMSC.

### **7.2 The mobile-services switching centre (MSC)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.2.1.

The mobile-services switching centre (MSC) constitutes the interface between the radio system and the fixed networks. The MSC performs all necessary functions in order to handle the circuit switched services to and from the mobile stations.

In order to obtain radio coverage of a given geographical area, a number of BSS and/or RNS are normally required; i.e., each MSC would thus have to interface to one or more BSS(s) and/or RNS(s). In addition, several MSCs may be required to cover a country.

When intra-domain connection of RAN nodes to multiple CN nodes is applied, all the MSCs serving a pool-area share the responsibility to serve the MSs located in the pool-area. All these MSCs interface to all the BSS(s) and/or RNS(s) forming the pool-area.

The mobile-services switching centre is an exchange that performs all the switching and signalling functions for mobile stations located in a geographical area designated as the MSC area. When intradomain connection of RAN nodes to multiple CN nodes is applied, one or more MSCs serve a pool-area, but each individual MS is served by only one out of these MSCs, as described in 3G TS 23.236. The main difference between a MSC and an exchange in a fixed network is that the MSC has to take into account the impact of the allocation of radio resources and the mobile nature of the subscribers and has to perform in addition, at least the following procedures:

- procedures required for the location registration;
- procedures required for handover.

When needed, the MSC can be implemented in two different entities: the MSC server, handling only signalling, and the CS-MGW, handling user's data. An MSC server and a CS-MGW make up the full functionality of a MSC.

The CS fallback enabled MSC supports the following additional functions according to [3G TS 23.272]:

- Maintaining SGs association towards MME for EPS/IMSI attached UE;
- Supporting SMS procedures according to CS Fallback.

#### **7.2.1 MSC server**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.2.1.1.

The MSC server mainly comprises the call control (CC) and mobility control parts of a MSC.

The MSC server is responsible for the control of mobile originated and mobile terminated CC CS domain calls. It terminates the user-network signalling and translates it into the relevant network-network signalling. The MSC server also contains a VLR to hold the mobile subscriber's service data and CAMEL related data.

The MSC server controls the parts of the call state that pertain to connection control for media channels in a CS-MGW.

An MSC Server which has been enhanced for SRVCC provides the following functions as needed for support of SRVCC according to [3G TS 23.216]:

- Handling the Relocation Preparation procedure requested for the voice component from MME via Sv interface;
- Invoking the session transfer procedure from IMS to CS;
- Coordinating the CS Handover and session transfer procedures;
- Handling the MAP\_Update\_Location procedure without it being triggered from the UE.

If a MSC Server is enhanced for IMS Centralized Services (as defined in [3G TS 23.292]), it is responsible for the CS to IMS interworking, and it terminates the user-network signalling received over the CS access (A/Iu and E interface) and translates it into SIP signalling in IMS and vice versa.

### 7.3 Visitor location register (VLR)

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.1.2.

A mobile station roaming in an MSC area is controlled by the visitor location register (VLR) in charge of this area. When a mobile station (MS) enters a new location area, it starts a registration procedure. The MSC in charge of that area notices this registration and transfers to the visitor location register the identity of the location area where the MS is situated. If this MS is not yet registered, the VLR and the HLR exchange information to allow the proper handling of calls involving the MS.

A VLR may be in charge of one or several MSC areas.

The VLR contains also the information needed to handle the calls set up or received by the MSs registered in its database (for some supplementary services the VLR may have to obtain additional information from the HLR). The following elements are included:

- the international mobile subscriber identity (IMSI);
- the mobile station international ISDN number (MSISDN);
- the mobile station roaming number (MSRN);
- the temporary mobile station identity (TMSI), if applicable;
- the local mobile station identity (LMSI), if used;
- the location area where the mobile station has been registered;
- the identity of the SGSN where the MS has been registered. Only applicable to PLMNs supporting GPRS and which have a Gs interface between MSC/VLR and SGSN;
- the last known location and the initial location of the MS;
- the identity of the MME where the MS has been registered. Only applicable to PLMNs supporting EPC and CS Fallback and which have a SGs interface between MSC/VLR and MME.

The VLR also contains supplementary service parameters attached to the mobile subscriber and received from the HLR.

## 7.4 Home subscriber server (HSS)

Entities in the mobile system can be either implemented in a monolithic way where user data are stored within the entity itself (or in an external entity via non-standard interfaces) or according to the User Data Convergence (UDC) concept (see [TS 23.335]) where the entity becomes a so-called user-data-less Application Front End (AFE). Application Front Ends access, via the Ud reference point, a User Data Repository (UDR), which stores the relevant user data managed by the applications. Unless explicitly stated otherwise, this document describes entities in the monolithic form, e.g., assuming that user data are stored in the HSS. If however the UDC concept applies, user data are actually stored in the UDR and managed by one or several Application Front Ends, so that user data may be shared among the different Application Front Ends, allowing several AFEs of the same application type (e.g., HSS) to serve the same user at any given time.

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.1.1.

The HSS is the master database for a given user. It is the entity containing the subscription-related information to support the network entities actually handling calls/sessions.

A home network may contain one or several HSSs: it depends on the number of mobile subscribers, on the capacity of the equipment and on the organization of the network.

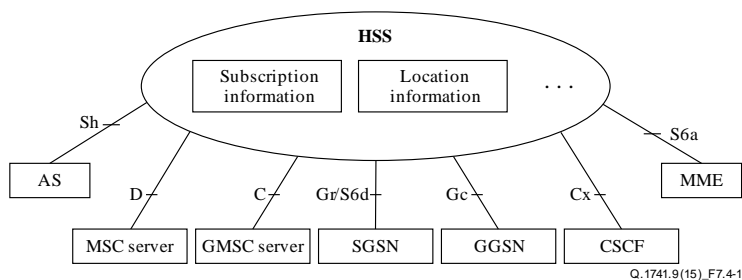
As an example, the HSS provides support to the call control servers in order to complete the routing/roaming procedures by solving authentication, authorization, naming/addressing resolution, location dependencies, etc.

The HSS is responsible for holding the following user-related information:

- user identification, numbering and addressing information;
- user security information: Network access control information for authentication and authorization;
- user location information at inter-system level: The HSS supports the user registration, and stores inter-system location information, etc.;
- user profile information.

The HSS also generates user security information for mutual authentication, communication integrity check and ciphering.

Based on this information, the HSS also is responsible for supporting the call control and session management entities of the different domains and subsystems (defined in clause 3) of the operator as shown in Figure 7.4-1.



**Figure 7.4-1 – Example of a generic HSS structure and basic interfaces**

The HSS may integrate heterogeneous information, and enable enhanced features in the core network to be offered to the application and services domain, at the same time hiding the heterogeneity.

The HSS consists of the following functionalities:

- IP multimedia functionality to provide support to control functions of the IM subsystem such as the CSCF. It is needed to enable subscriber usage of the IM CN subsystem services. This IP multimedia functionality is independent of the access network used to access the IM CN subsystem.
- The subset of the HLR/AUC functionality required by the PS domain (GPRS and EPC).
- The subset of the HLR/AUC functionality required by the CS domain, if it is desired to enable subscriber access to the CS domain or to support roaming to legacy GSM/UMTS CS domain networks.

The organization of the subscriber data is outlined in [3GPP TS 23.008]. It also indicates which numbers, addresses and identifiers specified in [3G TS 23.003] are stored in HSS.

#### **7.4.1 Home location register (HLR)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.1.1.1.

The HLR can be considered a subset of the HSS that holds the following functionalities:

- The functionality required to provide support to PS Domain entities such as the SGSN, MME and GGSN, through the Gr, S6a, S6d and Gc interfaces and the 3GPP AAA Server for EPS in case of non-3GPP access via SWx and for the I-WLAN through the D'/Gr' interface. It is needed to enable subscriber access to the PS domain services.
- The functionality required to provide support to CS domain entities such as the MSC/MSC server and GMSC/GMSC server, through the C and D interfaces. It is needed to enable subscriber access to the CS domain services and to support roaming to legacy GSM/UMTS CS domain networks.

#### **7.4.2 Authentication centre (AuC)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.1.1.2.

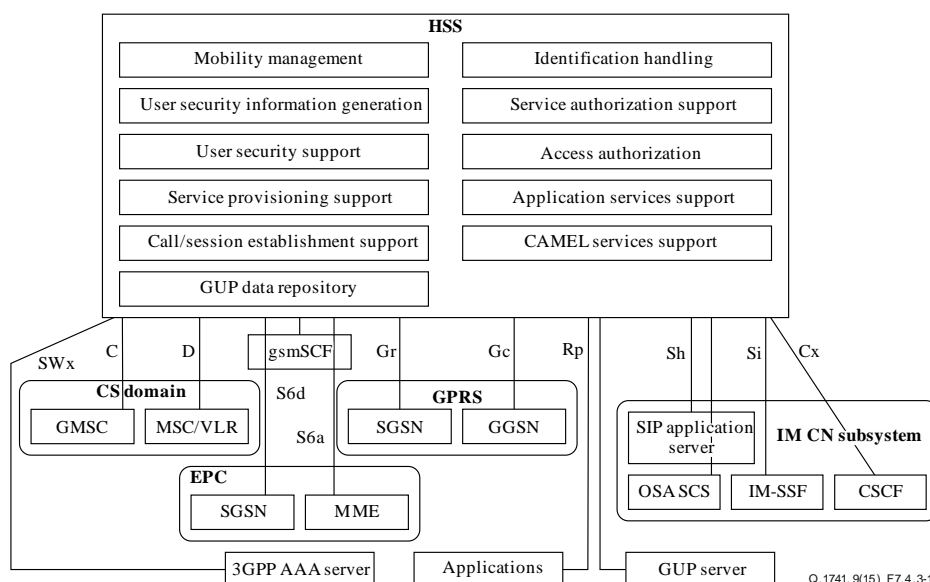
The AuC can be considered a subset of the HSS that holds the following functionalities for the CS domain and PS domain:

- The AuC is associated with an HLR and stores an identity key for each mobile subscriber registered with the associated HLR. This key is used to generate security data for each mobile subscriber:
  - data which are used for mutual authentication of the international mobile subscriber identity (IMSI) and the network;
  - a key used to check the integrity of the communication over the radio path between the mobile station and the network;
  - a key used to cipher communication over the radio path between the mobile station and the network.
- The AuC communicates only with its associated HLR over a non-standardized interface denoted the H interface. The HLR requests the data needed for authentication and ciphering from the AuC via the H interface, stores them and delivers them to the VLR, SGSN and MME which need them to perform the security functions for a mobile station.

#### **7.4.3 HSS logical functions**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.1.1.3.

This clause provides a high level and not exhaustive description of HSS functionality.



**Figure 7.4.3-1 – HSS logical functions**

- *Mobility management*  
This function supports the user mobility through CS domain, PS domain and IM CN subsystem.
- *Call and/or session establishment support*  
The HSS supports the call and/or session establishment procedures in CS domain, PS domain and IM CN subsystem. For terminating traffic, it provides information on which call and/or session control entity currently hosts the user.
- *User security information generation*  
The HSS generates user authentication, integrity and ciphering data for the CS and PS domains and for the IM CN subsystem.
- *User security support*  
The HSS supports the authentication procedures to access CS domain, PS domain and IM CN subsystem services by storing the generated data for authentication, integrity and ciphering and by providing these data to the appropriate entity in the CN (i.e., MSC/VLR, SGSN, MME, 3GPP AAA Server or CSCF).
- *User identification handling*  
The HSS provides the appropriate relations among all the identifiers uniquely determining the user in the system: CS domain, PS domain and IM CN subsystem (e.g., IMSI and MSISDNs for CS domain; IMSI, MSISDNs and IP addresses for PS domain, private identity and public identities for IM CN subsystem).
- *Access authorization*  
The HSS authorizes the user for mobile access when requested by the MSC/VLR, SGSN, MME, 3GPP AAA Server or CSCF, by checking that the user is allowed to roam to that visited network.
- *Service authorization support*  
The HSS provides basic authorization for MT call/session establishment and service invocation. Besides, the HSS updates the appropriate serving entities (i.e., MSC/VLR, SGSN, MME, 3GPP AAA Server, CSCF) with the relevant information related to the services to be provided to the user.
- *Service provisioning support*

The HSS provides access to the service profile data for use within the CS domain, PS domain and/or IM CN subsystem.

- *Application services and CAMEL services support (for GERAN and UTRAN access)*

The HSS communicates with the SIP application server and the OSA-SCS to support application services in the IM CN subsystem. It communicates with the IM-SSF to support the CAMEL services related to the IM CN subsystem. It communicates with the gsmSCF to support CAMEL services in the CS domain and PS domain (for GERAN and UTRAN access).

- *GUP Data Repository*

The HSS supports the storage of IM CN Subsystem user related data, and provides access to these data through the Rp reference point as described in [TS 23.240].

#### **7.4.4 Application front ends (AFE)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.26.

When the User Data Convergence (UDC) architecture is applied, certain functional entities keep the application logic, but do not locally store user data permanently. Examples of such functional entities are HLR/HSS/AuC and Application Servers. These data-less functional entities are known in the UDC architecture as Application Front Ends. The application that is handled by an AFE determines the type of AFE, e.g., HLR-FE or HSS-FE. The reference points between the Front Ends and the core and service layers are not affected by the UDC architecture. More information on Application Front Ends can be found in [TS 23.335].

#### **7.4.5 User data repository (UDR)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.27.

The UDR is a functional entity that acts as a single logical repository storing user data. The user-related data traditionally stored in the HSS/HLR/AuC, Application Servers, etc., are now stored in the UDR. UDR facilitates the share and provisioning of user-related data. The UDR provides a unique reference point to Application Front Ends such as HSS/HLR/AuC/AS Front Ends. This reference point is named Ud. More information on the UDR can be found in [TS 23.335].

#### **7.5 Equipment identity register (EIR)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.1.4.

The equipment identity register (EIR) is the logical entity, which is responsible for storing in the network the international mobile equipment identities (IMEIs) used.

The equipment is classified as "white listed", "grey listed", "black listed", or it may be unknown.

This functional entity contains one or several databases which store(s) the IMEIs used.

The mobile equipment may be classified as "white listed", "grey listed" and "black listed" and therefore may be stored in three separate lists.

An IMEI may also be unknown to the EIR.

An EIR shall as a minimum contain a "white list" (Equipment classified as "white listed").

#### **7.6 SMS gateway MSC (SMS-GMSC)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.1.5.



The SMS gateway MSC (SMS-GMSC) acts as an interface between a short message service centre and the PLMN, to allow short messages to be delivered to mobile stations from the service centre (SC).

The choice of which MSCs can act as SMS gateway MSCs is a network operator matter (e.g., all MSCs or some designated MSCs).

### **7.7 SMS interworking MSC (SMS-IWMSC)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.1.6.

The SMS Interworking MSC acts as an interface between the PLMN and a short message service centre (SC) to allow short messages to be submitted from mobile stations to the SC.

The choice of which MSCs can act as SMS interworking MSCs is a network operator matter (e.g., all MSCs or some designated MSCs).

### **7.8 Subscription locator function (SLF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.1.7.

The SLF:

- Is queried by the ICSCF during the Registration and Session Setup to get the name of the HSS containing the required subscriber specific data. Furthermore the SLF is also queried by the SCSCF during the Registration.
- Is queried by the AS in conjunction with the Sh interface operation to get the name of the HSS containing the required subscriber specific data.
- Is queried by the 3GPP AAA server to get the name of the HSS containing the required subscriber specific data.
- Is accessed via the Dx interface by the CSCF, via the Dh interface by the AS, and via the Dw interface by the 3GPP AAA Server.

The SLF is not required in a single HSS environment. An example for a single HSS environment is a server farm architecture. Use of SLF is not required when AS are configured/managed to use pre-defined HSS.

### **7.9 Gateway GPRS support node (GGSN)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clauses 4.1.3 and 4.1.3.2.

The UTRAN/GERAN PS-domain (or GPRS) Support Nodes (GSN) are the Gateway GSN (GGSN) and the Serving GSN (SGSN). They constitute the interface between the radio system and the fixed networks for packet-switched services. The GSN performs all necessary functions in order to handle the packet transmission to and from the mobile stations.

The location register function in the GGSN stores subscriber data received from the HLR and the SGSN. There are two types of subscriber data needed to handle originating and terminating packet data transfer:

- Subscription information:
  - the IMSI;
  - zero or more PDP addresses.
- Location information:
  - the SGSN address for the SGSN where the MS is registered.

The organisation of the subscriber data in the GGSN is defined in [TS 23.008] and [TS 23.060].

The procedures for information transfer between the GGSN, the SGSN and the HLR are defined in [TS 23.016] and [TS 23.060].

### **7.10 Serving GPRS support node (SGSN)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clauses 4.1.3 and 4.1.3.1.

The UMTS GPRS support nodes (GSN) is the gateway GSN (GGSN) and the serving GSN (SGSN). They constitute the interface between the radio system and the fixed networks for packet-switched services. The GSN performs all necessary functions in order to handle the packet transmission to and from the mobile stations.

The location register function in the SGSN stores two types of subscriber data needed to handle originating and terminating packet data transfer:

- Subscription information:
  - the IMSI;
  - one or more temporary identities;
  - zero or more PDP addresses.
- Location information:
  - depending on the operating mode of the MS, the cell or the routing area where the MS is registered;
  - the VLR number of the associated VLR (if the Gs interface is implemented);
  - the GGSN address of each GGSN for which an active PDP context exists.

The SGSN provide support for Direct Tunnel functions as specified in [TS 23.060].

The organization of the subscriber data in the SGSN is defined in [TS 23.008] and [TS 23.060].

The procedures for information transfer between the SGSN, the GGSN, the VLR and the HLR are defined in [TS 23.016] and [TS 23.060].

NOTE –When this improves the readability, the term 2G-SGSN can be used to refer to a SGSN Release 98 or prior, and the term 3G-SGSN can be used to refer to a SGSN Release 99 or later.

The SGSN provides support for SRVCC functions as specified in [TS 23.216].

### **7.11 Circuit switched – Media gateway function (CS-MGW)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.2.1.2.

NOTE – In this Recommendation, the term "Media Gateway Function (MGW)" is used when there is no need to differentiate between the CS domain entity and the IP multimedia CN subsystem entity. When referring specifically to the CS domain entity, the term "CS-MGW" is used. When referring specifically to the IP multimedia CN subsystem entity, the term "IMS-MGW" is used.

This component is PSTN/PLMN transport termination point for a defined network and interfaces UTRAN with the core network over Iu.

A CS-MGW may terminate bearer channels from a switched-circuit network and media streams from a packet network (e.g., RTP streams in an IP network). Over Iu, the CS-MGW may support media conversion, bearer control and payload processing (e.g., codec, echo canceller, conference bridge) for support of different Iu options for CS services (AAL 2/ATM-based as well as RTP/UDP/IP-based).

The CS-MGW:

- interacts with MGCF, MSC server and GMSC server for resource control;
- owns and handles resources such as echo cancellers, etc.;
- may need to have codecs.

The CS-MGW will be provisioned with the necessary resources for supporting UMTS/GSM transport media. Further tailoring (i.e., packages) of [ITU-T H.248.1] may be required to support additional codecs and framing protocols, etc.

The CS-MGW bearer control and payload processing capabilities will also need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current ITU-T H.248.1 standard mechanisms can be applied to enable this.

## **7.12 Entities of the EPC PS domain**

The text in following clauses is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], subclauses of the clause 4.1.4.

### **7.12.1 Mobility management entity (MME)**

MME is the control plane entity within EPS supporting functions as listed below and described in specifications [3G TS 23.401], [3G TS 23.402] and [3G TS 36.300].

- Mobility Management;
- NAS signalling and security;
- Inter CN node signalling for mobility between 3GPP access networks;
- Tracking Area list management;
- PDN GW and Serving GW selection;
- SGSN selection for handovers to 2G or 3G 3GPP access networks;
- Roaming;
- Authentication;
- Bearer management functions including dedicated bearer establishment;
- Lawful Interception of signalling traffic.

In order to support 3GPP2 access, MME supports:

- HRPD access node selection and maintenance for handovers to HRPD;
- Transparent transfer of HRPD signalling messages and transfer of status information between E-UTRAN and HRPD access;

The procedures for information transfer between the SGSN, the MME and the HSS are defined in [3G TS 23.401] and [3G TS 23.060].

The CS fallback enabled MME supports the following additional functions according to [3G TS 23.272]:

- Deriving a VLR number and LAI out of the TAI
- Maintaining of SGs association towards MSC/VLR for EPS/IMSI attached UE
- Initiating IMSI detach at EPS detach
- Initiating paging procedure towards eNodeB when MSC pages the UE for CS services
- Supporting SMS procedures for CS Fallback
- Support CS Fallback interface and related functions for 1xRTT CDMA access.

When the MME supports the interworking to CS, the MME supports the following functions as specified in [3G TS 23.216]:

- Performing the PS bearer splitting function by separating the voice PS bearer from the non-voice PS bearers.
- Handling the non-voice PS bearers handover with the target cell as according to Inter RAT handover procedure as defined in [3G TS 23.401].
- Initiating the SRVCC handover procedure for handover of the voice component to the target cell.
- Coordinating PS handover and SRVCC handover procedures when both procedures are performed.
- Support interworking and SRVCC related functions for 1xRTT CDMA access.

### **7.12.2 Serving GW**

The Serving GW is the gateway which terminates the interface towards E-UTRAN.

For each UE associated with the EPS, at a given point of time, there is a single Serving GW. For detailed S-GW functions, see [3G TS 23.401] and [3G TS 23.402].

Connectivity to a GGSN is not supported.

The functions of the Serving GW include:

- the local Mobility Anchor point for inter-eNodeB handover;
- Mobility anchoring for inter-3GPP mobility;
- ECM-IDLE mode downlink packet buffering and initiation of network triggered service request procedure;
- Lawful Interception;
- Packet routing and forwarding;
- Transport level packet marking in the uplink and the downlink;
- Accounting on user and QCI granularity for inter-operator charging;
- A local non-3GPP anchor for the case of roaming when the non-3GPP IP accesses connected to the VPLMN;
- Event reporting (change of RAT, etc.) to the PCRF;
- Uplink and downlink bearer binding towards 3GPP accesses as defined in [3G TS 23.203];
- Uplink bearer binding verification with packet dropping of "misbehaving UL traffic";
- Mobile Access Gateway (MAG) functions if PMIP-based S5 or S8 is used;
- Support necessary functions in order for enabling GTP/PMIP chaining functions.

### **7.12.3 PDN GW**

The PDN GW is the gateway which terminates the SGi interface towards the PDN.

If a UE is accessing multiple PDNs, there may be more than one PDN GW for that UE, however a mix of S5/S8 connectivity and Gn/Gp connectivity is not supported for that UE simultaneously.

The PDN-GW provides PDN connectivity to both GERAN/UTRAN only UEs and E UTRAN capable UEs using any of E UTRAN, GERAN or UTRAN. The PDN-GW provides PDN connectivity to E UTRAN capable UEs using E UTRAN only over the S5/S8 interface. The PDN-GW may also provide PDN connectivity to UEs using non-3GPP access networks with the procedures defined in [TS 23.402].

For detailed PDN GW functions, see [TS 23.401] and [TS 23.402].

PDN GW functions include:

- Per-user based packet filtering (by e.g., deep packet inspection);
- Lawful Interception;
- UE IP address allocation;
- Transport level packet marking in the uplink and downlink, e.g., setting the DiffServ Code Point, based on the QCI of the associated EPS bearer;
- UL and DL service level charging, gating control, rate enforcement as defined in [TS 23.203];
- UL and DL rate enforcement based on APN-AMBR;
- DL rate enforcement based on the accumulated MBRs of the aggregate of SDFs with the same GBR QCI (e.g., by rate policing/shaping);
- DHCPv4 (server and client) and DHCPv6 (client and server) functions.

Additionally the PDN GW includes the following functions for the GTP-based S5/S8/S2a/S2b:

- UL and DL bearer binding as defined in [TS 23.203];
- UL bearer binding verification. The PDN GW functions also includes user plane anchor for mobility between 3GPP access and non-3GPP access. It supports:
  - A LMA function for PMIPv6, if PMIP-based S5 or S8, or if PMIP based S2a or PMIP based S2b is used;
  - A DSMIPv6 Home Agent, if S2c is used;
- Allocation of GRE key, which is used to encapsulate uplink traffic to the PDN GW on the PMIP-based S5/S8, or PMIP based S2a or PMIP based S2b interface;
- A MIPv4 Home Agent, if S2a with MIPv4 FA CoA mode is used.
- GPRS Tunnelling Protocol for the control plane and the user plane to provide PDN connectivity to UEs using non-3GPP accesses, if GTP based S2a or GTP based S2b is used.

#### **7.12.4 EPC SGSN**

In addition to the functions described for GPRS, for EPC SGSN functions include:

- Inter EPC node signalling for mobility between 2G/3G and E-UTRAN 3GPP access networks;
- PDN and Serving GW selection: the selection of S GW/PDN GW by the SGSN is as specified for the MME;
- MME selection for handovers to E-UTRAN 3GPP access network.

For details, see [3G TS 23.401] and [3G TS 23.060].

#### **7.12.5 Trusted and untrusted non-3GPP access network**

Trusted and Untrusted Non-3GPP Access Networks are IP access networks that use access technology whose specification is out of the scope of 3GPP.

Whether a Non-3GPP IP access network is Trusted or Untrusted is not a characteristic of the access network.

In non-roaming scenario it is the HPLMN's operator decision if a Non-3GPP IP access network is used as Trusted or Untrusted Non-3GPP Access Network.

In roaming scenario, the HSS/3GPP AAA server in HPLMN makes the final decision of whether a Non-3GPP IP access network is used as trusted or untrusted non-3GPP access network. The HSS/3GPP AAA server may take the VPLMN's policy and capability returned from the 3GPP AAA proxy or roaming agreement into account.

For details, see [TS 23.402].

#### **7.12.6 Enhanced packet data gateway (ePDG)**

The functionality of ePDG includes the following:

- Functionality defined for the PDG in [3G TS 23.234] for the allocation of a remote IP address as an IP address local to the ePDG which is used as CoA when S2c is used;
- Functionality for transportation of a remote IP address as an IP address specific to a PDN when S2b is used;
- Routing of packets from/to PDN GW (and from/to Serving GW if it is used as local anchor in VPLMN) to/from UE; if GTP based S2b is used, this includes routing of uplink packets based on the uplink packet filters in the TFTs assigned to the S2b bearers of the PDN connection;
- Routing of downlink packets towards the SWu instance associated to the PDN connection;
- De-capsulation/Encapsulation of packets for IPsec and, if network based mobility (S2b) is used, for GTP or PMIP tunnels;
- Mobile Access Gateway (MAG) for PMIPv6 if PMIP based S2b is used;
- Tunnel authentication and authorization (termination of IKEv2 signalling and relay via AAA messages);
- Local mobility anchor within untrusted non-3GPP access networks using MOBIKE (if needed);
- Transport level packet marking in the uplink;
- Enforcement of QoS policies based on information received via AAA infrastructure;
- Lawful Interception.

For details, see [3G TS 23.402].

#### **7.12.7 3GPP AAA server**

The 3GPP AAA Server is located at the HPLMN and provides support for non-3GPP Access users with services like Authentication, Authorisation and location management services in order to get access to EPS. It also contains necessary user related information in order to grant access to non-3GPP access. It also coordinates the information needed to support mobility between 3GPP and non-3GPP accesses such as coordination of PDN-GW information. It interacts with HSS to maintain consistent information for users supporting mobility and service continuity between 3GPP and non-3GPP access. For details, see [3G TS 23.402].

#### **7.12.8 3GPP AAA proxy**

The 3GPP AAA Proxy provides support for roaming non-3GPP Access users in the VPLMN necessary the Authentication, Authorisation and location management services in order to get access to EPS. It may also provide roaming related information for support of chaining scenarios as described in [3G TS 23.402]. If an S-GW is needed for non-3GPP access in the visited network, the 3GPP AAA proxy selects an S-GW for the UE during initial attach or handover attach.

#### **7.12.9 Access network discovery and selection function (ANDSF)**

The ANDSF (which is an optional element in the architecture) contains data management and control functionality necessary to provide network discovery and selection assistance data as per operators' policy. The ANDSF is able to initiate data transfer to the UE, based on network triggers, and respond to requests from the UE. It provides functions such as inter-system mobility policy, access network discovery information.

The ANDSF in the subscriber's home operator network may interact with other databases such as the HSS user profile information residing in subscriber's home operator network. Details of such interaction with these databases are not described in this Release of the specifications. For details on ANDSF, see [3G TS 23.402].

NOTE – When the UE is roaming, how it discovers and interacts with the ANDSF is not specified in the specification of this release.

### **7.13 Border gateway (BG)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4.1.5.

The Border Gateway (BG) is a gateway between a PLMN supporting GPRS/EPC and an external inter-PLMN backbone network used to interconnect with other PLMNs also supporting GPRS/EPC. The role of the BG is to provide the appropriate level of security to protect the PLMN and its subscribers.

The BG is only needed in PLMNs supporting GPRS and EPC.

### **7.14 The group call register (GCR) entity**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.1.

The Group Call Register (GCR) is a register holding information about VGCS or VBS calls, the voice group or broadcast call attributes, respectively.

Voice group or broadcast call attributes are defined for a specific voice group or broadcast call reference and include the data required to configure the conference bridge for a VGCS or VBS call and other call related attributes.

The Group Call Register (GCR) shall hold for a related MSC area for each group ID and cell from which Voice Group Call Service (VGCS) or Voice Broadcast Service (VBS) calls can be established by mobile stations the voice group call reference or voice broadcast call reference to be used for a VGCS or VBS call to be established and an indication whether the originating MSC is the MSC responsible for that call.

If the originating MSC is not responsible for that call, the GCR shall hold the routing information identifying the MSC responsible for that call.

A GCR may be in charge of one or several MSCs. Each MSC involved in a voice group or broadcast call requests its proper voice group or broadcast call attributes from its related GCR by use of the voice group or broadcast call reference.

The contents of each list related to requests of the MSC responsible for a voice group or broadcast call is as follows:

- a list of cells inside the MSC area of the requesting MSC into which the call is to be sent (part of the group call area);
- a list of other MSCs into which the call is to be sent;
- a list of identities of dispatchers to which a dedicated link is to be established;
- a list of identities of dispatchers which are allowed to initiate the voice group or broadcast call;
- a list of identities of dispatchers which are allowed to terminate the voice group or broadcast call;
- the length of time over which no activity is detected before the voice group call is automatically terminated;

- the default priority level related to the voice group or broadcast call if the eMLPP supplementary service applies;
- a flag indicating if acknowledgements are required for this voice group or broadcast call.

The contents of each list related to requests of an MSC not responsible for a voice group or broadcast call is as follows:

- a list of cells inside the MSC area of the requesting MSC into which the call is to be sent (part of the group call area).

More information is provided in [TS 43.068] and [TS 43.069].

## **7.15 The location services (LCS) entities**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.3.

This clause describes the Location Services entities found in the Core Network that support positioning methods for the UE/MS.

### **7.15.1 Gateway mobile location centre (GMLC)**

The Gateway Mobile Location Centre (GMLC) is the first node an external Location Application accesses in the GSM PLMN. The GMLC performs registration authorization and requests routing information from the HLR. There may be more than one GMLC in a PLMN.

## **7.16 IP multimedia (IM) core network (CN) subsystem entities**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.

### **7.16.1 Call session control function (CSCF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.1.

The CSCF can act as proxy CSCF (P-CSCF), serving CSCF (S-CSCF) or interrogating CSCF (I-CSCF). The P-CSCF is the first contact point for the UE within the IM subsystem (IMS); the S-CSCF actually handles the session states in the network; the I-CSCF is mainly the contact point within an operator's network for all IMS connections destined to a subscriber of that network operator, or a roaming subscriber currently located within that network operator's service area. Further definitions of the P-, S- and I-CSCF are provided in [3G TS 23.228].

### **7.16.2 Media gateway control function (MGCF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.2.

The MGCF:

- controls the parts of the call state that pertain to connection control for media channels in an IMS-MGW;
- communicates with CSCF;
- selects the CSCF depending on the routing number for incoming calls from legacy networks;
- performs protocol conversion between ISUP and the IM subsystem call control protocols;
- out-of-band information assumed to be received in MGCF and may be forwarded to CSCF/IMS-MGW.



### **7.16.3 IP multimedia subsystem – Media gateway function (IMS-MGW)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.3.

NOTE – In this Recommendation, the term "Media Gateway Function (MGW)" is used when there is no need to differentiate between the CS domain entity and the IP multimedia CN subsystem entity. When referring specifically to the CS domain entity, the term "CS-MGW" is used. When referring specifically to the IP multimedia CN subsystem entity, the term "IMS-MGW" is used.

An IMS-MGW may terminate bearer channels from a switched-circuit network and media streams from a packet network (e.g., RTP streams in an IP network). The IMS-MGW may support media conversion, bearer control and payload processing (e.g., codec, echo canceller, conference bridge), it:

- interacts with the MGCF for resource control;
- owns and handles resources such as echo cancellers, etc.;
- may need to have codecs.

The IMS-MGW will be provisioned with the necessary resources for supporting UMTS/GSM transport media. Further tailoring (i.e., packages) of [ITU-T H.248.1] may be required to support additional codecs and framing protocols, etc.

### **7.16.4 Multimedia resource function controller (MRFC)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.4.

The MRFC:

- controls the media stream resources in the MRFP;
- interprets information coming from an AS and S-CSCF (e.g., session identifier) and controls MRFP accordingly;
- generates CDRs.

### **7.16.5 Multimedia resource function processor (MRFP)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.4a.

The MRFP:

- controls bearers on the Mb reference point;
- provides resources to be controlled by the MRFC;
- mixes incoming media streams (e.g., for multiple parties);
- sources media streams (for multimedia announcements);
- processes media streams (e.g., audio transcoding, media analysis).

### **7.16.6 Multimedia resource broker (MRB)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.4b.

The MRB supports the sharing of a pool of heterogeneous MRF resources by multiple heterogeneous applications. MRB assigns (and later releases) specific suitable MRF resources to calls as requested by the consuming applications, based on MRF attributes specified by the applications as well as other criteria.

The MRB may take the following kinds of information into account when assigning MRF resources to an application:

- the specific characteristics of the media resources required for the call or calls;
- the identity of the application;
- rules for allocating MRF resources across different applications;
- per-application or per-subscriber SLA or QoS criteria; and
- capacity models of particular MRF resources.

#### **7.16.7 Breakout gateway control function (BGCF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.6.

The breakout gateway control function (BGCF) selects the network in which PSTN breakout is to occur and – within the network where the breakout is to occur – selects the MGCF.

#### **7.16.8 Application server (AS)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.7.

An application server (AS) i.e., SIP application server, OSA application server, or CAMEL IM-SSF, offers value-added IM services and resides either in the user's home network or in a third-party location. The third party could be a network or simply a stand-alone AS.

NOTE – The OSA application server does not directly interact with the IMS network entities but through the OSA service capability servers (OSA SCSs). Further information on OSA is provided in [3G TS 22.127].

The AS (SIP application server and/or the OSA service capability server and/or IM-SSF) can communicate with the HSS. The Sh and Si interfaces are used for this purpose.

The serving-CSCF to AS interface is used to provide services residing in an AS. Two cases were identified:

- Serving-CSCF to an AS in home network;
- Serving-CSCF to an AS in a trusted external network (e.g., third party or visited). The S-CSCF does not provide authentication and security functionality for secure direct third party access to the IM subsystem. The OSA framework provides a standardized way for third party access to the IM subsystem.

An Application Server may influence and impact the SIP session on behalf of the services supported by the operator's network. An AS may host and execute services.

#### **7.16.9 Interconnection border control function (IBCF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.8.

An IBCF provides application specific functions at the SIP/SDP protocol layer in order to perform interconnection between two operator domains. It enables communication between IPv6 and IPv4 SIP applications. network topology hiding, controlling transport plane functions, screening of SIP signalling information, selecting the appropriate signalling interconnect and generation of charging data records. Details are described in [3G TS 23.228].

#### **7.16.10 Transition gateway (TrGW)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.9.

A TrGW is located within the media path and controlled by an IBCF. It provides functions like network address/port translation and IPv4/IPv6 protocol translation. Details are described in [3G TS 23.228].

#### **7.16.11 Location retrieval function (LRF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.10.

The LRF retrieves location information for the UE including, where required, interim location information, initial location and updated location information. The LRF may interact with a Routing Determination Function (RDF) in order to obtain routing information. The LRF may interact with a GMLC or other types of location server functions in order to obtain location information. Further definitions of the LRF is provided in [3G TS 23.167].

#### **7.16.12 Service centralization and continuity application server (SCC AS)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.11.

The SCC AS is an IMS Application that can provide functionality required to enable IMS Centralized Services as defined in [3G TS 23.292], and can provide IMS-based mechanisms for enabling service continuity of multimedia sessions as defined in [3G TS 23.237].

#### **7.16.13 Emergency access transfer function (EATF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.11a.

The EATF provides IMS-based mechanisms for enabling service continuity of IMS emergency sessions. It is a function in the serving (visited if roaming) IMS network, providing the procedures for IMS emergency session anchoring and PS to CS access transfer as defined in [TS 23.237].

##### **7.16.13.1 Access transfer control function (ATCF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.12.

The ATCF is a function in the serving (visited if roaming) IMS network. It enables SRVCC Session Transfer mechanisms in the serving network for a UE. The SCC AS can provide Session Transfer mechanisms in the serving network, if an ATCF is present in the SIP registration path of the UE, as defined in [TS 23.237].

#### **7.16.14 Access transfer gateway (ATGW)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.7.13.

The ATGW is a media function in the serving (visited if roaming) IMS network. It may anchor the media for enhanced SRVCC procedure as defined in [TS 23.237].

#### **7.17 Signalling gateway function (SGW)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.8.

The SGW performs the signalling conversion (both ways) at transport level between the SS7-based transport and the IP-based transport of signalling (i.e., between Sigtran SCTP/IP and SS7 MTP). The SGW does not interpret the application layer (e.g., MAP, CAP, BICC, ISUP) messages but may have to interpret the underlying SCCP or SCTP layer to ensure proper routing of the signalling.

#### **7.18 Global text telephony specific entities**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.9.

Interworking between cellular text modem (CTM) and text telephony standards (e.g., [ITU-T V.18]) used in external networks can be supported by three methods:

- Routing calls through a CTM special resource function (CTM-SRF) in the core network. The CTM-SRF is linked into the call path via CAMEL procedures. Depending on operator configuration, the CTM-SRF may also be linked into the call path for emergency calls.
- A CTM/text telephone converting function included along the speech call path selected by the network after an indication from the terminal that CTM is required.
- A CTM/text telephone converting function included in all speech call paths.

Further information of the support for text telephony is found in [3G TS 23.226].

For further details of CTM, see [3G TS 26.226].

### **7.19 Security gateway (SEG)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.10.

The UMTS network domain shall be logically and physically divided into security domains in order to protect IP-based control plane signalling. These security domains typically coincide with operator borders.

The interface between different security domains is protected by security gateways (SEGs). The SEGs are responsible for enforcing the security policy of an IP security domain towards other SEGs in the destination IP security domain. All NDS/IP traffic shall pass through a SEG before entering or leaving a security domain. The security policy between security domains is subject to interdomain agreements. This may differ from the security policy within the same security domain, which is optional to implementation and unilaterally decided by the security domain operator. For further details of SEG, see [3G TS 33.210].

### **7.20 Application function (AF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.11.

The Application Function (AF) is an element offering applications that require the control of IP bearer resources or the control of flow based bearer charging. The AF is capable of communicating with the PCRF to transfer dynamic QoS-related service information and/or dynamic charging-related service information.

One example of an AF is the PCSCF of the IM CN subsystem.

### **7.21 GPRS service switching function (gprsSSF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.4.4.

GPRS service switching function (gprsSSF) is a functional entity that interfaces the SGSN to the gsmSCF. The concept of the gprsSSF is derived from the IN SSF, but uses different triggering mechanisms because of the nature of the mobile network.

### **7.22 GSM service control function (gsmSCF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.4.1.

GSM service control function (gsmSCF) is a functional entity that contains the CAMEL service logic to implement operator specific service. It interfaces with the gsmSSF, the gsmSRF and the HLR.

### **7.23 GSM service switching function (gsmSSF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.4.2.

GSM service switching function (gsmSSF) is a functional entity that interfaces the MSC/GMSC to the gsmSCF. The concept of the gsmSSF is derived from the IN SSF, but uses different triggering mechanisms because of the nature of the mobile network.

### **7.24 GSM specialized resource function (gsmSRF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.4.3.

GSM specialized resource function (gsmSRF) is a functional entity, which provides various specialized resources. It interfaces with the gsmSCF and with the MSC. This entity is defined in [ITU-T Q.1214] with variations defined in [3G TS 23.078].

### **7.25 Cell broadcast centre (CBC)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.5.1.

The CBC shall be responsible for the management of CBS messages and for determining the CBS delivery parameters of the BSS/RNS. The CBC may be connected to several BSCs/RNCs. The CBC is regarded to be integrated as a node into the core network.

NOTE – Whether it should be possible that an RNC is connected to at least two CBCs at the same time (the "normal" one as in GSM and a second one for LCS) is for further study and depends on the solution taken for LCS.

### **7.26 Number portability database (NPDB)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.6.1.

The Number Portability Database (NPDB) is the central element of the IN based solution for Mobile Number Portability (MNP). MNP is the ability for a mobile subscriber to change the GSM subscription network within a portability cluster (e.g., a country) whilst retaining his/her original MSISDN or MSISDNs.

The NPDB stores the table of correspondence between MSISDNs and Subscription networks. Upon request of the (gateway or visited) MSC, the NPDB retrieves from the MSISDN the Routing Number pointing out the Subscription network.

### **7.27 Mobile number portability/signalling relay function (MNP-SRF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.6.2.

The MNP-Signalling Relay Function (MNP-SRF) is the central element of the Signalling Relay based solution for Mobile Number Portability.

The MNP-SRF obtains the routing information from a NP database to identify the subscription network associated with a particular national MSISDN. Upon request from gateway MSC, the MNP-SRF may perform one of the following actions:

- the MNP-SRF will reply back to the GMSC with the necessary routing information to route the call;
- the message is relayed to the HLR;
- the message is relayed to MNP-SRF in the subscription network.

For non-call related signalling (e.g., delivery of SMS), only cases 2 and 3 are applicable.

### **7.28 Gateway location register (GLR)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.2.1.

The gateway location register (GLR) handles location management of roaming subscriber in visited network without involving HLR. The location register function in the GLR stores subscription information and routing information for both CS services and PS services. This entity can be located only in a visited PLMN. The GLR is an optional function entity to optimize signalling traffic between PLMNs.

### **7.29 Intermediate GPRS serving node (IM-GSN)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.2.3.

The intermediate GPRS serving node (IM-GSN) is used as serving GSN towards home network and relay some PDU notification messages between serving GSN and gateway GSN. This entity can be located only in a visited PLMN.

### **7.30 Intermediate mobile-service switching centre (IM-MSC)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.2.2.

The intermediate mobile-services switching centre (IM-MSC) is used as serving MSC towards home network and relays some messages between home network and serving MSC. This entity can be located only in a visited PLMN.

### **7.31 Multimedia broadcast multicast service (MBMS) specific entities**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.14.

The Multimedia Broadcast Multicast Service (MBMS) is a point-to-multipoint service in which data is transmitted from a single source entity to multiple recipients. [TS 23.246] contains the technical realization of the service.

#### **7.31.1 Broadcast-multicast service centre (BM-SC)**

The Broadcast-Multicast Service Centre provides functions for MBMS user service provisioning and delivery. It may serve as an entry point for content provider MBMS transmissions, used to authorize and initiate MBMS Bearer Services within the PLMN and can be used to schedule and deliver MBMS transmissions.

#### **7.31.2 Multimedia broadcast-multicast service gateway (MBMS-GW)**

The MBMS GW provides functions in the EPS for controlling MBMS session initiation/modification/termination by the MBMS User Service and for providing delivery of IP Multicast datagrams from the SGi-mb reference point to downstream nodes in the MBMS Service Area with a specified quality of service.

#### **7.31.3 Multi-cell/multicast coordination entity (MCE)**

The MCE is a functional entity providing functions for admission control and allocation of radio resources by E UTRAN and for MBMS session control. See [TS 36.300].

### **7.32 Generic user profile (GUP) server**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.16.

The GUP Server is a functional entity providing a single point of access to the Generic User Profile data of a particular subscriber. The architecture does not specify or limit the physical location of the GUP Server enabling flexibility in the implementations. For further details of the GUP Server, see [TS 23.240].

### **7.33 Policy and charging rules function (PCRF)**

The Policy and Charging Rules Function (PCRF) acts as a policy decision point for policy and charging control of service data flows/applications and IP bearer resources. The PCRF selects and provides the applicable policy and charging control decision to the PCEF and, if applicable, application detection and control decision to the TDF or PCEF with application detection and control feature.

When the Gxx interface applies, the PCRF maintains the correlation between the GW control session and the IP-CAN session. The PCRF also acts as an information exchange point a relay between BBERF and PCEF to forward event triggers, which can't be transferred directly.

When the Sd interface applies, the PCRF maintains the correlation between the IP-CAN session and the TDF session. Events subscribed by the TDF are reported by the PCRF. PCRF is the policy and charging control element. PCRF functions are described in more detail in [TS 23.203].

When S9a interface applies, the PCRF provides to the BPCF the UE/H(e)NB local IP address and UDP port number, the QoS rules and PCC rules over S9a interface. PCRF maintains the correlation between the GW control session over S9a interface and the IP-CAN session over Gx interface (if IP-CAN session over Gx interface is available).

When S15 interface applies, the PCRF provides dynamic QoS control policies to the BPCF for the purpose of allocation of QoS resources in the Fixed Broadband Access Network for HNB CS traffic. PCRF is the policy and charging control element. PCRF functions are described in more detail in [TS 23.203].

In non-roaming scenario, there is only a single PCRF in the HPLMN associated with one UE's IP-CAN session.

In a roaming scenario with local breakout of traffic and/or when a Gxx interface applies there are two PCRFs associated with one UE's IP-CAN session:

- H-PCRF that resides within the H-PLMN;
- V-PCRF that resides within the V-PLMN.

A single logical PCRF entity may be deployed by means of multiple and separately addressable PCRFs in the PLMN. In this case, the PCRF discovery and selection is enabled by Diameter Routing Agency (DRA).

### **7.34 Policy and charging enforcement function (PCEF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.18.

The Policy and Charging Enforcement Function (PCEF) acts as a policy enforcement point for policy and charging control of IP bearer resources.

This functional entity is located at the Gateway (e.g., GGSN in the GPRS case) and in the PDN-GW for EPS).

The functionality of PCEF is described in [TS 23.203], [TS 23.401] and [TS 23.402].

### **7.35 Support of short message service over generic 3GPP Internet protocol access (SMSIP) specific entities**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.19.

Support of Short Message Service over generic 3GPP Internet Protocol access (SMSIP) provides 3GPP SMS messaging services across any form of IP Connectivity Access Network. [TS 23.204] contains the technical realization of the service.

#### **7.35.1 IP-short-message-gateway (IP-SM-GW)**

The IP Short Message Gateway function is used for two functions: to deliver SMS messages over the IP network and to provide interworking between SMS users and Instant Messaging users. The interworking function translates between MAP and SIP signalling to convey messages and responses between the two systems. Both functions are described in [TS 23.204].

### **7.36 Subscription profile repository (SPR)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.20.

The SPR logical entity contains all subscriber/subscription related information needed for subscription-based policies and charging control by the PCRF.

### **7.37 Service data flow based credit control function**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.21.

The Service Data Flow Based Credit Control Function performs online credit control functions. It is a functional entity embedded in the Online Charging Function (OCF) within the Online Charging System. (OCS) as specified in [TS 32.296].

### **7.38 Bearer binding and event reporting function (BBERF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.24.

The Bearer Binding and Event Reporting Function (BBERF) acts as a policy enforcement point for bearer binding, uplink bearer binding verification and event reporting to the PCRF when Gxx applies.

This function entity is located at a GW (e.g., S-GW in the 3GPP access with PMIP based S5/S8 case, HSGW in the HRPD case, A-GW in the non-3GPP access when PMIP or DSMIPv6 based mobility is used, ePDG with PMIP based S2b or Untrusted S2c case if Gxb\* applies).

The BBERF in the ePDG supports only reporting of the UE's Local IP address and UDP port number to the PCRF. Bearer binding and bearer binding verification functions are not supported.

### **7.39 Traffic detection function (TDF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.28.

The Traffic Detection Function (TDF) is a functional entity that performs application detection and control.

The functional description of the TDF is in [TS 23.203].



## **7.40 Specific entities to facilitate communications with packet data networks and applications**

### **7.40.1 Machine type communication-interworking function (MTC-IWF)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.29.1

The Machine Type Communication-InterWorking Function (MTC-IWF) is a functional entity that acts as an interface between the PLMN and a Services Capability Server (SCS) to provide specific MTC functionalities in the PLMN such as device triggering.

The functional description of the MTC-IWF is in [TS 23.682].

### **7.40.2 Machine type communication- authentication, authorization and accounting (MTC-AAA)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 4a.29.2

The Machine Type Communication-Authentication, Authorization and Accounting (MTC-AAA) is a functional entity that translates an IMSI to the external identifier(s) of the user.

The functional description of the MTC-AAA is in [TS 23.682].

## **8 Interfaces and reference points**

### **8.1 C interface (Gateway mobile switching centre server (GMSC server) – Home location register (HLR))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.1.2.

The gateway MSC server must interrogate the HLR of the required subscriber to obtain routing information for a call or a short message directed to that subscriber.

Signalling on this interface uses the mobile application part (MAP), which in turn uses the services of transaction capabilities.

For customized application for mobile network enhanced logic (CAMEL) purposes, this interface is used, e.g., at terminating calls to exchange routing information, subscriber status, location information, subscription information, etc.

### **8.2 D interface (Visitor location register (VLR) – Home location register (HLR))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.1.3.

This interface is used to exchange the data related to the location of the mobile station and to the management of the subscriber. The main service provided to the mobile subscriber is the capability to set up or to receive calls within the whole service area. To support this, the location registers have to exchange data. The VLR informs the HLR of the location of a mobile station managed by the latter and provides it (either at location updating or at call set-up) with the roaming number of that station. The HLR sends to the VLR all the data needed to support the service to the mobile subscriber. The HLR then instructs the previous VLR to cancel the location registration of this subscriber. Exchanges of data may occur when the mobile subscriber requires a particular service, when he wants to change some data attached to his subscription or when some parameters of the subscription are modified by administrative means.

Signalling on this interface uses the mobile application part (MAP), which in turn uses the services of transaction capabilities.

For customized application for mobile network enhanced logic (CAMEL) purposes, this interface is used to send the CAMEL related subscriber data to the visited PLMN and for provision of mobile station roaming number (MSRN). The interface is also used for the other purposes, e.g., to retrieve subscriber status and location information of the mobile subscriber or to indicate suppression of announcement for a CAMEL service.

### **8.3 E interface (Mobile switching centre server (MSC server) – Mobile switching centre server (MSC server))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.1.4.

When a mobile station moves from one MSC area to another during a call, a handover procedure has to be performed in order to continue the communication. For that purpose, the MSC servers have to exchange data to initiate and then to realize the operation.

After the handover operation has been completed, the MSC servers will exchange information to transfer A interface or Iu-interface signalling as defined in [3G TS 23.009].

When a short message is to be transferred between a mobile station and short message service centre (SC), in either direction, this interface is used to transfer the message between the MSC server serving the mobile station and the MSC server, which acts as the interface to the SC.

Signalling on this interface uses the mobile application part (MAP), which in turn uses the services of transaction capabilities (see [3G TS 29.002]).

### **8.4 F interface (Mobile switching centre server (MSC server) – Equipment identity register (EIR))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.1.5.

This interface is used between MSC server and EIR to exchange data, in order that the EIR can verify the status of the IMEI retrieved from the mobile station.

Signalling on this interface uses the mobile application part (MAP), which in turn uses the services of transaction capabilities.

### **8.5 G interface (Visitor location register (VLR) – Visitor location register (VLR))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.1.6.

When a mobile subscriber moves from a VLR area to another location registration procedure will happen. This procedure may include the retrieval of the IMSI and authentication parameters from the old VLR.

Signalling on this interface uses the mobile application part (MAP), which in turn uses the services of transaction capabilities.

### **8.6 Gc interface (Home location register (HLR) – Gateway GPRS support node (GGSN))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.2.3.

This optional signalling path may be used by the GGSN to retrieve information about the location and supported services for the mobile subscriber, to be able to activate a packet data network address.

There are two alternative ways to implement this signalling path:

- If an SS7 interface is implemented in the GGSN, signalling between the GGSN and the HLR uses the mobile application part (MAP), which in turn uses the services of transaction capabilities (TCAP);
- If there is *no* SS7 interface in the GGSN, any GSN in the same PLMN and which has an SS7 interface installed can be used as a GTP to MAP protocol converter, thus forming a signalling path between the GGSN and the HLR.

### **8.7 Gf interface (Equipment identity register (EIR) – Serving GPRS support node (SGSN))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.2.4.

This interface is used between SGSN and EIR to exchange data, in order that the EIR can verify the status of the IMEI retrieved from the mobile station.

Signalling on this interface uses the mobile application part (MAP), which in turn uses the services of transaction capabilities (TCAP).

### **8.8 Reference point GGSN – Packet data networks (Gi reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 7.2.

This is the reference point between the GGSN and a packet data network. It may be an operator external public or private packet data network or an intra operator packet data network, e.g., for provision of IMS services.

### **8.9 GLa interface (Gateway location register (GLR) – Home location register (HLR))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.1.

In circuit switched domain, this interface is the same as that between the VLR and the HLR. The HLR regards the GLR as the VLR via this interface. On the other hand, in packet switched domain, this interface is the same as that between the SGSN and the HLR. The HLR regards the GLR as the SGSN via this interface.

### **8.10 GLb interface (Gateway location register (GLR) – Visitor location register (VLR))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.2.

This interface is the same as those between the VLR and the HLR. The VLR regards the GLR as the HLR via this interface.

### **8.11 GLc interface (Gateway location register (GLR) – Serving GPRS support node (SGSN))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.3.

This interface is the same as those between the SGSN and the HLR. The SGSN regards the GLR as the HLR via this interface.

### **8.12 GLd interface (Gateway location register (GLR) – Intermediate mobile-services switching centre (IM-MSC))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.4.

In the network with the GLR, when the IM-MSC receives a message, it interrogates the GLR for the routing information of the MSC. However, this interface is internal because GLR and IM-MSC are implemented in the same physical node and the protocol on this interface is not specified.

### **8.13 GLe interface (Gateway location register (GLR) – Intermediate GPRS serving node (IM-GSN))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.5.

In the network with the GLR when the IM-GSN receiving a PDU notification from the GGSN, the IM-GSN relays the notification to the SGSN by interrogating via the interface the routing information to the GLR. The interrogation uses the same operation on the interface between the SGSN and the HLR.

### **8.14 GLf interface (Gateway location register (GLR) – Short message service-gateway mobile switching centre (SMS-GMSC))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.6.

This interface is used to forward mobile-terminated short messages in the network with the GLR in case of SMS transfer over GPRS. Signalling on this interface uses the mobile application part (MAP).

The SMS-GMSC regards the GLR as the SGSN via this interface.

### **8.15 GLg interface (Intermediate mobile-services switching centre (IM-MSC) – Short message service-gateway mobile switching centre (SMS-GMSC))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.7.

This interface is used to forward short messages in the network with the GLR in case of SMS transfer over non-GPRS. Signalling on this interface uses the mobile application part (MAP).

The SMS-GMSC regards the IM-MSC as the MSC via this interface.

### **8.16 GLh interface (Intermediate mobile-services switching centre (IM-MSC) – Mobile switching centre (MSC))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.8.

This interface is used to forward short messages in the network with the GLR in case of SMS transfer over non-GPRS. Also this interface is used to exchange data needed by the MSC to perform subscriber authorization and allocate network resources. Signalling on this interface uses the mobile application part (MAP).

### **8.17 GLi interface (Intermediate mobile-services switching centre (IM-MSC) – Gateway mobile location centre (GMLC))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.9.

Also this interface is used to exchange data needed by the MSC to perform subscriber authorization and allocate network resources. Signalling on this interface uses the mobile application part (MAP). The GMLC regards the IM-MSC as the MSC via this interface.

#### **8.18 GLj interface (Intermediate GPRS serving node (IM-GSN) – Gateway GPRS support node (GGSN))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.10.

In the network with the GLR when receiving a PDP PDU from the external network, the GGSN sends a notification to the IM-GSN by the routing information from the HLR. The GGSN regards the IM-GSN as the SGSN via this interface.

#### **8.19 GLk interface (Intermediate GPRS serving node (IM-GSN) – Serving GPRS support node (SGSN))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause A.5.11.

In the network with the GLR when receiving a PDP notification from the GGSN, the IM-GSN relays the notification to the SGSN by the routing information from the GLR. The SGSN regards the IM-GSN as the GGSN via this interface.

#### **8.20 Gn interface (Gateway GPRS support node (GGSN) – Serving GPRS support node (SGSN))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.2.2.

This interface is used to support mobility between the SGSN and GGSN. The Gn interface is used when GGSN and SGSN are located inside one PLMN. The Gn interface also includes a part which allows SGSNs to communicate subscriber and user data, when changing SGSN.

Signalling on this interface uses the user datagram protocol, UDP/IP.

#### **8.21 Gp interface (Serving GPRS support node (SGSN) – External data network)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.2.2.

The Gp interface is used if GGSN and SGSN are located in different PLMNs. The Gp interface also includes a part that allows SGSNs to communicate subscriber and user data, when changing SGSN.

Signalling on this interface uses the user datagram protocol, UDP/IP.

#### **8.22 Gr interface (Home location register (HLR) – Serving GPRS support node (SGSN))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.2.1.

This interface is used to exchange the data related to the location of the mobile station and to the management of the subscriber. The main service provided to the mobile subscriber is the capability to transfer packet data within the whole service area. The SGSN informs the HLR of the location of a mobile station managed by the latter. The HLR sends to the SGSN all the data needed to support the service to the mobile subscriber. Exchanges of data may occur when the mobile subscriber requires a particular service, when he wants to change some data attached to his subscription or when some parameters of the subscription are modified by administrative means.

Signalling on this interface uses the mobile application part (MAP), which in turn uses the services of transaction capabilities (TCAP).

### **8.23 Gs interface (Mobile switching centre (MSC)/Visitor location register (VLR) – Serving GPRS support node (SGSN))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.3.1.

The SGSN may send location information to the MSC/VLR via the optional Gs interface. The SGSN may receive paging requests from the MSC/VLR via the Gs interface. The MSC/VLR may indicate to an SGSN, via the Gs interface, that an MS is engaged in a service handled by the MSC.

Signalling on this interface uses connectionless SCCP (without TCAP). SCCP global title (GT) is used for addressing.

### **8.24 gsmSCF – HLR interface**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.4.4.

This interface is used by the gsmSCF to request information from the HLR. As a network operator option, the HLR may refuse to provide the information requested by the gsmSCF.

This interface is also used for USSD operations, both for gsmSCF-initiated dialogues and MS initiated dialogues (relayed via HLR). It is a network operator option whether to support or not USSD operations on this interface.

### **8.25 gsmSCF – gsmSRF interface**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.4.5.

This interface is used by the gsmSCF to instruct the gsmSRF to play tones/announcements to the users.

### **8.26 gsmSSF – gsmSCF interface**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.4.2.

This interface is used by the gsmSCF to control a call in a certain gsmSSF and to request the gsmSSF to establish a connection with a gsmSRF. Relationships on this interface are opened as a result of the gsmSSF sending a request for instructions to the gsmSCF.

### **8.27 gprsSSF – gsmSCF interface (Ge reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.4.8.

This interface is used by the gsmSCF to control a GPRS session or individual PDP Context in a certain gprsSSF. Relationships between the gprsSSF and the gsmSCF (GPRS dialogues) on this interface are opened as a result of the gprsSSF sending a request for instructions to the gsmSCF.

### **8.28 Interface between the CBC and RNS (Iu\_BC interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.5.1.

The interface between the CBC and the RNS is specified in the 25.41x-series of Technical Specifications.

The CBC-RNS interface is used to carry information concerning:

- the CBS messages itself; and
- CBS delivery parameter.

### **8.29 Interface between the CBC and MME (SBc interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.5.2.

Reference point between CBC and MME for warning message delivery and control functions. This interface is specified in [TS 29.168].

### **8.30 Interface between the CBC and BSC**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.5.3.

The interface between the CBC and the BSC is specified in [TS 48.049].

### **8.31 H interface (Home location register (HLR) – Authentication centre (AuC))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.3.2.

When an HLR receives a request for authentication and ciphering data for a mobile subscriber and it does not hold the requested data, the HLR requests the data from the AuC. The protocol used to transfer the data over this interface is not standardized.

### **8.32 IuCS interface (Mobile switching centre (MSC) – RNS or BSS)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clauses 6.2.1.2 and 6.2.1.3.

The IuCS interface between the MSC and its RNS or BSS is specified in the 25.41x-series of UMTS Technical Specifications.

The RNS-MSC interface is used to carry information concerning:

- RNS management;
- call handling;
- mobility management.

### **8.33 IuPS interface (Serving GPRS support node (SGSN) – RNS or BSS))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clauses 6.2.2.2 and 6.2.2.3.

The IuPS interface between SGSN and RNS/BSS is used to carry information concerning:

- packet data transmission;
- mobility management.

The IuPS interface is defined in the 25.41x-series of 3G Technical Specifications.

### **8.34 A interface (Mobile switching centre (MSC) – Base station system (BSS))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.2.1.1.

The A interface between the MSC and its BSS is specified in the 48-series of Technical Specifications.

The BSS-MSC interface is used to carry information concerning:

- BSS management;
- call handling;
- mobility management.

### **8.35 Gb interface (Serving GPRS support node (SGSN) – Base station system (BSS))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.2.2.1.

The BSS-SGSN interface is used to carry information concerning:

- packet data transmission;
- mobility management.

The Gb interface is defined in [3G TS 48.014], [3G TS 48.016] and [3G TS 48.018].

### **8.36 Reference point GMLC – external LCS client (Le reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 7.3.

At this reference point, external LCS clients request services from the PLMN.

### **8.37 Interface between the MSC and its associated GCR (I interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.1.1.

The GCR is the management data base for the voice group or broadcast calls in the area controlled by the associated MSC(s). Whenever the MSC needs data related to a requested voice group or broadcast call it interrogates the GCR to obtain the respective voice group or broadcast call attributes. The protocol used to transfer the data over this interface is not standardised.

### **8.38 LCS interfaces not using MAP**

The following interfaces are not based on MAP in LCS.

#### **8.38.1 Interface between GMLC and External LCS Client (Le interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.3.8.

The Le interface is used by the external LCS client to retrieve location information from the LCS server. Signalling on this interface may use the OMA Mobile Location Protocol (MLP) and Open Service Access Application Programming Interface (OSA-API).

#### **8.38.2 Interface between GMLC and GMLC (Lr interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.3.11.

The Lr interface is used by the GMLC to communicate with other GMLCs. Signalling on this interface may use the OMA Roaming Location Protocol (RLP).

#### **8.38.3 Interface between GMLC and MME (SLg interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.3.12.



The SLg interface is used by the GMLC to communicate with MMEs. The SLg interface is defined in [TS 29.172].

#### **8.38.4 Interface between MME and E-SMLC (SLs interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.3.13.

The SLs interface is used to convey LCS messages between the MME and E-SMLC. It is also used for tunnelling positioning protocol messages between the E-SMLC and either E-UTRAN or UE which are transparent to the MME as described in [TS 36.305]. The SLs interface is defined in [TS 29.171].

#### **8.38.5 Interface between GMLC and HSS (SLh interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.3.14.

SLh interface between GMLC and HSS. This interface is used by the GMLC to request the address of the visited MME for a particular target UE whose location has been requested. The SLh interface is defined in [TS 29.173].

### **8.39 LCS interfaces using MAP**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.3.1.

The following interfaces are based on MAP in LCS.

#### **8.39.1 Lh interface (interface between GMLC and HLR)**

This interface is used by the GMLC to request the address of the visited MSC or SGSN for a particular target UE whose location has been requested (see [3G TS 29.002]).

#### **8.39.2 Lg interface (interface between GMLC – MSC and GMLC – SGSN)**

This interface is used by the GMLC to convey a location request to the MSC or SGSN currently serving a particular target UE whose location was requested. The interface is used by the MSC or SGSN to return location results to the GMLC (see [3G TS 29.002]).

#### **8.39.3 Lc interface (between GMLC and gsmSCF, CAMEL)**

This interface is used to get location information for CAMEL-based services GMLC (see [3G TS 29.002]).

### **8.40 Mc reference point (Mobile switching centre server (MSC Server) – Circuit switched media gateway (CS-MGW))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.1.7.

The Mc reference point describes the interfaces between the MGCF and IMS-MGW, between the MSC server and CS-MGW, and between the GMSC Server and CS-MGW. It has the following properties:

- Full compliance with [ITU-T H.248.1].
- Flexible connection handling that allows support of different call models and different media processing purposes not restricted to ITU-T H.323 usage.
- Open architecture where extensions/packages definition work on the interface may be carried out.

- Dynamic sharing of MGW physical node resources. A physical MGW can be partitioned into logically separate virtual MGWs/domains consisting of a set of statically allocated terminations.
- Dynamic sharing of transmission resources between the domains as the MGW controls bearers and manage resources according to the ITU-T H.248.1 protocols.

The functionality across the Mc reference point will need to support mobile specific functions such as SRNS relocation/handover and anchoring. It is expected that current H.248.1/IETF Megaco standard mechanisms can be applied to enable this.

#### **8.41 Mobile switching centre (MSC) – gsmSCF interface**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.4.6.

This interface is used by the MSC to send supplementary service invocation notifications to the gsmSCF.

#### **8.42 Nb reference point (Circuit switched media gateway (CS-MGW) – Circuit switched media gateway (CS-MGW))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.1.9.

Over the Nb reference point the bearer control and transport are performed. The transport may be RTP/UDP/IP [IETF RFC 1889] and [IETF RFC 768] or AAL 2 [ITU-T I.363.2] for transport of user data. In the R00 architecture, different options for user data transport and bearer control shall be possible on Nb, for example: AAL 2/Q.AAL 2, STM/none, RTP/H.245, IPBC.

#### **8.43 Nc reference point (Mobile switching centre server (MSC server) – Gateway mobile switching centre server (GMSC server))**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.1.8.

Over the Nc reference point, the network-network-based call control is performed. Examples of this are ISUP or an evolution of ISUP for bearer independent call control (BICC). Different options for signalling transport on Nc shall be possible including IP.

#### **8.44 Reference point fixed networks – MSC**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 7.1.

The MSC is based on a normal ISDN exchange. It has, for call control, the same reference points as the fixed network exchanges. The signalling reference point considered in the Technical Specifications is related to the Signalling System No. 7 user parts TUP and ISUP associated to the circuits used for incoming and outgoing calls.

#### **8.45 IM subsystem reference points**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.

##### **8.45.1 Reference point HSS – CSCF (Cx reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.1.

The Cx reference point supports information transfer between CSCF and HSS.

The main procedures that require information transfer between CSCF and HSS are:

- 1) Procedures related to serving CSCF assignment.
- 2) Procedures related to routing information retrieval from HSS to CSCF.
- 3) Procedures related to authorization (e.g., checking of roaming agreement).
- 4) Procedures related to authentication: transfer of security parameters of the subscriber between HSS and CSCF.
- 5) Procedures related to filter control: transfer of filter parameters of the subscriber from HSS to CSCF.

Further information on the Cx reference point is provided in [3G TS 23.228].

#### **8.45.2 Reference point CSCF – UE (Gm reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.2.

The Gm reference point supports the communication between UE and IM CN subsystem, e.g., related to registration and session control.

The protocol used for the Gm reference point is SIP (as defined by [IETF RFC 3261]), other relevant RFCs, and additional enhancements introduced to support 3GPP's needs).

#### **8.45.3 Reference point MGCF – IMS-MGW (Mn reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.3.

The Mn reference point describes the interfaces between the MGCF and IMS-MGW in the IMS. It has the following properties:

- Full compliance with the ITU-T H.248.1 standard functions for IMS-PSTN/PLMN interworking.
- Flexible connection handling which allows support of different call models and different media processing purposes not restricted to ITU-T H.323 usage.
- Open architecture where extensions/Packages definition work on the interface may be carried out.
- Dynamic sharing of IMS-MGW physical node resources. A physical IMS-MGW can be partitioned into logically separate virtual MGWs/domains consisting of a set of statically allocated Terminations.
- Dynamic sharing of transmission resources between the domains as the IMS-MGW controls bearers and manage resources according to the ITU-T H.248.1 protocols and functions for IMS.

#### **8.45.4 Reference point MGCF – CSCF (Mg reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.4.

The Mg reference point allows the MGCF to forward incoming session signalling (from the PSTN) to the CSCF for the purpose of interworking with PSTN networks.

The protocol used for the Mg reference point is SIP (as defined by [IETF RFC 3261], other relevant RFCs, and additional enhancements introduced to support 3GPP's needs).

#### **8.45.5 Reference point AS-MRFC for media control (Cr reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.5a.

The Cr reference point allows interaction between an Application Server and an MRFC for media control.

The Cr reference point enables the MRFC to fetch and cache documents and resources from an Application Server and to return data to an Application Server.

The Cr reference point enables media control protocol requests, responses and notifications to be sent between the MRFC and an Application Server.

Further information on the Cr reference point is provided in [3G TS 23.218].

#### **8.45.6 Reference point AS-MRFC for session control (Mr' reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.5b.

The Mr' reference point allows interaction between an Application Server and an MRFC for session control without passing through an S-CSCF.

Further information on the Mr' reference point is provided in [3G TS 23.218].

#### **8.45.7 Reference point CSCF – MRFC (Mr reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.6.

The Mr reference point allows interaction between an S-CSCF and an MRFC.

The protocol used for the Mr reference point is SIP (as defined by [IETF RFC 3261], other relevant RFCs, and additional enhancements introduced to support 3GPP's needs).

#### **8.45.8 Reference point MRFC – MRFP (Mp reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.6a.

The Mp reference point has the following properties:

- Full compliance with [ITU-T H.248.1].
- Open architecture where extensions (packages) definition work on the interface may be carried out.

#### **8.45.9 Reference point CSCF – CSCF (Mw reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.7.

The Mw reference point allows the communication and forwarding of signalling messaging between CSCFs, e.g., during registration and session control.

#### **8.45.10 Reference point CSCF – BGCF (Mi reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.10.

This reference point allows the serving CSCF to forward the session signalling to the breakout gateway control function for the purpose of interworking to the PSTN networks.

The Mi reference point is based on external specifications, i.e., SIP [IETF RFC 3261].

#### **8.45.11 Reference point BGCF – MGCF (Mj reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.11.

This reference point allows the breakout gateway control function to forward the session signalling to the media gateway control function for the purpose of interworking to the PSTN networks.

The Mj reference point is based on external specifications, i.e., SIP [IETF RFC 3261].

#### **8.45.12 Reference point BGCF – BGCF (Mk reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.12.

This reference point allows the breakout gateway control function to forward the session signalling to another breakout gateway control function.

The Mk reference point is based on external specifications, i.e., SIP [IETF RFC 3261].

#### **8.45.13 Reference point CSCF – SLF (Dx reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.13.

This interface between CSCF and SLF is used to retrieve the address of the HSS which holds the subscription for a given user.

This interface is not required in a single HSS environment. An example for a single HSS environment is a server farm architecture.

Details are described in [3G TS 23.228].

#### **8.45.14 Reference point to IPv6 network services (Mb reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.14.

Via the Mb reference point, IPv6 network services are accessed. These IPv6 network services are used for user data transport. Note that GPRS provides IPv6 network services to the UE, i.e., the GPRS Gi reference point and the IMS Mb reference point may be the same.

#### **8.45.15 Reference point CSCF – AS or MRB (ISC reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clauses 6a.7.8a and 6a.7.15.

This interface is used with an MRB operating in In-Line mode and is described further in [3G TS 23.218]. The SCSCF receives a session initiation request from an MRB that originated from an Application Server requesting MRF resources and whose destination is an MRF resource identified by the MRB. The SCSCF routes the message to the identified MRFC. Subsequent messages in the same session dialog between the AS and MRFC traverse the MRB as well as the SCSCF.

This interface between CSCF and the application servers (i.e., SIP application server, OSA service capability server, or CAMEL IM-SSF) is used to provide services for the IMS.

Details are described in [3G TS 23.228].

#### **8.45.16 Reference Point E-CSCF – EATF (I4 Reference Point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.15a.

This is the interface between the Emergency CSCF and the EATF in serving network (i.e., EATF as defined in [TS 23.167]), it is used to provide services for emergency sessions.

#### **8.45.17 Reference Point I-CSCF - EATF (I5 Reference Point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.15b.

This is the interface between the Interrogating CSCF and the EATF in serving network (i.e., EATF as defined in [TS 23.167]), it is used to provide services for emergency sessions.

#### **8.45.18 Reference point HSS – SIP AS or OSA SCS (Sh reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.16.

The application server (SIP application server and/or the OSA service capability server) may communicate the HSS. The Sh interface is used for this purpose. Details are described in [3G TS 23.228], subclause 4.2.4.

#### **8.45.19 Reference point HSS – CAMEL IM-SSF (Si reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.17.

The CAMEL application server (IM-SSF) may communicate to the HSS. The Si interface is used for this purpose. Details are described in [3G TS 23.228], subclause 4.2.4.

#### **8.45.20 Reference point AS – MRB (Rc reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.9a.

The Rc reference point is used by the AS to request that media resources be assigned to a call when utilizing an MRB in both Query and In-Line modes (as described in [3G TS 23.218]).

#### **8.45.21 Reference point UE – AS (Ut reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.18.

The Ut interface resides between the UE and the SIP Application Server.

The Ut interface enables the user to manage information related to his services, such as creation and assignment of Public Service Identities, management of authorization policies that are used e.g., by Presence service, conference policy management, etc.

The AS may need to exhibit security related functions for the Ut interface, the details of these security functions are described in [3G TS 33.222].

#### **8.45.22 Reference point AS – SLF (Dh reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.19.

This interface between AS and SLF is used to retrieve the address of the HSS which holds the subscription for a given user.

This interface is not required in a single HSS environment. An example for a single HSS environment is a server farm architecture.

Details are described in [3G TS 23.228].

#### **8.45.23 Reference point CSCF/BGCF - IBCF (Mx reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.20.

The Mx reference point allows the communication and forwarding of signalling messages between a CSCF/BGCF and an IBCF, e.g., during session establishment.

#### **8.45.24 Reference point IBCF - TrGW (Ix reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.21.

This interface is used by the IBCF to control the TrGW, e.g., to request network address translation binding.

#### **8.45.25 Reference point ICSCF – AS (Ma reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.22.

This interface between InterrogatingCSCF and the Application Servers (i.e., SIP Application Server, OSA Service Capability Server, or CAMEL IM-SSF) is used to:

- forward SIP requests destined to a Public Service Identity hosted by an Application Server directly to the Application Server; and
- initiate a request on behalf of a user or Public Service Identity, if the AS has no knowledge of the serving SCSCF for that user or Public Service Identity.

Details are described in [3G TS 23.228].

#### **8.45.26 Reference point PCSCF – IMS Access Gateway (Iq reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.23.

The Iq reference point is between the ProxyCSCF and the IMS Access Gateway. It conveys the necessary information that is needed to allocate and release transport addresses.

Details are described in [3G TS 23.228].

#### **8.45.27 Reference point ECSCF – LRF (Ml reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.23a.

The Ml reference point allows the ECSCF to request the LRF to validate the location information received from the UE, to determine or query the LRF for routing information to emergency centres. Location information may be received from LRF and/or reference key to allow the PSAP to retrieve location at a later stage.

#### **8.45.28 Reference point IBCF - IBCF (Ici reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.24.

The Ici reference point allows two IBCFs to communicate with each other in order to provide the communication and forwarding of signalling messaging between IM CN subsystem networks.

#### **8.45.29 Reference point TrGW - TrGW (Izi reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.25.

The Izi reference point allows two TrGWs to forward media streams between IM CN subsystem networks.

#### **8.45.30 Reference point MSC Server - CSCF (I2 reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.27.

The I2 reference point is used to route session control signalling between the MSC Server enhanced for ICS and the home IMS, as defined in [3G TS 23.292] and in [3G TS 23.237]. This can be a roaming or an inter-operator reference point.

I2 is used to support one or more of the following features:

- MSC Server enhanced for ICS, as defined in [3G TS 23.292].
- MSC Server enhanced for ICS and SRVCC, as defined in [3G TS 23.292], [3G TS 23.216] and [3G TS 23.237];
- MSC Server enhanced for ICS and SRVCC with the MSC Server assisted mid-call feature as defined in [3G TS 23.237];
- MSC Server enhanced for ICS and SRVCC with the SRVCC for the call in alerting phase feature as defined in [3G TS 23.237].

#### **8.45.31 Reference Point MSC Server – TAS (I3 Reference Point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.28.

The I3 reference point is used between the MSC Server enhanced for ICS and the TAS to interwork CS signalling and communication service setting procedures, as defined in [3G TS 23.292].

#### **8.45.32 Reference Point ICS UE – SCC AS (I1 Reference Point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.7.29.

The I1 reference point is used between the ICS UE and the SCC AS for service control signalling over CS access, as defined in [TS 23.292].

#### **8.46 Reference point CSCF – Multimedia IP networks (Mm reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 7.4.

This is an IP interface between CSCF and IP networks. This interface is used, for example, to receive a session request from another SIP server or terminal.

#### **8.47 Reference point PDG – Packet data networks (Wi reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 7.6.

This is the reference point between the PDG and a packet data network. It may be an operator external public or private packet data network or an intra operator packet data network, e.g., for provision of IMS services.

#### **8.48 Reference point WAG – WLAN access network (Wn reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 7.7.

This is the reference point between the WAG and the WLAN access network. It is used to force traffic between a WLAN UE and PDG to go through the WAG.



#### **8.49 Interface between SGSN and SMS-GMSC or SMS-IW MSC (Gd Interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.3.3.

This interface is used to transfer short messages between SGSN and SMS-GMSC or SMS-IW MSC over GPRS. Signalling on this interface uses the Mobile Application Part (MAP) (see [3G TS 29.002]).

#### **8.50 Interfaces internal to, or related to the evolved packet core (EPC)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clauses 6.2.3, 6.4.3 and 6.4.4.

##### **8.50.1 Interface between MME and E-UTRAN (S1-MME interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.2.3.1.

Reference point for the control plane protocol between E-UTRAN and MME. This interface is defined in [3G TS 24.301].

##### **8.50.2 Interface between S-GW and E-UTRAN (S1-U interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.2.3.2.

Reference point between E-UTRAN and S GW for the per bearer user plane tunnelling. This interface is defined in [3G TS 29.281].

##### **8.50.3 Interface between MSC/VLR and MME (SGs interface) for EPC**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.3.4.

The SGs interface is the reference point between the MME and MSC/VLR which is used for the mobility management and paging procedures between EPS and CS domain, and it is based on the Gs interface procedures.

The SGs interface is used to provide Fallback for Location Services (LCS) and Call Independent Supplementary Services (SS).

The SGs interface is also used for the delivery of both mobile originating and mobile terminating SMS over EUTRAN in case SMSIP is not used.

The signalling on this interface uses SCTP. The SGs interface is defined in [3G TS 23.272] and [TS 29.118].

##### **8.50.4 Interface between MSC/VLR and MME (Sv interface) for EPC**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.3.5.

The Sv reference point provides SRVCC support for functions like sending Forward Relocation Message between MME and MSC Server. This interface is specified in [3G TS 29.280].

##### **8.50.5 Interface between MME and HSS (S6a interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.1.

This interface is used to exchange the data related to the location of the mobile station and to the management of the subscriber. The main service provided to the mobile subscriber is the capability

to transfer packet data within the whole service area. The MME informs the HSS of the location of a mobile station managed by the latter. The HSS sends to the MME all the data needed to support the service to the mobile subscriber. Exchanges of data may occur when the mobile subscriber requires a particular service, when he wants to change some data attached to his subscription or when some parameters of the subscription are modified by administrative means.

Signalling on this interface uses Diameter S6a/S6d Application as specified in [3G TS 29.272].

#### **8.50.6 Interface between SGSN and HSS (S6d interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.2.

This interface is used to exchange the data related to the location of the mobile station and to the management of the subscriber. The main service provided to the mobile subscriber is the capability to transfer packet data within the whole service area. The SGSN informs the HSS of the location of a mobile station managed by the latter. The HSS sends to the SGSN all the data needed to support the service to the mobile subscriber. Exchanges of data may occur when the mobile subscriber requires a particular service, when he wants to change some data attached to his subscription or when some parameters of the subscription are modified by administrative means.

Signalling on this interface uses Diameter S6a/S6d Application as specified in [3G TS 29.272].

#### **8.50.7 Interface between MME and S-GW (S11 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.3.

This interface is used to support mobility and bearer management between the MME and S-GW. This interface is specified in [3G TS 29.274].

#### **8.50.8 Interface between MME and MME (S10 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.4.

This interface is used to support user information transfer and MME relocation support between the MMEs. This interface is specified in [3G TS 29.274].

#### **8.50.9 Interface between S-GW and PDN-GW (S5 and S8 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.5.

These interfaces between S-GW and PDN-GW provide support for functions for packet data services towards end users during roaming and non-roaming cases (i.e., S8 is the inter PLMN variant of S5). These interfaces are specified in [3G TS 29.274] and [3G TS 29.281] for GTP, and in [3G TS 29.275] for PMIP.

#### **8.50.10 Interface between MME and EIR (S13 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.6.

This interface is used between MME and EIR to exchange data, in order that the EIR can verify the status of the IMEI retrieved from the Mobile Station.

Signalling on this interface uses the Diameter S13 Application in [3G TS 29.272].

#### **8.50.11 Interface between MME and SGSN (S3 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.7.

This interface enables user and bearer information exchange for inter 3GPP access network mobility in idle and/or active state. This interface is specified in [3G TS 29.274].

#### **8.50.12 Interface between S-GW and SGSN (S4 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.8.

This interface provides related control and mobility support between GPRS Core and the 3GPP Anchor function of Serving GW. In addition, if Direct Tunnel is not established, it provides the user plane tunnelling. This interface is specified in [3G TS 29.274] and [3G TS 29.281].

#### **8.50.13 Interface between S-GW and UTRAN (S12 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.9.

S12 is a reference point between UTRAN and Serving GW for user plane tunnelling when Direct Tunnel is established. It is based on the Iu-u/Gn-u reference point using the GTP-U protocol as defined between SGSN and UTRAN or respectively between SGSN and GGSN. Usage of S12 is an operator configuration option. This interface is specified in [3G TS 29.274] and [3G TS 29.281].

#### **8.50.14 Interface between Trusted non-3GPP IP Access and S-GW/P-GW (S2a interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.10.

It provides the user plane with related control and mobility support between trusted non 3GPP IP access and the Gateway. This interface is specified in [3G TS 29.275] and [3G TS 24.304] for PMIP and Client Mobile IPv4 FA mode, respectively.

#### **8.50.15 Interface between PDN-GW/S-GW and ePDG (S2b interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.11.

It provides the user plane with related control and mobility support between ePDG and the Gateway. This interface is specified in [3G TS 29.274] and [3G TS 24.281] for GTP, and in [3G TS 29.275] for PIMP.

#### **8.50.16 Interface between PDN-GW and UE (S2c interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.12.

It provides the user plane with related control and mobility support between UE and the Gateway. This reference point is implemented over trusted and/or untrusted non-3GPP Access and/or 3GPP access. This interface is specified in [3G TS 24.303].

#### **8.50.17 Interface between PDN-GW and 3GPP AAA Server/proxy (S6b interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.13.

It is the reference point between PDN GW and 3GPP AAA server/proxy for mobility related authentication and authorization. This reference point may also be used to retrieve and request storage of mobility parameters, such as the PDN GW Identity. This reference point may also be used to retrieve static QoS profile for a UE for non-3GPP access in case dynamic PCC is not supported. This interface is specified in [3G TS 29.273].

#### **8.50.18 Interface between untrusted non-3GPP IP access and 3GPP AAA server/proxy (SWa interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.14.

It enables support for the Untrusted non-3GPP IP Access with the 3GPP AAA Server/Proxy and transports access authentication, authorization and charging-related information in a secure manner. This interface is specified in [3G TS 29.273].

#### **8.50.19 Interface between trusted non-3GPP IP access and 3GPP AAA server/proxy (STa interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.15.

It connects the Trusted non-3GPP IP Access with the 3GPP AAA Server/Proxy and transports access authentication, authorization, mobility parameters and charging-related information in a secure manner. This interface is specified in [3G TS 29.273].

#### **8.50.20 Interface between 3GPP AAA server and 3GPP AAA proxy (SWd interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.16.

It connects the 3GPP AAA Proxy, possibly via intermediate networks, to the 3GPP AAA Server. This interface is specified in [3G TS 29.273].

#### **8.50.21 Interface between ePDG and 3GPP AAA server/proxy (SWm interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.17.

This reference point is located between 3GPP AAA Server/Proxy and ePDG and is used for AAA signalling (transport of mobility parameters, tunnel authentication and authorization data). This reference point also includes the MAG-AAA interface functionality and Mobile IPv6 NAS-AAA interface functionality. This interface is specified in [3G TS 29.273].

#### **8.50.22 Interface between ePDG and untrusted non-3GPP access (SWn interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.18.

This is the reference point between the Untrusted Non-3GPP IP Access and the ePDG. Traffic on this interface for a UE-initiated tunnel has to be forced towards ePDG. This interface is specified in [3G TS 29.273].

#### **8.50.23 Interface between ePDG and UE (SWu interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.19.

This is the reference point between the UE and the ePDG and supports handling of IPSec tunnels. The functionality of SWu includes UE-initiated tunnel establishment, user data packet transmission within the IPSec tunnel and tear down of the tunnel and support for fast update of IPSec tunnels during handover between two untrusted non-3GPP IP accesses. This interface is specified in [3G TS 24.302].

#### **8.50.24 Interface between HSS and 3GPP AAA Server (SWx interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.20.

This reference point is located between 3GPP AAA Server and HSS and is used for transport of authentication data. This interface is specified in [3G TS 29.273].

#### **8.50.25 Interface between UE and ANDSF (S14 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.21.

This reference point is between UE and ANDSF for direct queries via pull mechanism. It enables dynamic provision of information to the UE for Network discovery and selection procedures related to non-3GPP accesses. Push and/or combination of Pull-Push may be supported as well. This interface is specified in [3G TS 24.302].

#### **8.50.26 Reference point between HRDP AN and MME (S101 reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.22.

The S101 interface supports procedures for Pre-Registration, Session Maintenance and Active handovers between E-UTRAN and HRPD networks. This is based on tunnelling over S101 signalling of one technology while the UE is in the other technology as specified in TS 23.402. The HRPD air interface messages tunnelled over S101 in EUTRAN to HRPD mobility are defined in [3GPP2 C.S0087 0].

#### **8.50.27 Reference point between 3GPP2 1xCS IWS and MME (S102 reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.23.

The S102 reference point provides a tunnel between MME and 3GPP2 1xCS IWS to relay 3GPP2 1xCS signalling messages in order to support SRVCC as specified in [TS 23.216] and CS Fallback as specified in [TS 23.272]. 1x CS signalling messages are those messages that are defined for A21 interface as described in [3GPP2 A.S0008-C].

In case of CS Fallback to 1x CS network as specified in [TS 23.272], S102 Tunnel Redirection Procedure is used when the UE perform Tracking Area Update with MME change (as specified in [TS 23.402] in case of S101 tunnel redirection) while the UE is registered with the 1xRTT CS domain and the S102 session exists between the MME and the 1xCS IWS.

#### **8.50.28 Interface between HSGW and S-GW (S103 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.24.

The S103 interface between the Serving GW and HRPD PDSN HSGW supports the forwarding of DL data during mobility from E-UTRAN to HRPD as specified in [TS 23.402]. Signalling procedures on the S101 interface are used to set up tunnels on the S103 interface.

#### **8.50.29 Reference point between UE and CSG list server (Uh reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.25.

This reference point is used to provision the Allowed CSG list and the Operator CSG list subscription information to the mobile station via OMA DM or OTA. This interface is specified in [TS 24.285] for OMA DM and in [TS 31.102] for OTA.

#### **8.50.30 Reference point PDN-GW – packet data networks (SGi reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 7.2a.

This is the reference point between the PDN-GW and a packet data network. It may be an operator external public or private packet data network or an intra operator packet data network, e.g., for provision of IMS services. For more details see [3G TS 29.061].

#### **8.50.31 Reference point between the CSS and the S4-SGSN (S7d reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.26.

This reference point is used to transfer to the S4-SGSN the CSG subscription information stored in the VPLMN for roaming UEs.

Signalling on this interface uses Diameter S7d Application as specified in [TS 29.272].

#### **8.50.32 Reference point between the CSS and the MME (S7a reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.27

This reference point is used to transfer to the MME the CSG subscription information stored in the VPLMN for roaming UEs.

Signalling on this interface uses Diameter S7a Application as specified in [TS 29.272].

#### **8.50.33 Reference point between the MME and the SMS-GMSC/SMS-IW MSC/SMS Router (SGd reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.28

This reference point is used to transfer short messages between the MME and SMS-GMSC, SMS-IW MSC or SMS Router.

Signalling on this interface uses Diameter SGd Application as specified in [TS 29.338].

#### **8.50.34 Reference point between the HSS and the SMS-GMSC/SMS-IW MSC/SMS Router (S6c reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.4.29

This reference point is used to interrogate the HSS of the required subscriber to obtain routing information for a short message directed to that subscriber.

Signalling on this interface uses Diameter S6c Application as specified in [TS 29.336].

### **8.51 Number portability specific interfaces**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.6.

#### **8.51.1 IN-based solution: NPDB to MSC interface**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.6.1.1.

Upon receiving an ISUP IAM, the (gateway or visited) MSC send a database query to the NPDB as a result of analysis of the received MSISDN. The MSISDN is included in the query to the NPDB. The NPDB determines whether the MSISDN is ported or not. If not, it responds back to the MSC to continue the normal call setup procedure for MT calls (optionally providing the Routing Number). If it is ported, the NPDB responds back to the MSC with a Routing Number pointing out the Subscription network.

### **8.51.2 Signalling relay-based solution: GMSC to MNP-SRF interface**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.6.2.1.

Upon receiving an ISUP IAM, the gateway MSC sends a routing interrogation to the MNP-SRF, which in turn will perform one of the actions, described in clause 7.24, depending on the portability status of the subscriber and the network configuration (see [3G TS 23.066]).

### **8.51.3 Signalling relay-based solution: MNP-SRF to HLR interface**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.6.2.2.

When the MNP-SRF receives a routing interrogation from the GMSC or an interrogating network entity (non/call related signalling), and it determines that the subscriber is not ported or it has been ported from another network, the MNP-SRF relays the message to the HLR.

## **8.52 Reference points for 3GPP/WLAN interworking**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.

NOTE – With the introduction of Evolved Packet Core System, the 3GPP AAA server and 3GPP AAA Proxy provide a set of different and additional functions as specified in the EPC specific section of this specification.

### **8.52.1 Interface reference point 3GPP AAA Server - HLR (D'/Gr' reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.1.

This is the reference point between the 3GPP AAA server and the HLR up to and including Rel4 and the HSS in later releases. The functionality of this reference point is similar to that of the Wx reference point. For more information [see TS 23.234].

### **8.52.2 Reference point WLAN access network - 3GPP AAA proxy/server (Wa reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.2.

This is the reference point between the WLAN access network and 3GPP AAA Proxy or Server. The AAA protocol on this reference point is used to transport authentication, authorization and charging data.

### **8.52.3 Reference point 3GPP AAA server – 3GPP AAA proxy (Wd reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.3.

This is the reference point between the 3GPP AAA Server and Proxy. the purpose of the protocols crossing this reference point is to transport authentication, authorization and related information. For more information see [TS 23.234].

### **8.52.4 Reference point 3GPP AAA server/proxy – WAG (Wg reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.4.

This is the reference point between the 3GPP AAA server/proxy and WAG. It is used to provide information needed by the WAG to perform policy enforcement functions for authorised users and to transport per-tunnel based charging information from the WAG to the AAA Proxy in roaming scenarios.

### **8.52.5 Reference point PDG – packet data networks (Wi reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.5.

This is the reference point between the PDG and a packet data network. It may be an operator external public or private packet data network or an intra operator packet data network, e.g., for provision of IMS services.

### **8.52.6 Reference point 3GPP AAA Server/Proxy – PDG (Wm reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.6.

This is the reference point between the 3GPP AAA server/proxy and PDG. The functionality of this reference point is to enable:

- The 3GPP AAA Server/Proxy to retrieve tunnelling attributes and WLAN UE's IP configuration parameters from/via Packet Data Gateway
- Carrying messages for service authentication and authorization
- Carrying authentication data for the purpose of tunnel establishment, tunnel data authentication and encryption.

For more information see [TS 23.234].

### **8.52.7 Reference point WAG – WLAN access network (Wn reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.7.

This is the reference point between the WAG and the WLAN access network. It is used to force traffic between a WLAN UE and PDG to go through the WAG.

### **8.52.8 Reference point WAG – PDG (Wp reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.8.

This is the reference point between WAG and PDG. It is used to transport the Wu reference point protocol data packets.

### **8.52.9 Reference point WLAN UE – PDG (Wu reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.9.

This is the reference point between the 3GPP WLAN UE and PDG. The functionality of this reference point is to establish a tunnel between WLAN UE and PDG and to exchange data packets between WLAN UE and PDG.

### **8.52.10 Reference point HA – external packet data network (HGi reference point)**

The following text is based on the text in references [ETSI TS 123 327], [TTC TS-3GA-23.327], [ATIS 3GPP 23.327], [TTA TTAT.3G-23.327] and [CCSA-TSD-123 327], clause 5.5.

This reference point defines the interface from the HA to external PDN.

### **8.52.11 Reference point 3GPP AAA server - HSS (Wx reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.11.



This is the reference point between the 3GPP AAA server and HSS. The functionality of this reference point is to enable:

- Retrieval of authentication vectors
- Retrieval of WLAN access-related subscriber information (profile)
- Registration of the 3GPP AAA Server of an authorised WLAN user in the HSS
- Indication of change of subscriber profile
- Retrieval of online charging / offline charging function addresses from HSS.
- Retrieval of service related information

For more information see [TS 23.234].

#### **8.52.12 Reference point 3GPP AAA Server - SLF (Dw reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.9.12.

This reference point is between the 3GPP AAA Server and the SLF. The prime purpose of the protocol(s) crossing this reference point is to enable the 3GPP AAA Server to find the address of the HSS which holds the subscriber data for a given user identity in a configuration with multiple separately addressable HSSes.

#### **8.52.13 Reference point HA – UE (H1 reference point)**

The following text is based on the text in references [ETSI TS 123 327], [TTC TS-3GA-23.327], [ATIS 3GPP 23.327], [TTA TTAT.3G-23.327] and [CCSA-TSD-123 327], clause 5.5.

This is the reference point for signalling and user data transfer between UE and HA.

NOTE – H1 may be transported over IP connectivity provided by I-WLAN or the 3GPP access system.

#### **8.52.14 Reference point HA – 3GPP AAA architecture (H2 reference point)**

The following text is based on the text in references [ETSI TS 123 327], [TTC TS-3GA-23.327], [ATIS 3GPP 23.327], [TTA TTAT.3G-23.327] and [CCSA-TSD-123 327], clause 5.5.

This reference point defines the interface between HA and 3GPP AAA infrastructure (3GPP AAA server or 3GPP AAA proxy) and is used to transport authentication, authorization and charging-related information in a secure manner.

#### **8.52.15 Reference point 3GPP AAA server – online charging system (Wo reference point)**

The following text is based on the text in references [ETSI TS 123 234], [TTC TS-3GA-23.234], [ATIS 3GPP 23.234], [TTA TTAT.3G-23.234] and [CCSA-TSD-123 234], clause 6.3.4.

The Wo reference point is used by a 3GPP AAA Server to communicate with 3GPP Online Charging System (OCS). The prime purpose of the protocol(s) crossing this reference point is to transport online charging related information so as to perform credit control for the online charged subscriber.

#### **8.52.16 Reference point 3GPP AAA server – offline charging system (Wf reference point)**

The following text is based on the text in references [ETSI TS 123 234], [TTC TS-3GA-23.234], [ATIS 3GPP 23.234], [TTA TTAT.3G-23.234] and [CCSA-TSD-123 234], clause 6.3.5.

The Wf reference point is located between 3GPP AAA Server/Proxy and 3GPP Offline Charging System. The prime purpose of the protocols crossing this reference point is to transport/forward offline charging information towards 3GPP operator's Offline Charging System located in the visited network or home network where the subscriber is residing.

The information forwarded to the Offline Charging System is typically used for:

- Generating bills for offline charged subscribers by the subscribers' home operator.

- Calculation of inter-operator accounting from all roaming users. This inter operator accounting is used to settle the payments between visited and home network operator and/or between home/visited network and WLAN.

The functionality of the reference point is to transport:

- WLAN access-related charging data per WLAN user.

#### **8.52.17 Reference point 3GPP AAA server – SLF (Dw reference point)**

The following text is based on the text in references [ETSI TS 123 234], [TTC TS-3GA-23.234], [ATIS 3GPP 23.234], [TTA TTAT.3G-23.234] and [CCSA-TSD-123 234], clause 6.3.14.

This reference point is between the 3GPP AAA Server and the SLF. The prime purpose of the protocol(s) crossing this reference point is to enable the 3GPP AAA Server to find the address of the HSS which holds the subscriber data for a given user identity in a configuration with multiple separately addressable HSSs.

#### **8.52.18 Reference point PDG – online charging system (Wy reference point)**

The following text is based on the text in references [ETSI TS 123 234], [TTC TS-3GA-23.234], [ATIS 3GPP 23.234], [TTA TTAT.3G-23.234] and [CCSA-TSD-123 234], clause 6.3.15.

The Wy reference point is used by a PDG to communicate with an Online Charging System (OCS). The purpose of the protocol(s) crossing this reference point is to transport online charging related information about WLAN 3GPP IP Access so as to perform credit control for the online charged subscriber.

#### **8.52.19 Reference point PDG – offline charging system (Wz reference point)**

The following text is based on the text in references [ETSI TS 123 234], [TTC TS-3GA-23.234], [ATIS 3GPP 23.234], [TTA TTAT.3G-23.234] and [CCSA-TSD-123 234], clause 6.3.16.

The Wz reference point is used by a PDG to communicate with an Offline Charging System. The purpose of the protocol(s) crossing this reference point is to transport offline charging related information about WLAN 3GPP IP Access.

### **8.53 MBMS specific reference points for GPRS**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.10.

#### **8.53.1 Reference point GGSN – BM-SC (Gmb reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.10.1.

This reference point is used to exchange signalling between GGSN and BM-SC. This represents the network side boundary of the MBMS Bearer Service from a control plane perspective. This includes user specific Gmb signalling and MBMS bearer service specific signalling. The details for this reference point are described in [TS 23.246].

#### **8.53.2 Reference point BM-SC – BM-SC (Mz reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.10.2.

This reference point is the roaming variant of the Gmb reference point and is used to exchange signalling between a BM-SC in the VPLMN and a BM-SC in the HPLMN. The details for this reference point are described in [TS 23.246] and [TS 29.061].

### **8.53.3 Reference point GGSN – RNS (or BSS Iu mode) (Gmc reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.10.3.

This reference point is used between GGSN and RNS (or BSS Iu mode) for MBMS data delivery using IP multicast. The details for this reference point are described in [TS 23.246] and [TS 29.281].

### **8.54 MBMS specific reference points for EPS**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.11.

#### **8.54.1 Reference point MBMS GW – BM-SC (SGmb reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.11.1.

This reference point is used to exchange signalling between MBMS GW and BM-SC. This represents the network side boundary of the MBMS Bearer Service from a control plane perspective. This includes MBMS bearer service specific signalling. The details for this reference point are described in [TS 23.246] and [TS 29.061].

#### **8.54.2 Reference point MBMS GW – BM-SC (SGi-mb reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.11.2.

This reference point is used between MBMS GW and BM-SC for MBMS data delivery. The details for this reference point are described in [TS 23.246] and [TS 29.061].

#### **8.54.3 Reference point MBMS GW – MME (Sm reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.11.3.

This reference point is used to exchange signalling between MBMS GW and MME for MBMS Session Control. The details for this reference point are described in [TS 23.246] and [TS 29.274].

#### **8.54.4 Reference point MBMS GW – SGSN (Sn reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.11.4.

This reference point is used to exchange signalling between MBMS GW and S4-SGSN for MBMS Session Control and for MBMS data delivery in point-to-point mode. The details for this reference point are described in [TS 23.246] and [TS 29.274].

#### **8.54.5 Reference point MBMS GW – E-UTRAN/UTRAN (M1 reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.11.5.

This reference point is used between MBMS GW and E-UTRAN/UTRAN for MBMS data delivery using IP Multicast. The details for this reference point are described in [TS 23.246], [TS 29.281] and [TS 36.445].

#### **8.54.6 Reference point MME – MCE (M3 reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.11.6.

This reference point is used to exchange signalling between MME and MCE for MBMS Session Control. The details for this reference point are described in [TS 23.246], [TS 36.300] and [TS 36.444].

#### **8.54.7 Reference point MCE – eNodeB (M2 reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.11.7.

This reference point is used to exchange signalling between MCE and eNodeB for MBMS Session Control. The details for this reference point are described in [TS 23.246], [TS 36.300] and [TS 36.443].

#### **8.55 Reference points for 3GPP generic user profile (GUP)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.12.

##### **8.55.1 Reference point GUP server – Applications (Rg reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.12.1.

The Rg reference point resides between the GUP Server and the Applications.

The Rg reference point allows applications to create, read, modify and delete any user profile data using the harmonized access interface. The GUP Server locates the data repositories responsible of the storage of the requested profile component(s).

The details of the Rg reference point are described in [TS 23.240].

##### **8.55.2 Reference point GUP server – HSS and applications – HSS (Rp reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.12.2.

The Rp reference point resides between the GUP Server and the HSS, and between the Applications and the HSS.

The Rp reference point enables the GUP Server and the Applications to access GUP Data Repositories. The HSS is one of the GUP Data Repositories. It stores the IM CN Subsystem user related data.

The details of the Rp reference point are described in [TS 23.240].

#### **8.56 Reference points for policy and charging control**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.

##### **8.56.1 Reference point PCEF - PCRF/H-PCRF/V-PCRF (Gx reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.1.

This interface provides transfer of policy and charging rules from PCRF to Policy and Charging Enforcement Function Point (PCEF) in the GW (e.g., GGSN, PDN GW). This interface is specified in [TS 29.212].

##### **8.56.2 Reference point PCRF - Application function (Rx reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.2.

This interface allows for dynamic QoS and charging-related service information to be exchanged between the Policy and Charging Rules Function (PCRF) and the Application Function (AF). This information is used by the PCRF for the control of service data flows and IP bearer resources. For more information see [TS 23.203].

#### **8.56.3 Reference point SPR – PCRF (Sp reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.3.

This interface allows for the PCRF to request subscription information from the SPR and the SPR to notify the PCRF when the subscription information has changed if the PCRF has requested such notifications. The details associated with the Sp reference point are not specified in this Release.

#### **8.56.4 Reference point OCS – PCEF (Gy reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.4.

This interface allows for the online charging based on the Diameter credit control application between the Online Charging System (OCS) and the PCEF. For more information see [TS 32.251] and [RFC 4006].

#### **8.56.5 Reference point OFCS – PCEF (Gz reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.5.

This interface allows for the offline charging based on the charging record data transfer between the Offline Charging System (OFCS) and the PCEF. For more information see [TS 32.295].

#### **8.56.6 Reference point Trusted non-3GPP IP Access and PCRF/VPCRF (Gxa reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.6.

This interface provides transfer of (QoS) policy information from PCRF to the Trusted Non-3GPP accesses. This interface is specified in [TS 29.212].

#### **8.56.7 Reference point between S-GW and PCRF/VPCRF (Gxc interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.8.

This interface provides transfer of (QoS) policy information from PCRF to the Serving Gateway, Gxc is used only in the case of PMIP-based S5/S8. This interface is specified in [TS 29.212].

#### **8.56.8 Reference point PCRF/VPCRF – BBERF (Gxx reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.9.

This interface allows for a PCRF to have a dynamic control over the Bearer Binding and Event Report Function (BBERF) behaviour. For more information see [TS 23.402] and [TS 23.203]. This interface is specified in [TS 29.213].

#### **8.56.9 Reference point HPCRF – VPCRF (S9 interface)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.10.

This interface provides transfer of policy and charging rules (in case of local breakout of traffic) and/or (QoS) policy information (when Gxx interface applies) between the Home PCRF and the Visited PCRF in order to support PCC roaming related functions. This interface is specified in [TS 29.215].

#### **8.56.10 Reference point UDR – PCRF (Ud reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.11.

This interface allows for the PCRF, acting as an UDC Application Frontend as defined in [TS 23.335], to request subscription information from the UDR and the UDR to notify the PCRF when the subscription information has changed if the PCRF has requested such notifications. For details regarding the Ud reference point see [TS 23.335] and [TS 29.335].

#### **8.56.11 Reference point TDF – PCRF/H-PCRF/V-PCRF (Sd reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.12

The Sd Reference Point enables a PCRF to have dynamic control over the application detection and control behaviour at a TDF. The Sd Reference Point is specified in [TS 29.212].

#### **8.56.12 Reference point OCS - PCRF/H-PCRF (Sy reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.13

The Sy Reference Point enables transfer of information relating to subscriber spending from OCS to PCRF. The Sy Reference Point is specified in [TS 29.219].

#### **8.56.13 Reference point HNB GW - PCRF/V-PCRF (S15 reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.14

This reference point supports the initiation, modification and termination of sessions between the HNB GW and PCRF to support CS sessions. It triggers the PCRF to request allocation of resources in the Fixed Broadband access network for HNB CS calls. This interface is specified in [TS 29.212].

S15 is only applicable to the interworking with Fixed Broadband Access network.

#### **8.56.14 Reference point BPCF - PCRF/v-PCRF (S9a reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.15

This interface supports the transfer of (QoS) policy information from PCRF to BPCF of broadband access network. This interface is specified in [TS 29.215].

S9a is only applicable to the interworking with Fixed Broadband Access network.

#### **8.56.15 Reference point ePDG and PCRF/vPCRF (Gxb\* reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.13.7a.

The reference point transports access information from ePDG to PCRF/vPCRF for WLAN UEs such as the UE local IP address and the UDP port number. This interface is specified in [TS 29.212].

Gxb\* is only applicable to the interworking with Fixed Broadband Access network.

### **8.57 Reference point IP-SM-GW – HSS (J reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.14.1.

This reference point is used to exchange signalling between IP-SM-GW and the HSS for SMSIP delivery. The details for this reference point are described in [TS 23.204].

### **8.58 Reference point application front ends – UDR (Ud reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.15.1.

This reference point is used to exchange user between Application Front Ends and the UDR. The details for this reference point are described in [TS 23.335] and [TS 29.335].

### **8.59 Specific reference points for facilitating communications with packet data networks and applications**

#### **8.59.1 Reference point MTC-IWF – SCS (Tsp reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.16.1

This reference point is used between the MTC-IWF and the Services Capability Server (SCS) to invoke specific functionalities in the PLMN such as device triggering. The details for this reference point are described in [TS 23.682] and [TS 29.368].

This interface is a PLMN internal interface if the SCS is controlled by the operator.

Signalling on this interface uses Diameter Tsp Application as specified in [TS 29.368].

NOTE – See clause 7.8 when the SCS is not controlled by the operator.

#### **8.59.2 Reference point MTC-IWF – HSS/HLR (S6m reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.16.2

This reference point is used between the MTC-IWF and the HSS/HLR to authorize a certain SCS to request a specific service (e.g., device triggering), and to retrieve subscription information and routing information (i.e., serving SGSN/MME/MSC identities) from the HSS/HLR.

The details for this reference point are described in [TS 23.682] and [TS 29.336].

Signalling on this interface uses Diameter S6m Application as specified in [TS 29.336].

#### **8.52.3 Reference point MTC-AAA – HSS/HLR (S6n reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.16.3

This reference point is used between the MTC-AAA and the HSS/HLR to translate an IMSI to external identifier(s) of the user.

The details for this reference point are described in [TS 23.682] and [TS 29.336].

Signalling on this interface uses Diameter S6n Application as specified in [TS 29.336].

#### **8.52.4 Reference point MTC-IWF – SMS-SC (T4 reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6a.16.4

This reference point is used between the MTC-IWF and the SMS-SC to transfer device trigger to the SMS-SC inside the HPLMN.

The details for this reference point are described in [TS 23.682] and [TS 29.337].

Signalling on this interface uses Diameter T4 Application as specified in [TS 29.337].

#### **8.60 Reference point between the CSS and the VLR (Hv reference point)**

The text in this clause is based on the text in references [ETSI TS 123 002], [TTC TS-3GA-23.002], [ATIS 3GPP 23.002], [TTA TTAT.3G-23.002] and [CCSA-TSD-123 002], clause 6.4.1.10.

This reference point is used to transfer to the VLR the CSG subscription information stored in the VPLMN for roaming UEs.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities (TCAP) (see [TS 29.002]).

#### **8.61 Reference point between the CSS and the Gn/Gp SGSN (Ghv reference point)**

This reference point is used to transfer to the Gn/Gp SGSN the CSG subscription information stored in the VPLMN for roaming UEs.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities (TCAP) (see [TS 29.002]).

### **9 Technical specifications structure**

This clause provides an overview of the specifications for this IMT-2000 family member based on GSM evolved UMTS core network. Details for these specifications may be found in clause 10.

The following text describes the numbering scheme for the specifications and reports for the 3GPP 3rd generation mobile system.

Specifications for Release 11 mobile systems are identified by the "ab.cde" numbering scheme.

The following series titles and descriptions are used for guidance only and may be further developed with experience.

The specification series are:

|           |  |
|-----------|--|
| 21-series | Requirements   |
| 22-series | Service aspects ("stage 1")  |
| 23-series | Technical realisation ("stage 2")                                      |
| 24-series | Signalling protocols ("stage 3") – user equipment to network           |
| 25-series | Radio aspects (Note 1)   |
| 26-series | CODECs   |
| 27-series | Data   |
| 28-series | Signalling protocols ("stage 3") – (RSS-CN) and OAM&P and Charging     |
| 29-series | Signalling protocols ("stage 3") – intra-fixed-network                 |
| 30-series | Programme management (Note 2)  |
| 31-series | Subscriber Identity Module (SIM / USIM), IC Cards. Test specifications |
| 32-series | OAM&P and Charging   |
| 33-series | Security aspects   |
| 34-series | UE and (U)SIM test specifications (Note 2)                             |
| 35-series | Security algorithms  |



36-series            LTE (Evolved UTRA) and LTE-Advanced radio technology (Note 1)

37-series            Multiple radio access technology aspects (Note 1)

NOTE 1 – Technical Specifications in this series are not included in the scope for this Recommendation. They are described in [ITU-R M.1457-12].

NOTE 2 – Technical Specifications in these series are not included in the scope for this Recommendation.

## 10      Technical specifications

The working procedures within the 3GPP allow a continuous improvement of their specifications by means of a change request procedure. The Change Requests are reviewed by each 3GPP working group and provided for approval to the quarterly 3GPP TSG plenary meetings. Therefore, the SDO standards/specifications can be updated after each 3GPP TSG plenary meetings. In this context, it is recommended to the reader to retrieve the latest version of the SDO Standards/Specifications from the location indicated within the template.

NOTE – The format of the "issued date" column in clause 10 is **yyyy-mm-dd** (for year-month-day) or Month-yyyy, respectively, in case the day of month has not been specified.

### 10.1    21-series, Requirements

#### 10.1.1   TS 21.111 USIM and IC card requirements

This document defines the requirements of the USIM (universal subscriber identity module) and the IC card for 3G (UICC). These are derived from the service and security requirements defined in 3G TS 22.100 and 3G TS 22.101. The USIM is a 3G application on an IC card. It inter-operates with a 3G terminal and provides access to 3G services. This document is intended to serve as a basis for the detailed specification of the USIM and the UICC, and the interface to the 3G terminal.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-21.111        | 11.0.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/21/A21111-b01.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/21/A21111-b01.pdf</a> |
| ETSI | TS 121 111                 | 11.0.1  | Published      | 2013-01-10  | <a href="http://www.etsi.org/deliver/etsi_ts/121100_121199/121111/11.00.01_60/ts_121111v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/121100_121199/121111/11.00.01_60/ts_121111v110001p.pdf</a>                             |
| ATIS | ATIS.3GPP.21.111V1101-2014 | 11.0.1  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-21.111(R11-11.0.1) | 11.0.1  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTA.T.3G-21.111(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTA.T.3G-21.111(R11-11.0.1)</a>         |

### 10.2    22-series, Service aspects

#### 10.2.1   TS 22.001 Principles of circuit telecommunication services supported by a public land mobile network (PLMN)

The document covers the definition of the circuit telecommunication services supported by a PLMN. The purpose of the document is to provide a method for the characterization and the description of these telecommunication services.

[TS 22.101] describes overall service principles of a PLMN.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.001 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22001-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22001-b00.pdf</a> |

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 122 001                 | 11.0.0  | Published | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122001/11.00.00_60/ts_122001v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122001/11.00.00_60/ts_122001v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.001V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.001(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.001(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.001(R11-11.0.0)</a> |

### 10.2.2 TS 22.002 Circuit bearer services (BS) supported by a public land mobile network (PLMN)

The document defines a set of circuit bearer services to be provided to PLMN subscribers by a PLMN itself and in connection with other networks. This Technical Specification should also be used as a reference for defining the corresponding required mobile network capabilities.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.002        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22002-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22002-b00.pdf</a> |
| ETSI | TS 122 002                 | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122002/11.00.00_60/ts_122002v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122002/11.00.00_60/ts_122002v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.002V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.002(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.002(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.002(R11-11.0.0)</a>         |

### 10.2.3 TS 22.003 Circuit teleservices supported by a public land mobile network (PLMN)

This Technical Specification (TS) describes and defines a recommended set of circuit teleservices to be supported by a PLMN in connection with other networks as a basis for defining the network capabilities required.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.003        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22003-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22003-b00.pdf</a> |
| ETSI | TS 122 003                 | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122003/11.00.00_60/ts_122003v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122003/11.00.00_60/ts_122003v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.003V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.003(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.003(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.003(R11-11.0.0)</a>         |

### 10.2.4 TS 22.004 General on supplementary services

The purpose of the document is to define a recommended set of supplementary services to the teleservices and bearer services, which will be supported by a PLMN in connection with other networks as a basis for the definition of the network capabilities, required.

Supplementary services not covered in TS 22.004 cannot be introduced unilaterally in any PLMN if they require modification of the signalling specifications.

Technical realization of supplementary services is described in TS 23.011 and TS 24.010.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 004                  | 11.0.0  | Published    | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122004/11.00.00_60/ts_122004v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122004/11.00.00_60/ts_122004v110000p.pdf</a>                       |
| ATIS | ATIS.3GPP.22.004V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.004(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.004(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.004(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.004(Rel11)v11.0.0 | 11.0.0  | TTC approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.004(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.004(Rel11)v11.0.0.pdf</a>                               |

### 10.2.5 TS 22.011 Service accessibility

The purpose of this Technical Specification is to describe the service access procedures as presented to the user.

Definitions and procedures are provided in this Technical Specification for international roaming, national roaming and regionally provided service. These are mandatory in relation to the technical realization of the mobile station (UE).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 011                  | 11.3.0  | Published    | 2013-04-11  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122011/11.03.00_60/ts_122011v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122011/11.03.00_60/ts_122011v110300p.pdf</a>                       |
| ATIS | ATIS.3GPP.22.011V113-2014   | 11.3.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.011(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.011(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.011(R11-11.3.0)</a> |
| TTC  | TS-3GA-22.011(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.011(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.011(Rel11)v11.3.0.pdf</a>                               |

### 10.2.6 TS 22.016 International mobile station equipment identities (IMEI)

The document defines the principal purpose and use of international mobile station equipment identities (IMEI).

[TS 23.003] describes the technical manner of numbering, addressing and identification.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.016        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22016-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22016-b00.pdf</a> |
| ETSI | TS 122 016                 | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122016/11.00.00_60/ts_122016v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122016/11.00.00_60/ts_122016v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.016V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.016(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.016(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.016(R11-11.0.0)</a>       |

### 10.2.7 TS 22.022 Personalization of mobile equipment (ME); Mobile functionality specification

The document provides functional specifications of five features to personalize mobile equipment (ME) for GSM and 3G systems. These features are called:

- Network personalization;
- Network subset personalization;
- Service provider (SP) personalization;
- Corporate personalization;
- SIM/USIM personalization (SIM for GSM systems or USIM for 3G systems).

The document specifies requirements for MEs that provide these personalization features.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.022        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22022-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22022-b00.pdf</a> |
| ETSI | TS 122 022                 | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122022/11.00.00_60/ts_122022v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122022/11.00.00_60/ts_122022v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.022V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.022(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.022(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.022(R11-11.0.0)</a>       |

### 10.2.8 TS 22.024 Description of charge advice information (CAI)

The charging supplementary service is described in TS 22.086. These services are designed to supply to a mobile user sufficient information to allow a real-time estimate to be made of the bill that will eventually be levied in the home PLMN on the mobile station (MS) subscriber.

In the case of certain MS uses, for example a mobile payphone, this estimate could be subject to further processing (e.g., to present the charges in currency, rather than units, this may include an additional mark-up). This additional processing is not described in this document in order to avoid constraining the evolution of the MS product in this area.

This document gives an overall view of how this supplementary service shall operate both in the PLMN and within the MS. Text given in this document is required to define functionality and is not intended to constrain implementation.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 024                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122024/11.00.00_60/ts_122024v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122024/11.00.00_60/ts_122024v110000p.pdf</a>                       |
| ATIS | ATIS.3GPP.22.024V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.024(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.024(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.024(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.024(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.024(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.024(Rel11)v11.0.0.pdf</a>                               |

### 10.2.9 TS 22.030 Man-machine interface (MMI) of the user equipment (UE)

The document defines the requirements for and gives guidelines on the MMI on the user equipment (UE). This includes the requirements of the user procedures for call control and supplementary service control, the requirements on the physical input media and the output, such as indications and displayed information.

This document includes requirements only to UE connected to CS Domain. See TS 22.101 for overall service principles and TS 22.001 for circuit telecommunication services.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.030         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22030-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22030-b00.pdf</a> |
| ETSI | TS 122 030                  | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122030/11.00.00_60/ts_122030v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122030/11.00.00_60/ts_122030v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.030V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.030(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTA-T.3G-22.030(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTA-T.3G-22.030(R11-11.0.0)</a>         |

### 10.2.10 TS 22.031 Fraud information gathering system (FIGS); Service description; Stage 1

This Technical Specification specifies the stage 1 description of the fraud information gathering system (FIGS) feature which provides the means for the HPLMN to monitor the activities of its subscribers in a VPLMN.

The purpose of this network feature is to enable the HPLMN to monitor the activities of its subscribers while they are roaming. The VPLMN collects information about a defined set of activities on monitored subscribers and sends this information back to the HPLMN. This enables the HPLMN to clear certain types of calls and so stop fraudulent use of the GSM system.

This specification enables service providers/network operators to use FIGS, and service limitation controls such as operator determined barring (ODB) and immediate service termination (IST), to limit their financial exposure to subscribers producing large unpaid bills.

HPLMNs may also choose to monitor the activities of its subscribers within the HPLMN.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.031         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22031-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22031-b00.pdf</a> |
| ETSI | TS 122 031                  | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122031/11.00.00_60/ts_122031v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122031/11.00.00_60/ts_122031v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.031V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.031(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTA-T.3G-22.031(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTA-T.3G-22.031(R11-11.0.0)</a>         |

### 10.2.11 TS 22.032 Immediate service termination (IST); Service description; Stage 1

The document specifies the Stage 1 description of the immediate service termination (IST) service which provides the means for the HPLMN to terminate all the activities of an HPLMN subscriber in a VPLMN.

The purpose of this network feature is to enable the HPLMN to control the activities of its subscribers, particularly while they are roaming. If the HPLMN decides (based upon information received via fraud information gathering system (FIGS) or other systems) that a roaming subscriber is behaving in a fraudulent or suspicious manner, the HPLMN can terminate all activities of the subscriber, including calls (including transferred and diverted calls) that are in progress.

This procedure can also be used to terminate all the activities of a subscriber when the subscription has ended.

The primary aim is to enable service providers/network operators to use IST to reduce the amount of money that they lose because of roaming fraud.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.032         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22032-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22032-b00.pdf</a> |
| ETSI | TS 122 032                  | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122032/11.00.00_60/ts_122032v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122032/11.00.00_60/ts_122032v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.032V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.032(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.032(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.032(R11-11.0.0)</a>       |

### 10.2.12 TS 22.034 High speed circuit switched data (HSCSD); Stage 1

The document specifies the Stage 1 description of high speed circuit switched data (HSCSD). HSCSD is a feature that introduces general bearer services and a multislot mechanism is used for user rates that can be achieved with one or more TCH/F. Multislot also defines a flexible use of air interface resources that makes efficient and flexible use of higher user rates feasible.

The multislot mechanism is only applicable to GERAN.

At UTRAN radio access parameters used for GBS user data are specified at [TS 23.107].

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.034        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22034-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22034-b00.pdf</a> |
| ETSI | TS 122 034                 | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122034/11.00.00_60/ts_122034v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122034/11.00.00_60/ts_122034v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.034V110-0-201 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.034(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.034(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.034(R11-11.0.0)</a>       |

### 10.2.13 TS 22.038 USIM application toolkit (USAT); Service description; Stage 1

This technical specification defines the Stage 1 description of the USIM application toolkit (USAT). Stage 1 is an overall service description, primarily from the subscriber's and serving environment's points of view, and does not deal with the details of the human interface itself.

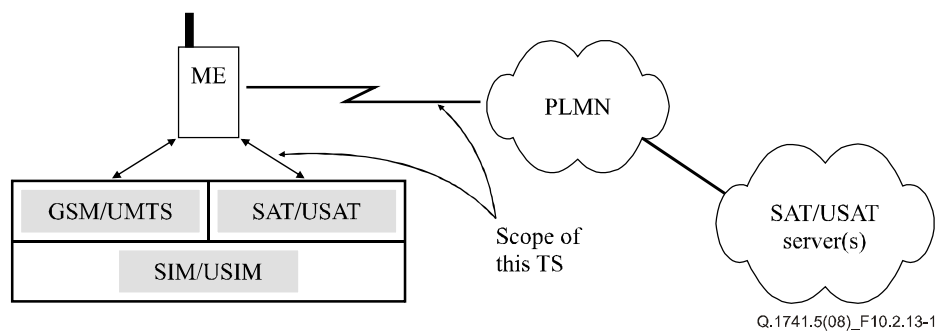
This Technical Specification includes information applicable to network operators, serving environments and terminal, switch and database manufacturers.

This technical specification contains the core requirements for a USIM application toolkit (USAT) that are sufficient to provide a complete service.

It is highly desirable, however, that technical solutions for a USIM application toolkit (USAT) are sufficiently flexible to allow for possible enhancements. Additional functionalities not documented in this technical specification may implement requirements that are considered outside the scope of this technical specification. This additional functionality may be on a network-wide basis, nationwide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

As indicated in Figure 10.2.13-1, the scope of this technical specification encompasses the USAT functionality in the UE (comprising USIM and ME) and the interaction with the PLMN environment. The USAT server is not necessarily a separate entity as shown in the figure; nodes providing USAT services may also exist within the PLMN. The functionalities of the USAT servers (such as charging aspects, security level classification, etc.) are not covered by this specification.





**Figure 10.2.13-1 – Scope of Technical Specification 22.038**

The requirements are considered to be applicable to both GSM and UMTS systems.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.038        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22038-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22038-b00.pdf</a> |
| ETSI | TS 122 038                 | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122038/11.00.00_60/ts_122038v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122038/11.00.00_60/ts_122038v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.038V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.038(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.038(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.038(R11-11.0.0)</a>       |

#### 10.2.14 TS 22.041 Operator determined barring (ODB)

The document describes the network feature operator determined barring (ODB).

This allows the network operator or service provider to regulate, by means of an exceptional procedure, access by the subscribers to services (both circuit and packet oriented), by the barring of certain categories of outgoing or incoming calls/packet oriented services or of roaming. ODB shall take effect immediately and shall terminate ongoing calls and bar future calls/packet oriented services.

The purpose of this network feature is to be able to limit the service provider's financial exposure to new subscribers, or to those who have not promptly paid their bills. It may only be applied to the service provider's own subscribers.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 041                  | 11.3.0  | Published    | 2013-10-01  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122041/11.03.00_60/ts_122041v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122041/11.03.00_60/ts_122041v110300p.pdf</a>                       |
| ATIS | ATIS.3GPP.22.041V112-2014   | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.041(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.041(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.041(R11-11.2.0)</a> |
| TTC  | TS-3GA-22.041(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.041(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.041(Rel11)v11.3.0.pdf</a>                               |

#### 10.2.15 TS 22.042 Network identity and time zone (NITZ); Service description; Stage 1

The document describes the feature network identity and time zone (NITZ).

This feature provides the means for serving PLMNs to transfer current identity, time, daylight saving time and the local time zone to mobile stations (MS)s, and for the MSs to store and use this

information. This enhances roaming by permitting accurate indication of PLMN identities that are either newer than the mobile equipment (ME) or have changed their name since the ME was sold. Additionally, time, daylight saving time, and time zone information can be utilized by MEs as desired.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 042                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122042/11.00.00_60/ts_122042v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122042/11.00.00_60/ts_122042v110000p.pdf</a>                       |
| ATIS | ATIS.3GPP.22.042V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.042(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.042(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.042(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.042(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.042(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/fre/3gpps2013/TS/TS-3GA-22.042(Rel11)v11.0.0.pdf</a>                               |

#### 10.2.16 TS 22.053 Tandem free operation (TFO); Service description; Stage 1

The document specifies the stage 1 description for the tandem free operation (TFO) feature that provides the capability to avoid tandeming speech codecs in mobile-to-mobile speech calls. The primary aim is to realize improvements in speech quality. The TFO mode of operation could also be used to reduce inter-mobile service switching centre (MSC) transmission bandwidth requirements.

In analogy with [ITU-T I.130], Stage 1 is an overall service description, from the service subscriber's and user's standpoints, that views the network as a single entity which provides services to the user.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.053         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22053-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22053-b00.pdf</a> |
| ETSI | TS 122 053                  | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122053/11.00.00_60/ts_122053v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122053/11.00.00_60/ts_122053v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.053V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.053(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.053(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.053(R11-11.0.0)</a>       |

#### 10.2.17 TS 22.057 Mobile execution environment (MExE); Service description; Stage 1

MExE provides a standardized execution environment in an UE, and an ability to negotiate its supported capabilities with a MExE service provider, allowing applications to be developed independently of any UE platform. The UE (consisting of the ME and SIM/USIM) can then be targeted at a range of implementations for MExE from small devices with low bandwidth, limited displays, low processor speeds, limited memory, MMI, etc., to sophisticated devices with a complete MExE execution environment.

This Technical Specification defines the Stage 1 description of the mobile execution environment (MExE). Stage 1 is an overall service description, primarily from the subscriber's and service providers' points of view, and does not deal with the details of the human interface itself.

This Technical Specification includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

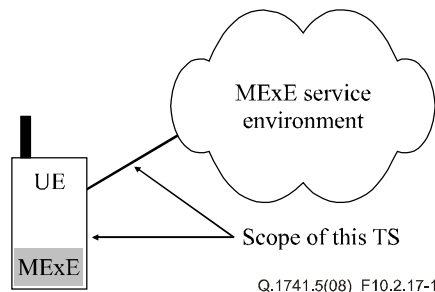
This Technical Specification contains the core requirements for a mobile execution environment (MExE) that is sufficient to provide a complete service.

It is highly desirable, however, that technical solutions for a mobile execution environment (MExE) be sufficiently flexible to allow for possible enhancements. Additional functionalities not documented



in this Technical Specification may implement requirements that are considered outside the scope of this Technical Specification. This additional functionality may be on a network-wide basis, nationwide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

As indicated in Figure 10.2.17-1, the scope of this Technical Specification encompasses the MExE functionality in the UE, interaction with the MExE service environment. The MExE service environment is not necessarily restricted to the PLMN, and nodes providing MExE services (i.e., MExE servers) may also exist outside the PLMN. Aspects of the support provided by MExE servers within the MExE service environment (such as charging aspects, security level classification, etc.) are covered by this specification, but not the MExE servers themselves.



**Figure 10.2.17-1 – Scope of Technical Specification 22.057**

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.057        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22057-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22057-b00.pdf</a> |
| ETSI | TS 122 057                 | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122057/11.00.00_60/ts_122057v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122057/11.00.00_60/ts_122057v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.057V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.057(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.057(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTA.T.3G-22.057(R11-11.0.0)</a>       |

### 10.2.18 TS 22.060 General packet radio service (GPRS); Service description; Stage 1

This Technical Specification defines the Stage 1 description of the general packet radio service (GPRS). Stage 1 is an overall service description, primarily from the service subscriber's and user's points of view, but does not deal with the details of the human interface itself. This Technical Specification includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

This Technical Specification contains the core requirements for the packet-switched 3G networks that are sufficient to provide a complete service. It defines a set of bearer services that provide packet mode transmission within the PLMN and interwork with external networks.

The term "GPRS" shall be used in this document to refer the GPRS service offered via GERAN and UTRAN and the PS Domain of the 3G PLMN.

The GPRS shall not prevent the user's operation of other 3GPP services.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 122 060                 | 11.0.0  | Published | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122060/11.00.00_60/ts_122060v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122060/11.00.00_60/ts_122060v110000p.pdf</a> |
| ATIS | ATIS.3GPP.22.060V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-22.060(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.060(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.060(R11-11.0.0)</a> |
| TTC | TS-3GA-22.060(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.060(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.060(Rel11)v11.0.0.pdf</a>                         |

### 10.2.19 TS 22.066 Support of mobile number portability (MNP); Service description; Stage 1

This Technical Specification defines the Stage 1 description of the support of mobile number portability between networks in the same country as well as North America cross-sector portability (i.e., number portability between fixed and 3GPP system). Stage 1 is an overall service description, primarily from the service subscriber's and user's points of view, but does not deal with the details of the human interface itself.

Mobile number portability (MNP) is applicable only to those telecommunication services identified by an MSISDN.

This specification includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

This specification contains the core requirements for the support of mobile number portability between network operators in the same country as well as North America cross-sector portability that are sufficient to provide a complete service.

Other cross-sector portability options (e.g., number portability between fixed and mobile networks outside the North American region) are outside the scope of this Technical Specification. It is highly desirable, however, that technical solutions for MNP should be sufficiently flexible to allow for possible enhancements, e.g., cross-sector number portability, and MNP between analogue and digital mobile networks. Additional functionalities not documented in this specification may implement requirements that are considered outside the scope of this specification. This additional functionality may be on a network-wide basis, nationwide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

Porting between service providers (i.e., service provider portability) that does not involve a change of network operator is outside the scope of this specification.

The relationship between service providers and network operators is outside the scope of this specification.

The relationship between a service provider and subscriber is outside the scope of this specification. The interface between the user equipment (UE) and any external applications are outside the scope of this specification. Charging principles are outside the scope of this specification, except where explicitly stated in the text.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 066                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122066/11.00.00_60/ts_122066v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122066/11.00.00_60/ts_122066v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.22.066V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.066(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.066(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.066(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.066(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.066(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.066(Rel11)v11.0.0.pdf</a>                         |

### 10.2.20 TS 22.067 Enhanced multi-level precedence and pre-emption service (eMLPP); Stage 1

The document specifies the Stage 1 description of the enhanced multilevel precedence and preemption service (eMLPP). This service has two parts: precedence and preemption. Precedence involves assigning a priority level to a call in combination with fast call setup. Preemption involves the seizing of resources, which are in use by a call of a lower precedence, by a higher-level precedence call in the absence of idle resources. Preemption can also involve the disconnection of an ongoing call of lower precedence to accept an incoming call of higher precedence.

The eMLPP service is provided as a network operator's option to a domain of a network. The domain can be the whole network or a subset of the network. The eMLPP service applies to all network resources in the domain that is in common use. The eMLPP service is applicable to all mobile stations in the domain with all or some mobile stations having a respective subscription assigning precedence according to the eMLPP service.

eMLPP is a supplementary service and shall be provided to a subscriber for all basic services subscribed to and for which eMLPP applies.

The service is described from the service subscriber's and user's point of view, in particular:

- the procedure for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other services and features.

The document does not deal with the man machine interface (MMI) requirements, but makes reference to the appropriate specifications.

The document is applicable to teleservices 1x and 6x and to all bearer services used in a mobile network if eMLPP is provided.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.067         | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22067-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22067-b10.pdf</a> |
| ETSI | TS 122 067                  | 11.1.0  | Published      | 2014-01-10  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122067/11.01.00_60/ts_122067v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122067/11.01.00_60/ts_122067v110100p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.067V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.067(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.067(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.067(R11-11.0.0)</a>         |

### 10.2.21 TS 22.071 Location services (LCS); Service description; Stage 1

This document provides the Stage 1 description of location services (LCS). A Stage 1 description provides an overall service description, primarily from the service subscriber's and user's points of view, but not dealing with the details of the man-machine interface (MMI). This Technical Specification includes information applicable to network operators, service providers and terminal, base station system, switch, and database manufacturers.

NOTE – Location services may be considered as a network-provided enabling technology consisting of standardized service capabilities that enable the provision of location-based applications. These applications may be service provider specific. The description of the numerous and varied possible location applications which are enabled by this technology are outside the scope of this specification. However, clarifying examples of how the functionality being specified may be used to provide specific location services is included in various clauses of the specification.

This document provides core requirements to an extent sufficient to derive a complete definition of location services at the service level. However, this document also provides additional requirements

that may suggest in a non-normative manner certain ways the system may be implemented to support location services.

LCS can be offered without subscription to basic telecommunication services. LCS is available to the following categories of LCS clients:

- Value-added services LCS clients – Use LCS to support various value-added services. These clients can include UE subscribers as well as non-subscribers to other services.
- PLMN operator LCS clients – Use LCS to enhance or support certain O&M related tasks, supplementary services, IN-related services and bearer services and teleservices.
- Emergency services LCS clients – Use LCS to enhance support for emergency calls from subscribers.
- Lawful intercept LCS clients – Use LCS to support various legally required or sanctioned services.

LCS is applicable to any target UE whether or not the UE supports LCS, but with restrictions on the choice of the positioning method or notification of a location request to the UE user when the LCS or the individual positioning methods, respectively, are not supported by the UE.

LCS is being developed in phases with enhancements added in yearly releases.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.071         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22071-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22071-b00.pdf</a> |
| ETSI | TS 122 071                  | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122071/11.00.00_60/ts_122071v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122071/11.00.00_60/ts_122071v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.071V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.071(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.071(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.071(R11-11.0.0)</a>           |

#### 10.2.22 TS 22.072 Call deflection service description; Stage 1

Call deflection (CD) enables the served mobile subscriber to respond to an incoming call offered by the network by requesting redirection of this call to another number specified in the response. The CD supplementary service can only be invoked before the connection is established by the served mobile subscriber, i.e., in response to the offered call, or during the period that the served subscriber is being informed of the call. The served subscriber's ability to originate calls is unaffected by the CD supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 072                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122072/11.00.00_60/ts_122072v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122072/11.00.00_60/ts_122072v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.22.072V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.072(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.072(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.072(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.072(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.072(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.072(Rel11)v11.0.0.pdf</a>                         |

#### 10.2.23 TS 22.076 Noise suppression for the AMR codec; Service description; Stage 1

This document specifies the Stage 1 description for the noise suppression feature for the AMR codec that enhances the input speech signal corrupted by acoustic noise. In analogy with [ITU-T I.130],

Stage 1 is an overall service description, from the service subscriber's and user's standpoints, that views the network as a single entity which provides services to the user.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.076         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22076-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22076-b00.pdf</a> |
| ETSI | TS 122 076                  | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122076/11.00.00_60/ts_122076v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122076/11.00.00_60/ts_122076v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.076V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.076(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.076(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.076(R11-11.0.0)</a>         |

#### **10.2.24 TS 22.078 Customized applications for mobile network enhanced logic (CAMEL); Service description; Stage 1**

This standard specifies the Stage 1 description for the CAMEL feature (customized applications for mobile network enhanced logic) that provides the mechanisms to support services consistently independently of the serving network. The CAMEL features shall facilitate service control of operator specific services external from the serving PLMN. The CAMEL feature is a network feature and not a supplementary service. It is a tool to help the network operator to provide the subscribers with the operator specific services even when roaming outside the HPLMN.

If an IPLMN or VPLMN supports CAMEL Phase 4, it shall also provide the functionality of all previous CAMEL phases.

Phase 4 network signalling shall support interworking with CAMEL Phases 3 and 2.

The CAMEL feature is applicable:

- to mobile originated and mobile terminated call related activities;
- to supplementary service invocations;
- to SMS MO, to GPRS sessions and PDP contexts, to the control of HLR subscriber data, to the control of network signalling load.

The mechanism described addresses especially the need for information exchange among the VPLMN, HPLMN and the CAMEL service environment (CSE) for support of such operator specific services. Any user procedures for operator specific services are outside the scope of this standard.

This specification describes the interactions between the functions of the VPLMN, HPLMN, IPLMN and the CSE.

The second phase of CAMEL enhances the capabilities of phase 1 where the following capabilities have been added:

- Additional event detection points.
- Interaction between a user and a service using announcements, voice prompting and information collection via in-band interaction or USSD interaction.
- Control of call duration and transfer of advice of charge information to the mobile station.
- The CSE can be informed about the invocation of the supplementary services ECT, CD and MPTY.
- For easier post-processing, charging information from a serving node can be integrated in normal call records.

The third phase of CAMEL enhances the capabilities of phase 2. The following capabilities are added:

- Support of facilities to avoid overload.

- Capabilities to support dialled services.
- Capabilities to handle mobility events, such as (Not-)reachability and roaming.
- Control of GPRS sessions and PDP contexts.
- Control of mobile originating SMS through both circuit-switched and packet-switched serving network entities.
- Interworking with SoLSA (support of localized service area). Support for this interworking is optional.
- The CSE can be informed about the invocation of the supplementary service CCBS.

Detailed information is given in the respective clauses.

The fourth phase of CAMEL enhances the capabilities of phase 3. The following capabilities are added:

- CAMEL support for optimal routing of circuit-switched mobile-to-mobile calls.
- The capability for the CSE to create additional parties in an existing call.
- The capability for the CSE to create a new call unrelated to any other existing call.
- Capabilities for the enhanced handling of call party connections.
- The capability for the CSE to control sessions in the IP multimedia subsystem.
- Enhanced CSE capability for dialled services.
- The capability to report basic service changes during ongoing call.

With CAMEL Phase 4, it is possible that only a limited subset of the new functionalities is supported, in addition to the complete support of CAMEL Phase 3.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 078                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122078/11.00.00_60/ts_122078v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122078/11.00.00_60/ts_122078v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.078V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.078(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.078(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.078(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.078(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.078(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.078(Rel11)v11.0.0.pdf</a>                           |

### 10.2.25 TS 22.079 Support of optimal routing (SOR); Stage 1

This Stage 1 description of the first phase of support of optimal routing (SOR):

- compiles the basic service requirements for SOR;
- describes the interactions for supplementary services (SS) in order to cater for SOR;
- refers to modifications to network features required by SOR.

This specification does not address the following:

- There is no need for optimization of the routing of calls originally directed to a fixed network subscriber, because the physical address of a fixed network terminating line cannot differ from its logical address.
- SOR in non-PLMNs is not a subject of this Technical Specification, but might be possible by bilateral arrangement between PLMN operators and those non-PLMN operators.

The purpose of SOR is to reduce the number of unnecessary inter-PLMN call legs.

The first phase of SOR applies to:



- Optimal routing for the benefit of the B party, i.e., mobile terminated calls with late call forwarding to the home or visited country (scenarios 1 and 2),

and optionally:

- Optimal routing for the benefit of the A party, e.g., mobile-to-mobile calls where both mobile subscribers are in the same country (scenarios 3 to 10).

The complete set of scenarios included in the phase 1 of optimal routing is presented in the paragraph for normal procedures. All other scenarios are excluded from Phase 1 of optimal routing.

Note that optimal routing is applicable to national roaming situations, that is to calls directed to a mobile subscriber roaming in his or her home country, but registered in a PLMN different from his or her HPLMN.

All further call scenarios, including multiple call forwarding, are left to subsequent phases of SOR. Subsequent phases of SOR shall be backwards compatible with this first phase.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 079                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122079/11.00.00_60/ts_122079v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122079/11.00.00_60/ts_122079v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.079V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.079(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.079(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.079(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.079(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.079(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.079(Rel11)v11.0.0.pdf</a>                           |

### 10.2.26 TS 22.081 Line identification supplementary services; Stage 1

The document describes the supplementary services belonging to the group line identification supplementary services.

The general aspects, including definitions and recommended provision, of the description of the supplementary services are given in [TS 22.004].

The group of line identification supplementary services is divided into the following four supplementary services:

- CLIP            Calling line identification presentation;
- CLIR            Calling line identification restriction;
- COLP           Connected line identification presentation;
- COLR           Connected line identification restriction.

**Definition of line identity:** The line identity is made up of a number of information units:

- The subscriber's national ISDN/MSISDN number (MSISDN number is the number stored in the VLR).
- The country code.
- Optionally, subaddress information. The PLMN cannot be responsible for the content of this subaddress. (For definition of the subaddress, see [ITU-T E.164]).
- In a full ISDN environment, the line identity shall include all the address information necessary to unambiguously identify a subscriber.
- The calling line identity is the line identity of the calling party.
- The connected line identity is the line identity of the connected party.

If for the line identity of the calling party or the connected party, additional line identification is received (additional calling party/connected party number) in a PLMN this additional line identification shall be used for the presentation purpose of the line identification presentation services.

**Definition of presentation and screening indicators:** In addition to or instead of the line identity, the network may give a presentation indicator (PI) and/or a screening indicator (SI) to the served subscriber. The following information may be given:

- Presentation indicator showing:
  - a) presentation allowed; or
  - b) presentation restricted; or
  - c) number not available due to interworking.

If presentation indicator is set to "Presentation Restricted", then the MS can get additional information on the cause of no CLI, if provided by the network.

The cause of no CLI value may be one of the following:

- unavailable;
- reject by user;
- interaction with other services;
- coin line/pay phone;
- Screening indicator showing:
  - a) user provided, verified and passed; or
  - b) user provided, not screened; or
  - c) network provided.

If the line identity is that of a PLMN subscriber, then:

- the national number and the country code shall always be provided by the network;
- the subaddress shall only be included if it is provided by the user (or user equipment);
- the screening indicator shall indicate "network provided".

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 081                  | 11.1.0  | Published    | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122081/11.01.00_60/ts_122081v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122081/11.01.00_60/ts_122081v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.081V1110-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.081(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.081(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.081(R11-11.1.0)</a> |
| TTC  | TS-3GA-22.081(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.081(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.081(Rel11)v11.1.0.pdf</a>                           |

### 10.2.27 TS 22.082 Call forwarding (CF) supplementary services; Stage 1

This specification describes the supplementary services belonging to the group CALL OFFERING SUPPLEMENTARY SERVICES.

The general aspects, including definitions and recommended provision, of the description of the supplementary services are given in Specification [TS 22.004].

The group of supplementary services CALL OFFERING SUPPLEMENTARY SERVICES is divided into four different supplementary services:

- call forwarding unconditional;



- call forwarding on mobile subscriber busy;
- call forwarding on no reply;
- call forwarding on mobile subscriber not reachable.

### **Indication of active call forwarding supplementary service**

An indication that a call forwarding service is currently active and operative on a number will be given to the forwarding party each time an outgoing call is made. There will be one indication for unconditional call forwarding and another common indication for the conditional call forwarding services.

### **Note on the use of the forwarded-to number at registration**

If the forwarded-to number is a number in the HPLMN country, it may be entered by the served mobile subscriber in three different formats, independent of his or her actual location, according to the schemes:

- 1) National (significant) number.
- 2) National (trunk) prefix plus national (significant) number.
- 3) International prefix\*, country code, national (significant) number.

Scheme 3) Storage of numbers in this format is mandatory for all PLMN operators.

If the forwarded-to number is a number in a country other than the HPLMN country, it shall be entered by the served mobile subscriber, independent of his or her actual location, according to the following scheme:

- International prefix (Note), country code, national (significant) number.

NOTE – The MMI for entering of international prefix is defined in [TS 22.030].

The maximum forwarded-to number length is 28 digits.

### **Principles for interaction with the barring of outgoing calls supplementary services**

Numbers allowed to call according to the barring of outgoing call service condition are allowed as forwarded-to numbers for the served mobile subscriber.

Numbers not allowed to call according to the barring of outgoing call service condition are not allowed as forwarded-to numbers for the served mobile subscriber.

For unconditional call forwarding, the forwarded leg is treated as an outgoing call from the HPLMN country.

For the conditional call forwarding services, the forwarded leg is treated as an outgoing call from the LPLMN (HPLMN or VPLMN) country.

### **Principles for interaction with the barring of incoming calls supplementary services**

When barring of all incoming calls is active for the served mobile subscriber – no call forwarding services are allowed.

When barring of all incoming calls when roaming outside the HPLMN country is active and operative – i.e., the served mobile subscriber is roaming outside the HPLMN country, the conditional call forwarding services are not allowed.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 122 082                 | 11.0.0  | Published | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122082/11.00.00_60/ts_122082v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122082/11.00.00_60/ts_122082v110000p.pdf</a> |
| ATIS | ATIS.3GPP.22.082V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-22.082(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.082(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.082(R11-11.0.0)</a> |
| TTC | TS-3GA-22.082(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.082(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.082(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.28 TS 22.083 Call waiting (CW) and call hold (HOLD) supplementary services; Stage 1

The document describes the supplementary services belonging to the group call completion supplementary services.

The general aspects, including definitions and recommended provision, of the description of supplementary services are given in TS 22.004.

The group of call completion supplementary services is divided into the following two supplementary services:

- Call waiting;
- Call hold.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 083                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122083/11.00.00_60/ts_122083v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122083/11.00.00_60/ts_122083v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.083V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.083(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.083(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.083(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.083(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.083(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.083(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.29 TS 22.084 Multi-party (MPTY) supplementary service; Stage 1

The document describes the supplementary services belonging to the group multi-party supplementary services.

The general aspects, including definitions and recommended provision, of the description of the supplementary services are given in TS 22.004.

The group of multi-party supplementary services consists of one supplementary service:

- Multi-party service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 084                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122084/11.00.00_60/ts_122084v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122084/11.00.00_60/ts_122084v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.084V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.084(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.084(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.084(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.084(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.084(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.084(Rel11)v11.0.0.pdf</a>                           |

### 10.2.30 TS 22.085 Closed user group (CUG) supplementary services; Stage 1

The document describes the supplementary services belonging to the group community of interest supplementary services.

The general aspects, including definitions and recommended provision, of the description of the supplementary services are given in TS 22.004.

The group of community of interest supplementary services includes one supplementary service:

- Closed user group.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 085                  | 11.0.0  | Published    | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122085/11.00.00_60/ts_122085v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122085/11.00.00_60/ts_122085v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.085V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.085(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.085(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.085(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.085(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.085(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.085(Rel11)v11.0.0.pdf</a>                           |

### 10.2.31 TS 22.086 Advice of charge (AoC) supplementary services; Stage 1

The document describes the supplementary services belonging to the group charging supplementary services.

The general aspects, including definitions and recommended provision, of the description of the supplementary services are given in TS 22.004.

Charging services are the supplementary services associated with charging aspects. The group of supplementary services charging supplementary services comprises two services:

- Advice of charge (Information);
- Advice of charge (Charging).

Advice of charge (AoC) supplementary services will use the charge advice information described in TS 22.024.

In principle, the same type of mobile station (MS) can be used for both services of advice of charge (AoC), except where the application demands special features – e.g., the payment mechanism in a payphone.

Only one of these services may be subscribed to at any one time.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 086                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122086/11.00.00_60/ts_122086v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122086/11.00.00_60/ts_122086v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.086V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.086(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.086(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.086(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.086(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.086(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.086(Rel11)v11.0.0.pdf</a>                           |

### 10.2.32 TS 22.087 User-to-user signalling (UUS); Stage 1

The user-to-user signalling (UUS) supplementary service allows a mobile subscriber to send/receive a limited amount of information to/from another PLMN or ISDN subscriber over the signalling channel in association with a call to the other subscriber.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 087                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122087/11.00.00_60/ts_122087v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122087/11.00.00_60/ts_122087v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.087V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.087(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.087(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.087(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.087(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.087(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.087(Rel11)v11.0.0.pdf</a>                           |

### 10.2.33 TS 22.088 Call barring (CB) supplementary services; Stage 1

The document describes the supplementary services belonging to the group call restriction supplementary services.

The general aspects – including definitions and recommended provision – of the description of the supplementary services are given in TS 22.004.

The call restriction supplementary services allow the possibility for a mobile subscriber to have barring of certain categories of outgoing or incoming calls at the mobile subscribers access.

The group of call restriction services includes two supplementary services:

- barring of outgoing calls;
- barring of incoming calls.

By use of subscription options, the mobile subscriber can at provision time select a set of one or more barring programs to determine the categories of calls to be barred. The following categories are defined:

- all outgoing calls;
- outgoing international calls;
- outgoing international calls except those directed to the home PLMN country;
- all incoming calls;
- incoming calls when roaming outside the home PLMN country.

NOTE 1 – Each category (barring program) is handled as a single supplementary service.

NOTE 2 – The call barring program "incoming calls when roaming outside the home PLMN country" is only relevant if, as a general rule, the called mobile subscriber pays the charges for the forwarded part of the call from his home PLMN country to any other country.

The barring services can be offered to a mobile subscriber with a password option allowing the activation and deactivation by the subscriber. One password per mobile subscriber is supported by the network for all barring services. For the definition of the password, the description of its use and its management, see TS 22.004.

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 122 088   | 11.1.0  | Published | 2013-10-01  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122088/11.01.00_60/ts_122088v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122088/11.01.00_60/ts_122088v110100p.pdf</a> |

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.22.088V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.088(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.088(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.088(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.088(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.088(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.088(Rel11)v11.1.0.pdf</a>                           |

#### 10.2.34 TS 22.090 Unstructured supplementary service data (USSD); Stage 1

The document defines the Stage 1 description of unstructured supplementary service data (USSD) for use in one or a number of public land mobile networks (PLMNs).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 090                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122090/11.00.00_60/ts_122090v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122090/11.00.00_60/ts_122090v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.090V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.090(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.090(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.090(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.090(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.090(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.090(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.35 TS 22.091 Explicit call transfer (ECT); Stage 1

The document specifies the Stage 1 description of explicit call transfer (ECT) from the service subscriber's and user's points of view, in particular:

- the procedures for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other supplementary services.

The document does not deal with the man-machine interface (MMI) requirements, but makes reference to the appropriate Technical Specifications.

The charging principles applied to ECT are established in the document in terms of the charging information required to be collected. Any subsequent charging implications are outside of the scope of the document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 091                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122091/11.00.00_60/ts_122091v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122091/11.00.00_60/ts_122091v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.091V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.091(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.091(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.091(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.091(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.091(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.091(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.36 TS 22.093 Completion of calls to busy subscriber (CCBS); Service description; Stage 1

The document specifies the Stage 1 description of completion of calls to busy subscriber (CCBS) from the subscriber's and user's points of view; in particular:

- the procedures for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other supplementary services;

The document does not deal with the man-machine interface (MMI) requirements, but makes reference to the appropriate specifications.

The charging principles applied to CCBS are outside of the scope of this specification.

Any interactions with other networks not dealt with in the document are outside the scope of the document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 093                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122093/11.00.00_60/ts_122093v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122093/11.00.00_60/ts_122093v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.093V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.093(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.093(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.093(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.093(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.093(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.093(Rel11)v11.0.0.pdf</a>                           |

### 10.2.37 TS 22.094 Follow me service description; Stage 1

The document specifies the Stage 1 description for the follow me feature.

The follow me feature enables a mobile subscriber A to manipulate the follow me data of a party B in such a way that – under certain conditions – subsequent calls directed to party B will be forwarded to subscriber A.

The feature is described from the service subscriber's and user's point of view, in particular:

- the procedure for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other GSM services and features.

This Technical Specification does not deal with the man machine interface (MMI) requirements, but makes reference to the appropriate specifications.

Any interaction with other services and/or networks not dealt with in this specification is outside the scope of this Technical Specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 094                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122094/11.00.00_60/ts_122094v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122094/11.00.00_60/ts_122094v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.094V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.094(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.094(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.094(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.094(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.094(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.094(Rel11)v11.0.0.pdf</a>                           |

### 10.2.38 TS 22.096 Name identification supplementary service; Stage 1

The document describes the supplementary services belonging to the group name identification supplementary services.

The general aspects, including definitions and recommended provision, of the description of the supplementary services are given in TS 22.004.

The group of name identification supplementary services is divided into the following supplementary services:

– Calling name presentation (CNAP).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 096                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122096/11.00.00_60/ts_122096v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122096/11.00.00_60/ts_122096v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.094V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.096(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.096(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.096(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.096(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.096(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.096(Rel11)v11.0.0.pdf</a>                           |

### 10.2.39 TS 22.097 Multiple subscriber profile (MSP) Phase 1; Service description; Stage 1

The document gives an overall view of how this service shall operate both in the PLMN and within the mobile station (MS). This Technical Specification defines functionality and is not intended to constrain implementation.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 097                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122000_122099/122097/11.00.00_60/ts_122097v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122000_122099/122097/11.00.00_60/ts_122097v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.097V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.097(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.097(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.097(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.097(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.097(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.097(Rel11)v11.0.0.pdf</a>                           |

### 10.2.40 TS 22.101 Service aspects; Service principles

This Technical Specification (TS) describes the service principles for PLMNs. Principles and requirements for interworking with WLAN are covered in TS 22.234.

3G specifications define integrated personal communications services. The system will support different applications ranging from narrow-band to wideband communications capability with integrated personal and terminal mobility to meet the user and service requirements of the 21st century.

The specifications allow the realization of a new generation of mobile communications technology for a world in which personal communications services should allow person-to-person calling, independent of location, the terminal used, the means of transmission (wired or wireless) and the choice of technology. Personal communication services should be based on a combination of fixed and wireless/mobile services to form a seamless end-to-end service for the user.

The specifications should be in compliance with the following objectives:

- to provide a single integrated system in which the user can access services in an easy and uniform way to use in all environments;
- to allow differentiation between service offerings of various serving networks and home environments;



- c) to provide a wide range of telecommunication services including those provided by fixed networks and requiring user bit rates of up to 2 Mbit/s as well as services special to mobile communications. These services should be supported in residential, public and office environments and in areas of diverse population densities. These services are provided with a quality comparable with that provided by fixed networks such as ISDN;
- d) to provide services via handheld, portable, vehicular-mounted, movable and fixed terminals (including those which normally operate connected to fixed networks), in all environments (in different service environments – residential, private domestic and different radio environments) provided that the terminal has the necessary capabilities;
- e) to provide support of roaming users by enabling users to access services provided by their home environment in the same way even when roaming;
- f) to provide audio, data, video and particularly multimedia services;
- g) to provide for the flexible introduction of telecommunication services;
- h) to provide within the residential environment the capability to enable a pedestrian user to access all services normally provided by fixed networks;
- i) to provide within the office environment the capability to enable a pedestrian user to access all services normally provided by PBXs and LANs;
- j) to provide a substitute for fixed networks in areas of diverse population densities, under conditions approved by the appropriate national or regional regulatory authority;
- k) to provide support for interfaces which allow the use of terminals normally connected to fixed networks.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.101        | 11.9.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22101-b90.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22101-b90.pdf</a> |
| ETSI | TS 122 101                 | 11.9.0  | Published      | 2013-07-11  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122101/11.09.00_60/ts_122101v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122101/11.09.00_60/ts_122101v110900p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.101V1180-2014 | 11.8.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.101(R11-11.8.0) | 11.8.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.101(R11-11.8.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.101(R11-11.8.0)</a>         |

#### 10.2.41 TS 22.105 Services and service capabilities

Existing systems have largely standardized the complete sets of bearer services, teleservices and supplementary services that they provide. 3G specifications specify service capabilities rather than services, allowing service differentiation and system continuity. This Technical Specification (TS) describes how and what kind of services the user has access to.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.105        | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22105-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22105-b10.pdf</a> |
| ETSI | TS 122 105                 | 11.1.0  | Published      | 2014-01-10  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122105/11.01.00_60/ts_122105v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122105/11.01.00_60/ts_122105v110100p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.105V1101-2014 | 11.0.1  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.105(R11-11.0.1) | 11.0.1  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.105(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.105(R11-11.0.1)</a>         |



#### 10.2.42 TS 22.115 Service aspects; Charging and billing

The document describes the service aspects of charging and billing of the 3GPP system.

The document is not intended to duplicate existing standards or standards being developed by other groups on these topics, and will reference these where appropriate. The document will elaborate on the charging requirements described in the charging principles in TS 22.001 service principles. It will allow the generation of accurate charging information to be used in the commercial and contractual relationships between the parties concerned.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 115                  | 11.6.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122115/11.06.00_60/ts_122115v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122115/11.06.00_60/ts_122115v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.115V1160-2014  | 11.6.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.115(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.115(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.115(R11-11.6.0)</a> |
| TTC  | TS-3GA-22.115(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.115(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.115(Rel11)v11.6.0.pdf</a>                           |

#### 10.2.43 TS 22.129 Handover requirements between UTRAN and GERAN or other radio systems

The scope of this document includes service requirements for handover maintaining continuity of service to a wireless terminal as it moves between the radio coverage area, or "cells", associated with different base station sites. This functionality is called "handover". Handover can also occur due to change of radio resource providing a service without necessarily any change of the base stations involved. In particular, when the radio resources providing a service change from one of the UTRA radio access modes to the other (UTRA-FDD and UTRA-TDD), this is regarded as handover. Particular emphasis has been placed on the description of requirements for service continuity within UTRAN and between UTRAN and GERAN, but requirements specific to other systems are incorporated as required.

It is a key requirement to allow for dual or multimode terminals to hand over traffic from UTRAN to other radio systems such as GERAN and vice versa. This document describes the service requirements for intra- and inter-system handover.

The following subject areas are within the scope of these service requirements:

- User perceived performance that may be influenced by handover;
- Operational requirements relating to handover;
- Security requirements.

The requirements set forth in this document are service requirements, in that they fulfil the following:

- The requirements are independent of the implementation of the UTRAN.
- The extent to which the requirements are met are in principle verifiable using observable that are not internal to the UTRAN.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 122 129                 | 11.0.0  | Published | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122129/11.00.00_60/ts_122129v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122129/11.00.00_60/ts_122129v110000p.pdf</a> |
| ATIS | ATIS.3GPP.22.129V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-22.129(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.129(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.129(R11-11.0.0)</a> |
| TTC | TS-3GA-22.129(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.129(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.129(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.44 TS 22.135 Multicall; Service description; Stage 1

The document describes multicall supplementary service.

The general aspects, including definitions and recommended provision, of the description of supplementary services are given in TS 22.004.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 135                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122135/11.00.00_60/ts_122135v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122135/11.00.00_60/ts_122135v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.135V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.135(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.135(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.135(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.135(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.135(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.135(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.45 TS 22.140 Multimedia messaging service (MMS); Stage 1

This Technical Specification defines the Stage 1 description of the non-real-time multimedia messaging service (MMS). Stage 1 is the set of requirements which shall be supported for the provision of non-real-time multimedia messaging service, seen primarily from the subscriber's and service providers' points of view.

This Technical Specification includes information applicable to network operators, service providers, terminal and network manufacturers.

This Technical Specification contains the core requirements for the multimedia messaging service, which is sufficient to provide a complete service.

This TS defines the requirements for MMS to be understood as a framework to enable non real-time transmissions for different types of media including such functionality as:

- multiple media elements per single message;
- individual handling of message elements;
- different delivery methods for each message element;
- negotiating different terminal and network MM capabilities;
- notification and acknowledgement of MM related events (e.g., delivery, deletion, etc.);
- handling of undeliverable MM;
- personalized MMS configuration;
- flexible charging.

The above list is not exhaustive.

Thus, the MMS enables a unified application that integrates the composition, storage, access, and delivery of different kinds of media, e.g., text, voice, image or video in combination with additional mobile requirements.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.140         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22140-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22140-b00.pdf</a> |
| ETSI | TS 122 140                  | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122140/11.00.00_60/ts_122140v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122140/11.00.00_60/ts_122140v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.140V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.140(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.140(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.140(R11-11.0.0)</a>         |

#### 10.2.46 TS 22.141 Presence service; Stage 1

This TS defines the Stage 1 description for the presence service. Stage 1 is the set of requirements which shall be supported to enable the exploitation of the presence service, seen primarily from the users' and home environments' points of view.

This TS includes information applicable to the home environment, device and network manufacturers which are sufficient to provide complete support of the presence service.

Additional functionalities not documented in this TS are considered outside the scope of this TS. Such additional functionality may be on a network-wide basis, nationwide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the requirements of the presence service defined in this specification.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.141         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22141-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22141-b00.pdf</a> |
| ETSI | TS 122 141                  | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122141/11.00.00_60/ts_122141v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122141/11.00.00_60/ts_122141v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.141V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.141(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.141(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.141(R11-11.0.0)</a>         |

#### 10.2.47 TS 22.142 Value Added Services (VAS) for Short Message Service (SMS) requirements

This document specifies the service requirements associated with series of value-added features for short message service (SMS). Specifically, the objective of this document is to specify potential new value-added services for SMS in 3GPP that need to be standardized.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 142                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122142/11.00.00_60/ts_122142v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122142/11.00.00_60/ts_122142v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.142V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.142(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.142(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.142(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.142(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.142(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.142(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.48 TS 22.146 Multimedia broadcast/multicast service; Stage 1

This Technical Specification defines the Stage 1 description of the broadcast and multicast services for the 3GPP System (UTRAN and GERAN). Stage 1 is the set of requirements which shall be supported for the provision of broadcast and multicast services, seen primarily from the subscriber's and service providers' points of view.

This TS includes information applicable to network operators, content providers, and terminal and network manufacturers.

This TS contains the core requirements for multicast and broadcast services, which are sufficient to provide a complete service.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.146        | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22146-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22146-b10.pdf</a> |
| ETSI | TS 122 146                 | 11.1.0  | Published      | 2013-05-30  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122146/11.01.00_60/ts_122146v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122146/11.01.00_60/ts_122146v110100p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.146V1110-2014 | 11.1.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.146(R11-11.1.0) | 11.1.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.146(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.146(R11-11.1.0)</a>         |

#### 10.2.49 TS 22.153 Multimedia priority service

This document specifies the service requirements for Multimedia Priority Service (MPS).

The scope of this document is to specify those requirements of MPS necessary to provide an end-to-end service and to interwork with external networks where needed. Service interactions with external networks are considered within the scope of this document although these interactions may be specified in other standards.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.153        | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22153-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22153-b10.pdf</a> |
| ETSI | TS 122 153                 | 11.1.0  | Published      | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122153/11.01.00_60/ts_122153v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122153/11.01.00_60/ts_122153v110100p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.153V1110-2014 | 11.1.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.153(R11-11.1.0) | 11.1.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.153(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.153(R11-11.1.0)</a>         |

#### 10.2.50 TS 22.173 IP Multimedia core network subsystem (IMS) multimedia telephony service and supplementary services; Stage 1

This Technical Specification defines the Stage 1 description of the IMS multimedia telephony service and the minimum set of capabilities required to secure multi-vendor and multi-operator interoperability for multimedia telephony and related supplementary services.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 122 173                 | 11.5.0  | Published | 2013-07-11  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122173/11.05.00_60/ts_122173v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122173/11.05.00_60/ts_122173v110500p.pdf</a> |
| ATIS | ATIS.3GPP.22.173V1140-2014 | 11.4.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-22.173(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.173(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.173(R11-11.4.0)</a> |
| TTC | TS-3GA-22.173(Rel11)v11.5.0 | 11.5.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.173(Rel11)v11.5.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.173(Rel11)v11.5.0.pdf</a>                           |

#### 10.2.51 TS 22.174 Push service; Service aspects; Stage 1

This Technical Specification defines the Stage 1 description of the push service and is the set of requirements that shall be supported for the provision of push, seen primarily from the subscriber's, service providers' and delivery network points of view.

This TS includes information applicable to network operators, service providers, terminal and network manufacturers. It is of use to manufacturers and organizations which have devices or machines benefiting by availability of push service.

This TS contains the core requirements for the push service, for operator and external push initiators, which are sufficient to provide a complete service capability and service capability feature.

This TS defines the requirements for the push service to enable delivery of push data, including such functionality as:

- transfer of push data from a push initiator to a push recipient;
- latency and priority classes;
- definition of handling of undeliverable push data.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.174        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22174-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22174-b00.pdf</a> |
| ETSI | TS 122 174                 | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122174/11.00.00_60/ts_122174v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122174/11.00.00_60/ts_122174v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.174V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.174(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.174(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.174(R11-11.0.0)</a>         |

#### 10.2.52 TS 22.182 Customized Alerting Tone (CAT) requirements; Stage 1

The document specifies the requirements and technical considerations for Customized Alerting Tone (CAT) service in both CS and PS domains, especially additional features for roaming and interoperability support.

This document considers voice and multi-media CAT, so the CAT user may experience favourable songs, multi-media clips or other customized alerting tones.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.182         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22182-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22182-b00.pdf</a> |
| ETSI | TS 122 182                  | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122182/11.00.00_60/ts_122182v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122182/11.00.00_60/ts_122182v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.182V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.182(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.182(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.182(R11-11.0.0)</a>         |

### 10.2.53 TS 22.183 Customized Ringing Signal (CRS) Requirements; Stage 1

The document specifies the requirements and technical considerations for Customized Ringing Signal (CRS) service in the PS and CS domains, especially additional features for roaming and interoperability support.

This document considers voice and multi-media CRS, so the CRS user may experience favourable songs, multi-media clips or other customized CRS.

This document specifies the CRS filtering service requirements that allow the user to filter the CRS.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 183                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122100_122199/122183/11.00.00_60/ts_122183v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122100_122199/122183/11.00.00_60/ts_122183v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.183V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.183(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.183(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.183(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.183(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.183(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.183(Rel11)v11.0.0.pdf</a>                           |

### 10.2.54 TS 22.220 Service requirements for Home Node B (HNB) and Home eNode B (HeNB)

This specification defines the service requirements for the basic functionalities for the support of Home NodeB (HNB) and Home eNodeB (HeNB) – jointly referred to as H(e)NB – and the further functionalities that will enable the mobile operators to provide more advanced services as well as improving the user experience.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.220         | 11.6.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22220-b60.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22220-b60.pdf</a> |
| ETSI | TS 122 220                  | 11.6.0  | Published      | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122220/11.06.00_60/ts_122220v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122220/11.06.00_60/ts_122220v110600p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.220V116-0-2014 | 11.6.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.220(R11-11.6.0)  | 11.6.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.220(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.220(R11-11.6.0)</a>         |

### 10.2.55 TS 22.226 Global text telephony (GTT); Stage 1

This Technical Specification defines the Stage 1 description of the global text telephone feature, (GTT). Stage 1 is the set of requirements which shall be supported for the provision of the real-time text conversation feature, seen primarily from the subscriber's and service providers' points of view.

This TS includes information applicable to network operators, service providers, terminal and network manufacturers.

This TS contains the core requirements for the global text telephony feature, which are sufficient to provide a complete feature to incorporate in conversational services.

This TS defines the requirements for GTT to be understood as a framework to enable real-time transmission of text, for the purpose of a text-based or text-supported conversation between users. Text may be transported alone or in combination with other media in the session, especially video and voice.

Thus, the GTT enables text conversation to be included in any mobile conversational service.

Interworking with existing text telephony in PSTN, as well as emerging forms of standardized text conversation in all networks, is within the scope of this document. Interoperation with multimedia messaging services is also within scope of this feature.

NOTE – The global text telephony feature may be enhanced due to, e.g., operator's or regulator's requirements; however, such additional functionality shall not compromise conformance to the core requirements documented in this TS.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 226                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122226/11.00.00_60/ts_122226v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122226/11.00.00_60/ts_122226v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.226V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.226(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.226(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.226(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.226(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.226(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.226(Rel11)v11.0.0.pdf</a>                           |

### 10.2.56 TS 22.228 Service requirements for the Internet protocol (IP) multimedia core network subsystem; Stage 1

This TS defines the service requirements from users' and operators' perspective for the support of IP multimedia applications.

IP multimedia applications are supported by IP multimedia sessions in the IM CN subsystem. IP multimedia sessions use IP connectivity bearers (e.g., GPRS as a bearer). Examples of IP multimedia applications include speech communication, real-time multimedia applications, shared online whiteboards, etc.

This TS, in general, does not standardize usage of IP multimedia applications, but instead identifies the requirements to enable their support.

In order to align IP multimedia applications wherever possible with non-3GPP IP applications, the general approach is to adopt non-3GPP IP-based solutions.

The existing legacy tele- and supplementary services shall not be re-standardized as IP multimedia applications, and multimedia equivalent applications may be created with toolkits.



|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.228         | 11.6.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22228-b60.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22228-b60.pdf</a> |
| ETSI | TS 122 228                  | 11.6.0  | Published      | 2013-01-10  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122228/11.06.00_60/ts_122228v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122228/11.06.00_60/ts_122228v110600p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.228V116 0-2014 | 11.6.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.228(R11-11.6.0)  | 11.6.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.228(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.228(R11-11.6.0)</a>         |
| TTC  | TS-3GA-22.228(Rel11)v11.6.0 | 11.6.0  | TTC Approved   | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.228(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.228(Rel11)v11.6.0.pdf</a>                                   |

### 10.2.57 TS 22.233 Transparent end-to-end packet-switched streaming service; Stage 1

This Technical Specification defines the Stage 1 description of the packet-switched streaming service (PSS). Stage 1 is the set of requirements that shall be supported for the provision of a streaming service, seen primarily from the user's and service providers' points of view but also includes the service capabilities of the PSS itself.

This TS includes information applicable to network operators, service providers, terminal and network manufacturers.

This TS contains the core requirements for the packet-switched streaming service (PSS), which are sufficient to enable a range of services.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.233         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22233-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22233-b00.pdf</a> |
| ETSI | TS 122 233                  | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122233/11.00.00_60/ts_122233v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122233/11.00.00_60/ts_122233v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.233V110 0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.233(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.233(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.233(R11-11.0.0)</a>         |

### 10.2.58 TS 22.234 Requirements on 3GPP system to wireless local area network (WLAN) interworking

The present document specifies the functional requirements placed on the 3GPP system for interworking WLAN with the 3GPP system. Guidance is given for WLAN operators intending to provide the interworked WLAN capability.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 234                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122234/11.00.00_60/ts_122234v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122234/11.00.00_60/ts_122234v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.234V110 0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.234(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.234(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.234(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.234(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.234(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.234(Rel11)v11.0.0.pdf</a>                           |



### 10.2.59 TS 22.240 Service requirements for 3GPP Generic User Profile (GUP); Stage 1

This document defines the stage one description to the 3GPP Generic User Profile (GUP). It specifies requirements to the 3GPP Generic User Profile, seen primarily from the user, home environment, serving network and value added service provider's points of view.

The present document includes information applicable to the home environment, device- and network manufacturers and value added service providers which are sufficient to provide complete support of services in 3GPP networks.

While the 3GPP Generic User Profile may contain components that are out of scope of 3GPP (e.g., for services offered by third parties) the requirements in the present document pertain only to those components that lie within the 3GPP system.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 240                  | 11.1.0  | Published    | 2014-01-10  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122240/11.01.00_60/ts_122240v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122240/11.01.00_60/ts_122240v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.240V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.240(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.240(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.240(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.240(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-22.240(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-22.240(Rel11)v11.1.0.pdf</a>                           |

### 10.2.60 TS 22.242 Digital rights management (DRM); Stage 1

The text in this specification has been removed. DRM specifications are elaborated in the open mobile alliance (OMA) according to an agreement between 3GPP and OMA.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.242        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22242-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22242-b00.pdf</a> |
| ETSI | TS 122 242                 | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122242/11.00.00_60/ts_122242v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122242/11.00.00_60/ts_122242v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.242V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.242(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.242(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.242(R11-11.0.0)</a>         |

### 10.2.61 TS 22.243 Speech recognition framework for automated voice services; Stage 1

The present document defines the Stage 1 description of the speech recognition framework (SRF) for automated voice services. Stage 1 is the set of requirements for data seen primarily from the user's and service providers' points of view.

This Technical Specification includes information applicable to network operators, service providers, terminal and network manufacturers.

This Technical Specification contains the core requirements for the speech recognition framework for automated voice services.

The scope of this Stage 1 is to identify the requirements for 3G networks to support the deployments of a speech recognition framework-based automated voice services, and therefore to introduce a 3GPP speech recognition framework as part of speech-enabled services. The speech recognition framework for automated voice services is an optional feature in a 3GPP system.

Figure 1 positions the speech recognition framework (SRF) with respect to other speech-enabled services. As illustrated, SRF is designed to support server-side speech recognition over packet switched network (e.g., IMS). As such, SRF also enables configurations of multimodal and multidevice services that include distributing the speech engines.

Note that it is possible to design speech-enabled services that alternate or combine the use of clientside only engines and SRF.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 243                  | 11.0.0  | Published    | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122243/11.00.00_60/ts_122243v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122243/11.00.00_60/ts_122243v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.243V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.243(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.243(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.243(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.243(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.243(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.243(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.62 TS 22.246 Multimedia broadcast/multicast service (MBMS) user services; Stage 1

The present document describes MBMS user services that use the capabilities of MBMS. Application scenarios including charging, QoS aspects and related service requirements derived from them are described. These scenarios and service requirements can be used as guidance for the design of codecs and bearers for both UTRAN and GERAN.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.246        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22246-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22246-b00.pdf</a> |
| ETSI | TS 122 246                 | 11.0.0  | Published      | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122246/11.00.00_60/ts_122246v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122246/11.00.00_60/ts_122246v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.246V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.246(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.246(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.246(R11-11.0.0)</a>         |

#### 10.2.63 TS 22.250 IP multimedia subsystem (IMS) group management; Stage 1

The present document defines the Stage 1 description of the IMS group management. Stage 1 is the set of requirements which shall be supported for the provision of IMS group management, seen primarily from the subscribers' and service providers' points of view.

The TS includes information applicable to network operator, service provider, terminal and network manufacturer.

Additional functionalities not documented in the TS are considered outside the scope of this TS. Such additional functionality may be on a network-wide basis, nationwide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the requirements of the IMS group management defined in this specification.

|      | Document No.              | Version | Status    | Issued date | Location  |
|------|---------------------------|---------|-----------|-------------|---|
| ETSI | TS 122 250                | 11.0.0  | Published | 2012-10-03  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122250/11.00.00_60/ts_122250v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122250/11.00.00_60/ts_122250v110000p.pdf</a> |
| ATIS | ATIS.3GPP.22.250V110-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-22.250(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.250(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.250(R11-11.0.0)</a> |
| TTC | TS-3GA-22.250(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.250(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.250(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.64 TS 22.259 Service requirements for personal network management (PNM); Stage 1

The present document describes the service requirements for the Personal Network Management (PNM). Aspects of data synchronisation and management of user data are out of scope.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.259        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22259-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22259-b00.pdf</a> |
| ETSI | TS 122 259                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122259/11.00.00_60/ts_122259v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122259/11.00.00_60/ts_122259v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.259V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.259(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.259(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.259(R11-11.0.0)</a>         |

#### 10.2.65 TS 22.268 Public warning system (PWS) requirements

This Technical Specification defines the stage one description of the Public Warning System (PWS) Requirements. Stage one is the set of requirements seen primarily from the users' and service providers' points of view.

The scope of this TS covers the core requirements for the PWS that are sufficient to provide a complete service. This TS also covers subsystem additional requirements for the Earthquake and Tsunami Warning System (ETWS) and the Commercial Mobile Alert System (CMAS).

This TS includes information applicable to network operators, service providers, terminal and network manufacturers, in case of deployment of PWS, ETWS, and or CMAS. PWS, ETWS and CMAS deployment depends on operator decision or national regulations.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.268        | 11.5.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22268-b50.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22268-b50.pdf</a> |
| ETSI | TS 122 268                 | 11.5.0  | Published      | 2013-01-10  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122268/11.05.00_60/ts_122268v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122268/11.05.00_60/ts_122268v110500p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.268V115-2014  | 11.5.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.268(R11-11.5.0) | 11.5.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.268(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.268(R11-11.5.0)</a>         |

#### 10.2.66 TS 22.278 Service requirements for the evolved packet system (EPS)

This document describes the service requirements for the evolved packet system. Additional requirements for E-UTRAN are contained in the specifications identified in annex B of the document.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.278        | 11.6.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22278-b60.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22278-b60.pdf</a> |
| ETSI | TS 122 278                 | 11.6.0  | Published      | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122278/11.06.00_60/ts_122278v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122278/11.06.00_60/ts_122278v110600p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.278V1160-2014 | 11.6.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.278(R11-11.6.0) | 11.6.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.278(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.278(R11-11.6.0)</a>         |

### 10.2.67 TS 22.279 Combined circuit switched (CS) and IP multimedia subsystem (IMS) sessions; Stage 1

This Technical Specification defines service requirements for combining CS and IMS services using a CS speech or CS multimedia call in association with an IMS session. The IMS session may consist of one or more IMS services.

Requirements for the following capabilities are included:

- Radio capability exchange.
- Terminal capability exchange.
- ITU-T E.164 number exchange.
- Adding IMS session to an ongoing CS call.
- Adding a CS call to an ongoing IMS session.
- Supplementary services as they relate to CSICS.

It is intended that the capabilities defined herein for CSICS shall support interoperability between different operator networks, and roaming.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 279                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/122200_122299/122279/11.00.00_60/ts_122279v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122200_122299/122279/11.00.00_60/ts_122279v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.279V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.279(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.279(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.279(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.279(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.279(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.279(Rel11)v11.0.0.pdf</a>                           |

### 10.2.68 TS 22.340 IP multimedia system (IMS) messaging; Stage 1

The present document specifies the Stage 1 description of the IMS messaging services. Stage 1 is an overall service description and defines service requirements, primarily from the subscriber's and service providers' points of view, and does not deal with the details of the human interface itself.

The present TS includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

The present TS contains the requirements for IMS messaging services, which are sufficient to provide a complete service. The messaging types identified in this document are: immediate messaging, session-based messaging and deferred delivery messaging.

However, the requirements for the "deferred delivery messaging" type of IMS messaging are considered to be the same as for the multimedia messaging service (MMS) as described in 3G TS 22.140. Therefore, the present TS references TS 22.140 for a description of requirements of the "deferred delivery messaging" type of IMS messaging.

It is highly desirable that technical solutions for IMS messaging services should be sufficiently flexible to allow for possible enhancements. Additional functionalities not documented in this 3GPP TS may implement requirements which are considered outside the scope of this 3GPP TS. Such additional functionality shall not compromise conformance to the core requirements of the service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 122 340                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/122300_122399/122340/11.00.00_60/ts_122340v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/122300_122399/122340/11.00.00_60/ts_122340v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.340V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.340(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.340(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.340(R11-11.0.0)</a> |
| TTC  | TS-3GA-22.340(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.340(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-22.340(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.69 TS 22.368 Service requirements for machine-type communications (MTC); Stage 1

The present document specifies the service requirements for network improvements for machine type communications. In particular it will:

- identify and specify general requirements for machine type communications;
- identify service aspects where network improvements (compared to the current human-to-human oriented services) are needed to cater for the specific nature of machine-type communications;
- specify machine type communication requirements for these service aspects where network improvements are needed for machine type communication.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-22.368        | 11.6.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22368-b60.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/22/A22368-b60.pdf</a> |
| ETSI | TS 122 368                 | 11.6.0  | Published      | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/122300_122399/122368/11.06.00_60/ts_122368v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/122300_122399/122368/11.06.00_60/ts_122368v110600p.pdf</a>                             |
| ATIS | ATIS.3GPP.22.368V116-2014  | 11.6.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.368(R11-11.6.0) | 11.6.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.368(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.368(R11-11.6.0)</a>         |

#### 10.2.70 TR 22.809 Feasibility study on support for 3GPP voice interworking with enterprise IP-PBX (VINE)

This study aims to provide use cases and requirements for the following aspects of interworking between 3GPP networks and Enterprise voice services:

- Support for CS and IMS voice services interworking with IP-PBX services while at the same time maintaining full operator visibility and control of the related voice service signalling in the mobile operator's core network,
- Mobile operator control of security, manageability and operation of IP-PBX interworking function,

- Mobile operator control of availability of IP-PBX services to 3GPP mobile devices,
- Mobility between cellular and Enterprise environments, and
- Continuity when an IMS session is moved between cellular and Enterprise environments and when the IMS session is moved between mobile and fixed devices in the Enterprise environment.

Use cases and requirements from other SDOs will be considered in this study.

The following services aspects will be covered:

- CS and IMS services,
- Enterprise specific value-added services (e.g., "short code dialling", conferencing, transfer of sessions to a soft-phone on a PC), and
- Interaction between services provided by the mobile operator and services provided by the Enterprise.

#### **10.2.71 TR 22.871 Study on non-voice emergency services**

Non Voice Emergency Services will be applicable to GPRS (GERAN, UTRAN) and to EPS (GERAN, UTRAN, E-UTRAN and non-3GPP).

#### **10.2.72 TR 22.894 Feasibility study on IP multimedia subsystem (IMS) network-independent public user identities**

This study aims to examine the use cases and potential requirements that allow different Public User Identities of the form sip:user@domain belonging to the same domain to be:

- assigned by multiple network operators, where an individual Public User Identity is served by only a single network operator for all IMS services;
- provisioned by network operators in the case where other URI schemes have already been, or are going to be, provisioned by different service providers in the internet.

The Public User Identities could be SIP URIs associated with or derived from user identities of services from the Internet domain.

This study also aims to clarify the relationships (e.g., business, interworking) between the Domain Name Owner, the assignee of sip:user@domain where it is not the same as the domain owner, and operators sharing the domain name.

Any potential regulatory aspects will also be considered.

#### **10.2.73 TR 22.903 Study on videotelephony teleservice**

This document analyses the introduction of additional functionalities for the videotelephony service in addition to what is provided in the 3GPP specifications up to Release 6. The functionalities will include but are not limited to codec negotiation, charging principles, supplementary services support. The approach followed is to evaluate how functionalities which are applicable to existing teleservices can be replicated for videotelephony.

The document will analyse how the new functionalities will impact the backwards compatibility with the existing CS multimedia service, and will analyse whether it is beneficial to create a videotelephony teleservice.

|      | Document No.              | Version | Status    | Issued date | Location  |
|------|---------------------------|---------|-----------|-------------|---|
| ETSI | TR 122 903                | 11.0.0  | Published | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900/122999/122903/11.00.00_60/tr_122903v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900/122999/122903/11.00.00_60/tr_122903v110000p.pdf</a> |
| ATIS | ATIS.3GPP.22.903V110-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-22.903(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.903(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.903(R11-11.0.0)</a> |
| TTC | TR-3GA-22.903(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/document_list/free/3gpps2013/TR/TR-3GA-22.903(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/document_list/free/3gpps2013/TR/TR-3GA-22.903(Rel11)v11.0.0.pdf</a>                                 |

#### 10.2.74 TR 22.906 Study on IMS based peer-to-peer content distribution services

This Technical Report presents the overview, use cases and other aspects (e.g., Mobility, Charging, Security and etc.) of IMS based Peer-to-Peer Content Distribution Services. And the potential service requirements will be identified. The objectives are to study IMS based content distribution services with the following aspects:

- Identifying the user cases to describe how users, operators and service providers will may benefit by using/deploying IMS based content distribution services in fixed and mobile convergence networks with Peer-to-Peer technology;
- Identifying service aspects where IMS network improvements are needed to cater for content distributed services for above accesses;
- Identifying mobility, charging and security related requirements in the case of content distribution services on IMS;
- Identifying potential copyright issues.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 122 906                  | 11.0.0  | Published    | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_tr/122900/122999/122906/11.00.00_60/tr_122906v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900/122999/122906/11.00.00_60/tr_122906v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.906V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.906(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.906(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.906(R11-11.0.0)</a> |
| TTC  | TR-3GA-22.906(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/document_list/free/3gpps2013/TR/TR-3GA-22.906(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/document_list/free/3gpps2013/TR/TR-3GA-22.906(Rel11)v11.0.0.pdf</a>                                 |

#### 10.2.75 TR 22.908 Study on paging permission with access control (PPAC)

This Technical Report (TR) presents the results of the Study on Paging Permission with Access Control. The intent of this Study is to assess the ability of 3GPP specifications to meet requirements identified for Paging Permission with Access Control. This Study considers the following aspects:

- Identify requirements and aspects for Paging Permission with Access Control.
- Perform a Gap Analysis to assess the ability of existing 3GPP specifications to meet the requirements and aspects.

Regarding use-cases, the following should be studied in order to identify issues which are caused by the existing access control mechanism which does not allow UEs with the applied access class restriction to establish terminating calls (non-exhaustive list):

- Priority Service.
- Emergency Service.
- Communication between UEs in the same area where access control is performed

This study should focus on providing this service using the CS/PS domain. This study includes the aspect of originating call and terminating call.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.908          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22908-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22908-b00.pdf</a> |
| ETSI | TR 122 908                  | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122908/11.00.00_60/tr_122908v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122908/11.00.00_60/tr_122908v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.908V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.908(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.908(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.908(R11-11.0.0)</a>         |

### 10.2.76 TR 22.912 Study into network selection requirements for non-3GPP access

This document considers the network selection procedures requirements for non-3GPP access types. The network selection principles covered include both automatic and manual selection. Also considered is the operator management of network preferences for non-3GPP access types and how the device accesses networks offered through non-3GPP access.

Non-3GPP access includes any method by which the UE is connected either to a core network or to a server other than by using the radio bearers standardized by 3GPP. Examples are: BlueTooth, WLAN and fixed (wired connections).

UEs considered in this study are UEs able to connect to a non-3GPP network in addition to its 3GPP capabilities (i.e., dual mode, multi-mode UEs).

This work in this TR is applicable to GSM and UMTS and there are no additional considerations of EPS (Evolved Packet System).

Roaming and handover conditions between 3GPP and non-3GPP networks is not under the scope of this document and will not be treated here. They may be referred to, however, for the consistency of use cases and access description consistency.

Connection to a 3GPP operator's core network by WLAN is out of scope where this is I-WLAN. This is covered in [TS 22.234].

Use of the Generic Access Network is out of scope.

Considerations of tariffing are out of scope.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.912          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22912-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22912-b00.pdf</a> |
| ETSI | TR 122 912                  | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122912/11.00.00_60/tr_122912v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122912/11.00.00_60/tr_122912v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.912V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.912(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.912(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.912(R11-11.0.0)</a>         |

### 10.2.77 TR 22.934 Feasibility study on 3GPP system to wireless local area network (WLAN) interworking

This document studies the feasibility of interworking between 3GPP systems and wireless local area networks (WLANs). This document identifies and describes:

- scenarios for 3GPP – WLAN interworking;
- 3GPP-WLAN interworking service requirements;



- guidelines for standardization of 3GPP-WLAN interworking.

The document includes a number of different scenarios of 3GPP-WLAN interworking ranging from common billing to the provision of services seamlessly between the WLAN and the 3GPP system. In addition, 3GPP-WLAN interworking feasibility study includes the analysis of a number of environments where both the 3GPP system and WLAN may be deployed. Finally, this report outlines some of the different WLAN technologies that may be interworked with 3GPP systems.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 122 934                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900/122999/122934/11.00.00_60/tr_122934v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900/122999/122934/11.00.00_60/tr_122934v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.934V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.934(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.934(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.934(R11-11.0.0)</a> |
| TTC  | TR-3GA-22.934(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.934(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.934(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.78 TR 22.935 Feasibility study on location services (LCS) for wireless local area network (WLAN) interworking

The 3GPP has developed and continues to develop location services (LCS) requirements and standards for GSM and UMTS. To further the advancement of LCS within the 3GPP, LCS requirements and standards may be extended for 3GPP WLAN interworking to support the same location-based services that have been deployed today for GSM and UMTS. LCS with 3GPP WLAN Interworking system is considered to enlarge the area of location services.

The purpose of the feasibility study is to study a generic interworking functionality for LCS between 3GPP system and WLAN systems (e.g., IEEE 802.11 family, HIPERLAN/2, ...). Specifically, the feasibility study aims to:

- Study the LCS requirements for 3GPP WLAN Interworking scenarios.
- Study the different possible LCS architectures for interworking.

Also, the feasibility study will:

- Assess the service requirements for support of LCS over I-WLAN.
- Define the MMI aspects, i.e., the minimum set of functions to support LCS when the choice of access system by the user and/or terminal for when both access systems is available.
- Assess the charging requirements and architecture impacts. In particular, consider whether or not WLAN charging for LCS should be integrated with the architecture for UMTS charging for LCS.
- Assess the security requirements, given the prerequisite that a) the security level of the UMTS platform itself is not impacted, b) the security level provided to users in the WLAN mode is comparable to the one of UMTS.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TR 122 935                 | 11.0.0  | Published | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900/122999/122935/11.00.00_60/tr_122935v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900/122999/122935/11.00.00_60/tr_122935v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.935V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.935(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.935(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.935(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TR-3GA-22.935(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.935(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.935(Rel11)v11.0.0.pdf</a> |

### 10.2.79 TR 22.936 Multi-system terminals

This document studies the behaviour of a multi-system terminal that supports both 3GPP and non-3GPP systems. Particular issues handled include, but are not restricted to:

- Whether the system selection or PLMN selection should take higher priority in a multisystem terminal.
- Criteria for system change.
- Interaction between the user's and the operator's preferences.
- Support of automatic and manual system selection mode.
- Different methods of system selection and their impact on 3GPP specifications.
- Some areas for possible standardization, to ensure 3GPP compliance and protection of 3GPP networks.

The document treats non-3GPP networks in a generic way but it applies mainly to the case of 3GPP2/3GPP compliant terminals.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.936         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22936-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22936-b00.pdf</a> |
| ETSI | TR 122 936                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122936/11.00.00_60/tr_122936v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122936/11.00.00_60/tr_122936v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.936V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.936(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.936(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.936(R11-11.0.0)</a>       |

### 10.2.80 TR 22.937 Requirements for service continuity between mobile and wireless local area network (WLAN) networks

The present document develops the use cases and requirements for service continuity between a 3GPP network and another network, which can be:

- a TISPAN NGN with an IMS, accessed by a WLAN;
- an ISP accessed via a WLAN.

Each access network has its own separate security system and the NOs have a commercial agreement for roaming and handover.

The present document also examines the requirements and implications of:

- service aspects: maintaining service quality and service continuity, while roaming between a 3GPP PLMN and an independently-owned WLAN;
- security aspects: while roaming between a 3GPP PLMN and a WLAN, in particular when networks may be independently authenticated;
- UICC aspects, including NAA types, personalisation and ownership.

The present document is related to ongoing standardisation efforts in the following areas:

- where the WLAN is an I-WLAN, requirements for which are described in [3G TS 22.234];

- methods for selecting the 3GPP or the non-3GPP access network, requirements for which are described in 3G TR 22.912.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.937         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22937-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22937-b00.pdf</a> |
| ETSI | TR 122 937                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122937/11.00.00_60/tr_122937v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122937/11.00.00_60/tr_122937v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.937V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.937(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.937(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.937(R11-11.0.0)</a>       |

### 10.2.81 TR 22.940 IP multimedia subsystem (IMS) messaging

The objective of this Technical Report is to:

- describe use cases that illustrate the service requirements for IMS messaging;
- derive the broad 3GPP requirements for IMS messaging services;
- investigate the possible requirements for interworking with networks outside the 3GPP domain;
- develop an analysis of the possible interaction between IMS messaging services and existing 3GPP messaging services (SMS, EMS and MMS) as well as other relevant 3GPP services such as presence IMS group management, etc.;
- identify possible routes to standardization by:
  - adopting existing and emerging standards, e.g., OMA, IETF;
  - modifying and enhancing existing and emerging standards;
  - developing of new standards.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 122 940                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122940/11.00.00_60/tr_122940v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122940/11.00.00_60/tr_122940v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.940V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.940(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.940(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.940(R11-11.0.0)</a> |
| TTC  | TR-3GA-22.940(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.940(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.940(Rel11)v11.0.0.pdf</a>                           |

### 10.2.82 TR 22.942 Study on value added services (VAS) for short message service (SMS)

This document studies the service requirements associated with series of value-added features for short message service (SMS). Specifically, the objective of this document is to study potential new value-added services for SMS in 3GPP that need to be standardized.

|      | Document No.       | Version | Status         | Issued date | Location  |
|------|--------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.942 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22942-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22942-b00.pdf</a> |
| ETSI | TR 122 942         | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122942/11.00.00_60/tr_122942v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122942/11.00.00_60/tr_122942v110000p.pdf</a>                           |

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ATIS | ATIS.3GPP.22.942V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.942(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.942(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.942(R11-11.0.0)</a> |

### 10.2.83 TR 22.944 Report on service requirements for UE functionality split

This report identifies scenarios and requirements for UEs with functionality split over multiple devices. Scenarios that are required to be supported in the standard are defined in detail. The requirements in this report should enable interoperability between user equipment components from different vendors. This report is not intended to identify all possible or permitted functionality splits. Certain splits of functionality may be prohibited for security or other reasons. This report does not identify all prohibited scenarios.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.944         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22944-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22944-b00.pdf</a> |
| ETSI | TR 122 944                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122944/11.00.00_60/tr_122944v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122944/11.00.00_60/tr_122944v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.944V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.944(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.944(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.944(R11-11.0.0)</a>       |

### 10.2.84 TR 22.947 Study on Personal Broadcast Service (PBS)

This Technical Report presents potential use cases of a personal broadcast service. It aims to take account of service and system aspects of PBS. The minimum set of service requirements associated with each use case will be identified.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 122 947                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122947/11.00.00_60/tr_122947v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122947/11.00.00_60/tr_122947v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.947V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.947(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.947(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.947(R11-11.0.0)</a> |
| TTC  | TR-3GA-22.947(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.947(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.947(Rel11)v11.0.0.pdf</a>                           |

### 10.2.85 TR 22.948 Study of requirements of IP-Multimedia Subsystem (IMS) convergent multimedia conferencing

This document studies the requirements for IP-Multimedia Subsystem (IMS) Convergent Multimedia Conferencing (CMMC) service in IMS. Specifically, the objective of this study item is to:

- Identify features of IMS multimedia conferencing, and describe potential service requirements for IMS multimedia conferencing.
- Identify the IMS requirements for multimedia conferencing services:
  - the conference framework
  - data sharing session establishment/termination/management in a conference

- media control for audio, video and data
- floor control for audio, video and data
- conference policy
- Identify possible routes to standardization by:
  - Adopting existing and emerging standards, e.g., OMA, IETF, W3C.
  - Modifying and enhancing existing and emerging standards.
  - Developing of new standards.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.948         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22948-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22948-b00.pdf</a> |
| ETSI | TR 122 948                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122948/11.00.00_60/tr_122948v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122948/11.00.00_60/tr_122948v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.948V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.948(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.948(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.948(R11-11.0.0)</a>       |

#### 10.2.86 TR 22.949 Study on a generalized privacy capability

The present document aims to investigate and summarize the existing service requirements on privacy for 3GPP services. In order to ensure that these services and future 3GPP services will have a consistent set of rules that control the availability and usage of confidential information, it is the intention to identify a common way to handle privacy-related information in the network.

Generic privacy requirements for the mobile industry are also being defined by the Open Mobile Alliance, and it is the intention of this document to present the existing requirements and any alternatives to achieving the required functionality within 3GPP networks.

The scope of this study is to:

- identify privacy-related information that is used in the 3GPP system;
- identify the existing 3GPP services that handle privacy-related information;
- identify the various stakeholders that handle, control or consume personal data, and to define their relationships;
- document the definitions of the various functions, stakeholders and functions involved in a privacy capability;
- identify the work being done by other organizations and the additional work to be done by 3GPP.

The types of data subject to privacy rules within the scope of this study include:

- privacy-related information specific to an individual user;
- privacy-related information relating to entities such as corporations;
- network data such as serving cell and broadcast area, e.g., data that relates to the user's location or presence in the network, and which could be used by applications to track the user.

|      | Document No.       | Version | Status         | Issued date | Location  |
|------|--------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.949 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22949-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22949-b00.pdf</a> |

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TR 122 949                 | 11.0.0  | Published | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122949/11.00.00_60/tr_122949v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122949/11.00.00_60/tr_122949v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.949V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.949(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.949(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.949(R11-11.0.0)</a> |

### 10.2.87 TR 22.950 Priority service feasibility study

This Technical Report (TR) presents the results of the feasibility study on priority service. The intent of this feasibility study is to assess the ability of 3GPP specifications to meet high-level requirements identified for priority service. This feasibility study consisted of a multi-step process, namely:

- 1) Identify high-level requirements for priority service.
- 2) Determine existing relevant 3GPP specifications for priority service.
- 3) Perform a gap analysis to assess the ability of existing 3GPP specifications to meet the high-level priority service requirements.

Additional functionalities not documented in this TR are considered outside the scope of this TR. Such additional functionality may be on a network-wide basis, nationwide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the requirements of the priority service defined in this specification.

The priority service is intended to be utilized for both voice and data and therefore both elements are considered within the scope of this document. While priority service is meant for both voice and data services, the initial set of requirements address circuit-switched services (voice as well as data). Multimedia and non-circuit-switched aspects of priority service have not been addressed in this feasibility study and are for further study.

The priority service is intended to interwork with external networks to provide an end-to-end service. Therefore, service interactions with external networks are considered within the scope of this document, although the specification of these interactions may be in other standards. If this occurs, a reference to that specification shall be made.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.950         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22950-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22950-b00.pdf</a> |
| ETSI | TR 122 950                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122950/11.00.00_60/tr_122950v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122950/11.00.00_60/tr_122950v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.950V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.950(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.950(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.950(R11-11.0.0)</a>       |

### 10.2.88 TR 22.951 Service aspects and requirements for network sharing

In the current dynamic market place, as a result of partnerships, acquisitions, creative agreements among operators, etc., the need for tools that enable various degrees of network sharing is becoming increasingly important.

When GSM and then UMTS were specified, the possibility of sharing part or all of the network by two or more separated commercial entities was not considered, and as a result the standards lack some functionalities that enable the realization of such commercial agreements.



GSM was designed under the principle "one operator, one radio access network". The GSM network has some possibilities of infrastructure sharing, but it does not support true radio access network sharing. The initial design of 3GPP system has followed the same principle.

This technical report is aimed to capture the service and user requirements that must be fulfilled by the 3GPP system in order to enable network sharing in a standardized way. Section 5 describes various network sharing and includes various scenarios, e.g., spanning from common radio access network connected to multiple core networks, or multiple radio access networks sharing one core network. Section 6 contains a summary of the user classification and network identities. In section 7 the user requirements are described, while section 8 deals with the network operator requirements. Section 9 describes the mobility requirements in a shared network. The rest of the document covers security (section 10) and charging (section 11). Some conclusions can be found in section 12 and an annex with examples of practical realization of network sharing is provided.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 122 951                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122951/11.00.00_60/tr_122951v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122951/11.00.00_60/tr_122951v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.951V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.951(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.951(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.951(R11-11.0.0)</a> |
| TTC  | TR-3GA-22.951(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.951(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.951(Rel11)v11.0.0.pdf</a>                           |

#### 10.2.89 TR 22.952 Priority service guide

This document addresses the service aspects (service description), network aspects (call flows), and management aspects (operations, administration, maintenance, and provisioning) of priority service, based on existing 3GPP specifications.

The priority service is intended to be used for both voice and data. However, this document only addresses circuit-switched voice service. Data, multimedia and non-circuit-switched aspects of priority service have not been addressed and are for further study.

The priority service is intended to interwork with external networks to provide an end-to-end service. Therefore, service interactions with external networks are considered within the scope of this document, although the specification of these interactions may be in another standard. If this occurs, a reference to that specification is made.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.952         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22952-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22952-b00.pdf</a> |
| ETSI | TR 122 952                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122952/11.00.00_60/tr_122952v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122952/11.00.00_60/tr_122952v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.952V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.952(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.952(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.952(R11-11.0.0)</a>       |

#### 10.2.90 TR 22.953 Multimedia priority service feasibility study

This Technical Report (TR) presents the results of the feasibility study on multimedia priority service. The intent of this feasibility study is to assess the ability of 3GPP specifications to meet high-level

requirements identified for multimedia priority service. This feasibility study consisted of a multi-step process, namely:

- Identify high-level requirements for multimedia priority service.
- Determine relevant 3GPP specifications for multimedia priority service.
- Perform a gap analysis to assess the ability of existing 3GPP specifications to meet the high-level multimedia priority service requirements.

Additional functionalities not documented in this TR are considered outside the scope of this TR. Such additional functionality may be on a network-wide basis, nationwide basis or particular to a group of users.

The multimedia priority service is intended to be utilized for both voice and data in the packet-switched (PS) domain and the IP multimedia subsystem (IMS).

The multimedia priority service is intended to interwork with external networks to provide an end-to-end service. Therefore, service interactions with external networks are considered within the scope of this document, although the specification of these interactions may be in other standards. If this occurs, a reference to that specification is made.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.953         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22953-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22953-b00.pdf</a> |
| ETSI | TR 122 953                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122953/11.00.00_60/tr_122953v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122953/11.00.00_60/tr_122953v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.953V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.953(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.953(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.953(R11-11.0.0)</a>       |

### 10.2.91 TR 22.967 Transferring of emergency call data

This document examines the issues associated with the transmission of emergency call data from a vehicle to a public service access point (PSAP).

Issues associated with the content of the emergency call data or the triggers of the emergency calls are outside the scope of this document.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.967         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22967-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22967-b00.pdf</a> |
| ETSI | TR 122 967                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122967/11.00.00_60/tr_122967v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122967/11.00.00_60/tr_122967v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.967V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.967(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.967(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.967(R11-11.0.0)</a>       |

### 10.2.92 TR 22.968 Study for requirements for a public warning system (PWS) service

This document presents results of the Study on Public Warning System (PWS). The intent of this study is to identify requirements and aspects for a Public Warning System. The regulatory requirements and use cases for a public warning service have not been finalized in all regions (i.e., in the USA) therefore, the results of this study are not applicable for those regions which do not have regulatory requirements defined.



The Public Warning System is intended to interwork with external networks to provide an end-to-end service. Therefore, service interactions with a Warning Notification Provider in external networks are considered within the scope of this document, although the specification of these interactions may be in other standards. If this occurs, a reference to that specification shall be made.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.968         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22968-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22968-b00.pdf</a> |
| ETSI | TR 122 968                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122968/11.00.00_60/tr_122968v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122968/11.00.00_60/tr_122968v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.968V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.968(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.968(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.968(R11-11.0.0)</a>         |

### 10.2.93 TR 22.973 IMS multimedia telephony service and supplementary services

This Technical Report defines the IMS multimedia telephony service and associated supplementary services for IMS. It aims to take account and build on the IMS capabilities already provided in 3GPP Release 5 and Release 6.

The objective is to define the minimum set of capabilities required in the IP multimedia subsystem to secure multi-vendor and multi-operator inter-operability for the IMS multimedia telephony service and related supplementary services.

While the user experience for the IMS multimedia telephony service is expected to have some similarity to existing telephony services, the richer capabilities of IMS will be exploited.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 122 973                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122973/11.00.00_60/tr_122973v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122973/11.00.00_60/tr_122973v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.22.973V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.973(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.973(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-22.973(R11-11.0.0)</a> |
| TTC  | TR-3GA-22.973(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.973(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.973(Rel11)v11.0.0.pdf</a>                         |

### 10.2.94 TR 22.977 Feasibility study for speech-enabled services

The advancement in the automatic speech recognition (ASR) technology, coupled with the rapid growth in the wireless telephony market has created a compelling need for speech-enabled services. Voice-activated dialling has become a *de facto* standard in many of the mobile phones in the market today. The speech recognition technology has also been applied more recently to voice messaging and personal access services. A voice eXtensible mark-up language (voice XML) has been designed to bring the full power of web development and content delivery to voice response applications. Voice portals that provide voice access to conventional graphically oriented services over the Internet are now becoming popular. Forecasts show that speech-driven services will play an important role on the 3G market. Users of mobile terminals want the ability to access information while on the move and the small portable mobile devices that will be used to access this information need improved user interfaces using speech input.

A brief overview of the speech-enabled services is presented. The different ways of enabling speech recognition for the speech-enabled services are described. Section 6 discusses multimodal services

and options to enable multimodal and multi-device services. The scope of the report, references, definitions and abbreviations are detailed in the first few sections.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 122 977                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122977/11.00.00_60/tr_122977v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122977/11.00.00_60/tr_122977v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.977V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.977(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.977(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.977(R11-11.0.0)</a> |
| TTC  | TR-3GA-22.977(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.977(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.977(Rel11)v11.0.0.pdf</a>                           |

### 10.2.95 TR 22.978 All-IP network (AIPN) feasibility study

The present document studies the feasibility of the progression of the 3GPP system to an AIPN. More specifically, this document:

- a) Identifies and describes the objectives and user, business and technological drivers for progression of the 3GPP system to an AIPN:
  - i) Investigates the High Level Objectives
  - ii) Investigates Motivations and Drivers
  - iii) Investigates impacts upon current models (e.g., business/charging/service models)
- Defines and develops the end-user and AIPN operator aspects of an AIPN:
  - Produces an AIPN vision, taking into account the special requirements for the mobile community e.g., carrier grade, optimization for the radio environment, recognizing support of multiple access system scenarios.
  - Investigates needs and requirements associated with the evolution of the 3GPP System to an AIPN.
  - Investigates requirements associated with the reuse of legacy infrastructure and support of legacy terminals.
  - Investigates migration and cost effective introduction of new technology.
- Identifies the capability expansion required to introduce the AIPN concept into the 3GPP system (migration and co-existence)
- Evaluates whether an AIPN should be standardized within 3GPP, and in the case of a positive conclusion identifies the subsequent steps to be taken to achieve this by defining the scope, target, and roadmap for work to be undertaken within future 3GPP releases.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.978          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22978-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22978-b00.pdf</a> |
| ETSI | TR 122 978                  | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122978/11.00.00_60/tr_122978v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122978/11.00.00_60/tr_122978v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.978V1100-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.978(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.978(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.978(R11-11.0.0)</a>       |
| TTC  | TR-3GA-22.978(Rel11)v11.0.0 | 11.0.0  | TTC Approved   | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.978(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.978(Rel11)v11.0.0.pdf</a>                                 |

### 10.2.96 TR 22.979 Feasibility study on combined circuit switched (CS) calls and IP multimedia subsystem (IMS) sessions

This document studies the service requirements associated with a multimedia service combining a CS call with one or more IMS services (or vice versa), while appearing as a single service to both end-users. The feasibility study addresses the high-level requirements and use cases such for combinational service including charging and user experience.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 122 979                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900/122999/122979/11.00.00_60/tr_122979v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900/122999/122979/11.00.00_60/tr_122979v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.979V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.979(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.979(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.979(R11-11.0.0)</a> |
| TTC  | TR-3GA-22.979(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.979(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.979(Rel11)v11.0.0.pdf</a>                           |

### 10.2.97 TR 22.980 Network composition feasibility study

This document explores the feasibility of a uniform procedure for the integration of, and the interworking with, a large variety of heterogeneous network types. This uniform procedure is called Network Composition. It focuses on ad-hoc networks, PANs, moving networks etc., but also includes access systems. The goal is to avoid the need for defining a new procedure for integration / interworking with each newly emerging network type and to explore the feasibility of making the Network Composition procedure dynamic and to minimize human intervention ("plug and play"). Of course, the high security (authentication, authorization) standards of 3GPP must thereby be maintained. Finally, it is desirable for the Network Composition procedure to be flexible regarding what functionality is assumed in the composing network.

It is conceivable that roaming within a pre-set commercial and technological environment could be established dynamically using the same procedure.

This Feasibility Study covers the following aspects:

- Description of purpose and benefits of composition
- Composition use cases highlighting uniformity, dynamicity, security, manageability, scalability, flexibility, as well as business aspects
- Study of potential composition requirements
- Description of the composition process
- Definition of traits and/or implications of introducing this functionality into the 3GPP system, covering subjects such as management, multi-link radio access, mobility, context & policy awareness, security, and media transcoding & adaptation capabilities.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.980         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22980-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22980-b00.pdf</a> |
| ETSI | TR 122 980                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900/122999/122980/11.00.00_60/tr_122980v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900/122999/122980/11.00.00_60/tr_122980v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.980V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.980(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.980(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.980(R11-11.0.0)</a>       |

### 10.2.98 TR 22.982 Study of customized alerting tone (CAT) requirements

This document studies requirements and potential new capabilities that need to be standardized for the CAT service, especially additional features for roaming and interoperability support.

The document specifies requirements for the technical implementation of Customized Alerting Tone (CAT) service in the CS domain as well as impacts on the PS domain.

Basically, this TR is considering voice services, although an interaction with IMS Multimedia Telephony (MITE, see 3G TS 22.173) services will be studied. Also Multi-media CAT will be taken into consideration, so the CAT user may experience favourable songs, multi-media clips or other customized alerting tones.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.982         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22982-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22982-b00.pdf</a> |
| ETSI | TR 122 982                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122982/11.00.00_60/tr_122982v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122982/11.00.00_60/tr_122982v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.982V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.982(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.982(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.982(R11-11.0.0)</a>       |

### 10.2.99 TR 22.983 Services alignment and migration

This document studies how services to the end user should be delivered and managed regardless of how the user accesses the services (e.g., using CS or IMS) and to ensure a consistent user experience.

The services in scope include but are not restricted to:

- Conversational voice and video services
- Messaging services
- Supplementary Services as applied to the above.

For each of the above types, the service features that should be supported when accessing the service via CS or IMS using any appropriate access type are described. Also, the way each service will behave when transferring between domains is described.

The work will also consider how to support existing ("traditional") services while allowing new, innovative services to be provided to the end user using the enhanced capabilities of the IMS. It will cover possible migration paths from where services are provided on both CS and IMS to IMS Call and Service Control. Also, this work will consider roaming and call handling, interaction with legacy terminals, and the provision of user state and location for services accessed via CS or IMS and for services transferred between them.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.983         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22983-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22983-b00.pdf</a> |
| ETSI | TR 122 983                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122983/11.00.00_60/tr_122983v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122983/11.00.00_60/tr_122983v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.983V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.983(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.983(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.983(R11-11.0.0)</a>       |

### 10.2.100 TR 22.985 Service requirement for the user data convergence (UDC)

This document describes the concept of the 3GPP User Data Convergence (UDC). Furthermore, it collects some architectural requirements and should be taken as guideline in stages 2 and 3 work.

The UDC will simplify the overall network topology and interfaces, avoid data duplication and inconsistency and simplify the creation of new services by providing easy access to the user data.

Special consideration is put on the following areas:

- Categorization of the user data of services which would be converged in UDC
- Identification of the requirements on the common data model framework with focus on extensibility
- Identification of the requirements on the UDC for the support of new services including their provisioning

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 122 985                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122985/11.00.00_60/tr_122985v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122985/11.00.00_60/tr_122985v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.22.985V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.985(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.985(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.985(R11-11.0.0)</a> |
| TTC  | TR-3GA-22.985(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.985(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-22.985(Rel11)v11.0.0.pdf</a>                           |

### 10.2.101 TR 22.986 Study on service specific access control

This Technical Report (TR) presents the results of the Study on Service Specific Access Control (SSAC). The intent of this Study is to assess the ability of 3GPP specifications to meet requirements identified for Services Specific Access Control. This Study considers the following aspects:

- Study use cases and clarify issues in SSAC in EPS.
- Describe the considerations and the problems with existing access control, which are identified in the use cases.
- Identify candidate requirements and aspects for providing SSAC in EPS.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.986         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22986-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22986-b00.pdf</a> |
| ETSI | TR 122 986                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122986/11.00.00_60/tr_122986v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122986/11.00.00_60/tr_122986v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.986V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.986(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.986(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.986(R11-11.0.0)</a>       |

### 10.2.102 TR 22.987 Study of haptic services requirements

This Technical Report aims to present use cases in telecommunication services that are developed by applying haptic technology. It also justifies accepting haptic technology in telecommunication services by investigating readiness for its use in the telecommunication system and the level of benefit for the user experience.

For this purpose this document investigates the following questions:

- Provide the overview of current haptic technology which might be deployed in telecommunication
- Identify any adaption required for existing services enhanced by supporting the delivery of haptic sense
- Identify key aspects of new services built on capabilities provided by haptic technology
- Identify and specify the general requirements for the delivery of haptic sense in telecommunication networks
- Identify the scope and roles of 3GPP for mobile haptic services and consult with OMA to coordinate on the development of mobile haptic services

Note that this Technical Report considers all types of telecommunication networks within the scope of 3GPP, including mobile networks and IMS-based fixed networks, etc.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-22.987         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22987-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/22/A22987-b00.pdf</a> |
| ETSI | TR 122 987                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_tr/122900_122999/122987/11.00.00_60/tr_122987v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/122900_122999/122987/11.00.00_60/tr_122987v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.22.987V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-22.987(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.987(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-22.987(R11-11.0.0)</a>       |

### 10.3 23-Series, Technical realization

#### 10.3.1 TS 23.002 Network architecture

This document offers an overview of the PLMN and its architectures and configuration. The configuration and the functional entities of the PLMN and the interfaces between them are described on a general level in order to cope with possible implementations. These descriptions include interfaces between and within the core networks, the access networks, the user equipment, different service platforms, different domains and subsystems, and functional entities within domains and subsystems.

This document covers different architectural aspects with varying level of detail. In general, other specifications shall be referred to for further details; these specifications enable the reader to acquire the full understanding of a system or service feature.

Note that this document does not cover, or even list, all features of PLMNs.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 002                  | 11.6.0  | Published    | 2013-06-27  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123002/11.06.00_60/ts_123002v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123002/11.06.00_60/ts_123002v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.002V115-2014   | 11.5.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.002(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.002(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.002(R11-11.5.0)</a> |
| TTC  | TS-3GA-23.002(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.002(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.002(Rel11)v11.6.0.pdf</a>                           |



### 10.3.2 TS 23.003 Numbering, addressing and identification

The document defines the principal purpose and use of international mobile station equipment identities (IMEI) within the digital cellular telecommunications system and the 3G system.

The document defines:

- a) an identification plan for mobile subscribers in the GSM system;
- b) principles of assigning telephone and ISDN numbers to MSs in the country of registration of the MS;
- c) principles of assigning mobile station (MS) roaming numbers to visiting MSs;
- d) an identification plan for location areas, routing areas, and base stations in the GSM system;
- e) an identification plan for MSCs, SGSNs, GGSNs, and location registers in the GSM system;
- f) principles of assigning international mobile equipment identities;
- g) principles of assigning zones for regional subscription;
- h) an identification plan for groups of subscribers to the voice group call service (VGCS) and to the voice broadcast service (VBS); and identification plan for voice group calls and voice broadcast calls; an identification plan for group call areas;
- i) principles for assigning packet data protocol (PDP) addresses to mobile stations;
- j) an identification plan for point-to-multipoint data transmission groups;
- k) an identification plan for CN domain, RNC and service area in the UTRAN system;
- l) an identification plan for mobile subscribers in the WLAN system.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 003                  | 11.8.0  | Published    | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123003/11.08.00_60/ts_123003v110800p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123003/11.08.00_60/ts_123003v110800p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.003V1150-2014  | 11.5.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.003(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.003(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.003(R11-11.5.0)</a> |
| TTC  | TS-3GA-23.003(Rel11)v11.7.0 | 11.7.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.003(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.003(Rel11)v11.7.0.pdf</a>                           |

### 10.3.3 TS 23.007 Restoration procedures

The data stored in location registers are automatically updated in normal operation; the main information stored in a location register defines the location of each mobile station and the subscriber data required to handle traffic for each mobile subscriber. The loss or corruption of these data will seriously degrade the service offered to mobile subscribers; it is therefore necessary to define procedures to limit the effects of failure of a location register, and to restore the location register data automatically. This document defines the necessary procedures.

The basic principle is that restoration should be based on radio contact to avoid faulty data being spread in the system.

Subscriber data for supplementary services must also be correctly restored, although the impact on service of corruption of supplementary service data is less severe.

Procedures for supporting these functions are defined in 3G Technical Specifications 29.002 and 29.060.

The MAP operation "IMSI Attach" is used only in MAP version 1; in MAP version 2 the same function is performed by the MAP operation "Update Location Area". References in this specification to IMSI attach apply only to MAP version 1 network entities.

If the restoration of subscriber data in the VLR is triggered by Location Updating or IMSI Attach, the VLR retrieves subscriber data from the HLR by sending an "Update Location" request, which triggers one or more "Insert Subscriber Data" operations from the HLR. The "Update Location" request may also be used to send the LMSI to the HLR.

If the restoration of subscriber data in the VLR is triggered by a "Provide Roaming Number" request, the behaviour of the VLR depends on whether it is implemented according to MAP version 1 or MAP version 2. For MAP version 2, the VLR retrieves subscriber data from the HLR by sending a "Restore Data" request, which triggers one or more "Insert Subscriber Data" operations from the HLR. The "Restore Data" request is also used to send the LMSI to the HLR. For MAP version 1, the VLR retrieves subscriber data from the HLR by sending a "Send Parameters" request with parameter type "Subscriber Data", which cannot be used to send the LMSI to the HLR.

The VLR number and MSC number in the subscriber data in the HLR are updated by the "Update Location" procedure.

The GGSN (gateway GPRS support node) is the point of PDN interconnection with the GSM PLMN supporting GPRS. The GGSN contains routing information for GPRS users with a PDP context active. The necessary procedures needed to restore GGSN data information after a restart is described in this document.

The SGSN (serving GPRS support node) is the node that is serving the MS. The SGSN stores information regarding, e.g., mobility management, routing and security. The necessary procedures needed to restore this SGSN information after a restart are described in this document.

A Type A LMU (location measurement unit) is a network node, accessed over the GSM air interface that is functionally similar to an MS. All requirements associated with a non-GPRS MS in this specification apply also to a Type A LMU, except where specified otherwise.

|      | Document No.                | Version                | Status       | Issued date | Location  |
|------|-----------------------------|------------------------|--------------|-------------|---|
| ETSI | TS 123 007                  | 11.8.0                 | Published    | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123007/11.08.00_60/ts_123007v110800p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123007/11.08.00_60/ts_123007v110800p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.007V1150-2014  | <a href="#">11.5.0</a> | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.007(R11-11.5.0)  | 11.5.0                 | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.007(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.007(R11-11.5.0)</a> |
| TTC  | TS-3GA-23.007(Rel11)v11.7.0 | 11.7.0                 | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.007(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.007(Rel11)v11.7.0.pdf</a>                           |

#### 10.3.4 TS 23.008 Organization of subscriber data

The document provides details concerning information to be stored in home subscriber servers, visitor location registers, GPRS support nodes and call session control function (CSCF) concerning mobile subscriber.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 123 008                 | 11.9.0  | Published | 2013-12-19  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123008/11.09.00_60/ts_123008v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123008/11.09.00_60/ts_123008v110900p.pdf</a> |
| ATIS | ATIS.3GPP.23.008V1170-2014 | 11.7.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-23.008(R11-11.7.0)  | 11.7.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.008(R11-11.7.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.008(R11-11.7.0)</a> |
| TTC | TS-3GA-23.008(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.008(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.008(Rel11)v11.9.0.pdf</a>                           |

### 10.3.5 TS 23.009 Handover procedures

The document contains a detailed description of the handover procedures to be used in PLMNs. The purpose of the handover procedures, as described in the document, are to ensure that the connection to the mobile station (MS) or user equipment (UE) is maintained as it moves from one cell or radio network to another. The document defines the circuit-switched handover functionality based on the service requirements in TS 22.129.

The document considers the following four cases:

- i) Handover between base stations connected to the same MSC: this is termed an "Intra-MSC handover";
- ii) Handover between radio network subsystems connected to the same 3G\_MSC: this is termed an "Intra-3G\_MSC handover/relocation". This case also includes inter-system handover between RNS and BSS if the 3G\_MSC supports the A interface. In the context of this specification, the term "RNS" refers also to a BSS when serving a mobile station in Iu mode;
- iii) Handover between base stations connected to different MSCs: this is termed an "Inter-MSC handover". This category can be sub-divided into three further procedures:
  - a) the basic inter-MSC handover procedure, where the MS is handed over from a controlling MSC (MSC-A) to another MSC (MSC-B);
  - b) the subsequent inter-MSC handover procedure, where the MS is handed over from MSC-B to a third MSC (MSC-B');
  - c) the subsequent inter-MSC hand back, where the MS is handed back from MSCB to MSC-A;
- iv) Handover between radio network subsystems connected to different 3G\_MSCs: this is termed an "Inter-3G\_MSC handover/relocation". In the context of this specification, the term "RNS" also refers to a BSS when serving a mobile station in Iu mode. This category can be divided into three further sub-procedures:
  - a) the inter-3G\_MSC handover procedure from UMTS to GSM, where the UE/MS is handed over from a controlling 3G\_MSC (3G\_MSC-A) to an MSC (MSC-B);
  - b) the inter-3G\_MSC handover procedure from GSM to UMTS, where the UE/MS is handed over from a controlling MSC (MSC-A) to a 3G\_MSC (3G\_MSCB);
  - c) the inter-3G\_MSC relocation procedure, where the UE is relocated from 3G\_MSC-A to 3G\_MSC-B. This procedure can also be combined with a hard change of radio resources (hard handover with switch in the core network).

The MSC in this category can optionally be a 3G\_MSC supporting the A interface. The three sub-procedures do also cover subsequent handover/relocation to a third MSCB' or 3G\_MSC-B' and subsequent handover/relocation back to MSC-A or 3G\_MSC-A.

In both cases i) and iii), the same procedures as defined in TS 48.008 and in TS 24.008 shall be used on the A interface and on the radio interface, respectively.

In case ii), the same procedures as defined in TS 25.413 and in TS 24.008 shall be used on the Iu interface. If the 3G\_MSC in case ii) also supports the A interface, TS 08.08 and TS 24.008 shall be used on the A interface.

In case iii), the handover procedures shall transport the A-interface messages between MSC-A and MSC-B described in the mobile application part (MAP), TS 29.002.

In case iv), the handover procedures shall transport the A-interface messages between 3G\_MSC and MSC described in the mobile application part (MAP), TS 29.002.

In case iv), the relocation procedure shall transport the Iu-interface messages between 3G\_MSC-A and 3G\_MSC-B described in the mobile application part (MAP), TS 29.002.

The interworking between the TS 29.002 protocol and the TS 48.008 protocol is described in TS 29.010.

Multicall supplementary service is not applicable in GERAN Iu mode, and relocation of multicalls is therefore only possible within UTRAN.

Handovers which take place on the same MSC are termed "Intra-MSC handovers"; this includes both inter-BSS and intra-BSS handovers.

Handovers which take place on the same 3G\_MSC are termed "Intra-3G\_MSC handovers"; this includes inter-RNS handovers and optionally RNS to BSS and BSS to RNS handovers.

In the context of this specification, the term "InterSystem handover" can also refer to a handover which takes place between a base station serving a mobile station in Iu mode and a base station serving a mobile in A/Gb mode.

*"Flexible Iu interface for handover/relocation" Option:* Up to release 99, an RNS can be connected only to one 3G\_MSC. From release 4 onwards, as a network option, an RNS can have Iu interfaces to more than one MSC. Such an additional Iu interface may be selected by an MSC during an intra-PLMN relocation or intra-PLMN BSS to RNS handover procedure. This allows the MSC to use an Intra-3G\_MSC handover procedure according to case ii) instead of an Inter-3G\_MSC handover procedure according to case iv). The decision whether to use the Intra-3G\_MSC handover procedure is implementation and configuration dependent. In a network implementing this option, a global title based on the global RNC-Id may optionally be used for the addressing of the Iu interface messages.

*"Intra-domain connection of RAN nodes to multiple CN nodes" Option:* When applied, a BSS or an RNS can be connected to more than one MSC.

The document also covers the requirements for handover in ongoing GSM voice group calls, directed retry and handover without a circuit connection between (U)MSCs. This document does not consider the case of handovers between radio channels on the same BSS (Intra-BSS handover) or the handover of packet radio services. The Inter-RNS handover case that results in a relocation is covered by this document but not other Inter-RNS or Intra-RNS handover cases.

For voice broadcast calls in GSM, the speaker uses normal point-to-point handover procedures, whilst the listeners use idle mode cell reselection procedures for the voice group call listeners.

Voice group calls are only applicable to GSM, and handover of voice group calls is therefore only possible in GSM.

Inter-MSC handover imposes a few limitations on the system. After inter-MSC handover:

- call re-establishment is not supported.

The list of TS 48.008 features supported during and after Inter-MSC handover is given in TS 49.008.

In the Inter-MSC handover case, the interworking between a Phase 1 BSSMAP protocol possibly used by one MSC and the Phase 2 BSSMAP protocol used in the Phase 2 MAP protocol on the E interface is performed by this MSC.

This document also includes SDL diagrams and message flows.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 009                  | 11.2.0  | Published    | 2013-01-16  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123009/11.02.00_60/ts_123009v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123009/11.02.00_60/ts_123009v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.009V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.009(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.009(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.009(R11-11.2.0)</a> |
| TTC  | TS-3GA-23.009(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.009(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.009(Rel11)v11.2.0.pdf</a>                           |

### 10.3.6 TS 23.011 Technical realization of supplementary services – General aspects

The document describes the general aspects on how supplementary services in the 3GPP system are realized from a technical point of view.

Description of technical realization for specific supplementary services can be found in 3GPP TS 23.072, 23.08x and in the 23.09x-series Technical Specifications.

All supplementary services may require signalling on the radio path. Signalling procedures and messages used are defined in the 3GPP TS 24.072 and in the 24.08x and 24.09x-series Technical Specifications.

For some supplementary services, information needs to be transferred between the home location register (HLR), the visitor location register (VLR), the mobile services switching centre (MSC) and the serving GPRS support node (SGSN). Signalling procedures for such information transfer are defined in 3GPP TS 29.002.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.072 and in the 22.08x and 22.09x-series Technical Specifications.

Definitions are given in 3G TS 22.004.

NOTE – The Technical Specifications on the technical realization of supplementary services do not distinguish between subscriber, user and customer, since all three do not fully cover the textual needs. Generally, the term "subscriber" is used, even if this person does not have the subscription.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 011                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123011/11.00.00_60/ts_123011v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123011/11.00.00_60/ts_123011v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.011V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.011(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.011(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.011(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.011(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.011(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.011(Rel11)v11.0.0.pdf</a>                           |

### 10.3.7 TS 23.012 Location management procedures

The document describes the location management procedures for the circuit-switched domain, with respect to the application level functional behaviour. This is to be distinguished from the corresponding protocol handling behaviour, which is specified in 3G TS 29.002. The following location management procedures are included:

- Location updating;
- Location cancellation;
- MS purging;

– IMSI attach/detach.

The procedures in the mobile station (MS) are described in GSM 03.22. The procedures between MSC, VLR and HLR utilize the Mobile Application Part (MAP) and details concerning the protocol handling are contained in 3G TS 29.002.

The document excludes location management procedures for the packet-switched domain, which are covered in 3G TS 23.060.

The descriptions herein depict a logical separation between the MSC and VLR. This logical separation, as well as the messages transferred between the two logical entities are the basis of a model used to define the externally visible behaviour of the MSC/VLR, which may be a single physical entity. They do not impose any requirement except the definition of the externally visible behaviour.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 012                  | 11.2.0  | Published    | 2013-01-16  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123012/11.02.00_60/ts_123012v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123012/11.02.00_60/ts_123012v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.012V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.012(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.012(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.012(R11-11.2.0)</a> |
| TTC  | TS-3GA-23.012(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.012(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.012(Rel11)v11.2.0.pdf</a>                           |

### 10.3.8 TS 23.014 Support of dual tone multi frequency (DTMF) signalling

The document describes how dual tone multi frequency (DTMF) signals are supported in the 3GPP system.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 014                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123014/11.00.00_60/ts_123014v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123014/11.00.00_60/ts_123014v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.014V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.014(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.014(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.014(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.014(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.014(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.014(Rel11)v11.0.0.pdf</a>                           |

### 10.3.9 TS 23.015 Technical realization of operator determined barring (ODB)

The network feature operator determined barring (ODB) allows a network operator or service provider to regulate access by subscribers to services (both circuit and packet oriented), by the barring of certain categories of incoming or outgoing calls/packet oriented services or of roaming. Operator determined barring applies to all bearer services and teleservices except the emergency call teleservice; the teleservice short message point-to-point is therefore subject to operator determined barring in the same way as circuit-switched calls.

The application of specific categories of operator determined barring to a subscription is controlled by the network operator or service provider, using administrative interaction at the HLR; this interface is not standardized.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 015                  | 11.3.0  | Published    | 2013-06-27  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123015/11.03.00_60/ts_123015v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123015/11.03.00_60/ts_123015v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.015V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.015(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.015(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.015(R11-11.2.0)</a> |
| TTC  | TS-3GA-23.015(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.015(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.015(Rel11)v11.3.0.pdf</a>                           |

### 10.3.10 TS 23.016 Subscriber data management; Stage 2

This specification gives the Stage 2 description of the subscriber data management handling between:

- the home location register (HLR) and the visitor location register (VLR);
- the home location register (HLR) and the serving GPRS support node (SGSN).

A number of procedures require updating of subscriber information:

- Location updating;
- Restoration;
- Modification of data by the operator;
- Modification of data by the subscriber via the mobile station (MS).

Updating of subscriber information from HLR to SGSN is required in the following situations:

- GPRS location updating;
- Modification of data by the operator.

Only the rules for the updating of subscriber data from the HLR to the VLR and from the HLR to the SGSN are described in this specification. Public land mobile network (PLMN) specific and unstructured supplementary service data (USSD) subscriber data are out of the scope of this specification. The GPRS context update from the SGSN to the GGSN is out of the scope of this specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 016                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123016/11.00.00_60/ts_123016v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123016/11.00.00_60/ts_123016v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.016V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.016(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.016(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.016(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.016(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.016(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.016(Rel11)v11.0.0.pdf</a>                           |

### 10.3.11 TS 23.018 Basic call handling – Technical realization

This Technical Specification (TS) specifies the technical realization of the handling of calls originated by a UMTS or GSM mobile subscriber and calls directed to a UMTS or GSM mobile subscriber, up to the point where the call is established. Normal release of the call after establishment is also specified.

In this specification, the term "MS" is used to denote a UMTS or GSM MS, as appropriate.

The handling of DTMF signalling and off-air call set-up (OACSU) is not described in this specification.

The details of the effects of UMTS or GSM supplementary services on the handling of a call are described in the relevant 23.07x, 23.08x and 23.09x series of specifications.

The specification of the handling of a request from the HLR for subscriber information is not part of basic call handling, but is required for both CAMEL (TS 23.078) and optimal routing (TS 23.079). The use of the provide subscriber information message flow is shown in TS 23.078 and TS 23.079.

The logical separation of the MSC and VLR, and the messages transferred between them are the basis of a model used to define the externally visible behaviour of the MSC/VLR, which is a single physical entity. They do not impose any requirement except the definition of the externally visible behaviour.

If there is any conflict between this specification and the corresponding Stage 3 specifications (TS 24.008, TS 25.413, GSM 48.008 and TS 29.002), the Stage 3 specifications shall prevail.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 018                  | 11.4.0  | Published    | 2013-04-02  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123018/11.04.00_60/ts_123018v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123018/11.04.00_60/ts_123018v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.018V1140-2014  | 11.4.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.018(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.018(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.018(R11-11.4.0)</a> |
| TTC  | TS-3GA-23.018(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.018(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.018(Rel11)v11.4.0.pdf</a>                           |

### 10.3.12 TS 23.031 3G security; Fraud information gathering system (FIGS); Technical realization; Stage 2

This Technical Specification specifies the Stage 2 description of the fraud information gathering system (FIGS) feature which provides the means for the HPLMN to monitor the activities of its subscribers in a VPLMN.

Three levels of FIGS service are defined, levels 1 to 3.

Level 1 will use the facilities provided by transferred account procedure (TAP).

Levels 2 and 3 will use facilities provided by customized applications for mobile network enhanced logic (CAMEL), in particular, the information flows between the GSM service switching function (gsmSSF) and GSM service control function (gsmSCF). Phase 1 and Phase 2 CAMEL facilities will be used.

Connection-orientated services only are covered.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 031                  | 11.0.0  | Published    | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123031/11.00.00_60/ts_123031v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123031/11.00.00_60/ts_123031v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.031V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.031(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.031(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.031(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.031(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.031(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.031(Rel11)v11.0.0.pdf</a>                           |



### 10.3.13 TS 23.032 Universal geographical area description (GAD)

The present document defines an intermediate universal geographical area description which subscriber applications, GSM or UMTS services, can use and the network can convert into an equivalent radio coverage map.

For GSM or UMTS services which involve the use of an "area", it can be assumed that in the majority of cases the service requester will be forbidden access to data on the radio coverage map of a particular PLMN and that the service requester will not have direct access to network entities (e.g., BSC/BTS or RNC/Node B).

The interpretation by the PLMN operator of the geographical area in terms of cells actually used, cells that are partly within the given area and all other technical and quality of service aspects are out of the scope of the present document.

This specification also provides a description of velocity that may be associated with a universal geographical area description when both are applied to a common entity at a common time.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 032                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123032/11.00.00_60/ts_123032v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123032/11.00.00_60/ts_123032v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.032V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.032(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.032(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.032(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.032(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.032(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.032(Rel11)v11.0.0.pdf</a>                           |

### 10.3.14 TS 23.034 High speed circuit switched data (HSCSD); Stage 2

The document contains the Stage 2 service description for a high speed circuit switched data (HSCSD) on GSM/GERAN in A/Gb mode and Iu mode. HSCSD utilizes the multi-slot mechanism, i.e., using multiple traffic channels (/bearers) for the communication.

Additionally, the present document specifies some HSCSD related requirements for multi-system mobile stations operating in UTRAN Iu mode. In UTRAN Iu mode, one bearer can provide all needed data rates, and the multi-slot mechanism is therefore not needed. However, for inter-system handover to GERAN, certain information has to be provided by the mobile station during the service negotiation. The UTRAN Iu mode aspects concerning HSCSD are described exclusively in clause 4.2 of the Technical Specification.

In analogy with [ITU-T I.130] (refer to Annex A) and with reference to [ITU-T Q.65], the second stage of the HSCSD is defined as follows.

Stage 2 identifies the functional capabilities and information flows needed to support the service as described in high speed circuit switched data (HSCSD) – Stage 1, TS 22.034. Furthermore, it identifies various possible physical locations for the functional capabilities. The output of Stage 2, which is signalling system independent, is used as an input to Stage 3, the design of signalling system and switching Recommendations.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 034                  | 11.0.0  | Published    | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123034/11.00.00_60/ts_123034v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123034/11.00.00_60/ts_123034v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.034V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.034(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.034(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.034(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.034(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.034(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.034(Rel11)v11.0.0.pdf</a>                           |

### 10.3.15 TS 23.035 Immediate service termination (IST); Stage 2

This document specifies the Stage 2 description of the immediate service termination (IST) service which provides the means for the HPLMN to terminate all the activities of an HPLMN subscriber in a VPLMN.

Two implementations of IST are described: an implementation based on CAMEL, and an implementation based on a new MAP message.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.035        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23035-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23035-b00.pdf</a> |
| ETSI | TS 123 035                 | 11.0.0  | Published      | 2012-10-23  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123035/11.00.00_60/ts_123035v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123035/11.00.00_60/ts_123035v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.035V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.035(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.035(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.035(R11-11.0.0)</a>         |

### 10.3.16 TS 23.038 Alphabets and language-specific information

This Technical Specification defines the alphabets, languages and message handling requirements for SMS, CBS and USSD and may additionally be used for man-machine interface (MMI) TS 22.030.

The specification for the data circuit-terminating equipment/data terminal equipment (DCE/DTE) interface TS 27.005 will also use the codes specified herein for the transfer of SMS data to an external terminal.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.038        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23038-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23038-b00.pdf</a> |
| ETSI | TS 123 038                 | 11.0.0  | Published      | 2012-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123038/11.00.00_60/ts_123038v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123038/11.00.00_60/ts_123038v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.038V110-2014  | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.038(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.038(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.038(R11-11.0.0)</a>         |

### 10.3.17 TS 23.040 Technical realization of the short message service (SMS)

The document describes the short message service (SMS) for GSM/UMTS networks. It defines:

- the services and service elements;



- the network architecture;
- the service centre functionality;
- the MSC functionality (with regard to the SMS);
- the SGSN functionality (with regard to the SMS);
- the routing requirements;
- the protocols and protocol layering,

for the teleservice short message service, as specified in the GSM TS 02.03 and 3G TS 22.105.

The use of radio resources for the transfer of short messages between the MS and the MSC or the SGSN is described in [3G TS 24.011] "Short Message Service Support on Mobile Radio Interface", and is dealt with in that specification.

The network aspects of short message service provision are outside the scope of the document (i.e., the provision of network connectivity between the PLMN subsystems). There is no technical restriction within the document for the transfer of short messages between different PLMNs. Any such restriction is likely to be subject to commercial arrangements, and PLMN operators must make their own provision for interworking or for preventing interworking with other PLMNs as they see fit.

The required and assumed network service offered to the higher layers is defined in this document.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.040        | 11.5.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23040-b50.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23040-b50.pdf</a> |
| ETSI | TS 123 040                 | 11.5.0  | Published      | 2013-04-11  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123040/11.05.00_60/ts_123040v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123040/11.05.00_60/ts_123040v110500p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.040V1150-2014 | 11.5.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.040(R11-11.5.0) | 11.5.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-23.040(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-23.040(R11-11.5.0)</a>           |

### 10.3.18 TS 23.041 Technical realization of cell broadcast service (CBS)

The document describes the cell broadcast short message service (CBS) for GSM and UMTS.

For GSM, it defines the primitives over the cell broadcast centre – base station system (CBC-BSS) interface and the message formats over the base station system – mobile station (BSS-MS) interface for teleservice 23 as specified in 3G TS 22.003.

For UMTS it defines the interface requirements for the cell broadcast centre – UMTS radio network system (RNS) interface and the radio interface requirements for UMTS radio access networks to support CBS as specified in TS 22.003.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.041        | 11.6.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23041-b60.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23041-b60.pdf</a> |
| ETSI | TS 123 041                 | 11.6.0  | Published      | 2013-04-11  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123041/11.06.00_60/ts_123041v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123041/11.06.00_60/ts_123041v110600p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.041V1160-2014 | 11.6.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.041(R11-11.6.0) | 11.6.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-23.041(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-23.041(R11-11.6.0)</a>           |

### 10.3.19 TS 23.042 Compression algorithm for text messaging services

The document introduces the concepts and mechanisms involved in the compression and decompression of a stream of data.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.042         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23042-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23042-b00.pdf</a> |
| ETSI | TS 123 042                  | 11.0.0  | Published      | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123042/11.00.00_60/ts_123042v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123042/11.00.00_60/ts_123042v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.042V110-0-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.042(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.042(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.042(R11-11.0.0)</a>         |

### 10.3.20 TS 23.053 Tandem free operation (TFO); Service description; Stage 2

The document defines the Stage 2 service description for tandem free operation (TFO) in and between GSM and UMTS. Tandem free operation applies only to speech calls.

NOTE – The TFO principles are built so that they could be used as well by other systems other than GSM and UMTS.

In analogy with [ITU-T I.130] and with reference to [ITU-T Q.65], the second stage of the following three-level structure is derived from a stage 1 service description.

- Stage 1 is an overall service description, from the service subscriber's and user's standpoints, that views the network as a single entity which provides services to the user.
- Stage 2 identifies the functional capabilities and information flows needed to support the service described in Stage 1. Furthermore, it identifies various possible physical locations for the functional capabilities. The output of Stage 2, which is signalling system independent, is used as an input to Stage 3, the design of signalling system and switching Recommendations.
- Stage 3 defines the signalling system protocols and switching functions needed to implement the service described in Stage 2.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.053         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23053-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23053-b00.pdf</a> |
| ETSI | TS 123 053                  | 11.0.0  | Published      | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123053/11.00.00_60/ts_123053v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123053/11.00.00_60/ts_123053v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.053V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.053(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.053(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.053(R11-11.0.0)</a>         |

### 10.3.21 TS 23.057 Mobile execution environment (MExE); Functional description; Stage 2

The document defines the Stage 2 and Stage 3 description of the mobile execution environment (MExE). Stage 2 identifies the functional capabilities and information flows needed to support the service described in Stage 1.

The document includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

The document contains the core functions for a mobile execution environment (MExE) that are sufficient to provide a complete service.

MExE uses a number of technologies to realize the requirements of the Stage 1 description (TS 22.057]. The document describes how the service requirements are realized with the selected technologies. The TS is divided into sections each covering the aspects relating to particular MExE technologies; it is intended that this specification will evolve along with the MExE technologies. A generic section of the specification covers areas of MExE common to all technologies.

Implementation of this specification outside the UE (user equipment) is outside the scope of this specification.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.057         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23057-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23057-b00.pdf</a> |
| ETSI | TS 123 057                  | 11.0.0  | Published      | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123057/11.00.00_60/ts_123057v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123057/11.00.00_60/ts_123057v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.057V110-0-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.057(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.057(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.057(R11-11.0.0)</a>         |

### 10.3.22 TS 23.060 General packet radio service (GPRS) Service description; Stage 2

The document defines the Stage 2 service description for the general packet radio service (GPRS) which is a packet bearer service and a main part of the packet domain. [ITU-T I.130] describes a three-stage method for characterization of telecommunication services, and [ITU-T Q.65] defines Stage 2 of the method.

The document does not cover the radio access network functionality. TS 23.064 contains an overall description of the GSM GPRS access network. 3G TS 25.301 contains an overall description of the UMTS terrestrial radio access network. 3G TS 43.051 contains an overall description of GSM/EDGE radio access network.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 060                  | 11.9.0  | Published    | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123060/11.09.00_60/ts_123060v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123060/11.09.00_60/ts_123060v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.060V115-0-2014 | 11.5.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.060(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.060(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.060(R11-11.5.0)</a> |
| TTC  | TS-3GA-23.060(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.060(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.060(Rel11)v11.8.0.pdf</a>                           |

### 10.3.23 TS 23.066 Support of mobile number portability (MNP); Technical realization; Stage 2

The document describes several alternatives for the realization of mobile number portability.

The document includes information applicable to network operators, service providers, switch and database manufacturers and national regulators.

It is left to operator and implementation decisions which option, or combination of options, is used, taking into account the regulatory and architectural constraints that may prevail. The possible implications of these options on internal node functions and on signalling performance are not covered in the document.

Normative Annex A of the document describes the technical realization of the handling of calls to ported UMTS or GSM mobile subscribers using IN technology.

Normative Annex C of the document describes the technical realization of the handling of calls to ported UMTS or GSM mobile subscribers using signalling relay technology.

Normative Annexes A and C describe alternative solutions. The network operator may choose the solution to be used in his network.

Normative Annex B of the document describes the technical realization of the handling of non-call related SCCP signalling for ported UMTS or GSM mobile subscribers using signalling relay technology.

The document does not specify the porting process.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 066                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123066/11.00.00_60/ts_123066v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123066/11.00.00_60/ts_123066v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.066V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.066(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.066(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.066(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.066(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.066(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.066(Rel11)v11.0.0.pdf</a>                           |

#### **10.3.24 TS 23.067 Enhanced multi-level precedence and pre-emption service (eMLPP); Stage 2**

The document specifies the Stage 2 description of the enhanced multi-level precedence and preemption service (eMLPP) which provides different call priorities in combination with fast call set-up and pre-emption for different applications according to 3G TS 22.067.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 067                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123067/11.00.00_60/ts_123067v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123067/11.00.00_60/ts_123067v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.067V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.067(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.067(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.067(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.067(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.067(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.067(Rel11)v11.0.0.pdf</a>                           |

#### **10.3.25 TS 23.072 Call deflection (CD) supplementary service; Stage 2**

This Technical Specification gives the Stage 2 description of the call deflection supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 072                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123072/11.00.00_60/ts_123072v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123072/11.00.00_60/ts_123072v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.23.072V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.072(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttatddesc.jsp?stdno=TTAT.3G-23.072(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttatddesc.jsp?stdno=TTAT.3G-23.072(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.072(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.072(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.072(Rel11)v11.0.0.pdf</a>                         |

### 10.3.26 TS 23.078 Customized applications for mobile network enhanced logic (CAMEL) Phase 4; Stage 2

The document specifies the Stage 2 description for the fourth phase (see [TS 22.078]) of the customized applications for mobile network enhanced logic (CAMEL) feature which provides the mechanisms to support services of operators which are not covered by standardized services even when roaming outside the HPLMN.

The CAMEL feature is a network feature and not a supplementary service. It is a tool to help the network operator to provide the subscribers with the operator specific services even when roaming outside the HPLMN.

In this document, the GSM service control function (gsmSCF) is treated as being part of the HPLMN. The regulatory environment in some countries may require the possibility that the gsmSCF and the HPLMN are controlled by different operators, and the gsmSCF and the HPLMN are therefore distinct entities.

The fourth phase of the CAMEL feature supports, in addition to the third phase of the CAMEL:

- interactions with optimal routing;
- call party handling;
- DTMF mid call procedure for mobile originated and mobile terminating calls;
- inclusion of flexible tone injection;
- provision of location information of called subscriber;
- provide location information during ongoing call;
- CAMEL control over MT SMS;
- notification of GPRS mobility management to CSE;
- inclusion of ODB data in any time modification;
- enhancement of any time interrogation and provide subscriber information for PS domain;
- mobile number portability database interrogation;
- criteria for the provision of location information during ongoing call;
- enhanced dialled services;
- enhancement to establish temporary connection.

CAMEL applicability to IP-based multimedia services is introduced in the fourth phase of the CAMEL. It is specified in TS 23.278.

CAMEL is not applicable to emergency set-up (TS 12), i.e., if an emergency call is requested, then the gsmSSF shall not be invoked.

The mechanism described in this document addresses especially the need for information exchange between the VPLMN or IPLMN and the HPLMN for support of operator-specific services. Any user

procedures for the control of operator-specific services are outside the scope of this document. Subscribers who have subscribed to operator specific services and therefore need the functional support of the CAMEL feature shall be marked in the HPLMN and VPLMN. In case a subscriber is marked to need CAMEL support, the appropriate procedures which provide the necessary information to the VPLMN or the HPLMN are invoked. It is possible for the HPLMN to instruct the VPLMN or IPLMN to interact with a gsmSCF which is controlled by the HPLMN.

The specification of operator specific services is outside the scope of this document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 078                  | 11.3.0  | Published    | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123078/11.03.00_60/ts_123078v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123078/11.03.00_60/ts_123078v110300p.pdf</a>                   |
| ATIS | ATIS.3GPP.23.078V1130-2014  | 11.3.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.078(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-23.078(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-23.078(R11-11.3.0)</a> |
| TTC  | TS-3GA-23.078(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.078(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.078(Rel11)v11.3.0.pdf</a>                         |

### 10.3.27 TS 23.079 Support of optimal routing (SOR); Technical realization; Stage 2

The document specifies the technical realization of the first phase of the network feature support of optimal routing (SOR). The first phase of SOR provides:

- as a network operator option, a method to route a call from one mobile subscriber directly to another mobile subscriber who is in the same country as the calling mobile subscriber or in the called mobile subscriber's home country, without needing to connect the call via the HPLMN of the called subscriber, even though the called mobile subscriber has roamed outside his HPLMN;
- a method to forward calls when a called mobile subscriber who has roamed outside his home country is busy, or is not reachable, or does not reply, to a forwarded-to destination in the HPLMN country of the called subscriber or the VPLMN country of the called subscriber, without needing to connect the forwarded call via the VPLMN of the called subscriber;
- a method to combine the optimal routing described in the first bullet point above with the optimal routing described in the second bullet point above.

Optimal routing of a call is permitted only if all entities involved in handling the call support optimal routing.

Other cases of optimal routing (e.g., calls where the calling and called subscribers are in different countries, forwarding to a mobile subscriber or multiple forwarding) will be considered for inclusion in later phases.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 079                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123079/11.00.00_60/ts_123079v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123079/11.00.00_60/ts_123079v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.23.079V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.079(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-23.079(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-23.079(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.079(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.079(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.079(Rel11)v11.0.0.pdf</a>                         |



### 10.3.28 TS 23.081 Line identification supplementary services; Stage 2

This document gives the Stage 2 description of the call identification supplementary services.

The group line identification supplementary services are divided into the following four supplementary services:

- Calling line identification presentation (CLIP);
- Calling line identification restriction (CLIR);
- Connected line identification presentation (COLP);
- Connected line identification restriction (COLR).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 081                  | 11.0.0  | Published    | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123081/11.00.00_60/ts_123081v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123081/11.00.00_60/ts_123081v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.081V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.081(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.081(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.081(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.081(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.081(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.081(Rel11)v11.0.0.pdf</a>                           |

### 10.3.29 TS 23.082 Call forwarding (CF) supplementary services; Stage 2

The document gives the Stage 2 description of the call forwarding supplementary services.

The group of supplementary services call offering supplementary services is divided into 4 different supplementary services:

- Call forwarding unconditional (CFU);
- Call forwarding on mobile subscriber busy (CFB);
- Call forwarding on no reply (CFNRy);
- Call forwarding on mobile subscriber not reachable (CFNRc).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 082                  | 11.0.0  | Published    | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123082/11.00.00_60/ts_123082v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123082/11.00.00_60/ts_123082v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.082V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.082(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.082(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.082(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.082(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.082(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.082(Rel11)v11.0.0.pdf</a>                           |

### 10.3.30 TS 23.083 Call waiting (CW) and call hold (HOLD) supplementary service; Stage 2

This document gives the Stage 2 description of the call completion supplementary services.

The group of call completion supplementary services is divided into the following two supplementary services:

- Call waiting (CW);
- Call hold (HOLD).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 083                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123083/11.00.00_60/ts_123083v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123083/11.00.00_60/ts_123083v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.083V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.083(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.083(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.083(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.083(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.083(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.083(Rel11)v11.0.0.pdf</a>                           |

### 10.3.31 TS 23.084 Multi-party (MPTY) supplementary service; Stage 2

The document gives the Stage 2 description of the multi-party supplementary services.

Only one multi-party supplementary service has been defined: this is the multi-party (MPTY) service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 084                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123084/11.00.00_60/ts_123084v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123084/11.00.00_60/ts_123084v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.084V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.084(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.084(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.084(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.084(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.084(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.084(Rel11)v11.0.0.pdf</a>                           |

### 10.3.32 TS 23.085 Closed user group (CUG) supplementary service; Stage 2

The document gives the Stage 2 description of the closed user group supplementary service.

The community of interest supplementary service defined is:

– Closed user group (CUG)

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 085                  | 11.0.0  | Published    | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123085/11.00.00_60/ts_123085v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123085/11.00.00_60/ts_123085v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.085V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.085(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.085(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.085(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.085(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.085(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.085(Rel11)v11.0.0.pdf</a>                           |

### 10.3.33 TS 23.086 Advice of charge (AoC) supplementary service; Stage 2

The document gives the Stage 2 description of the advice of charge (AoC) supplementary services.

The charging supplementary services currently defined are:

- Advice of charge (Information) (AoCI);
- Advice of charge (Charging) (AoCC).



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 086                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123086/11.00.00_60/ts_123086v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123086/11.00.00_60/ts_123086v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.086V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.086(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.086(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.086(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.086(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.086(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.086(Rel11)v11.0.0.pdf</a>                           |

### 10.3.34 TS 23.087 User-to-user signalling (UUS) supplementary service; Stage 2

The document gives the Stage 2 description of the user-to-user signalling supplementary services.

The user-to-user supplementary service is divided into 3 different services:

- Service 1 (UUS1);
- Service 2 (UUS2);
- Service 3 (UUS3).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 087                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123087/11.00.00_60/ts_123087v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123087/11.00.00_60/ts_123087v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.087V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.087(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.087(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.087(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.087(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.087(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.087(Rel11)v11.0.0.pdf</a>                           |

### 10.3.35 TS 23.088 Call barring (CB) supplementary services; Stage 2

The document gives the Stage 2 description of the call barring services.

The possibility for a mobile subscriber to have certain categories of calls barred originated from or terminated at his access.

Barring of outgoing calls:

- Barring of all outgoing calls (BAOC) (Barring program 1);
- Barring of outgoing international calls (BOIC) (Barring program 2);
- Barring of outgoing international calls EXCEPT those directed to the home PLMN country (BOIC-exHC) (Barring program 3).

Barring of incoming calls:

- Barring of all incoming calls (BAIC) (Barring program 1);
- Barring of incoming calls when roaming outside the home PLMN country (BIC-Roam) (Barring program 2).

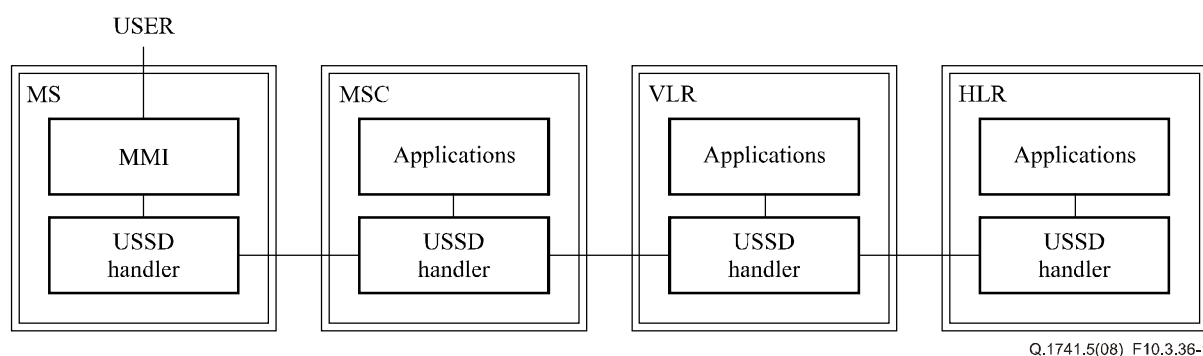
NOTE – The call barring program "incoming calls when roaming outside the home PLMN country" is only relevant if, as a general rule, the called mobile subscriber pays the charges for the forwarded part of the call from his home PLMN country to any other country.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 088                  | 11.3.0  | Published    | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123088/11.03.00_60/ts_123088v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123088/11.03.00_60/ts_123088v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.088V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.088(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.088(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.088(R11-11.1.0)</a> |
| TTC  | TS-3GA-23.088(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.088(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.088(Rel11)v11.2.0.pdf</a>                           |

### 10.3.36 TS 23.090 Unstructured supplementary service data (USSD); Stage 2

The document gives the Stage 2 description of unstructured supplementary service data (USSD).

The unstructured supplementary service data (USSD) mechanism allows the mobile station (MS) user and a PLMN operator defined application to communicate in a way which is transparent to the MS and to intermediate network entities. The mechanism allows development of PLMN specific supplementary services. Figure 10.3.36-1 shows how handling of USSD is carried out, independently of the applications.



**Figure 10.3.36-1 – Handling of USSD**

The document defines the requirements for handling USSD at the MS and network entities. It does not include specification of particular applications, nor does it specify how a particular application is selected. Where more than one application exists at a network entity, routing of messages to the correct application is carried out by the USSD handler. The MMI for USSD is specified in TS 22.030 and TS 22.090. The alphabet indicator and the data-coding scheme are defined in TS 23.038.

USSD may be initiated by the MS user, or by the network in the following ways:

- Network initiated USSD;
- Mobile initiated USSD.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 090                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123090/11.00.00_60/ts_123090v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123090/11.00.00_60/ts_123090v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.090V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.090(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.090(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.090(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.090(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.090(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.090(Rel11)v11.0.0.pdf</a>                           |

### 10.3.37 TS 23.091 Explicit call transfer (ECT) supplementary service; Stage 2

The document gives the Stage 2 description of the call transfer supplementary services.

Only one call transfer supplementary service has been defined, this is the explicit call transfer (ECT) supplementary service, and is described in this document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 091                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123091/11.00.00_60/ts_123091v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123091/11.00.00_60/ts_123091v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.091V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.091(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.091(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.091(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.091(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.091(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.091(Rel11)v11.0.0.pdf</a>                           |

### 10.3.38 TS 23.093 Technical realization of completion of calls to busy subscriber (CCBS); Stage 2

This Technical Specification gives the Stage 2 description of the completion of calls to busy subscriber (CCBS) supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 093                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123093/11.00.00_60/ts_123093v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123093/11.00.00_60/ts_123093v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.093V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.093(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.093(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.093(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.093(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.093(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.093(Rel11)v11.0.0.pdf</a>                           |

### 10.3.39 TS 23.094 Follow Me; Stage 2

The document specifies the Stage 2 description for the Follow Me feature.

The Follow Me feature enables a mobile subscriber A to manipulate the Follow Me data of a remote party B in such a way that subsequent calls directed to remote party B will be forwarded to subscriber A.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 094                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123094/11.00.00_60/ts_123094v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123094/11.00.00_60/ts_123094v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.094V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.094(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.094(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.094(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.094(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.094(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.094(Rel11)v11.0.0.pdf</a>                           |

#### 10.3.40 TS 23.096 Name identification supplementary service; Stage 2

The document gives the Stage 2 description of the name identification supplementary services.

The group of name identification supplementary services contains the following supplementary service:

CNAP – Calling name presentation.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 096                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123096/11.00.00_60/ts_123096v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123096/11.00.00_60/ts_123096v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.096V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.096(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.096(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.096(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.096(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.096(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.096(Rel11)v11.0.0.pdf</a>                           |

#### 10.3.41 TS 23.097 Multiple subscriber profile (MSP) Phase 2; Stage 2

The document specifies the Stage 2 description of the multiple subscriber profile (MSP) supplementary service Phase 2. MSP Phase 2 is implemented using CAMEL Phase 3.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 097                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123000_123099/123097/11.00.00_60/ts_123097v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123000_123099/123097/11.00.00_60/ts_123097v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.097V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.097(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.097(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.097(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.097(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.097(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.097(Rel11)v11.0.0.pdf</a>                           |

#### 10.3.42 TS 23.101 General UMTS architecture

This document defines the basic physical and functional separation of UMTS. The contents of this specification is limited to those features that are common to all UMTS networks independent of their origin. It identifies and names the reference points and functional groupings appearing at this level.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 101                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123101/11.00.00_60/ts_123101v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123101/11.00.00_60/ts_123101v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.101V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.101(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.101(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.101(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.101(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.101(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.101(Rel11)v11.0.0.pdf</a>                           |

### 10.3.43 TS 23.107 Quality of service (QoS) concept and architecture

The document provides the framework for quality of service within UMTS. The main purpose is to specify the list of attributes applicable to UMTS bearer service and radio access bearer service, as well as describe the quality of service architecture to be used in UMTS networks.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.107        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23107-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23107-b00.pdf</a> |
| ETSI | TS 123 107                 | 11.0.0  | Published      | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123107/11.00.00_60/ts_123107v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123107/11.00.00_60/ts_123107v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.107V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.107(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.107(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.107(R11-11.0.0)</a>         |

### 10.3.44 TS 23.108 Mobile radio interface layer 3 specification, core network protocols; Stage 2

This document specifies the procedures used at the radio interface (Reference Point Um, see TS 24.002) for call control (CC), mobility management (MM), and session management (SM).

When the notations for "further study" or "FS" or "FFS" are present in this document, they mean that the indicated text is not a normative portion of this standard.

These procedures are defined in terms of messages exchanged over the control channels of the radio interface. The control channels are described in TS 44.003.

The structured functions and procedures of this protocol and the relationship with other layers and entities are described in general terms in TS 24.007.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 108                  | 11.0.0  | Published    | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123108/11.00.00_60/ts_123108v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123108/11.00.00_60/ts_123108v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.108V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.108(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.108(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.108(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.108(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.108(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.108(Rel11)v11.0.0.pdf</a>                           |

### 10.3.45 TS 23.110 Universal mobile telecommunications system (UMTS) access stratum; services and functions

The present document specifies the services provided by the access stratum to the rest of the system. The adopted architecture is given by 3GPP TS 23.101.

The present document describes the main functions visible at the boundary between the access stratum and the rest of the system; it describes in general terms the information flows, both control and user data, over this boundary and relevant for the access stratum.

The present document is the basis of the detailed specifications of the protocols which rule the information flows, both control and user data, between the access stratum and the parts of UMTS outside the access stratum, and of the detailed specifications of the UTRAN. These detailed specifications are to be found in other Technical Specifications.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 110                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123110/11.00.00_60/ts_123110v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123110/11.00.00_60/ts_123110v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.110V110-0-2014 | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.110(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.110(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.110(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.110(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.110(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.110(Rel11)v11.0.0.pdf</a>                           |

### 10.3.46 TS 23.116 Super-charger technical realization; Stage 2

The document specifies the Stage 2 description of the super-charger that provides a mechanism to reduce the signalling traffic associated with mobility.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 116                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123116/11.00.00_60/ts_123116v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123116/11.00.00_60/ts_123116v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.116V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.116(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.116(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.116(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.116(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.116(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.116(Rel11)v11.0.0.pdf</a>                           |

### 10.3.47 TS 23.119 Gateway location register (GLR); Stage2

The document gives the Stage 2 description of the gateway location register (GLR) within the UMTS core network as a means of reducing the amount of MAP signalling traffic associated with location management carried over inter-PLMN links for roaming users.

The document will be restricted of the case where the GLR supports one VPLMN only.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 119                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123119/11.00.00_60/ts_123119v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123119/11.00.00_60/ts_123119v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.119V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.119(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.119(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.119(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.119(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.119(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.119(Rel11)v11.0.0.pdf</a>                           |

### 10.3.48 TS 23.122 Non-access-stratum (NAS) functions related to mobile station (MS) in idle mode

This Technical Specification gives an overview of the tasks undertaken by the core network protocols of a mobile station (MS) when in idle mode, that is, switched on but not having a dedicated channel allocated. It also describes the corresponding network functions. The idle mode functions are also performed by a GPRS MS as long as no dedicated channel is allocated to the MS. The conditions when the idle mode functions are performed by an MS in the UTRA RRC connected mode states are specified in 3G TS 25.331.

This Technical Specification outlines how the requirements of the 22-series Technical Specifications (especially 3G TS 22.011) on idle mode operation shall be implemented. Further details are given in 3G TS 24.008.

This Technical Specification gives a general description of the idle mode process. The main requirements and technical solutions of those requirements are included. The processes used in idle mode are described.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 122                  | 11.4.0  | Published    | 2013-01-16  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123122/11.04.00_60/ts_123122v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123122/11.04.00_60/ts_123122v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.122V114-2014   | 11.4.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.122(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.122(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.122(R11-11.4.0)</a> |
| TTC  | TS-3GA-23.122(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.122(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.122(Rel11)v11.4.0.pdf</a>                           |

### 10.3.49 TS 23.135 Multicall supplementary service; Stage 2

The document gives the Stage 2 description of the multicall supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 135                  | 11.0.0  | Published    | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123135/11.00.00_60/ts_123135v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123135/11.00.00_60/ts_123135v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.135V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.135(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.135(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.135(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.135(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.135(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.135(Rel11)v11.0.0.pdf</a>                           |



### 10.3.50 TS 23.139 3GPP system - fixed broadband access network interworking; Stage 2

This document specifies the Stage 2 system description for the interworking between a 3GPP system and a Fixed Broadband Access network defined by Broadband Forum to provide the IP connectivity to a 3GPP UE using a WLAN and a H(e)NB connected to a Fixed Broadband Access network.

The specification covers the system description mobility, Policy, QoS aspects between 3GPP and a Fixed Broadband Access network as well as the respective interactions with the PCC frameworks. This document specifies the detailed extension to EPC defined in TS 23.401 and TS 23.402 for supporting Fixed Broadband Access Network. The extension to PCC framework are specified in TS 23.203.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 139                  | 11.4.0  | Published    | 2013-04-05  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123139/11.04.00_60/ts_123139v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123139/11.04.00_60/ts_123139v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.139V1140-2014  | 11.4.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.139(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.139(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.139(R11-11.4.0)</a> |
| TTC  | TS-3GA-23.139(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.139(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.139(Rel11)v11.4.0.pdf</a>                           |

### 10.3.51 TS 23.141 Presence service; architecture and functional description

The present document describes the Stage 2 description (architectural solution and functionalities) for the presence service, which includes the elements necessary to realize the Stage 1 requirements in 3GPP TS 22.141.

The present document includes information applicable to network operators, service providers and manufacturers.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 141                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123141/11.00.00_60/ts_123141v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123141/11.00.00_60/ts_123141v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.141V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.141(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.141(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.141(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.141(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.141(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.141(Rel11)v11.0.0.pdf</a>                           |

### 10.3.52 TS 23.142 Value-added Services for SMS (VAS4SMS); Interface and Signalling Flow

This document describes the stage 2 of the VAS4SMS (Value Added Service for SMS). It includes:

- The logic architecture;
- The logic elements functionality;
- The signalling flows;
- The interaction with other features.

The service requirements of VAS4SMS are specified in 3GPP TS 22.142.

The functionality and mechanism of SMS Service is defined in 3GPP TS 23.040.



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 142                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123142/11.00.00_60/ts_123142v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123142/11.00.00_60/ts_123142v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.142V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.142(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.142(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.142(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.142(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.142(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.142(Rel11)v11.0.0.pdf</a>                           |

### 10.3.53 TS 23.146 Technical realization of facsimile Group 3 service – Non-transparent

The document describes the procedures allowing the technical realization of the real-time end-to-end facsimile group 3 service within the UMTS PLMN using non-transparent network support according to the definition of the teleservices 61 and 62 specified in TS 22.003. Within the document, particular attention is given to teleservice "Alternate speech/facsimile group 3" (Teleservice 61). However, the definitions apply also to teleservice "Automatic facsimile group 3" (Teleservice 62) with the exception of all actions concerned with the speech phase. Consequently, in the following descriptions, the term "Teleservice" denotes both teleservice 61 and teleservice 62 as appropriate.

NOTE – [ITU-T V.25 *bis*] is outdated. References to ITU-T V.25 *bis* procedures need to be replaced by corresponding procedures based on [ITU-T V.250] and on TS 27.007.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 146                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123146/11.00.00_60/ts_123146v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123146/11.00.00_60/ts_123146v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.146V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.146(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.146(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.146(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.146(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.146(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.146(Rel11)v11.0.0.pdf</a>                           |

### 10.3.54 TS 23.153 Out-of-band transcoder control; Stage 2

This Technical Specification specifies the Stage 2 description of the out-of-band transcoder control for speech services. It describes the principles and procedures to support transcoder free operation, tandem free operation and the interworking between TrFO and TFO. Transcoder at the edge is also part of this specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 153                  | 11.1.0  | Published    | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123153/11.01.00_60/ts_123153v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123153/11.01.00_60/ts_123153v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.153V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.153(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.153(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.153(R11-11.1.0)</a> |
| TTC  | TS-3GA-23.153(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.153(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.153(Rel11)v11.1.0.pdf</a>                           |

### 10.3.55 TS 23.167 IP multimedia subsystem (IMS) emergency sessions

This document defines the stage-2 service description for emergency services in the IP multimedia core network subsystem (IMS), including the elements necessary to support IP multimedia (IM) emergency services. [ITU-T I.130] describes a three-stage method for the characterization of telecommunication services, and [ITU-T Q.65] defines stage 2 of the method.

This document covers also the access network aspects that are crucial for the provisioning of IMS emergency services. Other 3GPP specifications that are related to the IMS emergency services are TS 23.228 on IMS in general, including fixed broadband access aspects, -TS 23.060 and TS 23.234 describing GPRS and 3GPP/WLAN interworking respectively and -[TS 23.271 that covers location services. TS 25.301 contains an overall description of the UMTS terrestrial radio access network.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 167                  | 11.10.0 | Published    | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123167/11.10.00_60/ts_123167v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123167/11.10.00_60/ts_123167v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.167V1160-2014  | 11.6.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.167(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.167(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.167(R11-11.6.0)</a> |
| TTC  | TS-3GA-23.167(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.167(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.167(Rel11)v11.9.0.pdf</a>                           |

### 10.3.56 TS 23.172 Technical realization of circuit switched (CS) multimedia service; UDI/RDI fallback and service modification; Stage 2

This specification describes the service change and UDI fallback (SCUDIF) feature. This service is available to UDI/RDI multimedia calls and allows users to achieve successful call establishment when end-to-end circuit-switched (CS) multimedia is not possible (fallback to speech) or when signalling of the feature is not possible in the network (fallback to preferred service or speech). Furthermore, it allows the users to swap between a multimedia service and basic speech during an established call.

NOTE – In this document, the term "multimedia" refers to UDI/RDI multimedia unless specifically stated.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 172                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/123100_123199/123172/11.00.00_60/ts_123172v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123100_123199/123172/11.00.00_60/ts_123172v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.172V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.172(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.172(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.172(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.172(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.172(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.172(Rel11)v11.0.0.pdf</a>                           |

### 10.3.57 TS 23.202 Circuit switched data bearer services

The present document provides an overview of the architecture and issues related to the provision of circuit switched bearer services in a 3G mobile network (UMTS) operating in UTRAN or GERAN Iu mode. Handover to GERAN A/Gb mode is also considered.

NOTE – The Gb interface does not play any role in the scope of the present document although the term "A/Gb mode" is used.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 202                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123202/11.00.00_60/ts_123202v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123202/11.00.00_60/ts_123202v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.202V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.202(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.202(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.202(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.202(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.202(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.202(Rel11)v11.0.0.pdf</a>                           |

### 10.3.58 TS 23.203 Policy and charging control architecture

The present document specifies the overall stage 2 level functionality for policy and charging control that encompasses the following high level functions for IP-CANs (e.g., GPRS, I-WLAN, fixed broadband, etc.):

- Flow based charging, including charging control and online credit control;
- Policy control (e.g., gating control, QoS control, etc.).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.203        | 11.12.0 | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23203-bc0.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23203-bc0.pdf</a> |
| ETSI | TS 123 203                 | 11.13.0 | Published      | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123203/11.13.00_60/ts_123203v111300p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123203/11.13.00_60/ts_123203v111300p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.203V1190-2014 | 11.9.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.203(R11-11.9.0) | 11.9.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.203(R11-11.9.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.203(R11-11.9.0)</a>         |

### 10.3.59 TS 23.204 Support of Short Message Service (SMS) over generic 3GPP Internet Protocol (IP) access; Stage 2

This document specifies the new capabilities and enhancements needed to support SMS over a generic IP Connectivity Access Network (IP-CAN) using IMS capabilities (3G TS 23.228). These include (but are not limited) to:

- Enhancements to the HSS;
- Communication between the SMS-GMSC/SMS-IW MSC and the HSS;
- Authentication of service usage and registration;
- Transfer of UE Terminated SMS, UE Originated SMS, and Delivery reports;
- Mechanisms to handle SMS when there is more than one IP connection active with the UE, etc.

The document also specifies the capabilities and enhancements needed to support the service level interworking for the Short Message service as defined in 3G TS 23.040 and in this specification and the Instant Messaging service as defined by OMA. The features supported from the IM specification are limited to the exchange of short or large immediate messages in pager mode.

NOTE – The page-mode immediate message as defined in TS 24.247 is considered as a subset of OMA.

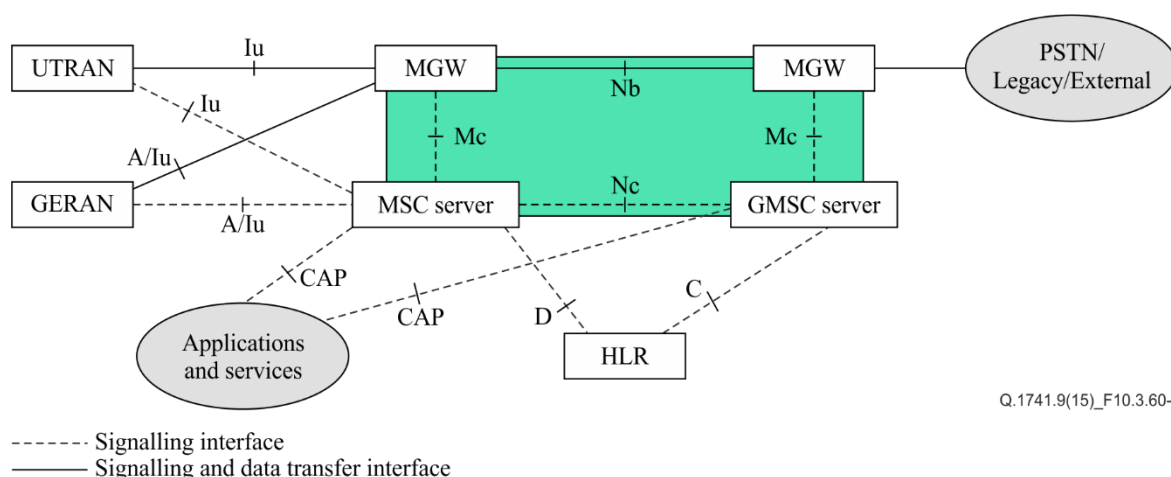
|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.204        | 11.5.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23204-b50.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23204-b50.pdf</a> |
| ETSI | TS 123 204                 | 11.5.0  | Published      | 2013-09-20  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123204/11.05.00_60/ts_123204v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123204/11.05.00_60/ts_123204v110500p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.204V1130-2014 | 11.3.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.204(R11-11.3.0) | 11.3.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.204(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.204(R11-11.3.0)</a>         |

### 10.3.60 TS 23.205 Bearer-independent circuit-switched core network; Stage 2

The document defines the Stage 2 description for the bearer independent CS core network. The Stage 2 shall cover the information flow between the GMSC server, MSC server and media gateways. Note that nothing in this document shall preclude an implementation of a combined MSC Server and MGW. This document shall show the CS core network termination of the Iu interface in order to cover the information flow stimulus to the core network and describe the interaction with the supplementary and value-added services and capabilities.

For the purposes of this specification, the protocol used over the Nc interface is an enhanced call control protocol supporting call bearer separation such as BICC (which is specified in 3G TS 29.205). The protocol used over the Mc interface is ITU-T H.248.1. Existing specifications and Recommendations shall not be repeated as such, the relevant specification shall be referred to.

This Technical Specification is applicable only for ATM or IP transport in the CS core network.



**Figure 10.3.60-1 – CS core network logical architecture**

The CAP interfaces and the interfaces towards the HLR are outside the scope of this Technical Specification.

Details of transcoder-free operation are outside the scope of this Technical Specification. Please see [TS 23.153] for more information.

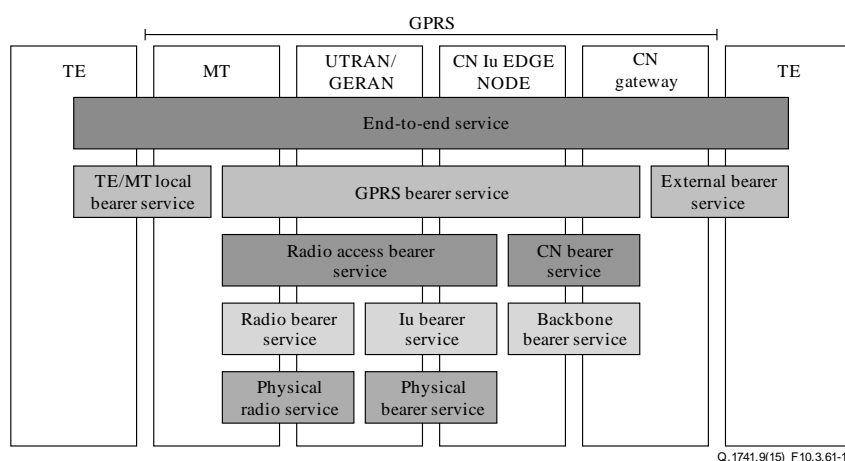
|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 123 205                 | 11.0.0  | Published | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123205/11.00.00_60/ts_123205v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123205/11.00.00_60/ts_123205v110000p.pdf</a> |
| ATIS | ATIS.3GPP.23.205V1100-2014 | 11.0.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-23.205(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.205(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.205(R11-11.0.0)</a> |
| TTC | TS-3GA-23.205(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.205(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.205(Rel11)v11.0.0.pdf</a>                           |

### 10.3.61 TS 23.207 End-to-end quality of service (QoS) concept and architecture

This document provides the framework for end-to-end quality of service involving GPRS and complements TS 23.107 which describes the framework for quality of service within UMTS. The end-to-end QoS architecture is provided in Figure 10.3.61-1. The document describes the interaction between the TE/MT local bearer service, the GPRS bearer service, and the external bearer service, and how these together provide quality of service for the end-to-end service. The document also describes IP level mechanisms necessary in providing end-to-end quality of service involving GPRS networks, including possible interaction between the IP level and the GPRS level, as well as the application level and the IP level.

In contrast to TS 23.107, this specification is only applicable to GPRS packet-switched access services, and includes aspects of interworking to the IM subsystem as well as PSTN and other networks. The document does not cover the circuit-switched access services.



**Figure 10.3.61-1 – End-to-end QoS architecture**

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.207        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23207-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23207-b00.pdf</a> |
| ETSI | TS 123 207                 | 11.0.0  | Published      | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123200/123299/123207/11.00.00_60/ts_123207v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200/123299/123207/11.00.00_60/ts_123207v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.207V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.207(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.207(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.207(R11-11.0.0)</a>         |

### 10.3.62 TS 23.216 Single radio voice call continuity (SRVCC); Stage 2

This document specifies the architecture enhancements for Single Radio Voice Call Continuity (SRVCC) between E-UTRAN access and 3GPP2's 1xCS, and between E-UTRAN access and 3GPP's UTRAN/GERAN accesses and between UTRAN (HSPA) access and 3GPP's UTRAN/GERAN accesses, for Circuit Switched (CS) calls that are anchored in the IMS.

This document will not describe 3GPP2 functional entities. However, interfaces between both 3GPP and 3GPP2 functional entities are described in this specification.

SRVCC from E-UTRAN access to 3GPP2 1xCS is covered in this specification. Handling of non-voice component and SRVCC from 3GPP2 1xCS to E-UTRAN direction is not specified in this release.

SRVCC from E-UTRAN/UTRAN (HSPA) access to 3GPP UTRAN/GERAN CS accesses for voice calls that are anchored in the IMS, as well as the coordination between the SRVCC for voice call and the handover of non-voice PS bearers, are covered in this specification. The handover of non-voice PS bearer from E-UTRAN is specified by the procedures defined in 3G TS 23.401, TS 23.060, TS 25.413 and TS 43.129. The handover of non-voice PS bearer from UTRAN (HSPA) is specified by the procedures defined in 3G TS 23.060, TS 25.413 and TS 43.129. Handling of SRVCC from 3GPP UTRAN/GERAN CS accesses to E-UTRAN/UTRAN (HSPA) direction is not specified in this release. The handling of multiple simultaneous voice bearers with SRVCC is not supported in this release.

|      | Document No.                 | Version | Status       | Issued date | Location  |
|------|------------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 216                   | 11.10.0 | Published    | 2013-12-18  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123216/11.10.00_60/ts_123216v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123216/11.10.00_60/ts_123216v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.216V1180-2014   | 11.8.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.216(R11-11.8.0)   | 11.8.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.216(R11-11.8.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.216(R11-11.8.0)</a> |
| TTC  | TS-3GA-23.216(Rel11)v11.10.0 | 11.10.0 | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.216(Rel11)v11.10.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.216(Rel11)v11.10.0.pdf</a>                         |

### 10.3.63 TS 23.218 IP multimedia (IM) session handling; IM call model; Stage 2

This document specifies the IP multimedia (IM) call model for handling of an IP multimedia session origination and termination for an IP multimedia subscriber.

This document includes interactions between an application server and IP multimedia sessions.

The IP multimedia (IM) subsystem Stage 2 is specified in TS 23.228, and the signalling flows for the IP multimedia call control based on SIP and SDP are specified in [TS 24.228].

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 218                  | 11.6.0  | Published    | 2013-07-04  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123218/11.06.00_60/ts_123218v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123218/11.06.00_60/ts_123218v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.218V1150-2014  | 11.5.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.218(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.218(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.218(R11-11.5.0)</a> |
| TTC  | TS-3GA-23.218(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.218(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.218(Rel11)v11.6.0.pdf</a>                           |

### 10.3.64 TS 23.221 Architectural requirements

This document covers details the architectural requirements for the GSM in Iu mode and UMTS systems. In particular, it details the high-level requirements for the circuit-switched (CS) domain and the Stage 2 procedures that span more than one domain/subsystem within UMTS and GSM. The reference model to which these procedures apply can be found within 3G TS 23.002. In addition, A mode-to-Iu mode handover for CS services is addressed. Detailed architectural requirements within the subsystems are contained within the remainder of the 23 series of specifications; e.g., the



requirements for the packet-switched (PS) domain are contained within 3G TS 23.060 and the requirements for the bearer independent CS core network are contained in 3G TS 23.205.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 221                  | 11.2.0  | Published    | 2013-06-27  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123221/11.02.00_60/ts_123221v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123221/11.02.00_60/ts_123221v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.221V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.221(R11-111.0)   | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.221(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.221(R11-11.1.0)</a> |
| TTC  | TS-3GA-23.221(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.221(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.221(Rel11)v11.2.0.pdf</a>                           |

### 10.3.65 TS 23.226 Global text telephony (GTT); Stage 2

This Technical Specification defines the Stage 2 description of the real-time text conversation feature called global text telephony (GTT). GTT Stage 2 identifies the functional capabilities needed to support the service described in GTT Stage 1.

This document contains the core functions for a real-time text conversation feature GTT, to be used in combination with other media in conversational services.

GTT offers real-time conversation in text, to be used alone or in combination with other conversational media, and interworking with current and emerging text conversation features in the fixed networks and other mobile networks.

GTT uses a number of functional entities to realize the requirements of the Stage 1 description [TS 22.226]. This document describes how the service requirements are realized with these functional entities. As far as possible, existing protocols shall be used for the realization of the global text telephony feature. This may include, e.g., SIP, 3G.324, or circuit-switched voice service as protocol environments, and CTM, AL1 and RTP/text as transmission protocols. It also means usage of existing text presentation format [ITU-T T.140], common to all GTT text conversation environments.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 226                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123226/11.00.00_60/ts_123226v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123226/11.00.00_60/ts_123226v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.226V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.226(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.226(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.226(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.226(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.226(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.226(Rel11)v11.0.0.pdf</a>                           |

### 10.3.66 TS 23.228 IP multimedia subsystem (IMS); Stage 2

This document defines the Stage 2 service description for the IP multimedia core network subsystem (IMS), which includes the elements necessary to support IP multimedia (IM) services in UMTS. [ITU-T I.130] describes a three-stage method for characterization of telecommunication services, and [ITU-T Q.65] defines Stage 2 of the method.

This document does not cover the access network functionality except as they relate to provision of IM services. TS 23.060 describes GPRS. GSM 03.64 contains an overall description of the GSM GPRS radio interface. TS 25.301 contains an overall description of the UMTS terrestrial radio access network.

This document identifies the mechanisms to enable support for IP multimedia applications. In order to align IP multimedia applications wherever possible with non-3GPP IP applications, the general approach is to adopt non-3GPP-specific IP-based solutions.

|      | Document No.                 | Version | Status         | Issued date | Location  |
|------|------------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.228          | 11.10.0 | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23228-ba0.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23228-ba0.pdf</a> |
| ETSI | TS 123 228                   | 11.10.0 | Published      | 2013-12-18  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123228/11.10.00_60/ts_123228v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123228/11.10.00_60/ts_123228v111000p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.228V1170-2014   | 11.7.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.228(R11-11.7.0)   | 11.7.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.228(R11-11.7.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.228(R11-11.7.0)</a>         |
| TTC  | TS-3GA-23.228(Rel11)v11.10.0 | 11.10.0 | TTC Approved   | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.228(Rel11)v11.10.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.228(Rel11)v11.10.0.pdf</a>                                 |

### 10.3.67 TS 23.231 SIP-I based circuit-switched core network; Stage 2

This document defines the stage 2 description for the SIP-I based CS core network. The logical architecture for the SIP-I based CS core network is defined in 3GPP TS 23.205.

This stage 2 shall cover the information flows between the GMSC server, MSC server and media gateways that are required to support a SIP-I based Nc interface. Note that nothing in the present document shall preclude an implementation of a combined MSC Server and MGW. The present document shall show the CS core network termination of the Iu and A interfaces in order to cover the information flow stimulus to the core network and describe the interaction with the supplementary and value added services and capabilities.

For the purposes of the present document, the Nc interface profile is based on ITU-T Q.1912.5 SIP-I profile C and is specified in GPP TS 29.231. The Mc interface profile is based on [ITU-T H.248.1] and is specified in 3GPP TS 29.232.

The present document is applicable only for IP transport in the CS core network.

Details of Transcoder-Free Operation/Out of Band Transcoder Control are outside the scope of the present document. See 3GPP TS 23.153 for more information.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 231                  | 11.1.1  | Published    | 2012-11-21  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123231/11.01.01_60/ts_123231v110101p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123231/11.01.01_60/ts_123231v110101p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.231V1111-2014  | 11.1.1  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.231(R11-11.1.1)  | 11.1.1  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.231(R11-11.1.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.231(R11-11.1.1)</a> |
| TTC  | TS-3GA-23.231(Rel11)v11.1.1 | 11.1.1  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.231(Rel11)v11.1.1.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.231(Rel11)v11.1.1.pdf</a>                           |

### 10.3.68 TS 23.234 3GPP system to wireless local area network (WLAN) interworking; system description

This document specifies system description for interworking between 3GPP systems and wireless local area networks (WLANs). The intent of 3GPP-WLAN interworking is to extend 3GPP services and functionality to the WLAN access environment. The 3GPP-WLAN interworking system



provides bearer services allowing a 3GPP subscriber to use a WLAN to access 3GPP PS-based services.

This specification defines a 3GPP system architecture and procedures to do the following:

- Provide access, authentication and authorization (AAA) services to the 3GPP-WLAN interworking system based on subscription.
- Provide access to the locally connected IP network (e.g., the Internet) if allowed by subscription.
- Provide WLAN UEs with IP bearer capability to the operator's network and PS services, if allowed by subscription.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 234                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123234/11.00.00_60/ts_123234v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123234/11.00.00_60/ts_123234v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.234V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.234(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.234(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.234(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.234(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.234(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.234(Rel11)v11.0.0.pdf</a>                           |

### 10.3.69 TS 23.236 Intra-domain connection of radio access network (RAN) nodes to multiple core network (CN) nodes

This document covers the details for the intra-domain connection of RAN nodes to multiple CN nodes for GSM and UMTS systems. In particular, it details the impacts to GSM and UMTS systems and the Stage 2 procedures for the support of connecting a RNC or BSC to multiple MSC servers or SGSNs. The overall solution is described, and the detailed impacts on the existing specifications are identified.

The reference model to which these procedures apply can be found within TS 23.002. Detailed architectural requirements within the subsystems are contained within the remainder of the 23 series of specifications, e.g., the requirements for the packet-switched (PS) domain are contained within TS 23.060, and the requirements for the bearer independent CS core network are contained in TS 23.205.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-23.236        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23236-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/23/A23236-b00.pdf</a> |
| ETSI | TS 123 236                 | 11.0.0  | Published      | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123236/11.00.00_60/ts_123236v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123236/11.00.00_60/ts_123236v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.23.236V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.236(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.236(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.236(R11-11.0.0)</a>         |

### 10.3.70 TS 23.237 IP Multimedia Subsystem (IMS) Service Continuity; Stage 2

This document specifies the architectural requirements and procedures for delivery of IMS Service Continuity.

3G TS 23.206 is migrated to this specification.

The scope of the specification includes:

- PS-CS service continuity using IMS Centralized Services (see 3G TS 23.292);
- PS-PS service continuity;
- PS-PS service continuity in conjunction with PS-CS service continuity;
- Adding and/or removing media flows to support service.

The solution is restricted to service continuity using IMS procedures, i.e., mobility mechanisms on the IP-CAN level are not within the scope of this specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 237                  | 11.9.0  | Published    | 2013-09-20  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123237/11.09.00_60/ts_123237v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123237/11.09.00_60/ts_123237v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.237V1170-2014  | 11.7.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.237(R11-11.7.0)  | 11.7.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.237(R11-11.7.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.237(R11-11.7.0)</a> |
| TTC  | TS-3GA-23.237(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.237(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.237(Rel11)v11.9.0.pdf</a>                           |

### 10.3.71 TS 23.240 3GPP generic user profile (GUP); architecture (Stage 2)

The objective of specifying the 3GPP generic user profile is to provide a conceptual description to enable harmonized usage of the user-related information located in different entities. Technically, the 3GPP generic user profile provides an architecture, data description and interface with mechanisms to handle the data.

The present document defines the Stage 2 architecture description to the 3GPP generic user profile (GUP), which includes the elements necessary to realize the Stage 1 requirements in 3G TS 22.240.

The present document includes the GUP reference architecture with descriptions of functional entities, and their interfaces and procedures, as well as the high-level information model for the GUP data.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 240                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123240/11.00.00_60/ts_123240v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123240/11.00.00_60/ts_123240v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.240V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.240(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.240(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.240(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.240(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.240(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.240(Rel11)v11.0.0.pdf</a>                           |

### 10.3.72 TS 23.246 Multimedia broadcast/multicast service (MBMS); architecture and functional description

The present document describes the Stage 2 description (architectural solution and functionalities) for the MBMS bearer service, which includes, together with MBMS user services defined in 3G TS 26.346, all the elements necessary to realize the Stage 1 requirements in 3G TS 22.146 and 3G TS 22.246.

The present document also includes considerations on the manner in which user services should make use of the MBMS bearer service described herein.

The present document includes information applicable to network operators, service providers and manufacturers.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 246                  | 11.1.0  | Published    | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123246/11.01.00_60/ts_123246v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123246/11.01.00_60/ts_123246v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.246V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.246(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.246(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.246(R11-11.1.0)</a> |
| TTC  | TS-3GA-23.246(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.246(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.246(Rel11)v11.1.0.pdf</a>                           |

### 10.3.73 TS 23.251 Network sharing; architecture and functional description

Network sharing is a way for operators to share the heavy deployment costs for mobile networks, especially in the roll-out phase. In the current mobile telephony marketplace, functionality that enables various forms of network sharing is becoming more and more important.

Scenarios and user requirements are described in 3G TR 22.951, while the current document presents the Stage 2 details and descriptions of how these requirements are supported in a 3GPP network.

The present document covers the details of network sharing. It shows how several core network operators can share one radio access network and details the impacts on the network architecture. All UEs shall comply with existing requirements, among them PLMN selection and system information reception. The present document defines additional requirements for network-sharing supporting UEs.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 251                  | 11.6.0  | Published    | 2013-12-18  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123251/11.06.00_60/ts_123251v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123251/11.06.00_60/ts_123251v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.251V1150-2014  | 11.6.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.251(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.251(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.251(R11-11.5.0)</a> |
| TTC  | TS-3GA-23.251(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.251(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.251(Rel11)v11.6.0.pdf</a>                           |

### 10.3.74 TS 23.259 Personal network management (PNM); Procedures and information flows; Stage 2

This document provides the procedure details and the information flows for support of Personal Network Management including the PN UE redirection and PN access control applications enabled by Personal Network Management (PNM).

NOTE – This specification does not currently cover the stage 1 requirements for PNE Networks specified in 3GPP TS 22.259.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 123 259                 | 11.0.0  | Published | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123259/11.00.00_60/ts_123259v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123259/11.00.00_60/ts_123259v110000p.pdf</a> |
| ATIS | ATIS.3GPP.23.259V1100-2014 | 11.0.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-23.259(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.259(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.259(R11-11.0.0)</a> |
| TTC | TS-3GA-23.259(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.259(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.259(Rel11)v11.0.0.pdf</a>                           |

### 10.3.75 TS 23.261 IP flow mobility and seamless wireless local area network (WLAN) offload; Stage 2

This document specifies the Stage 2 system description for IP flow mobility between a 3GPP and a WLAN. The technical solution is based on the working principles of DSMIPv6 [IETF RFC 5555] and it is applicable to both the Evolved Packet System and the I-WLAN mobility architecture.

The specification covers the system description of seamless WLAN offload and IP flow mobility between 3GPP and WLAN as well as the respective interactions with the PCC and ANDSF frameworks. The system description for non-seamless WLAN offload is covered in 3GPP TS 23.402.

This document specifies also the detailed extensions to S2c and H1 reference points for IP flow mobility. The extensions to the PCC and to the ANDSF framework are specified respectively in 3GPP TS 23.203 and in 3GPP TS 23.402.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 261                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123261/11.00.00_60/ts_123261v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123261/11.00.00_60/ts_123261v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.261V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.261(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.261(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.261(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.261(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.261(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.261(Rel11)v11.0.0.pdf</a>                           |

### 10.3.76 TS 23.271 Functional stage 2 description of LCS

The document specifies Stage 2 of the location services (LCS) feature in UMTS and GSM, which provides the mechanisms to support mobile location services for operators, subscribers and third party service providers.

Location services may be considered as a network-provided enabling technology consisting of standardized service capabilities, which enable the provision of location applications. The application(s) may be service-provider specific. The description of the numerous and varied possible location applications which are enabled by this technology are outside the scope of this document. However, clarifying examples of how the functionality being described may be used to provide specific location services may be included.

This Stage 2 service description covers the LCS system functional model for the whole system, the LCS system architecture, state descriptions, message flows, etc.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 271                  | 11.2.0  | Published    | 2013-04-05  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123271/11.02.00_60/ts_123271v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123271/11.02.00_60/ts_123271v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.271V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.271(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.271(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.271(R11-11.2.0)</a> |
| TTC  | TS-3GA-23.271(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.271(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.271(Rel11)v11.2.0.pdf</a>                           |

### 10.3.77 TS 23.272 Circuit switched (CS) fallback in evolved packet system (EPS); Stage 2

This document defines the Stage 2 architecture and specification for the CS Fallback for EPS. The scope of this document includes the architecture enhancements for functionality to enable fallback from E-UTRAN access to UTRAN/GERAN CS domain access and functionality to reuse of voice and other CS-domain services (e.g., CS UDI video / SMS/ LCS / USSD) by reuse of CS infrastructure.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 272                  | 11.8.0  | Published    | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123272/11.08.00_60/ts_123272v110800p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123272/11.08.00_60/ts_123272v110800p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.272V1140-2014  | 11.4.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.272(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.272(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.272(R11-11.4.0)</a> |
| TTC  | TS-3GA-23.272(Rel11)v11.7.0 | 11.7.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.272(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.272(Rel11)v11.7.0.pdf</a>                           |

### 10.3.78 TS 23.278 Customized applications for mobile network enhanced logic (CAMEL) Phase 4 – Stage 2; IM CN interworking

This document specifies the Stage 2 description for the customized applications for mobile network enhanced logic (CAMEL) feature which provides the mechanisms to support services for the IP multimedia core network (IM CN) subsystem.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 278                  | 11.0.1  | Published    | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123278/11.00.01_60/ts_123278v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123278/11.00.01_60/ts_123278v110001p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.278V1101-2014  | 11.0.1  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.278(R11-11.0.0)  | 11.0.1  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.278(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.278(R11-11.0.1)</a> |
| TTC  | TS-3GA-23.278(Rel11)v11.0.1 | 11.0.1  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.278(Rel11)v11.0.1.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.278(Rel11)v11.0.1.pdf</a>                           |

### 10.3.79 TS 23.279 Combining circuit switched (CS) and IP multimedia subsystem (IMS) services; Stage 2

The document provides architectural details to combine CS services and IMS services for using them in parallel between the same two users in a peer-to-peer context. The document provides a detailed description of how capabilities and identities are exchanged to enable the combination of CS and IMS services between the same two UEs.

The present document includes the following capabilities that enable the combination of CS and IMS services:

- Radio capability exchange.
- SIP based UE terminal capability exchange.
- MSISDN number exchange in SIP.
- Establishing an IMS session in parallel to an ongoing CS call between the same two UEs.
- Establishing a CS call in parallel to an ongoing IMS session between the same two users UEs.
- Network support for establishing multimedia sessions between a UE that uses IMS origination and a UE that uses CSI termination

The individual CS call or IMS service that are combined are described in their respective specifications.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 279                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123279/11.00.00_60/ts_123279v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123279/11.00.00_60/ts_123279v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.279V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.279(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.279(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.279(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.279(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.279(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.279(Rel11)v11.0.0.pdf</a>                           |

### 10.3.80 TS 23.284 Local call local switch (LCLS); Stage 2

This document defines the Stage 2 description for the Local Call Local Switch feature. Local Call Local Switch may be implemented in both BICC based CS core networks as defined in 3GPP TS 23.205 and SIP-I based CS core networks as defined in 3GPP TS 23.231, with a GSM/EDGE Radio Access Network supporting either TDM based or IP based A interface.

This stage 2 shall cover the information flows between the GMSC server, MSC server and media gateways that are required to support Local Call Local Switching highlighting the specific requirements in addition to those defined for BICC based CS core networks 3GPP TS 23.205 and SIP-I based CS core networks 3GPP TS 23.23. Note that nothing in the present document shall preclude an implementation of a combined MSC Server and MGW. This document shall show the CS core network termination of the A interface, and the information flows between the BSS and the MSC server, in order to cover the information flow stimulus to the core network and describe the interaction with the supplementary and value added services and capabilities.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 284                  | 11.1.0  | Published    | 2013-01-16  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123284/11.01.00_60/ts_123284v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123284/11.01.00_60/ts_123284v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.284V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.284(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.284(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.284(R11-11.1.0)</a> |
| TTC  | TS-3GA-23.284(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.284(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.284(Rel11)v11.1.0.pdf</a>                           |



### 10.3.81 TS 23.292 IP Multimedia system (IMS) centralized services; Stage 2

This document specifies the architectural requirements for delivery of consistent IMS services to the user regardless of the attached access type (e.g., CS domain access, or IP-CAN).

Consideration is given to how to access IMS Services (see clause 22.4 of 3G TS 22.101) while still allowing innovative services.

IMS control of Emergency calls that utilize TS12 are outside the scope of this specification in this release.

The scope of the specification includes:

- Session establishment when using CS access for media transmission for an IMS service
- Support of Service continuity as specified in 3G TS 23.237
- Access domain selection
- IMS control of services where the media is transported via the CS network (e.g., managing of mid-call services)
- Service data management

The solution is applicable for UE's with or without ICS functionality, and is applicable for the following deployment scenarios:

- An operator who supports for their subscribers only UEs that have ICS functionality.
- An operator who supports for their subscribers only UEs that do not have ICS functionality.
- An operator who supports for their subscribers UEs which do and do not have ICS functionality (to different subscribers and the same subscribers) ensuring the coexistence of UEs that have and do not have ICS functionality.
- Inbound roaming subscribers on an operator's network that supports either the same or different ICS functionality that the inbound roaming subscriber is using, ensuring the coexistence of UEs that have and do not have ICS functionality.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 292                  | 11.7.0  | Published    | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123200_123299/123292/11.07.00_60/ts_123292v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/123200_123299/123292/11.07.00_60/ts_123292v110700p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.292V1150-2014  | 11.5.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.292(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.292(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.292(R11-11.5.0)</a> |
| TTC  | TS-3GA-23.292(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.292(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.292(Rel11)v11.6.0.pdf</a>                           |

### 10.3.82 TS 23.327 Mobility between 3GPP-wireless local area network (WLAN) interworking and 3GPP systems

This document specifies the stage 2 system description for providing mobility between 3GPP Wireless Local Area Network Interworking (I-WLAN) and 3GPP Systems. It is to define a technical solution based on the working principles of DSMIPv6 with necessary enhancement of the I-WLAN architecture for supporting mobility and roaming between 3GPP-WLAN Interworking system and 3GPP Systems so that ongoing 3GPP PS based services can be maintained with minimal impact on the end user's perceived quality on the services at a change of the access network (between I-WLAN and 3GPP Access Systems).

The specification includes both non-roaming and roaming scenarios and covers all aspects, including mobility between 3GPP Systems and I-WLAN with access authentication and charging.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 327                  | 11.0.0  | Published    | 2012-11-14  | <a href="http://www.etsi.org/deliver/etsi_ts/123300_123399/123327/11.00.00_60/ts_123327v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123300_123399/123327/11.00.00_60/ts_123327v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.327V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.327(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.327(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.327(R11-11.0.0)</a> |
| TTC  | TS-3GA-23.327(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.327(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.327(Rel11)v11.0.0.pdf</a>                           |

### 10.3.83 TS 23.333 Multimedia resource function controller (MRFC) – Multimedia resource function processor (MRFP) Mp interface: Procedures descriptions

This specification describes the functional requirements and information flows that generate procedures between the multimedia resource function controller (MRFC) and the multimedia resource function processor (MRFP), the Mp interface.

This specification is limited to information flows relevant to the Mp interface; in order to define these procedures and make the functional requirements clear some triggers from an external interface may be described; these may be specified within the Mr interface, for example, or within an AS in which the MRFC function resides. However, for the overall stage 2 procedures of IMS, see 3GPP TS 23.228.

The protocol on the Mp interface is defined to comply with ITU-T H.248.1 gateway control protocol; see [ITU-T H.248.1]. The goal of this specification is to provide the input to defining a formal Profile within the ITU-T H.248 protocol toolbox specifically for the Mp application.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 333                  | 11.1.0  | Published    | 2013-02-13  | <a href="http://www.etsi.org/deliver/etsi_ts/123300_123399/123333/11.01.00_60/ts_123333v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/123300_123399/123333/11.01.00_60/ts_123333v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.333V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.333(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.333(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.333(R11-11.1.0)</a> |
| TTC  | TS-3GA-23.333(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.333(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.333(Rel11)v11.1.0.pdf</a>                           |

### 10.3.84 TS 23.334 IP Multimedia subsystem (IMS) application level gateway (IMS-ALG) – IMS access gateway (IMS-AGW) interface: Procedures descriptions

Annex G of 3GPP TS 23.228 gives out an IMS Application Level Gateway (IMS-ALG) and IMS Access Media Gateway (IMS-AGW) based reference model to support NAPT-PT, gate control and traffic policing between IP-CAN and IMS domain.

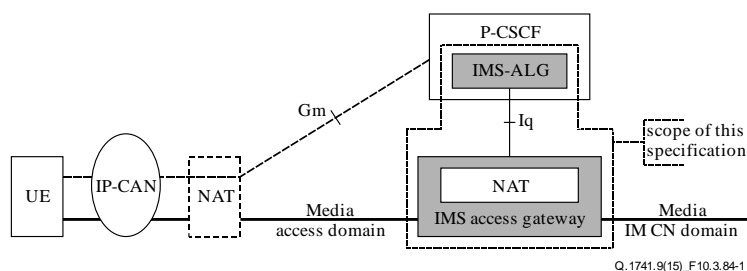


Figure 10.3.84-1 – Scope of the specification



Figure 10.3.84-1 illustrates the reference model for Iq:

- the dashed line represents the IP signalling-path with SIP (at Gm) as call/session control protocol between the UE and the P-CSCF (IMS-ALG);
- the bold, horizontal line represents the IP media-path (also known as (IP) bearer-path or (IP) data-path; the notion 'media' is used as generic term for "IP application data"); and
- the vertical line represents the Iq control-path with ITU-T H.248 as gateway/policy control protocol between the IMS-ALG and the IMS-AGW (ITU-T H.248 messages are transported over IP).

The Iq reference point is between the P-CSCF (IMS-ALG) and the IMS-AGW. It conveys the necessary information that is needed to allocate, modify and release (IP) transport addresses.

The present document defines the stage 2 description for the Iq reference point. The stage 2 shall cover the information flow between the P-CSCF (IMS-ALG) and IMS-AGW. The protocol used over the Iq interface is the gateway control protocol according to [ITU-T H.248] (which is specified for Iq by an ITU-T H.248 profile according to 3GPP TS 29.334).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 334                  | 11.2.0  | Published    | 2013-01-16  | <a href="http://www.etsi.org/deliver/etsi_ts/123300_123399/123334/11.02.00_60/ts_123334v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/123300_123399/123334/11.02.00_60/ts_123334v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.334V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.334(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.334(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.334(R11-11.2.0)</a> |
| TTC  | TS-3GA-23.334(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.334(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.334(Rel11)v11.2.0.pdf</a>                           |

### 10.3.85 TS 23.335 User Data Convergence (UDC); Technical realization and information flows; Stage 2

This document describes procedures and signalling flows associated to the technical realization of the 3GPP User Data Convergence (UDC). It furthermore indicates some requirements for the stage 3 specifications.

Special consideration is put in the following areas:

- reference architecture for the UDC concept
- general description of procedures for the user data manipulation (e.g., create, delete, update, etc.)
- identification of the requirements on the UDC for the applicability of the mechanisms described in this document.

User data convergence is an optional concept to ensure data consistency and simplify creation of new services by providing easy access to the user data, as well as to ensure the consistency of storage and data models and to have minimum impact on traffic mechanisms, reference points and protocols of network elements.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 123 335                 | 11.0.0  | Published | 2012-10-24  | <a href="http://www.etsi.org/deliver/etsi_ts/123300_123399/123335/11.00.00_60/ts_123335v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/123300_123399/123335/11.00.00_60/ts_123335v110000p.pdf</a> |
| ATIS | ATIS.3GPP.23.335V1100-2014 | 11.0.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-23.335(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.335(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.335(R11-11.0.0)</a> |
| TTC | TS-3GA-23.335(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.335(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.335(Rel11)v11.0.0.pdf</a>                           |

### 10.3.86 TS 23.380 IMS restoration procedures

This document specifies the procedures required in 3GPP IMS to handle a S-CSCF service interruption scenario with minimum impact to the service to the end user.

NOTE – IMS Restoration Procedures covering service interruption of other network elements are not defined in this version of the specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 380                  | 11.3.0  | Published    | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123300_123399/123380/11.03.00_60/ts_123380v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/123300_123399/123380/11.03.00_60/ts_123380v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.380V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.380(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.380(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.380(R11-11.1.0)</a> |
| TTC  | TS-3GA-23.380(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.380(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.380(Rel11)v11.2.0.pdf</a>                           |

### 10.3.87 TS 23.401 General packet radio service (GPRS) enhancements for evolved universal terrestrial radio access network (E-UTRAN) access

This document defines the Stage 2 service description for the Evolved 3GPP Packet Switched Domain – also known as the Evolved Packet System (EPS) in this document. The Evolved 3GPP Packet Switched Domain provides IP connectivity using the Evolved Universal Terrestrial Radio Access Network (E-UTRAN).

The specification covers both roaming and non-roaming scenarios and covers all aspects, including mobility between E-UTRAN and pre-E-UTRAN 3GPP radio access technologies, policy control and charging, and authentication.

The Radio Access Network functionality is documented only to the extent necessary to describe the overall system. 3G TS 36.300 contains the overall description of the Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN).

[ITU-T I.130] describes a three-stage method for characterisation of telecommunication services, and [ITU-T Q.65] defines Stage 2 of the method.

3G TS 23.402 is a companion specification to this specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 401                  | 11.9.0  | Published    | 2014-03-17  | <a href="http://www.etsi.org/deliver/etsi_ts/123400_123499/123401/11.09.00_60/ts_123401v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/123400_123499/123401/11.09.00_60/ts_123401v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.401V1150-2014  | 11.5.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.401(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.401(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.401(R11-11.5.0)</a> |
| TTC  | TS-3GA-23.401(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.401(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.401(Rel11)v11.8.0.pdf</a>                           |

### 10.3.88 TS 23.402 Architecture enhancements for non-3GPP accesses

This document specifies the stage 2 service description for providing IP connectivity using non-3GPP accesses to the Evolved 3GPP Packet Switched domain. In addition, for E-UTRAN and non-3GPP accesses, the specification describes the Evolved 3GPP PS Domain where the protocols between its Core Network elements are IETF-based.

[ITU-T I.130] describes a three-stage method for characterisation of telecommunication services, and [ITU-T Q.65] defines stage 2 of the method.

The specification covers both roaming and non-roaming scenarios and covers all aspects, including mobility between 3GPP and non 3GPP accesses, policy control and charging, and authentication, related to the usage of non-3GPP accesses.

3G TS 23.401 covers architecture aspects common to the Evolved 3GPP Packet Switched domain.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 402                  | 11.8.0  | Published    | 2013-12-18  | <a href="http://www.etsi.org/deliver/etsi_ts/123400_123499/123402/11.08.00_60/ts_123402v110800p.pdf">http://www.etsi.org/deliver/etsi_ts/123400_123499/123402/11.08.00_60/ts_123402v110800p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.402V1160-2014  | 11.6.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.402(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.402(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.402(R11-11.6.0)</a> |
| TTC  | TS-3GA-23.402(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.402(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-23.402(Rel11)v11.8.0.pdf</a>                           |

### 10.3.89 TS 23.682 Architecture enhancements to facilitate communications with packet data networks and applications

The document specifies architecture enhancements to facilitate communications with packet data networks and applications (e.g., Machine Type Communication (MTC) applications on the (external) network/MTC servers) as per the use cases and service requirements defined in TS 22.368, TS 22.101, and related 3GPP requirements specifications. Both roaming and non-roaming scenarios are covered.

In this release, this document specifies the network elements, interfaces and procedures for:

- Device triggering by applications/servers (e.g., MTC applications on the (external) network/MTC servers) and also security mechanisms for device triggering and security for external interfaces.
- PS-Only support with and without MSISDN.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 123 682                  | 11.5.0  | Published    | 2013-09-20  | <a href="http://www.etsi.org/deliver/etsi_ts/123600_123699/123682/11.05.00_60/ts_123682v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/123600_123699/123682/11.05.00_60/ts_123682v110500p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.682V1130-2014  | 11.3.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.682(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.682(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.682(R11-11.3.0)</a> |
| TTC  | TS-3GA-23.682(Rel11)v11.5.0 | 11.5.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.682(Rel11)v11.5.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-23.682(Rel11)v11.5.0.pdf</a>                           |

### 10.3.90 TR 23.812 Feasibility study on IP multimedia subsystem (IMS) evolution

The scope of the technical report is to capture the results of a study into the feasibility of enhancing IMS network architecture. This report intends to study the feasibility of enhancing IMS network architecture as follows,

- Investigating architectural improvements to reduce the complexity of signalling procedures by reducing the signalling hops, or the number of options and combinations (by looking at different groupings of combining existing entities);
- Investigating means to improve system-level load balancing and reliability;
- Investigating possibilities for reducing configuration workload to save OPEX;
- Investigating the introduction of IMS Overload Control mechanisms.
- Backward compatibility with current IMS specifications shall be ensured.

NOTE – Overlap with SA5 and CT4 work need to be monitored.

This report is intended to explore potential architecture improvements and also provide conclusions on the above aspects with respect to potential future normative specification work.

There are a number of functions involved in call session setup in IMS network. Interfaces and interactions between network elements may be a little complicated and not that efficient. It is deemed beneficial to review the current IMS architecture including aspects such as the possible optimization of interfaces/reference points (by looking at different groupings of combining existing entities), reducing options of solutions for the same issues, relevancy of certain functions etc.

IMS network service availability largely relies on the reliability of network entities. If some network elements implementing critical functions (e.g., S-CSCF, HSS) fail, service availability may be impacted. Moreover network elements may not be fully utilized because network load may not be well distributed, e.g., some nodes may be overloaded due to sudden traffic increase, while others may be under loaded to some extent. Though there are some element level approaches to solve these problems, some system level solutions should be studied, for example, the method to distribute load between network elements in different geographical locations especially when a disaster happens, such as earthquake.

Network expansion may require significant manual configurations, and the network maintenance and upgrade may be time-consuming and also may be costly for operators. Introducing self-organization features may improve the network intelligence and reduce the efforts of manual configuration.

The objectives of the study for investigating the introduction of IMS Overload Control mechanisms are to:

- Determine the parts of IMS architecture for which overload control mechanisms are needed;
- Evaluate the applicability of candidate solutions for Overload Control to the SIP entities of the IP multimedia core network architecture, including:
  - mechanisms having already been specified or studied within 3GPP and their possible enhancements,
  - mechanisms specified or studied by other bodies (e.g., ETSI TISPAN, IETF) and their possible enhancements,
  - other mechanisms, if proposed within this work item;
- Provide recommendations based on analysis.

### **10.3.91 TR 23.813 Study on policy solutions and enhancements**

The objective is to study an evolved policy solution through enhancement of 3GPP policy framework. One of the aims of the study is to ensure a policy architecture that provides an extensible framework for easy reuse with new IP based services by identifying areas where improvement of specifications are feasible. The study item will look into solutions for the examples in the section above.

Existing components for consideration in the Policy Study are functions and interfaces to/from:

- PCRF, PCEF and BBERF;
- SPR, HSS;

- ANDSF;
- IMS policy decision making entities.

The study aims to provide a more comprehensive way (e.g., going beyond existing 3GPP PCC framework) to handle operator policies for all IP / service flows (IMS and non-IMS) in a coordinated manner and under varying network conditions while keeping in view aspects such as:

- user preferences;
- user subscriptions;
- service requirements;
- terminal capabilities (including converged terminals);
- network capabilities (3GPP and those non 3GPP accesses inter- working with 3GPP);
- Session transfer and terminating policies;
- Security policy control, e.g., firewalling and gating.

Roaming scenarios are considered as part of this study. Compatibility with existing system architecture elements are protected and backward compatibility is expected. All types of policies i.e., static/pre-provisioned, dynamic, network based, UE based are considered in the study.

When a key issue is resolved sufficiently to be incorporated into the specification in an independent manner, the study work may move forward for a decision for normative specification work on such issue(s) using a new work item or a TEI.

#### **10.3.92 TR 23.842 Study on network provided location information to the IP multimedia subsystem (IMS)**

The document investigates architecture solutions for making the Network Provided Location Information (NPLI) related to the access network that the UE is camped on available to the IMS nodes whenever the IMS operator needs to record this information either to fulfil legal obligations, for charging or for other purposes.

This study will gather the various existing regulatory and operator requirements that the solution needs to fulfil, in particular:

- whether the provision of the Network Provided Location (NPLI) Information and local time are applicable to all the users served by a network (i.e., "non-roaming" subscribers and inbound roamers) or only to the network operator subscribers;
- whether Network Provided Location (NPLI) and local time need to be made available also if EPS/GPRS and IMS services of a subscriber are provided by different networks;
- what events trigger the need to retrieve the Network Provided Location (NPLI) and local time.

The study is then expected to produce solution candidates which detail the necessary Stage 2 message flows, architecture enhancements and new functionality needed in the EPS and GPRS networks. The solution candidates will also describe what IP Multimedia Subsystem elements are affected in order to obtain the Network Provided Location (NPLI).

The solutions produced will then be assessed against the criteria identified in clause 7 where recommendations for normative work will also be made.

#### **10.3.93 TR 23.849 Study on Stage 2 aspects of optimised service charging and allocation of resources (OSCAR) in the ip multimedia subsystem (IMS) whilst roaming**

The document provides a study into the new (Rel-11) requirements identified by SA WG1 to allow a home network to control a visited network to perform the following IMS functions for its subscribers:

- conferencing (network hosted);

- transcoding;
- tone insertion; and
- announcement insertion.

#### **10.3.94 TR 23.850 Study on roaming architecture for voice over IP multimedia subsystem (IMS) with local breakout**

In the context of support of roaming for voice over IMS, the GSM Association has decided that local breakout in the visited network will be needed (see GSMA PRD IR.65). This is because local breakout can be regarded as one cornerstone to allow the replication of the charging principles on which CS roaming is based on. However there are several other aspects that need to be considered e.g., the split/bundling of user and control plane, capturing of SDP information needed to generate charging records, to make such principles applicable to voice over IMS roaming.

This study item will therefore investigate solutions for the provision of voice over IMS in roaming scenarios that facilitate the realization of a charging model that replicates the principles of CS model.

It will be studied whether changes to the core 3GPP specifications are needed and if so which ones. The study will focus on IMS layer and not EPC aspects.

As some of the aspects of the roaming are outside the scope of 3GPP (e.g., decision to anchor media or control plane, interaction with carrier networks, roaming agreements) this study will be performed in close cooperation with the GSM Association which may provide additional requirements and guidance during its development.

#### **10.3.95 TR 23.854 Enhancements for multimedia priority service (MPS)**

MPS will enable National Security/Emergency Preparedness (NS/EP) users (herein called Service Users) to make priority calls/sessions using the public networks. This service needs to be ensured also under special conditions such as network congestion. Service Users are the government-authorized personnel, emergency management officials and/or other authorized users. Effective disaster response and management rely on the Service User's ability to communicate during congestion conditions. Service Users are expected to receive priority treatment, in support of mission critical multimedia communications.

The enhancements for MPS evaluated in this document are priority aspects of EPS packet bearer services and priority related interworking between IMS and EPS packet bearer services. These enhancements enable the network to support end-to-end priority treatment for MPS call/session origination/termination, including the Non Access Stratum (NAS) and Access Stratum (AS) signalling establishment procedures at originating/terminating network side as well as resource allocation in the core and radio networks for bearers. Priority treatment will be applicable to IMS based multimedia services, priority EPS bearer services and CS Fallback.

This document clarifies the architectural requirements for MPS, considers the priority service scenarios, and evaluates solution alternatives. Solutions will be proposed and evaluated based on the following three service categories: IMS based multimedia service (voice, video etc.), priority EPS bearer services (PS data without IMS interaction) and CS Fallback. Common issues for multiple service categories should be resolved by single solution to limit the amount of overall functionality and to avoid complexity.

The basic eMPS, i.e., priority handling of IMS based multimedia service, EPS bearer services and CS Fallback have completed in Rel-10. In Rel-11, Single Radio Voice Call Continuity (SRVCC) from LTE to UTRAN/GERAN/1xCS will be investigated based on Rel-10 SRVCC specification.

The result of the analysis should be suitable as a basis for normative MPS specification work.

The scope of the MPS part is to further investigate:

- The signalling and procedures for identifying priority and authorizing the usage of priority service.
- The required priority attributes used in enabling end-to-end priority marking and priority treatment during establishment, modification and release of an IMS based priority voice/video/data session.
- The scenarios and capabilities for supporting priority EPS bearer data services.
- The potential impacts on existing and relevant standard procedures in order to provide preferential treatment for MPS requests in the event of congestion.
- Inter-working with other IMS and CS networks to provide an end-to-end priority service.

### **10.3.96 TR 23.855 Data identification in Access network discovery and selection function (ANDSF) (DIDA)**

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.

[3GPP TR 21.905]: "Vocabulary for 3GPP Specifications".

[3GPP TS 23.402]: "Architecture enhancements for non-3GPP accesses".

[3GPP TS 23.261]: "IP flow mobility and seamless WLAN offload".

### **10.3.97 TR 23.857 Study of evolved packet core (EPC) nodes restoration**

The document contains the study on EPC nodes failure and restoration.

This document will consider any necessary operational protocol recovery mechanisms in the EPS in order to restore the subscriber service in the event of EPC node failure or clean up the hanging resource in other EPC nodes if the recovery of the failed node is not possible. The document will address the following aspects:

- list the different network failure scenarios to be analyzed for EPC nodes: MME, S4-SGSN, SGW and PGW;
- identify precisely the problems resulting from the current definition of the standards;
- list various possible solutions;
- identify pros and cons of possible solutions;
- conclude on potential enhancements to the standards (depending on gains vs complexity).

### **10.3.98 TR 23.885 Feasibility study of single radio voice call continuity (SRVCC) from UTRAN/GERAN to E-UTRAN/HSPA; Stage 2**

The objective of the feasibility study is to investigate a solution for supporting Single Radio Voice Call Continuity (SRVCC) from 3GPP UTRAN/GERAN CS access to 3GPP E-UTRAN/HSPA access, for voice call initiated in LTE/HSPA access and previously handed over to UTRAN/GERAN CS access, as well as for the voice call directly initiated in UTRAN/GERAN CS access.

This Technical Report investigates solutions for SRVCC for voice calls that are anchored in the IMS. Coordination between the SRVCC for voice call and the handover of non-voice PS bearers is also covered.

### 10.3.99 TR 23.888 System improvements for Machine-Type Communications (MTC)

This Technical Report studies and evaluates architectural aspects of the System Improvements for Machine Type Communications requirements specified in TS 22.368.

Specifically, the following system improvements are considered:

- Architectural enhancements to support a large number of Machine-Type Communication (MTC) devices in the network;
- Architectural enhancements to fulfil MTC service requirements;
- Support combinations of architectural enhancements for MTC, though not all combinations may be possible.

The end-to-end aspects of communication between MTC devices and MTC servers (which can be located outside or inside the network operator's domain) are out of the scope of this study. However, the transport services for MTC as provided by the 3GPP system and the related optimizations are considered in this study. In addition, the aspects needed to ensure that MTC devices and/or MTC servers and/or MTC applications do not cause peak loads of short duration (e.g., a "busy minute" rather than a "busy hour") are within the scope of this TR.

Even though some provided solutions may be beneficial for communications from a MTC Device towards another MTC Device, this particular type communication has not been explicitly considered in this Technical Report.

This Technical Report analyses architectural aspects to achieve these objectives and to gather technical content until it can be included in the relevant technical specifications.

NOTE – Some aspects in this feasibility study have led into normative specification in TS 23.682, TS 23.060, TS 23.401, TS 23.221 and TS 23.272. The text of the present document was not updated to align with normative specifications.

### 10.3.100 TR 23.903 Redial solution for voice-video switching

This document describes the idle mode redial mechanism which 3GPP based systems can use to enhance switching between circuit switched voice and video services.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 123 903                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_tr/123900_123999/123903/11.00.00_60/tr_123903v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/123900_123999/123903/11.00.00_60/tr_123903v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.903V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.903(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.903(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.903(R11-11.0.0)</a> |
| TTC  | TR-3GA-23.903(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.903(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.903(Rel11)v11.0.0.pdf</a>                           |

### 10.3.101 TR 23.919 Direct tunnel deployment guideline

The present document contains deployment guidelines for the use of direct tunnelling of user plane data between the RNC and the GGSN (earlier known as the one tunnel approach).

This report highlights the impacts of the 3GPP Release 7 direct tunnel solution to the current UMTS system in order to guide equipment development and network deployment.



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 123 919                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_tr/123900_123999/123919/11.00.00_60/tr_123919v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/123900_123999/123919/11.00.00_60/tr_123919v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.919V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.919(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.919(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.919(R11-11.0.0)</a> |
| TTC  | TR-3GA-23.919(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.919(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.919(Rel11)v11.0.0.pdf</a>                           |

### 10.3.102 TR 23.924 Feasibility study on Non-Access Stratum (NAS) node selection function above Base Station Controller (BSC) / Radio Network Controller (RNC)

This Technical Report evaluates the feasibility of implementing a function above the BSC/RNC nodes to provide similar functions as the NNSF function in BSC/RNC nodes that is specified in TS 23.236. This Technical Report also identifies the impacts on specifications.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 123 924                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_tr/123900_123999/123924/11.00.00_60/tr_123924v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/123900_123999/123924/11.00.00_60/tr_123924v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.924V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.924(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.924(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.924(R11-11.0.0)</a> |
| TTC  | TR-3GA-23.924(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.924(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.924(Rel11)v11.0.0.pdf</a>                           |

### 10.3.103 TR 23.975 IPv6 migration guidelines

The technical report identifies various scenarios of transition to IPv6 and co-existence of IPv4 and IPv6, deployment options and impacts on 3GPP network elements. In particular:

- Identify the transition and co-existence scenarios of interest for operators and the respective assumptions and requirements.
- Analyse existing IP address allocation mechanism for IPv6 migration if necessary.
- Investigate IPv6 transition mechanisms for the scenarios identified during the study and investigate their applicability for 3GPP network, and identify the compatibility among applicable transition mechanisms.
- Identify any impact on 3GPP network elements.
- Provide recommendations on IPv6 transition and co-existence of IPv4 and IPv6 and identify if any normative work is needed

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TR 123 975                 | 11.0.0  | Published | 2012-11-15  | <a href="http://www.etsi.org/deliver/etsi_tr/123900_123999/123975/11.00.00_60/tr_123975v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/123900_123999/123975/11.00.00_60/tr_123975v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.975V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.975(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.975(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.975(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TR-3GA-23.975(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.975(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.975(Rel11)v11.0.0.pdf</a> |

### 10.3.104 TR 23.976 Push architecture

The purpose of this technical report is to analyse the service requirements for push services as defined in 3GPP TS 22.174 "Push service; Stage 1".

This technical report describes methods for supporting push services by 3GPP delivery networks. The mechanisms described apply to existing delivery networks for the 3GPP packet-switched (PS) domain, circuit-switched (CS) domain, IP multimedia core network subsystem (IMS), multimedia broadcast/multicast service (MBMS), and wireless local area network (WLAN). Any necessary changes identified during this work will be introduced by means of change requests to the appropriate specifications.

The definition of push functionality that applies to push application servers is outside the scope of this work. The definition of push functionality that is best implemented in push application servers such as a push proxy and push initiator will be undertaken by other standards bodies and industry forums.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 123 976                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_tr/123900_123999/123976/11.00.00_60/tr_123976v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/123900_123999/123976/11.00.00_60/tr_123976v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.976V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.976(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.976(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.976(R11-11.0.0)</a> |
| TTC  | TR-3GA-23.976(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.976(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.976(Rel11)v11.0.0.pdf</a>                           |

### 10.3.105 TR 23.977 Bandwidth and resource savings and speech enhancements for circuit-switched (CS) networks (BARS)

The objective of this technical report is to identify the full set of requirements for bandwidth and resource savings and improved speech quality, with specific consideration to networks supporting A/Gb mode and the bearer independent circuit-switched core network (BICN). The different architectural solutions to meet these requirements will be assessed.

Consideration shall be made to existing architectures and solutions to provide harmony between 2G nodes, UMTS nodes and external networks (PSTN/ISDN). Backward compatibility to existing solutions and ease of network introduction/upgrade shall be given high importance.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-23.977         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/23/A23977-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/23/A23977-b00.pdf</a> |
| ETSI | TR 123 977                 | 11.0.0  | Published      | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_tr/123900_123999/123977/11.00.00_60/tr_123977v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/123900_123999/123977/11.00.00_60/tr_123977v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.23.977V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.977(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.977(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.977(R11-11.0.0)</a>       |

### 10.3.106 TR 23.979 3GPP enablers for open mobile alliance (OMA) push-to-talk over cellular (PoC) services; Stage 2

The present document studies the architectural requirements in order to enable services like PoC over 3GPP systems. The report looks into aspects of using 3GPP PS domain and radio access technologies (GERAN, UTRAN) for bearer services and IMS for reachability and connectivity for applications like PoC.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 123 979                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_tr/123900_123999/123979/11.00.00_60/tr_123979v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/123900_123999/123979/11.00.00_60/tr_123979v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.979V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.979(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.979(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.979(R11-11.0.0)</a> |
| TTC  | TR-3GA-23.979(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.979(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.979(Rel11)v11.0.0.pdf</a>                           |

### 10.3.107 TR 23.981 Interworking aspects and migration scenarios for IPv4-based IMS implementations

3GPP specifications design the IMS to use exclusively IPv6; however, early IMS implementations and deployments may use IPv4, as specified in clause 5.1 of 3G TS 23.221. Therefore, it is understood that there will exist IPv4-based IMS implementations, namely initial IMS implementations and IMS implementations based on 3GPP2 specifications. This is the motivation to study interworking and migration scenarios related to IPv4-based IMS implementations.

The present document studies interworking and migration scenarios related to IPv4-based IMS implementations. The study provides guidelines for operators and vendors on interworking aspects of IPv4-based IMS implementations, and provides guidelines on migrating to 3GPP IMS using IPv6.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 123 981                  | 11.0.0  | Published    | 2012-09-25  | <a href="http://www.etsi.org/deliver/etsi_tr/123900_123999/123981/11.00.00_60/tr_123981v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/123900_123999/123981/11.00.00_60/tr_123981v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.23.981V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-23.981(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.981(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-23.981(R11-11.0.0)</a> |
| TTC  | TR-3GA-23.981(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.981(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-23.981(Rel11)v11.0.0.pdf</a>                           |

## 10.4 24-series, Signalling protocols - user equipment to network

### 10.4.1 TS 24.002 GSM-UMTS public land mobile network (PLMN) access reference configuration

The document describes the reference configuration for access to a PLMN.

A user accesses a PLMN via a number of interfaces, including the MS-BS (in A/Gb mode and GERAN Iu mode) and UE-UTRAN (in UTRAN Iu mode) interface. The purpose of this Technical Specification is to indicate the possible access arrangements that may be used in conjunction with the MS-BS (in A/Gb mode and GERAN Iu mode) and UE-UTRAN (in UTRAN Iu mode) interface.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 002                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124002/11.00.00_60/ts_124002v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124002/11.00.00_60/ts_124002v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.002V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.002(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.002(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.002(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.002(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.002(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.002(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.2 TS 24.007 Mobile radio interface signalling layer 3 – General aspects

The document defines the principal architecture of layer 3 and its sublayers on the GSM Um interface, i.e., the interface between mobile station (MS) and network; for the CM sublayer, the description is restricted to paradigmatic examples, call control, supplementary services, and short message services for non-GPRS services. It also defines the basic message format and error handling applied by the layer 3 protocols.

For non-GPRS services, the communication between sublayers and adjacent layers and the services provided by the sublayers are distributed by use of abstract service primitives. But only externally observable behaviour resulting from the description is normatively prescribed by this document.

For GPRS services, in addition, the local information transfer and stimuli sent between sublayers is informatively included within Annex C of the document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 007                  | 11.0.0  | Published    | 2012-11-15  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124007/11.00.00_60/ts_124007v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124007/11.00.00_60/ts_124007v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.007V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.007(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.007(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.007(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.007(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.007(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.007(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.3 TS 24.008 Mobile radio interface layer 3 specification; Core network protocols; Stage 3

The document specifies the procedures used at the radio interface core network protocols within the 3rd generation mobile telecommunications system and the digital cellular telecommunications system.

It specifies the procedures used at the radio interface (reference point Um or Uu, see TS 24.002 or TS 23.002) for Call Control (CC), mobility management (MM), and session management (SM).

These procedures are defined in terms of messages exchanged over the control channels of the radio interface. The control channels are described in TS 44.003 and TS 25.301.

The structured functions and procedures of this protocol and the relationship with other layers and entities are described in general terms in TS 24.007.

The procedures currently described in this TS are for the call control of circuit-switched connections, session management for GPRS services, mobility management and radio resource management for circuit-switched and GPRS services.

TS 24.010 contains functional procedures for support of supplementary services.

TS 24.011 contains functional procedures for support of point-to-point short message services.

TS 24.012 contains functional description of short message – cell broadcast.

TS 44.060 contains procedures for radio link control and medium access control (RLC/MAC) of packet data physical channels.

TS 24.071 contains functional descriptions and procedures for support of location services.

NOTE – "layer 3" includes the functions and protocols described in this Technical Specification. The terms "data link layer" and "layer 2" are used interchangeably to refer to the layer immediately below layer 3.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 008                  | 11.10.0 | Published    | 2014-03-20  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124008/11.10.00_60/ts_124008v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124008/11.10.00_60/ts_124008v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.008V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.008(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.008(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.008(R11-11.6.0)</a> |
| TTC  | TS-3GA-24.008(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.008(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.008(Rel11)v11.9.0.pdf</a>                           |

#### 10.4.4 TS 24.010 Mobile radio interface layer 3 – Supplementary services specification – General aspects

The document gives the general aspects of the specification of supplementary services at the layer 3 radio interface.

TS 24.08x and 24.09x series specify the procedures used at the radio interface (reference point Um as defined in TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

TS 44.008 and TS 24.080 specify the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004 and TS 22.08x and 22.09x series.

Technical realization of supplementary services is described in TS 23.011 and GSM 23.08x and 23.09x series.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 44.008.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 010                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124010/11.00.00_60/ts_124010v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124010/11.00.00_60/ts_124010v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.010V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.010(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.010(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.010(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.010(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.010(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.010(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.5 TS 24.011 Point-to-point (PP) short message service (SMS) support on mobile radio interface

The document specifies the procedures used across the mobile radio interface by the signalling layer 3 function short message control (SMC) and short message relay function (SMRL) for both circuit switched in A/Gb mode and GPRS.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 011                  | 11.1.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124011/11.01.00_60/ts_124011v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124011/11.01.00_60/ts_124011v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.011V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.011(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.011(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.011(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.011(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.011(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.011(Rel11)v11.1.0.pdf</a>                           |

#### 10.4.6 TS 24.022 Radio link protocol (RLP) for circuit-switched bearer and teleservices

The document specifies the radio link protocol (RLP) for circuit-switched data transmission within the GSM and UMTS PLMN. RLP covers the Layer 2 functionality of the ISO OSI reference model [ITU-T X.200]. It is based on ideas contained in [ISO/IEC 3309], [ISO/IEC 4335] and [ISO/IEC 7809] (HDLC of ISO) as well as [ITU-T X.25] and [ITU-T Q.92x] (LAP-B and LAP-D of ITU, respectively). RLP has been tailored to the special needs of digital radio transmission. RLP provides to its users the OSI data link service [ITU-T X.212].

RLP is intended for use with non-transparent data-transfer. Protocol conversion may be provided for a variety of protocol configurations. Those foreseen immediately are:

- Character-mode protocols using start-stop transmission (IA5);
- ITU-T X.25 LAP-B.

For reasons of better presentation, material about protocol conversion has been placed within those Specifications concerned with the relevant Terminal Adapters, i.e., TS 27.002 for the asynchronous case and TS 27.003 for the synchronous case. Care must be taken that that material also applies to interworking functions; see TS 29.007.

The present document is valid for a PLMN in A/Gb mode as well as in Iu mode. If text applies only for one of these systems, it is explicitly mentioned by using the terms "A/Gb mode" and "Iu mode". Please note that the Gb interface does not play any role in the scope of the present document although the term "A/Gb mode" is used.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 022                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124022/11.00.00_60/ts_124022v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124022/11.00.00_60/ts_124022v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.022V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.022(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.022(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.022(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.022(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.022(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.022(Rel11)v11.0.0.pdf</a>                           |



#### 10.4.7 TS 24.030 Location services LCS; Supplementary service operations; Stage 3

The document gives the Stage 3 description of the location service (LCS) operations for mobile station. These operations shall apply to both CS and PS domain.

The group of location services operations is divided into two different classes:

- Network-initiated location services operations;
- Mobile-initiated location services operations.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 030                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124030/11.00.00_60/ts_124030v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124030/11.00.00_60/ts_124030v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.030V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.030(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.030(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.030(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.030(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.030(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.030(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.8 TS 24.067 Enhanced multi-level precedence and pre-emption service (eMLPP); Stage 3

The document specifies the procedures used at the radio interface (reference point Um for GSM and reference point Uu for UMTS as defined in TS 24.002) for normal operation, invocation, registration and interrogation of the enhanced multi-level precedence and pre-emption Service (eMLPP) supplementary service. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004 and TS 22.08x and in the 22.09x-series. TS 22.067 is related specially to eMLPP.

Technical realization of supplementary services is described in TS 23.011 and TS 23.08x and in the 23.09x-series.

TS 23.067 is related specially to eMLPP.

The procedures for call control, mobility management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

The procedures for radio resource management at layer 3 radio interface are defined in TS 44.018 and TS 25.331.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 067                 | 11.0.0  | Published | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124067/11.00.00_60/ts_124067v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124067/11.00.00_60/ts_124067v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.067V110-2014  | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.067(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.067(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.067(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-24.067(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.067(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.067(Rel11)v11.0.0.pdf</a> |

#### 10.4.9 TS 24.072 Call deflection (CD) supplementary service; Stage 3

This global system for mobile communications Technical Specification specifies the procedures used at the radio interface (reference point Um as defined in TS 44.002) for normal operation of call deflection (CD) supplementary service. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 072                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124072/11.00.00_60/ts_124072v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124072/11.00.00_60/ts_124072v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.072V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.072(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.072(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.072(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.072(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.072(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.072(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.10 TS 24.080 Mobile radio interface Layer 3 supplementary service specification – Formats and coding

The document contains the coding of information necessary for the support of supplementary service operation on the mobile radio interface layer 3.

This document gives the functional definitions and contents of messages for call-independent supplementary service operations. Messages necessary for the support of call-related supplementary service operations are defined in TS 24.008.

This document gives the general format and coding for messages used for call-independent supplementary service and the format and coding of information elements used for both call-related and call-independent supplementary service operations.

This document gives the specification of the call-related and call-independent supplementary service operations.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 080                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124080/11.00.00_60/ts_124080v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124080/11.00.00_60/ts_124080v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.080V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.080(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.080(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.080(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.080(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.080(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.080(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.11 TS 24.081 Line identification supplementary services; Stage 3

The document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of line identification supplementary



services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In 3G TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3G TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3G TS 22.004 and 3G TS 22.08x and in the 3G TS 22.09x-series. 3G TS 22.081 is related specially to line identification supplementary services.

Technical realization of supplementary services is described in 3G TS 23.011 and in the 3G TS 23.08x and in the 3G TS 23.09x-series. 3G TS 23.081 is related specially to line identification supplementary services.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in 3G TS 24.007 and 3G TS 24.008.

The following supplementary services belong to the line identification supplementary services and are described in this document:

- Calling line identification presentation (CLIP);
- Calling line identification restriction (CLIR);
- Connected line identification presentation (COLP);
- Connected line identification restriction (COLR).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 081                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124081/11.00.00_60/ts_124081v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124081/11.00.00_60/ts_124081v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.081V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.081(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.081(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.081(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.081(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.081(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.081(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.12 TS 24.082 Call forwarding (CF) supplementary service; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in TS 24.002) for normal operation, registration, erasure, activation, deactivation, interrogation and network invocation of call offering supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004 and TS 22.08x and in the TS 22.09x-series. TS 22.082 is related specially to call offering supplementary services.

Technical realization of supplementary services is described in TS 23.011 and TS 23.08x and in the TS 23.09x-series. TS 23.082 is related specially to call offering supplementary services.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

The following supplementary services belong to the call offering supplementary services and are described in this document:

- Call forwarding unconditional (CFU);
- Call forwarding on mobile subscriber busy (CFB);
- Call forwarding on no reply (CFNRy);
- Call forwarding on mobile subscriber not reachable (CFNRc).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 082                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124082/11.00.00_60/ts_124082v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124082/11.00.00_60/ts_124082v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.082V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.082(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.082(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.082(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.082(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.082(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.082(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.13 TS 24.083 Call waiting (CW) and call hold (HOLD) supplementary service; Stage 3

The document specifies the procedures used at the radio interface (reference point Um as defined in TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call completion supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004 and TS 22.08x and in the TS 22.09x-series. TS 22.083 is related specially to call completion supplementary services.

Technical realization of supplementary services is described in TS 23.011 and TS 23.08x and in the TS 23.09x-series.

TS 23.083 is related specially to call completion supplementary services.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

The following supplementary services belong to the call completion supplementary services and are described in this document:

- Call waiting (CW);
- Call hold (HOLD).

|      | Document No.              | Version | Status    | Issued date | Location  |
|------|---------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 083                | 11.0.0  | Published | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124083/11.00.00_60/ts_124083v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124083/11.00.00_60/ts_124083v110000p.pdf</a> |
| ATIS | ATIS.3GPP.24.083V110-2014 | 11.0.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-24.083(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.083(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.083(R11-11.0.0)</a> |
| TTC | TS-3GA-24.083(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.083(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.083(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.14 TS 24.084 Multi-party (MPHY) supplementary service; Stage 3

The document specifies the procedures used at the radio interface (reference point Um as defined in TS 24.002) for normal operation and invocation of multi-party supplementary services.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004 and the TS 22.08x and in the TS 22.09x-series.

TS 22.084 is related specially to multi-party supplementary services.

Technical realization of supplementary services is described in TS 23.011 and the TS 23.08x and in the TS 23.09x-series.

TS 23.084 is related specially to multi-party supplementary services.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

The following supplementary service belongs to the multi-party supplementary services and is described in this document:

- Multi-party service (MPHY).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 084                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124084/11.00.00_60/ts_124084v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124084/11.00.00_60/ts_124084v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.084V110-0-2014 | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.084(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.084(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.084(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.084(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.084(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.084(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.15 TS 24.085 Closed user group (CUG) supplementary service; Stage 3

This Technical Specification (TS) for mobile communications specifies the procedures used at the radio interface (reference point Um as defined in TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of community of interest supplementary services. The provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and causes no signalling on the radio interface.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

TS 24.080 specifies the formats coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004 and TS 22.08x and TS 22.09x-series. TS 22.085 is related to the community of interest supplementary services.

Technical realization of supplementary services is described in technical specifications TS 23.011 and TS 23.08x and 23.09x-series. TS 23.085 is related to the community of interest supplementary services.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

Signalling interworking for supplementary services between GSM 09.02 and TS 24.008 and between GSM 09.02 and TS 24.080 is defined in GSM 09.11.

The following supplementary services belong to the community of interest supplementary services and are described in this Technical Specification:

– Closed user group (CUG).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 085                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124085/11.00.00_60/ts_124085v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124085/11.00.00_60/ts_124085v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.085V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.085(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.085(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.085(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.085(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.085(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.085(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.16 TS 24.086 Advice of charge (AoC) supplementary service; Stage 3

The document specifies the procedures used at the radio interface (reference point Um as defined in TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of charging supplementary services. The provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and causes no signalling on the radio interface.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004 and TS 22.08x and TS 22.09x-series. TS 22.024 and 02.86 are related to the charging supplementary services.

Technical realization of supplementary services is described in TS 23.011 and TS 23.08x and TS 23.09x-series. TS 23.086 is related to the charging supplementary services.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

The following supplementary services belong to the charging supplementary services and are described in this document:

- Advice of charge (Information) (AoCI);
- Advice of charge (Charging) (AoCC).

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 124 086   | 11.0.0  | Published | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124086/11.00.00_60/ts_124086v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124086/11.00.00_60/ts_124086v110000p.pdf</a> |

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.24.086V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.086(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.086(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.086(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.086(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.086(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.086(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.17 TS 24.087 User-to-user signalling (UUS) supplementary service; Stage 3

This Technical Specification gives the Stage 3 description of the user-to-user signalling supplementary services.

The user-to-user supplementary service is divided into 3 different services:

- Service 1 (UUS1);
- Service 2 (UUS2);
- Service 3 (UUS3).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 087                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124087/11.00.00_60/ts_124087v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124087/11.00.00_60/ts_124087v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.087V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.087(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.087(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.087(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.087(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.087(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.087(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.18 TS 24.088 Call barring (CB) supplementary service; Stage 3

This Technical Specification (TS) specifies the procedures used at the radio interface (reference point Um as defined in TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call barring supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004, TS 22.08x and TS 22.09x-series.

Technical realization of supplementary services is described in TS 23.011, TS 23.08x and TS 23.09x-series.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

The following supplementary services belong to the call restriction supplementary services and are described in this specification:

- Barring of outgoing calls:
  - Barring of all outgoing calls (BAOC) (Barring program 1);

- Barring of outgoing international calls (BOIC) (Barring program 2);
- Barring of outgoing international calls EXCEPT those directed to the home PLMN country (BOIC-exHC) (Barring program 3).

– Barring of incoming calls:

- Barring of all incoming calls (BAIC) (Barring program 1);
- Barring of incoming calls when roaming outside the home PLMN country

(BIC-Roam) (Barring program 2).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 088                  | 11.0.0  | Published    | 2012-11-15  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124088/11.00.00_60/ts_124088v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124088/11.00.00_60/ts_124088v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.088V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.088(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.088(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.088(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.088(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.088(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.088(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.19 TS 24.090 Unstructured supplementary service data (USSD); Stage 3

The document gives the Stage 3 description of the unstructured supplementary service data (USSD) operations.

The group of unstructured supplementary service data operations is divided into two different classes:

- Network-initiated unstructured supplementary service data operations;
- Mobile-initiated unstructured supplementary service data operations.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 090                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124090/11.00.00_60/ts_124090v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124090/11.00.00_60/ts_124090v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.090V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.090(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.090(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.090(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.090(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.090(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.090(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.20 TS 24.091 Explicit call transfer (ECT) supplementary service; Stage 3

The document gives the Stage 3 description of the call transfer supplementary services.

The document specifies the procedures used at the radio interface (reference point Um as defined in TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call transfer supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

TS 24.080 specifies the formats and coding for the supplementary services.



Definitions and descriptions of supplementary services are given in TS 22.004, TS 22.08x and TS 22.09x-series. TS 22.091 is related specifically to call transfer supplementary services.

The technical realization of supplementary services is described in TS 23.011, TS 23.08x and TS 23.09x-series. TS 23.091 is related specifically to call transfer supplementary services.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

The following supplementary services belong to the call transfer supplementary services and are described in this document:

– Explicit call transfer (ECT).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 091                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124091/11.00.00_60/ts_124091v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124091/11.00.00_60/ts_124091v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.091V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.091(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.091(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.091(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.091(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.091(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.091(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.21 TS 24.093 Completion of calls to busy subscriber (CCBS); Stage 3

The document gives the Stage 3 description of the completion of calls to busy subscriber (CCBS) supplementary service. The document specifies the procedures used at the radio interface (reference point Um as defined in TS 24.002) for normal operation, activation, deactivation, invocation and interrogation of the completion of calls to busy subscriber supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004, TS 22.08x and TS 22.09x-series. Technical specification TS 22.093 is related specifically to the completion of calls to busy subscriber supplementary service.

The technical realization of supplementary services is described in technical specifications TS 23.011, TS 23.08x and 23.09x-series. TS 23.093 is related specifically to Completion of Calls to busy subscriber supplementary service.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

The following supplementary services belong to the call completion supplementary services and are described in this document:

– Completion of calls to busy subscriber (CCBS).

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 093                 | 11.0.0  | Published | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124093/11.00.00_60/ts_124093v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124093/11.00.00_60/ts_124093v110000p.pdf</a> |
| ATIS | ATIS.3GPP.24.093V1100-2014 | 11.0.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-24.093(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.093(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.093(R11-11.0.0)</a> |
| TTC | TS-3GA-24.093(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.093(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.093(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.22 TS 24.096 Name identification supplementary service; Stage 3

This Technical Specification (TS) specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of name identification supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given. TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in TS 22.004 and TS 22.08x and 22.09x-series. TS 22.096 is related specially to name identification supplementary services.

Technical realization of supplementary services is described in TS 23.011 and TS 23.08x and 23.09x-series. Technical specification TS 23.096 is related specially to name identification supplementary services.

The procedures for call control, mobility management and radio resource management at the layer 3 radio interface are defined in TS 24.007 and TS 24.008.

The following supplementary services belong to the name identification supplementary services and are described in this Technical Specification:

– Calling name presentation (CNAP).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 096                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124000_124099/124096/11.00.00_60/ts_124096v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124000_124099/124096/11.00.00_60/ts_124096v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.096V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.096(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.096(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.096(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.096(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.096(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.096(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.23 TS 24.109 Bootstrapping interface (Ub) and network application function interface (Ua); Protocol details

The present document defines Stage 3 for the HTTP Digest AKA IETF RFC 3310: "*Hypertext Transfer Protocol (HTTP) Digest Authentication Using Authentication and Key Agreement (AKA)*". based implementation of Ub interface (UE-BSF) and the HTTP Digest IETF RFC 2617: "*HTTP Authentication: Basic and Digest Access Authentication*" and the PSK TLS IETF RFC 4279: "*Pre-Shared Key Ciphersuites for Transport Layer Security (TLS)*" based implementation of bootstrapped security association usage over Ua interface (UE-NAF) in generic authentication architecture (GAA) as specified in 3G TS 33.220. The purpose of the Ub interface is to create a security association between UE and BSF for further usage in GAA applications. The purpose of the Ua interface is to use the so created bootstrapped security association between UE and NAF for secure communication.



The present document also defines Stage 3 for the authentication proxy usage as specified in 3G TS 33.222.

The present document also defines Stage 3 for the subscriber certificate enrolment, as specified in 3G TS 33.221, which is one realization of the Ua interface. The subscriber certificate enrolment uses the HTTP Digest-based implementation of bootstrapped security association usage to enrol a subscriber certificate and the delivery of a CA certificate.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 109                  | 11.4.0  | Published    | 2014-03-20  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124109/11.04.00_60/ts_124109v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124109/11.04.00_60/ts_124109v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.109V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.109(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.109(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.109(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.109(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.109(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.109(Rel11)v11.3.0.pdf</a>                           |

#### 10.4.24 TS 24.135 Multicall supplementary service; Stage 3

The document gives the Stage 3 description of the multicall (MC) supplementary service. The document specifies the procedures used by the radio interface for normal operation, registration and interrogation of the multicall supplementary service. Provision, withdrawal, erasure, activation and deactivation of supplementary services is an administrative matter between the mobile subscriber and the service provider and causes no signalling on the radio interface.

3G TS 24.010 describes the general aspects of the specification of supplementary services at the layer 3 radio interface.

3G TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3G TS 22.004, 3G TS 22.072, 3G TS 22.08x, 3G TS 22.09x-series and 3G TS 22.135. 3G TS 22.135 is related specifically to the Multicall supplementary service.

The technical realization of supplementary services are described in 3G TS 23.011, 3G TS 23.072, 3G TS 23.08x, 23.09x-series and 3G TS 23.135. 3G TS 23.135 is related specifically to the Multicall supplementary service.

The procedures for call control and mobility management at the layer 3 radio interface are defined in 3G TS 24.007 and 3G TS 24.008.

The following supplementary services are described in this document:

– Multicall (MC).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 135                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124135/11.00.00_60/ts_124135v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124135/11.00.00_60/ts_124135v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.135V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.135(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.135(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.135(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.135(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.135(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.135(Rel11)v11.0.0.pdf</a>                           |

#### **10.4.25 TS 24.141 Presence service using the IP multimedia (IM) core network (CN) subsystem; Stage 3**

The present document provides the protocol details for the presence service within the IP multimedia (IM) core network (CN) subsystem based on the session initiation protocol (SIP) and SIP events as defined in 3G TS 24.229.

Where possible, the present document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of SIP and SIP events, either directly, or as modified by 3G TS 24.229.

Requirements for manipulation of presence data are defined by use of a protocol at the Ut reference point based on XML configuration access protocol (XCAP) [IETF RFC 4825].

The present document is applicable to application servers (ASs) and user equipment (UE) providing presence functionality.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 141                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124141/11.00.00_60/ts_124141v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124141/11.00.00_60/ts_124141v110000p.pdf</a>                       |
| ATIS | ATIS.3GPP.24.141V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.141(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttatstddesc.jsp?stdno=TTAT.3G-24.141(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttatstddesc.jsp?stdno=TTAT.3G-24.141(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.141(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.141(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.141(Rel11)v11.0.0.pdf</a>                             |

#### **10.4.26 TS 24.147 Conferencing using the IP multimedia (IM) core network (CN) subsystem; Stage 3**

The present document provides the protocol details for conferencing within the IP multimedia core network subsystem (IMS) based on the session initiation protocol (SIP), SIP events, the session description protocol (SDP), the conference policy control protocol (CPCP) and the binary floor control protocol (BFCP).

The present document does not cover the signalling between a MRFC and a MRFP.

Where possible, the present document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of SIP, SIP events, SDP, CPCP and BFCP, either directly, or as modified by 3G TS 24.229. Where this is not possible, extensions to SIP are defined within the present document. The document has therefore been structured in order to allow both forms of specification.

The present document is applicable to application servers (ASs), multimedia resource function controllers (MRFCs), multimedia resource function processors (MRFP), media gateway control functions (MGCFs) and to user equipment (UE) providing conferencing capabilities.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 147                  | 11.2.0  | Published    | 2014-01-10  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124147/11.02.00_60/ts_124147v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124147/11.02.00_60/ts_124147v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.147V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.147(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.147(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.147(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.147(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.147(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.147(Rel11)v11.2.0.pdf</a>                           |

#### 10.4.27 TS 24.166 3GPP IP multimedia subsystem (IMS) conferencing management object (MO)

This document defines the IMS conferencing management object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework.

The IMS conferencing management object consists of relevant parameters that can be managed for IMS conferencing capabilities.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 166                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124166/11.00.00_60/ts_124166v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124166/11.00.00_60/ts_124166v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.166V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.166(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.166(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.166(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.166(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.166(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.166(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.28 TS 24.167 3GPP IMS management object (MO); Stage 3

This document defines a mobile device 3GPP IMS management object. The management object is compatible with open mobile alliance (OMA) device management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM device description framework.

The 3GPP IMS management object consists of relevant parameters that can be managed for the IM CN subsystem. This includes the basic framework defined in 3GPP TS 23.228 and 3GPP TS 24.229, and early IMS as defined in 3GPP TS 23.221.

The IMS management object defines a repository of data into the ME including parameters that are provisioned from the ISIM application (i.e., 3GPP TS 31.103) or, after derivation, from the USIM application (i.e., 3GPP TS 31.102).

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 167                 | 11.0.1  | Published | 2013-01-14  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124167/11.00.01_60/ts_124167v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124167/11.00.01_60/ts_124167v110001p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.167V1101-2014 | 11.0.1  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.167(R11-11.0.1) | 11.0.1  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.167(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.167(R11-11.0.1)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-24.167(Rel11)v11.0.1 | 11.0.1  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.167(Rel11)v11.0.1.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.167(Rel11)v11.0.1.pdf</a> |

#### 10.4.29 TS 24.171 Control plane location services (LCS) procedures in the evolved packet system (EPS)

This document specifies the operations and information coding for the Non-access Stratum (NAS) layer protocol for supporting the Location Services (LCS) in the Evolved Universal Terrestrial Radio Access Network (E-UTRAN).

The document is applicable to the User Equipment (UE) and to the Mobility Management Entity (MME) in the Evolved Packet System (EPS). It is developed in accordance to the general principles stated in 3GPP TS 23.271.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 171                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124171/11.00.00_60/ts_124171v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124171/11.00.00_60/ts_124171v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.171V110-0-2014 | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.171(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.171(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.171(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.171(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.171(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.171(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.30 TS 24.173 IMS multimedia telephony communication service and supplementary services; Stage 3

The present document provides the protocol details for multimedia telephony communication service and associated supplementary services in the IP multimedia (IM) core network (CN) subsystem based on the requirements from 3GPP TS 22.173.

Multimedia telephony and supplementary services allow users to establish communications between them and enrich that by enabling supplementary services.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 173                  | 11.5.0  | Published    | 2013-04-11  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124173/11.05.00_60/ts_124173v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124173/11.05.00_60/ts_124173v110500p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.173V115-0-2014 | 11.5.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.173(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.173(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.173(R11-11.5.0)</a> |
| TTC  | TS-3GA-24.173(Rel11)v11.5.0 | 11.5.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.173(Rel11)v11.5.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.173(Rel11)v11.5.0.pdf</a>                           |

#### 10.4.31 TS 24.182 IP multimedia subsystem (IMS) customized alerting tones (CAT); Protocol specification

The present document provides the protocol details for the Customized Alerting Tones (CAT) service in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.182.

The CAT service is an operator specific service by which an operator enables the subscriber to customize the media which is played to the calling party during alerting of the called party.

The present document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CAT service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 182                  | 11.1.0  | Published    | 2013-10-01  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124182/11.01.00_60/ts_124182v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124182/11.01.00_60/ts_124182v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.182V110-2014   | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.182(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.182(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.182(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.182(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.182(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.182(Rel11)v11.1.0.pdf</a>                           |

#### 10.4.32 TS 24.183 IP multimedia subsystem (IMS) customized ringing signal (CRS); Protocol specification

This document provides the protocol details for the Customized Ringing Signal (CRS) service in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.183.

The CRS service is an operator specific service by which an operator enables the subscriber to customize the media which is played to the called party as an incoming communication indication during establishment of a communication.

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CRS service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 183                  | 11.4.0  | Published    | 2014-03-20  | <a href="http://www.etsi.org/deliver/etsi_ts/124100_124199/124183/11.04.00_60/ts_124183v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/124100_124199/124183/11.04.00_60/ts_124183v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.183V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.183(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.183(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.183(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.183(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.183(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.183(Rel11)v11.3.0.pdf</a>                           |

#### 10.4.33 TS 24.216 Communication continuity management object (MO)

This document defines the communication continuity management object. The management object is compatible with OMA device management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM device description framework.

The communication continuity management object consists of relevant parameters that can be managed for communication continuity capabilities.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 216                 | 11.1.0  | Published | 2013-01-18  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124216/11.01.00_60/ts_124216v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124216/11.01.00_60/ts_124216v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.216V1110-2014 | 11.1.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.216(R11-11.1.0) | 11.1.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.216(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.216(R11-11.1.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-24.216(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.216(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.216(Rel11)v11.1.0.pdf</a> |

#### 10.4.34 TS 24.229 IP multimedia call control protocol based on SIP and SDP; Stage 3

This document defines a call control protocol for use in the IP multimedia (IM) core network (CN) subsystem based on the session initiation protocol (SIP), and the associated session description protocol (SDP).

This document is applicable to:

- the interface between the user equipment (UE) and the call session control function (CSCF);
- the interface between the CSCF and any other CSCF;
- the interface between the CSCF and an application server (AS);
- the interface between the CSCF and the media gateway control function (MGCF);
- the interface between the S-CSCF and the media resource function controller (MRFC)
- the interface between the CSCF and the breakout gateway control function (BGCF);
- the interface between the BGCF and the MGCF;
- the interface between the BGCF and any other BGCF; and
- the interface between the CSCF and an external multimedia IP network.

Where possible, this document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of SIP and SDP. Where this is not possible, extensions to SIP and SDP are defined within this document. The document has therefore been structured in order to allow both forms of specification.

As the IM CN subsystem is designed to interwork with different IP-connectivity access networks (IP-CANs), the IP-CAN independent aspects of the IM CN subsystem are described in the main body and Annex A of this specification. Aspects for connecting a UE to the IM CN subsystem through specific types of IP-CANs are documented separately in the annexes or in separate documents.

NOTE – This document covers only the usage of SIP and SDP to communicate with the entities of the IM CN subsystem. It is possible, and not precluded, to use the capabilities of GPRS to allow a terminal containing a SIP UA to communicate with SIP servers or SIP UAs outside the IM CN subsystem, and therefore utilize the services provided by those SIP servers. The usage of SIP and SDP for communicating with SIP servers or SIP UAs outside the IM CN subsystem is outside the scope of this document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 229                  | 11.11.0 | Published    | 2014-04-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124229/11.11.00_60/ts_124229v111100p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124229/11.11.00_60/ts_124229v111100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.229V1170-2014  | 11.7.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.229(R11-11.7.0)  | 11.7.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.229(R11-11.7.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.229(R11-11.7.0)</a> |
| TTC  | TS-3GA-24.229(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.229(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.229(Rel11)v11.9.0.pdf</a>                           |

#### 10.4.35 TS 24.234 3GPP system to wireless local area network (WLAN) interworking; User equipment (UE) to network protocols; Stage 3

The present document specifies the network selection, including authentication and access authorization procedures used for the interworking of the 3GPP system and WLANs. In addition to



these, the present document also specifies the tunnel management procedures used for establishing an end-to-end tunnel from the WLAN UE to the 3GPP network via the Wu reference point.

The present document is applicable to the WLAN user equipment (UE) and the network. In this technical specification, the network includes the WLAN and 3GPP network.

Tunnel management signalling is carried between WLAN-UE and WLAN by WLAN access technology-specific protocols; however, this signalling is transparent to the WLAN.

Details of the security framework for the end-to-end tunnel establishment are covered in 3G TS 33.234. The transport of the tunnel management signalling between WLAN and 3GPP network and within the 3GPP network (i.e., PDG, 3GPP AAA server and WAG) are covered in 3G TS 29.234.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 234                  | 11.3.0  | Published    | 2012-11-16  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124234/11.03.00_60/ts_124234v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124234/11.03.00_60/ts_124234v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.234V1130-2014  | 11.3.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.234(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.234(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.234(R11-11.3.0)</a> |
| TTC  | TS-3GA-24.234(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.234(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.234(Rel11)v11.3.0.pdf</a>                           |

#### 10.4.36 TS 24.235 3GPP System to wireless local area network (WLAN) interworking management object (MO)

This document defines the 3GPP System to Wireless Local Area Network Management Object (MO) for I-WLAN PLMN selection as specified in TS 24.234. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition.

The 3GPP System to Wireless Local Area Network Management Object consists of relevant parameters that can be managed for I-WLAN UE as specified in TS 24.234.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 235                  | 11.1.0  | Published    | 2012-11-16  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124235/11.01.00_60/ts_124235v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124235/11.01.00_60/ts_124235v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.235V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.235(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.235(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.235(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.235(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.235(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.235(Rel11)v11.1.0.pdf</a>                           |

#### 10.4.37 TS 24.237 IP multimedia subsystem (IMS) service continuity; Stage 3

IP Multimedia (IM) Core Network (CN) subsystem Service Continuity (SC) provides the capability of continuing ongoing communication sessions with multiple media across different access networks or across different user equipments (UEs) under the control of the same subscriber.

NOTE: Multiple media across different UEs under the control of the same subscriber is not specified in this version of the document.

This document provides the protocol details for enabling IMS SC based on the Session Initiation protocol (SIP) and the Session Description Protocol (SDP) and the protocols of the 3GPP Circuit-

Switched (CS) domain (e.g., CAP, MAP, ISUP, BICC and the NAS call control protocol for the CS access).

The document is applicable to User Equipment (UEs) and Application Servers (AS) providing IMS Service Continuity capabilities.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 237                  | 11.10.0 | Published    | 2014-03-20  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124237/11.10.00_60/ts_124237v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124237/11.10.00_60/ts_124237v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.237V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.237(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.237(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.237(R11-11.6.0)</a> |
| TTC  | TS-3GA-24.237(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.237(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.237(Rel11)v11.9.0.pdf</a>                           |

#### 10.4.38 TS 24.238 session initiation protocol (SIP) based user configuration; Stage 3

This document provides a Session Initiation Protocol (SIP) based protocol framework that serves as a means of user configuration of supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem. The protocol framework relies upon the contents of the Request-URI in a SIP INVITE request to enable basic configuration of services without requiring use of the Ut interface.

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support user configuration of supplementary services.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 238                  | 11.2.0  | Published    | 2013-04-11  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124238/11.02.00_60/ts_124238v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124238/11.02.00_60/ts_124238v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.238V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.238(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.238(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.238(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.238(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.238(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.238(Rel11)v11.2.0.pdf</a>                           |

#### 10.4.39 TS 24.239 flexible alerting (FA) using IP multimedia (IM) core network (CN) subsystem; Protocol specification

This document provides the protocol details for the Flexible Alerting supplementary service in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.173.

Flexible Alerting (FA) causes a call to a pilot identity to branch the call into several legs to alert several termination addresses (group members) simultaneously. The first leg to be answered is connected to the calling party. The other call legs are abandoned.

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the FA supplementary service.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 239                 | 11.0.0  | Published | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124239/11.00.00_60/ts_124239v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124239/11.00.00_60/ts_124239v110000p.pdf</a> |
| ATIS | ATIS.3GPP.24.239V1100-2014 | 11.0.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-24.239(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.239(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.239(R11-11.0.0)</a> |
| TTC | TS-3GA-24.239(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.239(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.239(Rel11)v11.0.0.pdf</a>                           |

#### **10.4.40 TS 24.247 Messaging service using the IP multimedia (IM) core network (CN) subsystem; Stage 3**

This document provides the protocol details for the messaging service within the IP multimedia CN subsystem (IMS) based on the session initiation protocol (SIP), the session description protocol (SDP), the message session relay protocol (MSRP) and the conference policy control protocol (CPCP). The document covers immediate messaging, session-based messaging and session-based messaging conferences, as described in 3G TS 22.340.

Where possible, the present document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of SIP, SDP, MSRP and other protocols, either directly, or as modified by 3G TS 24.229.

The present document is applicable to application servers (ASs), media resource function controllers (MRFCs), media resource function processors (MRFPs) and to user equipment (UE) providing messaging capabilities.

This document does not cover the signalling between a MRFC and a MRFP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 247                  | 11.2.0  | Published    | 2013-01-18  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124247/11.02.00_60/ts_124247v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124247/11.02.00_60/ts_124247v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.247V112 0-2014 | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.247(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.247(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.247(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.247(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.247(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.247(Rel11)v11.2.0.pdf</a>                           |

#### **10.4.41 TS 24.259 Personal network management (PNM); Stage 3**

Personal Network Management (PNM) is a home network-based application and provides the home network-based management of Personal Network (PN) consisting of multiple devices belonging to a single user, as described in 3GPP TS 22.259 and 3GPP TS 23.259.

This document provides protocol details for enabling Personal Network management (PNM) services in the IP Multimedia (IM) Core Network (CN) subsystem, based on the protocols of XML Configuration Access Protocol (XCAP), Session Initiation Protocol (SIP) and the Session Description Protocol (SDP). Further, it provides protocol details for enabling Personal Network management (PNM) services in Circuit Switched (CS) domain, based on the protocols of CAP, MAP, ISUP, USSD and BICC.

The document is applicable to User Equipment (UEs) and Application Servers (AS) providing PNM capabilities. It makes no PNM specific enhancements to SIP, SIP events or SDP specified in 3GPP TS 24.229, neither it makes any PNM specific enhancements to CAP, MAP, ISUP, USSD and BICC.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 259                  | 11.4.0  | Published    | 2014-03-20  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124259/11.04.00_60/ts_124259v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124259/11.04.00_60/ts_124259v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.259V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.259(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.259(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.259(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.259(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.259(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.259(Rel11)v11.3.0.pdf</a>                           |

#### **10.4.42 TS 24.279 Combining circuit switched (CS) and IP multimedia subsystem (IMS) services; Stage 3**

This document provides the technical realization for the combination of circuit switched calls and IM sessions when using them simultaneously between the same two users.

The present document describes the use of CS and IM services in combination, using the existing procedures that have been defined for CS and IMS. It includes the necessary function as adding an IM session to an ongoing CS call, adding a CS call to an ongoing IM session, supplementary services as they relate to CSICS and supporting capability exchange.

The present document is applicable to UE and application servers providing for the combination of circuit switched calls and IM sessions.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 279                  | 11.1.0  | Published    | 2014-03-20  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124279/11.01.00_60/ts_124279v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124279/11.01.00_60/ts_124279v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.279V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.279(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.279(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.279(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.279(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.279(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.279(Rel11)v11.0.0.pdf</a>                           |

#### **10.4.43 TS 24.285 Allowed closed subscriber group (CSG) list; Management object (MO)**

This document specifies an Allowed Closed Subscriber Group (CSG) List Management Object (MO).

The Allowed CSG List MO is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF).

The Allowed CSG List MO consists of relevant parameters for that can be used by the UE to select the appropriate CSG cell based on its subscription.

The Allowed CSG List MO defines the relevant parameters related to the Allowed CSG List and to the Operator CSG List.

The usage of the Allowed CSG List for in the idle mode process and the mobility management procedure is defined in 3GPP TS 23.122, 3GPP TS 24.008 and 3GPP TS 24.301.

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 124 285   | 11.0.0  | Published | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124285/11.00.00_60/ts_124285v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124285/11.00.00_60/ts_124285v110000p.pdf</a> |

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.24.285V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.285(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.285(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.285(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.285(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.285(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.285(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.44 TS 24.286 IP multimedia (IM) core network (CN) subsystem centralized services (ICS); Management object (MO)

This document defines the IMS Centralised Services Management Object (MO). The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework.

The IMS Centralised Services Management Object consists of relevant parameters that can be managed for ICS.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 286                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124286/11.00.00_60/ts_124286v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124286/11.00.00_60/ts_124286v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.286V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.286(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.286(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.286(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.286(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.286(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.286(Rel11)v11.0.0.pdf</a>                           |

#### 10.4.45 TS 24.292 IP multimedia core network subsystem centralized services; Stage 3

IP Multimedia (IM) Core Network (CN) subsystem centralized services (ICS) allow for the delivery of consistent IMS services to the user regardless of the attached access type (e.g., CS domain access or IP-CAN).

This document provides the protocol details for the realization of ICS based on the Session Initiation protocol (SIP), the Session Description Protocol (SDP) and the protocols of the 3GPP Circuit-Switched (CS) domain (e.g., CAP, MAP, ISUP, BICC and the NAS call control protocol for the CS access).

This document makes no ICS specific enhancements to SIP or SDP beyond those specified in 3GPP TS 24.229.

The document is applicable to User Equipment (UEs), MSC Servers and Application Servers (AS) providing ICS capabilities.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 292                 | 11.7.0  | Published | 2014-03-20  | <a href="http://www.etsi.org/deliver/etsi_ts/124200_124299/124292/11.07.00_60/ts_124292v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/124200_124299/124292/11.07.00_60/ts_124292v110700p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.292V1140-2014 | 11.4.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.292(R11-11.4.0) | 11.4.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.292(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.292(R11-11.4.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-24.292(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.292(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.292(Rel11)v11.6.0.pdf</a> |

#### **10.4.46 TS 24.294 IP multimedia subsystem (IMS) centralized services (ICS) protocol via I1 interface**

This document describes the I1 interface between IMS Centralized Services (ICS) UE and Service Centralization and Continuity (SCC) Application Server (AS).

This specification defines a new application layer protocol over I1 interface, specifies the interaction between the ICS UE and the SCC AS including session control procedures and supplementary services control procedures.

The protocol is intended to be independent of the transport-layer protocol used so it can be applied to a number of technologies that need different transport-layer protocols.

The overall ICS architecture is specified in 3GPP TS 23.292.

The procedures for delivery of IMS Service Continuity that do not use the I1 protocol are specified in the document 3GPP TS 24.237.

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the IMS centralized services.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 294                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124200/124299/124294/11.00.00_60/ts_124294v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124200/124299/124294/11.00.00_60/ts_124294v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.294V110-2014   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.294(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.294(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.294(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.294(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.294(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.294(Rel11)v11.0.0.pdf</a>                           |

#### **10.4.47 TS 24.301 Non-access-stratum (NAS) protocol for evolved packet system (EPS); Stage 3**

This document specifies the procedures used by the protocols for mobility management and session management between User Equipment (UE) and Mobility Management Entity (MME) in the Evolved Packet System (EPS). These protocols belong to the non-access stratum (NAS).

The EPS Mobility Management (EMM) protocol defined in the present document provides procedures for the control of mobility when the User Equipment (UE) is using the Evolved UMTS Terrestrial Radio Access Network (E-UTRAN). The EMM protocol also provides control of security for the NAS protocols.

The EPS Session Management (ESM) protocol defined in the present document provides procedures for the handling of EPS bearer contexts. Together with the bearer control provided by the access stratum, this protocol is used for the control of user plane bearers.

For both NAS protocols the present document specifies procedures for the support of inter-system mobility between E-UTRAN and other 3GPP or non-3GPP access networks:

- For inter-system mobility between E-UTRAN and GERAN or UTRAN, this includes rules for a mapping between parameters and procedures used by the NAS protocols defined in the present document and the NAS protocols specified in 3GPP TS 24.008.

- For inter-system mobility between E-UTRAN and generic non-3GPP access networks, this includes specific NAS procedures to maintain IP connectivity to the PDN Gateway and to provide parameters needed by the UE when using mobility management based on Dual-Stack Mobile IPv6 (see 3GPP TS 24.303) or MIPv4 (see 3GPP TS 24.304).

The present document is applicable to the UE and to the Mobility Management Entity (MME) in the EPS.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 301                  | 11.10.0 | Published    | 2014-03-20  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124301/11.10.00_60/ts_124301v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124301/11.10.00_60/ts_124301v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.301V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.301(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.301(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.301(R11-11.6.0)</a> |
| TTC  | TS-3GA-24.301(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.301(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.301(Rel11)v11.9.0.pdf</a>                           |

#### 10.4.48 TS 24.302 Access to the evolved packet core (EPC) via non-3GPP access networks; Stage 3

This document specifies the discovery and network selection procedures for access to 3GPP Evolved Packet Core (EPC) via non-3GPP access networks and includes Authentication and Access Authorization using Authentication, Authorization and Accounting (AAA) procedures used for the interworking of the 3GPP EPC and the non-3GPP access networks.

The document also specifies the Tunnel management procedures used for establishing an end-to-end tunnel from the UE to the ePDG to the point of obtaining IP connectivity and includes the selection of the IP mobility mode.

The non-3GPP access networks considered in this present document are cdma2000<sup>®</sup> HRPD and Worldwide Interoperability for Microwave Access (WiMAX), and any access technologies covered in 3GPP TS 23.402. These non-3GPP access networks can be trusted or untrusted access networks.

This document is applicable to the UE and the network. In this technical specification the network is the 3GPP EPC.

NOTE – cdma2000<sup>®</sup> is a registered trademark of the Telecommunications Industry Association (TIA-USA).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 302                  | 11.7.0  | Published    | 2013-07-04  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124302/11.07.00_60/ts_124302v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124302/11.07.00_60/ts_124302v110700p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.302V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.302(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.302(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.302(R11-11.6.0)</a> |
| TTC  | TS-3GA-24.302(Rel11)v11.7.0 | 11.7.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.302(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.302(Rel11)v11.7.0.pdf</a>                           |

#### 10.4.49 TS 24.303 Mobility management based on dual-stack mobile IPv6; Stage 3

This document specifies the signalling procedures for accessing the 3GPP Evolved Packet Core network and handling the mobility between 3GPP and non-3GPP accesses via the S2c reference point defined in 3GPP TS 23.402.

The document is applicable to the User Equipment (UE) and the network node implementing the Home Agent functionality.

In addition, the document specifies the procedures used for the DSMIPv6 Home Agent discovery, for bootstrapping the DSMIPv6 security association between the UE and the Home Agent and for managing the DSMIPv6 tunnel. The specification of these procedures is compliant to IETF RFCs.

DSMIPv6 procedures can be used independently of the underlying access technology.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 303                  | 11.3.0  | Published    | 2013-07-04  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124303/11.03.00_60/ts_124303v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124303/11.03.00_60/ts_124303v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.303V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.303(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.303(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.303(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.303(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.303(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.303(Rel11)v11.3.0.pdf</a>                           |

#### **10.4.50 TS 24.304 Mobility management based on mobile IPv4; User equipment (UE) - foreign agent interface; Stage 3**

This document describes stage 3 aspects of mobility management for User Equipment (UE) using IETF Mobile IPv4 foreign agent mode to access the Evolved Packet Core Network (EPC) through trusted non-3GPP access networks and for mobility management of UE between the 3GPP access network and trusted non-3GPP access networks.

In particular, the document describes the UE – Mobile IPv4 Foreign Agent (FA) interface stage 3 aspects, where the FA functionality is located within the access network in the non-3GPP access domain.

This document is applicable to the User Equipment (UE) and the network node implementing the FA functionality.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 304                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124304/11.00.00_60/ts_124304v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124304/11.00.00_60/ts_124304v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.304V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.304(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.304(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.304(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.304(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.304(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.304(Rel11)v11.0.0.pdf</a>                           |

#### **10.4.51 TS 24.305 Selective disabling of 3GPP user equipment capabilities (SDoUE) management object (MO)**

This present document specifies a mobile device selective disabling of 3GPP UE capabilities (SDoUE) management object (MO) and the rules and corresponding behaviour of the UE with regard to the selective disabling of 3GPP UE capabilities, for example, when services or functions are disabled/enabled.

The SDoUE MO is compatible with the OMA device management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM device description framework (DDF).



The SDoUE MO consists of the relevant parameters that can be managed for selective disabling of 3GPP UE capabilities.

The SDoUE MO defines a repository of data into the ME.

The service requirements for selective disabling of 3GPP UE capabilities are defined in 3GPP TS 22.011.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 305                  | 11.0.0  | Published    | 2012-11-16  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124305/11.00.00_60/ts_124305v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124305/11.00.00_60/ts_124305v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.305V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.305(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.305(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.305(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.305(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.305(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.305(Rel11)v11.0.0.pdf</a>                           |

#### **10.4.52 TS 24.312 Access network discovery and selection function (ANDSF) management object (MO)**

This document defines management objects that can be used by the Access Network Discovery and Selection Function (ANDSF) and the UE.

The Management Object (MO) is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF).

The MO consists of relevant parameters for intersystem mobility policy- and access network discovery information that can be managed by the ANDSF.

The service requirements and the functional requirements for the access network discovery and selection are described in 3GPP TS 22.278 and in 3GPP TS 23.402 respectively.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 312                  | 11.6.0  | Published    | 2013-04-11  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124312/11.06.00_60/ts_124312v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124312/11.06.00_60/ts_124312v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.312V1160-2014  | 11.6.0  |              | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.312(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.312(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.312(R11-11.6.0)</a> |
| TTC  | TS-3GA-24.312(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.312(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.312(Rel11)v11.6.0.pdf</a>                           |

#### **10.4.53 TS 24.315 IP multimedia subsystem (IMS) operator determined barring (ODB); Stage 3: protocol specification**

The document specifies the stage three, Protocol Description of the network feature Operator Determined Barring (ODB) of IMS Multimedia Telephony Services. It is based on the requirements described in 3GPP TS 22.041. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP). ). In addition, it provides protocol details for XCAP for barring of supplementary services configuration.

The document is applicable to:

- the Application Server (AS) intended to support Operator Determined Barring for communications;
- the AS that provides the XCAP based interface for manipulation of the settings for a supplementary service as defined in 3GPP TS 24.623; and
- the AS that supports the SIP based configuration for a supplementary service as defined in 3GPP TS 24.238.

|      | Document No.   | Version | Status       | Issued date | Location  |
|------|--|---------|--------------|-------------|---|
| ETSI | TS 124 315   | 11.1.0  | Published    | 2013-04-11  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124315/11.01.00_60/ts_124315v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124315/11.01.00_60/ts_124315v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.315V1110-2014   | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G- <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.315(R11-11.1.0)">24.315(R11-11.1.0)</a> | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.315(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.315(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.315(Rel11)v11.1.0  | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.315(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.315(Rel11)v11.1.0.pdf</a>                           |

#### **10.4.54 TS 24.323 3GPP IP multimedia subsystem (IMS) service level tracing management object (MO)**

This document defines the IMS service level tracing management object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework.

The IMS service level tracing management object consists of relevant parameters that can be managed for IMS service level tracing capabilities.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 323                  | 11.0.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124323/11.00.00_60/ts_124323v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124323/11.00.00_60/ts_124323v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.323V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.323(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.323(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.323(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.323(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.323(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.323(Rel11)v11.0.0.pdf</a>                           |

#### **10.4.55 TS 24.327 Mobility between 3GPP wireless local area network (WLAN) interworking (I-WLAN) and 3GPP systems; General packet radio system (GPRS) and 3GPP I-WLAN aspects; Stage 3**

This document specifies the signalling procedures for handling the mobility of a UE between 3GPP Wireless Local Area Network Interworking (I-WLAN) and GPRS systems.

The present document is applicable to the User Equipment (UE) and the network nodes supporting mobility between 3GPP I-WLAN and GPRS systems.

In addition, the present document specifies the procedures used between the UE and the network nodes for the attach and the detach cases. It also specifies how the UE performs handover when moving from 3GPP I-WLAN to GPRS systems and vice-versa.

This document is based on DSMIPv6 procedures specified in 3GPP TS 24.303 and will specify additional details specific to the 3GPP I-WLAN and GPRS systems in the context of mobility.



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 327                  | 11.0.0  | Published    | 2012-11-16  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124327/11.00.00_60/ts_124327v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124327/11.00.00_60/ts_124327v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.327V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.327(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.327(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.327(R11-11.0.0)</a> |
| TTC  | TS-3GA-24.327(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.327(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.327(Rel11)v11.0.0.pdf</a>                           |

#### **10.4.56 TS 24.337 IP multimedia (IM) core network (CN) subsystem IP multimedia subsystem (IMS) inter-UE transfer; Stage 3**

IP Multimedia (IM) Core Network (CN) subsystem inter-UE transfer (IUT) provides the capability of continuing ongoing communication sessions with multiple media across different user equipments (UEs) under the control of the same or different subscribers, and as part of Service Continuity (SC).

The present document provides the protocol details for enabling IMS inter-UE transfer based on the Session Initiation protocol (SIP) and the Session Description Protocol (SDP).

The present document is applicable to User Equipment (UEs) and Application Servers (AS).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 337                  | 11.6.0  | Published    | 2014-01-13  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124337/11.06.00_60/ts_124337v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124337/11.06.00_60/ts_124337v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.337V1140-2014  | 11.4.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.337(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.337(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.337(R11-11.4.0)</a> |
| TTC  | TS-3GA-24.337(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.337(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.337(Rel11)v11.6.0.pdf</a>                           |

#### **10.4.57 TS 24.341 Support of SMS over IP networks; Stage 3**

This document provides the protocol details for SMS over IP within the IP multimedia (IM) core network (CN) subsystem based on the session initiation protocol (SIP) and SIP events as defined in 3GPP TS 24.229.

Where possible the present document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of SIP and SIP events, either directly, or as modified by 3GPP TS 24.229.

The present document is applicable to application servers (ASs) and user equipment (UE) providing SMS over IP functionality.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 341                 | 11.2.0  | Published | 2013-01-18  | <a href="http://www.etsi.org/deliver/etsi_ts/124300_124399/124341/11.02.00_60/ts_124341v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/124300_124399/124341/11.02.00_60/ts_124341v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.341V1120-2014 | 11.2.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.341(R11-11.2.0) | 11.2.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.341(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.341(R11-11.2.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-24.341(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.341(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.341(Rel11)v11.2.0.pdf</a> |

#### 10.4.58 TS 24.368 Non-access stratum (NAS) configuration management object (MO)

This document defines a Management Object (MO) that can be used to configure the UE with parameters related to Non-Access Stratum (NAS) functionality.

The MO is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF) as described in the Enabler Release Definition.

The MO consists of relevant parameters for NAS related configuration of a UE.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 368                  | 11.2.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124300/124399/124368/11.02.00_60/ts_124368v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/124300/124399/124368/11.02.00_60/ts_124368v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.368V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.368(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.368(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.368(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.368(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.368(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.368(Rel11)v11.2.0.pdf</a>                           |

#### 10.4.59 TS 24.390 Unstructured supplementary service data (USSD) using IP Multimedia (IM) core network (CN) subsystem IMS; Stage 3

The document describes the procedures for using Unstructured Supplementary Service Data (USSD) operations for mobile initiated MMI mode over IP Multimedia Core Network Subsystem (IMS). MMI mode is for the transparent transport of MMI strings entered by the user to the Application Servers (AS) and for the transparent transport of text strings back to the User Equipment (UE) to be displayed for user information. Support of USSD service is optional and only applicable for an operator's Public Land Mobile Network (PLMN).

The document is applicable to UE and AS which are intended to support USSD operations over IP Multimedia Core Network Subsystem (IMS) in mobile initiated MMI mode.

|      | Document No.                                | Version | Status       | Issued date | Location  |
|------|---|---------|--------------|-------------|---|
| ETSI | TS 124 390                                  | 11.4.0  | Published    | 2013-10-01  | <a href="http://www.etsi.org/deliver/etsi_ts/124300/124399/124390/11.04.00_60/ts_124390v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/124300/124399/124390/11.04.00_60/ts_124390v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.390V1120-2014                  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.390(R11-11.2.0)                  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.390(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.390(R11-11.2.0)</a> |
| TTC  | <a href="#">TS-3GA-24.390(Rel11)v11.4.0</a> | 11.4.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.390(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.390(Rel11)v11.4.0.pdf</a>                           |

#### 10.4.60 TS 24.604 Communication diversion (CDIV) using IP multimedia (IM) core network (CN) subsystem; Protocol specification

This document specifies the stage 3, Protocol Description of the Communications Diversion (CDIV) supplementary services, based on stage one and two of the ISDN Communication diversion supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network

(CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

In addition, the "Communication Diversion Notification" (CDIVN) CDIV service is described in the document.

This document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CDIV supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 604                  | 11.8.0  | Published    | 2014-01-13  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124604/11.08.00_60/ts_124604v110800p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124604/11.08.00_60/ts_124604v110800p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.604V1150-2014  | 11.5.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.604(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.604(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.604(R11-11.5.0)</a> |
| TTC  | TS-3GA-24.604(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.604(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.604(Rel11)v11.8.0.pdf</a>                           |

#### **10.4.61 TS 24.605 Conference (CONF) using IP Multimedia (IM) core network (CN) subsystem; Protocol specification**

This document specifies the stage three Protocol Description of the Conference (CONF) service based on stage one and two of the ISDN CONF supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

The document specifies centralized conferencing, using a conference focus, distributed conferencing is out of scope.

This document does not cover the cases of:

- cascading conference services; and
- the support of the PSTN/ISDN conference service hosted in the PSTN.

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CONF supplementary service.

This document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CDIV supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 605                  | 11.1.0  | Published    | 2013-01-22  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124605/11.01.00_60/ts_124605v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124605/11.01.00_60/ts_124605v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.605V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.605(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.605(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.605(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.605(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.605(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.605(Rel11)v11.1.0.pdf</a>                           |

#### **10.4.62 TS 24.606 Message waiting indication (MWI) using IP multimedia (IM) core network (CN) subsystem; Protocol specification**

This document specifies the stage three Protocol Description of the Message Waiting Indication (MWI) service, based on stage one and two of the ISDN MWI supplementary services. It provides

the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the MWI supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 606                  | 11.1.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124606/11.01.00_60/ts_124606v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124606/11.01.00_60/ts_124606v110100p.pdf</a>                   |
| ATIS | ATIS.3GPP.24.606V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.606(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-24.606(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-24.606(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.606(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.606(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.606(Rel11)v11.1.0.pdf</a>                         |

#### **10.4.63 TS 24.607 Originating identification presentation (OIP) and originating identification restriction (OIR) using IP multimedia (IM) core network (CN) subsystem; Protocol specification**

This document specifies the stage three (protocol description) of the Originating Identification Presentation (OIP) supplementary service and the Originating Identification Restriction (OIR) supplementary services, based on stage one and two of the ISDN CLIP and CLIR supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 607                  | 11.3.0  | Published    | 2014-03-20  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124607/11.03.00_60/ts_124607v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124607/11.03.00_60/ts_124607v110300p.pdf</a>                   |
| ATIS | ATIS.3GPP.24.607V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.607(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-24.607(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-24.607(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.607(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.607(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.607(Rel11)v11.2.0.pdf</a>                         |

#### **10.4.64 TS 24.608 Terminating identification presentation (TIP) and terminating identification restriction (TIR) using IP multimedia (IM) core network (CN) subsystem; Protocol specification**

This document specifies the stage three protocol description of the Terminating Identification Presentation (TIP) and Terminating Identification Restriction (TIR) services, based on stage one and two of the ISDN COLP and COLR supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 608                 | 11.3.0  | Published | 2013-07-04  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124608/11.03.00_60/ts_124608v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124608/11.03.00_60/ts_124608v110300p.pdf</a>                   |
| ATIS | ATIS.3GPP.24.608V1120-2014 | 11.2.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.608(R11-11.2.0) | 11.2.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-24.608(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-24.608(R11-11.2.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-24.608(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.608(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.608(Rel11)v11.3.0.pdf</a> |

#### **10.4.65 TS 24.610 Communication HOLD (HOLD) using IP multimedia (IM) core network (CN) subsystem; Protocol specification**

This document specifies the stage three Protocol Description of the Communication Hold (HOLD) services, based on stages one and two of the ISDN Hold (HOLD) supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the HOLD supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 610                  | 11.3.0  | Published    | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124610/11.03.00_60/ts_124610v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124610/11.03.00_60/ts_124610v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.610V112 0-2014 | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.610(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.610(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.610(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.610(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.610(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.610(Rel11)v11.3.0.pdf</a>                           |

#### **10.4.66 TS 24.611 Anonymous communication rejection (ACR) and communication barring (CB) using IP multimedia (IM) core network (CN) subsystem; Protocol specification**

This document specifies the stage three, Protocol Description of the Anonymous Communication Rejection (ACR) and Communication Barring (CB) supplementary service, based on stage one and two of the ISDN supplementary service Anonymous Call Rejection (ACR), Incoming Communication Barring (ICB) and Outgoing Communication Barring (OCB). It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the ACR and CB supplementary services.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 611                  | 11.2.0  | Published    | 2012-10-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124611/11.02.00_60/ts_124611v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124611/11.02.00_60/ts_124611v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.611V112 0-2014 | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.611(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.611(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.611(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.611(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.611(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.611(Rel11)v11.2.0.pdf</a>                           |

#### **10.4.67 TS 24.615 Communication waiting (CW) using IP multimedia (IM) core network (CN) subsystem; Protocol Specification**

This document specifies the stage 3, Protocol Description of the Communication Waiting (CW) service, based on stage 1 and stage 2 of the ISDN call waiting supplementary services. It provides the

protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

The Communication Waiting (CW) service enables a user to be informed, that very limited resources are available for an incoming communication. The user then has the choice of accepting, rejecting or ignoring the waiting call (as per basic call procedures).

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CW supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 615                  | 11.3.0  | Published    | 2014-01-13  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124615/11.03.00_60/ts_124615v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124615/11.03.00_60/ts_124615v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.615V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.615(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.615(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.615(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.615(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.615(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.615(Rel11)v11.3.0.pdf</a>                           |

#### **10.4.68 TS 24.616 Malicious communication identification (MCID) using IP multimedia (IM) core network (CN) subsystem; Protocol specification**

This document specifies the stage three Protocol Description of the Malicious Call Communication Identification (MCID) service based on the stage one and two of ISDN Malicious Call Identification supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP). The MCID service will store session related information independent of the service requested.

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the MCID supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 616                  | 11.1.0  | Published    | 2013-01-22  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124616/11.01.00_60/ts_124616v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124616/11.01.00_60/ts_124616v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.616V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.616(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.616(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.616(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.616(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.616(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.616(Rel11)v11.1.0.pdf</a>                           |

#### **10.4.69 TS 24.623 Extensible markup language (XML) configuration access protocol (XCAP) over the Ut interface for manipulating simulation services**

This document defines a protocol used for manipulating data related to supplementary services. The protocol is based on the eXtensible Markup Language (XML) Configuration Access Protocol (XCAP) [IETF RFC 4825]. A new XCAP application usage is defined for the purpose of manipulating the supplementary services data. The common XCAP related aspects that are applicable to supplementary services are specified in the present document. The protocol allows authorized users to manipulate service-related data either when they are connected to IMS or when they are connected to non-IMS networks (e.g., the public Internet).

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support XCAP application usage for manipulating data related to supplementary services.



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 623                  | 11.1.0  | Published    | 2013-01-22  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124623/11.01.00_60/ts_124623v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124623/11.01.00_60/ts_124623v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.623V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.623(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.623(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.623(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.623(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.623(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.623(Rel11)v11.1.0.pdf</a>                           |

#### **10.4.70 TS 24.628 Common basic communication procedures using IP multimedia (IM) core network (CN) subsystem; Protocol specification**

This document describes the stage three protocol for basic communication procedures common to several services in the IP Multimedia (IM) Core Network (CN) subsystem when at least one Application Server (AS) is included in the communication. The common procedures are based on stage three specifications for supplementary services.

The document contains examples of signalling flows for the common basic communication procedures.

This document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the common basic communication procedures.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 628                  | 11.2.0  | Published    | 2013-04-12  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124628/11.02.00_60/ts_124628v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124628/11.02.00_60/ts_124628v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.628V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.628(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.628(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.628(R11-11.2.0)</a> |
| TTC  | TS-3GA-24.628(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.628(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.628(Rel11)v11.2.0.pdf</a>                           |

#### **10.4.71 TS 24.629 Explicit communication transfer (ECT) using IP multimedia (IM) core network (CN) subsystem; Protocol specification**

This document specifies the stage three (protocol description) of the Explicit Communication transfer (ECT) supplementary service, based on stage one and two of the ISDN ECT supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the ECT supplementary service.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 124 629                 | 11.3.0  | Published | 2014-01-13  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124629/11.03.00_60/ts_124629v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124629/11.03.00_60/ts_124629v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.629V1120-2014 | 11.2.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.629(R11-11.2.0) | 11.2.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.629(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.629(R11-11.2.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-24.629(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.629(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-24.629(Rel11)v11.3.0.pdf</a> |

#### **10.4.72 TS 24.642 Completion of communications to busy subscriber (CCBS) and Completion of communications by no reply (CCNR) using IP Multimedia (IM) core network (CN) subsystem; Protocol Specification**

This document specifies the stage three Protocol Description of the Completion of Communications to Busy Subscriber (CCBS) service and the Completion of Communication on no Reply (CCNR) service, based on stage one and two of the ISDN supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

The Completion of Communications to Busy Subscriber CCBS service enables user A, encountering a busy destination B, to have the communication completed without having to make a new communication attempt when the destination B becomes not busy.

The Completion of Communications on No Reply CCNR supplementary service enables user A, encountering a destination B which does not answer the communication (No Reply), to have the communication completed without having to make a new communication attempt when the destination becomes not busy after having initiated an activity.

The present document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CCBS and CCNR supplementary services.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 642                  | 11.4.0  | Published    | 2013-07-08  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124642/11.04.00_60/ts_124642v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124642/11.04.00_60/ts_124642v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.642V1130-2014  | 11.3.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.642(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.642(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.642(R11-11.3.0)</a> |
| TTC  | TS-3GA-24.642(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.642(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.642(Rel11)v11.4.0.pdf</a>                           |

#### **10.4.73 TS 24.647 Advice of charge (AOC) using IP multimedia (IM) Core Network (CN) subsystem; Protocol Specification**

This document specifies the stage three Protocol Description of the Advice Of Charge (AOC) service, based on stage 1 and 2 of the ISDN Supplementary Service Advice Of Charge for all calls (permanent mode). It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

Three AOC services exist:

- Charging information at communication set-up time (AOC-S)  
The AOC-S service enables a user to receive information about the charging rates at communication set-up time and also to receive further information during the communication if there is a change of charging rates.
- Charging information during the communication (AOC-D)  
The AOC-D service enables a user to receive information on the recorded charges for a communication during the active phase of the communication.
- Charging information at the end of the communication (AOC-E)



The AOC-E service enables a user to receive information on the recorded charges for a communication when the communication is terminated.

This document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the AOC supplementary services.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 647                  | 11.1.0  | Published    | 2012-11-16  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124647/11.01.00_60/ts_124647v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124647/11.01.00_60/ts_124647v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.647V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.647(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.647(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.647(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.647(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.647(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.647(Rel11)v11.1.0.pdf</a>                           |

#### **10.4.74 TS 24.654 Closed user group (CUG) using IP Multimedia (IM) core network (CN) subsystem, Protocol Specification**

This document specifies the stage three Protocol Description of the Closed User Group (CUG) service, based on stage one and two of the ISDN Communication diversion supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

The document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CUG supplementary service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 124 654                  | 11.1.0  | Published    | 2013-04-12  | <a href="http://www.etsi.org/deliver/etsi_ts/124600_124699/124654/11.01.00_60/ts_124654v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/124600_124699/124654/11.01.00_60/ts_124654v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.654V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.654(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.654(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.654(R11-11.1.0)</a> |
| TTC  | TS-3GA-24.654(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.654(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-24.654(Rel11)v11.1.0.pdf</a>                           |

#### **10.4.75 TR 24.820 3GPP system to fixed broadband access network interworking**

The document studies the additional UE – EPC procedures within the scope of 3GPP TS 24.302 and 3GPP TS 24.229, for the interworking between a 3GPP system and a Fixed Broadband Access network defined by Broadband Forum to provide the IP connectivity to a 3GPP UE using a WLAN and a H(e)NB connected to a Fixed Broadband Access network.

The report covers the discovery and network selection procedures, QoS aspects, Tunnel management procedures, selection of the IP mobility mode, Authentication and Access Authorization using Authentication, Authorization and Accounting (AAA) procedures, and IP CAN session impacts.

The document is applicable to the UE and the network. In this technical specification the network is the 3GPP EPC.

#### **10.4.76 TR 24.826 Study on impacts on signalling between user equipment (UE) and core network from energy saving**

The document contains the result of the study on the impacts on signalling between the UE and core network when energy saving measures are applied to network entities.

The study aims, within the defined CT1 work areas, at:

- analysing UE idle mode procedures and signalling between the UE and core network resulting from switch on/off of radio equipment in all types of 3GPP accesses, including home cell deployment and I-WLAN, as well as power adaptation of radio equipment (where applicable);
- performing a corresponding analysis for connected mode UEs;
- analysing similar impacts from activation status of non-3GPP access networks;
- documenting limitations, weaknesses and inefficiencies in these procedures, with emphasis on mass effects in the signalling between the UE and core network; and
- studying potential optimizations and enhancements to these procedures.

The study also evaluates potential enhancements to 3GPP specifications under CT1 responsibility.

This study takes into account decisions made by other 3GPP working groups in their related work.

#### **10.4.77 TR 24.930 Signalling flows for the session set-up in the IP multimedia core network subsystem (IMS) based on session initiation protocol (SIP) and session description protocol (SDP); Stage 3**

This document gives examples of the session set-up in the IM CN subsystem based on SIP and SDP.

These signalling flows provide detailed signalling flows, which expand on the overview information flows provided in 3GPP TS 23.228. The flows focus on a basic session set-up, i.e., no flows will be provided for topology hiding, for sessions with IBCF involved or for sessions having certain features.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 124 930                  | 11.0.0  | Published    | 2012-10-10  | <a href="http://www.etsi.org/deliver/etsi_tr/124900/124999/124930/11.00.00_60/tr_124930v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/124900/124999/124930/11.00.00_60/tr_124930v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.24.930V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-24.930(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.930(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-24.930(R11-11.0.0)</a> |
| TTC  | TR-3GA-24.930(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-24.930(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-24.930(Rel11)v11.0.0.pdf</a>                           |

## **10.5 26-series, CODECs**

### **10.5.1 TS 26.071 Mandatory speech CODEC speech processing functions; AMR speech codec; General description**

The document is an introduction to the speech processing parts of the narrow-band telephony speech service employing the adaptive multi-rate (AMR) speech coder. A general overview of the speech processing functions is given, with reference to the documents where each function is specified in detail.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.071        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26071-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26071-b00.pdf</a> |
| ETSI | TS 126 071                 | 11.0.0  | Published      | 2012-10-10  | <a href="http://www.etsi.org/deliver/etsi_ts/126000/126099/126071/11.00.00_60/ts_126071v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126000/126099/126071/11.00.00_60/ts_126071v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.071V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.071(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.071(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.071(R11-11.0.0)</a>         |

### 10.5.2 TS 26.073 ANSI-C code for the adaptive multi-rate (AMR) speech codec

The document contains an electronic copy of the ANSIC code for the adaptive multi-rate codec. The ANSIC code is necessary for a bit-exact implementation of the adaptive multi-rate speech transcoder (TS 26.090), voice activity detection (TS 26.094), comfort noise (TS 26.092), source controlled rate operation (TS 26.093) and example solutions for substituting and muting of lost frames (TS 26.091).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.073        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26073-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26073-b00.pdf</a> |
| ETSI | TS 126 073                 | 11.0.0  | Published      | 2012-10-10  | <a href="http://www.etsi.org/deliver/etsi_ts/126000/126099/126073/11.00.00_60/ts_126073v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126000/126099/126073/11.00.00_60/ts_126073v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.073V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.073(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.073(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.073(R11-11.0.0)</a>         |

### 10.5.3 TS 26.074 Mandatory speech codec speech processing functions; Adaptive multi-rate (AMR) speech codec test sequences

The document specifies the digital test sequences for the adaptive multi-rate (AMR) speech codec. These sequences test for a bit exact implementation of the adaptive multi-rate speech transcoder (TS 26.090), voice activity detection (TS 26.094), comfort noise (TS 26.092), and source controlled rate operation (TS 26.093).

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.074 | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26074-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26074-b10.pdf</a> |
| ETSI | TS 126 074          | 11.1.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_ts/126000/126099/126074/11.01.00_60/ts_126074v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/126000/126099/126074/11.01.00_60/ts_126074v110100p.pdf</a>                             |

### 10.5.4 TS 26.077 Minimum performance requirements for noise suppresser; Application to the AMR speech encoder

The document specifies recommended minimum performance requirements for noise suppression algorithms intended for application in conjunction with the AMR speech encoder. This specification is for guidance purposes. Noise suppression is intended to enhance the speech signal corrupted by acoustic noise at the input to the AMR speech encoder.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.077        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26077-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26077-b00.pdf</a> |
| ETSI | TS 126 077                 | 11.0.0  | Published      | 2012-10-10  | <a href="http://www.etsi.org/deliver/etsi_ts/126000/126099/126077/11.00.00_60/ts_126077v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126000/126099/126077/11.00.00_60/ts_126077v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.077V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.077(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.077(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.077(R11-11.0.0)</a>         |

### 10.5.5 TS 26.090 Mandatory speech codec speech processing functions; Adaptive multi-rate (AMR) speech codec; Transcoding functions

The document describes the detailed mapping from input blocks of 160 speech samples in 13bit uniform PCM format to encoded blocks of 95, 103, 118, 134, 148, 159, 204, and 244 bits and from

encoded blocks of 95, 103, 118, 134, 148, 159, 204, and 244 bits to output blocks of 160 reconstructed speech samples. The sampling rate is 8000 samples/s leading to a bit rate for the encoded bit stream of 4.75, 5.15, 5.90, 6.70, 7.40, 7.95, 10.2 or 12.2 kbit/s. The coding scheme for the multi-rate coding modes is the so-called algebraic code-excited linear prediction coder, hereafter referred to as ACELP. The multi-rate ACELP coder is referred to as MR-ACELP.

In the case of discrepancy between the requirements described in the document and the fixed point computational description (ANSIC code) of these requirements contained in 3G TS 26.073, the description in 3G TS 26.073 will prevail. The ANSIC code is not described in this document; see 3G TS 26.073 for a description of the ANSIC code.

The transcoding procedure specified in the document is mandatory for systems using the AMR speech codec.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.090         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26090-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26090-b00.pdf</a> |
| ETSI | TS 126 090                  | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126000_126099/126090/11.00.00_60/ts_126090v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126000_126099/126090/11.00.00_60/ts_126090v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.090V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.090(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.090(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.090(R11-11.0.0)</a>         |

#### **10.5.6 TS 26.091 Mandatory speech codec speech processing functions; Adaptive multi-rate (AMR) speech codec; Error concealment of lost frames**

The document defines an error concealment procedure, also termed "frame substitution and muting" procedure, which shall be used by the AMR speech codec receiving end when one or more lost speech or lost silence descriptor (SID) frames are received.

The requirements of this document are mandatory for implementation in all networks and user equipments (UE)s capable of supporting the AMR speech codec. It is not mandatory to follow the bit-exact implementation outlined in this document and the corresponding C source code.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.091         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26091-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26091-b00.pdf</a> |
| ETSI | TS 126 091                  | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126000_126099/126091/11.00.00_60/ts_126091v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126000_126099/126091/11.00.00_60/ts_126091v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.091V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.091(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.091(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.091(R11-11.0.0)</a>         |

#### **10.5.7 TS 26.092 Mandatory speech codec speech processing functions; Adaptive multi-rate (AMR) speech codec; Comfort noise aspects**

The document gives the detailed requirements for the correct operation of the background acoustic noise evaluation, noise parameter encoding/decoding and comfort noise generation for the AMR speech codec during source controlled rate (SCR) operation.

The requirements described in this document are mandatory for implementation in all UEs capable of supporting the AMR speech codec.

The receiver requirements are mandatory for implementation in all networks capable of supporting the AMR speech codec, the transmitter requirements only for those where downlink SCR will be used.

In case of discrepancy between the requirements described in this document and the fixed point computational description of these requirements contained in 3G TS 26.073, the description in 3G TS 26.073 will prevail.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.092        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26092-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26092-b00.pdf</a> |
| ETSI | TS 126 092                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126000_126099/126092/11.00.00_60/ts_126092v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126000_126099/126092/11.00.00_60/ts_126092v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.092V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.092(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.092(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.092(R11-11.0.0)</a>         |

#### **10.5.8 TS 26.093 Mandatory speech codec speech processing functions; Adaptive multi-rate (AMR) speech codec; Source controlled rate operation**

This document describes the source controlled rate (SCR) operation of the adaptive multi-rate speech codec in codec types UMTS\_AMR and GSM\_AMR for the UMTS system. The implementation of this SCR operation is mandatory in all UMTS equipment.

This structure of distributing the various functions between system entities is not mandatory for implementation, as long as the operation on the speech decoder output remains the same.

Annex A describes the discontinuous transmission (DTX) operation of the adaptive multi-rate speech codec in codec types FR\_AMR, HR\_AMR and OHR\_AMR for GERAN. This annex is the former GSM 06.93 (release 98).

Annexes B to E describe the SCR operation of the adaptive multi-rate speech codec in codec types GSM\_EFR, TDMA\_EFR, TDMA\_US1 and PDC\_EFR for the UMTS system.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.093        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26093-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26093-b00.pdf</a> |
| ETSI | TS 126 093                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126000_126099/126093/11.00.00_60/ts_126093v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126000_126099/126093/11.00.00_60/ts_126093v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.093V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.093(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.093(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.093(R11-11.0.0)</a>         |

#### **10.5.9 TS 26.094 Mandatory speech codec speech processing functions; Adaptive multi-rate (AMR) speech codec; Voice activity detector (VAD)**

The document specifies two alternatives for the voice activity detector (VAD) to be used in the discontinuous transmission (DTX) as described in 3G TS 26.093. Implementers of mobile station and infrastructure equipment conforming to the AMR specifications can choose which of the two VAD options to implement. There are no interoperability factors associated with this choice.

The requirements are mandatory on any VAD to be used either in user equipment (UE) or base station systems (BSS)s that utilize the AMR speech codec.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.094        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26094-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26094-b00.pdf</a> |
| ETSI | TS 126 094                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126000_126099/126094/11.00.00_60/ts_126094v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126000_126099/126094/11.00.00_60/ts_126094v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.094V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.094(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.094(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.094(R11-11.0.0)</a>         |

#### 10.5.10 TS 26.101 Mandatory speech codec speech processing functions; Adaptive multi-rate (AMR) speech codec frame structure

The document describes a generic frame format for the adaptive multi-rate (AMR) speech codec. This format shall be used as a common reference point when interfacing speech frames between different elements of the 3G system and between different systems. Appropriate mappings to and from this generic frame format will be used within and between each system element.

Annex A describes a second frame format, which shall be used when octet alignment of AMR frames is required.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.101        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26101-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26101-b00.pdf</a> |
| ETSI | TS 126 101                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126101/11.00.00_60/ts_126101v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126101/11.00.00_60/ts_126101v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.101V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.101(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.101(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.101(R11-11.0.0)</a>         |

#### 10.5.11 TS 26.102 AMR speech codec; Interface to Iu, Uu and Nb

The document specifies the mapping of the AMR generic frame format (TS 26.101) to the Iu Interface (TS 25.415), the Uu interface and the Nb interface (TS 29.415). It further specifies the mapping of enhanced full rate (GSM\_EFR) coded speech and of PCM 64 kbit/s [ITU-TG.711] coded speech to the Nb Interface.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.102        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26102-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26102-b00.pdf</a> |
| ETSI | TS 126 102                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126102/11.00.00_60/ts_126102v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126102/11.00.00_60/ts_126102v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.102V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.102(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.102(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.102(R11-11.0.0)</a>         |



### 10.5.12 TS 26.103 Speech codec list for GSM and UMTS

The Technical Specification outlines the codec lists in 3G including both systems, GSM and UMTS, to be used by the out of band transcoder control (OoBTC) protocol to set up a call or modify a call in transcoder free operation (TrFO) and in "transcoder at the edge" scenarios.

The TS further specifies the coding of the supported codec list information elements for the UMTS radio access technology.

The supported codec list IE includes Codec\_Types from the TDMA and PDC systems, to support TFO or TrFO between UMTS and TDMA, or UMTS and PDC.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.103        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26103-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26103-b00.pdf</a> |
| ETSI | TS 126 103                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126103/11.00.00_60/ts_126103v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126103/11.00.00_60/ts_126103v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.103V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.103(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.103(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.103(R11-11.0.0)</a>         |

### 10.5.13 TS 26.104 ANSI-C code for the floating-point adaptive multi-rate (AMR) speech codec

This Technical Standard (TS) contains an electronic copy of the ANSI-C code for a floating-point implementation of the adaptive multi-rate codec. This floating-point codec specification is mainly targeted to be used in multimedia applications such as the 3G-324M terminal specified in TS 26.110, or in packet-based (e.g., ITU-T H.323) applications. The bit-exact fixed-point ANSI-C code in TS 26.073 remains the preferred implementation for all applications, but the floating-point codec may be used instead of the fixed-point codec when the implementation platform is better suited for a floating-point implementation. It has been verified that the fixed-point and floating point codecs interoperate with each other without any artifacts.

The floating-point ANSIC code in this specification is the only standard conforming non-bit-exact implementation of the adaptive multi-rate speech transcoder (TS 26.090), voice activity detection (TS 26.094), comfort noise generation (TS 26.092), and source controlled rate operation (TS 26.093). The floating-point code also contains example solutions for substituting and muting of lost frames (TS 26.091).

The fixed-point specification in 26.073 shall remain the only allowed implementation for the 3G mandatory speech services and the use of the floating-point codec is strictly limited to other services.

The floating-point encoder in this specification is a non-bit-exact implementation of the fixed-point encoder producing quality indistinguishable from that of the fixed-point encoder. The decoder in this specification is functionally a bit exact implementation of the fixed-point decoder, but the code has been optimized for speed and the standard fixed-point libraries are not used as such.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.104        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26104-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26104-b00.pdf</a> |
| ETSI | TS 126 104                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126104/11.00.00_60/ts_126104v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126104/11.00.00_60/ts_126104v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.104V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.               | Version | Status    | Issued date | Location  |
|-----|----------------------------|---------|-----------|-------------|---|
| TTA | TTAT.3G-26.104(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.104(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.104(R11-11.0.0)</a> |

#### 10.5.14 TS 26.110 Codec for circuit-switched multimedia telephony service; General description

This specification introduces the set of specifications that apply to 3G-324M multimedia terminals.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.110        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26110-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26110-b00.pdf</a> |
| ETSI | TS 126 110                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126110/11.00.00_60/ts_126110v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126110/11.00.00_60/ts_126110v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.110V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.110(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.110(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.110(R11-11.0.0)</a>         |

#### 10.5.15 TS 26.111 Codec for circuit-switched multimedia telephony service; Modifications to ITU-T H.324

[ITU-T H.324] with Annex C describes a generic multimedia codec for use in error prone, wireless networks. The scope of the document is the changes, deletions, and additions to those texts necessary to fully specify a multimedia codec for use in 3G networks. Note that this implicitly excludes the network interface and call set-up procedures. Also excluded are any general introductions to the system components.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.111        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26111-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26111-b00.pdf</a> |
| ETSI | TS 126 111                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126111/11.00.00_60/ts_126111v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126111/11.00.00_60/ts_126111v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.111V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.111(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.111(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.111(R11-11.0.0)</a>         |

#### 10.5.16 TS 26.114 IP multimedia subsystem (IMS); Multimedia telephony; Media handling and interaction

The present document specifies a client for the multimedia telephony service for IMS (MTSI) supporting conversational speech (including DTMF), video and text transported over RTP with the scope to deliver a user experience equivalent to or better than that of circuit switched (CS) conversational services using the same amount of network resources. It defines media handling (e.g., signalling, transport, jitter buffer management, packet-loss handling, adaptation), as well as interactivity (e.g., adding or dropping media during a call). The focus is to ensure a reliable and interoperable service with a predictable media quality, while allowing for flexibility in the service offerings.

The scope includes maintaining backward compatibility in order to ensure seamless interworking with existing services available in the CS domain, such as CS speech and video telephony, as well as



with terminals of earlier 3GPP releases. In addition, inter-working with traditional PSTN and emerging TISPAN network is covered.

The specification is written in a forward-compatible way in order to allow additions of media components and functionality in later releases.

NOTE 1 – MTSI clients can support more than conversational speech, video and text, which is the scope of the present document. See 3GPP TS 22.173 for the definition of the multimedia telephony service for IMS.

NOTE 2 – 3GPP TS 26.235 and 3GPP TS 26.236 do not include the specification of an MTSI client, although they include conversational multimedia applications. Only those parts of 3GPP TS 26.235 and 3GPP TS 26.236 that are specifically referenced by the present document apply to multimedia telephony service for IMS.

NOTE 3 – The present document was started as a conclusion from the study in 3GPP TR 26.914 on optimization opportunities in multimedia telephony for IMS (3GPP TR 22.973).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.114        | 11.9.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26114-b90.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26114-b90.pdf</a> |
| ETSI | TS 126 114                 | 11.9.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126114/11.09.00_60/ts_126114v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126114/11.09.00_60/ts_126114v110900p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.114V1160-2014 | 11.6.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.114(R11-11.6.0) | 11.6.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.114(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.114(R11-11.6.0)</a>         |

#### 10.5.17 TS 26.115 Echo control for speech and multimedia services

The document specifies minimum performance requirements for the gateway echo control of 3G speech and multimedia services. The document is applicable to any narrow-band speech telephony or multimedia service.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.115        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26115-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26115-b00.pdf</a> |
| ETSI | TS 126 115                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126115/11.00.00_60/ts_126115v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126115/11.00.00_60/ts_126115v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.115V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.115(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.115(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.115(R11-11.0.0)</a>         |

#### 10.5.18 TS 26.131 Terminal acoustic characteristics for telephony; Requirements

The document is applicable to any terminal capable of supporting narrow-band or wideband telephony, either as a stand-alone service or as the telephony component of a multimedia service. The document specifies minimum performance requirements for the acoustic characteristics of 3G terminals when used to provide narrow-band or wideband telephony.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.131        | 11.3.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26131-b30.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26131-b30.pdf</a> |
| ETSI | TS 126 131                 | 11.3.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126131/11.03.00_60/ts_126131v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126131/11.03.00_60/ts_126131v110300p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.131V1120-2014 | 11.3.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.131(R11-11.2.0) | 11.2.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.131(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.131(R11-11.2.0)</a>         |

### 10.5.19 TS 26.132 Speech and video telephony terminal acoustic test specification

The document is applicable to any terminal capable of supporting narrowband or wideband telephony, either as a stand-alone service or as the telephony component of a multimedia service. The present document specifies test methods to allow the minimum performance requirements for the acoustic characteristics of GSM and 3G terminals when used to provide narrowband or wideband telephony to be assessed.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.132 | 11.4.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26132-b40.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26132-b40.pdf</a> |
| ETSI | TS 126 132          | 11.4.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126132/11.04.00_60/ts_126132v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126132/11.04.00_60/ts_126132v110400p.pdf</a>                             |

### 10.5.20 TS 26.140 Multimedia messaging service (MMS); Media formats and codes

This document specifies the media types, formats and codecs for the MMS within the 3GPP system. The scope of this document extends to codecs for speech, audio, video, still images, bitmap graphics, and other media in general, as well as scene description, multimedia integration and synchronization schemes.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.140        | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26140-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26140-b10.pdf</a> |
| ETSI | TS 126 140                 | 11.1.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126140/11.01.00_60/ts_126140v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126140/11.01.00_60/ts_126140v110100p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.140V1110-2014 | 11.1.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.140(R11-11.0.0) | 11.1.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.140(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.140(R11-11.0.0)</a>         |

### 10.5.21 TS 26.141 IP multimedia system (IMS) messaging and presence; Media formats and codecs

The 3GPP Technical Specifications 3G TS 22.340 and 3G TS 22.141 define the requirements for the 3GPP IP multimedia subsystem (IMS)-based messaging and presence services. This Technical Specification takes the requirements into account when defining the minimal baseline and optional media codecs and message container format to be used by IMS messaging and associated presence service, when supported.

IMS messaging services incorporate one or more of the following messaging types: immediate messaging, deferred delivery messaging, and session-based messaging. With immediate messaging the sender expects immediate message delivery in what is perceived as real time compared with

deferred messaging, where the sender expects the network to deliver the message as soon as the recipient becomes available. With session-based messaging, a communications association is established between two or more users before communication can take place. In the simplest form, session-based messaging may be a direct communication between two users. This specification defines the media types and container formats for both the immediate message type and the session-based message type.

The specification provides the ability to have an interoperable baseline set of media types for messaging and presence services, that will simultaneously maximize the technology reuse of the already existing 3GPP services with media types, defined in 3G TS 26.140 and 3G TS 26.234. Simultaneously, the specification will provide the ability to indicate the IMS system about the complete set of UE media and storage capabilities relevant for the IMS messaging and presence services.

The present document specifies the basic media formats and codecs to be used in the IMS messaging and presence services. It defines the mandatory "baseline" set of media types for the services. Additionally, it also targets to allow possible message content type enhancements, either 3GPP-standardized or other generally used media types, in a flexible way.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.141        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26141-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26141-b00.pdf</a> |
| ETSI | TS 126 141                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126141/11.00.00_60/ts_126141v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126141/11.00.00_60/ts_126141v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.141V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.141(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.141(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.141(R11-11.0.0)</a>         |

### 10.5.22 TS 26.142 Dynamic and interactive multimedia scenes

DIMS defines a dynamic rich-media system, including a media type, its packaging, delivery, and interaction with the local terminal, user, and other local and remote sub-systems. Enhanced end-user experiences are provided by the coordinated management and synchronization of media and events, combined with end-user interaction.

The DIMS media type can be used as a generic media type, allowing creating dynamic interactive rich-media services and can also benefit, or be used in association with other media types (e.g., audio codecs, video codecs, XHTML browser, etc.).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.142        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26142-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26142-b00.pdf</a> |
| ETSI | TS 126 142                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126142/11.00.00_60/ts_126142v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126142/11.00.00_60/ts_126142v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.142V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.142(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.142(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.142(R11-11.0.0)</a>         |

### 10.5.23 TS 26.150 Syndicated feed reception (SFR) within 3GPP environments; Protocols and codecs

This document defines a set of media codecs, formats and transport/application protocols to enable syndicated feed reception within the 3GPP system.

The document includes information applicable to network operators, service providers and manufacturers.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.150        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26150-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26150-b00.pdf</a> |
| ETSI | TS 126 150                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126150/11.00.00_60/ts_126150v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126150/11.00.00_60/ts_126150v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.150V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.150(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.150(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.150(R11-11.0.0)</a>         |

### 10.5.24 TS 26.171 Speech codec speech processing functions; Adaptive multi-rate - wideband (AMR-WB) speech codec; General description

This document is an introduction to the speech processing parts of the wideband telephony speech service employing the adaptive multi-rate wideband (AMR-WB) speech coder. A general overview of the speech processing functions is given, with reference to the documents where each function is specified in detail.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.171        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26171-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26171-b00.pdf</a> |
| ETSI | TS 126 171                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126171/11.00.00_60/ts_126171v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126171/11.00.00_60/ts_126171v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.171V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.171(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.171(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.171(R11-11.0.0)</a>         |

### 10.5.25 TS 26.173 ANSI-C code for the adaptive multi-rate – wideband (AMR-WB) speech codec

This document contains an electronic copy of the ANSI-C code for the adaptive multi-rate wideband codec. The ANSI-C code is necessary for a bit-exact implementation of the adaptive multi-rate wideband speech transcoder (3G TS 26.190), voice activity detection (3G TS 26.194), comfort noise (3G TS 26.192), source controlled rate operation (3G TS 26.193) and example solutions for substituting and muting of lost frames (3G TS 26.191).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.173        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26173-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26173-b00.pdf</a> |
| ETSI | TS 126 173                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126173/11.00.00_60/ts_126173v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126173/11.00.00_60/ts_126173v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.173V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.               | Version | Status    | Issued date | Location  |
|-----|----------------------------|---------|-----------|-------------|---|
| TTA | TTAT.3G-26.173(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.173(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.173(R11-11.0.0)</a> |

#### 10.5.26 TS 26.174 Speech codec speech processing functions; Adaptive multi-rate - wideband (AMR-WB) speech codec test sequences

The document specifies the digital test sequences for the adaptive multi-rate wideband (AMR-WB) speech codec. These sequences test for a bit-exact implementation of the adaptive multi-rate wideband (AMR-WB) speech transcoder (TS 26.190), voice activity detection (TS 26.194), comfort noise (TS 26.192), and source controlled rate operation (TS 26.193).

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.174 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26174-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26174-b00.pdf</a> |
| ETSI | TS 126 174          | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126174/11.00.00_60/ts_126174v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126174/11.00.00_60/ts_126174v110000p.pdf</a>                             |

#### 10.5.27 TS 26.177 Speech Enabled Services (SES); Distributed speech recognition (DSR) extended advanced front-end test sequences

The document specifies the digital test sequences for the DSR Extended Advanced Front-end speech codec. These sequences can be used to test for a bit exact implementation of the DSR Advanced Front-end codec and quantization (3GPP TS 26.243).

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.177 | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26177-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26177-b10.pdf</a> |
| ETSI | TS 126 177          | 11.1.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126177/11.01.00_60/ts_126177v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126177/11.01.00_60/ts_126177v110100p.pdf</a>                             |

#### 10.5.28 TS 26.190 Speech codec speech processing functions; Adaptive multi-rate – wideband (AMR-WB) speech codec; Transcoding functions

This Telecommunication Standard (TS) describes the detailed mapping from input blocks of 320 speech samples in 16-bit uniform PCM format to encoded blocks of 132, 177, 253, 285, 317, 365, 397, 461 and 477 bits and from encoded blocks of 132, 177, 253, 285, 317, 365, 397, 461 and 477 bits to output blocks of 320 reconstructed speech samples. The sampling rate is 16 000 samples/s leading to a bit rate for the encoded bit stream of 6.60, 8.85, 12.65, 14.25, 15.85, 18.25, 19.85, 23.05 or 23.85 kbit/s. The coding scheme for the multi-rate coding modes is the so-called algebraic code-excited linear prediction coder, hereafter referred to as ACELP. The multirate wideband ACELP coder is referred to as MRWB-ACELP.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.190        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26190-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26190-b00.pdf</a> |
| ETSI | TS 126 190                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126190/11.00.00_60/ts_126190v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126190/11.00.00_60/ts_126190v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.190V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.190(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.190(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.190(R11-11.0.0)</a>         |

### 10.5.29 TS 26.191 Speech codec speech processing functions; Adaptive multi-rate - wideband (AMR-WB) speech codec; Error concealment of erroneous or lost frames

This specification defines an error concealment procedure, also termed frame substitution and muting procedure, which shall be used by the AMR-WB speech codec receiving end when one or more erroneous/lost speech or lost silence descriptor (SID) frames are received.

The requirements of this document are mandatory for implementation in all networks and user equipments (UE)s capable of supporting the AMR-WB speech codec. It is not mandatory to follow the bit-exact implementation outlined in this document and the corresponding C source code.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.191        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26191-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26191-b00.pdf</a> |
| ETSI | TS 126 191                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126191/11.00.00_60/ts_126191v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126191/11.00.00_60/ts_126191v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.191V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.191(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.191(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.191(R11-11.0.0)</a>         |

### 10.5.30 TS 26.192 Speech codec speech processing functions; Adaptive multi-rate – wideband (AMR-WB) speech codec; Comfort noise aspects

This document gives the detailed requirements for the correct operation of the background acoustic noise evaluation, noise parameter encoding/decoding and comfort noise generation for the AMR wideband (AMR-WB) speech codec during source controlled rate (SCR) operation.

The requirements described in this document are mandatory for implementation in all UEs capable of supporting the AMR-WB speech codec.

The receiver requirements are mandatory for implementation in all networks capable of supporting the AMR-WB speech codec, the transmitter requirements only for those where downlink SCR will be used.

In case of discrepancy between the requirements described in this document and the fixed point computational description of these requirements contained in 3G TS 26.173, the description in 3G TS 26.173 will prevail.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.192        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26192-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26192-b00.pdf</a> |
| ETSI | TS 126 192                 | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126192/11.00.00_60/ts_126192v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126192/11.00.00_60/ts_126192v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.192V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.192(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.192(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.192(R11-11.0.0)</a>         |

### 10.5.31 TS 26.193 Speech codec speech processing functions; Adaptive multi-rate - wideband (AMR-WB) speech codec; Source controlled rate operation

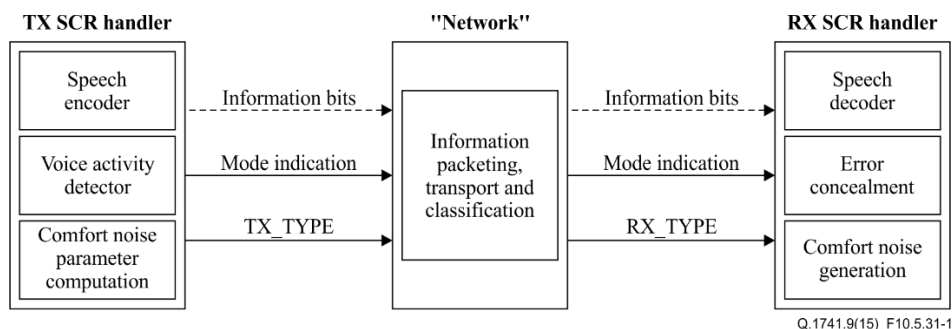
This document describes the source controlled rate (SCR) operation of the adaptive multi-rate wideband speech codec. The implementation of this SCR operation is mandatory in all UMTS equipment implementing the adaptive multi-rate wideband speech codec.



The description is structured according to the block diagram in Figure 10.5.26-1. This structure of distributing the various functions between system entities is not mandatory for implementation, as long as the operation on the speech decoder output remains the same.

Annex A describes the discontinuous transmission (DTX) operation of the adaptive multi-rate wideband speech codec in codec type FR\_AMR-WB for the GSM system.

An overall description of the speech processing parts can be found in 3G TS 26.171. An overview of one link SCR operation is shown in Figure 10.5.30-1.



**Figure 10.5.31-1 – Block diagram of one link SCR operation**

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.193         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26193-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26193-b00.pdf</a> |
| ETSI | TS 126 193                  | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126193/11.00.00_60/ts_126193v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126193/11.00.00_60/ts_126193v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.193V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.193(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.193(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.193(R11-11.0.0)</a>         |

### 10.5.32 TS 26.194 Speech codec speech processing functions; Adaptive multi-rate - wideband (AMR-WB) speech codec; Voice activity detector (VAD)

This document specifies the voice activity detector (VAD) to be used in the discontinuous transmission (DTX) as described in 3GPP TS 26.193.

The requirements are mandatory on any VAD to be used either in user equipment (UE) or base station systems (BSS)s that utilize the AMR wideband speech codec.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.194         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26194-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26194-b00.pdf</a> |
| ETSI | TS 126 194                  | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126100_126199/126194/11.00.00_60/ts_126194v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126100_126199/126194/11.00.00_60/ts_126194v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.194V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.194(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.194(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.194(R11-11.0.0)</a>         |

### 10.5.33 TS 26.201 Speech codec speech processing functions; Adaptive multi-rate - wideband (AMR-WB) speech codec; Frame structure

This document describes a generic frame format for the adaptive multi-rate wideband (AMRWB) speech codec. This format shall be used as a common reference point when interfacing speech frames between different elements of the 3G system and between different systems. Appropriate mappings to and from this generic frame format will be used within and between each system element.

Annex A of this Technical Specification describes a second frame format which shall be used when octet alignment of AMR-WB frames is required.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.201         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26201-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26201-b00.pdf</a> |
| ETSI | TS 126 201                  | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126201/11.00.00_60/ts_126201v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126201/11.00.00_60/ts_126201v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.201V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.201(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-26.201(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-26.201(R11-11.0.0)</a>           |

### 10.5.34 TS 26.202 Speech codec speech processing functions; Adaptive multi-rate - wideband (AMR-WB) speech codec; Interface to Iu, Uu and Nb

This document specifies the mapping of the AMR wideband generic frame format (3G TS 26.201) to the Iu interface (3G TS 25.415), the Uu interface and the Nb interface (3G TS 29.415). It further specifies the mapping of PCM 64 kbit/s ITU-T G.711 coded speech to the Nb interface.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.202         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26202-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26202-b00.pdf</a> |
| ETSI | TS 126 202                  | 11.0.0  | Published      | 2012-10-11  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126202/11.00.00_60/ts_126202v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126202/11.00.00_60/ts_126202v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.202V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.202(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-26.202(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-26.202(R11-11.0.0)</a>           |

### 10.5.35 TS 26.204 Speech codec speech processing functions; Adaptive multi-rate - wideband (AMR-WB) speech codec; ANSI-C code

This document contains an electronic copy of the ANSI-C code for the floating-point adaptive multi-rate wideband codec. This floating-point codec specification is mainly targeted to be used in multimedia applications or in packet-based applications. The bit-exact fixed-point ANSI-C code in 3G TS 26.173 remains the preferred implementation for all applications, but the floating-point codec may be used instead of the fixed-point codec when the implementation platform is better suited for a floating-point implementation. It has been verified that the fixed-point and floating-point codecs interoperate with each other without any artifacts.

The floating-point ANSI-C code in this document is the only standard conforming non-bit-exact implementation of the adaptive multi-rate wideband speech transcoder (3G TS 26.190), voice activity detection (3G TS 26.194), comfort noise generation (3G TS 26.192), and source controlled rate operation (3G TS 26.193). The floating-point code also contains example solutions for substituting and muting of lost frames (3G TS 26.191).



The fixed-point specification in 3G TS 26.173 shall remain the only allowed implementation for the 3G AMR-WB speech service and the use of the floating-point codec is strictly limited to other services.

The floating-point encoder in this document is a non-bit-exact implementation of the fixed-point encoder producing quality indistinguishable from that of the fixed-point encoder. The decoder in this document is functionally a bit-exact implementation of the fixed-point decoder, but the code has been optimized for speed and the standard fixed-point libraries are not used as such.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.204         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26204-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26204-b00.pdf</a> |
| ETSI | TS 126 204                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126204/11.00.00_60/ts_126204v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126204/11.00.00_60/ts_126204v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.204V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.204(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.204(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.204(R11-11.0.0)</a>         |

### 10.5.36 TS 26.226 Cellular text telephone modem; General description

This Technical Specification (TS) concerns the cellular text telephone modem (CTM). CTM allows reliable transmission of a text telephone conversation alternating with a speech conversation through the existing speech communication paths in cellular mobile phone systems. This reliability is achieved by an improved modulation technique, including error protection, interleaving and synchronization. Together with [ITU-T V.18] and [ITU-T T.140], CTM may serve for worldwide applications in text telephony.

A general overview and explanations of possible implementation architectures is provided. CTM is intended for use in end terminals (on the mobile or fixed side) and within the network for the adaptation between CTM and existing traditional text telephone standards.

The CTM transmitter is fully specified and a bit exact C-code reference is provided. An implementation of an example CTM receiver is also described.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.226         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26226-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26226-b00.pdf</a> |
| ETSI | TS 126 226                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126226/11.00.00_60/ts_126226v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126226/11.00.00_60/ts_126226v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.226V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.226(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.226(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.226(R11-11.0.0)</a>         |

### 10.5.37 TS 26.230 Cellular text telephone modem; transmitter bit exact C-code

This Technical Standard (TS) contains an electronic copy of the ANSI-C code for the cellular text telephone modem (CTM) for reliable transmission of text telephone text via the speech channel of cellular networks. While CTM is generally usable with text in UCS coding, the example application linked to CTM in this document is limited to use the signals and character set of the Baudot type.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.230         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26230-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26230-b00.pdf</a> |
| ETSI | TS 126 230                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126230/11.00.00_60/ts_126230v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126230/11.00.00_60/ts_126230v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.230V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.230(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.230(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.230(R11-11.0.0)</a>         |

### 10.5.38 TS 26.231 Cellular text telephone modem; minimum performance requirements

This Technical Standard (TS) describes the minimum performance requirements for the cellular text telephone modem (CTM) for reliable transmission of text telephone text via the speech channel of cellular or PSTN networks. The transmitting parts of the cellular text telephone modem are specified in 3G TS 26.226.

CTM is a general technology, independent of text telephone types. The tests are made only for one specific type of text telephone, the Baudot type. The tests are applicable only to a combination of a Baudot codec and CTM and tests the combined performance. A bit-exact implementation of the CTM transmitter as well as an example implementation of the remaining functions of such a combination are provided in 3G TS 26.230.

The test scripts and test vectors required to perform this testing are included in a supplement, which is located in the zip archive ctm\_testing.zip. The path and file names given in this specification refer to the file structures associated with this supplement. A second supplement (zip archive ctm\_score.zip) provides the scoring program that is described in clause 6 of 3G TS 26.231.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.231         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26231-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26231-b00.pdf</a> |
| ETSI | TS 126 231                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126231/11.00.00_60/ts_126231v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126231/11.00.00_60/ts_126231v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.231V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.231(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.231(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.231(R11-11.0.0)</a>         |

### 10.5.39 TS 26.233 Transparent end-to-end packet-switched streaming service (PSS); General description

The document contains a general description of a transparent packet-switched streaming service in 3G networks. In particular, it defines the usage scenarios, overall high-level end-to-end service concept, and lists terminal-related functional components. It also lists any identified service interworking requirements. PSS protocols and codecs are defined in 3G TS 26.234.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.233 | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26233-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26233-b10.pdf</a> |
| ETSI | TS 126 233          | 11.2.0  | Published      | 2014-03-21  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126233/11.02.00_60/ts_126233v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126233/11.02.00_60/ts_126233v110200p.pdf</a>                             |

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ATIS | ATIS.3GPP.26.233V110-2014  | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.233(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.233(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.233(R11-11.0.0)</a> |

#### 10.5.40 TS 26.234 Transparent end-to-end packet-switched streaming service (PSS); Protocols and codecs

The document specifies the protocols and codecs for the PSS within the 3G system. Protocols for control signalling, capability exchange, scene description, media transport and media encapsulations are specified. Codecs for speech, natural and synthetic audio, video, still images, bitmap graphics, vector graphics, timed text, and text are specified.

The document is applicable to IP-based packet-switched networks.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.234        | 11.3.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26234-b30.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26234-b30.pdf</a> |
| ETSI | TS 126 234                 | 11.3.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126234/11.03.00_60/ts_126234v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126234/11.03.00_60/ts_126234v110300p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.234V1110-2014 | 11.1.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.234(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.234(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.234(R11-11.0.0)</a>         |

#### 10.5.41 TS 26.235 Packet-switched conversational multimedia applications; Default codecs

This document introduces the set of default codecs for packet-switched conversational multimedia applications within the 3G IP multimedia subsystem. Visual and sound communication are specifically addressed. The intended applications are assumed to require low-delay, real-time functionality.

This document is applicable, but not limited, to PS video telephony.

The applicability of this specification to GERAN is FFS.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.235        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26235-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26235-b00.pdf</a> |
| ETSI | TS 126 235                 | 11.0.0  | Published      | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126235/11.00.00_60/ts_126235v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126235/11.00.00_60/ts_126235v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.235V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.235(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.235(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.235(R11-11.0.0)</a>         |

#### 10.5.42 TS 26.236 Packet-switched conversational multimedia applications; Transport protocols

This document introduces the required protocols for packet-switched conversational multimedia applications within 3GPP IP multimedia subsystem. Visual and sound communications are specifically addressed. The intended applications are assumed to require low-delay, real-time functionality.

This document describes the required protocol-related elements for 3G PS multimedia terminal:

- required SDP signalling regarding the media type bit rate, packet size, packet transport frequency;
- usage of RTP payload for media types;
- bandwidth adaptation;
- QoS negotiation.

This document is applicable, but not limited, to packet-switched video telephony.

The applicability of this document to GERAN is FFS.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB-STD-T63-26.236         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26236-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26236-b00.pdf</a> |
| ETSI | TS 126 236                  | 11.0.0  | Published      | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126236/11.00.00_60/ts_126236v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126236/11.00.00_60/ts_126236v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.236V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.236(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.236(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.236(R11-11.0.0)</a>         |

#### 10.5.43 TS 26.237 IP Multimedia Subsystem (IMS) based packet switch streaming (PSS) and multimedia broadcast/multicast service (MBMS) User service; Protocols

This document specifies the usage of IMS protocols to initiate and control PSS and MBMS Streaming User Services based applications. It applies to IMS enabled UEs that also implement PSS and/or MBMS clients. Existing protocols that are used are described in reference to relevant specifications. IMS based MBMS Download User Services are to be defined in a subsequent version of the present document.

The present document is applicable to IP-based packet-switched networks over 3GPP systems.

The present document includes information applicable to network operators, service providers and manufacturers.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB-STD-T63-26.237         | 11.3.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26237-b30.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26237-b30.pdf</a> |
| ETSI | TS 126 237                  | 11.3.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126237/11.03.00_60/ts_126237v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126237/11.03.00_60/ts_126237v110300p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.237V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.237(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.237(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.237(R11-11.0.0)</a>         |

#### 10.5.44 TS 26.243 ANSI-C code for the fixed-point distributed speech recognition extended advanced front-end

The present document contains an electronic copy of the ANSI-C code for DSR extended advanced front-end. The ANSI-C code is necessary for a bit-exact implementation of DSR extended advanced front-end.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.243        | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26243-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26243-b10.pdf</a> |
| ETSI | TS 126 243                 | 11.1.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126243/11.01.00_60/ts_126243v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126243/11.01.00_60/ts_126243v110100p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.243V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.243(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.243(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.243(R11-11.0.0)</a>         |

#### 10.5.45 TS 26.244 Transparent end-to-end packet-switched streaming service (PSS); 3GPP file format (3GP)

This document defines the 3GPP file format (3GP) as an instance of the ISO base media file format. The definition addresses 3GPP specific features such as codec registration and conformance within the MMS and PSS services.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.244        | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26244-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26244-b10.pdf</a> |
| ETSI | TS 126 244                 | 11.1.0  | Published      | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126244/11.01.00_60/ts_126244v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126244/11.01.00_60/ts_126244v110100p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.244V1110-2014 | 11.1.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.244(R11-11.1.0) | 11.1.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.244(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.244(R11-11.1.0)</a>         |

#### 10.5.46 TS 26.245 Transparent end-to-end packet-switched streaming service (PSS); Timed text format

The 3GPP transparent end-to-end packet-switched streaming service (PSS) specification consists of six 3GPP TSs: 3G TS 22.233, 3G TS 26.233, 3G TS 26.234, 3G TS 26.244, 3G TS 26.245 and 3G TS 26.246.

The 3G TS 22.233 contains the service requirements for the PSS. The 3G TS 26.233 provides an overview of the PSS. The 3G TS 26.234 provides the details of protocol and codecs used by the PSS. The 3G TS 26.244 defines the 3GPP file format (3GP) used by the PSS and MMS services. The 3G TS 26.246 defines the 3GPP SMIL language profile. The present document defines the timed text format used by the PSS.

The 3G TS 26.244, 3G TS 26.245 and 3G TS 26.246 start with Release 6. Earlier releases of the 3GPP file format, the timed text format and the 3GPP SMIL language profile can be found in 3G TS 26.234.

Timed text is text that is rendered at the terminal, in synchronization with other timed media such as video or audio. Timed text is used for such applications as closed captioning, titling, and other visual annotation of timed media.

This document defines the timed text format relative to the 3GPP file format. This specification defines the format of timed text in downloaded files.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.245         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26245-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26245-b00.pdf</a> |
| ETSI | TS 126 245                  | 11.0.0  | Published      | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126245/11.00.00_60/ts_126245v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126245/11.00.00_60/ts_126245v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.245V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.245(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-26.245(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-26.245(R11-11.0.0)</a>           |

#### **10.5.47 TS 26.246 Transparent end-to-end packet-switched streaming service (PSS); 3GPP SMIL language profile**

The present document includes the specification of the 3GPP SMIL language profile. The 3GPP SMIL language profile is also referred to as "3GPP PSS SMIL Language Profile" (3G TS 26.234) and also just "3GPP SMIL".

The 3GPP SMIL language profile is based on SMIL 2.0 basic and SMIL scalability framework. It is a clean subset of SMIL 2.0 full profile, and a clear superset of SMIL 2.0 basic.

The 3GPP SMIL language profile is used by the PSS and MMS services.

The 3GPP SMIL language profile is in no way restricted to be used with only these services, but can also be used for other services.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.246         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26246-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26246-b00.pdf</a> |
| ETSI | TS 126 246                  | 11.0.0  | Published      | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126246/11.00.00_60/ts_126246v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126246/11.00.00_60/ts_126246v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.246V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.246(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-26.246(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-26.246(R11-11.0.0)</a>           |

#### **10.5.48 TS 26.247 Transparent end-to-end packet-switched streaming service (PSS); Progressive download and dynamic adaptive streaming over HTTP (3GP-DASH)**

The present document specifies Progressive Download and Dynamic Adaptive Streaming over HTTP (3GP-DASH). This specification is part of Packet-switched Streaming Service (PSS). HTTP-based progressive download and dynamic adaptive streaming are separated from TS 26.234 to differentiate from RTP-based streaming that is maintained in TS 26.234. HTTP-based progressive download and dynamic adaptive streaming may be deployed independently from RTP-based PSS, for example by using standard HTTP/1.1 servers for hosting data formatted as defined in the present document.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.247         | 11.5.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26247-b50.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26247-b50.pdf</a> |
| ETSI | TS 126 247                  | 11.6.0  | Published      | 2014-03-21  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126247/11.06.00_60/ts_126247v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126247/11.06.00_60/ts_126247v110600p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.247V112-0-2014 | 11.2.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.               | Version | Status    | Issued date | Location  |
|-----|----------------------------|---------|-----------|-------------|---|
| TTA | TTAT.3G-26.247(R11-11.2.0) | 11.2.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.247(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.247(R11-11.2.0)</a> |

#### 10.5.49 TS 26.267 eCall data transfer; In-band modem solution; General description

This document specifies the eCall In-band Modem, which is used for reliable transmission of the eCall Minimum Set of Data (MSD) from an In-Vehicle System (IVS) to the Public Safety Answering Point (PSAP) via the voice channel of cellular and PSTN networks.

The European Union eCall requirements, recommendations and guidelines were developed by eSafety Forum, with important additional work produced by ETSI MSG, GSME, 3GPP, and CEN.

Previous work in 3GPP TR 22.967 "Transfer of Emergency Call Data", examined the issues associated with the transmission of emergency call data from a vehicle to a PSAP. This analysis identified that the preferred option be based on an in-band modem solution.

eCall provides reliable full-duplex data communications between IVS and PSAP in addition to emergency voice call (E112) via the cellular network, and can be initiated either automatically or manually. The eCall In-band Modem uses the same voice channel as used for the emergency voice call. eCall allows reliable transmission of MSD alternating with a speech conversation through the existing voice communication paths in cellular mobile phone systems. The expected benefit is that emergency services will be made aware of accidents much more rapidly, will get precise information on location, vehicle type etc. and therefore will be able to reach accident victims faster, with the potential to save many lives annually.

The eCall in-band modem solution described here exceeds the eCall requirements (see Annex A) by means of a combination of innovations in data modulation scheme, synchronization, forward error correction coding, hybrid ARQ (HARQ) and incremental redundancy transmission.

The document provides a general overview and algorithm description of the eCall in-band modems, including IVS modem and PSAP modem, to form the complete full-duplex transmission.

The eCall in-band modems (IVS and PSAP) are fully specified by this TS together with the C-code reference as provided in 3GPP TS 26.268.

3GPP TS 26.269 deals with the conformance testing for eCall modem implementations, and 3GPP TR 26.969 contains a characterization report of the in-band modem.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.267        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26267-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26267-b00.pdf</a> |
| ETSI | TS 126 267                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126267/11.00.00_60/ts_126267v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126267/11.00.00_60/ts_126267v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.267V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.267(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.267(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.267(R11-11.0.0)</a>         |

#### 10.5.50 TS 26.268 eCall data transfer; In-band modem solution; ANSI-C reference code

This document contains an electronic copy of the ANSIC code for the eCall in-band modem solution for reliable transmission of MSD data from IVS to PSAP via the speech channel of cellular networks. The ANSIC code is necessary for a bit exact implementation of the IVS modem and PSAP modem described in 3GPP TS 26.267.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.268        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26268-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26268-b00.pdf</a> |
| ETSI | TS 126 268                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126268/11.00.00_60/ts_126268v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126268/11.00.00_60/ts_126268v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.268V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.268(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-26.268(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-26.268(R11-11.0.0)</a>           |

#### 10.5.51 TS 26.269 eCall data transfer; In-band modem solution; Conformance testing

The document specifies the digital test sequences for the adaptive multi-rate wideband (AMR-WB) speech codec. These sequences test for a bit-exact implementation of the adaptive multi-rate wideband (AMR-WB) speech transcoder (TS 26.190), voice activity detection (TS 26.194), comfort noise (TS 26.192), and source controlled rate operation (TS 26.193).

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.269 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26269-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26269-b00.pdf</a> |
| ETSI | TS 126 269          | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126269/11.00.00_60/ts_126269v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126269/11.00.00_60/ts_126269v110000p.pdf</a>                             |

#### 10.5.52 TS 26.273 ANSI-C code for the fixed-point extended AMR – wideband (AMR-WB+) codec

This document contains an electronic copy of the ANSI-C code for the fixed-point extended adaptive multirate wideband codec. Alternatively, floating-point ANSI-C code is specified in TS 26.304. The floating-point codec/encoder/decoder specified in the present document or the floating-point codec/encoder/decoder specified in TS 26.304 may be used depending on if the implementation platform is better suited for a floating-point or a fixed-point implementation. It has been verified that the fixed-point and floating-point codecs interoperate with each other without any artifacts.

The fixed-point ANSI-C code in the present document defines, besides the floating-point c-code specified in TS 26.304, one valid reference implementation of the extended adaptive multi-rate wideband transcoder (TS 26.290). Standard conformance is enforced by meeting the conformance criteria defined in TS 26.274.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.273        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26273-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26273-b00.pdf</a> |
| ETSI | TS 126 273                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126273/11.00.00_60/ts_126273v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126273/11.00.00_60/ts_126273v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.273V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.273(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-26.273(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-26.273(R11-11.0.0)</a>           |



### 10.5.53 TS 26.274 Audio codec processing functions; Extended adaptive multi-rate - wideband (AMR-WB+) speech codec; Conformance testing

The document specifies test procedures and digital test sequences to be used for conformance testing of implementations of the Extended Adaptive Multi-Rate Wideband (AMR-WB+) codec.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.274 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26274-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26274-b00.pdf</a> |
| ETSI | TS 126 274          | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126274/11.00.00_60/ts_126274v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126274/11.00.00_60/ts_126274v110000p.pdf</a>                             |

### 10.5.54 TS 26.290 Audio codec processing functions; Extended adaptive multi-rate – wideband (AMR-WB+) codec; Transcoding functions

This Telecommunication Standard describes the detailed mapping from input blocks of monophonic or stereophonic audio samples in 16-bit uniform PCM format to encoded blocks and from encoded blocks to output blocks of reconstructed monophonic or stereophonic audio samples. The coding scheme is an extension of the AMR-WB coding scheme (3G TS 26.194) and is referred to as extended AMR-WB or AMR-WB+ codec. It comprises all AMR-WB speech codec modes including VAD/DTX (TS 26.190) as well as extended functionality for encoding general audio signals such as music, speech, mixed, and other signals.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.290        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26290-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26290-b00.pdf</a> |
| ETSI | TS 126 290                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126200_126299/126290/11.00.00_60/ts_126290v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126200_126299/126290/11.00.00_60/ts_126290v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.290V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.290(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.290(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.290(R11-11.0.0)</a>         |

### 10.5.55 TS 26.304 Extended adaptive multi-rate – wideband (AMR-WB+) codec; floatingpoint ANSI-C code

The present document contains an electronic copy of the ANSI-C code for the floating-point extended adaptive multi-rate wideband codec. Alternatively, fixed-point ANSI-C code is specified in 3G TS 26.273. The floating-point codec/encoder/decoder specified in this document or the fixed-point codec/encoder/decoder may be used depending on if the implementation platform is better suited for a floating-point or a fixed-point implementation. It has been verified that the fixed-point and floating-point codecs interoperate with each other without any artifacts.

The floating-point ANSI-C code in the present document defines, besides the fixed-point c-code specified in 3G TS 26.273, one valid reference implementation of the extended adaptive multirate wideband transcoder (3G TS 26.290). Standard conformance is enforced by meeting the conformance criteria defined in 3G TS 26.290.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.304        | 11.0.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26304-b01.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26304-b01.pdf</a> |
| ETSI | TS 126 304                 | 11.0.1  | Published      | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/126300_126399/126304/11.00.01_60/ts_126304v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/126300_126399/126304/11.00.01_60/ts_126304v110001p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.304V1101-2014 | 11.0.1  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.304(R11-11.0.1) | 11.0.1  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.304(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.304(R11-11.0.1)</a>         |

### 10.5.56 TS 26.346 Multimedia broadcast/multicast service (MBMS); Protocols and codecs

This document defines a set of media codecs, formats and transport/application protocols to enable the deployment of MBMS user services either over the MBMS bearer service or other UMTS bearer services within the 3GPP system.

In this version of the specification, only MBMS download and streaming delivery methods are specified. The present document does not preclude the use of other delivery methods.

The present document includes information applicable to network operators, service providers and manufacturers.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.346        | 11.7.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26346-b70.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26346-b70.pdf</a> |
| ETSI | TS 126 346                 | 11.8.0  | Published      | 2014-03-21  | <a href="http://www.etsi.org/deliver/etsi_ts/126300_126399/126346/11.08.00_60/ts_126346v110800p.pdf">http://www.etsi.org/deliver/etsi_ts/126300_126399/126346/11.08.00_60/ts_126346v110800p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.346V1140-2014 | 11.4.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.346(R11-11.4.0) | 11.4.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.346(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.346(R11-11.4.0)</a>         |

### 10.5.57 TS 26.401 General audio codec audio processing functions; Enhanced aacPlus general audio codec; General description

This Telecommunication Standard (TS) describes the detailed mapping from an MPEG-4 bitstream containing enhanced aacPlus coded audio to PCM sample output. The enhanced aacPlus audio codec is based on the AAC, SBR and parametric stereo coding tools defined in the MPEG-4 audio standard. In addition, it includes further tools such as error concealment, spline resampler, and stereo-to-mono downmix.

This Telecommunication Standard (TS) also describes the detailed mapping from a PCM sample input to an MPEG-4 bitstream containing enhanced aacPlus coded audio.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.401        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26401-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26401-b00.pdf</a> |
| ETSI | TS 126 401                 | 11.0.0  | Published      | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126401/11.00.00_60/ts_126401v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126401/11.00.00_60/ts_126401v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.401V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.401(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.401(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.401(R11-11.0.0)</a>         |

#### **10.5.58 TS 26.402 General audio codec audio processing functions; Enhanced aacPlus general audio codec; Additional decoder tools**

This Telecommunication Standard (TS) describes the error concealment algorithm, SBR parameter downmix and output resampling for the enhanced aacPlus general audio codec (3G TS 26.401).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.402        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26402-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26402-b00.pdf</a> |
| ETSI | TS 126 402                 | 11.0.0  | Published      | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126402/11.00.00_60/ts_126402v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126402/11.00.00_60/ts_126402v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.402V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.402(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.402(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.402(R11-11.0.0)</a>         |

#### **10.5.59 TS 26.403 General audio codec audio processing functions; Enhanced aacPlus general audio codec; Encoder specification AAC part**

This Telecommunication Standard (TS) describes the AAC encoder part of the enhanced aacPlus general audio codec (3G TS 26.401).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.403        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26403-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26403-b00.pdf</a> |
| ETSI | TS 126 403                 | 11.0.0  | Published      | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126403/11.00.00_60/ts_126403v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126403/11.00.00_60/ts_126403v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.403V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.403(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.403(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.403(R11-11.0.0)</a>         |

#### **10.5.60 TS 26.404 General audio codec audio processing functions; Enhanced aacPlus general audio codec; Enhanced aacPlus encoder SBR part**

This Telecommunication Standard (TS) describes the SBR encoder part of the enhanced aacPlus general audio codec (3G TS 26.401).

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.404 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26404-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26404-b00.pdf</a> |

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 126 404                 | 11.0.0  | Published | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126404/11.00.00_60/ts_126404v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126404/11.00.00_60/ts_126404v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.26.404V110-2014  | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.404(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.404(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.404(R11-11.0.0)</a> |

### 10.5.61 TS 26.405 General audio codec audio processing functions; Enhanced aacPlus general audio codec; Encoder specification parametric stereo part

This Telecommunication Standard (TS) describes the parametric stereo encoder part of the enhanced aacPlus general audio codec (3G TS 26.401).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.405        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26405-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26405-b00.pdf</a> |
| ETSI | TS 126 405                 | 11.0.0  | Published      | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126405/11.00.00_60/ts_126405v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126405/11.00.00_60/ts_126405v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.405V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.405(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.405(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.405(R11-11.0.0)</a>         |

### 10.5.62 TS 26.406 General audio codec audio processing functions; Enhanced aacPlus general audio codec; Conformance testing

The document specifies the digital test sequences and conformance criteria for the Enhanced aacPlus audio codec.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.406 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26406-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26406-b00.pdf</a> |
| ETSI | TS 126 406          | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126406/11.00.00_60/ts_126406v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126406/11.00.00_60/ts_126406v110000p.pdf</a>                             |

### 10.5.63 TS 26.410 General audio codec audio processing functions; Enhanced aacPlus general audio codec; Floating-point ANSI-C code

The present document contains an electronic copy of the ANSI-C code for the floating-point enhanced aacPlus codec (3G TS 26.401).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.410        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26410-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26410-b00.pdf</a> |
| ETSI | TS 126 410                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126410/11.00.00_60/ts_126410v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126410/11.00.00_60/ts_126410v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.410V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.410(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.410(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.410(R11-11.0.0)</a>         |

#### 10.5.64 TS 26.411 General audio codec audio processing functions; Enhanced aacPlus general audio codec; Fixed-point ANSI-C code

This document contains an electronic copy of the ANSIC code for the fixed-point enhanced aacPlus codec as specified in TS 26.401.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.411        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26411-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26411-b00.pdf</a> |
| ETSI | TS 126 411                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126411/11.00.00_60/ts_126411v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126411/11.00.00_60/ts_126411v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.411V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.411(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.411(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.411(R11-11.0.0)</a>         |

#### 10.5.65 TS 26.412 General audio codec audio processing functions; Source code for 3GP file format

This document contains the source code of the 3GPP file format as specified in TS 26.244.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.412        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26412-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26412-b00.pdf</a> |
| ETSI | TS 126 412                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126412/11.00.00_60/ts_126412v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126412/11.00.00_60/ts_126412v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.412V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.412(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.412(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.412(R11-11.0.0)</a>         |

#### 10.5.66 TS 26.430 Timed graphics

This document defines a timed graphics media type which reuses components from existing media types. A transport system is defined as is a storage format.

The specification is written in a forward-compatible way in order to allow additions of media components and functionality in future releases.

It enhances the user experience by enabling graphics to be encoded as graphics (as opposed to video) and without requiring an umbrella system such as SMIL or DIMS.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-26.430        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26430-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/26/A26430-b00.pdf</a> |
| ETSI | TS 126 430                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/126400_126499/126430/11.00.00_60/ts_126430v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/126400_126499/126430/11.00.00_60/ts_126430v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.26.430V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.430(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.430(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.430(R11-11.0.0)</a>         |

### 10.5.67 TR 26.851 Enhancements to multimedia (EMM); Download delivery enhancements (DDE) and IMS-based PSS and MBMS streaming synchronization enhancements (IPME) aspects

The document contains the results of the work items EMM, EMM-DDE and EMM-IPME. This document does not include the results from the EMM-EFEC work item.

### 10.5.68 TR 26.902 Video codec performance

This document comprises a technical report on video codec performance, for packet-switched video-capable multimedia services standardized by 3GPP.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.902         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26902-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26902-b00.pdf</a> |
| ETSI | TR 126 902                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126902/11.00.00_60/tr_126902v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126902/11.00.00_60/tr_126902v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.902V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.902(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.902(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.902(R11-11.0.0)</a>       |

### 10.5.69 TR 26.903 Improved video support for packet switched streaming (PSS) and multimedia broadcast/multicast service (MBMS) services

This document provides an analysis of the future video capability requirements of streaming and multicast/broadcast services. The purpose of this document is two-fold. On the one hand, it studies the options to upgrade the minimal requirements for video reception and decoding. On the other hand, it studies use cases for support of more advanced UEs. The ultimate target of this study item is to recommend solutions for efficiently providing video support commensurate with UE and user capabilities and needs in PSS and MBMS services.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.903         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26903-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26903-b00.pdf</a> |
| ETSI | TR 126 903                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126903/11.00.00_60/tr_126903v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126903/11.00.00_60/tr_126903v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.903V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.903(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.903(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.903(R11-11.0.0)</a>       |

### 10.5.70 TR 26.904 Improved video coding support

The present document provides an analysis of the future video capability requirements of streaming and multicast/broadcast services. The purpose of the present document is two-fold. On the one hand, it studies the options to upgrade the minimal requirements for video reception and decoding. On the other hand, it studies use cases for support of more advanced UE. The ultimate target of this study item is to recommend solutions for efficiently providing video support commensurate with UE and user capabilities and needs in PSS and MBMS services.

|      | Document No.       | Version | Status         | Issued date | Location  |
|------|--------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.904 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26904-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26904-b00.pdf</a> |



|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TR 126 904                 | 11.0.0  | Published | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126904/11.00.00_60/tr_126904v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126904/11.00.00_60/tr_126904v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.26.904V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.904(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.904(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.904(R11-11.0.0)</a> |

### 10.5.71 TS 26.905 Mobile stereoscopic 3D video

The document provides a study of stereoscopic 3D video services over 3GPP networks and terminals. Technical definitions, use case descriptions, working assumptions, subjective tests results and technical studies are presented.

This document identifies the gaps within the Release 10 3GPP specifications in order to enable the implementation of the mobile 3D video use cases.

|      | Document No.                                | Version | Status         | Issued date | Location  |
|------|---|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.905                          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26905-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26905-b00.pdf</a> |
| ETSI | TR 126 905                                  | 11.0.0  | Published      | 2012-11-21  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126905/11.00.00_60/tr_126905v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126905/11.00.00_60/tr_126905v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.905V1100-2014                  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G- <a href="#">26.905(R11-11.0.0)</a> | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.905(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.905(R11-11.0.0)</a>       |

### 10.4.72 TR 26.911 Codec(s) for circuit-switched multimedia telephony service; Terminal implementer's Guide

This document provides non-mandatory recommendations for the use of the different codec implementation options for the circuit-switched multimedia telephony service which is based on [ITU-T H.324], and in Annex C of [ITU-T H.324] in particular. These Recommendations address issues specific to the 3G operating environment, including guaranteeing sufficient error resilience and interworking between terminals.

The contents of this document are provided for information to assist in high-quality implementation of multimedia telephony terminals. All references to "terminals" in this report are to terminals supporting the Circuit-Switched Multimedia Telephony Service as described in [ITU-T H.324], [ITU-T G.723.1], and [ITU-T H.263].

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.911         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26911-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26911-b00.pdf</a> |
| ETSI | TR 126 911                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126911/11.00.00_60/tr_126911v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126911/11.00.00_60/tr_126911v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.911V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.911(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.911(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.911(R11-11.0.0)</a>       |

### 10.5.73 TR 26.914 Multimedia telephony over IP multimedia subsystem (IMS); Optimization opportunities

This document:

- identifies opportunities for optimization of service quality and efficiency of multimedia telephony over IP in a qualitative sense;
- provides the basis for developing a set of optional backward-compatible tools implementing such optimizations.

The optimized multimedia telephony targets many different system configurations and operating conditions, e.g., GERAN, UTRAN, interworking between GERAN, UTRAN, GAN, and different PLMNs. Of the various use cases for multimedia telephony, the main focus of the present document is on voice calls, but the focus also includes other core media components, such as video. In particular, areas with optimization opportunities include handling of degraded channels, delay jitter, packet losses, efficiency, interworking with other voice systems, etc.

The scope includes proposing solutions that maintain backward compatibility in order to ensure seamless interworking with existing services available in the CS domain, such as CS voice telephony and 3G-324M, as well as with terminals of earlier 3GPP releases. Alignment with legacy media formats avoids transcoding and even allows realizing at least parts of the optimization gains. All optimizations are hence based on the default codecs specified in TS 26.235 and TS 26.141.

The optimizations identified in this document address mainly media transport and signalling. Most of the SIP signalling is out of scope. Issues regarding registration to the network and/or to IMS at power-on or at other occurrences are not included either.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.914         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26914-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26914-b00.pdf</a> |
| ETSI | TR 126 914                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126914/11.00.00_60/tr_126914v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126914/11.00.00_60/tr_126914v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.914V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.914(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.914(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.914(R11-11.0.0)</a>       |

### 10.4.74 TR 26.935 Packet-switched conversational multimedia applications; Performance characterization of default codecs

The present document provides information on the performances of default speech codecs in packet-switched conversational multimedia applications. The codecs under test are AMR-NB (adaptive multi-rate narrowband) and AMR-WB (adaptive multi-rate wideband). In addition, several ITU-T codecs (ITU-T G.723.1, ITU-T G.729, ITU-T G.722 and ITU-T G.711) are included in the testing. Experimental test results from the speech quality testing are reported to illustrate the behaviour of these codecs.

The results give information of the performance of PS conversational multimedia applications under various operating and transmission conditions (e.g., considering radio transmission errors, IP packet losses, end-to-end delays, and several types of background noise). The performance results can be used, e.g., as guidance for network planning and to appropriately adjust the radio network parameters.

|      | Document No.       | Version | Status         | Issued date | Location  |
|------|--------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.935 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26935-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26935-b00.pdf</a> |



|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TR 126 935                 | 11.0.0  | Published | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126935/11.00.00_60/tr_126935v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126935/11.00.00_60/tr_126935v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.26.935V110-2014  | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.935(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.935(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.935(R11-11.0.0)</a> |

### 10.5.75 TR 26.936 Performance characterization of 3GPP audio codecs

This document comprises the Technical Report for the characterization of the 3GPP audio codecs, enhanced aacPlus (*Eaac+*) and extended AMR-WB (*AMR-WB+*), standardized by 3GPP in release 6 for packet-switched streaming service (PSS), multimedia messaging service (MMS), multimedia broadcast and multicast service (MBMS), and IMS messaging service and presence service.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.936         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26936-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26936-b00.pdf</a> |
| ETSI | TR 126 936                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126936/11.00.00_60/tr_126936v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126936/11.00.00_60/tr_126936v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.936V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.936(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.936(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.936(R11-11.0.0)</a>       |

### 10.5.76 TR 26.937 Transparent end-to-end packet-switched streaming service (PSS); RTP usage model

The objective of this document is to characterize the 3GPP packet-switched streaming service (PSS). In doing so, the document considers the impacts of the underlying network configurations and how the streaming mechanism itself could be optimized.

The scope of this document includes consideration of (non-exhaustive):

- trade-off between radio usage efficiency and streaming QoS;
- feedback of network conditions and adaptation of stream and/or the transmission of the stream;
- optimal packetization of the media stream in line with the segmentation within the transport mechanism;
- error robustness mechanisms (such as retransmission).

Client buffering to ease the QoS requirements on the network and enable more flexibility in how the network transport resources are applied.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.937          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26937-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26937-b00.pdf</a> |
| ETSI | TR 126 937                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126937/11.00.00_60/tr_126937v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126937/11.00.00_60/tr_126937v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.937V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.937(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.937(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.937(R11-11.0.0)</a>       |

### 10.5.77 TR 26.943 Recognition performance evaluations of codecs for speech-enabled services (SES)

This technical report provides information on the recognition performance of the DSR extended advanced front end conducted by speech recognition vendors IBM and scansoft for the selection of a codec for speech-enabled services. The performance results are provided both as absolute word error rates for DSR and AMR-NB/AMR-WB on a range of extensive evaluation databases and as relative word error rate reductions when compared to both the AMR-NB and AMR-WB codecs.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.943          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26943-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26943-b00.pdf</a> |
| ETSI | TR 126 943                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126943/11.00.00_60/tr_126943v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126943/11.00.00_60/tr_126943v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.943V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.943(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.943(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.943(R11-11.0.0)</a>       |

### 10.5.78 TR 26.944 End-to-end multimedia services performance metrics

The present document describes and defines performance metrics for popular multimedia services in 3G networks, including packet-switched streaming service (PSS), multimedia broadcast multicast service (MBMS), video telephony (VT), and IP multimedia subsystem service (IMS). The present document has a top-down approach, which starts with the quality of experience (QoE) parameters and metrics, and then provides end-to-end service QoS (ESQoS) and system quality of service (SQoS) parameters and metrics and mapping between these different layers.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.944          | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26944-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26944-b10.pdf</a> |
| ETSI | TR 126 944                  | 11.1.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126944/11.01.00_60/tr_126944v110100p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126944/11.01.00_60/tr_126944v110100p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.944V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.944(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.944(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.944(R11-11.0.0)</a>       |

### 10.5.79 TR 26.946 Multimedia broadcast/multicast service (MBMS) user service guidelines

MBMS user services can be built on top of the MBMS bearer service. This document describes the usage of the two delivery methods, which are defined in TS 26.346. The two delivery methods are streaming and download. Examples of applications using the download delivery method are news and software upgrades. Delivery of live music is an example of an application using the streaming delivery method.

The objective of the document is to provide an overview of the MBMS system, and describes how the MBMS user services use the MBMS bearer services.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.946         | 11.2.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26946-b20.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26946-b20.pdf</a> |
| ETSI | TR 126 946                 | 11.2.0  | Published      | 2014-01-08  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126946/11.02.00_60/tr_126946v110200p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126946/11.02.00_60/tr_126946v110200p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.946V1110-2014 | 11.1.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.946(R11-11.1.0) | 11.1.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.946(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.946(R11-11.1.0)</a>       |

### 10.5.80 TR 26.950 Study on surround sound codec extension for packet switched streaming (PSS) and multimedia broadcast/multicast service (MBMS)

The present document investigates the potential user experience benefits of surround audio in 3GPP services. The investigation will be performed as follows:

- Identify and document relevant use cases for surround sound in 3GPP.
- Define design constraints that would need to be met by a surround audio codec extension method for adoption by 3GPP.
- Identify suitable testing methodology for surround sound in relevant use cases of the PSS and MBMS services.
- Define subjective minimum performance criteria that would need to be met in order to motivate the consideration of a surround audio coding extension for adoption by 3GPP.
- Validate the user benefits and the feasibility of the deployment of surround sound for the PSS and MBMS services according to the defined minimum performance criteria, bit rate and design constraints for all the use cases (such as surround sound speaker set-up and headphone decoding mode) through evaluation of at least one example of surround sound coding methods which may be MPS.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.950         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26950-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26950-b00.pdf</a> |
| ETSI | TR 126 950                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126950/11.00.00_60/tr_126950v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126950/11.00.00_60/tr_126950v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.950V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.950(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.950(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.950(R11-11.0.0)</a>       |

### 10.5.81 TR 26.967 eCall data transfer; In-band modem solution

The European Union eCall requirements, recommendations and guidelines were developed by eSafety Forum, with important additional work produced by ETSI MSG, GSME, 3GPP, and CEN.

Previous work in 3GPP TR 22.967 'Transfer of Emergency Call Data', examined the issues associated with the transmission of emergency call data from a vehicle to a PSAP. This analysis identified that the preferred option be based on an in-band modem solution.

The objective of this work was to examine and describe the in band modem solution (in band modem and any necessary interface to the ME) for eCall. Because eCall is a European regional requirement, it shall not have an impact on the global circulation of terminals. In the interest of not duplicating work, the set of in-band solutions that were considered are those preferred by GSME unless significant improvements are available. The work assessed the suitability of existing 3GPP in-band solutions, e.g., CTM, to satisfy the requirements for eCall.

The present document assesses the suitability of CTM for eCall.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.967         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26967-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26967-b00.pdf</a> |
| ETSI | TR 126 967                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126967/11.00.00_60/tr_126967v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126967/11.00.00_60/tr_126967v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.967V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.967(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.967(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.967(R11-11.0.0)</a>       |

### 10.5.82 TR 26.969 eCall data transfer; In-band modem solution; Characterization report

This document characterizes the performance of the eCall In-band Modem, which is used for reliable transmission of the eCall Minimum Set of Data (MSD) from an In-Vehicle System (IVS) to the Public Safety Answering Point (PSAP) via the voice channel of cellular and PSTN networks.

The European Union eCall requirements, recommendations and guidelines were developed by eSafety Forum, with important additional work produced by ETSI MSG, GSME, 3GPP, and CEN.

Previous work in 3GPP TR 22.967 "Transfer of Emergency Call Data", examined the issues associated with the transmission of emergency call data from a vehicle to a PSAP. This analysis identified that the preferred option be based on an in-band modem solution.

eCall provides reliable full-duplex data communications between IVS and PSAP in addition to emergency voice call (E112) via the cellular network, and can be initiated either automatically or manually. The eCall In-band Modem uses the same voice channel as used for the emergency voice call. eCall allows reliable transmission of MSD alternating with a speech conversation through the existing voice communication paths in cellular mobile phone systems. The expected benefit is that emergency services will be made aware of accidents much more rapidly, will get precise information on location, vehicle type etc. and therefore will be able to reach accident victims faster, with the potential to save many lives annually.

The eCall in-band modems (IVS and PSAP) are fully specified by the 'General description' TS 26.267 together with the C-code reference as provided in 3GPP TS 26.268. 3GPP TS 26.269 deals with the conformance testing for eCall modem implementations.

The document provides a detailed performance characterization of the eCall in-band modem solution. Results from the 3GPP selection tests as well as verification and characterization tests have been collected into this report. It is impossible to test the eCall modem for all conditions that might arise

on the transmission path from the IVS to the PSAP. However, the selected set of test scenarios represents a wide range of conditions that are foreseen to potentially occur in the in-band transmission of eCall data over the radio access and core networks as well as the PSTN.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.969          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26969-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26969-b00.pdf</a> |
| ETSI | TR 126 969                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126969/11.00.00_60/tr_126969v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126969/11.00.00_60/tr_126969v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.969V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.969(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.969(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.969(R11-11.0.0)</a>       |

#### 10.5.83 TR 26.975 Performance characterization of the adaptive multi-rate (AMR) speech codec

This document provides background information on the performances of the adaptive multirate (AMR) speech codec. Experimental test results from the verification and characterization phases of testing are reported to illustrate the behaviour of AMR in multiple operational conditions.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.975          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26975-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26975-b00.pdf</a> |
| ETSI | TR 126 975                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126975/11.00.00_60/tr_126975v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126975/11.00.00_60/tr_126975v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.975V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.975(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.975(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.975(R11-11.0.0)</a>       |

#### 10.5.84 TR 26.976 Performance characterization of the adaptive multi-rate wideband (AMRWB) speech codec

This document provides information of the AMR wideband (AMR-WB) characterization, verification and selection phases. Experimental test results from the speech quality-related testing are reported to illustrate the behaviour of the AMR-WB codec. Additional information is provided, e.g., on implementation complexity of the AMR-WB codec. Also the verification results for the floating-point version of the AMR-WB codec (3G TS 26.204) are presented.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.976          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26976-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26976-b00.pdf</a> |
| ETSI | TR 126 976                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126976/11.00.00_60/tr_126976v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126976/11.00.00_60/tr_126976v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.976V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.976(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.976(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.976(R11-11.0.0)</a>       |

### 10.5.85 TR 26.978 Results of the adaptive multi-rate (AMR) noise suppression selection phase

The present document provides background information on the performance of the six candidates which were proposed as solutions for publication of an example noise suppression solution for application to the GSM adaptive multi-rate (AMR) speech codec. Experimental test results from the speech quality-related testing are reported to illustrate the behaviour of the candidate algorithms in multiple operational conditions. Additional information is also provided covering data not necessarily directly associated with speech quality (such as complexity, delay, effect on voice activity factor).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-26.978         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26978-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/26/A26978-b00.pdf</a> |
| ETSI | TR 126 978                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/126900_126999/126978/11.00.00_60/tr_126978v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/126900_126999/126978/11.00.00_60/tr_126978v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.26.978V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-26.978(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.978(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-26.978(R11-11.0.0)</a>       |

## 10.6 27-series, Data

### 10.6.1 TS 27.001 General on terminal adaptation functions (TAF) for mobile stations (MS)

The present document is based on the principles of terminal adaptor functions presented in the ITU-T I-series of Recommendations ([ITU-T I.460] to [ITU-T I.463]).

The PLMN supports a wide range of voice and non-voice services in the same network. In order to enable non-voice traffic in the PLMN, there is a need to connect various kinds of terminal equipment to the mobile termination (MT). The target of the present document is to outline the functions needed for the terminal adaptation.

The bearer services are described in 3GPP TS 22.002 and the general network configuration is described in 3GPP TS 23.002. The PLMN access reference configuration is defined in 3GPP TS 23.002. The various connection types used in the A/Gb mode or GERAN Iu mode PLMN are presented in [3GPP TR 21.905] and [3GPP TS 29.990]. For support of data services between a PLMN and other networks, see [3GPP TS 29.007].

The present document is valid for a 2nd generation PLMN (A/Gb mode) as well as for a 3rd generation PLMN (Iu mode). If text applies only for one of these systems, it is explicitly mentioned by using the terms "A/Gb mode" and "Iu mode". If text applies to both of the systems, but a distinction between the ISDN/PSTN and the PLMN is necessary, the term "PLMN" is used.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 127 001                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/127000_127099/127001/11.00.00_60/ts_127001v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/127000_127099/127001/11.00.00_60/ts_127001v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.27.001V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-27.001(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.001(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.001(R11-11.0.0)</a> |
| TTC  | TS-3GA-27.001(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gppts2013/TS/TS-3GA-27.001(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gppts2013/TS/TS-3GA-27.001(Rel11)v11.0.0.pdf</a>                         |



### 10.6.2 TS 27.002 Terminal adaptation functions (TAF) for services using asynchronous bearer capabilities

The document defines the interfaces and terminal adaptation functions (TAFs) integral to a mobile termination (MT) which enable the use of asynchronous bearer services in the PLMN and the attachment of asynchronous terminals to a MT (see TS 44.002 and TS 23.101).

The general aspects of terminal adaptation functions are contained in TS 27.001.

This document covers support of these services for the following interfaces and procedures:

- ITU-T V.14 procedures;
- ITU-T V.21 DTE/DCE interface;
- ITU-T V.22 *bis* DTE/DCE interface;
- ITU-T V.32 DTE/DCE procedures;
- ITU-T I.420 S interface;
- ITU-T V.250 signalling procedures.

The asynchronous data rates between the MT and the IWF are defined in TS 22.002.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 127 002                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/127000_127099/127002/11.00.00_60/ts_127002v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/127000_127099/127002/11.00.00_60/ts_127002v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.27.002V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-27.002(R11-11.0.1)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.002(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.002(R11-11.0.0)</a> |
| TTC  | TS-3GA-27.002(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-27.002(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-27.002(Rel11)v11.0.0.pdf</a>                           |

### 10.6.3 TS 27.003 Terminal adaptation functions (TAFs) for services using synchronous bearer capabilities

The document defines terminal adaptation functions (TAFs) which are integrated in a mobile termination (MT) and which enable the use of synchronous bearer services in the PLMN and the attachment of synchronous terminals to an MT (see TS 24.002). For the case where asynchronous terminals are attached to the TAF when using synchronous bearer services in the PLMN, the reader is referred to TS 27.002 for the asynchronous MT-TAF interface specifics and to this document for synchronous bearer service specifics on the TAF-IWF interface. The general aspects of terminal adaptation functions are contained in specification TS 27.001. This document covers support of synchronous data services (see TS 22.002) for the following interfaces and procedures:

- ITU-T V.22 DTE/DCE interface;
- ITU-T V.22 *bis* DTE/DCE interface;
- ITU-T V.26 *ter* DTE/DCE interface;
- ITU-T X.21 *bis* DTE/DCE interface;
- ITU-T X.32 procedure;
- ITU-T V.25 *bis* procedure.

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 127 003   | 11.0.0  | Published | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/127000_127099/127003/11.00.00_60/ts_127003v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/127000_127099/127003/11.00.00_60/ts_127003v110000p.pdf</a> |

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.27.003V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-27.003(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-27.003(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-27.003(R11-11.0.0)</a> |
| TTC  | TS-3GA-27.003(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-27.003(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-27.003(Rel11)v11.0.0.pdf</a>                         |

#### **10.6.4 TS 27.005 Use of data terminal equipment – data circuit-terminating equipment (DTE – DCE) interface for short message service (SMS) and cell broadcast service (CBS)**

This Technical Specification (TS) defines three interface protocols for control of SMS functions within a GSM/UMTS mobile telephone from a remote terminal via an asynchronous interface.

This document defines a binary protocol ("Block Mode"). The protocol includes error protection and is suitable for use where the link may not be completely reliable. It will be of particular use where control of remote devices is required. Efficient transfer of binary encoded user data is possible.

This document defines a character-based interfaced based on "AT" commands ("Text Mode"). This mode is suitable for unintelligent terminals or terminal emulators, and for application software built on command structures like those defined in [ITU-T V.25 *ter*]. Some of the commands defined in clause 3 will also be useful for implementations of clause 2 and/or clause 4, for example enabling an indication of incoming SMS messages.

This document defines a character-based interface with hex-encoded binary transfer of message blocks ("PDU Mode"). This mode is suitable for software drivers based on AT command structures which do not understand the content of the message blocks and can only pass them between the MT and "upper level" software resident in the TE.

In all three modes, the terminal is considered to be in control for SMS/CBS transactions.

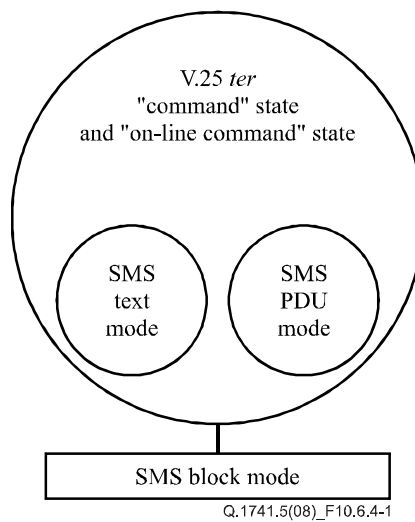
This specification considers the mobile termination to be a single entity. Other 3G/GSM Technical Specifications describe the split of functionality between the mobile equipment and (U)SIM.

The three "modes" referred to above are represented in Figure 10.6.4-1.

The "Block mode" is a self-contained mode in its own right, and when entered, control will remain within that mode until the procedures to exit the mode are executed, after which control is returned to the ITU-T V.25 *ter* "command" state or "on-line command" state.

The "Text" and "PDU" modes are not in themselves ITU-T V.25 *ter* states but are simply sets of commands that will operate in either the ITU-T V.25 *ter* "command" state or "on-line command" state. The "Text" and "PDU" modes are transitory states and after each operation, control is automatically returned to the ITU-T V.25 *ter* "command" state or "on-line command" state. Whilst in the ITU-T V.25 *ter* command state, the MS is available to handle incoming and outgoing calls such as data or facsimile.





**Figure 10.6.4-1 – Block, text and PDU modes**

In the "Block mode" and "PDU" mode, a mobile is not permitted to modify any component of an SMS/CBS message received from the air interface or an SMS message received from a TE, before passing it on, except where TS 23.040 or TS 23.041 defines a "component modification facility" and where this "component modification facility" is supported by the mobile. In the text mode, the mobile may be unable to display characters coded in particular coding schemes. In this case, the mobile shall behave as described in TS 23.038 and assume the coding scheme to be the GSM 7-bit default alphabet.

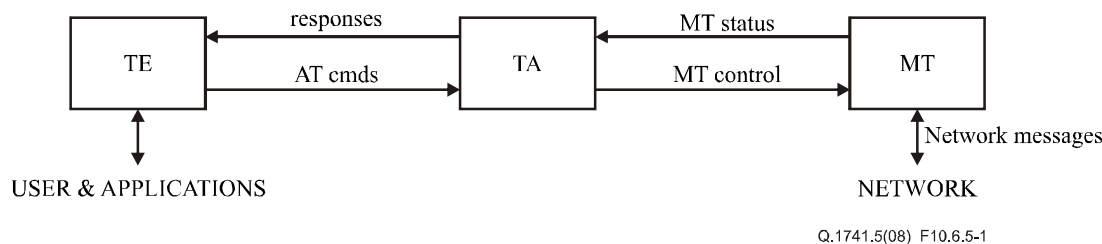
|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-27.005        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/27/A27005-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/27/A27005-b00.pdf</a> |
| ETSI | TS 127 005                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/127000_127099/127005/11.00.00_60/ts_127005v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/127000_127099/127005/11.00.00_60/ts_127005v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.27.005V1100-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-27.005(R11-11.0.1) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.005(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.005(R11-11.0.0)</a>         |

### 10.6.5 TS 27.007 AT command set for user equipment (UE)

The document specifies a profile of AT commands and recommends that this profile be used for controlling mobile termination (MT) functions and GSM/UMTS network services from a terminal equipment (TE) through terminal adaptor (TA). The command prefix +C is reserved for digital cellular in [ITU-T V.25 *ter*]. This document has also the syntax details used to construct these extended GSM/UMTS commands. Commands from [ITU-T V.25 *ter*] and existing digital cellular standards (TIA IS-99 and TIA IS-135) are used whenever applicable. Some of the new commands are defined in such way that they can be easily applied to MT of networks other than GSM/UMTS. [ITU-T T.31] and [ITU-T T.32] fax AT commands may be used for GSM/UMTS fax transmission from TE. GSM/UMTS short message service AT commands are defined in 3G TS 27.005. GPRS AT commands are defined in clause 10 of this specification. This document assumes an abstract architecture comprising a TE (e.g., a computer) and a MT interfaced by a TA (see Figure 10.6.5-1). The span of control of the defined commands should allow handling any physical implementation that this abstract architecture may lead to:

- TA, MT and TE as three separate entities;
- TA integrated under the MT cover, and the TE implemented as a separate entity;
- TA integrated under the TE cover, and the MT implemented as a separate entity;

- TA and MT integrated under the TE cover as a single entity.



**Figure 10.6.5-1 – Set-up**

The commands described in this document may be observed on the link between the TE and the TA. However, most of the commands retrieve information about the MT, not about the TA.

Interface between TE and TA is intended to operate over existing serial [ITU-T V.24] cables, infrared link, and all link types with similar behaviour. For correct operation, many of the defined commands require eight-bit data, and therefore it is recommended that TETA link is set to eight bits/byte mode. (For infrared operation implementation, refer to informative references IrDA. For embedding AT commands and data during on-line data state, refer to TIA IS-617 [ITU-T V.80]). Interface between TA and MT is dependent on the interface in the MT.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-27.007        | 11.8.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/27/A27007-b80.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/27/A27007-b80.pdf</a> |
| ETSI | TS 127 007                 | 11.8.0  | Published      | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/127000_127099/127007/11.08.00_60/ts_127007v110800p.pdf">http://www.etsi.org/deliver/etsi_ts/127000_127099/127007/11.08.00_60/ts_127007v110800p.pdf</a>                             |
| ATIS | ATIS.3GPP.27.007V1160-2014 | 11.6.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-27.007(R11-11.6.0) | 11.6.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.007(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.007(R11-11.6.0)</a>         |

#### 10.6.6 TS 27.010 Terminal equipment to user equipment (TE-UE) multiplexer protocol

The document is to define a multiplexing protocol between a UE and a TE. The multiplexing protocol can be used to send any data, for instance, voice, SMS, USSD, fax, etc.

The document describes the protocol, but not the commands or data transported with it.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-27.010        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/27/A27010-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/27/A27010-b00.pdf</a> |
| ETSI | TS 127 010                 | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/127000_127099/127010/11.00.00_60/ts_127010v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/127000_127099/127010/11.00.00_60/ts_127010v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.27.010V1100-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-27.010(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.010(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.010(R11-11.0.0)</a>         |

#### 10.6.7 TS 27.060 Packet domain; Mobile station (MS) supporting packet-switched services

The document defines the requirements for TE-MT interworking over the R-reference point for the packet domain, within the GSM and 3G systems. It is up to the manufacturer how to implement the

various functions but this document and existing Technical Specifications 27.001, 27.002, and 27.003 shall be followed where applicable.

It is the intention that this document shall remain as the specification to develop a MS for the support of packet-switched services and its text includes references to UMTS/GSM standards.

The UMTS/GSM PLMN supports a wide range of voice and non-voice services in the same network. In order to enable non-voice traffic in the PLMN, there is a need to connect various kinds of terminal equipments to the mobile station (MS). This document defines the requirements for TEMT interworking over the R-reference point for the packet domain, including the protocols and signalling needed to support packet-switched services, as defined in TS 22.060 and TS 23.060.

|      | Document No.                | Version | Status    | Issued date | Location  |
|------|-----------------------------|---------|-----------|-------------|---|
| ETSI | TS 127 060                  | 11.0.0  | Published | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/127000_127099/127060/11.00.00_60/ts_127060v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/127000_127099/127060/11.00.00_60/ts_127060v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.27.060V110-0-2014 | 11.0.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-27.060(R11-11.0.0)  | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.060(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-27.060(R11-11.0.0)</a> |

## 10.7 28-series, Signalling protocols - (RSS-CN) and OAM&P and Charging

### 10.7.1 TS 28.062 In-band tandem free operation (TFO) of speech codecs; Service description; Stage 3

The document contains the service description for the in-band signalling protocol for the support of tandem free operation of speech codecs in GSM and GSM-evolved 3G systems.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-28.062         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/28/A28062-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/28/A28062-b00.pdf</a> |
| ETSI | TS 128 062                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/128000_128099/128062/11.00.00_60/ts_128062v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128000_128099/128062/11.00.00_60/ts_128062v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.28.062V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.062(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.062(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.062(R11-11.0.0)</a>         |

### 10.7.2 TS 28.621 Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Requirements

The document defines, in addition to the requirements defined in 3GPP TS 32.101, TS 32.102 and TS 32.600, the requirements for the present IRP: Generic Network Resource Model IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 621                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128621/11.00.00_60/ts_128621v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128621/11.00.00_60/ts_128621v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.621V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.621(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.621(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.621(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.621(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.621(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.621(Rel11)v11.0.0.pdf</a>                           |

### 10.7.3 TS 28.622 Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)

The document specifies the Generic network resource information that can be communicated between an IRP Agent and an IRP Manager for telecommunication network management purposes, including management of converged networks.

This document specifies the semantics of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

This document supports the Federated Network Information Model (FNIM) concept described in that the relevant Information Object Class (IOC)s defined in this specification are directly or indirectly inherited from those specified in the Umbrella Information Model (UIM).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 622                  | 11.0.1  | Published    | 2013-04-05  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128622/11.00.01_60/ts_128622v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128622/11.00.01_60/ts_128622v110001p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.622V1101-2014  | 11.0.1  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.622(R11-11.0.1)  | 11.0.1  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.622(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.622(R11-11.0.1)</a> |
| TTC  | TS-3GA-28.622(Rel11)v11.0.1 | 11.0.1  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.622(Rel11)v11.0.1.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.622(Rel11)v11.0.1.pdf</a>                           |

### 10.7.4 TS 28.623 Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions

The TS 28.62x-series (Generic Network Resources IRP) define an Integration Reference Point (IRP) through which an "IRP Agent" (typically an Element Manager or Network Element) can communicate Network Management related information to one or several "IRP Managers" (typically Network Managers).

This TS-family specifies a generic Network Resource Model, NRM (also referred to as a Management Information Model – MIM) with definitions of Information Object Classes (IOCs) and Managed Object Classes (MOCs).

The document specifies the Solution Set definition for the Generic NRM IRP.

The Solution Set definition is related to 3GPP TS 28.622 V11.0.X.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 623                  | 11.1.0  | Published    | 2013-07-11  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128623/11.01.00_60/ts_128623v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128623/11.01.00_60/ts_128623v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.623V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.623(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.623(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.623(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.623(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.623(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.623(Rel11)v11.1.0.pdf</a>                           |

### 10.7.5 TS 28.624 Telecommunication management; State management data definition Integration Reference Point (IRP); Requirements

The document defines, in addition to the requirements defined in 3GPP TS 32.101, 3GPP TS 32.102 and 3GPP TS 32.600, the requirements for the present IRP: State Management Data Definition.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 624                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128624/11.00.00_60/ts_128624v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128624/11.00.00_60/ts_128624v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.624V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.624(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.624(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.624(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.624(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.624(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.624(Rel11)v11.0.0.pdf</a>                           |

### **10.7.6 TS 28.625 Telecommunication management; State management data definition Integration Reference Point (IRP); Information Service (IS)**

The document specifies the State Management Data Definition IRP Information Service that can be communicated between an IRP Agent and an IRP Manager for telecommunication network management purposes, including management of converged networks.

The document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 625                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128625/11.00.00_60/ts_128625v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128625/11.00.00_60/ts_128625v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.625V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.625(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.625(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.625(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.625(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.625(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.625(Rel11)v11.0.0.pdf</a>                           |

### **10.7.7 TS 28.626 Telecommunication management; State management data definition Integration Reference Point (IRP); Solution Set (SS) definitions**

The document specifies the Solution Set (SS) definitions for the IRP whose semantics is specified in State Management Data Definition IRP: Information Service (IS) (3GPP TS 28.625).

This Solution Set definitions specification is related to 3GPP TS 28.625 V11.0.X.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 626                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128626/11.00.00_60/ts_128626v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128626/11.00.00_60/ts_128626v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.626V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.626(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.626(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.626(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.626(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.626(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.626(Rel11)v11.0.0.pdf</a>                           |

### 10.7.8 TS 28.627 Telecommunication management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP); Requirements

The document describes concept and requirements of SON Policy management for Self-Optimization and SON coordination.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 627                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128627/11.00.00_60/ts_128627v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128627/11.00.00_60/ts_128627v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.28.627V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.627(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-28.627(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-28.627(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.627(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.627(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.627(Rel11)v11.0.0.pdf</a>                         |

### 10.7.9 TS 28.628 Telecommunication management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)

The document is part of an Integration Reference Point (IRP) named Self Organizing Networks (SON) Policy Network Resource Model (NRM) IRP, through which an IRP Agent can communicate management information to one or several IRP Managers concerning SON policies. The SON policy NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the protocol neutral SON policy NRM IRP: Information Service (IS).

In order to access the information defined by this NRM, an Interface IRP such as the "Basic CM IRP" is needed (3GPP TS 32.602). However, which Interface IRP is applicable is outside the scope of the present document.

The document also contains stage 2 descriptions for those functionalities for the Self-Optimization OAM and Energy Saving Management.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 628                  | 11.3.0  | Published    | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128628/11.03.00_60/ts_128628v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128628/11.03.00_60/ts_128628v110300p.pdf</a>                   |
| ATIS | ATIS.3GPP.28.628V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.628(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-28.628(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-28.628(R11-11.1.0)</a> |
| TTC  | TS-3GA-28.628(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.628(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.628(Rel11)v11.3.0.pdf</a>                         |

### 10.7.10 TS 28.629 Telecommunication management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions

The document specifies the Solution Set definitions for the IRP whose semantics is specified in 3GPP TS 28.628 SON Policy Network Resource Model IRP: Information Service (IS).

This Solution Set definitions specification is related to 3GPP TS 28.628 V11.0.X .



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 629                  | 11.2.0  | Published    | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128629/11.02.00_60/ts_128629v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128629/11.02.00_60/ts_128629v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.629V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.629(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.629(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.629(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.629(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.629(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.629(Rel11)v11.2.0.pdf</a>                           |

#### **10.7.11 TS 28.631 Telecommunication management; Inventory Management (IM) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The document defines, in addition to the requirements defined in 3GPP TS 32.101, 3GPP TS 32.102 and 3GPP TS 32.600, the requirements for the present IRP: Inventory Management (IM) Network Resource Model (NRM) IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 631                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128631/11.00.00_60/ts_128631v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128631/11.00.00_60/ts_128631v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.631V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.631(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.631(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.631(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.631(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.631(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.631(Rel11)v11.0.0.pdf</a>                           |

#### **10.7.12 TS 28.632 Telecommunication management; Inventory Management (IM) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

The document specifies the Inventory Management (IM) Network Resource Model (NRM) that can be communicated between an IRP Agent and an IRP Manager for telecommunication network management purposes, including management of converged networks.

The document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 632                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128632/11.00.00_60/ts_128632v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128632/11.00.00_60/ts_128632v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.632V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.632(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.632(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.632(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.632(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.632(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.632(Rel11)v11.0.0.pdf</a>                           |

### 10.7.13 TS 28.633 Telecommunication management; Inventory Management (IM) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions

The document provides the NRM-specific part related to the Inventory Management NRM IRP IS in 3GPP TS 28.632 of solution set definitions.

This Solution Set definitions specification is related to 3GPP TS 28.632 V 11.0.X.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 633                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128633/11.00.00_60/ts_128633v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128633/11.00.00_60/ts_128633v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.633V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.633(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.633(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.633(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.633(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.633(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.633(Rel11)v11.0.0.pdf</a>                           |

### 10.7.14 TS 28.651 Telecommunication management; Universal Terrestrial Radio Access Network (UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements

The document defines, in addition to the requirements defined in 3GPP TS 32.101, TS 32.102 and TS 32.600, the requirements for the present IRP: Universal Terrestrial Radio Access Network (UTRAN) Network Resource Model (NRM).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 651                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128651/11.00.00_60/ts_128651v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128651/11.00.00_60/ts_128651v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.651V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.651(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.651(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.651(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.651(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.651(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.651(Rel11)v11.0.0.pdf</a>                           |

### 10.7.15 TS 28.652 Telecommunication management; Universal Terrestrial Radio Access Network (UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)

The document specifies the UTRAN Network Resource Model (NRM) that can be communicated between an IRP Agent and an IRP Manager for telecommunication network management purposes, including management of converged networks.

The document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 128 652                 | 11.2.0  | Published | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128652/11.02.00_60/ts_128652v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128652/11.02.00_60/ts_128652v110200p.pdf</a> |
| ATIS | ATIS.3GPP.28.652V1110-2014 | 11.1.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-28.652(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.652(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.652(R11-11.1.0)</a> |
| TTC | TS-3GA-28.652(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.652(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.652(Rel11)v11.2.0.pdf</a>                           |

#### **10.7.16 TS 28.653 Telecommunication management; Universal Terrestrial Radio Access Network (UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document specifies the Solution Sets for the UTRAN NRM IRP.

This Solution Set specification is related to 3GPP TS 28.652 V11.1.X.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 653                  | 11.2.1  | Published    | 2014-02-11  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128653/11.02.01_60/ts_128653v110201p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128653/11.02.01_60/ts_128653v110201p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.653V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.653(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.653(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.653(R11-11.1.0)</a> |
| TTC  | TS-3GA-28.653(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.653(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.653(Rel11)v11.2.0.pdf</a>                           |

#### **10.7.17 TS 28.657 Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The following documents contain provisions which, through reference in this text, constitute provisions of the document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[3GPP TS 32.101]: "Telecommunication management; Principles and high level requirements".

[3GPP TS 32.102]: "Telecommunication management; Architecture".

[3GPP TS 32.600]: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

[3GPP TS 32.150]: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".

[3GPP TS 21.905]: "Vocabulary for 3GPP Specifications".

[3GPP TS 32.511]: "Telecommunication management; Automatic Neighbour Relation (ANR) management; Concepts and requirements".

[3GPP TS 32.107]: "Telecommunication management; Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM)".

[3GPP TS 28.620]: "Telecommunication management; Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM) Umbrella Information Model (UIM)".

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 657                  | 11.0.0  | Published    | 2013-02-26  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128657/11.00.00_60/ts_128657v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128657/11.00.00_60/ts_128657v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.657V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.657(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.657(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.657(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.657(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.657(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.657(Rel11)v11.0.0.pdf</a>                           |

#### **10.7.18 TS 28.658 Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

The document specifies the E-UTRAN network resource information that can be communicated between an IRPAgent and an IRPManager for telecommunication network management purposes, including management of converged networks.

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

The E-UTRAN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the protocol neutral E-UTRAN NRM IRP: Information Service (IS). It reuses relevant parts of the Generic NRM IRP: IS in 3GPP TS 28.622, either by direct reuse or sub-classing, and in addition to that defines E-UTRAN specific Information Object Classes.

In order to access the information defined by this NRM, an Interface IRP such as the "Basic CM IRP" is needed (3GPP TS 32.602). However, which Interface IRP is applicable is outside the scope of the document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 658                  | 11.3.0  | Published    | 2014-01-13  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128658/11.03.00_60/ts_128658v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128658/11.03.00_60/ts_128658v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.658V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.658(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.658(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.658(R11-11.1.0)</a> |
| TTC  | TS-3GA-28.658(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-28.658(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-28.658(Rel11)v11.3.0.pdf</a>                           |

#### **10.7.19 TS 28.659 Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document is part of an Integration Reference Point (IRP) named E-UTRAN Network Resource Model (NRM) IRP, through which an IRPAgent can communicate configuration management information to one or several IRPManagers concerning E-UTRAN resources. The E-UTRAN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the Solution Sets for the E-UTRAN NRM IRP.

This Solution Set specification is related to 3GPP TS 28.658 V11.1.X .

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 659                  | 11.3.0  | Published    | 2014-01-13  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128659/11.03.00_60/ts_128659v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128659/11.03.00_60/ts_128659v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.659V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.659(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.659(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.659(R11-11.1.0)</a> |
| TTC  | TS-3GA-28.659(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-28.659(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-28.659(Rel11)v11.3.0.pdf</a>                           |

#### **10.7.20 TS 28.661 Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The document defines, in addition to the requirements defined in 3GPP TS 32.101, 3GPP TS 32.102 and 3GPP TS 32.600, the Requirements for the common and generic radio access network equipments that may be shared between BSS in GSM, UTRAN and E-UTRAN.

The document can be used also for managing the equipment that can be shared by several RATs, even in the cases when it is not being shared.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 661                  | 11.1.0  | Published    | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128661/11.01.00_60/ts_128661v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128661/11.01.00_60/ts_128661v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.661V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.661(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.661(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.661(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.661(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.661(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.661(Rel11)v11.1.0.pdf</a>                           |

#### **10.7.21 TS 28.662 Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

The document specifies the Generic Radio Access Network (RAN) network resource model (NRM) that can be communicated between an IRP Agent and an IRP Manager for telecommunication network management purposes, including management of converged networks.

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

This document specifies equipment that may be shared between BSS in GSM, UTRAN and E-UTRAN.

In order to access the information defined by this NRM, an Interface IRP such as the "Basic CM IRP" is needed (3GPP TS 32.602). However, which Interface IRP is applicable is outside the scope of the document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 662                  | 11.1.0  | Published    | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128662/11.01.00_60/ts_128662v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128662/11.01.00_60/ts_128662v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.662V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.662(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.662(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.662(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.662(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.662(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.662(Rel11)v11.1.0.pdf</a>                           |

### 10.7.22 TS 28.663 Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions

The document is part of an Integration Reference Point (IRP) named Generic Radio Access Network (RAN) Network Resource Model (NRM) IRP, through which an `IRPAgent` can communicate configuration management information to one or several `IRPManagers` concerning Generic RAN resources. The Generic RAN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the Solution Sets for the Generic RAN NRM IRP.

This Solution Set specification is related to 3GPP TS 28.662 V11.0.X .

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 663                  | 11.1.0  | Published    | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128663/11.01.00_60/ts_128663v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128663/11.01.00_60/ts_128663v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.663V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.663(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.663(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.663(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.663(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.663(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.663(Rel11)v11.1.0.pdf</a>                           |

### 10.7.23 TS 28.671 Telecommunication management; Home Node B (HNB) Subsystem (HNS) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements

The document describes the requirements for Home NodeB Subsystem (HNS), which includes Home NodeB (HNB) and Home NodeB gateway (HNB GW). The HNS NRM IRP requirements are targeted on both HNB and HNB GW NRM.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 671                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128671/11.00.00_60/ts_128671v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128671/11.00.00_60/ts_128671v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.671V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.671(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.671(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.671(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.671(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.671(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.671(Rel11)v11.0.0.pdf</a>                           |

#### **10.7.24 TS 28.672 Telecommunication management; Home Node B (HNB) Subsystem (HNS) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

The document specifies the Home Node B Subsystem (HNS) Network Resource Model (NRM) IRP (that can be communicated between an IRPAgent and an IRPManager for telecommunication network management purposes, including management of converged networks).

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

In order to access the information defined by this NRM, an IRP IS is needed, such as the Basic CM IRP IS (3GPP TS 32.602) or the Bulk CM IRP IS (3GPP TS 32.612). However, which IS that is applicable is outside the scope of the document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 672                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128672/11.00.00_60/ts_128672v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128672/11.00.00_60/ts_128672v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.672V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.672(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.672(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.672(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.672(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.672(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.672(Rel11)v11.0.0.pdf</a>                           |

#### **10.7.25 TS 28.673 Telecommunication management; Home Node B (HNB) Subsystem (HNS) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document is part of an Integration Reference Point (IRP) named HNS Network Resource Model (NRM) IRP, through which an IRPAgent can communicate configuration management information to one or several IRPManagers concerning HNS resources. The HNS NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the Solution Sets for the HNS NRM IRP.

This specification is related to 3GPP TS 28.672V11.0.X.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 673                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600_128699/128673/11.00.00_60/ts_128673v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600_128699/128673/11.00.00_60/ts_128673v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.673V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.673(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.673(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.673(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.673(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.673(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.673(Rel11)v11.0.0.pdf</a>                           |

### **10.7.26 TS 28.674 Telecommunication management; Home enhanced Node B (HeNB) Subsystem (HeNS) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The document describes the requirements for Home eNodeB Subsystem (HeNS), which include Home eNodeB (HeNB) and Home eNodeB gateway (HeNB GW). The HeNS NRM IRP requirements are targeted on both HeNB and HeNB GW NRM.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 674                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600/128699/128674/11.00.00_60/ts_128674v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600/128699/128674/11.00.00_60/ts_128674v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.674V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.674(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.674(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.674(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.674(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.674(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.674(Rel11)v11.0.0.pdf</a>                           |

### **10.7.27 TS 28.675 Telecommunication management; Home enhanced Node B (HeNB) Subsystem (HeNS) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

The document specifies the Home enhanced Node B (HeNB) Subsystem (HeNS) Network Resource Model (NRM) IRP that can be communicated between an IRPAgent and an IRPManager for telecommunication network management purposes, including management of converged networks.

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

In order to access the information defined by this NRM, an IRP IS is needed, such as the Basic CM IRP IS (3GPP TS 32.602) or the Bulk CM IRP IS (3GPP TS 32.612). However, which IS that is applicable is outside the scope of the present document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 675                  | 11.0.0  | Published    | 2013-01-23  | <a href="http://www.etsi.org/deliver/etsi_ts/128600/128699/128675/11.00.00_60/ts_128675v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600/128699/128675/11.00.00_60/ts_128675v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.675V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.675(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.675(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.675(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.675(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.675(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.675(Rel11)v11.0.0.pdf</a>                           |

### **10.7.28 TS 28.676 Telecommunication management; Home enhanced Node B (HeNB) Subsystem (HeNS) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document is part of an Integration Reference Point (IRP) named HeNS Network Resource Model (NRM) IRP, through which an IRPAgent can communicate configuration management information to one or several IRPManagers concerning HeNS resources. The HeNS NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the Solution Sets for the HeNS NRM IRP.



This Solution Set specification is related to 3GPP TS 28.675 V11.0.X.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 676                  | 11.0.0  | Published    | 2013-02-26  | <a href="http://www.etsi.org/deliver/etsi_ts/128600/128699/128676/11.00.00_60/ts_128676v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128600/128699/128676/11.00.00_60/ts_128676v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.28.676V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.676(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-28.676(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-28.676(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.676(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.676(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.676(Rel11)v11.0.0.pdf</a>                         |

### **10.7.29 TS 28.704 Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The document defines, in addition to the requirements defined in 3GPP TS 32.101, TS 32.102 and TS 32.600, the requirements for the present IRP: IMS Network Resource Model (NRM) IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 704                  | 11.0.0  | Published    | 2013-01-25  | <a href="http://www.etsi.org/deliver/etsi_ts/128700/128799/128704/11.00.00_60/ts_128704v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128700/128799/128704/11.00.00_60/ts_128704v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.28.704V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.704(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-28.704(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-28.704(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.704(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.704(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.704(Rel11)v11.0.0.pdf</a>                         |

### **10.7.30 TS 28.705 Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

The document specifies the IP Multimedia Subsystem (IMS) network resource information that can be communicated between an IRP Agent and an IRP Manager for telecommunication network management purposes, including management of converged networks.

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

The IMS NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the protocol neutral IMS NRM IRP: Information Service (IS). It reuses relevant parts of the Generic NRM IRP: IS in 3GPP TS 28.622, either by direct reuse or sub-classing, and in addition to that defines IMS specific Information Object Classes.

Finally, in order to access the information defined by this NRM, an Interface IRP is needed, such as the Basic CM IRP in 3GPP TS 32.602. However, which Interface IRP that is applicable is outside the scope of the document.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 128 705                 | 11.1.0  | Published | 2013-07-12  | <a href="http://www.etsi.org/deliver/etsi_ts/128700/128799/128705/11.01.00_60/ts_128705v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/128700/128799/128705/11.01.00_60/ts_128705v110100p.pdf</a> |
| ATIS | ATIS.3GPP.28.705V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-28.705(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.705(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.705(R11-11.0.0)</a> |
| TTC | TS-3GA-28.705(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.705(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.705(Rel11)v11.1.0.pdf</a>                           |

### **10.7.31 TS 28.706 Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document specifies the Solution Sets for the IMS NRM IRP.

The Solution Set definition is related to 3GPP TS 28.705 V11.0.X .

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 706                  | 11.0.0  | Published    | 2013-01-25  | <a href="http://www.etsi.org/deliver/etsi_ts/128700_128799/128706/11.00.00_60/ts_128706v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128700_128799/128706/11.00.00_60/ts_128706v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.706V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.706(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.706(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.706(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.706(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.706(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.706(Rel11)v11.0.0.pdf</a>                           |

### **10.7.32 TS 28.707 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The document defines, in addition to the requirements defined in 3GPP TS 32.101, TS 32.102 and TS 32.600, the Requirements for the EPC Network Resource Model (NRM) IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 707                  | 11.0.0  | Published    | 2013-01-25  | <a href="http://www.etsi.org/deliver/etsi_ts/128700_128799/128707/11.00.00_60/ts_128707v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128700_128799/128707/11.00.00_60/ts_128707v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.707V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.707(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.707(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.707(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.707(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.707(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.707(Rel11)v11.0.0.pdf</a>                           |

### **10.7.33 TS 28.708 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

The document specifies Evolved Packet Core (EPC) network resource information that can be communicated between an IRP Agent and an IRP Manager for telecommunication network management purposes, including management of converged networks. . It reuses relevant parts of the Generic NRM in 3GPP TS 28.622, either by direct reuse or sub-classing, and in addition to that defines EPC specific Information Object Classes.

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.



In order to access the information defined by this NRM, an Interface IRP such as the "Basic CM IRP" is needed (3GPP TS 32.602). However, which Interface IRP is applicable is outside the scope of the document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 708                  | 11.0.0  | Published    | 2013-01-25  | <a href="http://www.etsi.org/deliver/etsi_ts/128700_128799/128708/11.00.00_60/ts_128708v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128700_128799/128708/11.00.00_60/ts_128708v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.708V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.708(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.708(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.708(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.708(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.708(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.708(Rel11)v11.0.0.pdf</a>                           |

#### **10.7.34 TS 28.709 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document specifies the Solution Sets for the EPC NRM IRP.

The Solution Set definition is related to 3GPP TS 28.708 V11.0.X .

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 709                  | 11.0.0  | Published    | 2013-01-25  | <a href="http://www.etsi.org/deliver/etsi_ts/128700_128799/128709/11.00.00_60/ts_128709v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128700_128799/128709/11.00.00_60/ts_128709v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.709V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.709(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.709(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.709(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.709(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.709(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.709(Rel11)v11.0.0.pdf</a>                           |

#### **10.7.35 TS 28.731 Telecommunication management; Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The document defines, in addition to the requirements defined in 3GPP TS 32.101, TS 32.102 and TS 32.600, the requirements for the present IRP: Transport Network (TN) interface Network Resource Model (NRM)

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 731                  | 11.0.0  | Published    | 2013-01-25  | <a href="http://www.etsi.org/deliver/etsi_ts/128700_128799/128731/11.00.00_60/ts_128731v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128700_128799/128731/11.00.00_60/ts_128731v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.731V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.731(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.731(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.731(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.731(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.731(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.731(Rel11)v11.0.0.pdf</a>                           |

### **10.7.36 TS 28.732 Telecommunication management; Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

The document specifies the Transport Network (TN) interface Network Resource Model (NRM) that can be communicated between an IRPAgent and an IRPManager for telecommunication network management purposes, including management of converged networks.

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

The "Transport Network (TN) Interface Network Resource Model (NRM) IRP" comprises a set of specifications defining Requirements, a protocol neutral Network Resource Model (NRM) and corresponding Solution Set(s).

The document:

- Specifies the protocol neutral Transport Network Interface Resources IRP: Network Resource Model. It reuses relevant parts of the generic NRM in TS 28.622, either by direct reuse or sub-classing, and in addition to that defines Transport specific Managed Object Classes.

The Configuration Management (CM) area is very large. The intention is to split the specification of the related interfaces in several IRPs - as described in the Introduction clause above. An important aspect of such a split is that the Network Resource Models (NRMs) defined in different IRPs containing NRMs are consistent, and that NRMs supported by an IRPAgent implementation can be accessed as one coherent model through one IRP Information Service.

In order to access the information defined by this NRM, an IRP Information Service (IS) is needed, such as the Basic CM IRP: IS (TS 32.602) or the Bulk CM IRP: IS (TS 32.612). However, which Information Service that is applicable is outside the scope of this document.

Finally, regarding the support of the State Management IRP: IS (TS 32.672), all NRM's of one release shall support the same State Management IRP version.

This specification is related to 3GPP TS 32.672.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 732                  | 11.1.0  | Published    | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/128700_128799/128732/11.01.00_60/ts_128732v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/128700_128799/128732/11.01.00_60/ts_128732v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.732V110-2014   | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.732(R11-11.0.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.732(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.732(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.732(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.732(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.732(Rel11)v11.1.0.pdf</a>                           |

### **10.7.37 TS 28.733 Telecommunication management; Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document is part of an Integration Reference Point (IRP) named Transport Network (TN) interface Network Resource Model (NRM) IRP, through which an IRPAgent can communicate configuration management information to one or several IRPManagers concerning TN resources. The TN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the Solution Sets for the TN NRM IRP.

This specification is related to 3GPP TS 28.732 V11.0.X.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 733                  | 11.0.0  | Published    | 2013-01-25  | <a href="http://www.etsi.org/deliver/etsi_ts/128700_128799/128733/11.00.00_60/ts_128733v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128700_128799/128733/11.00.00_60/ts_128733v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.733V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.733(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.733(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.733(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.733(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.733(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.733(Rel11)v11.0.0.pdf</a>                           |

### 10.7.38 TS 28.734 Telecommunication management; Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Requirements

The document defines, in addition to the requirements defined in 3GPP TS 32.101, TS 32.102 and TS 32.600, the requirements for the Signalling Transport Network (STN) interface NRM IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 128 734                  | 11.0.0  | Published    | 2013-01-25  | <a href="http://www.etsi.org/deliver/etsi_ts/128700_128799/128734/11.00.00_60/ts_128734v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/128700_128799/128734/11.00.00_60/ts_128734v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.28.734V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-28.734(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.734(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-28.734(R11-11.0.0)</a> |
| TTC  | TS-3GA-28.734(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.734(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-28.734(Rel11)v11.0.0.pdf</a>                           |

## 10.8 9-series, Signalling protocols - intra-fixed-network

### 10.8.1 TS 29.002 Mobile application part (MAP) specification

It is necessary to transfer between entities of a public land mobile network (PLMN) information specific to the PLMN in order to deal with the specific behaviour of roaming mobile stations (MS)s. The Signalling System No. 7 specified by ITU-T is used to transfer this information.

This document describes the requirements for the signalling system and the procedures needed at the application level in order to fulfil these signalling needs.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 002                  | 11.9.0  | Published    | 2014-01-30  | <a href="http://www.etsi.org/deliver/etsi_ts/129000_129099/129002/11.09.00_60/ts_129002v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/129000_129099/129002/11.09.00_60/ts_129002v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.002V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.002(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.002(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.002(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.002(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.002(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.002(Rel11)v11.9.0.pdf</a>                           |

### 10.8.2 TS 29.007 General requirements on interworking between the public land mobile network (PLMN) and the integrated services digital network (ISDN) or public switched telephone network (PSTN)

The document identifies the mobile services switching centre/interworking functions (MSC/IWFs) and requirements to support interworking between:

- a) PLMN and PSTN;
- b) PLMN and ISDN;

for circuit-switched services in the PLMN. It is not possible to treat ISDN and PSTN as one type of network, even when both ISDN and PSTN subscribers are served by the same exchange because of the limitations of the PSTN subscriber's access, i.e., analogue connection without Dchannel signalling.

Within this document, the requirements for voice and non-voice (data) calls are considered separately.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 007                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/129000/129099/129007/11.00.00_60/ts_129007v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129000/129099/129007/11.00.00_60/ts_129007v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.007V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.007(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttatstdesc.jsp?stdno=TTAT.3G-29.007(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttatstdesc.jsp?stdno=TTAT.3G-29.007(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.007(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.007(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.007(Rel11)v11.0.0.pdf</a>                           |

### 10.8.3 TS 29.010 Information element mapping between mobile station – base station system (MS – BSS) and base station system – mobile-services switching centre (BSS – MSC) signalling procedures and the mobile application part (MAP)

The scope of the document is:

- i) to provide a detailed specification for the interworking between information elements contained in layer 3 messages sent on the MS-MSC interface (call control and mobility management parts of GSM 04.08) and parameters contained in MAP services sent over the MSC-VLR interface (GSM 09.02) where the MSC acts as a transparent relay of information;
- ii) to provide a detailed specification for the interworking between information elements contained in BSSMAP messages sent on the BSC-MSC interface (GSM 08.08) and parameters contained in MAP services sent over the MSC-VLR interface (GSM 09.02) where the MSC acts as a transparent relay of information;
- iii) to provide a detailed specification for the interworking between information elements contained in BSSMAP messages (TS 48.008) and RANAP (TS 25.413);
- iv) to provide a detailed specification for the interworking as in i) and ii) above when the MSC also processes the information.

Interworking for supplementary services is given in GSM 09.11. Interworking for the short message service is given in GSM 03.40 and GSM 04.11. Interworking between the call control signalling of GSM 04.08 and the PSTN/ISDN is given in GSM 09.03, GSM 09.07 and TS 49.008. Interworking between the 'A' and 'E' interfaces for inter-MSC handover signalling is given in GSM 09.07 and 09.08.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 129 010                 | 11.1.0  | Published | 2014-03-18  | <a href="http://www.etsi.org/deliver/etsi_ts/129000/129099/129010/11.01.00_60/ts_129010v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129000/129099/129010/11.01.00_60/ts_129010v110100p.pdf</a> |
| ATIS | ATIS.3GPP.29.010V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-29.010(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.010(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.010(R11-11.0.0)</a> |
| TTC | TS-3GA-29.010(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.010(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.010(Rel11)v11.0.0.pdf</a>                           |

#### 10.8.4 TS 29.011 Signalling interworking for supplementary services

This Technical Specification is to provide a detailed specification for interworking between the A interface protocol and the mobile application part for handling of supplementary services. The MAP interfaces of interest are the B, C, D and E interfaces.

The A, C, D and E interfaces are physical interfaces while the B interface is an internal interface defined for modelling purposes. Information relating to the modelling interface is not normative in this specification.

Supplementary service signalling may be passed by the MSC/VLR between the A and E interfaces after inter-MSC handover. This procedure is transparent as far as supplementary services are concerned therefore interworking concerning this process is not described in this specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 011                  | 11.0.0  | Published    | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/129000/129099/129011/11.00.00_60/ts_129011v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129000/129099/129011/11.00.00_60/ts_129011v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.011V1100-201   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.011(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.011(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.011(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.011(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.011(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.011(Rel11)v11.0.0.pdf</a>                           |

#### 10.8.5 TS 29.013 Signalling interworking between ISDN supplementary services application service element (ASE) and mobile application part (MAP) protocols

This document is to provide a specification for interworking between the ISDN application service element (ASE) protocol for supplementary services and the mobile application part (MAP) protocol on MAP D-interface protocol for handling of supplementary services within the digital cellular telecommunications system (Phase 2+). This version of the specification includes the interworking for the call completion to busy subscriber (CCBS) service between the ISDN CCBSASE and MAP.

The MAP protocol for CCBS service is specified in GSM 09.02. The ISDN CCBS-ASE protocol is specified in ETSI ETS 300 35618. The ISDN CCBS-ASE protocol is also commonly referred to as the SSAP protocol in GSM 03.93. This specification clarifies the interworking within the HLR between these protocols for the call completion to busy subscriber (CCBS) service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 013                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129000/129099/129013/11.00.00_60/ts_129013v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129000/129099/129013/11.00.00_60/ts_129013v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.013V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.013(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.013(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.013(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.013(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.013(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.013(Rel11)v11.0.0.pdf</a>                           |

### 10.8.6 TS 29.016 Serving GPRS support node (SGSN) – visitor location register (VLR); Gs interface network service specification

This document specifies or references the subset of MTP and SCCP that is used for the reliable transport of BSSAP+ messages in the Gs interface. This document references the TS 29.202 that specifies alternative transport layers that can be applied instead of the MTP. This document also specifies the SCCP addressing capabilities to be provided in the Gs interface.

The SCCP is used to provide message routing between the SGSN and the VLR. The SCCP routing principles specified in this Technical Specification allow connecting one SGSN to several VLR. No segmentation at SCCP level is needed on the Gs interface. Only SCCP class 0 is used on the Gs interface.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 016                  | 11.0.0  | Published    | 2012-10-12  | <a href="http://www.etsi.org/deliver/etsi_ts/129000/129099/129016/11.00.00_60/ts_129016v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129000/129099/129016/11.00.00_60/ts_129016v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.016V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.016(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.016(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.016(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.016(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.016(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.016(Rel11)v11.0.0.pdf</a>                           |

### 10.8.7 TS 29.018 Serving GPRS support node (SGSN) – visitor location register (VLR); Gs interface layer 3 specification

The document specifies or references procedures used on the serving GPRS support node (SGSN) to visitor location register (VLR) interface for interoperability between GSM circuit-switched services and GSM packet data services.

The document specifies the layer 3 messages and procedures on the Gs interface to allow coordination between databases and to relay certain messages related to GSM circuit-switched services over the GPRS subsystem.

The functional split between VLR and SGSN is defined in TS 23.060. The required procedures between VLR and SGSN are defined in detail in the document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 018                  | 11.7.0  | Published    | 2014-01-13  | <a href="http://www.etsi.org/deliver/etsi_ts/129000/129099/129018/11.07.00_60/ts_129018v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/129000/129099/129018/11.07.00_60/ts_129018v110700p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.018V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.018(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.018(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.018(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.018(Rel11)v11.7.0 | 11.7.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.018(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.018(Rel11)v11.7.0.pdf</a>                           |

### 10.8.8 TS 29.060 GPRS tunnelling protocol (GTP) across the Gn and Gp interface

The document defines the second version of GTP used on:

- the Gn and Gp interfaces of the general packet radio service (GPRS);
- the Iu, Gn and Gp interfaces of the UMTS system.

NOTE – The version number used in the message headers is 0 for the first version of GTP described in GSM 09.60, and 1 for the second version in TS 29.060.



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 060                  | 11.9.0  | Published    | 2014-03-18  | <a href="http://www.etsi.org/deliver/etsi_ts/129000_129099/129060/11.09.00_60/ts_129060v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/129000_129099/129060/11.09.00_60/ts_129060v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.060V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.060(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.060(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.060(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.060(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.060(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.060(Rel11)v11.8.0.pdf</a>                           |

### 10.8.9 TS 29.061 Interworking between the public land mobile network (PLMN) supporting packet-based services and packet data networks (PDNs)

The document defines the requirements for packet domain interworking between a:

- PLMN and PDN;
- PLMN and PLMN.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 061                  | 11.6.0  | Published    | 2014-03-18  | <a href="http://www.etsi.org/deliver/etsi_ts/129000_129099/129061/11.06.00_60/ts_129061v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/129000_129099/129061/11.06.00_60/ts_129061v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.061V1140-2014  | 11.4.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.061(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.061(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.061(R11-11.4.0)</a> |
| TTC  | TS-3GA-29.061(Rel11)v11.5.0 | 11.5.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.061(Rel11)v11.5.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.061(Rel11)v11.5.0.pdf</a>                           |

### 10.8.10 TS 29.078 Customized application for mobile network enhanced logic (CAMEL) Phase 3; CAMEL application part (CAP) specification

The document specifies the CAMEL application part (CAP) supporting the third phase of the network feature customized applications for mobile network enhanced logic. CAP is based on a sub-set of the ETSI core INAP CS-2 as specified by [ETSI EN 301 1401]. Descriptions and definitions provided by [ETSI EN 301 1401] are directly referenced by this standard in case no additions or clarifications are needed for the use in the CAP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 078                  | 11.2.0  | Published    | 2013-01-25  | <a href="http://www.etsi.org/deliver/etsi_ts/129000_129099/129078/11.02.00_60/ts_129078v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/129000_129099/129078/11.02.00_60/ts_129078v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.078V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.078(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.078(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.078(R11-11.2.0)</a> |
| TTC  | TS-3GA-29.078(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.078(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.078(Rel11)v11.2.0.pdf</a>                           |

### 10.8.11 TS 29.079 Optimal media routing within the IP Multimedia Subsystem (IMS); Stage 3

The present document defines optional Optimal Media Routing (OMR) procedures that can be applied by entities in the IP Multimedia Subsystem (IMS) that control media resources and are capable of

manipulating the Session Description Protocol (SDP) as defined by the Session Description Protocol (SDP) [IETF RFC 4566].

The OMR procedures in the present specification relate to the handling of OMR-specific SDP attributes that are documented in TS 24.229. The OMR procedures use SDP offer/answer related procedures in IETF RFC 3264 and in 3GPP TS 24.229 in a backward-compatible manner.

The 3GPP network architecture, including the configuration and network entities of the IMS, is defined in 3GPP TS 23.002. The stage 2 of the IMS is defined 3GPP TS 23.228. Annex Q of 3GPP TS 23.228 documents the architecture and call flows for OMR.

The OMR procedures in this document are applicable to the following IMS entities that perform as an IMS-ALG or UA according to 3GPP TS 24.229 and that control media resources:

- an IBCF acting as an IMS-ALG;
- a P-CSCF acting as IMS-ALG;
- an AS acting as B2BUA and adapting IMS-ALG procedures to control an MRF;
- an AS acting as B2BUA and adapting UA procedures to control an MRF; and
- an MGCF acting as UA.

NOTE 1 – An AS acting as B2BUA to perform application functions such as conferencing or announcements will normally perform separate originating and terminating UA procedures, treating the media resource as an endpoint. An AS acting as B2BUA offering transcoding options will typically follow IMS-ALG procedures.

NOTE 2 – The controlled media resource can be a TrGW, IMS-AGW, MRF, or a media function of the entity performing OMR.

The OMR procedures are not applicable for an UE.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 079                  | 11.3.0  | Published    | 2013-04-16  | <a href="http://www.etsi.org/deliver/etsi_ts/129000_129099/129079/11.03.00_60/ts_129079v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/129000_129099/129079/11.03.00_60/ts_129079v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.079V1130-2014  | 11.3.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.079(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.079(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.079(R11-11.3.0)</a> |
| TTC  | TS-3GA-29.079(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.079(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.079(Rel11)v11.3.0.pdf</a>                           |

#### 10.8.12 TS 29.108 Application of the radio access network application part (RANAP) on the E interface

The document describes the subset of radio access network application part (RANAP) messages and procedures, defined in TS 25.413, which is used on the E interface. A general description can be found in TS 23.002 and TS 23.009.

For the initiation and execution of relocation of SRNS ("relocation" for short, throughout the whole document) between MSCs, a subset of RANAP procedures are used. For the subsequent control of resources allocated to the user equipment (UE), RANAP procedures are used. The direct transfer elementary procedure (EP) of RANAP is used for the transfer of connection management and mobility management messages between the UE and the controlling 3G\_MSC.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 129 108                 | 11.0.0  | Published | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129108/11.00.00_60/ts_129108v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129108/11.00.00_60/ts_129108v110000p.pdf</a> |
| ATIS | ATIS.3GPP.29.108V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-29.108(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.108(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.108(R11-11.0.0)</a> |
| TTC | TS-3GA-29.108(Rel11)v11.1.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.108(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.108(Rel11)v11.0.0.pdf</a>                           |

### 10.8.13 TS 29.109 Generic authentication architecture (GAA); Zh and Zn interfaces based on the diameter protocol; Stage 3

The present Stage 3 specification defines the Diameter-based implementation for bootstrapping Z interface (BSF-HSS) and GAA application Zn interface (BSF-NAF) in generic authentication architecture (GAA). The definition contains procedures, message contents and coding. The procedures for bootstrapping and usage of bootstrapped security association are defined in 3G TS 33.220.

This specification is a part of the generic authentication architecture (GAA) specification series.

The diameter-based implementation is based on re-usage of Cx interface MultimediaAuthRequest/Answer messages originally between CSCF and HSS. These messages are defined in 3GPP TS 29.229. The 3GPP IMS mobility management uses the same definitions between CSCF and HSS. The present document defines how the defined messages are used with the bootstrapping and GAA application procedures (e.g., subscriber certificates) and the application logic that is needed in GAA network elements (BSF, HSS, and NAF).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 109                  | 11.5.0  | Published    | 2014-03-18  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129109/11.05.00_60/ts_129109v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129109/11.05.00_60/ts_129109v110500p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.109V1130-2014  | 11.3.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.109(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.109(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.109(R11-11.3.0)</a> |
| TTC  | TS-3GA-29.109(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.109(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.109(Rel11)v11.4.0.pdf</a>                           |

### 10.8.14 TS 29.118 Mobility Management Entity (MME) - Visitor Location Register (VLR) SGs interface specification

CS Fallback in the Evolved Packet System (EPS) enables the provisioning of CS-domain services (e.g., voice call, Short Message Service (SMS), Location Services (LCS) or supplementary services) by reuse of CS infrastructure when the UE is served by E-UTRAN.

This document specifies the procedures and the SGs Application Part (SGsAP) messages used on the SGs interface between the Mobility Management Entity (MME) in the EPS and the Visitor Location Register (VLR), to allow location management coordination and to relay certain messages related to GSM circuit switched services over the EPS system.

The document also specifies the use of Stream Control Transmission Protocol (SCTP) for the transport of SGsAP messages.

This document is applicable to the MME in the EPS and to the VLR. The functional split between the MME and the VLR is defined in 3GPP TS 23.272.

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 129 118   | 11.10.0 | Published | 2014-03-21  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129118/11.10.00_60/ts_129118v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129118/11.10.00_60/ts_129118v111000p.pdf</a> |

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.29.118V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.118(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.118(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.118(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.118(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.118(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.118(Rel11)v11.9.0.pdf</a>                           |

#### 10.8.15 TS 29.119 GPRS tunnelling protocol (GTP) specification for gateway location register (GLR)

The document describes the signalling requirements and procedures used at network elements related to the GLR for GTP within the 3G system at the application level.

The document gives the description of the systems needed only in the network utilizing GLR as the delta document against TS 29.060.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 119                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129119/11.00.00_60/ts_129119v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129119/11.00.00_60/ts_129119v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.119V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.119(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.119(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.119(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.119(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.119(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.119(Rel11)v11.0.0.pdf</a>                           |

#### 10.8.16 TS 29.120 Mobile application part (MAP) specification for gateway location register (GLR)

The document describes the signalling requirements and procedures used at network elements related to the GLR for MAP within the 3G system at the application level.

The document gives the description of the systems needed only in the network utilizing GLR as the delta document against TS 29.002.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 120                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129120/11.00.00_60/ts_129120v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129120/11.00.00_60/ts_129120v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.120V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.120(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.120(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.120(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.120(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.120(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.120(Rel11)v11.0.0.pdf</a>                           |

#### 10.8.17 TS 29.139 3GPP system – fixed broadband access network interworking; Home (e)Node B – security gateway interface

The document specifies the H(e)NB – SeGW interface. The interface is used for the interworking between a 3GPP system and a Fixed Broadband Access network defined by Broadband Forum. The interworking procedure provides the IP connectivity to a 3GPP UE using a H(e)NB connected to a Fixed Broadband Access network as specified in 3GPP TS 23.139.

The specification covers the QoS aspects and Tunnel management procedures.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 139                  | 11.1.0  | Published    | 2013-01-28  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129139/11.01.00_60/ts_129139v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129139/11.01.00_60/ts_129139v110100p.pdf</a>                   |
| ATIS | ATIS.3GPP.29.139V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.139(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-29.139(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-29.139(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.139(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.139(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.139(Rel11)v11.1.0.pdf</a>                         |

#### 10.8.18 TS 29.161 Interworking between the public land mobile network (PLMN) supporting packet-based services with wireless local area network (WLAN) access and packet data networks (PDNs)

The present document describes the network interworking for the packet domain. Interworking to various external networks is defined together with the interworking for data forwarding while subscribers roam within the 3GPP system.

The present document defines the requirements for packet domain interworking between a:

- a) PLMN with WLAN access and PDN;
- b) PLMN with WLAN access and PLMN.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 161                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129161/11.00.00_60/ts_129161v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129161/11.00.00_60/ts_129161v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.29.161V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.161(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-29.161(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-29.161(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.161(Rel11)v11.0.1 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.161(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.161(Rel11)v11.0.0.pdf</a>                         |

#### 10.8.19 TS 29.162 Interworking between the IM CN subsystem and IP networks

The IM CN subsystem interworks with the external IP networks through the Mb reference point.

This document details the interworking between the IM CN subsystem and external IP networks for IM service support. It addresses the issues of control plane interworking, user plane interworking and IP version interworking.

The IP version interworking, between IP version 4 IETF RFC 791: "*Internet Protocol*" and IP version 6 IETF RFC 1883 (IETF RFC 2460: "*Internet Protocol, Version 6 (IPv6) Specification*") detailed in terms of the processes and protocol mappings required in order to support both mobile originated and terminated calls.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 162                  | 11.2.0  | Published    | 2014-01-13  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129162/11.02.00_60/ts_129162v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129162/11.02.00_60/ts_129162v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.162V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.162(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.162(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.162(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.162(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.162(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.162(Rel11)v11.2.0.pdf</a>                           |

#### **10.8.20 TS 29.163 Interworking between the IP multimedia (IM) core network (CN) subsystem and circuit-switched (CS) networks**

The present document specifies the principles of interworking between the 3GPP IM CN subsystem and BICC/ISUP based legacy CS networks, in order to support IM basic voice calls.

The present document addresses the areas of control and user plane interworking between the IM CN subsystem and CS networks through the network functions, which include the MGCF and IM-MGW. For the specification of control plane interworking, areas such as the interworking between SIP and BICC or ISUP are detailed in terms of the processes and protocol mappings required for the support of both IM originated and terminated voice calls.

Other areas addressed encompass the transport protocol and signalling issues for negotiation and mapping of bearer capabilities and QoS information.

The present document specifies the interworking between 3GPP profile of SIP (as detailed according to 3GPP TS 24.229) and BICC or ISUP, as specified in [ITU-T Q.1902.1] to [ITU-T Q.1902.6]: "*Bearer Independent Call Control*" and [ITU-T Q.761] to [ITU-T Q.764]: "*Signalling System No. 7 – ISDN User Part Signalling procedures*" respectively.

The present document addresses two interworking scenarios with respect to the properties of the CS network:

- The CS network does not use any 3GPP specific additions.
- The CS network uses 3GPP-specific additions.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 163                  | 11.10.0 | Published    | 2014-03-18  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129163/11.10.00_60/ts_129163v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129163/11.10.00_60/ts_129163v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.163V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.163(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.163(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.163(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.163(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.163(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.163(Rel11)v11.9.0.pdf</a>                           |

#### **10.8.21 TS 29.164 Interworking between the 3GPP CS domain with BICC or ISUP as signalling protocol and external SIP-I networks**

The present document defines interworking procedures between a 3GPP CS domain (see TS 23.205) which applies either BICC or ISUP as signalling protocol, and external networks that use SIP-I (see [ITU-T Q.1912.5], Profile C) as signalling protocol. The document also describes the related interworking architecture. The control plane interworking is performed by an interworking unit at the interconnection between the 3GPP CS domain and an external SIP-I network. The user plane

interworking is performed by an MGW. The present document defines stage 2 procedures for the control of the MGW.

The present specification reuses existing interworking procedures of TS 29.163 and [ITU-T Q.1912.5], Profile C, as far as possible.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 164                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129164/11.00.00_60/ts_129164v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129164/11.00.00_60/ts_129164v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.29.164V1100-201   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.164(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-29.164(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-29.164(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.164(Rel11)v11.0.1 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.164(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.164(Rel11)v11.0.0.pdf</a>                         |

### 10.8.22 TS 29.165 Inter-IMS Network to Network Interface

The objective of this document is to address the Inter-IMS Network to Network Interface (II-NNI) consisting of Ici and Izi reference points between IMS networks in order to support end-to-end service interoperability.

The present document will address the issues related to control plane signalling (3GPP usage of SIP and SDP protocols, required SIP headers) as well as other interconnecting aspects like security, numbering/naming/addressing and user plane issues as transport protocol, media and codecs actually covered in a widespread set of 3GPP specifications. A profiling of the Inter-IMS Network to Network Interface (II-NNI) is also provided.

Charging aspects will be addressed as far as SIP signalling is concerned.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 165                  | 11.10.0 | Published    | 2014-03-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129165/11.10.00_60/ts_129165v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129165/11.10.00_60/ts_129165v111000p.pdf</a>                   |
| ATIS | ATIS.3GPP.29.165V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.165(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-29.165(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-29.165(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.165(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.165(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.165(Rel11)v11.9.0.pdf</a>                         |

### 10.8.23 TS 29.168 Cell Broadcast Centre interfaces with the Evolved Packet Core; Stage 3

The present document specifies the procedures and the SBc Application Part (SBc-AP) messages used on the SBc-AP interface between the Mobility Management Entity (MME) and the Cell Broadcast Centre (CBC).

The present document supports the following functions.

– Warning Message Transmission function in the EPS.

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 129 168   | 11.4.0  | Published | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129168/11.04.00_60/ts_129168v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129168/11.04.00_60/ts_129168v110400p.pdf</a> |

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.29.168V1140-2014  | 11.4.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.168(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.168(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.168(R11-11.4.0)</a> |
| TTC  | TS-3GA-29.168(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.168(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.168(Rel11)v11.4.0.pdf</a>                           |

#### **10.8.24 TS 29.171 Location Services (LCS); LCS Application Protocol (LCS-AP) between the Mobile Management Entity (MME) and Evolved Serving Mobile Location Centre (E-SMLC); SLs interface**

This document specifies the procedures and information coding for LCS Application Protocol (LCS-AP) that is needed to support the location services in E-UTRAN. The LCS-AP message set is applicable to the SLs interface between the E-SMLC and the MME. LCS-AP is developed in accordance to the general principles stated in 3GPP TS 23.271.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 171                  | 11.3.0  | Published    | 2013-06-28  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129171/11.03.00_60/ts_129171v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129171/11.03.00_60/ts_129171v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.171V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.171(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.171(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.171(R11-11.2.0)</a> |
| TTC  | TS-3GA-29.171(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.171(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.171(Rel11)v11.3.0.pdf</a>                           |

#### **10.8.25 TS 29.172 Location Services (LCS); Evolved Packet Core (EPC) LCS Protocol (ELP) between the Gateway Mobile Location Centre (GMLC) and the Mobile Management Entity (MME); SLg interface**

This document specifies the procedures and information coding for the EPC LCS Protocol (ELP) that is needed to support the location services in E-UTRAN. The ELP message set is applicable to the SLg interface between the MME and the GMLC. ELP is developed in accordance to the general principles stated in 3GPP TS 23.271.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 172                  | 11.1.0  | Published    | 2013-09-24  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129172/11.01.00_60/ts_129172v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129172/11.01.00_60/ts_129172v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.172V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.172(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.172(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.172(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.172(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.172(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.172(Rel11)v11.1.0.pdf</a>                           |

#### **10.8.26 TS 29.173 Location Services (LCS); Diameter-based SLh interface for Control Plane LCS**

The present document describes the Diameter-based SLh interface between the GMLC and the HSS defined for the Control Plane LCS in EPC.

LCS procedures over the SLh interface are defined in 3GPP TS 23.271.



This specification defines the Diameter application for the GMLC-HSS, SLh reference point. The interactions between the HSS and the GMLC are specified, including the signalling flows. As LCS procedures over the Diameter-based SLh interface are identical to the MAP-based Lh interface, the descriptions of the Lh MAP operations defined in 3GPP TS 29.002 are mapped into the descriptions of the SLh Diameter commands.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 173                  | 11.1.0  | Published    | 2013-01-28  | <a href="http://www.etsi.org/deliver/etsi_ts/129100_129199/129173/11.01.00_60/ts_129173v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129100_129199/129173/11.01.00_60/ts_129173v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.173V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.173(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.173(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.173(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.173(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.173(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.173(Rel11)v11.1.0.pdf</a>                           |

### 10.8.27 TS 29.202 Signalling System No. 7 (SS7) signalling transport in core network; Stage 3

The document defines the possible protocol architectures for transport of SS7 signalling protocols in core network.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 202                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129202/11.00.00_60/ts_129202v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129202/11.00.00_60/ts_129202v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.202V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.202(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.202(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.202(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.202(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.202(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.202(Rel11)v11.0.0.pdf</a>                           |

### 10.8.28 TS 29.204 Signalling System No. 7 (SS7) security gateway; Architecture, functional description and protocol details

This document provides functional description of the SS7 security gateway. The document covers also network architecture, routing considerations, and protocol details.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 204                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129204/11.00.00_60/ts_129204v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129204/11.00.00_60/ts_129204v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.204V1100-201   | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.204(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.204(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.204(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.204(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.204(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.204(Rel11)v11.0.0.pdf</a>                           |

### 10.8.29 TS 29.205 Application of Q.1900-series to bearer-independent circuit-switched core network architecture; Stage 3

The document describes the protocols to be used when [ITU-T Q.1902.x] "*Bearer Independent Call Control*" are used as call control protocol in a 3G bearer independent CS core network 3G TS 23.205. [ITU-T Q.1902.x], operate between (G)MSC servers. The BICC architecture, as described in [ITU-T Q.1902.x] consists of a number of protocols. The following types of protocols are described: call control protocol, bearer control protocols and a resource control protocol for this architecture. The architecture complies with the requirements imposed by 3G TS 23.205 and 3G TS 23.153.

NOTE – [ITU-T Q.1902.x] can be used in other network architectures than the one defined in TS 23.205.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 205                  | 11.0.0  | Published    | 2012-10-25  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129205/11.00.00_60/ts_129205v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129205/11.00.00_60/ts_129205v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.205V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.205(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.205(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.205(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.205(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.205(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.205(Rel11)v11.0.0.pdf</a>                           |

### 10.8.30 TS 29.212 Policy and charging control over reference points

This document provides the stage 3 specification of the Gx, Gxx and Sd reference points for the present release. The functional requirements and the stage 2 specifications of the Gx, Gxx and Sd reference points are contained in TS 23.203. The Gx reference point lies between the Policy and Charging Rule Function and the Policy and Charging Enforcement Function. The Gxx reference point lies between the Policy and Charging Rule Function and the Bearer Binding and Event Reporting Function. The Sd reference point lies between the Policy and Charging Rule Function and the Traffic Detection Function.

Whenever it is possible, the present document specifies the requirements for the protocol by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible, extensions to Diameter are defined within the present document.

|      | Document No.                  | Version | Status       | Issued date | Location  |
|------|-------------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 212                    | 11.12.0 | Published    | 2014-03-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129212/11.12.00_60/ts_129212v111200p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129212/11.12.00_60/ts_129212v111200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.212V1180-2014    | 11.8.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.212(R11-11.8.0)    | 11.8.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.212(R11-11.8.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.212(R11-11.8.0)</a> |
| TTC  | TS-3GA-29.212(Rel11)v11.111.0 | 11.11.0 | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.212(Rel11)v11.111.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.212(Rel11)v11.111.0.pdf</a>                       |

### 10.8.31 TS 29.213 Policy and charging control signalling flows and QoS parameter mapping

The specification adds detailed flows of policy and charging control (PCC) over the Rx and Gx reference points and their relationship with the bearer level signalling flows over the Gn interface.

The calls flows depicted in this Technical Specification represent usual cases, i.e., not all situations are covered. Detailed information provided in TS 29.212 and TS 29.214 shall be taken into consideration.



The present specification also describes the binding and the mapping of QoS parameters among SDP, UMTS QoS parameters, and QoS authorization parameters.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 213                  | 11.10.0 | Published    | 2014-03-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129213/11.10.00_60/ts_129213v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129213/11.10.00_60/ts_129213v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.213V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.213(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.213(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.213(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.213(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.213(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.213(Rel11)v11.9.0.pdf</a>                           |

### 10.8.32 TS 29.214 Policy and charging control over Rx reference point

The present document provides the stage 3 specification of the Rx reference point for the present release. The functional requirements and the stage 2 specifications of the Rx reference point are contained in TS 23.203. The Rx reference point lies between the application function and the policy and charging rule function.

Whenever it is possible, the present document specifies the requirements for the protocol by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible, extensions to Diameter are defined within the present document.

|      | Document No.                 | Version | Status       | Issued date | Location  |
|------|------------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 214                   | 11.12.0 | Published    | 2014-03-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129214/11.12.00_60/ts_129214v111200p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129214/11.12.00_60/ts_129214v111200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.214V1180-2014   | 11.8.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.214(R11-11.8.0)   | 11.8.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.214(R11-11.8.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.214(R11-11.8.0)</a> |
| TTC  | TS-3GA-29.214(Rel11)v11.11.0 | 11.11.0 | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.214(Rel11)v11.11.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.214(Rel11)v11.11.0.pdf</a>                         |

### 10.8.33 TS 29.215 Policy and Charging Control (PCC) over S9 reference point

The present document provides the stage 3 specification of the S9 reference point for the present release. The functional requirements of stage 2 specification for the S9 reference point are contained in 3GPP TS 23.203. The S9 reference point lies between the PCRF in the home PLMN (also known as H-PCRF) and the PCRF in the visited PLMN (also known as V-PCRF).

Whenever it is possible the present document specifies the requirements for the protocols by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible extensions to Diameter are defined within the present document.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 129 215                 | 11.12.0 | Published | 2014-03-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129215/11.12.00_60/ts_129215v111200p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129215/11.12.00_60/ts_129215v111200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.215V1180-2014 | 11.8.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.215(R11-11.8.0) | 11.8.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.215(R11-11.8.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.215(R11-11.8.0)</a> |

|     | Document No.                 | Version | Status       | Issued date | Location  |
|-----|------------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-29.215(Rel11)v11.11.0 | 11.11.0 | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.215(Rel11)v11.11.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.215(Rel11)v11.11.0.pdf</a> |

#### 10.8.34 TS 29.219 Policy and charging control: Spending limit reporting over Sy reference point

The document provides the stage 3 specification of the Sy reference point for the present release. The functional requirements and the stage 2 specifications of the Sy reference point are contained in 3GPP TS 23.203. The Sy reference point lies between the Policy and Charging Rule Function (PCRF) and the Online Charging System (OCS). The internal OCS functionality for policy counter provision management pertaining to Sy is specified in 3GPP TS 32.296.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 219                  | 11.6.0  | Published    | 2014-01-15  | <a href="http://www.etsi.org/deliver/etsi_ts/129200/129299/129219/11.06.00_60/ts_129219v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/129200/129299/129219/11.06.00_60/ts_129219v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.219V1140-2014  | 11.4.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.219(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.219(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.219(R11-11.4.0)</a> |
| TTC  | TS-3GA-29.219(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.219(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.219(Rel11)v11.6.0.pdf</a>                           |

#### 10.8.35 TS 29.228 IP multimedia (IM) subsystem Cx and Dx interfaces; Signalling flows and message contents

This Technical Specification (TS) specifies:

- 1) the interactions between the HSS (home subscriber server) and the CSCF (call session control functions), referred to as the Cx interface;
- 2) the interactions between the CSCF and the SLF (server locator function), referred to as the Dx interface.

The IP multimedia (IM) subsystem Stage 2 is specified in 3G TS 23.228 and the signalling flows for the IP multimedia call control based on SIP and SDP are specified in 3G TS 24.228.

This document addresses the signalling flows for Cx and Dx interfaces.

|      | Document No.                 | Version | Status       | Issued date | Location  |
|------|------------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 228                   | 11.10.0 | Published    | 2013-12-18  | <a href="http://www.etsi.org/deliver/etsi_ts/129200/129299/129228/11.10.00_60/ts_129228v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200/129299/129228/11.10.00_60/ts_129228v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.228V1170-2014   | 11.7.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.228(R11-11.7.0)   | 11.7.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.228(R11-11.7.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.228(R11-11.7.0)</a> |
| TTC  | TS-3GA-29.228(Rel11)v11.10.0 | 11.10.0 | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.228(Rel11)v11.10.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.228(Rel11)v11.10.0.pdf</a>                         |

#### 10.8.36 TS 29.229 Cx and Dx interfaces based on the diameter protocol; Protocol details

The document defines a transport protocol for use in the IP multimedia (IM) core network (CN) subsystem based on Diameter.

This document is applicable to:

- the Cx interface between the I-CSCF/S-CSCF and the HSS;
- the Dx interface between the I-CSCF/S-CSCF and the SLF.

Whenever it is possible, this document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible, extensions to Diameter are defined within this document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 229                  | 11.4.0  | Published    | 2013-07-02  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129229/11.04.00_60/ts_129229v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129229/11.04.00_60/ts_129229v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.229V1130-2014  | 11.3.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.229(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.229(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.229(R11-11.3.0)</a> |
| TTC  | TS-3GA-29.229(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.229(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.229(Rel11)v11.4.0.pdf</a>                           |

### 10.8.37 TS 29.230 Diameter applications; 3GPP specific codes and identifiers

The document lists the 3GPP-specific Diameter protocol codes, including the AVP codes and experimental result codes.

This document lists also the application identifiers assigned to 3GPP-specific Diameter applications by IANA and the Diameter command code range which is assigned to 3GPP by IANA.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 230                  | 11.10.0 | Published    | 2014-03-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129230/11.10.00_60/ts_129230v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129230/11.10.00_60/ts_129230v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.230V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.230(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.230(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.230(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.230(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.230(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.230(Rel11)v11.9.0.pdf</a>                           |

### 10.8.38 TS 29.231 Application of SIP-I Protocols to Circuit Switched (CS) core network architecture; Stage 3

This document describes the protocols to be used when SIP-I is optionally used as call control protocol in a 3GPP CS core network on Nc interface, see 3GPP TS 23.231. The SIP-I protocol operates between (G)MSC servers. The SIP-I architecture consists of a number of protocols. The following types of protocols are described: call control protocol, resource control protocols and user plane protocol for this architecture. The architecture complies with the requirements imposed by 3GPP TS 23.231 and TS 23.153.

Interworking of SIP-I on Nc to external networks is described by TS 29.235.

The document is valid for a 3rd generation PLMN (UMTS) complying with Release 9 and later.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 129 231                 | 11.0.0  | Published | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129231/11.00.00_60/ts_129231v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129231/11.00.00_60/ts_129231v110000p.pdf</a> |
| ATIS | ATIS.3GPP.29.231V1100-2014 | 11.0.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-29.231(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.231(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.231(R11-11.0.0)</a> |
| TTC | TS-3GA-29.231(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.231(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.231(Rel11)v11.0.0.pdf</a>                           |

### 10.8.39 TS 29.232 Media gateway controller (MGC) – Media gateway (MGW) interface; Stage 3

The document describes the protocol to be used on the media gateway controller (MGC) – media gateway (MGW) interface. The media gateway controllers covered in this specification are the MSC server and the GMSC server. The basis for this protocol is the ITU-T H.248.1 MEGACO protocol as specified in ITU-T and IETF. The BICC architecture, as described in TS 23.205 and 29.205, defines the usage of this protocol.

This specification describes the changes to H.248.1/MEGACO which are needed to handle 3G specific traffic cases. This is done by using the H.248.1/MEGACO standard extension mechanism.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 232                  | 11.2.0  | Published    | 2013-07-02  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129232/11.02.00_60/ts_129232v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129232/11.02.00_60/ts_129232v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.232V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.232(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.232(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.232(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.232(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.232(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.232(Rel11)v11.2.0.pdf</a>                           |

### 10.8.40 TS 29.234 3GPP system to wireless local area network (WLAN) interworking; Stage 3

This document defines the Stage 3 protocol description for several reference points in the WLAN-3GPP interworking system.

The document is applicable to:

- the Dw reference point between the 3GPP AAA server and an SLF;
- the Wa reference point between the WLAN AN and the 3GPP AAA proxy;
- the Wd reference point between the 3GPP AAA proxy and 3GPP AAA server;
- the Wx reference point between the 3GPP AAA server and the HSS;
- the Wm reference point between the 3GPP AAA server and the PDG;
- the Wn reference point between the WLAN AN and the 3GPP WAG;
- the Wg reference point between the 3GPP AAA server/proxy and the WAG.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 129 234                 | 11.2.0  | Published | 2013-06-28  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129234/11.02.00_60/ts_129234v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129234/11.02.00_60/ts_129234v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.234V1110-2014 | 11.1.0  | Approved  | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.234(R11-11.1.0) | 11.1.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.234(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.234(R11-11.1.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-29.234(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.234(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.234(Rel11)v11.2.0.pdf</a> |

#### 10.8.41 TS 29.235 Interworking between SIP-I based circuit-switched core network and other networks

This document specifies the interworking between SIP-I based circuit-switched core network, as specified in 3GPP TS 23.231 and 3GPP TS 29.231, with out-of-band transcoder control related procedures in 3GPP TS 23.153, and:

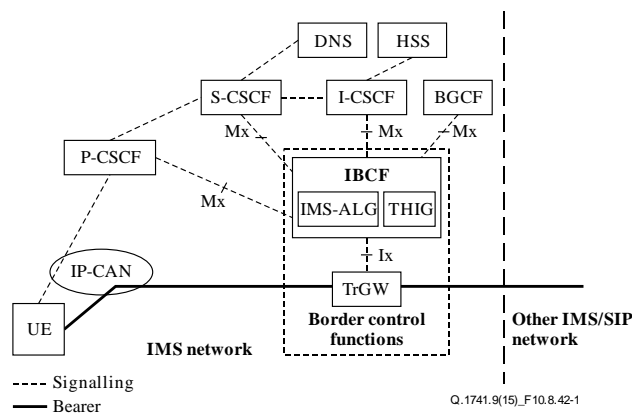
- an external SIP-I based signalling network compliant to [ITU-T Q.1912.5]
- an ISUP ([ITU-T Q.761] to [ITU-T Q.764]) based network such as an ISUP based 3GPP CS Domain or an PSTN
- a BICC ([ITU-T Q.1902.1] to [ITU-T Q.1902.6]) based network such as an BICC based 3GPP CS Domain as specified in 3GPP TS 23.205 and 3GPP TS 29.205
- an Internet Multimedia Subsystem, as specified in 3GPP TS 23.228 and 3GPP TS 24.229

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 235                  | 11.3.0  | Published    | 2013-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129235/11.03.00_60/ts_129235v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129235/11.03.00_60/ts_129235v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.235V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.235(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.235(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.235(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.235(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.235(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.235(Rel11)v11.3.0.pdf</a>                           |

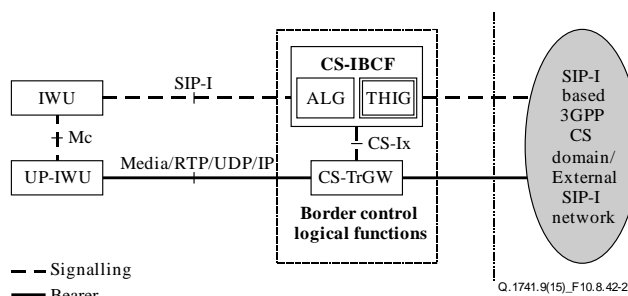
#### 10.8.42 TS 29.238 Interconnection Border Control Functions (IBCF) – Transition Gateway (TrGW) interface, Ix Interface; Stage 3

This document describes the protocol to be used on the Interconnection Border Control Function (IBCF) – Transition Gateway (TrGW) interface and the CS-IBCF – CS-TrGW interface. The basis for this protocol is the ITU-T H.248 protocol as specified in ITU-T. The Profile provides MG control function for IMS and CS Border Control. The IMS architecture is described in 3GPP TS 23.228]. The underlying reference model and stage 2 information is described in Annex I of 3GPP TS 23.228 and in 3GPP TS 29.162. The CS architecture is described in Annex A of 3GPP TS 29.235.

This specification describes the application of ITU-T H.248 Ix profile for both Ix and CS-Ix interfaces (see Figure 10.8.42-1 and Figure 10.8.42-2). Required extensions use the ITU-T H.248 standard extension mechanism. In addition certain aspects of the base protocol ITU-T H.248 are not needed for this interface and thus excluded by this profile.



**Figure 10.8.42-1 – Reference model for IMS border control functions**



**Figure 10.8.42-2 – Reference model for CS border control functions**

NOTE – The Ix profile is applied over both IMS and CS Ix interfaces.

In the text the specification, terms IBCF and TrGW also include respectively the CS-IBCF and CS-TrGW functionalities.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 238                  | 11.2.0  | Published    | 2013-07-01  | <a href="http://www.etsi.org/deliver/etsi_ts/129200/129299/129238/11.02.00_60/ts_129238v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/129200/129299/129238/11.02.00_60/ts_129238v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.238V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.238(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.238(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.238(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.238(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.238(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.238(Rel11)v11.2.0.pdf</a>                           |

### 10.8.43 TS 29.240 3GPP generic user profile (GUP); Stage 3; Network

This document defines the stage 3 network protocol description to the 3GPP generic user profile (GUP), which includes the elements necessary to realize the stage 2 requirements in TS 23.240.

The fact of having several domains within the 3GPP mobile system (e.g., circuit-switched, packet switched, IP multimedia subsystem) and access technologies (e.g., GERAN, UTRAN and WLAN) introduces a wide distribution of data associated with the user. Further, the new functions both in terminals and networks mean that the data related to users, services and user equipment will be increased greatly. This causes difficulties for users, subscribers, network operators and value-added service providers to create, access and manage the user-related data located in different entities.

The objective of specifying the 3GPP generic user profile is to provide a conceptual description to enable harmonized usage of the user-related information located in different entities. Technically, the



3GPP generic user profile provides an architecture, data description and interface with mechanisms to handle the data.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 240                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129240/11.00.00_60/ts_129240v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129240/11.00.00_60/ts_129240v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.240V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.240(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.240(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.240(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.240(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.240(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.240(Rel11)v11.0.0.pdf</a>                           |

#### 10.8.44 TS 29.272 Interworking between SIP-I based circuit-switched core network and other networks

This document describes the Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related diameter-based interfaces towards the Home Subscriber Server (HSS), and the MME and the SGSN related diameter-based interface towards the Equipment Identity Register (EIR).

This specification defines the Diameter application for the MME-HSS, S6a reference point, and for the SGSN-HSS, S6d reference point. The interactions between the HSS and the MME/SGSN are specified, including the signalling flows.

This specification defines the Diameter application for the MME-EIR, S13 reference point, and for the SGSN-EIR, S13' reference point. The interactions between the MME/SGSN and the EIR are specified, including the signalling flows.

If there is no specific indication, the SGSN in the specification refers to a S4-SGSN which supports S4 interface.

The Evolved Packet System stage 2 description (architecture and functional solutions) is specified in 3GPP TS 23.401 and in 3GPP TS 23.060.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 272                  | 11.9.0  | Published    | 2013-12-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129272/11.09.00_60/ts_129272v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129272/11.09.00_60/ts_129272v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.272V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.272(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.272(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.272(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.272(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.272(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.272(Rel11)v11.9.0.pdf</a>                           |

#### 10.8.45 TS 29.273 Evolved Packet System (EPS); 3GPP EPS AAA interfaces

This document defines the stage-3 protocol description for several reference points for the non-3GPP access in EPS.

The present document is applicable to:

- The SWa reference point between an un-trusted non-3GPP IP access and the 3GPP AAA Server/Proxy.
- The STa reference point between a trusted non-3GPP IP access and the 3GPP AAA Server/Proxy.

- The SWd reference point between the 3GPP AAA Proxy and 3GPP AAA Server.
- The SWx reference point between the 3GPP AAA Server and the HSS.
- The S6b reference point between the 3GPP AAA Server/Proxy and the PDN GW.
- The H2 reference point between the 3GPP AAA Server and the HA.
- The SWm reference point between the 3GPP AAA Server/Proxy and the ePDG.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 273                  | 11.9.0  | Published    | 2014-03-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129200/129299/129273/11.09.00_60/ts_129273v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/129200/129299/129273/11.09.00_60/ts_129273v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.273V1150-2014  | 11.5.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.273(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.273(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.273(R11-11.5.0)</a> |
| TTC  | TS-3GA-29.273(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.273(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.273(Rel11)v11.8.0.pdf</a>                           |

#### 10.8.46 TS 29.274 3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3

This document specifies the stage 3 of the control plane of the GPRS Tunnelling Protocol, Version 2 for Evolved Packet System interfaces (GTPv2-C).

In this document, unless otherwise specified the S5 interface refers always to "GTP-based S5" and S8 interface refers always to "GTP-based S8" interface.

GTPv2-C shall be used across the following EPC signalling interfaces: S3, S4, S5, S8, S10, S11 and S16.

GTPv2-C based protocols shall also be used across Sv (3GPP TS 29.280) and S101 (3GPP TS 29.276) interfaces.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 274                  | 11.10.0 | Published    | 2014-03-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129200/129299/129274/11.10.00_60/ts_129274v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200/129299/129274/11.10.00_60/ts_129274v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.274V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.274(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.274(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.274(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.274(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.274(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.274(Rel11)v11.9.0.pdf</a>                           |

#### 10.8.47 TS 29.275 Proxy Mobile IPv6 (PMIPv6) based Mobility and Tunnelling protocols; Stage 3

This document specifies the stage 3 of the PMIPv6 Based Mobility and Tunnelling Protocols used over the PMIP-based S2a, S2b, S5, and S8 reference points defined in 3GPP TS 23.402, and are thus applicable to the Serving GW, PDN Gateway, ePDG, and Trusted Non-3GPP Access. Protocols specifications are compliant with relevant IETF RFCs. In this specification PMIP refers to PMIPv6 as defined in [IETF RFC 5213].



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 275                  | 11.9.0  | Published    | 2014-03-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129275/11.09.00_60/ts_129275v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129275/11.09.00_60/ts_129275v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.275V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.275(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.275(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.275(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.275(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.275(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.275(Rel11)v11.8.0.pdf</a>                           |

#### 10.8.48 TS 29.276 Optimized Handover Procedures and Protocols between EUTRAN Access and cdma2000 HRPD Access

This document specifies the stage 3 of the Evolved Packet System S101 interface between the MME and the HRPD Access Network. The S101 interface supports procedures for Pre-Registration, Session Maintenance and Active handoffs between E-UTRAN and HRPD networks.

It also specifies the S103 interface between the Serving GW and HRPD PDSN. This User Plane interface is used to forward DL data to minimize packet losses in mobility from E-UTRAN to HRPD. Signalling procedures on the S101 interface are used to set up tunnels on the S103 interface.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 276                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129276/11.00.00_60/ts_129276v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129276/11.00.00_60/ts_129276v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.276V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.276(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.276(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.276(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.276(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.276(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.276(Rel11)v11.0.0.pdf</a>                           |

#### 10.8.49 TS 29.277 Optimized Handover Procedures and Protocols between EUTRAN Access and cdma2000 HRPD Access

This document specifies the stage 3 of the Evolved Packet System S102 interface between the MME and the 1x CS IWS to relay the 1xCS signalling messages documented in 3GPP TS 23.216.

The S102 interface is used to support UEs that do not transmit and receive on both the LTE and 1x radio interfaces simultaneously. S102 protocol aspects for SRVCC from E-UTRAN access to 3GPP2 1xCS is covered in this specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 277                  | 11.1.0  | Published    | 2013-01-29  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129277/11.01.00_60/ts_129277v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129277/11.01.00_60/ts_129277v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.277V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.277(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.277(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.277(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.277(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.277(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.277(Rel11)v11.1.0.pdf</a>                           |

### 10.8.50 TS 29.278 Customized applications for mobile network enhanced logic (CAMEL) Phase 4; CAMEL application part (CAP) specification for IP multimedia subsystems (IMS)

The document specifies the CAMEL application part (CAP) supporting the fourth phase of the network feature customized applications for mobile network enhanced logic for IP multimedia CN subsystems. CAP is based on a sub-set of the ETSI core INAP CS-2 as specified by [ETSI EN 301 140-1]. Descriptions and definitions provided by [ETSI EN 301 140-1] are directly referenced by this standard in case no additions or clarifications are needed for the use in the CAP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| CCSA | CCSA-TSD-129 278            | 11.0.0  |              |             |   |
| ETSI | TS 129 278                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129278/11.00.00_60/ts_129278v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129278/11.00.00_60/ts_129278v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.29.278V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.278(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-29.278(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-29.278(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.278(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.278(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.278(Rel11)v11.0.0.pdf</a>                         |

### 10.8.51 TS 29.279 Mobile IPv4 (MIPv4) based mobility protocols; Stage 3

This document specifies the stage 3 of the MIPv4 Based Mobility Protocol used over the S2a reference point defined in 3GPP TS 23.402, and is thus applicable to the PDN Gateway and Trusted Non-3GPP Access. Protocol specification is compliant with relevant IETF RFCs.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 279                  | 11.0.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129279/11.00.00_60/ts_129279v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129279/11.00.00_60/ts_129279v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.29.279V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.279(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-29.279(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-29.279(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.279(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.279(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.279(Rel11)v11.0.0.pdf</a>                         |

### 10.8.52 TS 29.280 Evolved Packet System (EPS); 3GPP Sv interface (MME to MSC, and SGSN to MSC) for SRVCC

This document describes the Sv interface between the Mobility Management Entity (MME) or Serving GPRS Support Node (SGSN) and 3GPP MSC server enhanced for SRVCC. Sv interface is used to support Inter-RAT handover from VoIP/IMS over EPS to CS domain over 3GPP UTRAN/GERAN access or from UTRAN (HSPA) to 3GPP UTRAN/GERAN access.

If there is no specific indication, the term "MSC server" denotes 3GPP MSC server enhanced for SRVCC as defined in 3GPP TS 23.216.

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 129 280   | 11.5.0  | Published | 2013-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129280/11.05.00_60/ts_129280v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129280/11.05.00_60/ts_129280v110500p.pdf</a> |

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.29.280V1130-2014  | 11.3.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.280(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.280(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.280(R11-11.3.0)</a> |
| TTC  | TS-3GA-29.280(Rel11)v11.5.0 | 11.5.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.280(Rel11)v11.5.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.280(Rel11)v11.5.0.pdf</a>                           |

### 10.8.53 TS 29.281 General Packet Radio System (GPRS) Tunnelling Protocol User Plane (GTPv1-U)

This document defines the user plane of GTP used on:

- the Gn and Gp interfaces of the General Packet Radio Service (GPRS);
- the Iu, Gn and Gp interfaces of the UMTS system;
- the S1-U, X2, S4, S5, S8 and S12 interfaces of the Evolved Packet System (EPS);

This definition ensures full backwards compatibility with RNC, SGSN and GGSN implementations according to release 7 of 3GPP TS 29.060.

NOTE – Releases previous to Release-8 have used 3GPP TS 29.060 as normative definition of the user plane of GTP. This shall be considered when essential corrections are included in the present document or in pre-release-8 version of 3GPP TS 29.060.

Fallback from GTPv1-U to GTPv0-U shall not be supported. Therefore, 3GPP Rel-8 and onwards GTPv1-U entity should not listen to the well-known GTPv0 port 3386. If GTPv1 entity listens to the GTPv0 port, the entity shall silently discard any received GTPv0-U message.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 281                  | 11.6.0  | Published    | 2013-04-09  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129281/11.06.00_60/ts_129281v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129281/11.06.00_60/ts_129281v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.281V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.281(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.281(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.281(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.281(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.281(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.281(Rel11)v11.6.0.pdf</a>                           |

### 10.8.54 TS 29.282 Mobile IPv6 vendor specific option format and usage within 3GPP

This document specifies the format and usage of the Mobile IPv6 Vendor Specific Option within the Third Generation Partnership Project.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 282                  | 11.1.0  | Published    | 2013-01-29  | <a href="http://www.etsi.org/deliver/etsi_ts/129200_129299/129282/11.01.00_60/ts_129282v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129200_129299/129282/11.01.00_60/ts_129282v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.282V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.282(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.282(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.282(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.282(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.282(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.282(Rel11)v11.1.0.pdf</a>                           |

### **10.8.55 TS 29.292 Interworking between the IP Multimedia (IM) Core Network (CN) subsystem (IMS) and MSC Server for IMS Centralized Services (ICS)**

IMS Centralized Services (ICS) enable the delivery of IM CN subsystem based multimedia telephony and supplementary services as defined in 3GPP TS 24.173 to users regardless of the attached access network type; e.g., CS domain access or IP-CAN.

This document specifies the principles of interworking between the IM CN subsystem and CS domain in order to enable ICS for UEs using CS domain access.

The present document addresses the area of registration procedures interworking between the CS domain and IM CN subsystem.

The document addresses the areas of control and user plane interworking between the IM CN subsystem and CS domain through an MSC Server enhanced for ICS and CS-MGW respectively. This includes the signalling procedures between the MSC Server and CS-MGW. For the specification of control plane interworking, present document defines the protocol interworking between the 3GPP profile of SIP as described in 3GPP TS 24.229 and NAS signalling as described in 3GPP TS 24.008 required for the support of IM CN subsystem based multimedia telephony and supplementary services.

This document addresses the area of supplementary service configuration interworking between the CS domain and IM CN subsystem.

The document is applicable to the MSC Server and CS-MGW.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 292                  | 11.6.0  | Published    | 2013-07-09  | <a href="http://www.etsi.org/deliver/etsi_ts/129200/129299/129292/11.06.00_60/ts_129292v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/129200/129299/129292/11.06.00_60/ts_129292v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.292V1150-2014  | 11.5.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.292(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.292(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.292(R11-11.5.0)</a> |
| TTC  | TS-3GA-29.292(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.292(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.292(Rel11)v11.6.0.pdf</a>                           |

### **10.8.56 TS 29.303 Domain Name System Procedures; Stage 3**

This document describes Domain Name System (DNS) Procedures for the Evolved Packet System. This document covers the Evolved Packet Core gateway node selection using DNS (e.g., SGW and PGW nodes) excluding all User Equipment (UE) initiated DNS-based discovery and selection procedures.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 303                  | 11.2.0  | Published    | 2012-10-26  | <a href="http://www.etsi.org/deliver/etsi_ts/129300/129399/129303/11.02.00_60/ts_129303v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/129300/129399/129303/11.02.00_60/ts_129303v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.303V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.303(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.303(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.303(R11-11.2.0)</a> |
| TTC  | TS-3GA-29.303(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.303(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.303(Rel11)v11.2.0.pdf</a>                           |

### 10.8.57 TS 29.305 InterWorking Function (IWF) between MAP based and Diameter based interfaces

This document specifies the InterWorking Function (IWF) between MAP-based Gr, Gf interfaces and Diameter-based S6a, S6d, S13, S13a interfaces.

For each IWF scenario, the present document will specify the mapping of related procedures and the corresponding parameter handling.

The document will also specify the related mechanisms for the IWF, e.g., message routing, user data handling. The other mechanism, such as security, will also be described in this document as a part of the whole solution.

If there is no specific indication, the SGSN in the specification refers to a S4-SGSN which supports S4 interface.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 305                  | 11.7.0  | Published    | 2013-12-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129305/11.07.00_60/ts_129305v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129305/11.07.00_60/ts_129305v110700p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.305V1140-2014  | 11.4.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.305(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.305(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.305(R11-11.4.0)</a> |
| TTC  | TS-3GA-29.305(Rel11)v11.7.0 | 11.7.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.305(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-29.305(Rel11)v11.7.0.pdf</a>                           |

### 10.8.58 TS 29.311 Service Level Interworking for Messaging Services

This document specifies the protocol details of service level interworking between Instant Message using the 3GPP IP Multimedia CN subsystem and the Short Message Service over both legacy CS/PS network as specified in 3GPP TS 23.040 and a generic IP Connectivity Access Network (IP-CAN) as specified in 3GPP TS 24.341. These include:

- Procedures to implement service level interworking between IM and SM.
- Enhancement of the IP-SM-GW as an Application Server to support service selection, authorization and mapping between IM and SM protocols.
- Interaction between service level interworking and transport layer interworking.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 311                  | 11.1.0  | Published    | 2013-07-09  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129311/11.01.00_60/ts_129311v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129311/11.01.00_60/ts_129311v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.311V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.311(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.311(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.311(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.311(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.311(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.311(Rel11)v11.1.0.pdf</a>                           |

### 10.8.59 TS 29.328 IP multimedia (IM) subsystem Sh interface; signalling flows and message contents

This Technical Specification (TS) specifies the interactions between the HSS (home subscriber server) and the SIP AS (application server) and between the HSS and the OSA SCS (service capability server). This interface is referred to as the Sh reference point.

The IP multimedia (IM) core network subsystem Stage 2 is specified in 3G TS 23.228 and the signalling flows for the IP multimedia call control based on SIP and SDP are specified in 3G TS 24.228.

The IP multimedia (IM) session handling with the IP multimedia (IM) call model is specified in 3G TS 23.218.

This document addresses the signalling flows and message contents for the protocol at the Sh interface.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 328                  | 11.10.0 | Published    | 2013-12-19  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129328/11.10.00_60/ts_129328v111000p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129328/11.10.00_60/ts_129328v111000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.328V1170-2014  | 11.7.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.328(R11-11.7.0)  | 11.7.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.328(R11-11.7.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.328(R11-11.7.0)</a> |
| TTC  | TS-3GA-29.328(Rel11)v11.9.0 | 11.9.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.328(Rel11)v11.9.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.328(Rel11)v11.9.0.pdf</a>                           |

#### 10.8.60 TS 29.329 Sh interface based on the Diameter protocol; Protocol details

The document defines a transport protocol for use in the IP multimedia (IM) core network (CN) subsystem based on diameter.

This document is applicable to:

- the Sh interface between an AS and the HSS;
- the Sh interface between an SCS and the HSS.

Whenever it is possible, this document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of diameter. Where this is not possible, extensions to diameter are defined within this document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 329                  | 11.7.0  | Published    | 2013-07-01  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129329/11.07.00_60/ts_129329v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129329/11.07.00_60/ts_129329v110700p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.329V1160-2014  | 11.6.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.329(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.329(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.329(R11-11.6.0)</a> |
| TTC  | TS-3GA-29.329(Rel11)v11.7.0 | 11.7.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.329(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.329(Rel11)v11.7.0.pdf</a>                           |

#### 10.8.61 TS 29.332 Media gateway control function (MGCF) – IM media gateway; Mn interface

The present document describes the protocol to be used on the media gateway control function (MGCF) – IM media gateway (IM-MGW) interface. The basis for this protocol is the H.248.1/MEGACO protocol as specified in ITU-T and IETF. The IMS architecture is described in 3G TS 23.228. The interaction of the MGCF-IM MGW interface signalling procedures in relation to the SIP, and BICC/ISUP signalling at the MGCF are described in 3G TS 29.163.

This specification describes the application of H.248.1/MEGACO on the Mn interface. Required extensions use the H.248.1/MEGACO standard extension mechanism.



The present document is valid for a 3rd generation PLMN (UMTS) complying with Release 6 and later.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 332                  | 11.3.0  | Published    | 2013-07-01  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129332/11.03.00_60/ts_129332v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129332/11.03.00_60/ts_129332v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.332V1120-2014  | 1.2.0   | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.332(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.332(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.332(R11-11.2.0)</a> |
| TTC  | TS-3GA-29.332(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.332(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.332(Rel11)v11.3.0.pdf</a>                           |

### **10.8.62 TS 29.333 Multimedia resource function controller (MRFC) – Multimedia resource function processor (MRFP) Mp interface; Stage 3**

This document describes the protocol to be used on the multimedia resource function controller (MRFC) – multimedia resource function processor (MRFP) interface (Mp interface). The IMS architecture is described in TS 23.228, the functional requirements are described in 3G TS 23.333.

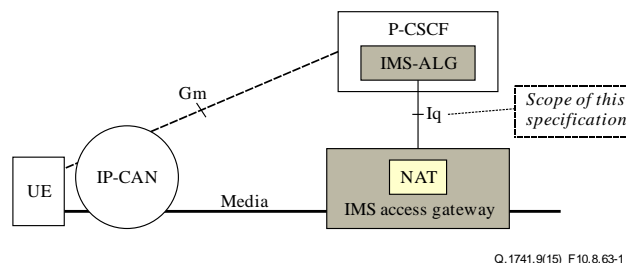
This specification defines a profile of the gateway control protocol [ITU-T H.248.1], for controlling multimedia resource function processor supporting in-band user interaction, conferencing and transcoding for multimedia-services.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 333                  | 11.3.0  | Published    | 2013-07-01  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129333/11.03.00_60/ts_129333v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129333/11.03.00_60/ts_129333v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.333V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.333(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.333(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.333(R11-11.2.0)</a> |
| TTC  | TS-3GA-29.333(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.333(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.333(Rel11)v11.3.0.pdf</a>                           |

### **10.8.63 TS 29.334 IMS Application Level Gateway (IMS-ALG) – IMS Access Gateway (IMS-AGW); Iq Interface; Stage 3**

This document describes the protocol to be used on the IMS Application Level Gateway (ALG) – IMS Access Gateway (IMS-AGW) interface. The basis for this protocol is the ITU-T H.248 protocol as specified in ITU-T. The IMS architecture is described in 3GPP TS 23.228. The underlying reference model and stage 2 information is described in Annex G of 3GPP TS 23.228 and in 3GPP TS 23.334.

This specification describes the application of ITU-T H.248 on the Iq interface (see Figure 10.8.63-1). Required extensions use the ITU-T H.248 standard extension mechanism. In addition certain aspects of the base protocol ITU-T H.248 are not needed for this interface and thus excluded by this profile.



**Figure 10.8.63-1 – Reference model for IMS access**

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 334                  | 11.2.0  | Published    | 2013-07-01  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129334/11.02.00_60/ts_129334v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129334/11.02.00_60/ts_129334v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.334V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.334(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.334(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.334(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.334(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.334(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.334(Rel11)v11.2.0.pdf</a>                           |

#### **10.8.61 TS 29.335 User Data Convergence (UDC); User Data Repository Access Protocol over the Ud interface; Stage 3**

This document specifies the stage 3 of the Ud interface between the Front-Ends (FEs) and the User Data Repository (UDR) in the User Data Convergence (UDC architecture).

This 3GPP Technical Specification (TS) specifies the protocol and interactions between the FE and the UDR for Ud reference point, in particular:

- The details of the LDAP protocol that are to be considered
- The details of the SOAP envelope that provide support for subscriptions to notifications and notifications about data changes service (S/N operations).

The User Data Convergence Stage 2 description (architecture and information flows) is specified in 3GPP TS 23.335.

Details related to the data model used with LDAP (e.g., directory tree) are left outside the scope of this specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 335                  | 11.1.0  | Published    | 2013-01-30  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129335/11.01.00_60/ts_129335v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129335/11.01.00_60/ts_129335v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.335V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.335(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.335(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.335(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.335(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.335(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.335(Rel11)v11.1.0.pdf</a>                           |



### 10.8.65 TS 29.336 Home Subscriber Server (HSS) diameter interfaces for interworking with packet data networks and applications

The document describes the Diameter-based interfaces between the HSS and other network elements involved in the architecture for interworking with packet data networks and applications, such as Machine-Type Communications (MTC).

In particular, this document specifies the S6m interface between the Home Subscriber Server (HSS) and the MTC Interworking Function (MTC-IWF) and the S6n interface between the HSS and the MTC-AAA. The procedures over those interfaces are defined in 3GPP TS 23.682.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 336                  | 11.1.0  | Published    | 2013-01-30  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129336/11.01.00_60/ts_129336v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129336/11.01.00_60/ts_129336v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.336V1110-2014  | 11.1.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.336(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.336(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.336(R11-11.1.0)</a> |
| TTC  | TS-3GA-29.336(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.336(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.336(Rel11)v11.1.0.pdf</a>                           |

### 10.8.66 TS 29.337 Diameter-based T4 Interface for communications with packet data networks and applications

The document describes the Diameter based interface between the Machine Type Communications-InterWorking Function (MTC-IWF) and the Short Message Service-Service Centre (SMS-SC) for communications with packet data networks and applications.

This specification defines the Diameter application for the T4 reference point between the MTC-IWF and the SMS-SC. The interactions between the MTC-IWF and the SMS-SC are specified.

The stage 2 description for communications with packet data networks and applications (architecture and functionality) is specified in the 3GPP TS 23.682.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 337                  | 11.3.0  | Published    | 2013-07-01  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129337/11.03.00_60/ts_129337v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129337/11.03.00_60/ts_129337v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.337V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.337(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.337(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.337(R11-11.2.0)</a> |
| TTC  | TS-3GA-29.337(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.337(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.337(Rel11)v11.3.0.pdf</a>                           |

### 10.8.67 TS 29.338 Diameter based protocols to support Short Message Service (SMS) capable Mobile Management Entities (MMEs)

The document defines the Diameter-based interfaces specific to SMS when they are used in conjunction with the "SMS in MME" architecture specified in 3GPP TS 23.272. It comprises:

- the Diameter application for the S6c interface between the HSS and the SMS-GMSC or the SMS Router and between the SMS-GMSC and the SMS Router;
- the Diameter application for the SGd interface between the MME and the SMS-IWMSC or the SMS-GMSC or the SMS Router and between the SMS-GMSC and the SMS Router.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 338                  | 11.1.0  | Published    | 2013-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129338/11.01.00_60/ts_129338v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129338/11.01.00_60/ts_129338v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.338V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.338(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.338(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.338(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.338(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.338(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.338(Rel11)v11.1.0.pdf</a>                           |

#### 10.8.68 TS 29.364 IP Multimedia Subsystem (IMS) Application Server (AS) service data descriptions for AS interoperability

This specification standardizes the structure and the coding of the service data that are transported over the Sh interface between an Application Server supporting Multimedia Telephony supplementary services as defined in 3GPP TS 22.173 and the HSS. Two optional formats are specified. One is based on a binary coding of the service data and supports the subset of MMTEL services corresponding to PSTN/ISDN and CS supplementary services. The other uses an XML format and supports the full set of MMTEL Services.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 364                  | 11.2.0  | Published    | 2013-04-09  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129364/11.02.00_60/ts_129364v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129364/11.02.00_60/ts_129364v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.364V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.364(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.364(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.364(R11-11.2.0)</a> |
| TTC  | TS-3GA-29.364(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.364(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.364(Rel11)v11.2.0.pdf</a>                           |

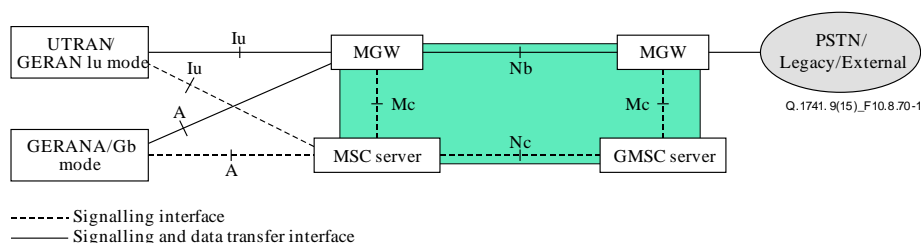
#### 10.8.69 TS 29.368 Tsp interface protocol between the MTC Interworking Function (MTC-IWF) and Service Capability Server (SCS)

The document provides the stage 3 specification of the Tsp reference point for the present release. The functional requirements and the stage 2 specifications of the Tsp reference point are contained in 3GPP TS 23.682. The Tsp reference point lies between the Service Capability Server (SCS) and the Machine Type Communication Inter Working Function (MTC-IWF).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 368                  | 11.4.0  | Published    | 2013-09-25  | <a href="http://www.etsi.org/deliver/etsi_ts/129300_129399/129368/11.04.00_60/ts_129368v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/129300_129399/129368/11.04.00_60/ts_129368v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.368V1120-2014  | 11.2.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.368(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.368(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.368(R11-11.2.0)</a> |
| TTC  | TS-3GA-29.368(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.368(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.368(Rel11)v11.4.0.pdf</a>                           |

### 10.8.70 TS 29.414 Core network Nb data transport and transport signalling

The document specifies the bearer data transport and bearer control protocols used between MGWs within the CS core network across the Nb Interface. This document assumes the implementation of the split of the call control and the bearer transport and control, as specified in TS 23.205; see Figure 10.8.97-1. The user plane protocol that uses this bearer data transport (Nb UP) is described in TS 29.415. Note that the document does not preclude an implementation of a combined MSC server and MGW.



**Figure 10.8.70-1 – CS core network logical architecture**

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 414                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/129400_129499/129414/11.00.00_60/ts_129414v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129400_129499/129414/11.00.00_60/ts_129414v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.414V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.414(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.414(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.414(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.414(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.414(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.414(Rel11)v11.0.0.pdf</a>                           |

### 10.8.71 TS 29.415 Core network Nb user plane protocols

The document specifies the user plane protocol of the bearer used between two MGWs within the CS core network, called the Nb UP protocol. This document assumes the implementation of the split between call control and the bearer transport and control, as specified in TS 23.205. Note that the document does not preclude an implementation of a combined MSC server and MGW.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 415                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/129400_129499/129415/11.00.00_60/ts_129415v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129400_129499/129415/11.00.00_60/ts_129415v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.415V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.415(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.415(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.415(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.415(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.415(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.415(Rel11)v11.0.0.pdf</a>                           |

### 10.8.72 TS 29.658 SIP Transfer of IP Multimedia Service Tariff Information; Protocol specification

The present document specifies the Stage 3 of the real-time transfer of Tariff Information between a Charge Determination Point (CDP) and a Charge Generation Point (CGP) by means of the Session Initiation Protocol (SIP).

It identifies the protocol procedures and switching functions needed to support the transfer of tariff information related to IP multimedia services. The information needed to support the ISDN User part (ISUP) signalling aspects of charging ([ETSI ES 201 296]) for Advice of Charge information purposes is also specified, however, it can be used for other purposes as well where applicable.

The present document is applicable to an environment where different operators are working together. It is also applicable to a single network operator environment.

Whether the present document is applicable to a national environment and/or can be used for inter-network purposes depends on regulatory demands and/or bilateral agreements. It should be noted that there are network requirements and signalling limitations that are not covered because they are outside the scope of the present document. Examples of these are as follows:

- the on-line provided advice of charge information may not accurately reflect the correct charging rate due to discount rates, special charging arrangements, etc. It is out of scope to ensure alignment of this information;
- complaint handling between network operators in case of incorrect advice of charge information;
- explicit encryption or special security mechanisms;
- usage of the transferred tariff information for charging purposes;
- interaction between UE and CGP for possible confirmation of provided tariffs;
- any function behind the CGP towards the UE.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 129 658                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/129600_129699/129658/11.00.00_60/ts_129658v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/129600_129699/129658/11.00.00_60/ts_129658v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.658V1100-2014  | 11.0.0  | Approved     | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.658(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.658(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.658(R11-11.0.0)</a> |
| TTC  | TS-3GA-29.658(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.658(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-29.658(Rel11)v11.0.0.pdf</a>                           |

### **10.8.73 TS 29.839 3GPP system - fixed broadband access network interworking; Home (e)Node B - security gateway interface**

The document specifies the H(e)NB – SeGW interface. The interface is used for the interworking between a 3GPP system and a Fixed Broadband Access network defined by Broadband Forum. The interworking procedure provides the IP connectivity to a 3GPP UE using a H(e)NB connected to a Fixed Broadband Access network as specified in 3GPP TS 23.139.

The specification covers the QoS aspects, and Tunnel management procedures.

### **10.8.74 TR 29.909 Diameter-based protocols usage and recommendations in 3GPP**

This document contains a common set of principles, rules and recommendations across 3GPP WGs to ensure Diameter-based interfaces have the same treatment for release control and generating new applications-id. Also to address in a unified manner the use/re-use of AVPs, and other Diameter BASE [IETF RFC 3588] related decisions.

The present document covers all aspects of Diameter usage within 3GPP, including description of the current situation of Diameter usage in different 3GPP WGs (CT3, CT4, SA5) in Release 6/7, describe recommendations and conditions to re-use existing Diameter applications (3GPP or IETF application-id), commands, AVPs and/or AVP values, describe recommendations and conditions to define new Diameter applications, commands, AVPs and/or AVP values, and any other related issues, e.g., the

cross-release issue, whether to apply proposed guideline back to existing Diameter applications or not, or only new SAE Diameter interfaces, etc.

To achieve maximum benefit from this work it is strongly recommended that all 3GPP Diameter-based protocols follow the recommendations in the present document.

The present document also serves a placeholder for Diameter inter-operator considerations with brief guidelines on how to deploy & realize the inter-operator Diameter-based roaming infrastructure.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 129 909                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/129900_129999/129909/11.00.00_60/tr_129909v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/129900_129999/129909/11.00.00_60/tr_129909v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.909V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.909(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.909(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.909(R11-11.0.0)</a> |
| TTC  | TR-3GA-29.909(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-29.909(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-29.909(Rel11)v11.0.0.pdf</a>                           |

### 10.8.75 TR 29.935 Study on User Data Convergence (UDC) data model

The document analyses and evaluates the definition of a Reference Data Model (RDM) for Ud interface between Front-Ends (FEs) for the HSS application and the User Data Repository (UDR).

The stage 3 of the Ud interface in the User Data Convergence (UDC architecture) is defined in 3GPP TS 29.335.

The Reference Data Model (RDM) shall comply with the Common Baseline Information Model for UDC as defined in 3GPP TS 32.182 and it shall follow the concepts of the Framework for Model Handling and Management as defined in 3GPP TS 32.181.

The analysis will comprise the general considerations impacting the RDM for HSS.

The analysis will comprise the following topics:

- The general considerations impacting the RDM for HSS;
- Attributes definition: names, syntax, semantics;
- Object classes & Directory Information Tree: object classes names, attributes grouping, LDAP entries, Distinguished Names and Relative Distinguished Names.

Directory information trees, object classes and attributes in this report should be considered informative since they are subject to additions and/or modification depending on the specific implementation as illustrated in the presented alternatives in this technical report. Even the assignment of attributes to object classes may be redistributed, for example, because the normalization of object classes across different domains may result in attributes being moved to a superclass. Naming is provisional. Diagrams used and naming convention are not standardized.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TR 129 935                 | 11.0.0  | Published | 2012-11-21  | <a href="http://www.etsi.org/deliver/etsi_tr/129900_129999/129935/11.00.00_60/tr_129935v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/129900_129999/129935/11.00.00_60/tr_129935v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.935V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.935(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.935(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.935(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TR-3GA-29.935(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-29.935(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-29.935(Rel11)v11.0.0.pdf</a> |

### 10.8.76 TR 29.994 Recommended infrastructure measures to overcome specific mobile station (MS) faults

The document clarifies recommended measures which may be adopted by 3GPP infrastructure utilizing GSM or GERAN as access network to enable interworking to be obtained between network and various user equipment (UE) implementations of the 3GPP specification. The objective is to obtain compatibility without changing the consolidated set of specifications. The present document describes the recommended changes to the infrastructure to cater for specific faults within some types of UE.

The lifetime of the herein-described measures together with their potential impact on optimal network performance is out of the scope of the document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 129 994                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_tr/129900/129999/129994/11.00.00_60/tr_129994v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/129900/129999/129994/11.00.00_60/tr_129994v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.29.994V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-29.994(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.994(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-29.994(R11-11.0.0)</a> |
| TTC  | TR-3GA-29.994(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-29.994(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-29.994(Rel11)v11.0.0.pdf</a>                           |

## 10.9 31-series, Subscriber Identity Module (SIM / USIM), IC Cards. Test specifications

### 10.9.1 TS 31.101 UICC-terminal interface; Physical and logical characteristics

The document specifies the interface between the UICC and the terminal for 3G-telecom network operation.

The document specifies:

- the requirements for the physical characteristics of the UICC;
- the electrical interface between the UICC and the terminal;
- the initial communication establishment and the transport protocols;
- the model which serves as a basis for the logical structure of the UICC;
- the communication commands and the procedures;
- the application independent files and protocols.

The administrative procedures and initial card management are not part of the document.

|      | Document No.              | Version | Status         | Issued date | Location  |
|------|---------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.101       | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31101-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31101-b00.pdf</a> |
| ETSI | TS 131 101                | 11.0.0  | Published      | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/131100/131199/131101/11.00.00_60/ts_131101v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/131100/131199/131101/11.00.00_60/ts_131101v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.101V110-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.               | Version | Status    | Issued date | Location  |
|-----|----------------------------|---------|-----------|-------------|---|
| TTA | TTAT.3G-31.101(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.101(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.101(R11-11.0.0)</a> |

### 10.9.2 TS 31.102 Characteristics of the USIM application

The document defines the USIM application for 3G-telecom network operation.

The document specifies:

- specific command parameters;
- file structures;
- contents of EFs (elementary files);
- security functions;
- application protocol to be used on the interface between UICC (USIM) and ME.

This is to ensure interoperability between a USIM and an ME independently of the respective manufacturer, card issuer or operator.

The document does not define any aspects related to the administrative management phase of the USIM. Any internal technical realization of either the USIM or the ME is only specified where these are reflected over the interface. The document does not specify any of the security algorithms that may be used.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.102        | 11.6.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31102-b60.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31102-b60.pdf</a> |
| ETSI | TS 131 102                 | 11.6.0  | Published      | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131102/11.06.00_60/ts_131102v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131102/11.06.00_60/ts_131102v110600p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.102V1140-2014 | 11.4.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.102(R11-11.4.0) | 11.4.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.102(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.102(R11-11.4.0)</a>         |

### 10.9.3 TS 31.103 Characteristics of the IP multimedia services identity module (ISIM) application

This document defines the ISIM application for access to IMS services.

This document specifies:

- specific command parameters;
- file structures;
- contents of EFs (elementary files);
- security functions;
- application protocol to be used on the interface between UICC (ISIM) and terminal.

This is to ensure interoperability between an ISIM and terminal independently of the respective manufacturer, card issuer or operator.

This document does not define any aspects related to the administrative management phase of the ISIM. Any internal technical realization of either the ISIM or the terminal is only specified where these are reflected over the interface. This document does not specify any of the security algorithms that may be used.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.103        | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31103-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31103-b10.pdf</a> |
| ETSI | TS 131 103                 | 11.2.0  | Published      | 2014-03-25  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131103/11.02.00_60/ts_131103v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131103/11.02.00_60/ts_131103v110200p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.103V1110-2014 | 11.1.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.103(R11-11.1.0) | 11.1.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.103(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.103(R11-11.1.0)</a>         |

#### 10.9.4 TS 31.104 Characteristics of the Hosting Party Subscription Identity Module (HPSIM) application

The document applies to a H(e)NB supporting the HPSIM for H(e)NB Hosting Party authentication. The present document defines the HPSIM application, the UICC application residing in the Hosting Party Module for H(e)NB Hosting Party authentication and provisioning.

The document specifies:

- identification of the Hosting Party
- security mechanism, e.g., authentication based on EAP-AKA method
- support of information for the initial provisioning (e.g., O&M system contact)
- initialisation procedure on H(e)NB-UICC interface
- O&M procedure

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.104        | 11.2.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31104-b20.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31104-b20.pdf</a> |
| ETSI | TS 131 104                 | 11.2.0  | Published      | 2014-01-15  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131104/11.02.00_60/ts_131104v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131104/11.02.00_60/ts_131104v110200p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.104V1110-2014 | 11.1.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.104(R11-11.1.0) | 11.1.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.104(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.104(R11-11.1.0)</a>         |

#### 10.9.5 TS 31.111 USIM application toolkit (USAT)

The document defines the interface between the universal ICC (UICC) and the mobile equipment (ME), and mandatory ME procedures, specifically for "USIM application toolkit".

USAT is a set of commands and procedures for use during the network operation phase of 3G, in addition to those defined in TS 31.101.

Specifying the interface is to ensure interoperability between a UICC and an ME independently of the respective manufacturers and operators.

The document defines:

- the commands;
- the application protocol;
- the mandatory requirements on the UICC and ME for each procedure.



This document does not specify any aspects related to the administrative management phase. Any internal technical realization of either the UICC or the ME is only specified where these reflect over the interface. The document does not specify any of the security algorithms that may be used.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.111        | 11.7.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31111-b70.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31111-b70.pdf</a> |
| ETSI | TS 131 111                 | 11.8.0  | Published      | 2014-04-02  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131111/11.08.00_60/ts_131111v110800p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131111/11.08.00_60/ts_131111v110800p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.111V1150-2014 | 11.5.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.111(R11-11.5.0) | 11.5.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.111(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.111(R11-11.5.0)</a>         |

### 10.9.6 TS 31.115 Secured packet structure for (U)SIM toolkit applications

This document specifies the structure of the secured packets in implementations using short message service point-to-point (SMS-PP), short message service cell broadcast (SMS-CB), and unstructured supplementary service data (USSD) based on TS 102 225.

The structure of the secured packets shall comply with the one defined in TS 102 225. The present document only contains additional requirements or explicit limitations for SIM/USIM applications.

It is applicable to the exchange of secured packets between an entity in a 3G or GSM PLMN and an entity in the (U)SIM.

Secured packets contain application messages to which certain mechanisms according to TS 102 224 have been applied. Application messages are commands or data exchanged between an application resident in or behind the 3G or GSM PLMN and on the (U)SIM. The sending/receiving entity in the 3G or GSM PLMN and the UICC are responsible for applying the security mechanisms to the application messages and thus turning them into secured packets.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.115        | 11.0.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31115-b01.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31115-b01.pdf</a> |
| ETSI | TS 131 115                 | 11.0.1  | Published      | 2013-08-06  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131115/11.00.01_60/ts_131115v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131115/11.00.01_60/ts_131115v110001p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.115V1100-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.115(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.115(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.115(R11-11.0.0)</a>         |

### 10.9.7 TS 31.116 Remote APDU structure for (U)SIM toolkit applications

The present document defines the remote management of files and applets on the SIM/USIM.

It describes the APDU format for remote management.

Furthermore, the document specifies:

- a set of commands coded according to this APDU structure and used in the remote file management on the SIM/USIM specified in 3G TS 51.011, 3G TS 31.101 and 3G TS 31.102;
- a set of commands coded according to this APDU structure and used in the remote applet management on the SIM/USIM. This is based on TS 102 226.

The remote APDU structure for SIM/USIM applications shall comply with the one defined in TS 102 226. The present document only contains additional requirements or explicit limitations for SIM/USIM applications.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.116        | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31116-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31116-b10.pdf</a> |
| ETSI | TS 131 116                 | 11.1.0  | Published      | 2013-07-16  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131116/11.01.00_60/ts_131116v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131116/11.01.00_60/ts_131116v110100p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.116V110-2014  | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.116(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.116(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.116(R11-11.0.0)</a>         |

#### 10.09.8 TS 31.120 UICC-terminal interface; Physical, electrical and logical test specification

The document specifies the interface test for the Terminal / UICC.

The document specifies the tests of:

- physical characteristics of the UICC;
- the electrical interface between the UICC and the Terminal;
- the initial communication establishment and the transport protocols;
- the application independent procedures.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.120 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31120-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31120-b00.pdf</a> |
| ETSI | TS 131 120          | 11.0.0  | Published      | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131120/11.00.00_60/ts_131120v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131120/11.00.00_60/ts_131120v110000p.pdf</a>                             |

#### 10.9.9 TS 31.121 UICC-terminal interface; Universal Subscriber Identity Module (USIM) application test specification

The document provides the UICC –Terminal Interface Conformance Test Specification between a 2G, 3G or 3G E-UTRAN terminal and the USIM (Universal Subscriber Identity Module) as an application on the UICC and the Terminal for a 2G, 3G or 3G E-UTRAN network operation:

- the default setting of the USIM;
- the applicability of each test case;
- the test configurations;
- the conformance requirement and reference to the core specifications;
- the test purposes; and
- a brief description of the test procedure and the specific acceptance criteria.

For the avoidance of doubt, references to clauses of ETSI TS 102 221 include all the subclauses of that clause, unless specifically mentioned.

ETSI TS 102 221 contains material that is outside of the scope of 3GPP requirements. A 3GPP ME may support functionality that is not required by 3GPP, but the requirements to do so are outside of the scope of 3GPP. Thus the present document does not contain tests for features defined in ETSI TS 102 221 which are out of scope of 3GPP.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.121 | 11.3.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31121-b30.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31121-b30.pdf</a> |
| ETSI | TS 131 121          | 11.4.0  | Published      | 2014-04-02  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131121/11.04.00_60/ts_131121v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131121/11.04.00_60/ts_131121v110400p.pdf</a>                             |

#### **10.9.10 TS 31.122 Universal Subscriber Identity Module (USIM) conformance test specification**

The document provides the Conformance Test Specification for a Universal IC Card (UICC) defined in TS 31.101 with Universal Subscriber Identity Module (USIM) defined in TS 31.102.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.122 | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31122-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31122-b10.pdf</a> |
| ETSI | TS 131 122          | 11.1.0  | Published      | 2013-07-16  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131122/11.01.00_60/ts_131122v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131122/11.01.00_60/ts_131122v110100p.pdf</a>                             |

#### **10.9.11 TS 31.124 Mobile Equipment (ME) conformance test specification; Universal Subscriber Identity Module Application Toolkit (USAT) conformance test specification**

The present document describes the technical characteristics and methods of test for testing the USIM Application Toolkit implemented in 3<sup>rd</sup> Generation Mobile Equipments (ME) or Mobile Station (MS) for the 3G and 2G digital cellular communications systems within the 3GPP digital cellular telecommunications system, in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-7 and ETSI ETS 300 406

The present document is valid for ME implemented according to 3GPP Release 99, or Release 4, or Release 5, or Release 6, or Release 7 or Release 8.

The present document covers the minimum characteristics considered necessary in order to provide sufficient performance for mobile equipment and to prevent interference to other services or to other users, and to the PLMNs.

It does not necessarily include all the characteristics which may be required by a user or subscriber, nor does it necessarily represent the optimum performance achievable.

The document is part of the 3GPP-series of technical specifications. The present document neither replaces any of the other 3GPP technical specifications or 3GPP related ETSs or ENs, nor is it created to provide full understanding of (or parts of) the UMTS. The present document lists the requirements, and provides the methods of test for testing the USIM Application Toolkit implemented in a ME for conformance to the 3GPP standard.

For a full description of the system, reference should be made to all the 3GPP technical specifications or 3GPP related ETSIs, ETSs or ENs. Clause 2 provides a complete list of the 3GPP technical specifications, 3GPP related ETSI's ETSs, ENs, and ETRs, on which this conformance test specifications is based.

If there is a difference between this present conformance document, and any other 3GPP technical specification or 3GPP related ETSI, ETS, EN, or 3GPP TS, then the other 3GPP technical specification or 3GPP related ETSI ETS, EN or 3GPP TS shall prevail.

Within the context of this document, the term "terminal" used in ETSI TS 102 384 refers to the Mobile Equipment (ME).

Within the context of this document, the term "UICC" used in ETSI TS 102 384 refers to the USIM card.

Within the context of this document, the term "NAA" used in ETSI TS 102 384 refers to the USIM application.

For the avoidance of doubt, references to clauses of ETSI TS 102 384 or ETSI TS 102 221 include all the subclauses of that clause, unless specifically mentioned.

The target test specification ETSI TS 102 384 contains material that is outside of the scope of 3GPP requirements and the present document indicates which parts are in the scope and which are not.

A 3GPP ME may support functionality that is not required by 3GPP, but the requirements to do so are outside of the scope of 3GPP. Thus the present document does not contain tests or references to ETSI TS 102 384 tests for features which are out of scope of 3GPP.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.124 | 11.5.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31124-b50.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31124-b50.pdf</a> |
| ETSI | TS 131 124          | 11.6.0  | Published      | 2014-04-02  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131124/11.06.00_60/ts_131124v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131124/11.06.00_60/ts_131124v110600p.pdf</a>                             |

#### 10.9.12 TS 31.130 (U)SIM application programming interface; (U)SIM API for Java card

The present document defines the (U)SIM application programming interface extending the "UICC API for Java card™".

This API allows to develop a (U)SAT application running together with a (U)SIM application and using GSM/3G network features.

The present document includes information applicable to network operators, service providers, server manufacturers, SIM manufacturers, USIM manufacturers, and database manufacturers.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.130         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31130-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31130-b00.pdf</a> |
| ETSI | TS 131 130                  | 11.0.0  | Published      | 2013-04-26  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131130/11.00.00_60/ts_131130v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131130/11.00.00_60/ts_131130v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.130V110-0-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.130(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.130(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.130(R11-11.0.0)</a>         |

#### 10.9.13 TS 31.131 C-language binding to (U)SIM API

A subscriber identity module application programming interface (SIM API) has been defined in 3G TS 42.019 as a technology-independent API by which toolkit applications and (U)SIMs cooperate. That specification is independent of the programming language technology used to create the application, the platform used to host the application and the runtime environment used to execute the application.

The present document includes information applicable to (U)SIM toolkit application developers creating applications using the C programming language ISO/IEC 9899. The present document describes an interface between toolkit applications written in the C programming language and the (U)SIM in order to realize the cooperation set forth in 3G TS 42.019. In particular, the API described herein provides the service of assembling proactive commands and disassembling the responses to these commands for the application programmer.

Software tools, integrated software development environments and software management systems that may be used to create application programs are explicitly out of scope of the present document.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.131         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31131-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31131-b00.pdf</a> |
| ETSI | TS 131 131                  | 11.0.0  | Published      | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131131/11.00.00_60/ts_131131v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131131/11.00.00_60/ts_131131v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.131V110-0-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.131(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.131(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.131(R11-11.0.0)</a>         |

#### **10.9.14 TS 31.133 IP multimedia services identity module (ISIM) application programming interface (API); ISIM API for Java card™**

This document defines the ISIM application programming interface extending the "UICC API for Java card™". [ETSI TS 102 241].

This API allows to develop an application running together with a ISIM application.

The document includes information applicable to network operators, service providers, and manufacturers of ISIM server equipment and database.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.133         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31133-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31133-b00.pdf</a> |
| ETSI | TS 131 133                  | 11.0.0  | Published      | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/131100_131199/131133/11.00.00_60/ts_131133v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/131100_131199/131133/11.00.00_60/ts_131133v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.133V110-0-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.133(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.133(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.133(R11-11.0.0)</a>         |

#### **10.9.15 TS 31.213 Test specification for (U)SIM; Application Programming Interface (API) for Java Card™**

The document covers the minimum characteristics considered necessary in order to provide compliance to TS 31.130.

The document describes the technical characteristics and methods of test for testing the (U)SIM API for Java Card™ (TS 31.130) implemented in the (U)SIM. It specifies the following parts:

- test applicability;
- test environment description;
- tests format;
- test area reference;
- conformance requirements;
- test suite files;
- test procedure;
- test coverage; and
- a description of the associated testing tools that shall be used.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.213 | 11.2.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31213-b20.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31213-b20.pdf</a> |
| ETSI | TS 131 213          | 11.2.0  | Published      | 2013-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/131200_131299/131213/11.02.00_60/ts_131213v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/131200_131299/131213/11.02.00_60/ts_131213v110200p.pdf</a>                             |

### 10.9.16 TS 31.220 Characteristics of the Contact Manager for 3GPP UICC applications

This document defines the Contact Manager for 3GPP UICC applications.

The document specifies the external interface between the Contact Manager Server in the UICC and the Contact Manager External Client in the ME;

Any internal technical realization of either the Contact Manager Server or clients is only specified where these are reflected over the interfaces.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.220         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31220-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31220-b00.pdf</a> |
| ETSI | TS 131 220                  | 11.0.0  | Published      | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/131200_131299/131220/11.00.00_60/ts_131220v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/131200_131299/131220/11.00.00_60/ts_131220v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.220V110-0-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.220(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.220(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.220(R11-11.0.0)</a>         |

### 10.9.17 TS 31.221 Contact Manager Application Programming Interface (API); Contact Manager API for Java Card™

This document defines the internal interface characteristics of the Contact Manager for 3GPP UICC applications (see TS 31.220).

The internal interface between the Contact Manager Server application on the UICC and the Contact Manager Client application on the UICC enables Java Card™ platform based applet, to invoke and register to the Contact Manager Server services. In particular, the Contact Manager Java Card™ based API provides methods to:

- Read/Update/Create/Delete contact(s) in the Contact Manager Server;
- Manage group of contacts in the Contact Manager Server;
- Search for a contact in the Contact Manager Server storage;
- manage the contacts structure;
- Register/Un-register the application to pre-defined events (e.g., application to be notified when contacts are modified in the Contact Manager Server).

This API allows to develop an application running together with a Contact Manager (see TS 31.220).

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-31.221         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31221-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/31/A31221-b00.pdf</a> |
| ETSI | TS 131 221                  | 11.0.0  | Published      | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_ts/131200_131299/131221/11.00.00_60/ts_131221v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/131200_131299/131221/11.00.00_60/ts_131221v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.31.221V110-0-2014 | 11.0.0  | Approved       | 2014-05-09  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.               | Version | Status    | Issued date | Location  |
|-----|----------------------------|---------|-----------|-------------|---|
| TTA | TTAT.3G-31.221(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.221(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.221(R11-11.0.0)</a> |

### 10.9.18 TR 31.900 SIM/USIM internal and external interworking aspects

This document describes:

- the different cases of interworking between a 2G or 3G ICC and a 2G or 3G ME;
- the different cases of interworking between any given ME/ICC combination and the rest of the network;
- the possibilities of interworking between a SIM and a USIM together on a single UICC;
- the possibilities of interworking between several USIMs on a single UICC.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-31.900          | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/31/A31900-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/31/A31900-b00.pdf</a> |
| ETSI | TR 131 900                  | 11.0.0  | Published      | 2012-11-13  | <a href="http://www.etsi.org/deliver/etsi_tr/131900_131999/131900/11.00.00_60/tr_131900v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/131900_131999/131900/11.00.00_60/tr_131900v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.31.900V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-31.900(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.900(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-31.900(R11-11.0.0)</a>       |

## 10.10 32-series, OAM&P and Charging

### 10.10.1 TS 32.101 3G telecommunication management; Principles and high-level requirements

The document establishes and defines the management principles and high-level requirements for the management of UMTS.

In particular, this document identifies the requirements for:

- the upper level of a UMTS management system;
- the reference model, showing the elements the UMTS management system interacts with;
- the network operator processes needed to run, operate and maintain a UMTS network;
- the functional architecture of the UMTS management system;
- the principles to be applied to UMTS management interfaces.

The requirements identified in this document are directed to the further development of UMTS management specifications, as well as the development of UMTS management products. This document can be seen as guidance for the development of all other Technical Specifications addressing the management of UMTS.

This document does not provide physical architectures of the UMTS management system. These aspects are defined and discussed in more detail in TS 32.102.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 101                  | 11.1.0  | Published    | 2013-01-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132101/11.01.00_60/ts_132101v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132101/11.01.00_60/ts_132101v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.101V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.101(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.101(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.101(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.101(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.101(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.101(Rel11)v11.1.0.pdf</a>                           |

### 10.10.2 TS 32.102 3G telecommunication management; Architecture

The document identifies and standardizes the most important and strategic contexts in the physical architecture for the management of UMTS. It serves as a framework to help define a telecom management physical architecture for a planned UMTS and to adopt standards and provide products that are easy to integrate.

The requirements identified in this document are applicable to all further development of UMTS telecom management specifications as well as the development of UMTS management products. This document can be seen as guidance for the development of all other Technical Specifications addressing the management of UMTS, except TS 32.101.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 102                  | 11.2.0  | Published    | 2013-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132102/11.02.00_60/ts_132102v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132102/11.02.00_60/ts_132102v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.102V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.102(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.102(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.102(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.102(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.102(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.102(Rel11)v11.2.0.pdf</a>                           |

### 10.10.3 TS 32.103 Telecommunication management; Integration Reference Point (IRP) overview and usage guide

This document gives an overview about 3GPP's management interface capabilities and related functionality.

It provides high-level information about IRP Framework, available IRP's as well as their relationship with each other. This document is intended to be a guide into the world of 3GPP management specifications, enabling also non-subject matter experts to gain an understanding about 3GPP's management solutions.

In addition Annex A provides IRP packaging suggestions, intended to guide service providers as well as equipment and solutions providers to identify and choose suitable standardized management interface capabilities.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 103                 | 11.3.0  | Published | 2013-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132103/11.03.00_60/ts_132103v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132103/11.03.00_60/ts_132103v110300p.pdf</a> |
| ATIS | ATIS.3GPP.32.103V1120-2014 | 11.2.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-32.103(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.103(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.103(R11-11.2.0)</a> |
| TTC | TS-3GA-32.103(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.103(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.103(Rel11)v11.3.0.pdf</a>                           |

#### 10.10.4 TS 32.111-1 Telecommunication management; Fault management; Part 1: 3G fault management requirements

The document specifies the overall requirements for 3G fault management (FM) as it applies to the network elements (NE), element manager (EM) and network manager (NM).

This document defines the FM concept and functional requirements for the detection of faults and the generation, collection and presentation of alarms, operational state data and test results across 3G systems. These functions are described on a non-formal level since the formal standardization of these functions across the different vendors' equipment is not required. The functional areas specified in this document cover:

- fault surveillance and detection in the NEs;
- notification of alarms (including alarm cease) and operational state changes;
- retrieval of current alarms from the NEs;
- fault isolation and defence mechanisms in the NEs;
- alarm filtering;
- management of alarm severity levels;
- alarm and operational state data presentation and analysis at the operations system (OS);
- retention of alarm and operational state data in the NEs and the OS; and
- the management of tests.

Any (re)configuration activity exerted from the EM as a consequence of faults will not be subject of this document; these are described in the TS 32.600-series.

This document defines the functional requirements for the standard Itf-N, for the purpose of fault management of 3G networks, as seen from the network manager (NM). The Itf-N is fully standardized so as to connect systems of any vendor to the NM via this interface.

|      | Document No.                  | Version | Status       | Issued date | Location  |
|------|-------------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 111-1                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/13211101/11.00.00_60/ts_13211101v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/13211101/11.00.00_60/ts_13211101v110000p.pdf</a>                 |
| ATIS | ATIS.3GPP.32.111-1V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.111-1(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.111-1(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.111-1(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.111-1(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.111-1(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.111-1(Rel11)v11.0.0.pdf</a>                           |

#### 10.10.5 TS 32.111-2 Telecommunication management; Fault management; Part 2: Alarm integration reference point: Information service

The document defines the alarm integration reference point (IRP) information service (IS), which addresses the alarm surveillance aspects of fault management (FM), applied to the N interface.

The purpose of the alarm IRP is to define an interface through which a "system" (typically a network element manager or a network element) can communicate alarm information for its managed objects to one or several manager systems (typically network management systems).

The alarm IRP IS defines the semantics of alarms and the interactions visible across the reference point in a protocol-neutral way. It defines the semantics of the operations and notifications visible in the IRP. It does not define the syntax or encoding of the operations, notifications and their parameters.

|      | Document No.                  | Version | Status       | Issued date | Location  |
|------|-------------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 111-2                  | 11.1.0  | Published    | 2013-01-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/13211102/11.01.00_60/ts_13211102v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/13211102/11.01.00_60/ts_13211102v110100p.pdf</a>                 |
| ATIS | ATIS.3GPP.32.111-2V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.111-2(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.111-2(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.111-2(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.111-2(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.111-2(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.111-2(Rel11)v11.1.0.pdf</a>                           |

#### 10.10.6 TS 32.111-6 Telecommunication management; Fault Management; Part 6: Alarm Integration Reference Point (IRP): Solution Set (SS) definitions

This document contains Solution Sets for IRP whose semantics as specified in Alarm IRP: Information Service TS 32.111-2.

|      | Document No.                  | Version | Status       | Issued date | Location  |
|------|-------------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 111-6                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/13211106/11.00.00_60/ts_13211106v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/13211106/11.00.00_60/ts_13211106v110000p.pdf</a>                 |
| ATIS | ATIS.3GPP.32.111-6V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.111-6(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.111-6(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.111-6(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.111-6(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.111-6(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.111-6(Rel11)v11.0.0.pdf</a>                           |

#### 10.10.7 TS 32.121 Telecommunication management; Advanced Alarm Management (AAM) Integration Reference Point (IRP); Requirements

The purpose of this set of specifications is to provide a mechanism enabling the IRP Manager to improve the information content of alarms, thereby contributing to reduce the time-to-repair. For this configurable rules for advanced alarm filtering are defined to reduce the number of alarms by applying such advanced alarm filtering.

This document contains the Requirements of Advanced Alarm Management (AAM) on Itf-N IRP. It defines, for the purpose of AAM on Itf-N, the basic requirements to be fulfilled on Itf-N.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 121                 | 11.0.0  | Published | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132121/11.00.00_60/ts_132121v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132121/11.00.00_60/ts_132121v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.121V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.121(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.121(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.121(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.121(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.121(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.121(Rel11)v11.0.0.pdf</a> |

#### **10.10.8 TS 32.122 Telecommunication management; Advanced Alarm Management (AAM) Integration Reference Point (IRP); Information Service (IS)**

The purpose of Advanced Alarm Management (AAM) IRP is to define an interface through which an IRPManager can categorize alarm notifications.

This document is the Information Service of AAM. It defines, for the purpose of categorizing alarm notifications, the information observable and controlled by management system's client and it also specifies the semantics of the interactions used to carry this information.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 122                  | 11.0.0  | Published    | 2012-09-26  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132122/11.00.00_60/ts_132122v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132122/11.00.00_60/ts_132122v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.122V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.122(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.122(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.122(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.122(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.122(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.122(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.9 TS 32.126 Telecommunication management; Advanced Alarm Management (AAM) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document specifies Solution Set definitions for IRP whose semantics as specified in the Advanced Alarm Management (AAM) IRP Information Service in TS 32.122.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 126                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132126/11.00.00_60/ts_132126v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132126/11.00.00_60/ts_132126v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.126V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.126(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.126(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.126(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.126(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.126(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.126(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.10 TS 32.140 Telecommunication management; Subscription management (SuM) requirements**

This document defines the service requirements and high-level architecture for SuM.

SuM is expected to evolve in stages over several releases of 3GPP specifications.

The document provides additional supporting material, which whilst not within the scope of this release, provides an insight towards the future evolution. This is in order that initial work may be done with an appreciation of the wider context expected in future releases of 3GPP specifications.

SuM for 3GPP is primarily concerned with the ability to define subscription profiles and associate the profile with subscribers, users and services that are authorized by agreements. The subscription profile may be used in the process of configuring various network resources (access and core) to make the service a reality for the user.

The management capabilities extend to the creation, modification, synchronization, and reapplication of subscription profiles.

This document is oriented towards a standardized interface into the home subscriber server (HSS) in order that services can be provisioned and maintained.

The document includes information applicable to network operators, content providers, and terminal and network manufacturers.

The document contains the core requirements for SuM, which are sufficient to provide management services.

The method by which applications subscribe to OSA is not within the scope of the present document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 140                  | 11.1.0  | Published    | 2013-07-10  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132140/11.01.00_60/ts_132140v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132140/11.01.00_60/ts_132140v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.140V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.140(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.140(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.140(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.140(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.140(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.140(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.11 TS 32.141 Telecommunication management; Subscription management (SuM) architecture**

Subscription management (SuM) is a feature that permits service providers, value-added service providers, and mobile operators to provision services for a specific subscriber. The feature is necessary to allow service providers and operators to provision, control, monitor and bill the configuration of services that they offer to their subscribers.

For further details, please refer to 3G TS 32.140 SuM requirements specification that gives an overview of SuM requirements.

The document defines the architecture for subscription management (SuM).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 141                  | 11.1.0  | Published    | 2013-07-10  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132141/11.01.00_60/ts_132141v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132141/11.01.00_60/ts_132141v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.141V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.141(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.141(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.141(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.141(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.141(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.141(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.12 TS 32.150 Telecommunication management; Integration reference point (IRP) concept and definitions**

This document provides the overall concept for all integration reference point (IRP) specifications produced by 3GPP. Relevant IRP overview and high-level definitions are already provided in 3G TS 32.101 and 3G TS 32.102.

The document is a member of a TS-family consisting of 3G TS 32.150, 3G TS 32.151, 3G TS 32.152.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 150                  | 11.2.0  | Published    | 2013-04-17  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132150/11.02.00_60/ts_132150v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132150/11.02.00_60/ts_132150v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.150V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.150(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.150(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.150(R11-11.2.0)</a> |
| TTC  | TS-3GA-32.150(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.150(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.150(Rel11)v11.2.0.pdf</a>                           |

#### **10.10.13 TS 32.151 Telecommunication management; Integration reference point (IRP) information service (IS) template**

This document contains the template to be used for the production of all integration reference point (IRP) information service (IS) specifications within the 3GPP 32-series.

The document is a member of a TS-family consisting of 3G TS 32.150, 3G TS 32.151, 3G TS 32.152.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 151                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132151/11.00.00_60/ts_132151v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132151/11.00.00_60/ts_132151v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.151V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.151(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.151(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.151(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.151(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.151(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.151(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.14 TS 32.152 Telecommunication management; Integration reference point (IRP) information service (IS) unified modelling language (UML) repertoire**

This TS documents the necessary and sufficient set of UML notations and model elements, including the ones built by the UML extension mechanism <<stereotype>>, for use by 3GPP IRP IS authors. Collectively, this set of notations and model elements is called the 3GPP IRP IS modelling repertoire.

The selection of the UML notations and model elements in this repertoire is based on the needs of the existing 3GPP IRP IS specifications. Future IRP IS releases may require the use of additional UML notations or model elements.

IRP IS specifications shall employ the UML notation and model elements of this repertoire and may also employ other UML notation and model elements considered necessary. However, before any other UML notation and model elements may be employed in an approved 3GPP IRP specification, the other notation and model elements should be agreed for inclusion first in this repertoire.

This document is a member of a TS-family consisting of 3G TS 32.150, 3G TS 32.151, 3G TS 32.152.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 152                 | 11.1.0  | Published | 2013-01-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132152/11.01.00_60/ts_132152v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132152/11.01.00_60/ts_132152v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.152V1110-2014 | 11.1.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.152(R11-11.1.0) | 11.1.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.152(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.152(R11-11.1.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.152(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.152(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.152(Rel11)v11.1.0.pdf</a> |

#### **10.10.15 TS 32.153 Telecommunication management; Integration Reference Point (IRP) technology specific templates, rules and guidelines**

The present document contains the templates to be used for the production of Integration Reference Point (IRP) technology-specific specifications.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 153                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132153/11.00.00_60/ts_132153v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132153/11.00.00_60/ts_132153v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.153V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.153(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.153(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.153(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.153(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.153(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.153(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.16 TS 32.154 Telecommunication management; Backward and forward compatibility (BFC); Concept and definitions**

This document gives recommendations to develop future IRP specifications in a backward compatible (BC) way so that the group of IRPManager(s) and IRPAgent(s) are not forced to be upgraded in lock step.

The business case for supporting such group, as described above, is complex. It may not relate to the functions of the supported IRPs alone. Rather, it can relate to the cost of coordination of IRPVersion upgrades, the cost of maintaining an old IRPVersion and the cost of using single-vendor or multi-vendor IRPAgents. These considerations are operator deployment scenarios specific.

Clause 4 specifies the Recommendations and clause 5 describes the system context where the Recommendations are applicable.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 154                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132154/11.00.00_60/ts_132154v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132154/11.00.00_60/ts_132154v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.154V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.154(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.154(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.154(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.154(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.154(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.154(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.17 TS 32.155 Telecommunication management; Requirements template**

The document contains the template to be used for the production of all Requirements TSs for the 3GPP Telecommunication management.

This template is mainly based on the requirements template (mainly Annex A) in [ITU-T M.3020].



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 155                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132155/11.00.00_60/ts_132155v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132155/11.00.00_60/ts_132155v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.155V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.155(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.155(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.155(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.155(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.155(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.155(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.18 TS 32.156 Telecommunication management; Fixed Mobile Convergence (FMC); Model repertoire**

The JWG on Model Alignment work has chosen UML to capture behaviour of systems/entities under management.

UML provides a rich set of concepts, notations and model elements to model distributive systems. Usage of all UML notations and model elements is not necessary for the purpose of JWG Model Alignment work. This paper documents the necessary and sufficient set of UML notations and model elements, including the ones built by the UML extension mechanism <<stereotype>>, for use by JWG Model Alignment work. Collectively, this set of notations and model elements is called the FMC (developed by the Converged Management of Fixed/Mobile Networks project) Model Repertoire.

JWG Model Alignment specifications shall employ the UML notation and model elements of this repertoire. In the course of the JWG Model Alignment work, JWG Model Alignment group may modify (add, delete, modify) UML notation and model elements of this repertoire when necessary.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 156                  | 11.1.0  | Published    | 2013-07-10  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132156/11.01.00_60/ts_132156v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132156/11.01.00_60/ts_132156v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.156V1102-2014  | 11.0.2  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.156(R11-11.0.2)  | 11.0.2  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.156(R11-11.0.2)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.156(R11-11.0.2)</a> |
| TTC  | TS-3GA-32.156(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.156(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.156(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.19 TS 32.157 Telecommunication management; Integration Reference Point (IRP) Information Service (IS) template**

The document contains the template to be used for the production of all Integration Reference Point (IRP) Information Service (IS) specifications for Converged Management.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 157                 | 11.3.0  | Published | 2014-01-15  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132157/11.03.00_60/ts_132157v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132157/11.03.00_60/ts_132157v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.157V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.157(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.157(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.157(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.157(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.157(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.157(Rel11)v11.3.0.pdf</a> |

#### **10.10.20 TS 32.171 Subscription management (SuM) network resource model (NRM) integration reference point (IRP): Requirements**

The document defines, in addition to the requirements defined in 3G TS 32.101, 3G TS 32.102, 3G TS 32.140, 3G TS 32.141, requirements for the present SuM NRM IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 171                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132171/11.00.00_60/ts_132171v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132171/11.00.00_60/ts_132171v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.171V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.171(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.171(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.171(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.171(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.171(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.171(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.21 TS 32.172 Telecommunication management; Subscription management (SuM) network resource model (NRM) integration reference point (IRP): Information service (IS)**

The interface Itf-N, defined in 3G TS 32.102, is built up by a number of integration reference points (IRPs) and a related name convention, which realize the functional capabilities over this interface. The basic structure of the IRPs is defined in 3G TS 32.101 and 3G TS 32.102.

This document defines the network resources model (NRM) for the SuM IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 172                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132172/11.00.00_60/ts_132172v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132172/11.00.00_60/ts_132172v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.172V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.172(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.172(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.172(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.172(Rel11)v11.2.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.172(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.172(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.22 TS 32.176 Telecommunication management; Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

This document is part of an Integration Reference Point (IRP) named Subscription Management (SuM) Network Resource Model (NRM) IRP, through which an IRPAgent can communicate configuration management information to one or several IRPManagers concerning SuM resources. The SuM NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the Solution Sets for the SuM NRM IRP.

This specification is related to TS 32.172.



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 176                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132176/11.00.00_60/ts_132176v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132176/11.00.00_60/ts_132176v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.176V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.176(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.176(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.176(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.176(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.176(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.176(Rel11)v11.0.0.pdf</a>                           |

### 10.10.23 TS 32.181 Telecommunication management; User Data Convergence (UDC); Framework for Model Handling and Management

This document specifies the framework for overall management of the User Data Convergence.

In order to accommodate multiple applications and services, existing and new ones, the framework for model handling and management of the UDC as identified by TS 22.101 includes the following items:

- UDC information models:  
UDC information model infrastructure containing the common baseline information model (CBIM), application information models (AIM), and the specialised information model (SIM). The CBIM is standardised in TS 32.182.
- UDC information model handling:  
provide a template and guidelines explaining the design of application information models to be used together with the common baseline information model to create the specialized information model  
describe the process to combine the common baseline information model with application information models in order to produce an operator-specific specialised information model
- Application management data:  
access control data for an application to UDC: identification and authentication  
assignment to an application data model, including linkage to the consolidated data model  
subscription rights for specific events on specific data of specific users
- Consolidated data model management  
lifecycle management of the consolidated data model in the UDR and in the provisioning entity  
activation/deactivation of application adaptation

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 181                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132100_132199/132181/11.00.00_60/ts_132181v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132100_132199/132181/11.00.00_60/ts_132181v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.181V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.181(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.181(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.181(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.181(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.181(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.181(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.24 TS 32.182 Telecommunication management; User Data Convergence (UDC); Common Baseline Information Model (CBIM)**

The present document specifies a Common Baseline Information Model for UDC. This information model denotes an abstract, formal representation of entity types that are common to many applications using the UDR. CBIM describes the basic IOCs of UDC, their properties and their relationships. Detailed requirements for the specification of this Common Baseline Information Model are given in 3GPP TR 22.985 and 3GPP TS 22.101.

From the Common Baseline Information Model specialized information models and data models can be derived. All these derived models are out of the scope of this specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 182                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132_100_132199/132182/11.00.00_60/ts_132182v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132_100_132199/132182/11.00.00_60/ts_132182v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.182V1 100-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.asp">https://www.atis.org/docstore/default.asp</a>   |
| TTA  | TTAT.3G-32.182(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.182(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.182(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.182(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.182(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.182(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.25 TS 32.240 Telecommunication management; Charging management; Charging architecture and principles**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network charging architecture and principles are specified in the present document, which thus provides an umbrella for other charging management TSs that specify:

- the content of the CDRs per domain/subsystem/service (offline charging);
- the content of real-time charging events per domain/subsystem/service (online charging);
- the functionality of online and offline charging for those domains/subsystems/services;
- the interfaces that are used in the charging framework to transfer the charging information (i.e., CDRs or charging events).

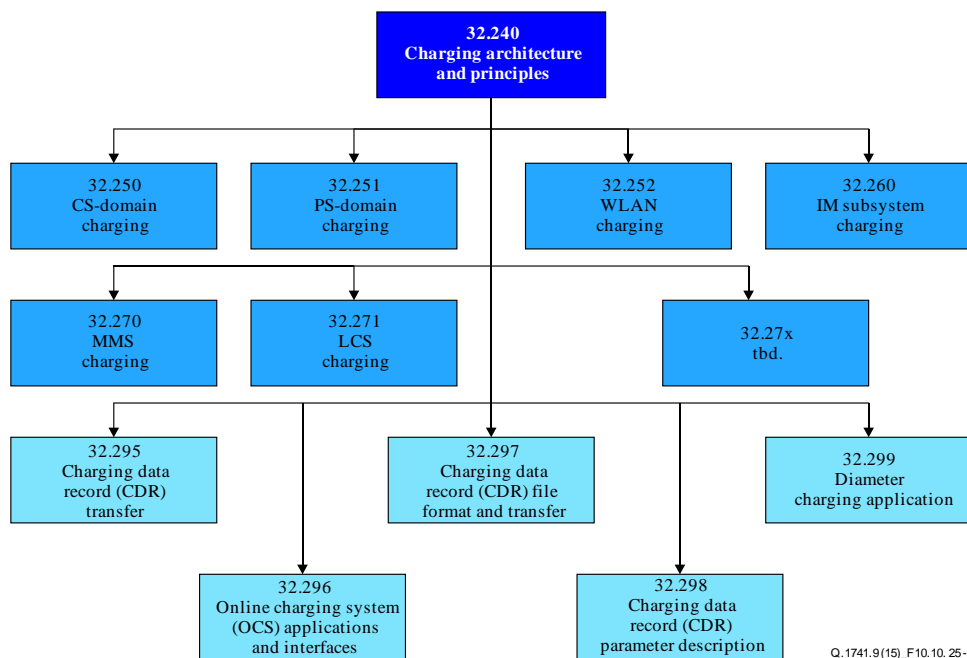
The purposes of the present document are:

- to lay down common principles of charging in the network; and
- to specify a logical common charging architecture that applies to all 3GPP domains, subsystems and services.

A set of domain/subsystem/service-specific TSs covers the bearer (CS, PS, WLAN domains), subsystem (IMS) and service (MMS, LCS, etc.) levels, respectively, in the 3G TS 32.25x, 32.26x and 32.27x number range. These 3G TSs describe the mapping of the common architecture specified in the present document onto the specific domain/subsystem/service and the scenarios and information for online and offline charging that are specific to the domain/subsystem/service. They are commonly referred to as the "middle tier (charging) TSs".

A set of 3G TSs in the 32.29x range covers common aspects such as CDR parameter and syntax descriptions, online and offline charging applications, and the charging interactions within the network (CDR transfer) as well as between the network and the billing domain (CDR file transfer).

The complete document structure for these 3G TSs is outlined in Figure 10.10.25-1.



**Figure 10.10.25-1 – Charging documents structure**

All references, abbreviations, definitions, descriptions, principles and requirements, used in the present document, that are common across 3GPP TSs, are defined in the 3GPP Vocabulary, [3GPP TR 21.905]. Those that are common across charging management in GSM/UMTS domains, services or subsystems are provided in the present document (umbrella TS), and are copied into clause 3 of the other TSs depicted in the figure above, for ease of reading. Finally, those items that are specific to the present document are defined exclusively in the present document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 240                  | 11.6.0  | Published    | 2013-04-17  | <a href="http://www.etsi.org/deliver/etsi_ts/132_200_132299/132240/11.06.00_60/ts_132240v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/132_200_132299/132240/11.06.00_60/ts_132240v110600p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.240V1 160-2014 | 11.6.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.240(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.240(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.240(R11-11.6.0)</a> |
| TTC  | TS-3GA-32.240(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.240(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.240(Rel11)v11.6.0.pdf</a>                           |

#### **10.10.26 TS 32.250 Telecommunication management; Charging management; Circuitswitched (CS) domain charging**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network charging architecture and principles are specified in 3G TS 32.240, which provides an umbrella for other charging management TSs that specify:

- the content of the CDRs per domain and subsystem (offline charging);
- the content of real-time charging messages per domain/subsystem (online charging);
- the functionality of online and offline charging for those domains and subsystems;
- the interfaces that are used in the charging framework to transfer the charging information (i.e., CDRs or charging events).

The complete document structure for these TSs is defined in 3G TS 32.240.

The document specifies the offline charging description for the 3GPP circuit-switched domain, based on the functional descriptions of the 3GPP bearer-, tele- and supplementary services in 3G TS 22.002, 3GPP TS 22.003 and 3G TS 22.004, respectively. This charging description includes the offline charging architecture and scenarios specific to the CS domain, as well as the mapping of the common charging architecture specified in 3G TS 32.240 onto the CS domain. It further specifies the structure and content of the CDRs for offline charging. The present document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in 3G TS 32.240.
- The parameters, abstract syntax and encoding rules for these CDR types are specified in 3G TS 32.298.
- The file-based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device) is specified in 3G TS 32.297.

Note that online charging for the CS domain is solely based on CAMEL (3G TS 23.078 and 3G TS 29.078) and therefore outside the scope of the 32-series charging specifications.

All references, abbreviations, definitions, descriptions, principles and requirements, used in the present document, that are common across 3G TSs, are defined in [3G TR 21.905]. Those that are common across charging management in GSM/UMTS domains or subsystems are provided in the umbrella document 3G TS 32.240 and are copied into clause 3 of the present document for ease of reading. Finally, those items that are specific to the present document are defined exclusively in the present document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 250                  | 11.1.0  | Published    | 2013-04-17  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132250/11.01.00_60/ts_132250v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132250/11.01.00_60/ts_132250v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.250V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.250(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.250(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.250(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.250(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.250(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.250(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.27 TS 32.251 Telecommunication management; Charging management; Packetswitched (PS) domain charging**

This document is part of a series of documents specifying charging functionality and charging management in GSM/UMTS networks.

The document specifies the offline and online charging description for the packet switched (PS) domain (i.e., GPRS), based on the functional Stage 2 description of GPRS in 3G TS 23.060. This charging description includes the offline and online charging architecture and scenarios specific to the PS domain, as well as the mapping of the common 3GPP charging architecture specified in 3G TS 32.240 onto the PS domain. It further specifies the structure and content of the CDRs for offline charging, and the charging events for online charging. The present document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in 3G TS 32.240.
- The parameters, abstract syntax and encoding rules for the CDRs are specified in 3G TS 32.298.
- A transaction based mechanism for the transfer of CDRs within the network is specified in 3G TS 32.295.

- The file-based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device) is specified in 3G TS 32.297.
- The 3GPP Diameter application that is used for PS domain offline and online charging is specified in 3G TS 32.299.

Note that a CAMEL-based prepaid function and protocol is also specified for the PS domain (3G TS 23.078 and 3G TS 29.078). CAMEL entities and functions are outside the scope of the present document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 251                  | 11.9.0  | Published    | 2014-03-21  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132251/11.09.00_60/ts_132251v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132251/11.09.00_60/ts_132251v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.251V1160-2014  | 11.6.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.251(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.251(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.251(R11-11.6.0)</a> |
| TTC  | TS-3GA-32.251(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.251(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.251(Rel11)v11.8.0.pdf</a>                           |

#### **10.10.28 TS 32.252 Telecommunication management; Charging management; Wireless local area network (WLAN) charging**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network charging architecture and principles are specified in TS 32.240, which provides an umbrella for other charging management documents that specify:

- the content of the CDRs per domain and subsystem (offline charging);
- the content of real-time charging messages per domain/subsystem (online charging);
- the functionality of online and offline charging for those domains and subsystems;
- the interfaces that are used in the charging framework to transfer the charging information (i.e., CDRs or charging events).

The complete document structure for these TSs is defined in TS 32.240.

The document specifies the offline and online charging description for the 3GPP interworked wireless LAN (WLAN), based on the functional stage 2 description of 3GPP WLAN interworking in TS 23.234. This charging description includes the offline and online charging architecture and scenarios specific to the 3GPP interworked WLAN, as well as the mapping of the common 3GPP charging architecture specified in TS 32.240 onto the 3GPP interworked WLAN. It further specifies the structure and content of the CDRs for offline charging, and the charging events for online charging. The present document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in TS 32.240.
- The parameters, abstract syntax and encoding rules for these CDR types are specified in TS 32.298.
- The file based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device) is specified in TS 32.297.
- The 3GPP Diameter application that is used for WLAN offline and online charging is specified in TS 32.299.

All terms, definitions and abbreviations used in the present document, that are common across 3GPP TSs, are defined in the 3GPP Vocabulary, TR 21.905. Those that are common across charging management in GSM/UMTS domains or subsystems are provided in the umbrella document

TS 32.240 and are copied into clause 3 of the present document for ease of reading. Finally, those items that are specific to the present document are defined exclusively in the present document.

Furthermore, requirements that govern the charging work are specified in TS 22.115.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 252                  | 11.1.0  | Published    | 2013-07-10  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132252/11.01.00_60/ts_132252v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132252/11.01.00_60/ts_132252v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.252V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.252(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.252(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.252(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.252(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.252(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.252(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.29 TS 32.260 Telecommunication management; Charging management; IP multimedia subsystem (IMS) charging**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks.

The document specifies the offline and online charging description for the IP multimedia subsystem (IMS), based on the functional descriptions of the IMS in 3G TS 23.228. This charging description includes the offline and online charging architecture and scenarios specific to IMS, as well as the mapping of common 3GPP charging architecture specified in 3G TS 32.240 onto IMS. It further specifies the structure and content of the CDRs for offline charging, and the charging events for online charging. This document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in 3G TS 32.240.
- The parameters, abstract syntax and encoding rules for these CDR types are specified in 3G TS 32.298.
- A transaction-based mechanism for the transfer of CDRs within the network is specified in 3G TS 32.295.
- The file-based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device) is specified in 3G TS 32.297.
- The 3GPP Diameter application that is used for IMS offline and online charging is specified in 3G TS 32.299.

|      | Document No.                 | Version | Status       | Issued date | Location  |
|------|------------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 260                   | 11.11.0 | Published    | 2014-03-21  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132260/11.11.00_60/ts_132260v111100p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132260/11.11.00_60/ts_132260v111100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.260V117-2014    | 11.7.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.260(R11-11.7.0)   | 11.7.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.260(R11-11.7.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.260(R11-11.7.0)</a> |
| TTC  | TS-3GA-32.260(Rel11)v11.10.0 | 11.10.0 | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.260(Rel11)v11.10.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.260(Rel11)v11.10.0.pdf</a>                         |

#### **10.10.30 TS 32.270 Telecommunication management; Charging management; Multimedia messaging service (MMS) charging**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks.



The complete document structure for these TSs is defined in 3G TS 32.240.

This document specifies the offline and online charging description for MMS charging, based on the functional Stage 2 descriptions of the MMS in 3G TS 23.140. This charging description includes the offline and online charging architecture and scenarios specific to the MMS, as well as the mapping of the common 3GPP charging architecture specified in 3G TS 32.240 onto MMS. It further specifies the structure and content of the CDRs for offline charging, and the charging events for online charging. The present document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in 3G TS 32.240.
- The parameters, abstract syntax and encoding rules for these CDR types are specified in 3G TS 32.298.
- A transaction-based mechanism for the transfer of CDRs within the network is specified in 3G TS 32.295.
- The file-based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device) is specified in 3G TS 32.297.
- The 3GPP Diameter application that is used for MMS online charging is specified in 3G TS 32.299.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 270                  | 11.0.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132270/11.00.00_60/ts_132270v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132270/11.00.00_60/ts_132270v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.270V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.270(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.270(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.270(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.270(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.270(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.270(Rel11)v11.0.0.pdf</a>                           |

#### 10.10.31 TS 32.271 Telecommunication management; Charging management; Location services (LCS) charging

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks.

The document specifies the LCS offline and online charging description for the LCS domain, based on the functional Stage 2 description of the LCS in 3G TS 23.071. This charging description includes the offline and online charging architecture and scenarios specific to the LCS, as well as the mapping of the common 3GPP architecture specified in 3G TS 32.240 onto the LCS domain. It further specifies the structure and content of the CDRs for offline charging and the charging events for online charging.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 271                  | 11.1.1  | Published    | 2013-04-17  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132271/11.01.01_60/ts_132271v110101p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132271/11.01.01_60/ts_132271v110101p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.271V1111-2014  | 11.1.1  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.271(R11-11.1.1)  | 11.1.1  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.271(R11-11.1.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.271(R11-11.1.1)</a> |
| TTC  | TS-3GA-32.271(Rel11)v11.1.1 | 11.1.1  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.271(Rel11)v11.1.1.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.271(Rel11)v11.1.1.pdf</a>                           |

### 10.10.32 TS 32.272 Telecommunication management; Charging management; Push-to-talk over cellular (PoC) charging

The document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network charging architecture and principles are specified in TS 32.240, which provides an umbrella for other charging management TSs that specify:

- the content of the CDRs per domain and subsystem (offline charging);
- the content of real-time charging messages per domain/subsystem (online charging);
- the functionality of online and offline charging for those domains and subsystems;
- the interfaces that are used in the charging framework to transfer the charging information (i.e., CDRs or charging events).

The complete document structure for these TSs is defined in TS 32.240.

This document specifies the offline and online charging description for the "Push-to-Talk over Cellular" (PoC) service, based on the functional description of the PoC service in TR 23.979 "3GPP enablers for OMA PoC Services", in OMA-AD-POC "Push to talk over Cellular (PoC) – Architecture", in OMA-CP-POC "OMA PoC Control Plane" and in OMA-UP-POC: "OMA POC User Plane", respectively. This charging description includes the offline and online charging architecture and scenarios specific to PoC, as well as the mapping of the common 3GPP charging architecture specified in TS 32.240 onto the PoC service. It further specifies the structure and content of the CDRs for offline charging, and the charging events for online charging. The present document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in TS 32.240.
- The parameters, abstract syntax and encoding rules for these CDR types are specified in TS 32.298.
- The file based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device) is specified in TS 32.297.
- The 3GPP Diameter application that is used for WLAN offline and online charging is specified in TS 32.299.

All terms, definitions and abbreviations used in the present document, that are common across 3GPP TSs, are defined in the 3GPP Vocabulary, TR 21.905. Those that are common across charging management in GSM/UMTS domains or subsystems are provided in the umbrella document TS 32.240 and are copied into clause 3 of the present document for ease of reading. Finally, those items that are specific to the present document are defined exclusively in the present document.

Furthermore, requirements that govern the charging work are specified in TS 22.115.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 272                  | 11.1.0  | Published    | 2014-01-15  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132272/11.01.00_60/ts_132272v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132272/11.01.00_60/ts_132272v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.272V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.272(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.272(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.272(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.272(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.272(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.272(Rel11)v11.1.0.pdf</a>                           |



### **10.10.33 TS 32.273 Telecommunication management; Charging management; Multimedia broadcast and multicast service (MBMS) charging**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network charging architecture and principles are specified in TS 32.240, which provides an umbrella for other charging management TSs that specify:

- the content of the CDRs per domain and subsystem (offline charging);
- the content of real-time charging messages per domain/subsystem (online charging);
- the functionality of online and offline charging for those domains and subsystems;
- the interfaces that are used in the charging framework to transfer the charging information (i.e., CDRs or charging events).

The complete document structure for these TSes is defined in TS 32.240.

This document specifies the offline and online charging description for the multimedia broadcast and multicast service (MBMS), based on the functional stage 2 description in TS 23.246. This charging description includes the offline and online charging architecture and scenarios specific to MBMS, as well as the mapping of the common 3GPP charging architecture specified in TS 32.240 onto MBMS. It further specifies the structure and content of the CDRs for offline charging, and the charging events for online charging. The present document is related to other 3GPP charging TSes as follows:

- The common 3GPP charging architecture is specified in TS 32.240.
- The parameters, abstract syntax and encoding rules for these CDR types are specified in TS 32.298.
- The file based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device) is specified in TS 32.297.
- The 3GPP Diameter application that is used for WLAN offline and online charging is specified in TS 32.299.

All terms, definitions and abbreviations used in the present document, that are common across 3GPP TSes, are defined in the 3GPP Vocabulary, TR 21.905. Those that are common across charging management in GSM/UMTS domains or subsystems are provided in the umbrella document TS 32.240 and are copied into clause 3 of the present document for ease of reading. Finally, those items that are specific to the present document are defined exclusively in the present document.

Furthermore, requirements that govern the charging work are specified in TS 22.115.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 273                  | 11.1.0  | Published    | 2014-01-15  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132273/11.01.00_60/ts_132273v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132273/11.01.00_60/ts_132273v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.273V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.273(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.273(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.273(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.273(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.273(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.273(Rel11)v11.1.0.pdf</a>                           |

### **10.10.34 TS 32.274 Telecommunication management; Charging management; Short Message Service (SMS) charging**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network charging architecture and

principles are specified in 3GPP TS 32.240, which provides an umbrella for other charging management TSs that specify:

- the content of the CDRs per domain / subsystem / service (offline charging);
- the content of real-time charging messages per domain / subsystem / service (online charging);
- the functionality of online and offline charging for those domains / subsystems / services;
- the interfaces that are used in the charging framework to transfer the charging information (i.e., CDRs or charging events).

The complete document structure for these TSs is defined in 3GPP TS 32.240.

This document specifies the Offline and Online Charging description for the Short Message Service (SMS), based on the functional description in 3GPP TS 23.040 and on the SMS over IP in 3GPP TS 23.204. The document does not replace existing offline SMS charging functionality and therefore is in addition to that defined in 3GPP TS 32.250 and 3GPP TS 32.251. This charging description includes the offline and online charging architecture and scenarios specific to SMS, as well as the mapping of the common 3GPP charging architecture specified in 3GPP TS 32.240 onto SMS. It further specifies the structure and content of the CDRs for offline charging, and the charging events for online charging. This document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in 3GPP TS 32.240;
- The parameters, abstract syntax and encoding rules for the CDRs are specified in 3GPP TS 32.298;
- A transaction based mechanism for the transfer of CDRs within the network is specified in TS 32.295;
- The file based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device) is specified in 3GPP TS 32.297;
- The 3GPP Diameter application that is used for SMS offline and online charging is specified in 3GPP TS 32.299.

Furthermore, requirements that govern the charging work are specified in 3GPP TS 22.115.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 274                  | 11.0.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132274/11.00.00_60/ts_132274v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132274/11.00.00_60/ts_132274v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.274V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.274(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.274(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.274(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.274(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.274(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.274(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.35 TS 32.275 Telecommunication management; Charging management; MultiMedia Telephony (MMTel) charging**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network charging architecture and principles are specified in 3GPP TS 32.240, which provides an umbrella for other charging management TSs that specify:

- the content of the CDRs per domain and subsystem (offline charging),
- the content of real-time charging messages per domain / subsystem (online charging);
- the functionality of online and offline charging for those domains and subsystems;

- the interfaces that are used in the charging framework to transfer the charging information (i.e., CDRs or charging events).

The complete document structure for these TSes is defined in TS 32.240.

The present document specifies the Offline and Online Charging for MultiMedia Telephony (MMTel) service and supplementary services, based on the functional description of MMTel in 3GPP TS 22.173. Charging for the following supplementary services is specified:

- Communications Diversion (CDIV)
- Communication Hold (HOLD)
- CONference (CONF)
- Message Waiting Indication (MWI)
- Originating Identity Presentation (OIP) / Originating Identity Restriction (OIR)
- Terminating Identity Presentation (TIP) / Terminating Identity Restriction (TIR)
- Call Barring (CB)
- Explicit Call Transfer (ECT)
- Communication Wait (CW)
- Completion of Communications to Busy Subscriber (CCBS)
- Completion of Communications by No Reply (CCNR)
- Malicious Communication Identification (MCID)
- Customized Alerting Tone (CAT)
- Closed User Group (CUG)
- Personal Network Management (PNM)
- Customized Ringing Signal (CRS)
- Reverse Charging

Charging of these supplementary services is performed at the respective MMTel AS. The MMTel charging aspects are an extension of the basic IMS charging capabilities as specified in TS 32.260.

This charging description includes the offline and online charging architecture and scenarios specific to the MMTel, as well as the mapping of the common 3GPP charging architecture specified in TS 32.240 onto the MMTel. It further specifies the structure and content of the CDRs for offline charging, and the charging events for online charging.

The present document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in TS 32.240;
- The common IMS charging principles are specified in TS 32.260;
- The parameters, abstract syntax and encoding rules for these CDR types are specified in TS 32.298;
- A transaction based mechanism for the transfer of CDRs within the network is specified in TS 32.295;
- The file based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device) is specified in TS 32.297;
- The 3GPP Diameter application that is used for MMTel offline and online charging is specified in TS 32.299.

All references, abbreviations, definitions, descriptions, principles and requirements, used in the present document, that are common across 3GPP TSs, are defined in the 3GPP Vocabulary, TR 21.905. Those that are common across charging management in GSM/UMTS domains or

subsystems are provided in the umbrella document TS 32.240. Finally, those items that are specific to the present document are defined exclusively in the present document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 275                  | 11.3.0  | Published    | 2013-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132275/11.03.00_60/ts_132275v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132275/11.03.00_60/ts_132275v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.275V1121-2014  | 11.2.1  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.275(R11-11.2.1)  | 11.2.1  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.275(R11-11.2.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.275(R11-11.2.1)</a> |
| TTC  | TS-3GA-32.275(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.275(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.275(Rel11)v11.3.0.pdf</a>                           |

#### **10.10.36 TS 32.280 Telecommunication management; Charging management; Advice of Charge (AoC) service**

This document specifies the AoC framework for relevant events, sessions, and services. The 3GPP umbrella charging architecture and principles are defined in 3GPP TS 32.240.

The AoC framework detailed herein provides for both offline and online charging models. It specifies the following:

- The AoC architecture.
- The common principles that govern AoC.
- The AoC function that enables the IMS AoC framework.
- Exemplary message flows.
- AoC interface data description.

All terms, definitions and abbreviations used in the present document, that are common across 3GPP TSs, are defined in the 3GPP Vocabulary, TR 21.905. Those that are common across charging management in 3GPP network, services or subsystems are provided in the umbrella document TS 32.240 and may be copied into clause 3 of the present document for ease of reading. Finally, those items that are specific to the present document are defined exclusively in the present document.

Requirements that govern the AoC work are specified in 3GPP TS 22.115.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 280                  | 11.1.0  | Published    | 2014-01-20  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132280/11.01.00_60/ts_132280v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132280/11.01.00_60/ts_132280v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.280V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.280(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.280(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.280(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.280(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.280(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.280(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.37 TS 32.295 Telecommunication management; Charging management; Charging data record (CDR) transfer**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks.

The document specifies the transaction-based mechanism for the near real-time transfer of CDRs within the network.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 295                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132295/11.00.00_60/ts_132295v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132295/11.00.00_60/ts_132295v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.295V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.295(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.295(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.295(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.295(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.295(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.295(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.38 TS 32.296 Telecommunication management; Charging management; Online charging system (OCS): Applications and interfaces**

This document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks.

The document covers all internal aspects of the online charging system (OCS). The document contains the architecture and functions of the OCS logical components and thereby derives the functionality of the OCS interfaces. A detailed specification of interfaces between the logical OCS components is also included. The functionality of the OCS, as described in the present document, applies to all charging domains (bearer, session and service).

The interfaces connecting to the OCS (e.g., Ro, CAP) are out of the scope of the present document.

NOTE – In the current release, the present document is limited to the interface between the charging function and the rating function, namely Re.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 296                  | 11.5.0  | Published    | 2013-04-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132296/11.05.00_60/ts_132296v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132296/11.05.00_60/ts_132296v110500p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.296V1150-2014  | 11.5.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.296(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.296(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.296(R11-11.5.0)</a> |
| TTC  | TS-3GA-32.296(Rel11)v11.5.0 | 11.5.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.296(Rel11)v11.5.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.296(Rel11)v11.5.0.pdf</a>                           |

#### **10.10.39 TS 32.297 Telecommunication management; Charging management; Charging data record (CDR) file format and transfer**

This document is part of a series of documents specifying charging functionality and charging management in GSM/UMTS networks.

The document specifies the mechanisms used to transfer the CDRs from the network to the operator's billing domain (e.g., the billing system or a mediation device). This includes the file transfer procedures and the layout of the CDR files, as well as file meta information and the encoding of the CDRs within the files.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 297                 | 11.0.0  | Published | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132297/11.00.00_60/ts_132297v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132297/11.00.00_60/ts_132297v110000p.pdf</a> |
| ATIS | ATIS.3GPP.32.297V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-32.297(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.297(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.297(R11-11.0.0)</a> |
| TTC | TS-3GA-32.297(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.297(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.297(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.40 TS 32.298 Telecommunication management; Charging management; Charging data record (CDR) parameter description**

This document is part of a series of documents that specify charging functionality and charging management in GSM and UMTS networks. The GSM/UMTS core network charging architecture and principles are specified in document TS 32.240, which provides an umbrella for other charging management documents that specify:

- the content of the CDRs per domain and subsystem (offline charging);
- the content of real-time charging events per domain/subsystem (online charging);
- the functionality of online and offline charging for those domains and subsystems;
- the interfaces that are used in the charging framework to transfer the charging information (i.e., CDRs or charging events).

The complete document structure for these TSs is defined in TS 32.240.

This document specifies the CDR parameters, the abstract syntax and encoding rules for all the CDR types that are defined in the charging management TSs described above. Therefore, it is only applicable to offline charging. The mechanisms used to transfer the CDRs from the generating node to the operator's billing domain (e.g., the billing system or a mediation device) are specified in TS 32.297. Further details with respect to the operator's billing domain for offline charging are out of scope of 3GPP standardisation.

Note that a generic Diameter application for online charging in 3GPP networks is specified in TS 32.299. Furthermore, 3GPP TSs are being created to standardize some technical aspects of the operator's billing domain for online charging, i.e., the online charging system (OCS).

All terms, definitions and abbreviations used in the present document, that are common across 3GPP TSs, are defined in the 3GPP Vocabulary, [ETSI TR 121 905]. Those that are common across charging management in UMTS domains or subsystems are provided in the umbrella document TS 32.240 and are copied into clause 3 of the present document for ease of reading. Finally, those items that are specific to the present document are defined exclusively in the present document.

Furthermore, requirements that govern the charging work are specified in TS 22.115.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 298                  | 11.9.0  | Published    | 2014-03-21  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132298/11.09.00_60/ts_132298v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132298/11.09.00_60/ts_132298v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.298V1160-2014  | 11.6.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.298(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.298(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.298(R11-11.6.0)</a> |
| TTC  | TS-3GA-32.298(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.298(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.298(Rel11)v11.8.0.pdf</a>                           |



#### **10.10.41 TS 32.299 Telecommunication management; Charging management; Diameter charging applications**

The document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks.

This document specifies in detail the Diameter-based offline and online charging applications for 3GPP networks. It includes all charging parameters, scenarios and message flows.

|      | Document No.                 | Version | Status       | Issued date | Location  |
|------|------------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 299                   | 11.11.0 | Published    | 2014-03-21  | <a href="http://www.etsi.org/deliver/etsi_ts/132200_132299/132299/11.11.00_60/ts_132299v111100p.pdf">http://www.etsi.org/deliver/etsi_ts/132200_132299/132299/11.11.00_60/ts_132299v111100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.299V1170-2014   | 11.7.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.299(R11-11.7.0)   | 11.7.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.299(R11-11.7.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.299(R11-11.7.0)</a> |
| TTC  | TS-3GA-32.299(Rel11)v11.10.0 | 11.10.0 | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.299(Rel11)v11.10.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.299(Rel11)v11.10.0.pdf</a>                         |

#### **10.10.42 TS 32.300 Telecommunication management; Configuration management (CM); Name convention for managed objects**

A more detailed background and introduction of the IRP concept is given in TS 32.101 and TS 32.102.

To perform network management tasks, cooperating applications require identical interpretation of names assigned to network resources under management. Such names are required to be unambiguous as well. The document recommends one name convention for network resources under management in the IRP context.

To facilitate integration of network management information obtained via multiple IRPs of different technologies such as CMIP and CORBA, identical network resource name semantics shall be conveyed in all IRPs. The document specifies one such name convention.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 300                  | 11.2.0  | Published    | 2013-07-10  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132300/11.02.00_60/ts_132300v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132300/11.02.00_60/ts_132300v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.300V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.300(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.300(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.300(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.300(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.300(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.300(Rel11)v11.2.0.pdf</a>                           |

#### **10.10.43 TS 32.301 Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP); Requirements**

The purpose of notification IRP is to define an interface through which an IRPManager can subscribe to an IRPAgent for receiving notifications. This document is the "Requirements" of notification IRP. It defines, for the purpose of subscribing to an IRPAgent for receiving notifications, the basic requirements that shall be fulfilled on Itf-N.

How IRPManager discovers the IRPAgent's address or reference (so that IRPManager can invoke an operation) is outside the scope of this document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 301                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132301/11.00.00_60/ts_132301v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132301/11.00.00_60/ts_132301v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.301V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.301(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.301(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.301(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.301(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.301(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.301(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.44 TS 32.302 Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP); Information Service (IS)**

The purpose of notification IRP is to define an interface through which an IRPManager can subscribe to an IRPAgent for receiving notifications. This document is the "Information Service" of notification IRP. It defines, for the purpose of subscribing to an IRPAgent for receiving notifications, the information observable and controlled by management system's client and it also specifies the semantics of the interactions used to carry this information. It also defines the information common to all notifications which is called the "notificationHeader".

An IRPAgent supporting this IRP IS may emit one or multiple categories of notifications, such as alarms (as specified in Alarm IRP: Information service 3G TS 32.111-2) and others. This IRP IS defines a mechanism that IRPManager can use to determine the categories of notifications supported by an IRPAgent. It also defines a mechanism (subscribe and unsubscribe operations) that IRPManager can use to specify the categories of notifications IRPAgent should emit to IRPManager during subscription. It also defines a mechanism (getSubscriptionIds operation) that IRPManager can use to check which categories of notifications it has subscribed to. IRPManager can set and change filter criteria applicable during the life-cycle of a subscription. IRPManager can also exercise flow-control on IRPAgent's emission of notifications (suspendSubscription and resumeSubscription operations).

Using different managerReference, an IRPManager can subscribe several times. It will result in multiple subscriptions. As far as IRPAgent is concerned, notifications are sent to multiple "places".

Using the same managerReference, an IRPManager can subscribe several times specifying different categories of notifications.

This IRP IS does not specify information that is carried in some but not all notifications. That kind of information is specified in other IRP ISs involved. For example, `perceivedSeverity` is a piece of information specific for notifications carrying alarm information. This information is not defined in this document but in Alarm IRP: Information service 3G TS 32.111-2.

How IRPManager discovers the IRPAgent's address or reference (so that IRPManager can invoke an operation) is outside the scope of this document.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 302                 | 11.1.0  | Published | 2013-01-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132302/11.01.00_60/ts_132302v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132302/11.01.00_60/ts_132302v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.302V1110-2014 | 11.1.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.302(R11-11.1.0) | 11.1.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.302(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.302(R11-11.1.0)</a> |



|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.302(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.302(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.302(Rel11)v11.1.0.pdf</a> |

#### **10.10.45 TS 32.306 Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Solution Set (SS) definitions**

The document contains the Solution Sets for the IRP whose semantics is specified in Notification IRP: Information Service TS 32.302.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 306                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132306/11.00.00_60/ts_132306v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132306/11.00.00_60/ts_132306v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.306V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.306(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.306(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.306(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.306(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.306(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.306(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.46 TS 32.311 Telecommunication management; Generic IRP management; Requirements**

The purpose of the document is to define a common service supported by all IRPs. This document is the "Requirements" part. It defines, for the purpose of supporting the common service, the requirements that shall be fulfilled by all IRPs supporting this service.

With this common service supported by all IRPs, an IRPManager shall be able to retrieve the profile of operations and notifications supported by a given IRP that are by an IRPAgent. An IRPManager shall also be able to retrieve the different versions supported by an IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 311                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132311/11.00.00_60/ts_132311v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132311/11.00.00_60/ts_132311v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.311V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.311(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.311(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.311(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.311(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.311(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.311(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.47 TS 32.312 Telecommunication management; Generic IRP management; Information service**

The purpose of the document is to define a common service supported by all IRPs. This document is the "Information Service" part. It defines, for the purpose of supporting the common service, the information observable and controlled by management system's client and it also specifies the semantics of the interactions used to carry this information.

With this common service supported by all IRPs, an IRPManager can retrieve the profile of operations and notifications supported by a given IRP supported by an IRPAgent. An IRPManager can also retrieve the different versions supported by an IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 312                  | 11.1.0  | Published    | 2013-04-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132312/11.01.00_60/ts_132312v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132312/11.01.00_60/ts_132312v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.312V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.312(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.312(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.312(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.312(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.312(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.312(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.48 TS 32.316 Telecommunication management; Generic Integration Reference Point (IRP) management; Solution Set (SS) Definitions**

The document provides the Solution Set definitions for Generic Integration Reference Point (IRP) management, whose capabilities are specified in TS 32.312, the Generic IRP management: Information Service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 316                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132316/11.00.00_60/ts_132316v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132316/11.00.00_60/ts_132316v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.316V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.316(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.316(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.316(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.316(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.316(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.316(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.49 TS 32.321 Telecommunication management; Test management integration reference point (IRP); Requirements**

This document describes, in addition to the requirements defined in 3G TS 32.101 and 3G TS 32.102, the requirements for the test management IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 321                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132321/11.00.00_60/ts_132321v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132321/11.00.00_60/ts_132321v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.321V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.321(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.321(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.321(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.321(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.321(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.321(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.50 TS 32.322 Telecommunication management; Test management integration reference point (IRP); Information service**

This document defines the IS part of the test management IRP, which describes the semantics of the information and the interactions visible across Itf-N in a protocol-independent way. The information is specified by means of information object classes and the interactions by means of operations and notifications. This document does not specify the syntax (encoding) of the information.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 322                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132322/11.00.00_60/ts_132322v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132322/11.00.00_60/ts_132322v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.322V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.322(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.322(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.322(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.322(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.322(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.322(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.51 TS 32.326 Telecommunication management; Test management Integration Reference Point (IRP): Solution Set (SS) definitions**

The document contains Solution Sets for the IRP whose semantics is specified in Test management IRP IS TS 32.322.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 326                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132326/11.00.00_60/ts_132326v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132326/11.00.00_60/ts_132326v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.326V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.326(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.326(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.326(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.326(Rel11)v11.1.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.326(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.326(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.52 TS 32.331 Telecommunication management; Notification log integration reference point (IRP): Requirements**

The document describes the requirements and information model necessary for telecommunications management (TM). The TM principles and TM architecture are specified in 3G TS 32.101 and 3G TS 32.102, respectively.

This document specifies the overall requirements for notification log management over ItfN.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 331                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132331/11.00.00_60/ts_132331v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132331/11.00.00_60/ts_132331v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.331V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.331(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.331(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.331(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.331(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.331(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.331(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.53 TS 32.332 Telecommunication management; Notification log integration reference point (IRP): Information service (IS)**

The document specifies the information service for the notification log integration reference point (NL IRP) as it applies to Itf-N.

This IRP IS defines the semantics of operations (and their parameters) visible across the Itf-N in a protocol and technology neutral way. It does not define the syntax or encoding of the operations and their parameters.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 332                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132332/11.00.00_60/ts_132332v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132332/11.00.00_60/ts_132332v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.332V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.332(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.332(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.332(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.332(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.332(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.332(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.54 TS 32.336 Telecommunication management; Notification Log (NL) Integration Reference Point (IRP): Solution Sets (SS) definitions**

The document specifies the Solution Sets for the IRP whose semantics is specified in Notification Log (NL) IRP IS TS 32.332.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 336                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132336/11.00.00_60/ts_132336v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132336/11.00.00_60/ts_132336v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.336V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.336(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.336(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.336(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.336(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.336(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.336(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.55 TS 32.341 Telecommunication management; File transfer (FT) integration reference point (IRP): Requirements**

The document specifies the overall requirements for the file transfer integration reference point (FT IRP) as it applies to the Itf-N.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 341                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132341/11.00.00_60/ts_132341v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132341/11.00.00_60/ts_132341v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.341V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.341(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.341(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.341(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.341(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.341(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.341(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.56 TS 32.342 Telecommunication management; File transfer (FT) integration reference point (IRP): Information service (IS)**

The document specifies the information service for the file transfer integration reference point (FileTransferIRP) as it applies to the Itf-N.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 342                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132342/11.00.00_60/ts_132342v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132342/11.00.00_60/ts_132342v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.342V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.342(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.342(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.342(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.342(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.342(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.342(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.57 TS 32.346 Telecommunication management; File Transfer (FT) Integration Reference Point (IRP): Solution Set (SS) definitions**

The document contains the Solution Sets for the IRP whose semantics are specified in File Transfer IRP: Information Service TS 32.342.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 346                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132346/11.00.00_60/ts_132346v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132346/11.00.00_60/ts_132346v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.346V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.346(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.346(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.346(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.346(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.346(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.346(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.58 TS 32.351 Telecommunication management; Communication surveillance (CS) integration reference point (IRP): Requirements**

The document describes the requirements of the communication surveillance IRP (CSIRP).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 351                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132351/11.00.00_60/ts_132351v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132351/11.00.00_60/ts_132351v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.351V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.351(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.351(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.351(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.351(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.351(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.351(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.59 TS 32.352 Telecommunication management; Communication surveillance (CS) integration reference point (IRP): Information service (IS)**

The document defines the IS part of the CSIRP, which describes the semantics of the information and the interactions visible across Itf-N in a protocol-independent way. The information is specified by means of information object classes and the interactions by means of operations and notifications. The present document does not specify the syntax (encoding) of the information.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 352                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132352/11.00.00_60/ts_132352v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132352/11.00.00_60/ts_132352v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.352V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.352(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.352(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.352(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.352(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.352(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.352(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.60 TS 32.356 Telecommunication management; Communication Surveillance (CS) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document specifies Solution Set definitions for the IRP whose semantics is specified in TS 32.352 Communication Surveillance IRP: Information Service.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 356                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132356/11.00.00_60/ts_132356v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132356/11.00.00_60/ts_132356v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.356V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.356(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.356(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.356(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.356(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.356(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.356(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.61 TS 32.361 Telecommunication management; Entry point (EP) integration reference point (IRP): Requirements**

The document describes the requirements of the EPIRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 361                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132361/11.00.00_60/ts_132361v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132361/11.00.00_60/ts_132361v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.361V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.361(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.361(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.361(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.361(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.361(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.361(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.62 TS 32.362 Telecommunication management; Entry point (EP) integration reference point (IRP): Information service (IS)**

The document defines the IS part of the EPIRP, which describes the semantics of the information and the interactions visible across Itf-N in a protocol independent way. The information is specified by means of information object classes and the interactions by means of operations and notifications. The present document does not specify the syntax (encoding) of the information.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 362                  | 11.1.0  | Published    | 2013-04-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132362/11.01.00_60/ts_132362v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132362/11.01.00_60/ts_132362v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.362V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.362(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.362(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.362(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.362(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.362(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.362(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.63 TS 32.366 Telecommunication management; Entry Point (EP) Integration Reference Point (IRP); Solution Set (SS) definitions**

The document specifies Solution Set definitions for the IRP whose semantics are specified in the Entry Point IRP: Information Service TS 32.362.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 366                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132366/11.00.00_60/ts_132366v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132366/11.00.00_60/ts_132366v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.366V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.366(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.366(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.366(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.366(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.366(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.366(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.64 TS 32.371 Telecommunication management; Security management concept and requirements**

The document defines, in addition to the requirements defined in 3G TS 32.101 and 3G TS 32.102, the requirements for security management IRP.

The purpose of this document is to specify the necessary security features, services and functions to protect the network management data, including Requests, Responses, Notifications and Files, exchanged across the Itf-N.

Telecommunication network security can be breached by weaknesses in operational procedures, physical installations, communication links, computational processes and data storage. Of concern here in the present document is the security problems resulting from the weaknesses inherent in the communication technologies (i.e., the 3GPP-defined interface IRPs and their supporting protocol stacks) deployed across the Itf-N.

An appropriate level of security for a telecommunication network is essential. Secured access to the network management applications, and network management data, is essential. The 3GPP-defined interface IRPs (and their supporting protocol stacks), deployed across the Itf-N, are used for such access, and therefore, their security is considered essential.

Many network management security standards exist. However, there is no recommendation on how to apply them in the Itf-N context. Their deployment across the Itf-N is left to operators. The present document and the corresponding solutions identify and recommend security standards in the Itf-N context.

The business case for secured Itf-N is complex as it does not relate to the functions of the interface IRPs (the functions are constant) but rather, it relates to variants such as the cost of recovering from



security breaks, the probability of security incidents and the cost of implementing security management, all of which differ depending on specific deployment scenarios.

This document describes the security functions for a 3G network in terms of security domains.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 371                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132371/11.00.00_60/ts_132371v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132371/11.00.00_60/ts_132371v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.371V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.371(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.371(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.371(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.371(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.371(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.371(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.65 TS 32.372 Telecommunication management; Security services for integration reference point (IRP): Information service (IS)**

The purpose of this document is to specify the necessary security features, services and functions to protect the network management data, including Requests, Responses, Notifications and Files, exchanged across the Itf-N.

The document specifies the security service for IRP information service.

This security service for IRP IS defines the semantics of management information visible across the Itf-N in a protocol and technology neutral way. It does not define the syntax or encoding of the operations and their parameters.

This information service specification is related to 3GPP TS 32.371.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 372                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132372/11.00.00_60/ts_132372v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132372/11.00.00_60/ts_132372v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.372V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.372(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.372(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.372(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.372(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.372(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.372(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.66 TS 32.376 Telecommunication management; Security services for Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set for the IRP whose semantics is specified in TS 32.372 Security Service for IRP Information Service.

Note that within the document there are several alternate solutions. Specific choices will need to be made to counter identified security threats, and to consider performance and cost criteria, i.e., an implementation is not expected to have to support every option for every deployment.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 376                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132376/11.00.00_60/ts_132376v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132376/11.00.00_60/ts_132376v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.376V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.376(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.376(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.376(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.376(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.376(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.376(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.67 TS 32.381 Telecommunication management; Partial suspension of Itf-N integration reference point (IRP): Requirements**

The purpose of partial suspension of Itf-N IRP is to define an interface through which an IRPManager can suspend the forwarding of notifications via Itf-N which were generated in parts of the managed systems.

This document contains the requirements of partial suspension of Itf-N IRP. It defines, for the purpose of generally suspending the forwarding of notifications, the basic requirements to be fulfilled on Itf-N.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 381                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132381/11.00.00_60/ts_132381v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132381/11.00.00_60/ts_132381v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.381V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.381(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.381(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.381(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.381(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.381(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.381(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.68 TS 32.382 Telecommunication management; Partial suspension of Itf-N integration reference point (IRP): Information service (IS)**

The purpose of partial suspension of Itf-N IRP is to define an interface through which an IRPManager can suspend the forwarding of notifications via Itf-N which were generated in parts of the managed systems.

This document is the information service of partial suspension of Itf-N IRP. It defines, for the purpose of suspending generally the forwarding of notifications, the information observable and controlled by management system's client and it also specifies the semantics of the interactions used to carry this information.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 382                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132382/11.00.00_60/ts_132382v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132382/11.00.00_60/ts_132382v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.382V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.382(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.382(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.382(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.382(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.382(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.382(Rel11)v11.0.0.pdf</a>                           |

### 10.10.69 TS 32.386 Telecommunication management; Partial Suspension of Itf-N Integration Reference Point (IRP); Solution Set (SS) definitions

This document specifies the SOAP SS for the IRP whose semantics is specified Partial Suspension of Itf-N IRP IS TS 32.382.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 386                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132386/11.00.00_60/ts_132386v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132386/11.00.00_60/ts_132386v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.386V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.386(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.386(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.386(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.386(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.386(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.386(Rel11)v11.0.0.pdf</a>                         |

### 10.10.70 TS 32.391 Telecommunication management; Delta synchronization integration reference point (IRP): Requirements

The purpose of delta synchronization IRP is to define an interface through which an IRPManager can request only those data which changed (i.e., changed, were created or deleted) from a synchronization point onwards.

This document contains the requirements of delta synchronization IRP. It defines, for the purpose of delta synchronization, the basic requirements to be fulfilled on Itf-N.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 391                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132391/11.00.00_60/ts_132391v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132391/11.00.00_60/ts_132391v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.391V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.391(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.391(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.391(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.391(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.391(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.391(Rel11)v11.0.0.pdf</a>                         |

### 10.10.71 TS 32.392 Telecommunication management; Delta synchronization integration reference point (IRP): Information service (IS)

The purpose of delta synchronization IRP is to define an interface through which an IRPManager can request only those data which changed (i.e., changed, were created or deleted) from a synchronization point onwards.

This document is the information service of delta synchronization IRP. It defines, for the purpose of delta synchronization, the information observable and controlled by management system's client, and it also specifies the semantics of the interactions used to carry this information.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 392                 | 11.0.0  | Published | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132300_132399/132392/11.00.00_60/ts_132392v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300_132399/132392/11.00.00_60/ts_132392v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.392V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.392(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.392(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.392(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.392(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.392(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.392(Rel11)v11.0.0.pdf</a> |

#### **10.10.72 TS 32.396 Telecommunication management; Delta synchronization Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set definitions for the IRP whose semantics is specified in Delta Synchronization IRP IS TS 32.392.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 396                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132300/132399/132396/11.00.00_60/ts_132396v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132300/132399/132396/11.00.00_60/ts_132396v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.396V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.396(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.396(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.396(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.396(Rel11)v11.1.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.396(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.396(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.73 TS 32.401 Telecommunication management; Performance management (PM); Concept and requirements**

The present document describes the requirements for the management of performance measurements and the collection of performance measurement result data across GSM and UMTS networks. It defines the administration of measurement schedules by the network element manager (EM), the generation of measurement results in the network elements (NEs) and the transfer of these results to one or more operations systems, i.e., EM(s) and/or network manager(s) (NM(s)).

The basic performance management concept that the present document is built upon is described in clause 4. The requirements of how an EM administers the performance measurements and how the results can be collected are defined in detail in clause 5. Measurements available for collection by NEs are described in the following specifications:

- TS 52.402 for GSM systems;
- TS 32.405, TS 32.406, TS 32.407 and TS 32.408 for UMTS and combined UMTS/GSM systems;
- TS 32.409 for IMS networks.

Effort has been made to ensure consistency in the definition of measurements between different NEs and generations. The performance measurement result is described in performance measurement file format definition (TS 32.432).

The following is beyond the scope of the present document, and therefore the present document does not describe:

- the formal definition of the interface that the EM uses to administer performance measurements in the NEs;
- the formal definition of the interface that the EM uses to collect measurement results from the NEs;
- how the data, once accumulated and collected, could or should be processed, stored, or presented to an end user;

- the information which may be obtained through the collection and processing of call or event-related records which have been produced by the NEs primarily for the purpose of raising bills and other charges.

The management requirements have been derived from existing telecommunications operations experience. The management definitions were then derived from other standardization work so as to minimize the re-invention factor. References are given as appropriate.

The objectives of this standardization are:

- to provide the descriptions for a standard set of measurements;
- to produce a common description of the management technique for measurement administration and result accumulation; and
- to define a method for the bulk transmission of measurement results across a management interface.

The definition of the standard measurements is intended to result in comparability of measurement result data produced in a multi-vendor wireless network, for those measurement types that can be standardized across all vendors' implementations.

As far as possible, existing standardization in the area of performance management has been reused and enhanced where particular requirements, peculiar to the mobile telephony environment, have been recognized.

This document considers all the above aspects of performance management for a GSM and UMTS network and its NEs defined in the core Technical Specifications. However, only those aspects which are specific to a GSM/UMTS system and particular to wireless network operation are included in the present document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 401                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132401/11.00.00_60/ts_132401v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132401/11.00.00_60/ts_132401v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.401V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.401(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.401(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.401(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.401(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.401(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.401(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.74 TS 32.404 Telecommunication management; Performance management (PM); Performance measurements – Definitions and template**

This document describes the measurements for UMTS and combined UMTS/GSM.

TS 32.401 describes performance management concepts and requirements.

The present document is valid for all measurement types provided by an implementation of a UMTS network and combined UMTS/GSM network.

Only measurement types that are specific to UMTS or combined UMTS/GSM networks are defined within the present documents. Vendor-specific measurement types used in UMTS and combined UMTS/GSM networks are not covered. Instead, these could be applied according to the manufacturer's documentation.

Measurements related to "external" technologies (such as ATM or IP), as described by "external" standards bodies (e.g., ITU-T or IETF), shall only be referenced within this specification, wherever there is a need identified for the existence of such a reference.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardized across all vendors' implementations.

TS 32.411; Telecommunication management; performance management (PM) integration reference point (IRP): Requirements

This document specifies the overall requirements for the performance management integration reference point (PMIRP) as it applies to the network elements (NE), element manager (EM) and network manager (NM).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 404                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132404/11.00.00_60/ts_132404v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132404/11.00.00_60/ts_132404v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.404V110-2014   | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.404(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.404(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.404(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.404(Rel11)v11.1.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.404(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.404(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.75 TS 32.405 Telecommunication management; Performance management (PM); Performance measurements universal terrestrial radio access network (UTRAN)**

This document describes the measurements for UMTS and combined UMTS/GSM. TS 32.401 describes performance management concepts and requirements.

The present document is valid for all measurement types provided by an implementation of a UMTS network and combined UMTS/GSM network. Only measurement types that are specific to UMTS or combined UMTS/GSM networks are defined within the present documents.

Vendor-specific measurement types used in UMTS and combined UMTS/GSM networks are not covered. Instead, these could be applied according to the manufacturer's documentation.

Measurements related to "external" technologies (such as ATM or IP), as described by "external" standards bodies (e.g., ITU-T or IETF), shall only be referenced within this specification, wherever there is a need identified for the existence of such a reference.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardized across all vendors' implementations.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 405                  | 11.1.1  | Published    | 2013-01-14  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132405/11.01.01_60/ts_132405v110101p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132405/11.01.01_60/ts_132405v110101p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.405V111-2014   | 11.1.1  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.405(R11-11.1.1)  | 11.1.1  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.405(R11-11.1.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.405(R11-11.1.1)</a> |
| TTC  | TS-3GA-32.405(Rel11)v11.1.1 | 11.1.1  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.405(Rel11)v11.1.1.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.405(Rel11)v11.1.1.pdf</a>                           |

#### **10.10.76 TS 32.406 Telecommunication management; Performance management (PM); Performance measurements core network (CN) packet switched (PS) domain**

This document describes the measurements for UMTS and combined UMTS/GSM.



TS 32.401 describes performance management concepts and requirements.

This document is valid for all measurement types provided by an implementation of a UMTS network and combined UMTS/GSM network.

Only measurement types that are specific to UMTS or combined UMTS/GSM networks are defined within the present documents. Vendor-specific measurement types used in UMTS and combined UMTS/GSM networks are not covered. Instead, these could be applied according to the manufacturer's documentation.

Measurements related to "external" technologies (such as ATM or IP), as described by "external" standards bodies (e.g., ITU-T or IETF), shall only be referenced within this specification, wherever there is a need identified for the existence of such a reference.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardized across all vendors' implementations.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 406                  | 11.3.0  | Published    | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132406/11.03.00_60/ts_132406v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132406/11.03.00_60/ts_132406v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.406V1130-2014  | 11.3.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.406(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.406(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.406(R11-11.3.0)</a> |
| TTC  | TS-3GA-32.406(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/document_list/free/3gpps2013/TS/TS-3GA-32.406(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/document_list/free/3gpps2013/TS/TS-3GA-32.406(Rel11)v11.3.0.pdf</a>                                 |

#### **10.10.77 TS 32.407 Telecommunication management; Performance management (PM); Core network (CN) circuit switched (CS) domain; Performance measurements – UMTS and combined UMTS/GSM**

This document describes the CN CS measurements for UMTS and combined UMTS/GSM.

TS 32.401 describes performance management concepts and requirements.

This document is valid for all measurement types provided by an implementation of a UMTS network and combined UMTS/GSM network. These may be measurement types defined within the present document, measurements defined within other standards bodies, or vendor-specific measurement types.

Only measurement types that are specific to CN CS UMTS or combined UMTS/GSM networks are defined within the present documents, i.e., vendor-specific measurement types used in UMTS and combined UMTS/GSM networks. Some ATM or IP measurements defined here are only used for load carrying. The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardized across all vendors' implementations.



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 407                  | 11.2.0  | Published    | 2012-11-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132407/11.02.00_60/ts_132407v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132407/11.02.00_60/ts_132407v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.407V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.407(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.407(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.407(R11-11.2.0)</a> |
| TTC  | TS-3GA-32.407(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.407(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.407(Rel11)v11.2.0.pdf</a>                           |

#### **10.10.78 TS 32.408 Telecommunication management; Performance management (PM); Performance measurements teleservice**

This document describes the measurements for UMTS and combined UMTS/GSM.

TS 32.401 describes performance management concepts and requirements.

This document is valid for all measurement types provided by an implementation of a UMTS network and combined UMTS/GSM network.

Only measurement types that are specific to UMTS or combined UMTS/GSM networks are defined within the present documents. Vendor-specific measurement types used in UMTS and combined UMTS/GSM networks are not covered. Instead, these could be applied according to the manufacturer's documentation.

Measurements related to "external" technologies (such as ATM or IP), as described by "external" standards bodies (e.g., ITU-T or IETF), shall only be referenced within this specification, wherever there is a need identified for the existence of such a reference.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardized across all vendors' implementations.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 408                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132408/11.00.00_60/ts_132408v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132408/11.00.00_60/ts_132408v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.408V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.408(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.408(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.408(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.408(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.408(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.408(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.79 TS 32.409 Telecommunication management; Performance management (PM); Performance measurements – IP multimedia subsystem (IMS)**

This document describes the measurements of IMS.

TS 32.401 describes performance management concepts and requirements.

This document is valid for all measurement types provided by an implementation of an IMS network. These may be measurement types defined within the present document, measurements defined within other standards bodies, or vendor-specific measurement types.

Only measurement types that are specific to IMS network are defined within the present documents, i.e., vendor-specific measurement types and measurements related to "external" technologies used in

IMS network, such as ATM or IP, are not covered. Instead, these could be applied as described by the other, "external" standards bodies (e.g., ITU-T or IETF) or according to the manufacturer's documentation.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardized across all vendors' implementations.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 409                  | 11.4.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132409/11.04.00_60/ts_132409v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132409/11.04.00_60/ts_132409v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.409V1140-2014  | 11.4.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.409(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.409(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.409(R11-11.4.0)</a> |
| TTC  | TS-3GA-32.409(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.409(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.409(Rel11)v11.4.0.pdf</a>                           |

#### 10.10.80 TS 32.410 Telecommunication management; Key Performance Indicators (KPI) for UMTS and GSM

The present document specifies Key Performance Indicators (KPIs) for GSM, UMTS, etc. KPI definitions include high level KPIs that are:

- common** across GSM and UMTS networks; and
- specific** to network techniques such as GSM and UMTS networks.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 410                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132410/11.00.00_60/ts_132410v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132410/11.00.00_60/ts_132410v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.410V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.410(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.410(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.410(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.410(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.410(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.410(Rel11)v11.0.0.pdf</a>                           |

#### 10.10.81 TS 32.411 Telecommunication management; Performance management (PM) integration reference point (IRP): Requirements

The present document specifies the overall requirements for the performance management integration reference point (PMIRP) as it applies to the network elements (NE), element manager (EM) and network manager (NM).

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 411                 | 11.0.0  | Published | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132411/11.00.00_60/ts_132411v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132411/11.00.00_60/ts_132411v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.411V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.411(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.411(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.411(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.411(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.411(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.411(Rel11)v11.0.0.pdf</a> |

#### **10.10.82 TS 32.412 Telecommunication management; Performance management (PM) integration reference point (IRP): Information service (IS)**

This document specifies the information service for the performance management integration reference point (PMIRP) as it applies to the Itf-N.

This IRP IS defines the semantics of operations (and their parameters) visible across the Itf-N in a protocol and technology neutral way. It does not define the syntax or encoding of the operations and their parameters.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 412                  | 11.1.0  | Published    | 2013-02-01  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132412/11.01.00_60/ts_132412v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132412/11.01.00_60/ts_132412v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.412V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.412(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.412(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.412(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.412(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.412(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.412(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.83 TS 32.416 Telecommunication management; Performance Management (PM) Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set definitions for the IRP whose semantics is specified in PM (Performance Management) IRP: Information Service TS 32.412.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 416                  | 11.1.0  | Published    | 2013-07-10  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132416/11.01.00_60/ts_132416v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132416/11.01.00_60/ts_132416v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.416V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.416(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.416(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.416(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.416(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.416(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.416(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.84 TS 32.421 Telecommunication management; Subscriber and equipment trace: Trace concepts and requirements**

This document describes the requirements for the management of trace and the reporting of trace data across UMTS networks as it refers to subscriber tracing (tracing of IMSI or private ID) and MS tracing (tracing of IMEI or IMEISV). It defines the administration of trace session activation/deactivation by the element manager (EM) or the network itself via signalling, the generation of trace results in the network elements (NEs) and the transfer of these results to one or more operations systems, i.e., EM(s) and/or network manager(s) (NM(s)).

The basic subscriber and MS trace concept that the present document is built upon is described in clause 4. The high-level requirements for trace data, trace session activation/deactivation and trace reporting are defined in clause 5. Clause 5 also contains an overview of use cases for trace (the use

cases are described in Annex B). Annex A provides a high-level view of trace functional architecture. Trace control and configuration management are described in 3GPP TS 32.422, and trace data definition and management are described in 3GPP TS 32.423.

In this release, this document does not cover any trace capability limitations within a NE (e.g., maximum number of simultaneous traced mobiles for a given NE) or any functionality related to these limitations (e.g., NE aborting a trace session due to resource limitations).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 421                  | 11.6.0  | Published    | 2013-04-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132421/11.06.00_60/ts_132421v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132421/11.06.00_60/ts_132421v110600p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.421V1160-2014  | 11.6.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.421(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.421(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.421(R11-11.6.0)</a> |
| TTC  | TS-3GA-32.421(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.421(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.421(Rel11)v11.6.0.pdf</a>                           |

#### **10.10.85 TS 32.422 Telecommunication management; Subscriber and equipment trace; Trace control and configuration management**

This document describes the mechanisms used for the control and configuration of the trace functionality at the EMs and NEs. It covers the triggering events for starting/stopping of subscriber/MS activity traced over 3GPP standardized signalling interfaces, the types of trace mechanisms, configuration of a trace, level of detail available in the trace data, the generation of trace results in the network elements (NEs) and the transfer of these results to one or more EM(s) and/or network manager(s) (NM(s)).

The mechanisms for trace activation/deactivation are detailed in clause 4; clause 5 details the various trace control and configuration parameters and the triggering events that can be set in a network. Trace concepts and requirements are covered in 3G TS 32.421, while trace data definition and management is covered in 3G TS 32.423.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 422                  | 11.9.0  | Published    | 2014-03-24  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132422/11.09.00_60/ts_132422v110900p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132422/11.09.00_60/ts_132422v110900p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.422V1170-2014  | 11.7.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.422(R11-11.7.0)  | 11.7.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.422(R11-11.7.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.422(R11-11.7.0)</a> |
| TTC  | TS-3GA-32.422(Rel11)v11.8.0 | 11.8.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.422(Rel11)v11.8.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.422(Rel11)v11.8.0.pdf</a>                           |

#### **10.10.86 TS 32.423 Telecommunication management; Subscriber and equipment trace: Trace data definition and management**

The document describes trace data definition and management. It covers trace records content, their format and transfer.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 423                 | 11.7.0  | Published | 2014-03-24  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132423/11.07.00_60/ts_132423v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132423/11.07.00_60/ts_132423v110700p.pdf</a> |
| ATIS | ATIS.3GPP.32.423V1140-2014 | 11.4.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-32.423(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.423(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.423(R11-11.4.0)</a> |
| TTC | TS-3GA-32.423(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.423(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.423(Rel11)v11.6.0.pdf</a>                           |

#### **10.10.87 TS 32.425 Telecommunication management; Performance Management (PM); Performance measurements Evolved Universal Terrestrial Radio Access Network (E-UTRAN)**

This document describes the measurements for E-UTRAN.

TS 32.401 describes Performance Management concepts and requirements.

The present document is valid for all measurement types provided by an implementation of an E-UTRAN.

Only measurement types that are specific to E-UTRAN are defined within the present documents. Vendor specific measurement types used in E-UTRAN are not covered. Instead, these could be applied according to manufacturer's documentation.

Measurements related to "external" technologies (such as ATM or IP) as described by "external" standards bodies (e.g., ITU-T or IETF) shall only be referenced within this specification, wherever there is a need identified for the existence of such a reference.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardised across all vendors' implementations.

The structure of the document is as follows:

- Header 1: Network Element (e.g., measurements related to eNodeB);
- Header 2: Measurement function (e.g., RRC connection setup related measurements);
- Header 3: Measurements.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 425                  | 11.4.0  | Published    | 2013-01-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132425/11.04.00_60/ts_132425v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132425/11.04.00_60/ts_132425v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.425V1140-2014  | 11.4.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.425(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.425(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.425(R11-11.4.0)</a> |
| TTC  | TS-3GA-32.425(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.425(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.425(Rel11)v11.4.0.pdf</a>                           |

#### **10.10.88 TS 32.426 Telecommunication management; Performance Management (PM); Performance measurements Evolved Packet Core network (EPC)**

This document describes the measurements for EPC and combined EPC/UMTS/GSM.

TS 32.401 describes Performance Management concepts and requirements.

The present document is valid for all measurement types provided by an implementation of an EPC network and combined EPC/UMTS/GSM network. Only measurement types that are specific to EPC or combined EPC/UMTS/GSM networks are defined within the present documents.

Vendor specific measurement types used in EPC and combined EPC/UMTS/GSM networks are not covered. Instead, these could be applied according to manufacturer's documentation.

Measurements related to "external" technologies (such as IP) as described by "external" standards bodies (e.g., IETF) shall only be referenced within this specification, wherever there is a need identified for the existence of such a reference.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardised across all vendors' implementations.

The structure of the present document is as follows:

- Header 1: Network Element (e.g., MME related measurements);
- Header 2: Measurement function;
- Header 3: Measurements.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 426                  | 11.4.0  | Published    | 2013-07-10  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132426/11.04.00_60/ts_132426v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132426/11.04.00_60/ts_132426v110400p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.426V1130-2014  | 11.3.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.426(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.426(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.426(R11-11.3.0)</a> |
| TTC  | TS-3GA-32.426(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.426(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.426(Rel11)v11.4.0.pdf</a>                           |

#### **10.10.89 TS 32.432 Telecommunication management; Performance measurement: File format definition**

The document describes the general semantics of performance measurement result and collection. It defines the report file format, report file conventions and the file transfer procedure. Clause 4 specifies the file format for the bulk transfer of performance measurement results to the NM, while clause 6 discusses the file transfer procedure utilized on that interface.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 432                  | 11.0.0  | Published    | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132432/11.00.00_60/ts_132432v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132432/11.00.00_60/ts_132432v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.432V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.432(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.432(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.432(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.432(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.432(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.432(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.90 TS 32.435 Telecommunication management; Performance measurement eXtensible markup language (XML) file format definition**

The document describes the XML file format of performance measurement results whose semantics is defined in 3G TS 32.432.

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 132 435   | 11.0.0  | Published | 2012-10-30  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132435/11.00.00_60/ts_132435v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132435/11.00.00_60/ts_132435v110000p.pdf</a> |



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.32.435V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.435(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.435(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.435(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.435(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.435(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.435(Rel11)v11.0.0.pdf</a>                           |

#### 10.10.91 TS 32.436 Telecommunication management; Performance measurement: Abstract syntax notation one (ASN.1) file format definition

The document defines the ASN.1 file format definition for performance measurement results collection whose semantics is defined in 3G TS 32.432.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 436                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132436/11.00.00_60/ts_132436v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132436/11.00.00_60/ts_132436v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.436V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.436(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.436(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.436(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.436(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.436(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.436(Rel11)v11.0.0.pdf</a>                           |

#### 10.10.92 TS 32.441 Telecommunication management; Trace management integration reference point (IRP): Requirements

This document specifies the overall requirements for the trace management integration reference point (TraceIRP) as it applies to Itf-N.

The trace IRP supports the operations that are required for the subscriber and equipment trace, the service level trace and the cell traffic trace functionalities.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 441                  | 11.3.0  | Published    | 2013-01-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132441/11.03.00_60/ts_132441v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132441/11.03.00_60/ts_132441v110300p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.441V1130-2014  | 11.3.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.441(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.441(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.441(R11-11.3.0)</a> |
| TTC  | TS-3GA-32.441(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.441(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.441(Rel11)v11.3.0.pdf</a>                           |

#### 10.10.93 TS 32.442 Telecommunication management; Trace management integration reference point (IRP): Information service (IS)

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 442                 | 11.6.0  | Published | 2013-04-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132442/11.06.00_60/ts_132442v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132442/11.06.00_60/ts_132442v110600p.pdf</a> |
| ATIS | ATIS.3GPP.32.442V1160-2014 | 11.6.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-32.442(R11-11.6.0)  | 11.6.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.442(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.442(R11-11.6.0)</a> |
| TTC | TS-3GA-32.442(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.442(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.442(Rel11)v11.6.0.pdf</a>                           |

#### **10.10.94 TS 32.446 Telecommunication management; Trace Management Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set definitions for the IRP whose semantics is specified in Trace Management IRP: Information Service TS 32.442.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 446                  | 11.5.0  | Published    | 2013-02-01  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132446/11.05.00_60/ts_132446v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132446/11.05.00_60/ts_132446v110500p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.446V1150-2014  | 11.5.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.446(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.446(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.446(R11-11.5.0)</a> |
| TTC  | TS-3GA-32.446(Rel11)v11.5.0 | 11.5.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.446(Rel11)v11.5.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.446(Rel11)v11.5.0.pdf</a>                           |

#### **10.10.95 TS 32.450 Telecommunication management; Key Performance Indicators (KPI) for Evolved Universal Terrestrial Radio Access Network (E-UTRAN): Definitions**

This document specifies definitions of Key Performance Indicators (KPIs) for E-UTRAN.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 450                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132450/11.00.00_60/ts_132450v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132450/11.00.00_60/ts_132450v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.450V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.450(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.450(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.450(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.450(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.450(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.450(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.96 TS 32.451 Telecommunication management; Key Performance Indicators (KPI) for E-UTRAN: Requirements**

The present document specifies requirements (business level requirements, specification level requirements and use case descriptions) related to Key Performance Indicators (KPIs) for E-UTRAN.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 451                 | 11.0.0  | Published | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132451/11.00.00_60/ts_132451v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132451/11.00.00_60/ts_132451v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.451V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.451(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.451(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.451(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.451(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.451(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.451(Rel11)v11.0.0.pdf</a> |

#### **10.10.97 TS 32.452 Telecommunication management; Performance Management (PM); Performance measurements Home Node B (HNB) Subsystem (HNS)**

This document describes measurements for Home Node B subsystem (HNS).

HNS consists of a HNB and HNB-GW. And, it appears as an RNS to the core network and is connected by means of the Iu-CS interface to the MSC and by means of the Iu-PS interface to the SGSN.

TS 32.401 describes Performance Management concepts and requirements.

This document is valid for all measurement types provided by an implementation of a HNS.

Only measurement types that are specific to HNS are defined within the present documents. Vendor specific measurement types used in HNS are not covered. Instead, these could be applied according to manufacturer's documentation.

Measurements related to "external" technologies (such as ATM or IP) as described by "external" standards bodies (e.g., ITU-T or IETF) shall only be referenced within this specification, wherever there is a need identified for the existence of such a reference.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardised across all vendors' implementations.

The structure of the present document is as follows:

- Header 1: Network Element (e.g., measurements related to HNB and HNB GW);
- Header 2: Measurement function (e.g., HNB registration measurements);
- Header 3: Measurements.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 452                  | 11.0.0  | Published    | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132400/132499/132452/11.00.00_60/ts_132452v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400/132499/132452/11.00.00_60/ts_132452v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.452V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.452(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.452(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.452(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.452(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.452(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.452(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.98 TS 32.453 Telecommunication management; Performance Management (PM); Performance measurements Home enhanced Node B (HeNB) Subsystem (HeNS)**

This document describes measurements for Home enhanced Node B Subsystem (HeNS).

HeNS consists of a HeNB and optionally a HeNB GW. And, it is connected by means of the standard S1 interface to the EPC (Evolved Packet Core), more specifically to the MME (Mobility Management Entity) by means of the S1-MME interface and to the Serving Gateway (S-GW) by means of the S1-U interface

Performance Management concepts and requirements are described in TS 32.401.

This document is valid for all measurement types provided by an implementation of HeNS.

Only measurement types that are specific to HeNS are defined within the present documents. Vendor specific measurement types used in HeNS are not covered. Instead, these could be applied according to manufacturer's documentation.

Measurements related to "external" technologies (such as ATM or IP) as described by "external" standards bodies (e.g., ITU-T or IETF) shall only be referenced within this specification, wherever there is a need identified for the existence of such a reference.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardised across all vendors' implementations.

The structure of the present document is as follows:

- Header 1: Network Element (e.g., measurements related to HeNB and HeNB GW);
- Header 2: Measurement function (e.g., HeNB registration measurements);
- Header 3: Measurements.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 453                  | 11.0.0  | Published    | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132453/11.00.00_60/ts_132453v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132453/11.00.00_60/ts_132453v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.453V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.453(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.453(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.453(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.453(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.453(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.453(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.99 TS 32.454 Telecommunication management; Key Performance Indicators (KPI) for the IP Multimedia Subsystem (IMS); Definitions**

This document specifies Key Performance Indicators (KPIs) for the IP Multimedia Subsystem (IMS).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 454                  | 11.0.0  | Published    | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132454/11.00.00_60/ts_132454v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132454/11.00.00_60/ts_132454v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.454V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.454(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.454(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.454(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.454(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.454(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.454(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.100 TS 32.455 Telecommunication management; Key Performance Indicators (KPI) for the Evolved Packet Core (EPC); Definitions**

This document specifies Key Performance Indicators (KPIs) for the EPC.

|      | Document No.                | Version | Status    | Issued date | Location  |
|------|-----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 455                  | 11.0.0  | Published | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132400_132499/132455/11.00.00_60/ts_132455v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132400_132499/132455/11.00.00_60/ts_132455v110000p.pdf</a> |
| ATIS | ATIS.3GPP.32.455V110-0-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-32.455(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.455(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.455(R11-11.0.0)</a> |
| TTC | TS-3GA-32.455(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.455(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.455(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.101 TS 32.500 Telecommunication management; Self-Organizing Networks (SON); Concepts and requirements**

This document describes the requirements and architecture for the Self Organizing Network (SON) functions within the OAM system. SON includes:

##### **Provision of infrastructure for SON, in the OAM system**

- Enabling SON operations
- Provide SON capabilities (each of which can either be distributed or centralised) within the OAM infrastructure, including their management
- Access to SON relevant eNodeB attributes
- Identification of SON relevant eNodeB and UE Measurements
- Access to and transfer of SON relevant eNodeB and UE measurements
- Transfer of SON relevant eNodeB alarms

##### **Define necessary Interface IRPs**

- the automation of neighbour relation lists in E-UTRAN and between different 3GPP Radio Access Technologies,
- self establishment of a new eNodeB in the network,
- self-configuration and self-healing of eNodeBs,
- automated coverage and capacity optimisation,
- optimisation of parameters due to troubleshooting,
- continuous optimisation due to dynamic changes in the network,
- automated handover optimisation,
- optimisation of QoS related radio parameters.

The SON concept and architecture are described in clause 4.

The high-level requirements for SON are defined in clause 5.

Use cases for SON are described in clause 5.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 500                  | 11.1.0  | Published    | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132500/11.01.00_60/ts_132500v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132500/11.01.00_60/ts_132500v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.500V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.500(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.500(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.500(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.500(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.500(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.500(Rel11)v11.1.0.pdf</a>                           |

### 10.10.102 TS 32.501 Telecommunication management; Self-Configuration of Network Elements; Concepts and Integration Reference Point (IRP) Requirements

This document describes the concepts how self-configuration works and what IRP requirements need to be met to support this functionality. The document also captures if a requirement shall be met via the Itf-N interface or via other protocols. This version of the TS is restricted to self-configuration of eNBs. The requirements in this document are not imposed on HNBs.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 501                  | 11.0.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132501/11.00.00_60/ts_132501v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132501/11.00.00_60/ts_132501v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.501V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.501(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.501(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.501(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.501(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.501(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.501(Rel11)v11.0.0.pdf</a>                           |

### 10.10.103 TS 32.502 Telecommunication management; Self-Configuration of Network Elements Integration Reference Point (IRP); Information Service (IS)

This document defines the Information Service (IS) part of the Self-Configuration IRP (SCIRP). It describes the semantics of the information and the interactions visible across Itf-N in a protocol independent way. The information is specified by means of Information Object Classes (IOCs) and the interactions by means of operations and notifications. The present document does not specify the syntax (encoding) of the information.

The scope of this version of the TS is restricted to self-configuration of eNBs.

The document also describes how already defined Itf-N functionalities are used in the context of Self-Configuration.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 502                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132502/11.00.00_60/ts_132502v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132502/11.00.00_60/ts_132502v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.502V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.502(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.502(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.502(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.502(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.502(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.502(Rel11)v11.0.0.pdf</a>                           |

### 10.10.104 TS 32.506 Telecommunication management; Self-Configuration of Network Elements Integration Reference Point (IRP); Solution Set (SS) definitions

This document specifies Solution Set definitions for the IRP whose semantics are specified in Self-Configuration of Network Elements Integration Reference Point (IRP): Information Service TS 32.502.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 506                 | 11.0.0  | Published | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132506/11.00.00_60/ts_132506v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132506/11.00.00_60/ts_132506v110000p.pdf</a> |
| ATIS | ATIS.3GPP.32.506V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-32.506(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.506(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.506(R11-11.0.0)</a> |
| TTC | TS-3GA-32.506(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.506(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.506(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.105 TS 32.511 Telecommunication management; Automatic Neighbour Relation (ANR) management; Concepts and requirements**

This document describes the requirements and architecture for the management of Neighbour cell Relations (NRs) across the Itf-N. The NR management is a key feature of Self Organization Network (SON), described in 3GPP TR 32.816.

The NR concept and background information are described in clause 4.

The requirements for management of NR are defined in clause 5.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 511                  | 11.2.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132511/11.02.00_60/ts_132511v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132511/11.02.00_60/ts_132511v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.511V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.511(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.511(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.511(R11-11.2.0)</a> |
| TTC  | TS-3GA-32.511(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.511(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.511(Rel11)v11.2.0.pdf</a>                           |

#### **10.10.106 TS 32.521 Telecommunications Management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The document describes concept and requirements of OAM for Self-Optimisation.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 521                  | 11.1.0  | Published    | 2013-02-01  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132521/11.01.00_60/ts_132521v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132521/11.01.00_60/ts_132521v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.521V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.521(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.521(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.521(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.521(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.521(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.521(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.107 TS 32.522 Telecommunication management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

This document is part of an Integration Reference Point (IRP) named Self Organizing Networks (SON) Policy Network Resource Model (NRM) IRP, through which an IRP Agent can communicate management information to one or several IRP Managers concerning SON policies. The SON policy NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).



The present document specifies the protocol neutral SON policy NRM IRP: Information Service (IS). In order to access the information defined by this NRM, an Interface IRP such as the "Basic CM IRP" is needed 3GPP TS 32.602. However, which Interface IRP is applicable is outside the scope of the present document.

The present document also contains stage 2 descriptions for those functionalities for the Self-Optimization OAM.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 522                  | 11.7.0  | Published    | 2013-10-14  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132522/11.07.00_60/ts_132522v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132522/11.07.00_60/ts_132522v110700p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.522V1151-2014  | 11.5.1  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.522(R11-11.5.1)  | 11.5.1  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.522(R11-11.5.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.522(R11-11.5.1)</a> |
| TTC  | TS-3GA-32.522(Rel11)v11.7.0 | 11.7.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.522(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.522(Rel11)v11.7.0.pdf</a>                           |

#### **10.10.108 TS 32.526 Telecommunication management; Self-Organizing Networks (SON); Policy Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set definitions for the IRP whose semantics is specified in TS 32.522 SON Policy Network Resource Model IRP: Information Service (IS).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 526                  | 11.7.0  | Published    | 2014-01-20  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132526/11.07.00_60/ts_132526v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132526/11.07.00_60/ts_132526v110700p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.526V1140-2014  | 11.4.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.526(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.526(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.526(R11-11.4.0)</a> |
| TTC  | TS-3GA-32.526(Rel11)v11.7.0 | 11.7.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.526(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.526(Rel11)v11.7.0.pdf</a>                           |

#### **10.10.109 TS 32.531 Telecommunication management; Software Management (SWM); Concepts and Integration Reference Point (IRP) Requirements**

This document describes the concepts how SWM of NEs works and what IRP requirements need to be met to support this functionality.

The present document focuses on automated software management of eNBs.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 531                  | 11.0.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132531/11.00.00_60/ts_132531v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132531/11.00.00_60/ts_132531v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.531V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.531(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.531(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.531(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.531(Rel11)v11.1.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.531(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.531(Rel11)v11.0.0.pdf</a>                           |



#### **10.10.110 TS 32.532 Telecommunication management; Software management Integration Reference Point (IRP); Information Service (IS)**

The document contains the Software Management Interface IRP Information Services descriptions.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 532                  | 11.0.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132532/11.00.00_60/ts_132532v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132532/11.00.00_60/ts_132532v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.532V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.532(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.532(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.532(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.532(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.532(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.532(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.111 TS 32.536 Telecommunication management; Software management Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set definitions for the IRP whose semantics are specified in Software Management IRP Information Service TS 32.532.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 536                  | 11.0.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132536/11.00.00_60/ts_132536v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132536/11.00.00_60/ts_132536v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.536V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.536(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.536(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.536(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.536(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.536(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.536(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.112 TS 32.541 Telecommunication management; Self-Organizing Networks (SON); Self-healing concepts and requirements**

This document describes concept and requirements of OAM for Self-Healing of Self-Organising Networks (SON).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 541                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132541/11.00.00_60/ts_132541v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132541/11.00.00_60/ts_132541v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.541V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.541(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.541(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.541(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.541(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.541(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.541(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.113 TS 32.551 Telecommunication management; Energy Saving Management (ESM); Concepts and requirements**

This document describes concepts and requirements for managing energy savings. It also describes if a requirement shall be met via the Itf-N interface or via other means.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 551                  | 11.3.1  | Published    | 2013-07-11  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132551/11.03.01_60/ts_132551v110301p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132551/11.03.01_60/ts_132551v110301p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.551V1130-2014  | 11.3.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.551(R11-11.3.0)  | 11.3.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.551(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.551(R11-11.3.0)</a> |
| TTC  | TS-3GA-32.551(Rel11)v11.3.0 | 11.3.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.551(Rel11)v11.3.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.551(Rel11)v11.3.0.pdf</a>                           |

#### **10.10.114 TS 32.571 Telecommunication Management; Home Node B (HNB) and Home eNode B (HeNB) management; Type 2 interface concepts and requirements**

This document describes requirements and concepts including architecture supporting Home Node B and Home eNode B OAM&P for interface Type 2.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 571                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132571/11.00.00_60/ts_132571v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132571/11.00.00_60/ts_132571v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.571V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.571(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.571(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.571(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.571(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.571(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.571(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.115 TS 32.572 Telecommunication Management; Home Node B (HNB) and Home eNode B (HeNB) management; Type 2 interface models and mapping functions**

This document describes requirements and concepts including architecture supporting Home NB and Home eNB OAM&P for interface Type 2.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 572                  | 11.0.0  | Published    | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132572/11.00.00_60/ts_132572v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132572/11.00.00_60/ts_132572v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.572V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.572(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.572(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.572(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.572(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.572(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.572(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.116 TS 32.581 Telecommunication management; Home Node B (HNB) Operations, Administration, Maintenance and Provisioning (OAM&P); Concepts and Requirements for Type 1 interface HNB to HNB Management System (HMS)**

This document describes the concepts and requirements of OAM for Home NodeB (HNB). The requirements captured in this document shall be met via Type 1 interface between HNB and HMS.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 581                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132581/11.00.00_60/ts_132581v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132581/11.00.00_60/ts_132581v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.581V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.581(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.581(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.581(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.581(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.581(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.581(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.117 TS 32.582 Telecommunication management; Home Node B (HNB) Operations, Administration, Maintenance and Provisioning (OAM&P); Information model for Type 1 interface HNB to HNB Management System (HMS)**

This document describes the architecture for Home NodeB (HNB) Management and Data class definition for Fault Management, Configuration Management and Performance Measurements. The stage 2 definitions captured in this document shall be met via type 1 interface between HNB and Domain Manager.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 582                  | 11.0.0  | Published    | 2012-11-21  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132582/11.00.00_60/ts_132582v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132582/11.00.00_60/ts_132582v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.582V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.582(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.582(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.582(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.582(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.582(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.582(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.118 TS 32.583 Telecommunication management; Home Node B (HNB) Operations, Administration, Maintenance and Provisioning (OAM&P); Procedure flows for Type 1 interface HNB to HNB Management System (HMS)**

This document describes the procedure flows between HNB & HMS for the OAM of HNB Management.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 583                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132583/11.00.00_60/ts_132583v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132583/11.00.00_60/ts_132583v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.583V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.583(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.583(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.583(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.583(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.583(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.583(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.1119 TS 32.584 Telecommunication management; Home Node B (HNB) Operations, Administration, Maintenance and Provisioning (OAM&P); XML definitions for Type 1 interface HNB to HNB Management System (HMS)**

This document describes the data format for Configuration Management and Performance Management for Home Node B (HNB). The XML definitions captured in this document shall be met via Type 1 interface between HNB and HNB Management System (HMS).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 584                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132584/11.00.00_60/ts_132584v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132584/11.00.00_60/ts_132584v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.584V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.584(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.584(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.584(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.584(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.584(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.584(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.120 TS 32.591 Telecommunication management; Home enhanced Node B (HeNB) Operations, Administration, Maintenance and Provisioning (OAM&P); Concepts and requirements for Type 1 interface HeNB to HeNB Management System (HeMS)**

This document describes the concepts and requirements of OAM for Home eNodeB (HeNB). The requirements captured in this document shall be met via Type 1 interface between HeNB and HeMS.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 591                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132591/11.00.00_60/ts_132591v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132591/11.00.00_60/ts_132591v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.591V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.591(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.591(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.591(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.591(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.591(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.591(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.121 TS 32.592 Telecommunication management; Home enhanced Node B (HeNB) Operations, Administration, Maintenance and Provisioning (OAM&P); Information model for Type 1 interface HeNB to HeNB Management System (HeMS)**

This document describes the Information Model definition for Fault Management, Configuration Management and Performance measurements of Home eNodeBs.

The stage 2 definitions captured in the present document shall be met via type 1 interface between HeNB and HMS.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 592                 | 11.2.0  | Published | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132592/11.02.00_60/ts_132592v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132592/11.02.00_60/ts_132592v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.592V1120-2014 | 11.2.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.592(R11-11.2.0) | 11.2.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.592(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.592(R11-11.2.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.592(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.592(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.592(Rel11)v11.2.0.pdf</a> |

#### **10.10.122 TS 32.593 Telecommunication management; Home eNode B (HeNB) Operations, Administration, Maintenance and Provisioning (OAM&P); Procedure Flows for Type 1 Interface HeNB to HeNB Management System**

This specification describes the procedure flows between network entities involved in HeNB management-related tasks. These procedures are based on the requirements specified in TS 32.591. Information model for management-related information exchanged in these procedures is specified in TS 32.592 and references therein. XML file formats used to encapsulate the information exchanged in these procedures are specified in TS 32.594. The communication protocol used for HeNB management is the TR-069 protocol.

Management interface affected by these procedures is the Type 1 interface between HeNB and HeMS. Procedures flows over the Type 2 interface (between Element Management and Network Management layer) for the management of HeNB are outside of scope of this document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 593                  | 11.0.0  | Published    | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132593/11.00.00_60/ts_132593v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132593/11.00.00_60/ts_132593v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.593V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.593(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.593(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.593(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.593(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.593(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.593(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.123 TS 32.594 Telecommunication management; Home enhanced Node B (HeNB) Operations, Administration, Maintenance and Provisioning (OAM&P); XML definitions for Type 1 interface HeNB to HeNB Management System (HeMS)**

This document describes the data format for Configuration Management, Fault Management, and Performance Management for Home eNodeB (HeNB). The Stage 3 definitions captured in this document shall be met via type 1 interface between HeNB and Home eNodeB Management System (HeMS).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 594                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132500_132599/132594/11.00.00_60/ts_132594v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132500_132599/132594/11.00.00_60/ts_132594v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.594V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.594(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.594(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.594(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.594(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.594(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.594(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.124 TS 32.600 Telecommunication management; Configuration Management (CM); Concept and high-level requirements**

This document describes Configuration Management (CM) aspects of managing a PLMN. This is described from the management perspective in TS 32.101 and TS 32.102.

The document defines a set of controls to be employed to effect set-up and changes to a PLMN network in such a way that operational capability and Quality of Service (QoS), network integrity and system interworking are ensured. In this way, this document describes the interface definition and behaviour for the management of relevant NEs in the context of the described management environment. The context is described for both the management system (OS) and Network Element (NE) functionality.

The Itf N for CM is built up by a number of Integration Reference Points (IRPs) and a related Name Convention, which realize the functional capabilities over this interface. The basic structure of the IRPs is defined in TS 32.150. For CM, a number of IRPs (and a Name Convention TS 32.300) are defined, used by this as well as by other specifications for Telecom Management produced by 3GPP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 600                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132600/11.00.00_60/ts_132600v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132600/11.00.00_60/ts_132600v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.600V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.600(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.600(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.600(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.600(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.600(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.600(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.125 TS 32.601 Telecommunication management; Configuration management (CM); Basic CM integration reference point (IRP); Requirements**

The document defines, in addition to the requirements defined in TS 32.101, TS 32.102 and TS 32.600, the requirements for the present IRP: Basic configuration management IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 601                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132601/11.00.00_60/ts_132601v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132601/11.00.00_60/ts_132601v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.601V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.601(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.601(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.601(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.601(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.601(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.601(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.126 TS 32.602 Telecommunication management; Configuration management; Basic CM integration reference point (IRP) information service**

The document defines a component of an integration reference point (IRP) through which an 'IRPAgent' (typically an element manager or network element) can communicate basic configuration management-related information to one or several 'IRPManagers' (typically network managers).

This version of the IRP is mainly intended for "passive management" of high-level network configuration and status information as required by a network manager.

The configuration management (CM) area is very large. The intention is to split the specification of the related interfaces in several IRPs – as described in the introduction clause. An important aspect of such a split is that the network resource models (NRMs) defined in different IRPs containing NRMs are consistent, and that NRMs supported by an IRPAgent implementation can be accessed as one coherent model through one IRP information service. The Basic CM IRP: IS defined herein provides one such information service.



The basic CM IRP: IS defined in the document has the following main purpose: to define an interface for retrieval of configuration management information.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 602                  | 11.2.0  | Published    | 2013-04-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132602/11.02.00_60/ts_132602v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132602/11.02.00_60/ts_132602v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.602V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.602(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.602(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.602(R11-11.2.0)</a> |
| TTC  | TS-3GA-32.602(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.602(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.602(Rel11)v11.2.0.pdf</a>                           |

#### **10.10.127 TS 32.606 Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP); Solution Set (SS) definitions**

The purpose of this document is to define the mapping of the Basic CM IRP: IS (TS 32.602) to the protocol specific details necessary for implementation of this IRP in a CORBA/IDL environment and in a SOAP/WSDL environment.

This document defines NRM independent data types and methods.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 606                  | 11.0.0  | Published    | 2012-10-16  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132606/11.00.00_60/ts_132606v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132606/11.00.00_60/ts_132606v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.606V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.606(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.606(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.606(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.606(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.606(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.606(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.128 TS 32.611 Telecommunication management; 3G configuration management (CM); Bulk CM integration reference point (IRP): Requirements**

The document describes the bulk configuration management (CM) requirements for managing a 3G network. This is described from the management perspective in TS 32.101 and TS 32.102.

The ItfN for CM is built up by a number of integration reference points (IRPs) and a related name convention TS 32.300, which realize the functional capabilities over this interface. The basic structure of the IRPs is defined in TS 32.101 and TS 32.102. For CM, a number of IRPs (and a name convention) are defined, used by this as well as by other specifications for telecom management. These IRPs are defined in separate specifications. This document defines the requirements for the bulk CM IRP.



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 611                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132611/11.00.00_60/ts_132611v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132611/11.00.00_60/ts_132611v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.611V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.611(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.611(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.611(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.611(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.611(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.611(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.129 TS 32.612 Telecommunication management; 3G configuration management (CM); Bulk CM integration reference point (IRP): Information service**

The document (bulk configuration management IRP: Information service) defines an integration reference point (IRP) through which an 'IRPAgent' (typically an element manager or network element) can communicate bulk configuration management related information to one or several 'IRPManagers' (typically network managers).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 612                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132612/11.00.00_60/ts_132612v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132612/11.00.00_60/ts_132612v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.612V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.612(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.612(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.612(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.612(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.612(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.612(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.130 TS 32.616 Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Sets for the IRP whose semantics are specified in Bulk CM IRP: Information Service TS 32.612.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 616                  | 11.1.0  | Published    | 2014-01-20  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132616/11.01.00_60/ts_132616v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132616/11.01.00_60/ts_132616v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.616V1100-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.616(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.616(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.616(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.616(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.616(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.616(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.131 TS 32.621 Telecommunication management; Configuration management (CM); Generic network resources integration reference point (IRP): Requirements**

The document defines, in addition to the requirements defined in TS 32.101, 32.102 and 32.600, the requirements for the present IRP: Generic network resources IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| CCSA | CCSA-TSD-132 621            |         |              |             |   |
| ETSI | TS 132 621                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132621/11.00.00_60/ts_132621v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132621/11.00.00_60/ts_132621v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.621V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.621(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.621(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.621(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.621(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.621(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.621(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.132 TS 32.622 Telecommunication management; Configuration management (CM); Generic network resources IRP; Network resource model (NRM)**

The document (generic network resources IRP: Network resource model) defines an integration reference point (IRP) through which an 'IRPAgent' (typically an element manager or network element) can communicate network management-related information to one or several 'IRPManagers' (typically network managers).

The document specifies a generic network resource model (NRM) (also referred to as a management information model – MIM) with definitions of managed object classes.

The configuration management (CM) area is very large. The intention is to split the specification of the related interfaces in several IRPs. In addition to the subject IRP, it is expected that IRPs will be defined for functional areas like security management, software management, network & service provisioning, etc. An important aspect of such a split is that the network resource models (NRMs) defined in different IRPs are consistent. The generic network resources IRP here provides a base for all resource modelling.

The generic network resources IRP main purpose is to define a generic network resource model that constitutes a base from which other (more specialized) resource models can inherit or have associations with.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 622                  | 11.1.0  | Published    | 2013-07-11  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132622/11.01.00_60/ts_132622v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132622/11.01.00_60/ts_132622v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.622V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.622(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.622(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.622(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.622(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-08-30  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.622(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.622(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.133 TS 32.626 Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP); Solution Set (SS) definitions**

The TS 32.62x-series (Generic Network Resources IRP) defines an Integration Reference Point (IRP) through which an "IRPAgent" (typically an Element Manager or Network Element) can communicate Network Management related information to one or several "IRPManagers" (typically Network Managers).

This TS-family specifies a generic Network Resource Model, NRM (also referred to as a Management Information Model - MIM) with definitions of Information Object Classes (IOCs) and Managed Object Classes (MOCs).

This document specifies the Solution Sets for the Generic NRM IRP.

These Solution Set specifications are related to TS 32.622.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 626                  | 11.2.0  | Published    | 2013-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132626/11.02.00_60/ts_132626v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132626/11.02.00_60/ts_132626v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.626V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.626(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.626(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.626(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.626(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.626(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.626(Rel11)v11.2.0.pdf</a>                           |

#### **10.10.134 TS 32.631 Telecommunication management; Configuration management (CM); Core network resources IRP: Requirements**

The document defines, in addition to the requirements defined in TS 32.101, 32.102 and 32.600, the requirements for the present IRP: Core network resources IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| CCSA | CCSA-TSD-132 631            |         |              |             |   |
| ETSI | TS 132 631                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132631/11.00.00_60/ts_132631v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132631/11.00.00_60/ts_132631v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.631V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.631(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.631(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.631(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.631(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.631(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.631(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.135 TS 32.632 Telecommunication management; Configuration management; Core network resources IRP: Network resource model (NRM)**

The document is part of an integration reference point (IRP) named "Core Network Resources IRP", through which an 'IRPAgent' (typically an element manager or network element) can communicate configuration management information to one or several 'IRPManagers' (typically network managers) concerning CN resources. This version of the IRP is mainly intended for "passive management" of high-level network configuration and status information as required by a network manager. The "Core Network Resources IRP" comprises a set of specifications defining Requirements, a protocol-neutral network resource model (NRM) and corresponding solution set(s).

The document specifies the protocol-neutral core network resources IRP: Network resource model. It reuses relevant parts of the generic NRM in TS 32.622, either by direct reuse or subclassing, and in addition to that defines CN-specific managed object classes.

The configuration management (CM) area is very large. The intention is to split the specification of the related interfaces in several IRPs – as described in the Introduction clause. An important aspect of such a split is that the network resource models (NRMs) defined in different IRPs containing NRMs are consistent, and that NRMs supported by an IRPAgent implementation can be accessed as one coherent model through one IRP information service.

The document has the following main purpose: to define the applied CN-specific network resource model, based on the generic NRM in TS 32.622.

Finally, in order to access the information defined by this NRM, an IRP information service (IS) is needed, such as the basic CM IRP: IS TS 32.602. However, which information service that is applicable is outside the scope of this document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 632                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132632/11.00.00_60/ts_132632v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132632/11.00.00_60/ts_132632v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.632V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.632(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.632(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.632(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.632(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.632(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.632(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.136 TS 32.636 Telecommunication management; Configuration Management (CM); Core network resources Integration Reference Point (IRP); Solution Set (SS) Definitions**

The purpose of this document is to define the mapping of the IRP information model (see TS 32.632) to protocol specific details necessary for implementation of this IRP in a specific solution set environment.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 636                  | 11.0.0  | Published    | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132636/11.00.00_60/ts_132636v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132636/11.00.00_60/ts_132636v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.636V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.636(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.636(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.636(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.636(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.636(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.636(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.137 TS 32.641 Telecommunication management; Configuration management (CM); UTRAN network resources IRP: Requirements**

The document defines, in addition to the requirements defined in TS 32.101, 32.102 and 32.600, the requirements for the present IRP: UTRAN network resources IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| CCSA | CCSA-TSD-132 641            |         |              |             |   |
| ETSI | TS 132 641                  | 11.0.0  | Published    | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132641/11.00.00_60/ts_132641v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132641/11.00.00_60/ts_132641v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.641V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.641(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.641(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.641(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.641(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.641(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.641(Rel11)v11.0.0.pdf</a>                           |

### **10.10.138 TS 32.642 Telecommunication management; Configuration management (CM); UTRAN network resources IRP: NRM**

The document is part of an integration reference point (IRP) named "UTRAN Network Resources IRP", through which an 'IRPAgent' (typically an element manager or network element) can communicate configuration management information to one or several 'IRPManagers' (typically network managers) concerning UTRAN resources. The "UTRAN Network Resources IRP" comprises a set of specifications defining Requirements, a protocol neutral network resource model (NRM) and corresponding solution set(s).

The document specifies the protocol neutral UTRAN network resources IRP: Network resource model. It reuses relevant parts of the generic NRM in TS 32.622, either by direct reuse or sub-classing, and in addition to that defines UTRAN specific managed object classes.

The configuration management (CM) area is very large. The intention is to split the specification of the related interfaces in several IRPs – as described in the introduction clause. An important aspect of such a split is that the network resource models (NRMs) defined in different IRPs containing NRMs are consistent, and that NRMs supported by an IRPAgent implementation can be accessed as one coherent model through one IRP information service.

The document has the following main purpose: to define the applied UTRAN-specific network resource model, based on the generic NRM in TS 32.600.

Finally, in order to access the information defined by this NRM, an IRP information service (IS) is needed, such as the basic CM IRP: IS 32.602 or the bulk CM IRP: IS 32.612. However, which information service is applicable is outside the scope of this document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 642                  | 11.4.1  | Published    | 2013-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132642/11.04.01_60/ts_132642v110401p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132642/11.04.01_60/ts_132642v110401p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.642V1140-2014  | 11.4.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.642(R11-11.4.0)  | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.642(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.642(R11-11.4.0)</a> |
| TTC  | TS-3GA-32.642(Rel11)v11.4.0 | 11.4.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.642(Rel11)v11.4.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.642(Rel11)v11.4.0.pdf</a>                           |

### **10.10.139 TS 32.646 Telecommunication management; Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Sets for the UTRAN NRM IRP.

This Solution Set specification is related to TS 32.642.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 646                  | 11.2.0  | Published    | 2013-02-01  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132646/11.02.00_60/ts_132646v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132646/11.02.00_60/ts_132646v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.646V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.646(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.646(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.646(R11-11.2.0)</a> |
| TTC  | TS-3GA-32.646(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.646(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.646(Rel11)v11.2.0.pdf</a>                           |

#### **10.10.140 TS 32.651 Telecommunication management; Configuration Management (CM); GERAN network resources Integration Reference Point (IRP); Requirements**

This document defines, in addition to those specified in TS 32.101, TS 32.102 and TS 32.600, the requirements for the present IRP: GERAN Network Resources IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 651                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132651/11.00.00_60/ts_132651v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132651/11.00.00_60/ts_132651v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.651V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.651(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.651(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.651(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.651(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.651(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.651(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.141 TS 32.652 Telecommunication management; Configuration Management (CM); GERAN network resources Integration Reference Point (IRP); Network Resource Model (NRM)**

This document is part of an Integration Reference Point (IRP) named "GERAN Network Resources IRP", through which an "IRPAgent" (typically an Element Manager or Network Element) can communicate Configuration Management information to one or several "IRPManagers" (typically Network Managers) concerning GERAN resources. The "GERAN Network Resources IRP" comprises a set of specifications defining Requirements, a protocol neutral Network Resource Model (NRM) and corresponding Solution Set(s).

This document specifies the protocol neutral GERAN Network Resources IRP: Network Resource Model. It reuses relevant parts of the generic NRM in TS 32.622, either by direct reuse or sub-classing, and in addition to that defines GERAN specific Managed Object Classes.

The Configuration Management (CM) area is very large. The intention is to split the specification of the related interfaces in several IRPs – as described in the Introduction clause above. An important aspect of such a split is that the Network Resource Models (NRMs) defined in different IRPs containing NRMs are consistent, and that NRMs supported by an IRPAgent implementation can be accessed as one coherent model through one IRP Information Service.

To summarize, the present document has following main purpose: to define the applied GERAN specific Network Resource Model, based on the generic NRM in TS 32.622.

In order to access the information defined by this NRM, an IRP Information Service (IS) is needed, such as the Basic CM IRP: IS TS 32.602 or the Bulk CM IRP: IS TS 32.612. However, which Information Service that is applicable is outside the scope of the present document.

Regarding the support of the State Management IRP: IS TS 32.672, all NRMs of one release shall support the same State Management IRP version.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 652                 | 11.2.1  | Published | 2013-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132652/11.02.01_60/ts_132652v110201p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132652/11.02.01_60/ts_132652v110201p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.652V1120-2014 | 11.2.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.652(R11-11.2.0) | 11.2.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.652(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.652(R11-11.2.0)</a> |



|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.652(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.652(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.652(Rel11)v11.2.0.pdf</a> |

#### **10.10.142 TS 32.656 Telecommunication management; Configuration Management (CM); GERAN network resources Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Sets for the GERAN NRM IRP.

This Solution Set specification is related to TS 32.652.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 656                  | 11.2.0  | Published    | 2013-04-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132656/11.02.00_60/ts_132656v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132656/11.02.00_60/ts_132656v110200p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.656V1120-2014  | 11.2.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.656(R11-11.2.0)  | 11.2.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.656(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.656(R11-11.2.0)</a> |
| TTC  | TS-3GA-32.656(Rel11)v11.2.0 | 11.2.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.656(Rel11)v11.2.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.656(Rel11)v11.2.0.pdf</a>                           |

#### **10.10.143 TS 32.661 Telecommunication management; Configuration management (CM); Kernel CM; Requirements**

This document defines, in addition to the requirements defined in 3G TS 32.101, 3G TS 32.102, and 3G TS 32.600, the requirements for the present IRP: Kernel configuration management IRP. It is the intent of Kernel configuration management to provide an IRP that contains the configuration management functionality that is basic and minimal. It is the functionality that is common to and required by both basic CM and bulk CM. While neither the basic CM IRP nor bulk CM IRP requires the other, they each require the Kernel CM IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 661                  | 11.0.0  | Published    | 2012-10-31  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132661/11.00.00_60/ts_132661v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132661/11.00.00_60/ts_132661v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.661V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.661(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.661(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.661(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.661(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.661(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.661(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.144 TS 32.662 Telecommunication management; Configuration management (CM); Kernel CM; Information service**

This document defines integration reference point (IRP) through which an 'IRPAgent' (typically an element manager or network element) can communicate configuration management-related information to one or several 'IRPManagers' (typically network managers).

The function of this Kernel CM IRP information service is to define an interface that provides the essential CM services. While it is not expected that the Kernel CM IRP alone will provide adequate CM capability, the Kernel CM IRP is expected to provide the common supporting capability required



for other IRPs such as the basic CM IRP or the bulk CM IRP, each of which requires the Kernel CM IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 662                  | 11.1.0  | Published    | 2013-02-01  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132662/11.01.00_60/ts_132662v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132662/11.01.00_60/ts_132662v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.662V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.662(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.662(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.662(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.662(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.662(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.662(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.145 TS 32.666 Telecommunication management; Configuration Management (CM); Kernel CM Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set definitions for the IRP whose semantics is specified in Kernel CM (Configuration Management) IRP: Information Service TS 32.662.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 666                  | 11.0.0  | Published    | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132666/11.00.00_60/ts_132666v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132666/11.00.00_60/ts_132666v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.666V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.666(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.666(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.666(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.666(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.666(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.666(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.146 TS 32.671 Telecommunication management; Configuration management (CM); State management integration reference point (IRP): Requirements**

This document defines, in addition to the requirements defined in 3G TS 32.101, 3G TS 32.102 and 3G TS 32.600, the requirements for the present IRP: State management.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 671                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132671/11.00.00_60/ts_132671v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132671/11.00.00_60/ts_132671v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.671V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.671(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.671(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.671(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.671(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.671(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.671(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.147 TS 32.672 Telecommunication management; Configuration management (CM); State management integration reference point (IRP): Information service**

This document defines the information service (IS) part of the state management IRP. It specifies the semantics of the network resource state and status information visible across the Itf-N. It also specifies the interaction required for the management of the state and status information.

The state and status attributes specified in this document shall be used, where applicable, as attributes in information object class (IOC) definitions of other 3G IRPs. When used by the IOC definition, the semantics of the state and status attributes can be qualified and enhanced, if deemed necessary.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 672                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132672/11.00.00_60/ts_132672v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132672/11.00.00_60/ts_132672v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.672V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.672(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.672(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.672(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.672(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.672(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.672(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.148 TS 32.676 Telecommunication management; Configuration Management (CM); State Management Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set (SS) definitions for the IRP whose semantics is specified in State Management IRP: Information Service (IS) TS 32.672.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 676                  | 11.0.0  | Published    | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132676/11.00.00_60/ts_132676v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132676/11.00.00_60/ts_132676v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.676V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.676(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.676(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.676(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.676(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.676(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.676(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.149 TS 32.690 Telecommunication management; Inventory management (IM); Requirements**

The document defines the requirements for the present IRP: Inventory management IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 690                  | 11.0.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132690/11.00.00_60/ts_132690v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132690/11.00.00_60/ts_132690v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.690V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.690(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.690(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-32.690(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.690(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.690(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.690(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.151 TS 32.691 Telecommunication management; Inventory management network resources integration reference point (IRP): Requirements**

This document defines, in addition to the requirements defined in 3G TS 32.101, 3G TS 32.102 and 3G TS 32.600, the requirements for the present IRP: Inventory management network resources IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 691                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132691/11.00.00_60/ts_132691v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132691/11.00.00_60/ts_132691v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.691V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.691(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.691(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.691(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.691(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.691(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.691(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.151 TS 32.692 Telecommunication management; Inventory management network resources integration reference point (IRP): Network resource model**

This document defines an integration reference point (IRP) through which an 'IRPAgent' (typically an element manager or network element) can communicate network management-related information to one or several 'IRPManagers' (typically network managers).

This document specifies an inventory management network resource model (NRM) (also referred to as a management information model – MIM) with definitions of information object classes.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 692                  | 11.0.0  | Published    | 2012-09-28  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132692/11.00.00_60/ts_132692v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132692/11.00.00_60/ts_132692v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.692V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.692(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.692(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.692(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.692(Rel11)v11.1.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.692(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.692(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.152 TS 32.696 Telecommunication management; Inventory Management (IM) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

This document provides the NRM-specific part related to the Inventory Management NRM IRP IS in TS 32.692 of solution set definitions.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 696                  | 11.1.0  | Published    | 2013-02-01  | <a href="http://www.etsi.org/deliver/etsi_ts/132600_132699/132696/11.01.00_60/ts_132696v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132600_132699/132696/11.01.00_60/ts_132696v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.696V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.696(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.696(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.696(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.696(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.696(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.696(Rel11)v11.1.0.pdf</a>                           |

### **10.10.153 TS 32.711 Telecommunication management; Configuration management (CM); Transport network (TN) interface network resource model (NRM) integration reference point (IRP): Requirements**

The document defines the requirements for the present IRP: Transport network (TN) interface network resource model (NRM) integration reference point.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 711                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132711/11.00.00_60/ts_132711v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132711/11.00.00_60/ts_132711v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.711V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.711(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.711(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.711(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.711(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.711(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.711(Rel11)v11.0.0.pdf</a>                           |

### **10.10.154 TS 32.712 Telecommunication management; Configuration management (CM); Transport network (TN) interface network resource model (NRM) integration reference point (IRP): Information service (IS)**

This document is part of an integration reference point (IRP) named "Transport Network (TN) interface network resource model (NRM) IRP", through which an "IRPAgent" (typically an element manager or network element) can communicate configuration management information to one or several "IRPManagers" (typically network managers) concerning transport resources. The "Transport Network (TN) Interface Network Resource Model (NRM) IRP" comprises a set of specifications defining Requirements, a protocol-neutral network resource model (NRM) and corresponding solution set(s).

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 712                  | 11.1.0  | Published    | 2013-10-04  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132712/11.01.00_60/ts_132712v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132712/11.01.00_60/ts_132712v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.712V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.712(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.712(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.712(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.712(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-11-22  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.712(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.712(Rel11)v11.1.0.pdf</a>                           |

### **10.10.155 TS 32.716 Telecommunication management; Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

This document is part of an Integration Reference Point (IRP) named Transport Network (TN) interface Network Resource Model (NRM) IRP, through which an IRPAgent can communicate configuration management information to one or several IRPManagers concerning TN resources. The TN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies Solution Sets for the TN NRM IRP. It is related to TS 32.712.

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 132 716   | 11.0.0  | Published | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132716/11.00.00_60/ts_132716v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132716/11.00.00_60/ts_132716v110000p.pdf</a> |

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.32.716V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.716(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.716(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.716(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.716(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.716(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.716(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.156 TS 32.721 Telecommunication management; Configuration management (CM); Repeater network resources integration reference point (IRP): Requirements**

This document defines, in addition to the requirements defined in 3GPP TS 32.101, 3GPP TS 32.102 and 3GPP TS 32.600, the requirements for the present repeater network resources IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 721                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132721/11.00.00_60/ts_132721v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132721/11.00.00_60/ts_132721v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.721V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.721(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.721(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.721(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.721(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.721(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.721(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.157 TS 32.722 Telecommunication management; Configuration management (CM); Repeater network resources integration reference point (IRP): Information service (IS)**

This document is part of an integration reference point (IRP) named "Repeater Network Resources IRP", through which an "IRPAgent" (typically an element manager or network element) can communicate configuration management information to one or several "IRPManagers" (typically network managers) concerning repeater resources. The "Repeater Network Resources IRP" comprises a set of specifications defining Requirements, a protocol neutral network resource model (NRM) and corresponding solution set(s).

The document specifies the protocol neutral repeater network resources IRP: Network resource model. It reuses relevant parts of the generic NRM in TS 32.622 and TS 32.642, either by direct reuse or sub-classing, and in addition to that defines repeater specific information object classes.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 722                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132722/11.00.00_60/ts_132722v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132722/11.00.00_60/ts_132722v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.722V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.722(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.722(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.722(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.722(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.722(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.722(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.158 TS 32.726 Telecommunication management; Configuration Management (CM); Repeater network resources Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set definitions for the IRP whose semantics are specified in the Repeater Network Resources IRP NRM Information Service TS 32.722.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 726                  | 11.0.0  | Published    | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132726/11.00.00_60/ts_132726v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132726/11.00.00_60/ts_132726v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.726V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.726(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.726(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.726(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.726(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.726(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.726(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.159 TS 32.731 Telecommunication management; IP multimedia subsystem (IMS) network resource model (NRM) integration reference point (IRP): Requirements**

This document defines, in addition to the requirements defined in 3GPP TS 32.101, 3GPP TS 32.102 and 3GPP TS 32.600, the requirements for the IMS network resource model (NRM) IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 731                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132731/11.00.00_60/ts_132731v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132731/11.00.00_60/ts_132731v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.731V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.731(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.731(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.731(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.731(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.731(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.731(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.160 TS 32.732 Telecommunication management; IP multimedia subsystem (IMS) network resource model (NRM) integration reference point (IRP): Information service (IS)**

This document is part of an integration reference point (IRP) named IMS network resource model (NRM) IRP, through which an IRPAgent can communicate configuration management information to one or several IRPManagers concerning IMS resources. The IMS NRM IRP comprises a set of specifications defining Requirements, a protocol neutral information service and one or more solution set(s).

The document specifies the protocol neutral IMS NRM IRP: Information service (IS). It reuses relevant parts of the generic NRM IRP: IS in 3GPP TS 32.622, either by direct reuse or subclassing, and in addition to that defines IMS-specific information object classes.

Finally, in order to access the information defined by this NRM, an interface IRP is needed, such as the basic CM IRP in 3GPP TS 32.602. However, which interface IRP is applicable is outside the scope of the present document.

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 132 732   | 11.0.0  | Published | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132732/11.00.00_60/ts_132732v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132732/11.00.00_60/ts_132732v110000p.pdf</a> |



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ATIS | ATIS.3GPP.32.732V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.732(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.732(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.732(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.732(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.732(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.732(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.161 TS 32.736 Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

This document specifies Solution Set definitions for the IRP whose semantics is specified in IMS (IP Multimedia Subsystem) NRM (Network Resource Model) IRP: Information Service TS 32.732.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 736                  | 11.0.0  | Published    | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132736/11.00.00_60/ts_132736v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132736/11.00.00_60/ts_132736v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.736V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.736(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.736(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.736(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.736(Rel11)v11.1.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.736(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.736(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.162 TS 32.741 Telecommunication management; Configuration management (CM); Signalling transport network (STN) interface network resource model (NRM) integration reference point (IRP): Requirements**

The document defines the requirements for the signalling transport network (STN) interface NRM IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 741                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132741/11.00.00_60/ts_132741v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132741/11.00.00_60/ts_132741v110000p.pdf</a>                   |
| ATIS | ATIS.3GPP.32.741V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.741(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.741(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-32.741(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.741(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.741(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.741(Rel11)v11.0.0.pdf</a>                         |

#### **10.10.163 TS 32.742 Telecommunication management; Configuration management (CM); Signalling transport network (STN) interface network resource model (NRM) integration reference point (IRP): Information service (IS)**

This document is part of an integration reference point (IRP) named "Signalling Transport Network (STN) network resources IRP", through which an "IRPAgent" (typically an element manager or network element) can communicate configuration management information to one or several "IRPManagers" (typically network managers) concerning signalling transport resources. The "Signalling Transport Network (STN) network resources IRP" comprises a set of specifications



defining Requirements, a protocol-neutral network resource model (NRM) and corresponding solution set(s).

The document specifies the protocol-neutral STN resources IRP: Network resource model.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 742                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132742/11.00.00_60/ts_132742v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132742/11.00.00_60/ts_132742v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.742V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.742(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.742(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.742(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.742(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.742(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.742(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.164 TS 32.746 Telecommunication management; Configuration Management (CM); Signalling Transport Network (STN) interface Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

This document is part of an Integration Reference Point (IRP) named Signalling Transport Network (STN) interface Network Resource Model (NRM) IRP, through which an IRP Agent can communicate configuration management information to one or several IRP Managers concerning STN resources. The STN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies the Solution Sets for the STN NRM IRP. It is related to TS 32.742.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 746                  | 11.0.0  | Published    | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132746/11.00.00_60/ts_132746v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132746/11.00.00_60/ts_132746v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.746V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.746(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.746(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.746(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.746(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.746(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.746(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.165 TS 32.751 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The document defines, in addition to the requirements defined in 3GPP TS 32.101, TS 32.102 and TS 32.600, the Requirements for the EPC Network Resource Model (NRM) IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 751                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132751/11.00.00_60/ts_132751v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132751/11.00.00_60/ts_132751v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.751V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.751(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.751(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.751(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.751(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.751(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.751(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.166 TS 32.752 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

This document specifies the protocol neutral EPC Network Resource Model IRP Information Service, through which an 'IRPAgent' (typically an Element Manager or Network Element) can communicate information to one or several 'IRPManagers' (typically Network Managers) concerning EPC resources. It reuses relevant parts of the Generic NRM in 3GPP TS 32.622, either by direct reuse or sub-classing, and in addition to that defines EPC specific Information Object Classes.

In order to access the information defined by this NRM, an Interface IRP such as the "Basic CM IRP" is needed (3GPP TS 32.602). However, which Interface IRP is applicable is outside the scope of the present document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 752                  | 11.0.1  | Published    | 2013-08-02  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132752/11.00.01_60/ts_132752v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132752/11.00.01_60/ts_132752v110001p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.752V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.752(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.752(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.752(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.752(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.752(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.752(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.167 TS 32.756 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) Definitions**

The TS 32.75x-series (EPC NRM IRP) define an Integration Reference Point (IRP) named EPC Network Resource Model (NRM) IRP, through which an "IRPAgent" (typically an Element Manager or Network Element) can communicate Network Management related information to one or several "IRPManagers" (typically Network Managers).

The present document provides solution set definitions for EPC Network Resources IRP, which define the mapping of the IRP information model (see TS 32.752) to the protocol specific details necessary for implementation of this IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 756                  | 11.0.0  | Published    | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132756/11.00.00_60/ts_132756v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132756/11.00.00_60/ts_132756v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.756V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.756(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.756(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.756(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.756(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.756(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.756(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.168 TS 32.761 Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

The document defines, in addition to the requirements defined in 3GPP TS 32.101, TS 32.102 and TS 32.600, the Requirements for the EUTRAN Network Resource Model (NRM) IRP.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 761                  | 11.1.0  | Published    | 2013-02-01  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132761/11.01.00_60/ts_132761v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132761/11.01.00_60/ts_132761v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.761V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.761(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.761(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.761(R11-11.1.0)</a> |
| TTC  | TS-3GA-32.761(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.761(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.761(Rel11)v11.1.0.pdf</a>                           |

#### **10.10.169 TS 32.762 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions**

This document provides the XML file format definition for the EPC Network Resource Model IRP IS TS 32.752.

An application of these XML definitions is to build a configuration file for transfer with the Bulk CM IRP using either CORBA Solution Set of 3GPP TS 32.613 or the SOAP Solution Set of 3GPP TS 32.617. For this application, the basic part of the XML file format definition is provided by 3GPP TS 32.615.

Other applications of these XML definitions are the SOAP solution sets of other IRPs that perform operations on managed objects, for example the Basic CM IRP SOAP SS of 3GPP TS 32.607.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 762                  | 11.7.0  | Published    | 2014-03-24  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132762/11.07.00_60/ts_132762v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132762/11.07.00_60/ts_132762v110700p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.762V1150-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.762(R11-11.5.0)  | 11.5.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.762(R11-11.5.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.762(R11-11.5.0)</a> |
| TTC  | TS-3GA-32.762(Rel11)v11.6.0 | 11.6.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.762(Rel11)v11.6.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.762(Rel11)v11.6.0.pdf</a>                           |

#### **10.10.170 TS.32.766 Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

This document is part of an Integration Reference Point (IRP) named E-UTRAN Network Resource Model (NRM) IRP, through which an IRP Agent can communicate configuration management information to one or several IRP Managers concerning E-UTRAN resources. The E-UTRAN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The present document specifies the Solution Sets for the E-UTRAN NRM IRP and is related to TS 32.762.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 766                 | 11.8.0  | Published | 2014-03-24  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132766/11.08.00_60/ts_132766v110800p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132766/11.08.00_60/ts_132766v110800p.pdf</a> |
| ATIS | ATIS.3GPP.32.766V1140-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.                 | Version | Status       | Issued date | Location  |
|-----|------------------------------|---------|--------------|-------------|---|
| TTA | TTAT.3G-32.766(R11-11.4.0)   | 11.4.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.766(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.766(R11-11.4.0)</a> |
| TTC | /TS-3GA-32.766(Rel11)v11.7.0 | 11.7.0  | TTC Approved | 2014-03-20  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.766(Rel11)v11.7.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2014/TS/TS-3GA-32.766(Rel11)v11.7.0.pdf</a>                           |

#### **10.10.171 TS 32.771 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions**

This document provides the XML file format definition for the EPC Network Resource Model IRP IS TS 32.752.

An application of these XML definitions is to build a configuration file for transfer with the Bulk CM IRP using either CORBA Solution Set of 3GPP TS 32.613 or the SOAP Solution Set of 3GPP TS 32.617. For this application, the basic part of the XML file format definition is provided by 3GPP TS 32.615.

Other applications of these XML definitions are the SOAP solution sets of other IRPs that perform operations on managed objects, for example the Basic CM IRP SOAP SS of 3GPP TS 32.607.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 771                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132771/11.00.00_60/ts_132771v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132771/11.00.00_60/ts_132771v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.771V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.771(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.771(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.771(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.771(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.771(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.771(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.172 TS 32.772 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions**

This document provides the XML file format definition for the EPC Network Resource Model IRP IS TS 32.752.

An application of these XML definitions is to build a configuration file for transfer with the Bulk CM IRP using either CORBA Solution Set of 3GPP TS 32.613 or the SOAP Solution Set of 3GPP TS 32.617. For this application, the basic part of the XML file format definition is provided by 3GPP TS 32.615.

Other applications of these XML definitions are the SOAP solution sets of other IRPs that perform operations on managed objects, for example the Basic CM IRP SOAP SS of 3GPP TS 32.607.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 132 772                 | 11.0.0  | Published | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132772/11.00.00_60/ts_132772v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132772/11.00.00_60/ts_132772v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.772V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.772(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.772(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.772(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TS-3GA-32.772(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.772(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.772(Rel11)v11.0.0.pdf</a> |

#### **10.10.173 TS 32.776 Telecommunication management; Home Node B (HNB) Subsystem (HNS); Network Resource Model (NRM); Integration Reference Point (IRP); Solution Set (SS) definitions**

This document is part of an Integration Reference Point (IRP) named HNS Network Resource Model (NRM) IRP, through which an IRP Agent can communicate configuration management information to one or several IRPManagers concerning HNS resources. The HNS NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies Solution Sets for the HNS NRM IRP. It is related to TS 32.772.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 776                  | 11.0.0  | Published    | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132776/11.00.00_60/ts_132776v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132776/11.00.00_60/ts_132776v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.776V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.776(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.776(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.776(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.776(Rel11)v11.1.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.776(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.776(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.174 TS 32.781 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions**

This document provides the XML file format definition for the EPC Network Resource Model IRP IS TS 32.752.

An application of these XML definitions is to build a configuration file for transfer with the Bulk CM IRP using either CORBA Solution Set of 3GPP TS 32.613 or the SOAP Solution Set of 3GPP TS 32.617. For this application, the basic part of the XML file format definition is provided by 3GPP TS 32.615.

Other applications of these XML definitions are the SOAP solution sets of other IRPs that perform operations on managed objects, for example the Basic CM IRP SOAP SS of 3GPP TS 32.607.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 781                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132781/11.00.00_60/ts_132781v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132781/11.00.00_60/ts_132781v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.781V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.781(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.781(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.781(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.781(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.781(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.781(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.175 TS 32.782 Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions**

This document provides the XML file format definition for the EPC Network Resource Model IRP IS TS 32.752.

An application of these XML definitions is to build a configuration file for transfer with the Bulk CM IRP using either CORBA Solution Set of 3GPP TS 32.613 or the SOAP Solution Set of 3GPP TS 32.617. For this application, the basic part of the XML file format definition is provided by 3GPP TS 32.615.

Other applications of these XML definitions are the SOAP solution sets of other IRPs that perform operations on managed objects, for example the Basic CM IRP SOAP SS of 3GPP TS 32.607.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 782                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132782/11.00.00_60/ts_132782v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132782/11.00.00_60/ts_132782v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.782V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.782(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.782(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.782(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.782(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.782(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.782(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.176 TS 32.786 Telecommunication management; Home enhanced Node B (HeNB) Subsystem (HeNS); Network Resource Model (NRM); Integration Reference Point (IRP); Solution Set (SS) definitions**

This document is part of an Integration Reference Point (IRP) named HeNS Network Resource Model (NRM) IRP, through which an IRPAgent can communicate configuration management information to one or several IRPManagers concerning HeNS resources. The HeNS NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The present document specifies Solution Sets for the HeNS NRM IRP and is related to TS 32.782.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 786                  | 11.0.0  | Published    | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132786/11.00.00_60/ts_132786v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132786/11.00.00_60/ts_132786v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.786V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.786(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.786(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.786(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.786(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.786(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.786(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.177 TS 32.791 Telecommunication management; Common Radio Access Technology (RAT) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements**

This document defines, in addition to the requirements defined in TS 32.101, TS 32.102 and TS 32.600, the Requirements for the Common RAT NRM IRP for equipment that may be shared between BSS in GSM, UTRAN and E UTRAN.



The document can be used also for managing the equipment that can be shared by several RATs, even in the cases when it is not being shared.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 791                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132791/11.00.00_60/ts_132791v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132791/11.00.00_60/ts_132791v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.791V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.791(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.791(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.791(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.791(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.791(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.791(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.178 TS 32.792 Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)**

This document specifies the Generic Radio Access Network (RAN) network resource information that can be communicated between an IRP Agent and one or several IRP Managers for network management purposes.

The document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

This document specifies equipment that may be shared between BSS in GSM, UTRAN and E UTRAN.

In order to access the information defined by this NRM, an Interface IRP such as the "Basic CM IRP" is needed TS 32.602. However, which Interface IRP is applicable is outside the scope of the present document.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 792                  | 11.0.0  | Published    | 2012-11-06  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132792/11.00.00_60/ts_132792v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132792/11.00.00_60/ts_132792v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.792V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.792(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.792(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.792(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.792(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.792(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.792(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.179 TS 32.796 Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions**

This document is part of an Integration Reference Point (IRP) named Generic Radio Access Network (RAN) Network Resource Model (NRM) IRP, through which an IRP Agent can communicate configuration management information to one or several IRP Managers concerning Generic RAN resources. The Generic RAN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The document specifies Solution Sets for the Generic RAN NRM IRP and is related to TS 32.792.



|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 132 796                  | 11.0.0  | Published    | 2012-10-18  | <a href="http://www.etsi.org/deliver/etsi_ts/132700_132799/132796/11.00.00_60/ts_132796v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/132700_132799/132796/11.00.00_60/ts_132796v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.32.796V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-32.796(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.796(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-32.796(R11-11.0.0)</a> |
| TTC  | TS-3GA-32.796(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.796(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-32.796(Rel11)v11.0.0.pdf</a>                           |

#### **10.10.180 TR 32.833 Telecommunication management; Study on management of converged networks**

The document investigates which new functionalities regarding a true end to end management are enabled by a converged OSS. The fragments looked at are Fault Management, Performance Management and Configuration Management.

#### **10.10.181 TR 32.834 Study on Operations, Administration and Maintenance (OAM) aspects of inter-Radio-Access-Technology (RAT) energy saving**

The present document focuses on Inter-RAT aspects of Energy Saving, i.e., reducing the capabilities of one RAT to reduce its energy consumption while providing a back-up by another RAT.

The following RATs are considered in this study: GSM, UMTS; LTE, CDMA.

#### **10.10.182 TR 32.853 Telecommunication management; Final report from the 3GPP - TM Forum Joint Work Group (JWG) on fault management harmonization**

This document is the report of the 3GPP™ SA5 / TM Forum NGWW Joint Work Group on Fault Management Harmonization. The analysis and recommendations in it are offered to 3GPP and TM Forum for further consideration in their work on Fault Management.

This report discusses 43 items, ranging from major structural aspects of the 3GPP SA5 and TM Forum TIP RAM Fault Management solutions to some more detailed points. The results are:

- 26 items: a recommendation on how to reach alignment was agreed (or were already aligned);
- 16 items: no recommendation on alignment could be agreed;
- 1 item: initially considered, but concluded to be out of scope.

The most important item on which no agreement could be reached concerns the way alarms and/or alarm notifications are uniquely identified.

It should be noted that the study addressed in the first place the differences between the 3GPP and the TM Forum Fault Management solutions. A consequence is that this report does not list the majority of the items in which the solutions are already aligned.

If alignment is reported, that is either because the alignment was attained as a result of this study, or because it existed already but was not recognized earlier. Against this background, the number of the subjects in this document which are labelled "no agreement reached" should not be taken as an indication that the 3GPP and TM Forum solutions are far apart - in reality there are much more subjects on which both solutions are aligned than on which they are not aligned.

The document concludes with a general discussion and proposal on interface harmonization.

#### **10.10.183 TR 32.854 Telecommunication management; Fixed Mobile Convergence (FMC); 3GPP / TM Forum concrete model relationships and use cases**

This document sets out a number of independent operator activity contexts where each context has been chosen to exercise one or more of the operator requirements and to lead to points of intersection of the network model work of 3GPP and TM Forum where some degree of harmonisation would consequently seem valuable.

Each context description focuses on one or more use cases that suitably describe the relevant details of that operator activity with respect to an expected area of intersection. The use cases are first explained and then depicted via one or more stylized network and model diagrams. The model diagram is then developed to a formal model structure.

Finally the set of changes proposed cumulated from all context analyses are provided as a coherent recommendation. Respective concrete models must use this model to support the FMC use cases to claim FMC network management compliance.

It should be noted that the UIM cannot be used directly for implementation. Implementation classes must be derived from those in the UIM by Inheritance or some other appropriate mechanism. Classes derived from those in the UIM (e.g., for the fixed environment) must use different names from those used in the UIM.

This content of this document has been jointly developed by 3GPP and TM Forum as part of the Joint Working Group on Resource Model Alignment .

#### **10.10.184 TR 32.901 Telecommunication management; Study on User Data Convergence (UDC) information model handling and provisioning: Example use cases**

3GPP TR 22.985 Service requirement for the UDC describes the architecture of the User Data Convergence, a concept that proposes to move the user data from where it has been distributed and siloed in Network Elements, Applications, and other network resources to a single logical consolidated facility here called User Data Repository (UDR) where it can be accessed, stored and managed in a common way.

The introduction of a User Data Convergence of user data for network services and management applications could significantly enhance the ability of 3GPP based networks to offer complex and combined services. User data can be decomposed and reformed by a common data model framework (e.g., tree-like data model, rational data model) provided by UDR. In that case, user data categorized by services can be regrouped and identified by user ID, leaving no data redundancy. Also, convergence in data model will unify the user data access interface and its protocol, which will promote new service application development. Thereby, the capability of user data convergence can be open to creation of data-less applications.

Methods for data protection against access by unauthorized parties are outside the scope of this document.

3GPP TS 32.181 UDC Framework for Model Handling and Management and 3GPP TS 29.335 UDC; User Data Repository Access Protocol over the Ud interface; Stage 3 provide various types of information and data models associated with the architecture of UDC. These include the Common Baseline Information Model (CBIM) (see 3GPP TS 32.182), the Specialized Information Model (SpIM), Application Information Models (AIMs), Application Data Models (ADMs), and the Consolidated Data Model (CDM) of the User Data Repository (UDR). Figure 1 from 3GPP TS 32.181 UDC Framework for Model Handling and Management shows the operational environment of the UDC.

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TR-3GA-32.901(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-32.901(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-32.901(Rel11)v11.0.0.pdf</a> |

## 10.11 33-series, Security aspects

### 10.11.1 TS 33.102 3G security; Security architecture

This specification defines the security architecture, i.e., the security features and the security mechanisms, for the third generation mobile telecommunication system.

A security feature is a service capability that meets one or several security requirements. The complete set of security features addresses the security requirements as they are defined in "3G Security: Threats and Requirements" (TS 21.133) and implement the security objectives and principles described in TS 33.120. A security mechanism is an element that is used to realize a security feature. All security features and security mechanisms taken together form the security architecture.

An example of a security feature is user data confidentiality. A security mechanism that may be used to implement that feature is a stream cipher using a derived cipher key.

This specification defines 3G security procedures performed within 3G capable networks (R99+), i.e., intra-UMTS and UMTS-GSM. As an example, UMTS authentication is applicable to UMTS radio access as well as GSM radio access provided that the serving network node and the MS are UMTS capable. Interoperability with non-UMTS capable networks (R98-) is also covered.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.102        | 11.5.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33102-b51.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33102-b51.pdf</a> |
| ETSI | TS 133 102                 | 11.6.0  | Published      | 2014-03-24  | <a href="http://www.etsi.org/deliver/etsi_ts/133100_133199/133102/11.06.00_60/ts_133102v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/133100_133199/133102/11.06.00_60/ts_133102v110600p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.102V1150-2014 | 11.5.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.102(R11-115.0)  | 11.5.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.102(R11-115.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.102(R11-115.0)</a>           |

### 10.11.2 TS 33.105 3G security; Cryptographic algorithm requirements

This specification constitutes a requirements specification for the security functions which may be used to provide the network access security features defined in 3G TS 33.102.

The specification covers the intended use of the functions, the technical requirements on the functions and the requirements as regards standardization.

For those functions that require standardization, it also covers the intended use of the algorithm specification, the requirements on test data, and quality assurance requirements on both the algorithm and its documentation.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.105        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33105-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33105-b00.pdf</a> |
| ETSI | TS 133 105                 | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/133100_133199/133105/11.00.00_60/ts_133105v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/133100_133199/133105/11.00.00_60/ts_133105v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.105V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.105(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.105(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.105(R11-11.0.0)</a>         |

### 10.11.3 TS 33.106 Lawful interception requirements

The document provides basic interception requirements within a third generation mobile communication system (3GMS).

The specification describes the service requirements from a law enforcement point of view only. The aim of this document is to define a 3GMS interception system that supports a number of regional interception regulations, but these regulations are not repeated here as they vary. Regional interception requirements shall rely on this specification to derive such information, as they require.

These interception requirements shall be used to derive specific network requirements.

|      | Document No.              | Version | Status         | Issued date | Location  |
|------|---------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.106       | 11.1.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33106-b11.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33106-b11.pdf</a> |
| ATIS | ATIS.3GPP.33.106V111-2014 | 11.1.1  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

### 10.11.4 TS 33.107 3G security; Lawful interception architecture and functions

The document describes the architecture and functional requirements within a third generation mobile communication system (3GMS).

The specification shows the service requirements from a law enforcement point of view only. The aim of this document is to define a 3GMS interception system that supports a number of regional interception regulations, but these regulations are not repeated here as they vary. Regional interception requirements shall be met in using specific (regional) mediation functions allowing only required information to be transported.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.107        | 11.3.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33107-b30.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33107-b30.pdf</a> |
| ETSI | TS 133 107                 | 11.3.0  | Published      | 2012-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/133100_133199/133107/11.03.00_60/ts_133107v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/133100_133199/133107/11.03.00_60/ts_133107v110300p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.107V1130-2014 | 11.3.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.107(R11-11.3.0) | 11.3.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-33.107(R11-11.3.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-33.107(R11-11.3.0)</a>           |

### 10.11.5 TS 33.108 3G security; Handover interface for lawful interception (LI)

This specification addresses the handover interfaces for lawful interception of packet-data services, circuit-switched services, and multimedia services within the UMTS network. The handover interface in this context includes the delivery of intercept related information (HI2) and content of communication (HI3) to the law enforcement monitoring facility.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.108        | 11.4.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33108-b40.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33108-b40.pdf</a> |
| ETSI | TS 133 108                 | 11.4.0  | Published      | 2012-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/133100_133199/133108/11.04.00_60/ts_133108v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/133100_133199/133108/11.04.00_60/ts_133108v110400p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.108V1140-2014 | 11.4.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.108(R11-11.4.0) | 11.4.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.108(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.108(R11-11.4.0)</a>         |

#### 10.11.6 TS 33.110 Key establishment between a universal integrated circuit card (UICC) and a terminal

This document describes the security features and mechanisms to provision a shared key between a UICC and a terminal that may host the UICC or be connected to the device hosting the UICC via a local interface. Candidate applications to use this key establishment mechanism include, but are not restricted to, secure channel between a UICC and a terminal [ETSI TS 102 484].

The scope of this specification includes an architecture overview and the detailed procedure how to establish the shared key between the UICC and the terminal.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.110        | 11.0.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33110-b01.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33110-b01.pdf</a> |
| ETSI | TS 133 110                 | 11.0.1  | Published      | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/133100_133199/133110/11.00.01_60/ts_133110v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/133100_133199/133110/11.00.01_60/ts_133110v110001p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.110V1101-2014 | 11.0.1  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.110(R11-11.0.1) | 11.0.1  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.110(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.110(R11-11.0.1)</a>         |

#### 10.117 TS 33.141 Presence service; Security

This document is the Stage 2 specification for the security requirements, security architecture, security features and security mechanisms for the presence service, which includes the elements necessary to realize the requirements in 3G TS 22.141 and 3G TS 23.141. As far as SIPbased procedures are concerned, this specification refers to 3G TS 33.203. The main content of this specification is the security for the Ut reference point, which is HTTP based, as applied in presence services.

The document includes information applicable to network operators, service providers and manufacturers.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.141         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33141-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33141-b00.pdf</a> |
| ETSI | TS 133 141                  | 11.0.0  | Published      | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/133100_133199/133141/11.00.00_60/ts_133141v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/133100_133199/133141/11.00.00_60/ts_133141v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.141V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.141(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.141(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.141(R11-11.0.0)</a>         |

### 10.11.8 TS 33.203 3G security; Access security for IP-based services

The scope for this technical specification is to specify the security features and mechanisms for secure access to the IM subsystem (IMS) for the 3G mobile telecommunication system.

The IMS in UMTS will support IP multimedia applications such as video, audio and multimedia conferences. Session initiation protocol (SIP [IETF RFC 3261]) has been chosen as the signalling protocol for creating and terminating multimedia sessions. This specification only deals with how the SIP signalling is protected between the subscriber and the IMS, how the subscriber is authenticated and how the subscriber authenticates the IMS.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.203         | 11.2.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33203-b20.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33203-b20.pdf</a> |
| ETSI | TS 133 203                  | 11.2.0  | Published      | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133203/11.02.00_60/ts_133203v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133203/11.02.00_60/ts_133203v110200p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.203V112-0-2014 | 11.2.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.203(R11-11.2.0)  | 11.2.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.203(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.203(R11-11.2.0)</a>         |

### 10.11.9 TS 33.204 3G Security; Network domain security (NDS); Transaction capabilities application part (TCAP) user security

This technical specification covers the security mechanisms and procedures necessary to protect all TCAP user messages which are sent between different security domains. The complete set of enhancements and extensions to facilitate security protection for the TCAP protocol is termed TCAPsec and it covers transport security in the TCAP protocol itself and the security management procedures.

This technical specification contains the stage 2 specification for security protection of the TCAP protocol. The actual implementation (stage 3) specification can be found in TS 29.204.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 133 204                  | 11.0.0  | Published    | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133204/11.00.00_60/ts_133204v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133204/11.00.00_60/ts_133204v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.33.204V110-0-2014 | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.204(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.204(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.204(R11-11.0.0)</a> |
| TTC  | TS-3GA-33.204(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-33.204(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-33.204(Rel11)v11.0.0.pdf</a>                           |



#### 10.11.10 TS 33.210 3G security; Network domain security (NDS); IP network layer security

This document defines the security architecture for the UMTS network domain IP-based control plane. The scope of the UMTS network domain control plane security is to cover the control signalling on selected interfaces between UMTS network elements.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.210        | 11.4.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33210-b40.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33210-b40.pdf</a> |
| ETSI | TS 133 210                 | 11.4.0  | Published      | 2012-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133210/11.04.00_60/ts_133210v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133210/11.04.00_60/ts_133210v110400p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.210V1140-2014 | 11.4.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.210(R11-11.4.0) | 11.4.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.210(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.210(R11-11.4.0)</a>         |

#### 10.11.11 TS 33.220 Generic authentication architecture (GAA); Generic bootstrapping architecture

This document describes the security features and a mechanism to bootstrap authentication and key agreement for application security from the 3GPP AKA mechanism. Candidate applications to use this bootstrapping mechanism include, but are not restricted to, subscriber certificate distribution 3GPP TS 33.221. Subscriber certificates support services whose provision mobile operator assists, as well as services that mobile operator provides.

The scope of this specification includes a generic AKA bootstrapping function, an architecture overview and the detailed procedure how to bootstrap the credential.

Clause 4 of this specification describes a mechanism, called GBA\_ME, to bootstrap authentication and key agreement, which does not require any changes to the UICC. Clause 5 of this specification describes a mechanism, called GBA\_U, to bootstrap authentication and key agreement, which does require changes to the UICC, but provides enhanced security by storing certain derived keys on the UICC.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.220        | 11.5.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33220-b50.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33220-b50.pdf</a> |
| ETSI | TS 133 220                 | 11.5.0  | Published      | 2013-07-11  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133220/11.05.00_60/ts_133220v110500p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133220/11.05.00_60/ts_133220v110500p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.220V1140-2014 | 11.4.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.220(R11-11.4.0) | 11.4.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.220(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.220(R11-11.4.0)</a>         |

#### 10.11.12 TS 33.221 Generic authentication architecture (GAA); Support for subscriber certificates

This document describes subscriber certificate distribution by means of generic bootstrapping architecture (GBA) 3GPP TS 33.220. Subscriber certificates support services whose provision the mobile operator assists, as well as services that are offered by the mobile operator.

The scope of this specification presents signalling procedures for support of issuing certificates to subscribers and the standard format of certificates and digital signatures. It is not intended to duplicate existing standards being developed by other groups on these topics, and will reference these where appropriate.



|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.221        | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33221-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33221-b10.pdf</a> |
| ETSI | TS 133 221                 | 11.1.0  | Published      | 2014-01-22  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133221/11.01.00_60/ts_133221v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133221/11.01.00_60/ts_133221v110100p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.221V1101-2014 | 11.0.1  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.221(R11-11.0.1) | 11.0.1  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.221(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.221(R11-11.0.1)</a>         |

#### **10.11.13 TS 33.222 Generic authentication architecture (GAA); Access to network application functions using hypertext transfer protocol over transport layer security (HTTPS)**

The document specifies secure access methods to network application functions (NAFs) using HTTP over TLS in the generic authentication architecture (GAA), and provides Stage 2 security requirements, principles and procedures for the access. The present document describes both direct access to an application server (AS) and access to an application server through an authentication proxy (AP).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.222        | 11.3.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33222-b30.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33222-b30.pdf</a> |
| ETSI | TS 133 222                 | 11.3.0  | Published      | 2014-01-22  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133222/11.03.00_60/ts_133222v110300p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133222/11.03.00_60/ts_133222v110300p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.222V1122-2014 | 11.2.2  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.222(R11-11.2.2) | 11.2.2  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.222(R11-11.2.2)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.222(R11-11.2.2)</a>         |

#### **10.11.14 TS 33.223 Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA) Push function**

The present document specifies a Push Function as a functional add-on for the Generic Authentication Architecture (GAA) described in 3GPP TS 33.220.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.223        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33223-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33223-b00.pdf</a> |
| ETSI | TS 133 223                 | 11.0.0  | Published      | 2012-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133223/11.00.00_60/ts_133223v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133223/11.00.00_60/ts_133223v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.223V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.223(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.223(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.223(R11-11.0.0)</a>         |

#### **10.11.15 TS 33.224 Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA) Push Layer**

This document specifies a generic push layer that makes use of the GBA Push Function as specified in TS 33.223. The GPL specification includes a message format, cipher suites and processing model.

GPL assumes that keys and other SA parameters have been preinstalled in the Push-NAF and UE in the form of a NAF SA. GPL is a protection protocol that can be applied in a unidirectional fashion.

The rationale for GPL is that having each application specify its own security mechanisms would for obvious reasons lead to duplication of work, specifications and implementations. Using a generic secure push layer avoids these problems. A generic secure push layer may also relieve the applications using the service of having to be aware of inner working of the security layer. As an analogy, TS 33.222 can be mentioned, which provides a generic security layer for HTTP based applications.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 133 224                  | 11.1.0  | Published    | 2013-04-19  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133224/11.01.00_60/ts_133224v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133224/11.01.00_60/ts_133224v110100p.pdf</a>                     |
| ATIS | ATIS.3GPP.33.224V1110-2014  | 11.1.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.224(R11-11.1.0)  | 11.1.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.224(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.224(R11-11.1.0)</a> |
| TTC  | TS-3GA-33.224(Rel11)v11.1.0 | 11.1.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-33.224(Rel11)v11.1.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-33.224(Rel11)v11.1.0.pdf</a>                           |

#### 10.11.16 TS 33.234 3G Security; Wireless local area network (WLAN) interworking security

This document specifies the security architecture, trust model and security requirements for the interworking of the 3GPP System and WLAN access networks.

Specifications of the appropriate mechanisms for user and network authentication, key management, service authorization, confidentiality and integrity protection of user and signalling data are also provided.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.234        | 11.4.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33234-b40.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33234-b40.pdf</a> |
| ETSI | TS 133 234                 | 11.4.0  | Published      | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133234/11.04.00_60/ts_133234v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133234/11.04.00_60/ts_133234v110400p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.234V1140-2014 | 11.4.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.234(R11-11.4.0) | 11.4.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.234(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.234(R11-11.4.0)</a>         |

#### 10.11.17 TS 33.246 3G security; Security of multimedia broadcast/multicast service

The Technical Specification covers the security procedures of the multimedia broadcast/multicast service (MBMS) for 3GPP systems (UTRAN and GERAN). MBMS is a 3GPP system network bearer service over which many different applications could be carried. The actual method of protection may vary depending on the type of MBMS application.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.246        | 11.2.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33246-b20.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33246-b20.pdf</a> |
| ETSI | TS 133 246                 | 11.2.0  | Published      | 2013-07-11  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133246/11.02.00_60/ts_133246v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133246/11.02.00_60/ts_133246v110200p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.246V1110-2014 | 11.1.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.               | Version | Status    | Issued date | Location  |
|-----|----------------------------|---------|-----------|-------------|---|
| TTA | TTAT.3G-33.246(R11-11.1.0) | 11.1.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.246(R11-11.1.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.246(R11-11.1.0)</a> |

#### 10.11.18 TS 33.259 Key establishment between a UICC hosting device and a remote device

This document describes the security features and mechanisms to provision a shared key between a UICC hosting device and a remote device connected via a local interface. The shared secret is then intended to be used to secure the interface between the remote device and the UICC hosting device. Candidate applications to use this key establishment mechanism include, but are not restricted to personal network management (see TS 22.259).

The scope of this specification includes an architecture overview and the detailed procedure how to establish the shared key between the UICC hosting device and the remote device. This is different from Technical Specification TS 33.110 that describes an architecture overview and the detailed procedure how to establish the shared key between the UICC itself and the terminal hosting the UICC. The use cases utilizing the mechanisms described in this specification are seen to be different to the use cases where "Key establishment between a UICC and a terminal", IETF RFC 4279 is utilized.

The solution described in this document is built on the existing infrastructure defined in "GBA", TS 33.220.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.259         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33259-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33259-b00.pdf</a> |
| ETSI | TS 133 259                  | 11.0.0  | Published      | 2012-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/133200_133299/133259/11.00.00_60/ts_133259v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/133200_133299/133259/11.00.00_60/ts_133259v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.259V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.259(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.259(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.259(R11-11.0.0)</a>         |

#### 10.11.19 TS 33.310 Network Domain Security (NDS); Authentication Framework (AF)

For 3GPP systems, there is a need for truly scalable entity authentication framework (AF) since an increasing number of network elements and interfaces are covered by security mechanisms.

This specification provides a highly scalable entity authentication framework for 3GPP network nodes. This framework is developed in the context of the network domain security work item, which effectively limits the scope to the control plane entities of the core network. Thus, *the Authentication Framework will provide entity authentication for the nodes that are using NDS/IP.*

Feasible trust models (i.e., how CAs are organized) and their effects are provided. Additionally, requirements are presented for the used protocols and certificate profiles, to make it possible for operator IPsec and PKI implementations to interoperate.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.310         | 11.2.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33310-b20.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33310-b20.pdf</a> |
| ETSI | TS 133 310                  | 11.2.0  | Published      | 2013-02-01  | <a href="http://www.etsi.org/deliver/etsi_ts/133300_133399/133310/11.02.00_60/ts_133310v110200p.pdf">http://www.etsi.org/deliver/etsi_ts/133300_133399/133310/11.02.00_60/ts_133310v110200p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.310V112-0-2014 | 11.2.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |

|     | Document No.               | Version | Status    | Issued date | Location  |
|-----|----------------------------|---------|-----------|-------------|---|
| TTA | TTAT.3G-33.310(R11-11.2.0) | 11.2.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.310(R11-11.2.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.310(R11-11.2.0)</a> |

### 10.11.20 TS 33.320 Security of Home Node B (HNB) / Home evolved Node B (HeNB)

This document specifies the security architecture for the H(e)NB subsystem. This includes security requirements on Home Node Bs, Home eNode Bs, and other H(e)NB-associated network nodes (e.g., SeGW and H(e)MS), as well as the procedures and features which are provided to meet those requirements.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.320        | 11.6.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33320-b60.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33320-b60.pdf</a> |
| ETSI | TS 133 320                 | 11.6.0  | Published      | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/133300_133399/133320/11.06.00_60/ts_133320v110600p.pdf">http://www.etsi.org/deliver/etsi_ts/133300_133399/133320/11.06.00_60/ts_133320v110600p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.320V1160-2014 | 11.6.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.320(R11-11.6.0) | 11.6.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.320(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.320(R11-11.6.0)</a>         |

### 10.11.21 TS 33.328 IP Multimedia Subsystem (IMS) media plane security

The present document presents IMS media plane security for RTP based media which is designed to meet the following three main objectives:

- to provide security for media usable across all access networks
- to provide an end-to-end (e2e) media security solution to satisfy major user categories
- to provide end-to-end (e2e) media security for important user groups like enterprises, National Security and Public Safety (NSPS) organizations and different government authorities who may have weaker trust in the inherent IMS security and/or may desire to provide their own key management service.

The media plane security in this release of the TS is based on the well-established protocol SRTP. Key management solutions for SRTP are defined in this specification.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TS 133 328                  | 11.0.0  | Published    | 2012-10-02  | <a href="http://www.etsi.org/deliver/etsi_ts/133300_133399/133328/11.00.00_60/ts_133328v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/133300_133399/133328/11.00.00_60/ts_133328v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.33.328V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.328(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.328(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.328(R11-11.0.0)</a> |
| TTC  | TS-3GA-33.328(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-33.328(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TS/TS-3GA-33.328(Rel11)v11.0.0.pdf</a>                           |

### 10.10.22 TS 33.401 3GPP System Architecture Evolution (SAE); Security architecture

This document specifies the security architecture, i.e., the security features and the security mechanisms for the Evolved Packet System and the Evolved Packet Core, and the security procedures performed within the evolved Packet System (EPS) including the Evolved Packet Core (EPC) and the Evolved UTRAN (E-UTRAN).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.401        | 11.7.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33401-b70.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33401-b70.pdf</a> |
| ETSI | TS 133 401                 | 11.7.0  | Published      | 2013-07-11  | <a href="http://www.etsi.org/deliver/etsi_ts/133400_133499/133401/11.07.00_60/ts_133401v110700p.pdf">http://www.etsi.org/deliver/etsi_ts/133400_133499/133401/11.07.00_60/ts_133401v110700p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.401V1160-2014 | 11.6.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.401(R11-11.6.0) | 11.6.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.401(R11-11.6.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.401(R11-11.6.0)</a>         |

### 10.11.23 TS 33.402 3GPP System Architecture Evolution (SAE); Security aspects of non-3GPP accesses

The present document specifies the security architecture, i.e., the security feature groups and the security mechanisms performed during inter working between non-3GPP accesses and the Evolved Packet System (EPS).

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-33.402        | 11.4.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33402-b40.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/33/A33402-b40.pdf</a> |
| ETSI | TS 133 402                 | 11.4.0  | Published      | 2012-11-19  | <a href="http://www.etsi.org/deliver/etsi_ts/133400_133499/133402/11.04.00_60/ts_133402v110400p.pdf">http://www.etsi.org/deliver/etsi_ts/133400_133499/133402/11.04.00_60/ts_133402v110400p.pdf</a>                             |
| ATIS | ATIS.3GPP.33.402V1140-2014 | 11.4.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.402(R11-11.4.0) | 11.4.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.402(R11-11.4.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.402(R11-11.4.0)</a>         |

### 10.11.24 TR 33.804 Single Sign On (SSO) application security for Common IP Multimedia Subsystem (IMS) based on Session Initiation Protocol (SIP) Digest

The objective of this study item is to provide reference material for IMS based non-UICC based Single Sign On (SSO) to applications. This study item targets to re-use the SIP Digest Credentials for SSO to applications by re-using Common IMS and existing security elements. The study should describe needed extension to enable a re-use of SIP Digest credentials in Common IMS for providing security between a terminal and an application server. The study aims to maximize the commonalities of the SSO\_APS with the currently defined application security approaches in 3GPP while efficiently satisfying the needs of Common IMS deployments using SIP Digest.

The Technical Report targets to bring forth approaches with a security level for access to applications using SSO\_APS that is at least as good as that provided by SIP Digest for Common IMS. This Technical Report is intended to be used where the usage of UICC is not possible in a UICC-less environment. If the usage of UICC is possible, then it is expected to be used, but that is outside the scope of the present study.

The scope of this Technical Report (Study Item Code SSO\_APS) is restricted to environments where the storage of credentials on a UICC is not mandated.

### 10.11.25 TR 33.828 IP Multimedia Subsystem (IMS) media plane security

The document studies use cases, requirements and candidate solutions for protecting the IMS media plane against eavesdropping and undetected modification. Currently IMS media protection relies on security provided at the lower layers. With Common IMS, it has become possible to use IMS over a wide variety of access networks which provide varying levels of security and in some cases no

security at all. It is therefore desirable to study solutions for securing the IMS media plane in a uniform manner across all access networks. Furthermore, media transport in the core network, although generally less vulnerable than in the access network, may also be realised in varying ways with different levels of security. Therefore, the present document also studies solutions for end-to-end protection of IMS media.

#### **10.11.26 TR 33.838 Study on Protection against Unsolicited Communication for IMS (PUCI)**

The document studies more focussed the high-level solutions possibilities for PUCI described in the technical report (TR 33.937) on PUCI.

The scope of the study includes:

- Study of the PUCI related information:
- What information to be stored in the HSS.
- Type of PUCI information to be exchanged (e.g., scoring information, contextual information) and how this information should be structured, or even between which nodes the information should be sent.
- If and how PUCI information should be sent inside SIP.
- Study on Invoking of 3rd party PUCI AS or Supplementary Services (SS) depending on configuration.
- Interworking
  - with non-IMS networks.
  - with other IMS services like SRVCC, ICS, and service continuity.
- Types of communication that should/can be covered by PUCI, and how the different types of communication affect the PUCI solution.
- How much of PUCI that can be achieved via prevention and how much needs to be done via treatment.
- PUCIF to PUCIF communication.
- Use of existing methods of user notification for PUCI communication.
- Mitigation of source identity spoofing, especially from non-IMS networks, on the effectiveness of the PUCI mechanism.
- Illustrative use of standardized PUCI features in typical deployment scenarios.

#### **10.11.27 TR 33.844 Security Study on IP Multimedia Subsystem (IMS) based peer-to-peer content distribution services; Stage 2**

The document provides an analysis of security aspects of the enhancements of IMS to support Peer-to-Peer Content Distribution Services based on the requirements studied in TR 22.906 and architecture studied in TR 23.844. This analysis focuses on both the network and terminal and includes security threats, requirements and solutions.

#### **10.11.28 TR 33.859 Study on the Introduction of Key Hierarchy in Universal Terrestrial Radio Access Network (UTRAN)**

The objective of this work item is to study potential solutions for introducing an "E-UTRAN-like" key hierarchy in UTRAN, to improve the security level in UTRAN in the presence of the new deployment scenarios and to ensure that a security breach in UTRAN will not propagate into E-UTRAN. The study covers the technical feasibility and consequences. The impacts of such potential solution on UTRAN of earlier releases are identified. Interworking with earlier releases of UTRAN, GERAN and E-UTRAN is also studied.



The UTRAN key hierarchy is assumed to be built on top of (R99+) UMTS AKA, without requiring any changes to the authentication protocol or USIM. Therefore, it could in principle be used also in GERAN as long as USIMs are used and the SGSN, MSC/VLR, and ME are updated. However, the benefit of introducing the key hierarchy in GPRS is smaller than for the circuit switched part, as the traffic protection already terminates in the core network. Solution details for GERAN are not discussed further.

The study covers both PS and CS part of UTRAN.

### 10.11.29 TR 33.905 Recommendations for trusted open platforms

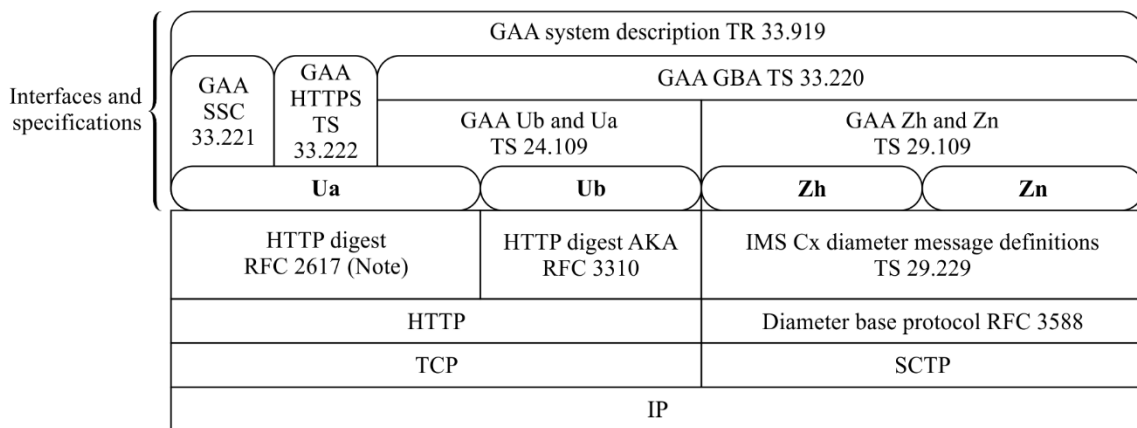
This technical report investigates relevant trust standards and technologies, both existing as well as the ones that are work-in-progress. It develops the recommendations for trusted open platforms for delivery of new applications and services to open platforms.

|      | Document No.                | Version | Status       | Issued date | Location  |
|------|-----------------------------|---------|--------------|-------------|---|
| ETSI | TR 133 905                  | 11.0.0  | Published    | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_tr/133900_133999/133905/11.00.00_60/tr_133905v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/133900_133999/133905/11.00.00_60/tr_133905v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.33.905V1100-2014  | 11.0.0  | Approved     | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.905(R11-11.0.0)  | 11.0.0  | Published    | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.905(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.905(R11-11.0.0)</a> |
| TTC  | TR-3GA-33.905(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-33.905(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-33.905(Rel11)v11.0.0.pdf</a>                           |

### 10.11.30 TR 33.919 3G Security; Generic authentication architecture (GAA); System description

This 3GPP Technical Report aims to give an overview of the different mechanisms that mobile applications can rely upon for authentication between server and client (i.e., the UE). Additionally, it provides guidelines related to the use of GAA and to the choice of authentication mechanism in a given situation and for a given application.

To this end, the TR puts the different GAA specifications that are related to peer authentication into perspective. It clarifies the logic for having three technical specifications, sketches their content and explains the interrelation between these three TSs and their relation with this TR.



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NOTE – The GAA supports potentially many protocols on the Ua interface. One example is the HTTP digest.

NOTE – The GAA supports potentially many protocols on the Ua interface. One example is the HTTP digest.

**Figure 10.11.30-1 – Relationships between GAA specifications and the protocols used by GAA interfaces**



Figure 10.11.30-1 depicts protocols used over GAA interfaces and the relationships between different GAA specifications. New GAA specifications will be added to the figure as they become available. Also, other protocols may be added in the future. In particular, new kinds of Ua interfaces could be added in the future and then other protocols may be added below the Ua interface.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB-TR-T12-33.919         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/33/A33919-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/33/A33919-b00.pdf</a> |
| ETSI | TR 133 919                 | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_tr/133900_133999/133919/11.00.00_60/tr_133919v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/133900_133999/133919/11.00.00_60/tr_133919v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.33.919V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.919(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.919(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.919(R11-11.0.0)</a>       |

### 10.11.31 TR 33.924 Identity management and 3GPP security interworking; Identity management and Generic Authentication Architecture (GAA) interworking

The objective of this document is to extend the current identity management as outlined in TS 33.220, TS 33.222, TS 29.109 and TR 33.980 with the latest developments on identity management outside of the 3GPP sphere. This will allow a better integration and usage of identity management for services in 3GPP and seamless integration with existing services that are not standardized in 3GPP. This report outlines the interworking of GBA and OpenID.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB TR-T12-33.924         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/33/A33924-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/33/A33924-b00.pdf</a> |
| ETSI | TR 133 924                 | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_tr/133900_133999/133924/11.00.00_60/tr_133924v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/133900_133999/133924/11.00.00_60/tr_133924v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.33.924V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.924(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.924(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.924(R11-11.0.0)</a>       |

### 10.11.32 TR 33.937 Study of Mechanisms for Protection against Unsolicited Communication for IMS (PUCI)

The scope of this report is to highlight alternative solutions that could be used to protect mobile subscribers from receiving unsolicited communication over IMS and to analyse these solutions in respect of their requirements and impacts on standardized interfaces.

This activity took into account the study done in TISPAN TR 187 009 on "Feasibility study of prevention of unsolicited communications in the NGN".

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TR 133 937                 | 11.0.0  | Published | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_tr/133900_133999/133937/11.00.00_60/tr_133937v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/133900_133999/133937/11.00.00_60/tr_133937v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.33.937V110-2014  | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.937(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.937(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-33.937(R11-11.0.0)</a> |

|     | Document No.                | Version | Status       | Issued date | Location  |
|-----|-----------------------------|---------|--------------|-------------|---|
| TTC | TR-3GA-33.937(Rel11)v11.0.0 | 11.0.0  | TTC Approved | 2013-06-25  | <a href="http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-33.937(Rel11)v11.0.0.pdf">http://www.ttc.or.jp/jp/document_list/free/3gpps2013/TR/TR-3GA-33.937(Rel11)v11.0.0.pdf</a> |

### 10.11.33 TR 33.980 Liberty alliance and 3GPP security interworking; Interworking of liberty alliance identity federation framework (ID-FF), Identity web services framework (ID-WSF) and generic authentication architecture (GAA)

The present document provides guidelines on the interworking of the generic authentication architecture (GAA) and the liberty alliance architecture. The document studies the details of possible interworking methods between the security assertion markup language v2.0, SAML v2.0 (or alternatively the liberty alliance identity federation framework, ID-FF), the identity web services framework (ID-WSF), the security assertion markup language (SAML) and a component of GAA called the generic bootstrapping architecture (GBA). This document only applies if liberty alliance and GBA or SAML v2.0 and GBA are used in combination.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB-TR-T12-33.980         | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/33/A33980-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/33/A33980-b10.pdf</a> |
| ETSI | TR 133 980                 | 11.1.0  | Published      | 2014-01-22  | <a href="http://www.etsi.org/deliver/etsi_tr/133900_133999/133980/11.01.00_60/tr_133980v110100p.pdf">http://www.etsi.org/deliver/etsi_tr/133900_133999/133980/11.01.00_60/tr_133980v110100p.pdf</a>                           |
| ATIS | ATIS.3GPP.33.980V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-33.980(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-33.980(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-33.980(R11-11.0.0)</a>         |

## 10.12 35-series, Security algorithms

### 10.12.1 TS 35.201 Specification of the 3GPP confidentiality and integrity algorithms; Document 1: *f8* and *f9* specifications

This specification gives a detailed specification of the confidentiality algorithm *f8*, and the integrity algorithm *f9*.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.201        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35201-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35201-b00.pdf</a> |
| ETSI | TS 135 201                 | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135201/11.00.00_60/ts_135201v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135201/11.00.00_60/ts_135201v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.35.201V1100-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.201(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-35.201(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_tastddesc.jsp?stdno=TTAT.3G-35.201(R11-11.0.0)</a>           |

### 10.12.2 TS 35.202 Specification of the 3GPP confidentiality and integrity algorithms; Document 2: Kasumi specification

This specification gives a detailed specification of the Algorithm KASUMI. KASUMI is a block cipher that forms the heart of the confidentiality algorithm *f8*, and the integrity algorithm *f9*.

|      | Document No.                | Version | Status         | Issued date | Location  |
|------|-----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.202         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35202-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35202-b00.pdf</a> |
| ETSI | TS 135 202                  | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135202/11.00.00_60/ts_135202v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135202/11.00.00_60/ts_135202v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.35.202V110-0-2014 | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.202(R11-11.0.0)  | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.202(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.202(R11-11.0.0)</a>         |

### 10.12.3 TS 35.203 3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 3: Implementors' test data

This specification gives detailed test data for implementors of the algorithm set. It provides visibility of the internal state of the algorithm to aid in the realisation of the algorithms.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.203 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35203-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35203-b00.pdf</a> |
| ETSI | TS 135 203          | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135203/11.00.00_60/ts_135203v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135203/11.00.00_60/ts_135203v110000p.pdf</a>                             |

### 10.12.4 TS 35.204 3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 4: Design conformance test data

This specification gives black-box test data for the algorithm set. The test data has been selected to give a high degree of confidence that the implementation is correct. However, no claim is made that conformance with this test data guarantees a correct implementation.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.204 | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35204-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35204-b00.pdf</a> |
| ETSI | TS 135 204          | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135204/11.00.00_60/ts_135204v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135204/11.00.00_60/ts_135204v110000p.pdf</a>                             |

### 10.12.5 TS 35.205 3G security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions $f_1, f_1^*, f_2, f_3, f_4, f_5$ and $f_5^*$ ; Document 1: General

This report is a description of the work undertaken by an ETSI SAGE Task Force on the design of the Milenage algorithm set: an example set of authentication and key generation functions.

The authentication and key generation functions are not standardized. An example set of these algorithms has been produced with the intent that it shall be offered to the UMTS operators, to utilize instead of developing their own. An ETSI SAGE Task Force has carried out this work.

The requirement specification stated that operator personalization of the example set must be possible and that the basic Kernel must be possible to replace.

The example set is based on the block cipher Rijndael, which at the time was one of the AES candidates and the specification describes how the seven algorithms used in 3GPP authentication and key generation are scheduled around this basic Kernel. The specification and associated test data for the example algorithm set is documented in three documents:

- A formal specification of both the modes and the example Kernel TS 35.206;

- A detailed test data document, covering modes and the example Kernel TS 35.207;
- A "black box" test data document TS 35.208.

This report gives an overview of the overall work by the task force.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 135 205                 | 11.0.0  | Published | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135205/11.00.00_60/ts_135205v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135205/11.00.00_60/ts_135205v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.35.205V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.205(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.205(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.205(R11-11.0.0)</a> |

#### **10.12.6 TS 35.206 3G security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions $f_1, f_1^*, f_2, f_3, f_4, f_5$ and $f_5^*$ ; Document 2: Algorithm specification**

This document contains an example set of algorithms which may be used as the authentication and key generation functions  $f_1, f_1^*, f_2, f_3, f_4, f_5$  and  $f_5^*$ . (It is not mandatory that the particular algorithms specified in this document are used – all seven functions are operator-specifiable rather than being fully standardized.)

The algorithms specified in this document are examples that may be used by an operator who does not wish to design his own.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TS 135 206                 | 11.0.0  | Published | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135206/11.00.00_60/ts_135206v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135206/11.00.00_60/ts_135206v110000p.pdf</a>                     |
| ATIS | ATIS.3GPP.35.206V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.206(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.206(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.206(R11-11.0.0)</a> |

#### **10.12.7 TS 35.207 3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions $f_1, f_1^*, f_2, f_3, f_4, f_5$ and $f_5^*$ ; Document 3: Implementors' test data**

This document has been prepared by the 3GPP Task Force, and contains an example set of algorithms which may be used as the authentication and key generation functions  $f_1, f_1^*, f_2, f_3, f_4, f_5$  and  $f_5^*$ . (It is not mandatory that the particular algorithms specified in this document are used – all seven functions are operator-specifiable rather than being fully standardised). This document is one five, which between them form the entire specification of the example algorithms, entitled:

- 3GPP TS 35.205: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set: An example algorithm set for the 3GPP authentication and key generation functions  $f_1, f_1^*, f_2, f_3, f_4, f_5$  and  $f_5^*$ ; Document 1: General".
- 3GPP TS 35.206: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set: An example algorithm set for the 3GPP authentication and key generation functions  $f_1, f_1^*, f_2, f_3, f_4, f_5$  and  $f_5^*$ ; Document 2: Algorithm Specification".
- 3GPP TS 35.207: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set:

An example algorithm set for the 3GPP authentication and key generation functions  $f_1$ ,  $f_1^*$ ,  $f_2$ ,  $f_3$ ,  $f_4$ ,  $f_5$  and  $f_5^*$ ; **Document 3: Implementors' Test Data**".

- 3GPP TS 35.208: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set: An example algorithm set for the 3GPP authentication and key generation functions  $f_1$ ,  $f_1^*$ ,  $f_2$ ,  $f_3$ ,  $f_4$ ,  $f_5$  and  $f_5^*$ ; Document 4: Design Conformance Test Data".
- 3GPP TR 35.909: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set: An example algorithm set for the 3GPP authentication and key generation functions  $f_1$ ,  $f_1^*$ ,  $f_2$ ,  $f_3$ ,  $f_4$ ,  $f_5$  and  $f_5^*$ ; Document 5: Summary and results of design and evaluation".

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 135 207   | 11.0.0  | Published | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135207/11.00.00_60/ts_135207v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135207/11.00.00_60/ts_135207v110000p.pdf</a> |

#### 10.12.8 TS 35.208 3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions $f_1$ , $f_1^*$ , $f_2$ , $f_3$ , $f_4$ , $f_5$ and $f_5^*$ ; Document 4: Design conformance test data

This document has been prepared by the 3GPP Task Force, and contains an example set of algorithms which may be used as the authentication and key generation functions  $f_1$ ,  $f_1^*$ ,  $f_2$ ,  $f_3$ ,  $f_4$ ,  $f_5$  and  $f_5^*$ . (It is not mandatory that the particular algorithms specified in this document are used – all seven functions are operator-specifiable rather than being fully standardised). This document is one five, which between them form the entire specification of the example algorithms, entitled:

- 3GPP TS 35.205: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set: An example algorithm set for the 3GPP authentication and key generation functions  $f_1$ ,  $f_1^*$ ,  $f_2$ ,  $f_3$ ,  $f_4$ ,  $f_5$  and  $f_5^*$ ; Document 1: General".
- 3GPP TS 35.206: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set: An example algorithm set for the 3GPP authentication and key generation functions  $f_1$ ,  $f_1^*$ ,  $f_2$ ,  $f_3$ ,  $f_4$ ,  $f_5$  and  $f_5^*$ ; Document 2: Algorithm Specification".
- 3GPP TS 35.207: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set: An example algorithm set for the 3GPP authentication and key generation functions  $f_1$ ,  $f_1^*$ ,  $f_2$ ,  $f_3$ ,  $f_4$ ,  $f_5$  and  $f_5^*$ ; Document 3: Implementors' Test Data".
- 3GPP TS 35.208: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set: An example algorithm set for the 3GPP authentication and key generation functions  $f_1$ ,  $f_1^*$ ,  $f_2$ ,  $f_3$ ,  $f_4$ ,  $f_5$  and  $f_5^*$ ; **Document 4: Design Conformance Test Data**".
- 3GPP TR 35.909: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Specification of the MILENAGE Algorithm Set: An example algorithm set for the 3GPP authentication and key generation functions  $f_1$ ,  $f_1^*$ ,  $f_2$ ,  $f_3$ ,  $f_4$ ,  $f_5$  and  $f_5^*$ ; Document 5: Summary and results of design and evaluation".

|      | Document No. | Version | Status    | Issued date | Location  |
|------|--------------|---------|-----------|-------------|---|
| ETSI | TS 135 208   | 11.0.0  | Published | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135208/11.00.00_60/ts_135208v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135208/11.00.00_60/ts_135208v110000p.pdf</a> |

### 10.12.9 TS 35.215 Specification of the 3GPP confidentiality and integrity algorithms UEA2 & UIA2; Document 1: UEA2 and UIA2 specifications

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.215        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35215-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35215-b00.pdf</a> |
| ETSI | TS 135 215                 | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135215/11.00.00_60/ts_135215v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135215/11.00.00_60/ts_135215v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.35.215V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.215(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.215(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.215(R11-11.0.0)</a>         |

### 10.12.10 TS 35.216 Specification of the 3GPP confidentiality and integrity algorithms UEA2 & UIA2; Document 2: SNOW 3G specification

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.216        | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35216-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35216-b00.pdf</a> |
| ETSI | TS 135 216                 | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135216/11.00.00_60/ts_135216v110000p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135216/11.00.00_60/ts_135216v110000p.pdf</a>                             |
| ATIS | ATIS.3GPP.35.216V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.216(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.216(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.216(R11-11.0.0)</a>         |

### 10.12.11 TS 35.217 Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 3: Implementors' test data

The document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.217 | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35217-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35217-b10.pdf</a> |
| ETSI | TS 135 217          | 11.1.0  | Published      | 2013-02-01  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135217/11.01.00_60/ts_135217v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135217/11.01.00_60/ts_135217v110100p.pdf</a>                             |

### 10.12.12 TS 35.218 Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 4: Design conformance test data

The document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.218 | 11.1.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35218-b10.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35218-b10.pdf</a> |
| ETSI | TS 135 218          | 11.1.0  | Published      | 2013-02-06  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135218/11.01.00_60/ts_135218v110100p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135218/11.01.00_60/ts_135218v110100p.pdf</a>                             |



### 10.12.13 TS 35.221 Specification of the 3GPP Confidentiality and Integrity Algorithms EEA3 & EIA3; Document 1: EEA3 and EIA3 specifications

The document specifies the 3GPP confidentiality and integrity algorithms known as EEA3 and EIA3.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.221        | 11.0.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35221-b01.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35221-b01.pdf</a> |
| ETSI | TS 135 221                 | 11.0.1  | Published      | 2012-05-30  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135221/11.00.01_60/ts_135221v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135221/11.00.01_60/ts_135221v110001p.pdf</a>                             |
| ATIS | ATIS.3GPP.35.221V1101-2014 | 11.0.1  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.221(R11-11.0.1) | 11.0.1  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-35.221(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-35.221(R11-11.0.1)</a>           |

### 10.12.14 TS 35.222 Specification of the 3GPP Confidentiality and Integrity Algorithms EEA3 & EIA3; Document 2: ZUC specification

The document specifies the 3GPP confidentiality and integrity algorithms known as EEA3 and EIA3.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.222        | 11.0.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35222-b01.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35222-b01.pdf</a> |
| ETSI | TS 135 222                 | 11.0.1  | Published      | 2012-05-30  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135222/11.00.01_60/ts_135222v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135222/11.00.01_60/ts_135222v110001p.pdf</a>                             |
| ATIS | ATIS.3GPP.35.222V1101-2014 | 11.0.1  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.222(R11-11.0.1) | 11.0.1  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-35.222(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastdesc.jsp?stdno=TTAT.3G-35.222(R11-11.0.1)</a>           |

### 10.12.15 TS 35.223 Specification of the 3GPP Confidentiality and Integrity Algorithms EEA3 & EIA3; Document 3: Implementors' test data

The document specifies the 3GPP confidentiality and integrity algorithms known as EEA3 and EIA3.

|      | Document No.        | Version | Status         | Issued date | Location  |
|------|---------------------|---------|----------------|-------------|---|
| ARIB | ARIB STD-T63-35.223 | 11.0.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35223-b01.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/2_T63/ARIB-STD-T63/Rel11/35/A35223-b01.pdf</a> |
| ETSI | TS 135 223          | 11.0.1  | Published      | 2012-05-30  | <a href="http://www.etsi.org/deliver/etsi_ts/135200_135299/135223/11.00.01_60/ts_135223v110001p.pdf">http://www.etsi.org/deliver/etsi_ts/135200_135299/135223/11.00.01_60/ts_135223v110001p.pdf</a>                             |

### 10.12.16 TR 35.909 3G security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions $f_1, f_1^*, f_2, f_3, f_4, f_5$ and $f_5^*$ ; Document 5: Summary and results of design and evaluation

This report contains a detailed summary of the work performed during the design and evaluation of the 3G authentication functions denoted as the MILENAGE algorithm set.

|      | Document No.               | Version | Status    | Issued date | Location  |
|------|----------------------------|---------|-----------|-------------|---|
| ETSI | TR 135 909                 | 11.0.0  | Published | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_tr/135900_135999/135909/11.00.00_60/tr_135909v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/135900_135999/135909/11.00.00_60/tr_135909v110000p.pdf</a> |
| ATIS | ATIS.3GPP.35.909V1100-2014 | 11.0.0  | Approved  | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |



|     | Document No.               | Version | Status    | Issued date | Location  |
|-----|----------------------------|---------|-----------|-------------|---|
| TTA | TTAT.3G-35.909(R11-11.0.0) | 11.0.0  | Published | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.909(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.909(R11-11.0.0)</a> |

#### **10.12.17 TR 35.919 Specification of the 3GPP confidentiality and integrity algorithms UEA2 & UIA2; Document 5: Design and evaluation report**

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB-TR-T12-35.919         | 11.0.0  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/35/A35919-b00.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/35/A35919-b00.pdf</a> |
| ETSI | TR 135 919                 | 11.0.0  | Published      | 2012-11-09  | <a href="http://www.etsi.org/deliver/etsi_tr/135900_135999/135919/11.00.00_60/tr_135919v110000p.pdf">http://www.etsi.org/deliver/etsi_tr/135900_135999/135919/11.00.00_60/tr_135919v110000p.pdf</a>                           |
| ATIS | ATIS.3GPP.35.919V110-2014  | 11.0.0  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.919(R11-11.0.0) | 11.0.0  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.919(R11-11.0.0)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.919(R11-11.0.0)</a>       |

#### **10.12.18 TR 35.924 Specification of the 3GPP Confidentiality and Integrity Algorithms EEA3 & EIA3; Document 4: Design and Evaluation Report**

The document specifies the 3GPP confidentiality and integrity algorithms known as EEA3 and EIA3.

|      | Document No.               | Version | Status         | Issued date | Location  |
|------|----------------------------|---------|----------------|-------------|---|
| ARIB | ARIB-TR-T12-35.924         | 11.0.1  | ARIB published | 2014-03-18  | <a href="http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/35/A35924-b01.pdf">http://www.arib.or.jp/english/html/overview/doc/STD-T63v10_30/3_T12/ARIB-TR-T12/Rel11/35/A35924-b01.pdf</a> |
| ETSI | TS 135 924                 | 11.0.1  | Published      | 2012-05-30  | <a href="http://www.etsi.org/deliver/etsi_tr/135900_135999/135924/11.00.01_60/tr_135924v110001p.pdf">http://www.etsi.org/deliver/etsi_tr/135900_135999/135924/11.00.01_60/tr_135924v110001p.pdf</a>                           |
| ATIS | ATIS.3GPP.35.924V1101-2014 | 11.0.1  | Approved       | 2014-09-26  | <a href="https://www.atis.org/docstore/default.aspx">https://www.atis.org/docstore/default.aspx</a>   |
| TTA  | TTAT.3G-35.924(R11-11.0.1) | 11.0.1  | Published      | 2013-08-26  | <a href="http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.924(R11-11.0.1)">http://www.tta.or.kr/English/new/standardization/eng_ttastddesc.jsp?stdno=TTAT.3G-35.924(R11-11.0.1)</a>       |



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