INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.1741.2

(12/2002)

SERIES Q: SWITCHING AND SIGNALLING

Signalling requirements and protocols for IMT-2000

IMT-2000 references to release 4 of GSM evolved UMTS core network with UTRAN access network

ITU-T Recommendation Q.1741.2

ITU-T Q-SERIES RECOMMENDATIONS

SWITCHING AND SIGNALLING

SIGNALLING IN THE INTERNATIONAL MANUAL SERVICE	Q.1–Q.3
INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING	Q.4–Q.59
FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN	Q.60–Q.99
CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS	Q.100–Q.119
SPECIFICATIONS OF SIGNALLING SYSTEM No. 4	Q.120–Q.139
SPECIFICATIONS OF SIGNALLING SYSTEM No. 5	Q.140–Q.199
SPECIFICATIONS OF SIGNALLING SYSTEM No. 6	Q.250–Q.309
SPECIFICATIONS OF SIGNALLING SYSTEM R1	Q.310–Q.399
SPECIFICATIONS OF SIGNALLING SYSTEM R2	Q.400–Q.499
DIGITAL EXCHANGES	Q.500–Q.599
INTERWORKING OF SIGNALLING SYSTEMS	Q.600–Q.699
SPECIFICATIONS OF SIGNALLING SYSTEM No. 7	Q.700–Q.799
Q3 INTERFACE	Q.800–Q.849
DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1	Q.850–Q.999
PUBLIC LAND MOBILE NETWORK	Q.1000–Q.1099
INTERWORKING WITH SATELLITE MOBILE SYSTEMS	Q.1100–Q.1199
INTELLIGENT NETWORK	Q.1200–Q.1699
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR IMT-2000	**Q.1700–Q.1799**
SPECIFICATIONS OF SIGNALLING RELATED TO BEARER INDEPENDENT CALL CONTROL (BICC)	Q.1900–Q.1999
BROADBAND ISDN	Q.2000–Q.2999

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation Q.1741.2

IMT-2000 references to release 4 of GSM evolved UMTS core network with UTRAN access network

Summary

This Recommendation identifies a release of the IMT-2000 family member, "GSM evolved UMTS Core Network with UTRAN Access Network". This release of the family member is known to the Standards Development Organizations (i.e., ARIB, CWTS, ETSI, T1, TTA, TTC) as the "3GPP Release 4". An earlier release, known as "3GPP Release 99", of this family member is specified in ITU-T Rec. Q.1741.1, while other IMT-2000 family members are specified in other Recommendations in the 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.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

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.

NOTE

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

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

© ITU 2003

CONTENTS

ITU-T Recommendation Q.1741.2

IMT-2000 references to release 4 of GSM evolved UMTS core network with UTRAN access network

1 Scope

This Recommendation identifies the IMT-2000 family member, "GSM evolved UMTS core network with UTRAN access network". This release of the family member is known to the Standards Development Organizations (i.e., ARIB, CWTS, ETSI, T1, TTA, TTC) as the "3GPP Release 4".

The Core Network interfaces identified in this Recommendation and the radio interfaces and radio access interfaces identified in ITU-R Rec. M.1457 [1] 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 Rec. M.1457 [1], shall take precedence.

2 References[1]

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

[1]   ITU-R Recommendation M.1457 (2001), *Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)*.

[2]   ETSI TS 123.002 (2002), *Network Architecture (Release 4)*.

[3]   TTC JP-3GA-23.002(R4) (2002), *Network Architecture (Release 4)*.

[4]   T1 T1.3GPP.23.002 (2002), *Network Architecture (Release 4)*.

[5]   TTA TTAE.3G-23.002(R4) (2002), *Network Architecture (Release 4)*.

[6]   CWTS-TSD-CN-23.002 (R4) (2002), *Network Architecture (Release 4)*.

---

[1] Technical documents of Standards Development Organizations recognized under the provisions of ITU-T Rec. A.5 can be found under:

ARIB   at http://www.arib.or.jp

CWTS   at http://www.cwts.org/cwts/index_eng.html

ETSI   at http://www.etsi.org

T1   at http://www.t1.org

TTA   at http://www.tta.or.kr/English/main/index.htm

TTC   at http://www.ttc.or.jp/e/index.html

[7]   ARIB STD-T63-23.271(R4) (2002), *Functional Stage 2 description of location services in UMTS.*

[8]   ETSI TS 123.271 (2002), *Functional Stage 2 description of location services in UMTS.*

[9]   T1 T1.3GPP.23.271 (2002), *Functional Stage 2 description of location services in UMTS.*

[10]   TTA TTAE.3G-23.271(R4) (2002), *Functional Stage 2 description of location services in UMTS.*

[11]   CWTS-TSD-CN-23.271(R4) (2002), *Functional Stage 2 description of location services in UMTS.*

[12]   ETSI EN 301 140-1 (1999), *Intelligent Network (IN); Intelligent network Application Protocol (INAP); Capability Set 2 (CS2); Part 1: Protocol Specification.*

[13]   ETSI ETS 300 356-18 (2001), *ISDN User Part (ISUP) version 2 for the international interface: Part 18: Completion of Calls to Busy Subscriber (CCBS) supplementary service.*

[14]   ISO/IEC 3309:1993, *Information technology – Telecommunications and information exchange between systems – High-level data link control (HDLC) procedures – Frame structure.*

[15]   ISO/IEC 4335:1993, *Information technology – Telecommunications and information exchange between systems – High-level data link control (HDLC) procedures – Elements of procedures.*

[16]   ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The basic model.*

[17]   ISO/IEC 7809:1993, *Information technology – Telecommunications and information exchange between systems – High-level data link control (HDLC) procedures – Classes of procedures.*

[18]   ITU-T Recommendation X.212 (1995) | ISO/IEC 8886:1996, *Information technology – Open Systems Interconnection – Data link service definition.*

[19]   ITU-T Recommendation E.164 (1997), *The international public telecommunication numbering plan.*

[20]   ITU-T Recommendation G.711 (1988), *Pulse code modulation (PCM) of voice frequencies.*

[21]   ITU-T Recommendation H.245 (2001), *Control protocol for multimedia communication.*

[22]   ITU-T Recommendation H.248 (2000), *Gateway control protocol.*

[23]   ITU-T Recommendation H.323 (2000), *Packet-based multimedia communications systems.*

[24]   ITU-T Recommendation H.324 (1998), *Terminal for low bit-rate multimedia communication.*

[25]   ITU-T Recommendation I.112 (1993), *Vocabulary of terms for ISDNs.*

[26]   ITU-T Recommendation I.113 (1997), *Vocabulary of terms for broadband aspects of ISDN.*

[27]   ITU-T Recommendation I.130 (1988), *Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN.*

[28]   ITU-T Recommendation I.210 (1993), *Principles of telecommunication services supported by an ISDN and the means to describe them.*

[29]   ITU-T Recommendation I.420 (1988), *Basic user-network interface.*

[30]   ITU-T Recommendation I.460 (1999), *Multiplexing, rate adaption and support of existing interfaces.*

[31]   ITU-T Recommendation I.461/X.30 (1993), *Support of X.21, X.21 bis and X.20 bis based Data Terminal Equipments (DTEs) by an Integrated Services Digital Network (ISDN)*.

[32]   ITU-T Recommendation I.462/X.31 (1995), *Support of packet mode terminal equipment by an ISDN*.

[33]   ITU-T Recommendation I.463/V.110 (2000), *Support by an ISDN of data terminal equipments with V-Series type interfaces*.

[34]   ITU-T Recommendation Q.65 (2000), *The unified functional methodology for the characterization of services and network capabilities including alternative object oriented techniques*.

[35]   ITU-T Recommendation Q.920/I.440 (1993), *ISDN user-network interface data link layer – General aspects*.

[36]   ITU-T Recommendation Q.921/I.441 (1997), *ISDN user-network interface – data link layer specification*.

[37]   ITU-T Recommendation Q.921 *bis* (1993), *Abstract test suites for LAPD conformance testing*.

[38]   ITU-T Recommendation Q.922 (1992), *ISDN data link layer specification for frame mode bearer services*.

[39]   ITU-T Recommendation Q.1001 (1988), *General aspects of public land mobile networks*.

[40]   ITU-T Recommendation Q.1214 (1995), *Distributed functional plane for intelligent network CS-1*.

[41]   ITU-T Recommendation Q.1902.1 (2001), *Bearer Independent Call Control protocol (Capability Set 2): Functional description*.

[42]   ITU-T Recommendation Q.1902.2 (2001), *Bearer Independent Call Control protocol (Capability Set 2) and Signalling System No.7 ISDN user part: General functions of messages and parameters*.

[43]   ITU-T Recommendation Q.1902.3 (2001), *Bearer Independent Call Control protocol (Capability Set 2) and Signalling System No.7 ISDN user part: Formats and codes*.

[44]   ITU-T Recommendation Q.1902.4 (2001), *Bearer Independent Call Control Protocol (Capability Set 2): Basic call procedures*.

[45]   ITU-T Recommendation Q.1902.5 (2001), *Bearer Independent Call Control protocol (Capability Set 2): Exceptions to the Application transport mechanism in the context of BICC*.

[46]   ITU-T Recommendation Q.1902.6 (2001), *Bearer Independent Call Control protocol (Capability Set 2): Generic signalling procedures and support of the ISDN user part supplementary services and for bearer redirection*.

[47]   ITU-T Recommendation T.31 (1995), *Asynchronous facsimile DCE control – Service Class 1*.

[48]   ITU-T Recommendation T.32 (1995), *Asynchronous facsimile DCE control – Service Class 2*.

[49]   ITU-T Recommendation V.14 (1993), *Transmission of start-stop characters over synchronous bearer channels*.

[50]   ITU-T Recommendation V.21 (1988), *300 bits per second duplex modem standardized for use in the general switched telephone network*.

[51]   ITU-T Recommendation V.22 (1988), *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.*

[52]   ITU-T Recommendation V.22 *bis* (1988), *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.*

[53]   ITU-T Recommendation V.24 (2000), *List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE).*

[54]   ITU-T Recommendation V25 *bis* (1996), *Synchronous and asynchronous automatic dialling procedures on switched networks.*

[55]   ITU-T Recommendation V25 *ter* (1997), *Serial asynchronous automatic dialling and control.*

[56]   ITU-T Recommendation V26 *ter* (1988), *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.*

[57]   ITU-T Recommendation V.32 (1993), *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.*

[58]   ITU-T Recommendation V.80 (1996), *In-band DCE control and synchronous data modes for asynchronous DTE.*

[59]   ITU-T Recommendation V.250 Suppl. 1 (2001), *Various extensions to V.250 basic command set.*

[60]   ITU-T Recommendation X.21 *bis* (1988), *Use on public data networks of Data Terminal Equipment (DTE) which is designed for interfacing to synchronous V-Series modems.*

[61]   ITU-T Recommendation X.25 (1996), *Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in packet mode and connected to public data networks by dedicated circuit.*

[62]   ITU-T Recommendation X.32 (1996), *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.*

[63]   TIA/EIA/IS-99 (1998), *Data Services Option Standard for Wideband Spread Spectrum Digital Cellular System.*

[64]   TIA/EIA/IS-135 (1998), *800 MHz Cellular Systems – TDMA Services – Async Data and Fax.*

[65]   TIA Specification IS-617 (1996), *Data Transmission Systems and Equipment – In Band DCE Control.*

2.2   Informative references

[66]   ETSI TR 121 905 V4.4.0 (2001), *3G Vocabulary.*

[67]   ARIB TR-T12-21.905 V4.4.0 (2002), *3G Vocabulary.*

[68]   T1 T1.3GPP.21.905 V440 (2002), *3G Vocabulary.*

[69]   TTA TTAE.3G-21.905 (R4-4.4.0) (2002), *3G Vocabulary.*

3 Definitions

The text is based on references [66] to [69].

This Recommendation defines the following terms:

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

3.2   application: An application consists of a set of security mechanisms, files, data and protocols (excluding transmission protocols).

3.3   application interface: Standardized interface used by application/clients to access service capability features.

3.4   application protocol: The set of procedures required by the application.

3.5   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.

3.6   base station: A base station is a macrocell, microcell or picocell site and consists of transmitters generating radio frequency electromagnetic energy and receivers in a cabin or cabinet. A base station is connected to antennas by feeder cables.

3.7   basic telecommunication service: This term is used as a common reference to both bearer services and teleservices.

3.8   bearer: An information transmission path of defined capacity, delay and bit error rate, etc.

3.9   bearer capability: A transmission function, which the UE requests to the network.

3.10   bearer service: A type of telecommunication service that provides the capability of transmission of signals between access points.

3.11   billing: A function whereby CDRs generated by the charging function are transformed into bills requiring payment.

3.12   call: A logical association between several users (this could be connection-oriented or connection less).

3.13   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.

3.14   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 Access Point. A Cell is either FDD or TDD mode.

3.15   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.

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

3.17   closed user group: A group with a pre-defined set of members. Only defined members may participate in a closed group.

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

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

3.20 **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.

3.21 **connectionless service**: A service, which allows the transfer of information among service users without the need for end-to-end call establishment procedures ([26]).

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

3.23 **core network**: An architectural term relating to the part of UMTS, which is independent of the connection technology of the terminal (e.g., radio, wired).

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

3.25 **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.

3.26 **coverage area**: Area over which a UMTS service is provided with the service probability above a certain threshold.

3.27 **dedicated channel**: A channel dedicated to a specific UE.

3.28 **domain**: The highest-level group of physical entities. Reference points are defined between domains.

3.29 **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.

3.30 **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.

3.31 **elementary file**: A file containing access conditions and data and no other files.

3.32 **file**: A directory or an organized set of bytes or records in the SIM.

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

3.34 **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.

3.35 **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.

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

3.37 **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.

3.38 **hard handover**: Hard handover is a category of handover procedures where all the old radio links in the UE are abandoned before the new radio links are established.

3.39 **home environment**: Responsible for overall provision and control of the Personal Service Environment of its subscribers.

3.40 **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.

3.41 **IC card**: A card holding an Integrated Circuit containing subscriber, end user, authentication and/or application data for one or more applications.

3.42 **idle mode**: The state of UE switched on but which does not have any established RRC connection.

3.43 **in Iu mode**: Indicates that this clause applies only to the UMTS system. For a multi-system case this is determined by the current serving radio access network.

3.44 **integrity**: (in the context of security) The avoidance of unauthorized modification of information.

3.45 **interface**: The common boundary between two associated systems ([25]).

3.46 **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.

3.47 **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.)

3.48 **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.

3.49 **Iu**: Interconnection point between an RNC and a Core Network. It is also considered as a reference point.

3.50 **Iub**: Interface between an RNC and a Node B.

3.51 **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.

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

3.53 **medium access control**: A sublayer of radio interface layer 2 providing unacknowledged data transfer service on logical channels and access to transport channels.

3.54 **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 ([26]).

3.55 **MExE server**: A node supporting MExE services in the MExE service environment.

3.56 **MExE service**: A service enhanced (or made possible) by MExE technology.

3.57 **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.

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

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

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

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

3.62   multipoint: A value of the service attribute "communication configuration", which denotes that the communication involves more than two network terminations ([26]).

3.63   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.

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

3.65   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.

3.66   network operator: See PLMN operator.

3.67   network personalization: Allows the network operator to personalize a ME so that it can only be used with that particular network operator's SIMs.

3.68   network resource model: A protocol independent model describing managed objects representing network resources, e.g., an RNC or Node B.

3.69   network subset personalization: A refinement of network personalization, which allows network operators to limit the usage of a ME to a subset of SIMs.

3.70   network termination: A functional group on the network side of a user-network interface ([25]).

3.71   number portability: Where the provision of diallable numbers is independent of home environment and/or serving network.

3.72   open service architecture: Concept for introducing a vendor-independent means for introduction of new services.

3.73   operations system: This term indicates a generic management system, independent of its location level within the management hierarchy.

3.74   OSA interface: Standardized interface used by application/clients to access service capability features.

3.75   packet data protocol (PDP): Any protocol which transmits data as discrete units known as packets, e.g., IP, or X.25 [61].

3.76   paging: The act of seeking a User Equipment.

3.77   performance: The ability to track service and resource usage levels and to provide feedback on the responsiveness and reliability of the network.

3.78   personal service environment: Contains personalized information defining how subscribed services are provided and presented towards the user. Each subscriber of the Home

Environment has his/her own Personal Service Environment. The Personal Service Environment is defined in terms of one or more User Profiles.

3.79 **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.

3.80 **PLMN operator**: Public Land Mobile Network operator. The entity which offers telecommunications services over an air interface.

3.81 **point-to-point**: A value of the service attribute "communication configuration", which denotes that the communication involves only two network terminations.

3.82 **protocol**: A formal set of procedures that are adopted to ensure communication between two or more functions within the within the same layer of a hierarchy of functions ([25]).

3.83 **public land mobile network**: A telecommunications network providing mobile cellular services.

3.84 **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.

3.85 **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.

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

3.87 **radio access network application part**: Radio Network Signalling over the Iu.

3.88 **radio access technology**: UTRA, GERAN, etc.

3.89 **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.

3.90 **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.

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

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

3.93 **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.

3.94   radio system: The selected 2nd or 3rd generation radio access technology, e.g., UTRAN or GERAN.

3.95   real time: Time, typically in number of seconds, to perform the on-line mechanism used for fraud control and cost control.

3.96   regionally provided service: A service entitlement to only certain geographical part(s) of a PLMN, as controlled by the network operator.

3.97   registration: This is the process of camping on a cell of the PLMN and doing any necessary LRs.

3.98   release 99: A particular version of the UMTS standards produced by the 3GPP project. Also: release 00, release 01, release 02, etc.

3.99   roaming: The ability for a user to function in a serving network different from the home network.

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

3.101   service area: The Service Area is defined in the same way as the Service Area according to ITU-T Rec. Q.1001 [39]. 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.

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

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

3.104   service capability server: Network functionality providing open interfaces towards the functionality offered by UMTS service capabilities.

3.105   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.

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

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

3.108   service subscriber: Entity which subscribes to the General Packet Radio Service (GPRS) service.

3.109   services (of a mobile cellular system): The set of functions that the mobile cellular system can make available to the user.

3.110   serving network: The serving network provides the user with access to the services of home environment.

3.111   settlement: Payment of amounts resulting from the accounting process.

3.112   SIM personalization: Enables a user to personalize a ME so that it may only be used with particular SIM(s).

3.113   stratum: Grouping of protocols related to one aspect of the services provided by one or several domains.

3.114   subscriber: The responsibility for payment of charges incurred by one or more users may be undertaken by another entity designated as a subscriber. This division between use of and payment for services has no impact on standardization.

3.115   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.

3.116   telecommunication service: That which is offered by a PLMN operator or service provider customers in order to satisfy a specific telecommunication requirement ([25]). Telecommunication services are divided into two broad families: bearer services and teleservices ([28]).

3.117   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.

3.118   traffic channel: A "traffic channel" is a logical channel which carries user information.

3.119   UMTS core network: Refers in this Recommendation to an evolved GSM core network infrastructure or any new UMTS core network infrastructures, integrating circuit and packet-switched traffic.

3.120   UMTS network: Network operated by a single network operator and consisting of UTRAN access networks (WCDMA and/or TD-CDMA), optionally GSM BSS access networks, an UMTS core network.

3.121   universal mobile telecommunications system (UMTS): The telecommunications system, incorporating mobile cellular and other functionality that is the subject of standards produced by 3GPP.

3.122   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.

3.123   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.

3.124   user: An entity, not part of UMTS, which uses UMTS services. Example: a person using a UMTS mobile station as a portable telephone.

3.125   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 ([25]).

3.126   user equipment: A device allowing a user access to network services. For the purpose of 3GPP 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 as defined in GSM TS 04.02.

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

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

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
ACELP	Algebraic Code-Excited Linear Prediction
AES	Advanced Encryption Standard
AID	Application IDentifier
AMF	Authentication Management Field
AMR	Adaptive Multi Rate (also appears as "Adaptive Multi-Rate")
ANSI	American National Standards Institute
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
ARIB	Association of Radio Industries and Businesses (Japan)
ASE	Application Service Element
AT-command	ATtension Command
ATM	Asynchronous Transfer Mode
AuC	Authentication Centre
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")
BICC	Bearer Independent Call Control
BIC-Roam	Barring of Incoming Calls when Roaming outside the home PLMN country
BOIC	Barring of Outgoing International Calls
BOIC-exHC	Barring of Outgoing International Calls except those directed to the Home PLMN Country
BS	Bearer Service
BS	Base Station
BSC	Base Station Controller
BSS	Base Station System
BSSMAP	Base Station System Management Application Part
BTS	Base Transceiver Station

CAI	Charge Advice Information
CAMEL	Customized Applications for Mobile network Enhanced Logic
CAP	CAMEL Application Part
CB	Call Barring
CBC	Cell Broadcast Centre
CBS	Cell Broadcast Service
CC	Call Control
CCBS	Completion of Calls to Busy Subscriber (also appears as "Call Completion to Busy Subscriber")
CD	Call Deflection
CDR	Charging Data Record
CF	Call Forwarding
CFB	Call Forwarding Busy
CFNRc	Call Forwarding on Terminal Not Reachable supplementary service (also appears without "supplementary service")
CFNR	Call Forwarding on No Reply supplementary service (also appears without "supplementary service")
CFU	Call Forwarding Unconditional
CGF	Charging Gateway Function
CLI	Calling Line Identity
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CM	Configuration Management
CMIP	Common Management Information Protocol
CN	Core Network
CNAP	Calling Name Presentation
COLP	Connected Line identification Presentation
COLR	Connected Line identification Restriction
CORBA	Common Object Request Broker Architecture
CS	Circuit Switched
CSE	CAMEL Service Environment
CS-MGW	Circuit Switched Media Gateway
CUG	Closed User Group
CW	Call Waiting
CWTS	China Wireless Telecommunication Standard Group
DCE	Data Circuit terminating Equipment
DTE	Data Terminal Equipment

DTMF	Dual-Tone Multiple Frequency
DTX	Discontinuous Transmission
ECT	Explicit Call Transfer supplementary service
EF	Elementary Files
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")
EN	European Norm
EP	Elementary Procedure
ETSI	European Telecommunications Standards Institute
FDD	Frequency Division Duplex
FM	Fault Management
GAD	Geographical Area Description
GBS	General Bearer Services
GERAN	GSM/EDGE Radio Access Network
GGSN	Gateway GPRS Support Node
GLR	Gateway Location Register
GMLC	Gateway Mobile Location Centre
GMSC	Gateway MSC
GPRS	General Packet Radio Service
gprsSSF	GPRS Service Switching Function
GPS	Global Positioning System
GSM	Global System for Mobile communications
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
HDLC	High Level Data Link Control
HE	Home Environment
HLR	Home Location Register
HPLMN	Home Public Land Mobile Network
HSCSD	High-Speed Circuit-Switched Data

IC	Integrated Circuit (also appears as "Integrated Circuits")
ICC	Integrated Circuit Card
IDL	Interface Definition Language
IETF	Internet Engineering Task Force
IMEI	International Mobile Equipment Identity
IM-GSN	Intermediate GPRS Serving Node
IM-MGW	Intermediate Media Gateway
IM-MSC	Intermediate Mobile-services Switching Centre
IMSI	International Mobile Subscriber Identity (also appears as "International Mobile Station Identity")
IN	Intelligent Network
INAP	Intelligent Network Application Protocol
IP	Internet Protocol
IPDL	Idle Period Downlink
IPLMN	Interrogating PLMN
IrDA	Infrared Data Association
IRP	Integration Reference Point
IS	Information Service
IS	Interim Standard
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
ISUP	ISDN User Part
Itf-N	Interface N
IWF	Interworking Function
K	Subscriber key
LAN	Local Area Network
LCS	LoCation Services
LMSI	Local Mobile Station Identity
LMU	Location Measurement Unit
LR	Location Registration
MAP	Mobile Application Part
MC	Multicall
ME	Mobile Equipment
MExE	Mobile station application Execution Environment
MGC	Media Gateway Controller
MGW	Media Gateway
MIM	Management Information Model

MIME	Multipurpose Internet Mail Extensions
MLC	Mobile Location Centre
MM	Mobility Management
MMI	Man-Machine Interface
MMS	Multimedia Messaging Service
MNP	Mobile Number Portability
MO	Mobile Originated
MO-LR	Mobile Originating Location Request
MPTY	MultiParty
MR	Multi Rate
MS	Mobile Station
MSC	Mobile Switching Centre
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
NE	Network Element
NITZ	Network Identity and Time Zone
NM	Network Manager
NRM	Network Resource Model
NW	Network
OACSU	Off-Air Call Set-Up
ODB	Operator Determined Barring
OoBTC	Out of Band Transcoder Control
OP	OPerator
OS	Operations System
OSA	Open Service Access
OSA	Open Service Architecture
OSI	Open Systems Interconnection
OTDOA	Observed Time Difference Of Arrival
PBX	Private Branch eXchange
PCM	Pulse Code Modulation
PDC	Personal Digital Communication
PDC-EFR	ARIB PDC-EFR 6.7 kbit/s speech Codec

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
PP	Point-to-Point
PS	Packet Switched
PSE	Personal Service Environment
PSS	Packet-switched Streaming Service
PSTN	Public Switched Telephone Network
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/Medium Access Control
RLP	Radio Link Protocol
RNC	Radio Network Controller
RNS	Radio Network Subsystem (also appears as "Radio Network System")
RR	Radio Resources
RTP	Real Time Protocol
SAGE	Security Algorithms Group of Experts
SAT	SIM Application Toolkit
SC	Service Centre (used for SMS)
SCCP	Signalling Connection Control Part
SCF	Service Control Function (IN context), Service Capability Feature (VHE/OSA context)
SCR	Source Controlled Rate
SCTP	Stream Control Transmission Protocol
SDL	Specification and Description Language
SDO	Standards Development Organization
SGSN	Serving GPRS Support Node
SGW	Signalling Gateway
SID	Silence Descriptor
SIM	GSM Subscriber Identity Module
SIWFS	Shared Inter Working Function Server

SM	Session Management
SMC	Short Message Control
SMIL	Synchronized Multimedia Integration Language
SM-RL	Short Message Relay function
SMLC	Serving Mobile Location Centre
SMS	Short Message Service
SMTP	Simple Mail Transfer Protocol
SP	Service Provider
SP	Switching Point
SQN	Sequence number
SOR	Support of Optimal Routeing
SRNC	Serving Radio Network Controller
SRNS	Serving RNS
SS	Supplementary Service
SS	Solution Set
SS7	Signalling System No. 7
SSAP	Supplementary Service Application Part
SSF	Service Switching Function
T1	Standards Committee T1 Telecommunications
TA	Terminal Adaptation
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_USI	TIA TDMA-US1 (12.2 kbit/s Codec, similar to GSM-EFR)
TE	Terminal Equipment
TFO	Tandem Free Operation
TIA	Telecommunications Industry Association
TMSI	Temporary Mobile Subscriber Identity (also appears as "Temporary Mobile Station Identity")
TrFO	Transcoder Free Operation
TS	Technical Specification
TSG	Technical Specification Group
TTA	Telecommunications Technology Association (Korea)

TTC	Telecommunication Technology Committee (Japan)
TUP	Telephone User Part (SS7)
UDP	User Datagram Protocol
UE	User Equipment
UI	User Interaction
UI	User Interface
UICC	Universal IC Card
UIM	User Identity Module
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
UUS	User-to-User Signalling
VAD	Voice Activity Detector
VBS	Voice Broadcast Service
VGCS	Voice Group Call Service
VHE	Virtual Home Environment
VLR	Visitor Location Register
VMSC	Visited Mobile Switching Centre
VPLMN	Visited Public Land Mobile Network
WAP	Wireless Application Protocol
XML	Extensible Markup Language

5   Introduction

The Core Network for this IMT-2000 family member referred to as "UMTS Release 4", is based on an evolved Core Network from the 3rd generation release 1999. 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 wide-band communications capability with integrated personal and terminal mobility to meet the user and service requirements.

Release 4 is the second 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 terrestrial usage based on GSM evolved UMTS core network with UTRAN access network. The core network of UMTS supports both 2nd and 3rd generation radio accesss networks as options.

Refer to UMTS Service principles in 10.2.40 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 respective specification.

6   Basic architecture for the UMTS IMT-2000 family member

This text is based on the text in references [2] to [6] 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. This configuration presents signalling and user traffic interfaces that 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 equipments. 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 UMTS 25.4xx series of Technical Specifications, which are outside the scope of this Recommendation. Interfaces C, D, E, F and G need the support of the Mobile Application Part of the 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 UMTS 23 series and 24 series of Technical Specifications. Interfaces Mc, Nb, and Nc are defined in UMTS 23.205 and in the UMTS 29 series of Technical Specifications.

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.

Q.1741.2_F06
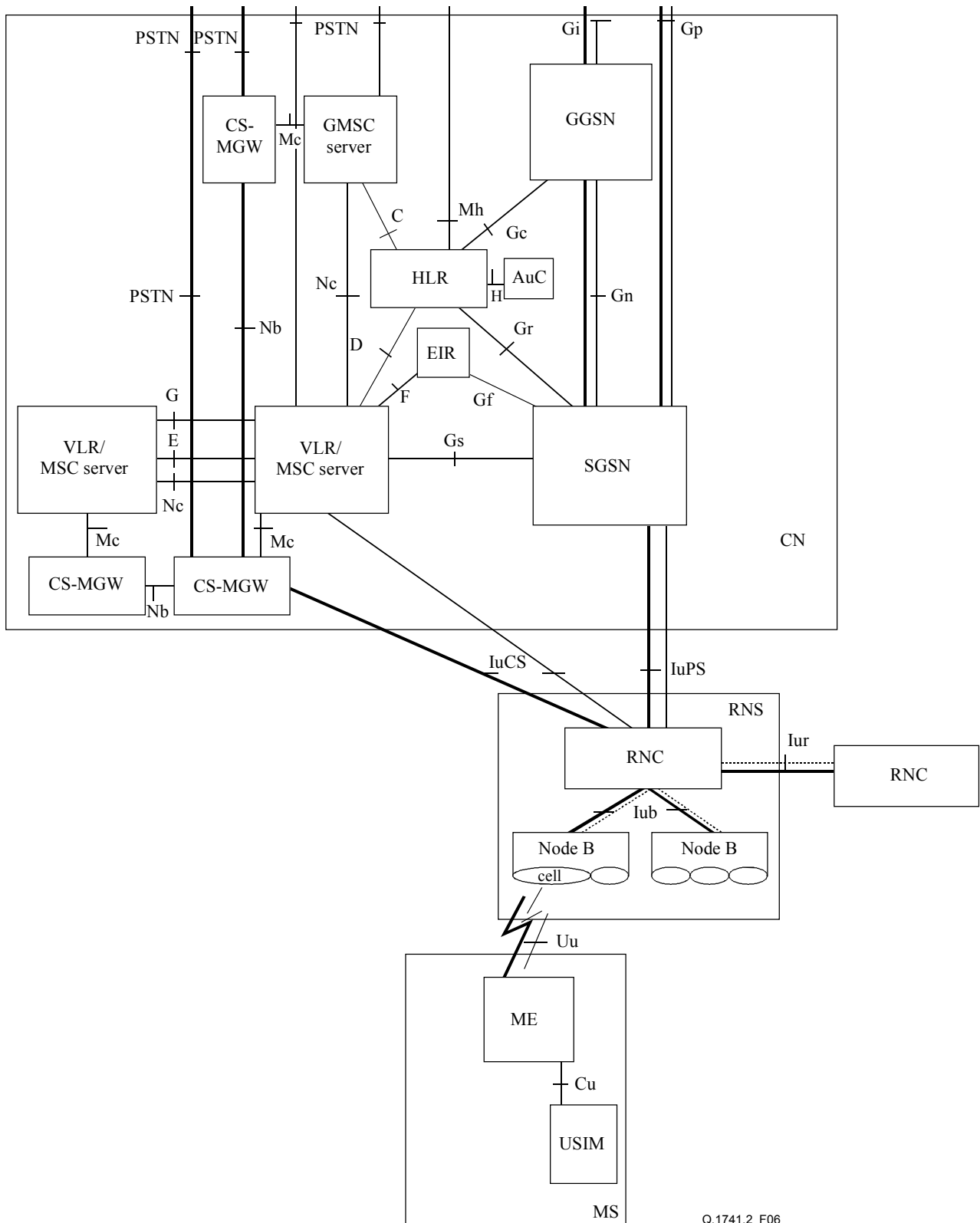
Bold lines   Interfaces supporting user traffic
Dashed lines   Interfaces supporting signalling

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 – This is a simplified architecture figure. Not all nodes and interfaces are indicated.
NOTE 3 – This figure differs from the original figure in references [2] to [6]. This figure only shows the third generation aspects.

**Figure 6-1/Q.1741.2 – Basic configuration of a PLMN supporting CS
and PS services and interfaces**

This text is based on the text in references [2] to [6] clause 5.2.2.

The basic configuration of UMTS Location Services is presented in Figure 6-2.
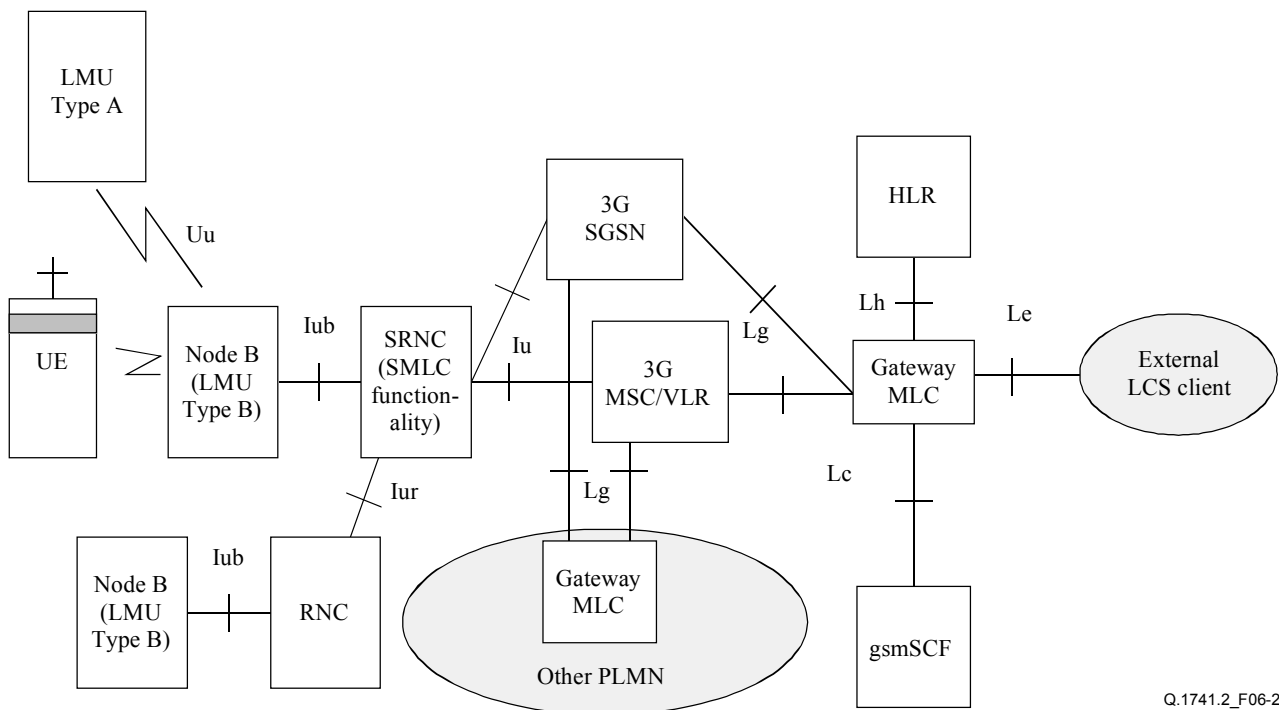
Figure 6-2/Q.1741.2 – Configuration of location services entities in a UMTS PLMN

This text is based on the text in references [2] to [6] clause 4a.4 and 5.3.

The CAMEL feature (Customized Applications for Mobile network Enhanced Logic) provides the mechanisms to support services consistently independently of the serving network.

Figure 6-3 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 6-3 are still supported by these entities even if not shown.

NOTE 1 – The 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".

Q.1741.2_F06-3
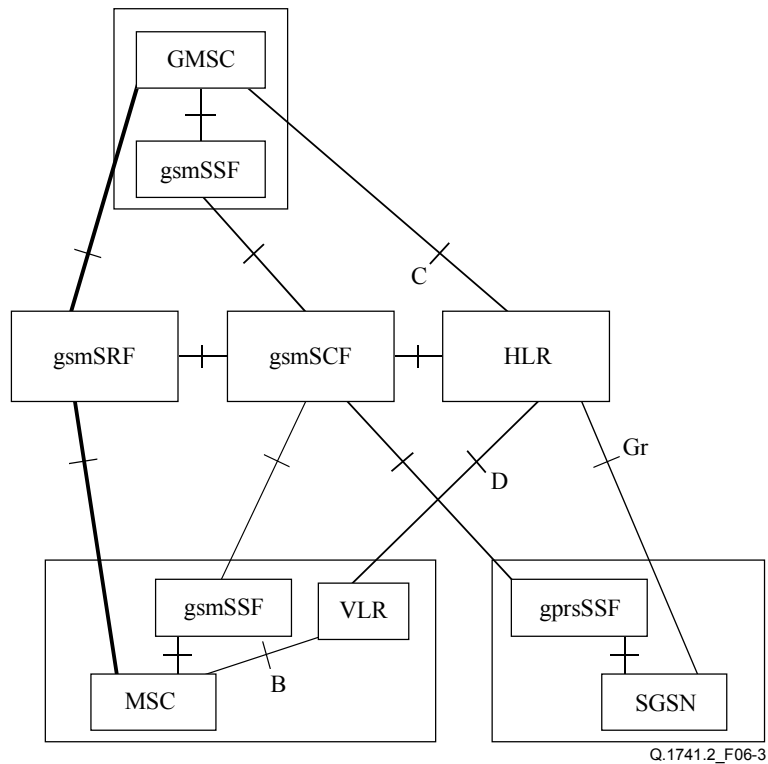
Figure 6-3/Q.1741.2 – Configuration of CAMEL entities

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

This text is based on the text in references [2] to [6] 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. (See Figure 6-4.)
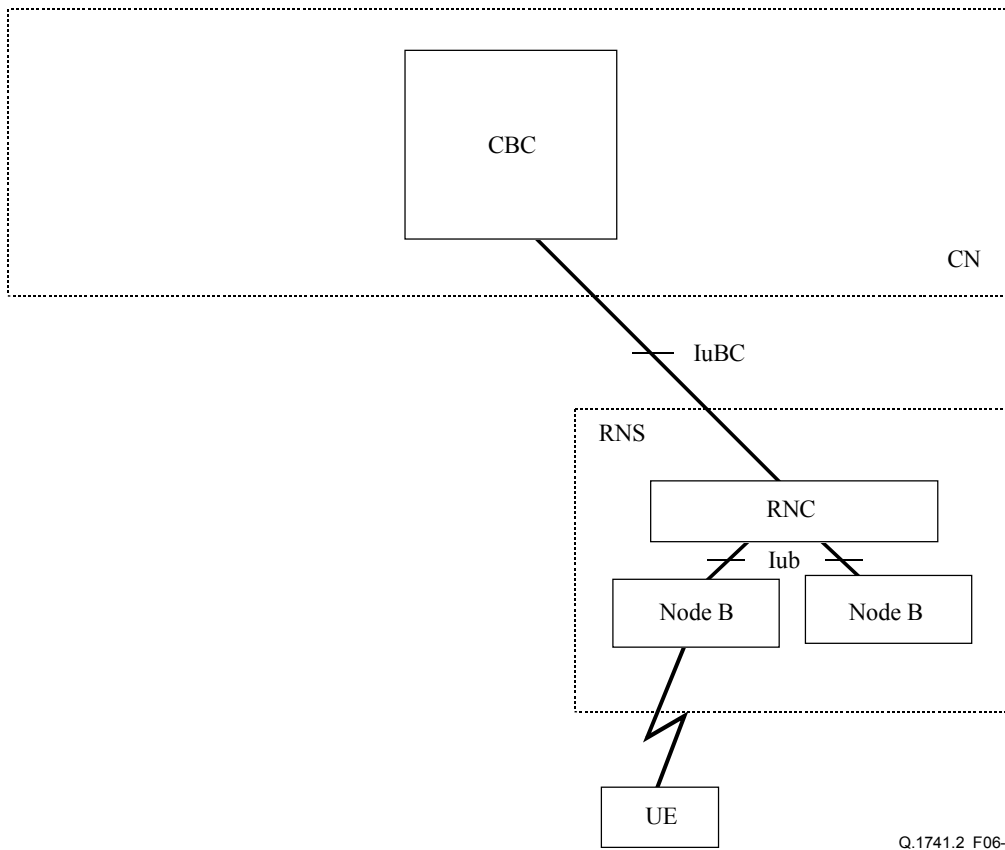
Figure 6-4/Q.1741.2 – Configuration of a PLMN supporting Cell Broadcast Service entities

This text is based on the text in references [2] to [6] clause 5.5.

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.
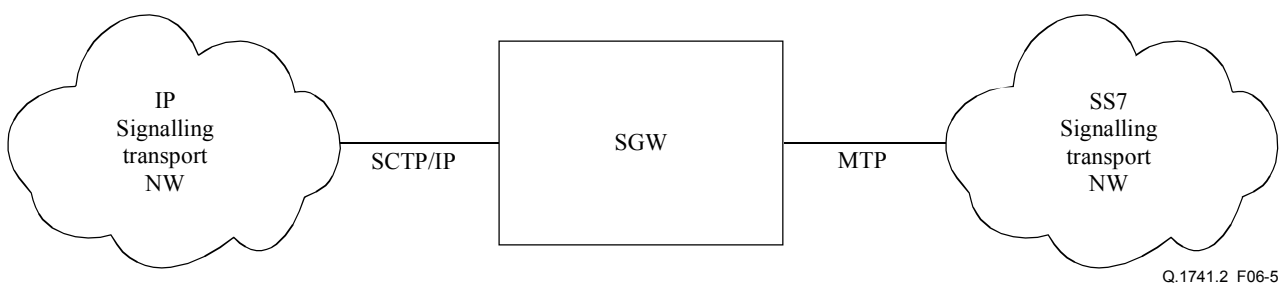
Figure 6-5/Q.1741.2 – Configuration of a signalling gateway function

NOTE 2 – SS7 application transport and SCTP/IP adaptation protocols are not shown.

This text is based on the text in references [2] to [6] 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 a visited network without involving HLR. The location register function in the GLR stores subscription information and routeing 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 6-6, all the functions related to GLR introduction are considered implemented in different equipments. 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 the 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 GPRS Tunnelling Protocol – Control to provide the packet domain services.
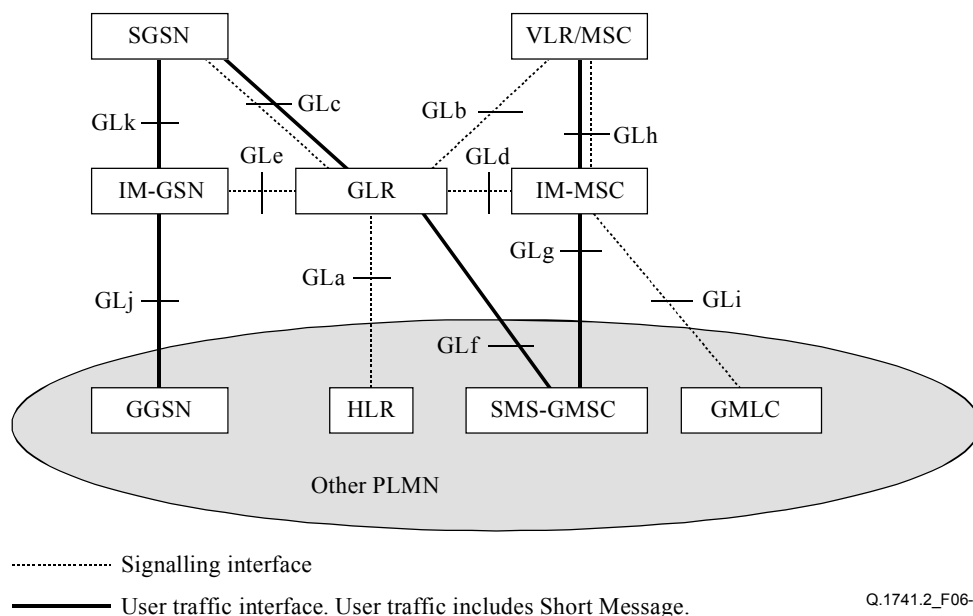
Figure 6-6/Q.1741.2– Configuration of a PLMN and interfaces with GLR

7 Network entities

7.1 Gateway Mobile Switching Centre (GMSC)

The text in this clause is based on the text in references [2] to [6] clause 4.1.2.2.

The Mobile Switching Centre (MSC) which performs the routeing function to the actual location of the Mobile Station (MS) is called the Gateway MSC (GMSC).

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 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).

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 CS-MGW 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 [2] to [6] clause 4.1.2.2.1.

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

7.2 Mobile Switching Centre and Visitor Location Register MSC/VLR (MSC/VLR)

7.2.1 Mobile Switching Centre (MSC)

The text in this clause is based on the text in references [2] to [6] 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 base stations are normally required; i.e., each MSC would thus have to interface several base stations. In addition, several MSCs may be required to cover a country.

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. 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. A MSC Server and a CS-MGW make up the full functionality of a MSC.

7.2.2 Mobile Switching Centre Server (MSC Server)

The text in this clause is based on the text in references [2] to [6] 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.

7.2.3 Visitor Location Register (VLR)

The text in this clause is based on the text in references [2] to [6] 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 VLR also contains supplementary service parameters attached to the mobile subscriber and received from the HLR.

7.3   Home Location Register (HLR)

The text in this clause is based on the text in references [2] to [6] clause 4.1.1.1.

The Home Location Register (HLR) is a database in charge of the management of mobile subscribers. A PLMN may contain one or several HLRs: it depends on the number of mobile subscribers, on the capacity of the equipment and on the organization of the network. The following kinds of information are stored there:

–   the subscription information;

–   some location information enabling the charging and routeing of calls towards the MSC where the MS is registered (e.g., the MS Roaming Number, the VLR Number, the MSC Number, the Local MS Identity);

and, if GPRS is supported, also:

–   location information enabling the charging and routeing of messages in the SGSN where the MS is currently registered (e.g., the SGSN Number);

and, if LCS is supported, also:

–   a LCS privacy exception list, which indicates the privacy class of the MS subscriber;

–   a GMLC list;

–   a MO-LR list.

Different types of identity are attached to each mobile subscription and are stored in the HLR. The following identities are stored:

–   the International Mobile Station Identity (IMSI);

–   one or more Mobile Station International ISDN number(s) (MSISDN).

If GPRS is supported, the following identity is also stored:

–   Zero or more Packet Data Protocol (PDP) address(es);

and, if LCS is supported, the following identity is also stored:

–   the LMU indicator.

There is always at least one identity, apart from the IMSI, attached to each mobile subscription and stored in the HLR.

The IMSI or the MSISDN may be used as a key to access the information in the database for a mobile subscription.

The database contains other information such as:

–   teleservices and bearer services subscription information;

–   service restrictions (e.g., roaming limitation);

–   a list of all the group IDs a service subscriber is entitled to use to establish voice group or broadcast calls;

–   supplementary services; the HLR contains the parameters attached to these services;

and, if GPRS is supported, also:

–   information about if a GGSN is allowed to dynamically allocates PDP addresses for a
     subscriber.

7.4   Authentication Centre (AuC)

The text in this clause is based on the text in references [2] to [6] clause 4.1.1.3.

The Authentication Centre (AuC) is an entity that stores data for each mobile subscriber to allow
the International Mobile Subscriber Identity (IMSI) to be authenticated and to allow communication
over the radio path between the mobile station and the network to be ciphered. The AuC transmits
the data needed for authentication and ciphering via the HLR to the VLR, MSC and SGSN which
need to authenticate a mobile station.

The Authentication Centre (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:

–   data that are used to authenticate the International Mobile Subscriber Identity (IMSI);

–   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 an interface denoted the H-interface
(see 8.28).

7.5   Equipment Identity Register (EIR)

The text in this clause is based on the text in references [2] to [6] 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   Gateway GPRS Support Node (GGSN)

The text in this clause is based on the text in references [2] to [6] clause 4.1.3 and 4.1.3.2.

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.

Gateway GPRS Support Node (GGSN): 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.

7.7 Serving GPRS Support Node (SGSN)

The text in this clause is based on the text in references [2] to [6] clause 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.

Serving GPRS Support Node (SGSN): 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 routeing 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.

7.8 Circuit Switched – Media Gateway function (CS-MGW)

The text in this clause is based on the text in references [2] to [6] 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 "IM-MGW" is used.

This component is the 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 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 Rec. H.248 [22] 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 H.248 [22] standard mechanisms can be applied to enable this.

7.9   Signalling Gateway function (SGW)

The text in this clause is based on the text in references [2] to [6] clause 4a.7.

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 or ISUP) messages but may have to interpret the underlying SCCP or SCTP layer to ensure proper routeing of the signalling.

7.10   Gateway Mobile Location Centre (GMLC)

The text in this clause is based on the text in references [2] to [6] clause 4a.3.2.

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

7.11   GPRS Service Switching Function (gprsSSF)

The text in this clause is based on the text in references [2] to [6] 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.

7.12   GSM Service Control Function (gsmSCF)

The text in this clause is based on the text in references [2] to [6] 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.

7.13   GSM Service Switching Function (gsmSSF)

The text in this clause is based on the text in references [2] to [6] 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.

7.14   GSM Specialized Resource Function (gsmSRF)

The text in this clause is based on the text in references [2] to [6] 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 Rec. Q.1214 [40] with variations defined in 23.078 (see 10.3.26).

7.15   Gateway Location Register (GLR)

The text in this clause is based on the text in references [2] to [6] clause A.2.1.

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

7.16 Intermediate GPRS Serving Node (IM-GSN)

The text in this clause is based on the text in references [2] to [6] 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 only located in a visited PLMN.

7.17 Intermediate Mobile-service Switching Centre (IM-MSC)

The text in this clause is based on the text in references [2] to [6] 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 only located in a visited PLMN.

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 [2] to [6] clause 6.4.1.2.

The Gateway MSC server must interrogate the HLR of the required subscriber to obtain routeing 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 routeing 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 [2] to [6] 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 [2] to [6] 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 signalling as necessary.

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.

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 [2] to [6] 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 [2] to [6] 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 base on the text in references [2] to [6] 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 [2] to [6] 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 Gi Interface (Gateway GPRS Support Node (GGSN) – External Data Networks)

The text in this clause is based on the text in references [2] to [6] clause 7.2.

This interface connects the PLMN to external public or private packet data networks.

8.9 GLa Interface (Gateway Location Register (GLR) – Home Location Register (HLR))

The text in this clause is based on the text in references [2] to [6] 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 [2] to [6] 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 [2] to [6] 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 [2] to [6] clause A.5.4.

In the network with the GLR, when the IM-MSC receives a message, it interrogates the GLR for the routeing 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 [2] to [6] clause A.5.5.

In the network with the GLR when the IM-GSN receives a PDU notification from the GGSN, the IM-GSN relays the notification to the SGSN by interrogating via the interface the routeing 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 [2] to [6] 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 [2] to [6] 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 [2] to [6] 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 [2] to [6] 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 [2] to [6] 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 routeing 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 [2] to [6] 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 routeing 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 [2] to [6] 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 [2] to [6] 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 [2] to [6] 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 [2] to [6] 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 [2] to [6] 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 [2] to [6] 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 [2] to [6] 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

The text in this clause is based on the text in references [2] to [6] 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 H Interface (Home Location Register (HLR) – Authentication Centre (AuC))

The text in this clause is based on the text in references [2] to [6] 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.

8.29 IuBC Interface (Core Network (CN) – Radio Network Controller (RNC))

The text in this clause is based on the text in references [2] to [6] clause 6a.5.1.

The interface between the CBC and the RNS is specified in the 25.41x series of 3G technical specifications.

The CBC-RNS interface is used to carry information concerning:
– the CBS messages itself; and
– CBS delivery parameter.

8.30 IuCS Interface (Mobile Switching Centre (MSC) – Radio Network Controller (RNC))

The text in this clause is based on the text in references [2] to [6] clause 6.2.1.2.

The interface between the MSC and its RNS 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.

8.31 IuPS Interface (Serving GPRS Support Node (SGSN) – Radio Network Controller (RNC))

The text in this clause is based on the text in references [2] to [6] clause 6.2.2.2.

The RNS-SGSN interface is used to carry information concerning:

– packet data transmission;
– mobility management.

The IuPS interface is defined in the 25.41x series of UMTS Technical Specifications.

8.32 Lc Interface (Gateway Mobile Location Centre (GMLC) – GSM Service Control Function (gsmSCF))

The text in this clause is based on the text in references [7] to [11] clause 6.3.10.

The Lc interface supports CAMEL access to LCS.

8.33 Le Interface (Gateway Mobile Location Centre (GMLC) – External LCS client)

The text in this clause is based on the text in references [2] to [6] clause 7.3.

This interface connects the PLMN to the external LCS Client.

8.34 Lg Interface (Mobile Switching Centre (MSC)/Visitor Location Register (VLR) – Mobile Location Centre (MLC))

The text in this clause is based on the text in references [2] to [6] clause 6a.3.1.

The MSC-GMLC interface is used to exchange data needed by the MSC to perform subscriber authorization and allocate network resources. The GMLC provides the IMSI and requested Quality of Service information.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities (TCAP).

8.35 Lh Interface (Home Location Register (HLR) – Gateway Mobile Location Centre (GMLC))

The text in this clause is based on the text in references [2] to [6] clause 6a.3.4.

This interface is used by the GMLC to retrieve the VMSC location and IMSI for a particular mobile.

Signalling on this interface uses the Mobile Application Part (MAP), which in turn uses the services of Transaction Capabilities (TCAP).

8.36 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 [2] to [6] clause 6.4.1.7.

The Mc reference point describes the interfaces between the MSC Server and CS-MGW, and between the GMSC Server and CS-MGW. It has the following properties:

– full compliance with the ITU-T Rec. H.248 [22];
– flexible connection handling that allows support of different call models and different media processing purposes not restricted to ITU-T Rec. H.323 [23] 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 Rec. H.248 [22] 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[22]/IETF Megaco standard mechanisms can be applied to enable this.

8.37 Mobile Switching Centre (MSC) – gsmSCF interface

The text in this clause is based on the text in references [2] to [6] clause 6a.4.6.

This interface is used by the MSC to send supplementary service invocation notifications to the gsmSCF.

8.38 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 [2] to [6] clause 6.4.1.9.

Over the Nb reference point the bearer control and transport are performed. The transport may be RTP/UDP/IP or AAL 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 [21].

8.39 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 [2] to [6] 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 evolvement of ISUP for bearer independent call control (BICC). Different options for signalling transport on Nc shall be possible including IP.

8.40 PSTN Interface (Mobile Switching Centre (MSC)/Visitor Location Register (VLR) – Public Switched Telephone Network (PSTN))

The text in this clause is based on the text in references [2] to [6] clause 7.1.

The MSC is based on a normal ISDN exchange. It has, for call control, the same interface as the fixed network exchanges. The signalling interface considered in the GSM 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.

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 with UTRAN access 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 4 of the 3rd Generation mobile system 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 specifications;
– 22-series: Service aspects;
– 23-series: Technical realization;
– 24-series: Signalling protocols (UE-CN network);
– 25-series: UTRA aspects (Note 1);
– 26-series: Codecs (speech, video, etc.);
– 27-series: Data;
– 28-series: Signalling protocols (RSS-CN);
– 29-series: Signalling protocols;
– 30-series: Programme management (Note 2);
– 31-series: User Identity Module (UIM);
– 32-series: Operation and maintenance;
– 33-series: Security aspects;
– 34-series: Test specifications (Note 2);
– 35-series: Algorithm specifications.

NOTE 1 – Technical specifications in this series are not included in the scope for this Recommendation. They are described in reference [1].

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 issue date column in the whole clause 10 is dd-mm-yy.

10.1   21-Series – Requirements specifications

10.1.1   TS 21.102 – 3rd Generation mobile system Release 4 specifications

The document identifies the 3rd generation mobile system specifications for Release 4. The specifications and reports of 3G Release 4 have a major version number 4 (e.g., 4.x.y).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 21.102 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 121 102	4.4.0	Published	09-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16050
T1	T1.3GPP.21.102 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-21.102(R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-21.102(R4-4.4.0).pdf
TTC	TS-3GA-21.102 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts21102rel4v440.pdf

10.1.2 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 terminals.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-21.111V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A21111-400.pdf
CWTS	CWTS-TSD-CN 21.111 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 121 111	4.0.0	Published	19-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13632
T1	T1.3GPP.21.111 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-21.111 (R4-4.0.0)	4.0.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-21.111(R4-4.0.0).zip

10.1.3 TS 21.133 – 3G security; Security threats and requirements

This specification takes notice of the Security Principles and Objectives as set out in 3G TS 33.120. It contains an evaluation of perceived threats to a 3G system and produces subsequently a list of security requirements to address these threats.

As teleservices and applications will not, in general, be standardized, it is difficult to predict their exact nature. Therefore, this specification considers all security threats and aims at listing generic security requirements that shall be applicable irrespective of the actual services offered. The list of threats and requirements may however need to be updated as the 3G system evolves.

The threat analysis performed relies to a large extent on previous experiences with 2G systems, in particular GSM, and takes into account known problems from that area.

The security requirements listed in this specification shall be used as input for the choice of security features and the design of the 3G security architecture as specified in 3G TS 33.102.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-21.133V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A21133-410.pdf
CWTS	CWTS-TSD-CN 21.133 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 121 133	4.1.0	Published	14-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15321
T1	T1.3GPP.21.133 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-21.133 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-21.133(R4-4.1.0).pdf

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-T63-22.001V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22001-430.pdf
CWTS	CWTS-TSD-CN 22.001 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 001	4.3.0	Published	03-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15649
T1	T1.3GPP.22.001 V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.001(R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.001(R4-4.3.0).pdf

10.2.2 TS 22.002 – Circuit Bearer (BS) services 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-T63-22.002V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22002-420.pdf
CWTS	CWTS-TSD-CN 22.002 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 002	4.2.0	Published	16-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14175
T1	T1.3GPP.22.002 V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.002(R4	4.2.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_002_R4_.zip

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-T63-22.003V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22003-430.pdf
CWTS	CWTS-TSD-CN 22.003 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 003	4.3.0	Published	03-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15651
T1	T1.3GPP.22.003 V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.003(R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.003(R4-4.3.0).pdf

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 24.010.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 22.004 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 004	4.1.0	Published	03-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15653
T1	T1.3GPP.22.004V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.004 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.004(R4-4.1.0).pdf
TTC	TS-3GA-22.004 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22004rel4v410.pdf

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
CWTS	CWTS-TSD-CN-22.011 (R4)	4.6.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 011	4.6.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15655
T1	T1.3GPP.22.011V460-2002	4.6.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.011 (R4-4.6.0)	4.6.0	Approved	28-07-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.011(R4-4.6.0).pdf
TTC	TS-3GA-22.011 (Rel4)v4.6.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22011rel4v460.pdf

10.2.6   TS 22.016 – International Mobile 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-T63-22.016V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22016-410.pdf
CWTS	CWTS-TSD-CN-22.016 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 016	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15656
T1	T1.3GPP.22.016 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.016 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.016(R4-4.1.0).pdf

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;

–   USIM personalization.

The document specifies requirements for MEs that provide these personalization features.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-22.022V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22022-400.pdf
CWTS	CWTS-TSD-CN-22.022 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 022	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13656
T1	T1.3GPP.22. 022V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.022(R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_022_R4_.zip

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 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
CWTS	CWTS-TSD-CN 22.024 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 024	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13658
T1	T1.3GPP.22.024V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.024(R4)	4.0.0	Approved	19-12-02	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_024_R4_.zip
TTC	TS-3GA-22.024 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22024rel4v400.pdf

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.

The present document included 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-T63-22.030V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22030-410.pdf
CWTS	CWTS-TSD-CN 22.030 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 030	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15657
T1	T1.3GPP.22.030 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.030 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.030(R4-4.1.0).pdf

10.2.10   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
CWTS	CWTS-TSD-CN 22.032 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 032	4.0.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16441
T1	T1.3GPP.22.032V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.032(R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.032(R4-4.0.0).pdf

10.2.11   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 in TS 23.107.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-22.034V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22034-400.pdf
CWTS	CWTS-TSD-CN 22.034 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 034	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13661
T1	T1.3GPP.22.034V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.034(R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_034_R4_.zip

10.2.12 TS 22.038 – USIM/SIM Application Toolkit (SAT/USAT); Service description; Stage 1

This Technical Specification defines the Stage 1 description of the USIM/SIM application Toolkit (SAT/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/SIM application Toolkit (SAT/USAT) that are sufficient to provide a complete service.

It is highly desirable, however, that technical solution for a USIM/SIM application Toolkit (SAT/USAT) should 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, nation-wide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

Figure 10-1/Q.1741.2 – Scope of Technical Specification 22038

As indicated in Figure 10-1, the scope of this Technical Specification encompasses the SAT/USAT functionality in the UE/MS (comprising USIM/SIM and ME) and the interaction with the PLMN environment. The SAT/USAT Server is not necessarily a separate entity as shown in the figure; nodes providing SAT/USAT services may also exist within the PLMN. The functionalities of the SAT/USAT servers (such as charging aspects, security level classification, etc.) are not covered by this specification.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-22.038V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22038-410.pdf
CWTS	CWTS-TSD-CN 22.038 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 038	4.1.0	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16198
T1	T1.3GPP.22.038V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.038(R4)	4.1.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_038_R4_.zip

10.2.13 TS 22.041 – Operator Determined Call Barring

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
CWTS	CWTS-TSD-CN 22.041 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 041	4.1.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13550
T1	T1.3GPP.22.041V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.041(R4)	4.1.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_041_R4_.zip
TTC	TS-3GA-22.041 (Rel4)v4.1.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22041rel4v410.pdf

10.2.14 TS 22.042 – Network Identity and Time Zone (NITZ); Service description; Stage 1

The document describes the feature Network Identity and Time Zone (NITZ) for CS Domain.

This feature provides the means for serving PLMNs to transfer current identity, time, Daylight Saving Time and the local time zone to Mobile Stations (MSs), 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 has 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
CWTS	CWTS-TSD-CN 22.042 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 042	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15658
T1	T1.3GPP.22.042V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.042(R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.042(R4-4.1.0).pdf
TTC	TS-3GA-22.042(Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22042rel4v410.pdf

10.2.15   TS 22.048 – Security Mechanisms for the (U)SIM application toolkit; Stage 1

The document provides standardized security mechanisms in conjunction with the SIM Application Toolkit for the interface between a 3G or GSM PLMN Entity and a UICC.

The security mechanisms that are specified are independent of applications.

The document describes the functional requirements of the security mechanisms with the implementation detail of these mechanisms being described in the Stage 2 specification (TS 23.048).

The document is the result of a feasibility study carried out on this topic, contained in GSM 11.15.

Within the scope of this document, the UICC refers here to an ICC that support at least one application in order to access a cellular network.

The ICC is considered as a platform, which is based on TS 31.101, here called "3G platform".

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-22.048V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22048-400.pdf
CWTS	CWTS-TSD-CN 22.048 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 048	4.0.0	Published	26-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14476
T1	T1.3GPP.22.048V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.048(R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_048_R4_.zip

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 services Switching Center (MSC) transmission bandwidth requirements.

In analogy with ITU-T Rec. I.130 [27], 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-T63-22.053V4.0.1	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22053-401.pdf
CWTS	CWTS-TSD-CN 22.053 (R4)	4.0.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 053	4.0.1	Published	10-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14931
T1	T1.3GPP.22.053 V401-2002	4.0.1	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.053 (R4-4.0.1)	4.0.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.053(R4-4.0.1).pdf

10.2.17   TS 22.057 – Mobile Execution Environment (MExE); Service description; Stage 1

This Technical Specification defines the Stage one 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) should 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, nation-wide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.
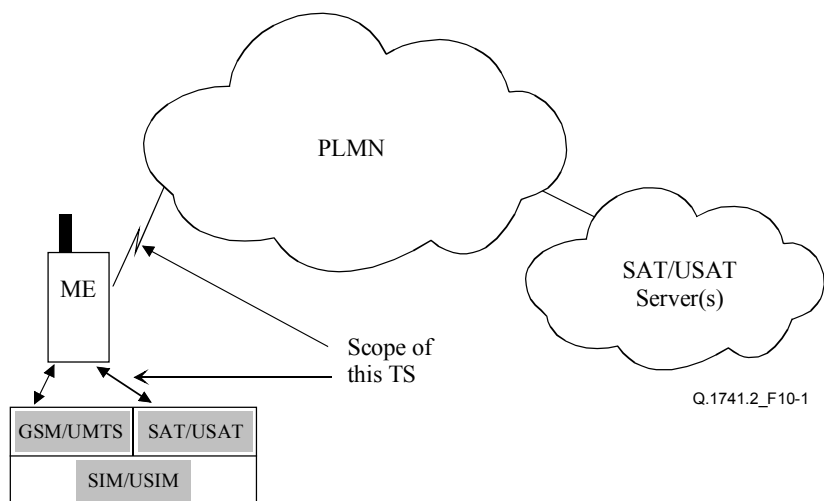
As indicated in Figure 10-2, the scope of this Technical Specification encompasses the MExE functionality in the UE, interaction with the MExE service environment. The MExE service environment is not necessarily restricted to the PLMN, and nodes providing MExE services (i.e., MExE servers) may also exist 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.
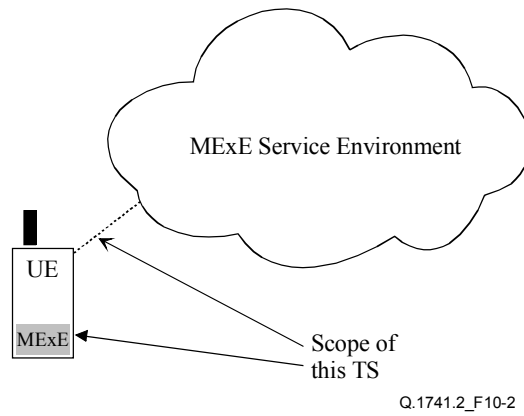
Figure 10-2/Q.1741.2 – Scope of Technical Specification 22.057

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-22.057V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22057-410.pdf
CWTS	CWTS-TSD-CN 22.057 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 057	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15659
T1	T1.3GPP.22.057 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.057(R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.057(R4-4.1.0).pdf

10.2.18 TS 22.060 – General Packet Radio Service (GPRS); Service description; Stage 1

This Technical Specification defines the Stage one 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 data base 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.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 22.060 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 060	4.3.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15963
T1	T1.3GPP.22.060V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.060 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.060(R4-4.3.0).pdf
TTC	TS-3GA-22.060 (Rel4)v4.3.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22060rel4v430.pdf

10.2.19 TS 22.066 – Support of Mobile Number Portability (MNP); 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 GSM mobile networks). 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, nation-wide 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 Mobile Station (MS) 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
CWTS	CWTS-TSD-CN 22.066 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 066	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13552
T1	T1.3GPP.22.066V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.066 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/imt2000/TTAE_3G-22_066_R4_.zip
TTC	TS-3GA-22.066 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22066rel4v400.pdf

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 Multi-Level Precedence and Pre-emption Service (eMLPP). This service has two parts: precedence and pre-emption. Precedence involves assigning a priority level to a call in combination with fast call set-up. Pre-emption 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. Pre-emption can also involve the disconnection of an on-going 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.

NOTE – It is under study whether normal GSM Phase 2 Mobile Stations will be able to be used for this service.

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-T63-22.067V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22067-410.pdf
CWTS	CWTS-TSD-CN 22.067 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 067	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15663
T1	T1.3GPP.22.067 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.067 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.067(R4-4.1.0).pdf

10.2.21   TS 22.071 – Location Services (LCS); 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 data base 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, the present 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 choice of positioning method or notification of a location request to the UE user when LCS or individual positioning methods, respectively, are not supported by the UE.

LCS is being developed in phases with enhancements added in yearly releases:

1) UMTS Release 99: LCS is supported in the circuit-switched domain of the 3G core network (GMLC connected to MSC). UTRAN R99 specifications support cell coverage (i.e., cell identity) based LCS. (The radio interface RRC specification also support IPDL-OTDOA

and network assisted GPS (assistance data broadcasting), but the UTRAN internal interfaces do not yet support these two methods in R99.)

2) GSM/UMTS Release 4: LCS shall be supported in the circuit-switched domain and in the packet-switched domain including GPRS. LCS shall be supported in GERAN and in UTRAN FDD and UTRAN TDD. The positioning methods in UTRAN will be at least the 3 methods identified earlier: cell coverage based, IPDL-OTDOA and assisted GPS. LCS support is to be included in the Open Service Architecture (OSA) including enhancements for the support of value added services, and support for the velocity parameter in the position request/response. The objective is to have common service descriptions for all Access Networks in this Stage 1 specification. Possible deviations shall be noted in the text.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-22.071V4.4.1	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22071-441.pdf
CWTS	CWTS-TSD-CN 22.071 (R4)	4.4.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 071	4.4.1	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15665
T1	T1.3GPP.22. 071V441-2002	4.4.1	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.071 (R4-4.4.1)	4.4.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.071(R4-4.4.1).pdf

10.2.22 TS 22.072 – Call Deflection (CD); 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
CWTS	CWTS-TSD-CN 22.072 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 072	4.0.0	Published	03-05-01	http://pda.etsi.org/pda/home.asp?wki_id=13664
T1	T1.3GPP.22.072V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.072(R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_072_R4_.zip
TTC	TS-3GA-22.072 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22072rel4v400.pdf

10.2.23 TS 22.076 – Noise Suppression for the AMR Codec; Service Description; Stage 1

The 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 Rec. I.130 [27], 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-T63-22.076V4.0.1	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22076-401.pdf
CWTS	CWTS-TSD-CN 22.076 (R4)	4.0.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 076	4.0.1	Published	10-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14932
T1	T1.3GPP.22.076 V401-2002	4.0.1	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.076 (R4-4.0.1)	4.0.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.076(R4-4.0.1).pdf

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 independent 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.

CAMEL is developed in phases. The following phases exist:

– CAMEL phase 1;

– CAMEL phase 2;

– CAMEL phase 3.

A VPLMN or IPLMN supporting CAMEL phase 2 shall also support CAMEL phase 1, so far as it is applicable to the network entities concerned.

A VPLMN or IPLMN supporting CAMEL phase 3 shall also support CAMEL phase 2 and CAMEL phase 1, so far as it is applicable to the network entities concerned. For instance, an SGSN has no capability defined for CAMEL phase 2 or CAMEL phase 1.

The CAMEL feature is applicable:

– to mobile originated and mobile terminated call related activities;

– as a CAMEL phase 2 function, to supplementary service invocations;

– as a CAMEL Phase 3 function, 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. The following capabilities are 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-) reach ability and roaming;

– control of GPRS sessions and PDP contexts;

– control of mobile originating SMS through both circuit-switched and packet-switched serving network entities;

– the CSE can be informed about the invocation of the GSM supplementary service CCBS.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 22.078 (R4)	4.5.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 078	4.5.0	Published	09-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15668
T1	T1.3GPP.22.078V450-2002	4.5.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.078 (R4-4.5.0)	4.5.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.078(R4-4.5.0).pdf
TTC	TS-3GA-22.078 (Rel4)v4.5.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22078rel4v450.pdf

10.2.25   TS 22.079 – Support of Optimal Routeing; Stage 1

This Stage 1 description of the first phase of Support of Optimal Routeing (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 routeing 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 Routeing 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 Routeing 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 Routeing is presented in the paragraph for normal procedures. All other scenarios are excluded from Phase 1 of Optimal Routeing.

Note that Optimal Routeing is applicable to national roaming situations that are to calls directed to a mobile subscriber roaming in his/her home country, but registered in a PLMN different from his/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
CWTS	CWTS-TSD-CN 22.079 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 079	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13666
T1	T1.3GPP.22.079V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.079 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_079_R4_.zip
TTC	TS-3GA-22.079 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22079rel4v400.pdf

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 Rec. E.164 [19]).

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
CWTS	CWTS-TSD-CN 22.081 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 081	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15669
T1	T1.3GPP.22.081 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.081 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.081(R4-4.1.0).pdf
TTC	TS-3GA-22.081 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22081rel4v410.pdf

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/her actual location, according to the schemes:

1)   National (significant) number;

2)   National (trunk) prefix plus national (significant) number;

3)   International prefix (see Note), 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/her actual location, according to the following scheme:

–   International prefix (see 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 for him/her.

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
CWTS	CWTS-TSD-CN 22.082 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 082	4.2.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15670
T1	T1.3GPP.22.082 V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.082 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.082(R4-4.2.0).pdf
TTC	TS-3GA-22.082 (Rel4)v4.2.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22082rel4v420.pdf

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
CWTS	CWTS-TSD-CN 22.083 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 083	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15671
T1	T1.3GPP.22.083 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.083 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.083(R4-4.1.0).pdf
TTC	TS-3GA-22.083 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22083rel4v410.pdf

10.2.29   TS 22.084 – MultiParty (MPTY) Supplementary Service; Stage 1

The document describes the Supplementary Services belonging to the group MultiParty 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 Supplementary Services MultiParty Supplementary Services consists of one Supplementary Service:

–	MultiParty service.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 22.084 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 084	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15672
T1	T1.3GPP.22.084 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.084 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.084(R4-4.1.0).pdf
TTC	TS-3GA-22.084 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22084rel4v410.pdf

## 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
CWTS	CWTS-TSD-CN 22.085 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 085	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15673
T1	T1.3GPP.22. 085V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.085 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.085(R4-4.1.0).pdf
TTC	TS-3GA-22.085 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22085rel4v410.pdf

## 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
CWTS	CWTS-TSD-CN 22.086 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 086	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13674
T1	T1.3GPP.22.086 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.086 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_086_R4_.zip
TTC	TS-3GA-22.086 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22086rel4v400.pdf

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
CWTS	CWTS-TSD-CN 22.087 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 087	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13678
T1	T1.3GPP.22.087V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.087 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_087_R4_.zip
TTC	TS-3GA-22.087 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22087rel4v400.pdf

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
CWTS	CWTS-TSD-CN 22.088 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 088	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15674
T1	T1.3GPP.22.088 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.088 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.088(R4-4.1.0).pdf
TTC	TS-3GA-22.088 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22088rel4v410.pdf

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
CWTS	CWTS-TSD-CN 22.090 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 090	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13573
T1	T1.3GPP.22.090V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.090 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_090_R4_.zip
TTC	TS-3GA-22.090 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22090rel4v400.pdf

10.2.35 TS 22.091 – Explicit Call Transfer (ECT) Supplementary Service; 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
CWTS	CWTS-TSD-CN 22.091 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 091	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13575
T1	T1.3GPP.22.091 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.091 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_091_R4_.zip
TTC	TS-3GA-22.091 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22091rel4v400.pdf

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 is outside the scope of the document.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 22.093 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 093	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13683
T1	T1.3GPP.22. 093V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.093 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_093_R4_.zip
TTC	TS-3GA-22.093 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22093rel4v400.pdf

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
CWTS	CWTS-TSD-CN 22.094 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 094	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15675
T1	T1.3GPP.22.094V 410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.094 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.094(R4-4.1.0).pdf
TTC	TS-3GA-22.094 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22094rel4v410.pdf

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:

• CNAP: Calling Name Presentation.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 22.096 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 096	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13686
T1	T1.3GPP.22.096V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.096 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_096_R4_.zip
TTC	TS-3GA-22.096 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22096rel4v400.pdf

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
CWTS	CWTS-TSD-CN 22.097 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 097	4.1.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15676
T1	T1.3GPP.22.097 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.097 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.097(R4-4.1.0).pdf
TTC	TS-3GA-22.097 (Rel4)v4.1.0	1	TTC published	28-05-01	http://www.ttc.or.jp/imt2000/ts/ts22097rel4v410.pdf

10.2.40 TS 22.101 – Service aspects; Service principles

This Technical Specification (TS) describes the Service Principles for PLMNs.

3G specifications define integrated personal communications services. The system will support different applications ranging from narrow-band to wide-band 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:

a) To provide a single integrated system in which the user can access services in an easy to use and uniform way in all environments;

b) To allow differentiation between service offerings of various serving networks and home environments;

c)   To provide a wide range of telecommunications 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 hand-held, portable, vehicle-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-T63-22.101V4.6.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22101-460.pdf
CWTS	CWTS-TSD-CN 22.101 (R4)	4.6.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 101	4.6.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15689
T1	T1.3GPP.22.101 V460-2002	4.6.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.101(R4-4.6.0)	4.6.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.101(R4-4.6.0).pdf

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-T63-22.105V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22105-430.pdf
CWTS	CWTS-TSD-CN 22.105 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 105	4.3.0	Published	09-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15690
T1	T1.3GPP.22.105V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.105 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.105(R4-4.3.0).pdf

10.2.42   TS 22.115 – Service Aspects; Charging and billing

The document describes the Service Aspects of charging and billing of the Universal Mobile Telecommunications System (UMTS).

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
CWTS	CWTS-TSD-CN 22.115 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 115	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13602
T1	T1.3GPP.22.115V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.115(R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_115_R4_.zip
TTC	TS-3GA-22.115 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22115rel4v400.pdf

10.2.43   TS 22.121 – Service aspects; The Virtual Home Environment; Stage 1

The document specifies the content of the Stage 1 requirement for realization of VHE.

Virtual Home Environment (VHE) is defined as a concept for Personal Service Environment (PSE) portability across network boundaries and between terminals. The concept of the VHE is such that users are consistently presented with the same personalized features, User Interface customization and services in whatever network and whatever terminal (within the capabilities of the terminal and the network), wherever the user may be located.

A key feature to support VHE is the ability to build services using a standardized application interface.

The OSA requirements in release 99 TS 22.121 has been extracted into separate TS 22.127.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 22.121 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 121	4.1.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13605
T1	T1.3GPP.22.121 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.121 (R4)	4.1.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-22_121_R4_.zip
TTC	TS-3GA-22.121 (Rel4)v4.1.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts22121rel4v410.pdf

10.2.44   TS 22.127 – Service Requirement for the Open Services Access (OSA); Stage 1

This document specifies the Stage 1 requirements for realization of an Open Service Access (OSA).

OSA enables applications to make use of network functionality through an open standardized interface (the OSA API). OSA provides the glue between applications and network functionality. In this way applications implementing the services become independent from the underlying network technology.

Applications that make use of network functionality offered through the OSA interface are not standardized.

OSA is one toolkit, amongst others, that enables certain aspects of the requirements of the Virtual Home Environment (VHE) concept to be realized.

This document is only applicable to OSA release 4. In Release 99 Service requirements are described in the VHE Stage 1 description TS 22.121.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 22.127 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 127	4.4.0	Published	10-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15693
T1	T1.3GPP.22.127V 440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.127 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.127(R4-4.4.0).pdf
TTC	TS-3GA-22.127 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22127rel4v440.pdf

10.2.45   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 multi-mode terminals to handover 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
CWTS	CWTS-TSD-CN 22.129 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 129	4.4.0	Published	15-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15327
T1	T1.3GPP.22.129V 440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.129 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.129(R4-4.4.0).pdf
TTC	TS-3GA-22.129 (Rel4)v4.4.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts22129rel4v440.pdf

10.2.46   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
CWTS	CWTS-TSD-CN 22.135 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 135	4.1.0	Published	09-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16059
T1	T1.3GPP.22.135 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.135 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.135(R4-4.1.0).pdf
TTC	TS-3GA-22.135 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts22135rel4v410.pdf

10.2.47 TS 22.140 – Service aspects; Multimedia Messaging Service; 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.

Additional functionalities not documented in this Technical Specification may implement requirements that are considered outside the scope of this Technical Specification. Such additional functionality may be on a network-wide basis, nation-wide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the 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;

– negotiate different terminal and network MM capabilities;

– notification and acknowledgement of MM related events (e.g., delivery, deletion, ...);

– 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-T63-22.140V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A22140-420.pdf
CWTS	CWTS-TSD-CN 22.140 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 122 140	4.2.0	Published	10-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15700
T1	T1.3GPP.22.140 V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-22.140 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-22.140(R4-4.2.0).pdf

10.3 23-Series – Technical realization

10.3.1 TS 23.002 – Network architecture

The purpose of the document is to present the possible architectures of the mobile system. The document contains a definition of the different functional entities needed to support the mobile service. The configuration of a PLMN is described as well as the organization of the functional entities; the configuration presented is the most general in order to cope with all the possible implementations that can be imagined in the different countries. To illustrate that purpose, some examples of possible configurations are presented. The document contains a brief description of the interfaces involved that shows the principle of the organization considered.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.002 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 002	4.4.0	Published	11-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15328
T1	T1.3GPP.23.002V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.002 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.002(R4-4.4.0).pdf
TTC	TS-3GA-23.002 (Rel4)v4.4.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts23002rel4v440.pdf

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, routeing 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.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.003 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 003	4.3.0	Published	15-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15330
T1	T1.3GPP.23.003V 430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.003 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.003(R4-4.3.0).pdf
TTC	TS-3GA-23.003 (Rel4)v4.3.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts23003rel4v430.pdf

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. The present 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 routeing 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, routeing and security. The necessary procedures needed to restore this SGSN information after a restart is 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
CWTS	CWTS-TSD-CN 23.007 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 007	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13408
T1	T1.3GPP.23.007 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.007(R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_007_R4_.zip
TTC	TS-3GA-23.007 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23007rel4v400.pdf

10.3.4   TS 23.008 – Organization of subscriber data

The document provides details concerning information to be stored in home location registers, visitor location registers and GPRS Support Nodes concerning mobile subscriber.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.008 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 008	4.1.0	Published	03-08-01	http://pda.etsi.org/pda/home.asp?wki_id=14324
T1	T1.3GPP.23.008 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.008(R4)	4.1.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_008_R4_.zip
TTC	TS-3GA-23.008 (Rel4)v4.1.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts23008rel4v410.pdf

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;

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 MSC-B to MSC-A.

iv) Handover between Radio Network Subsystems connected to different 3G_MSCs, this is termed an Inter-3G_MSC handover/relocation. 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_MSC-B);

  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 MSC-B' 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 the TS 08.08 and the 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 the TS 25.413 and the TS 24.008 shall be used on the Iu-interface. If the 3G_MSC in case ii) also supports the A-interface, the TS 08.08 and the 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 08.08 protocol is described in the TS 29.010.

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.

"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.

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. The present 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 the present 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, as 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 hand-over imposes a few limitations on the system. After inter-MSC hand-over:

– Call re-establishment is not supported.

The list of TS 08.08 features supported during and after Inter-MSC handover is given in TS 09.08.

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.

NOTE – The message primitive names used in the SDL diagrams and message flows in the present document do not represent the actual messages specified in the GSM or 3G Stage 3 technical specifications. The primitive names are only intended to be indicative of their use in the present document.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.009 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 23 009	4.3.0	Published	14-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15332
T1	T1.3GPP.23.009V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.009 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.009(R4-4.3.0).pdf
TTC	TS-3GA-23.009 (Rel4)v4.3.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts23009rel4v430.pdf

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 GSM system are realized from a technical point of view.

Description of technical realization for specific supplementary services can be found in 3G TS 23.08x and 23.09x series of Technical Specifications.

All supplementary services may require signalling on the radio path. Signalling procedures and messages used are defined in the 3G TS 24.08x and 24.09x series of Technical Specifications.

For some supplementary services information needs to be transferred between the Home Location Register (HLR), the Visitor Location Register (VLR) and the Mobile services Switching Centre (MSC). Signalling procedures for such information transfer are defined in 3G TS 29.002.

Definitions and descriptions of supplementary services are given in the 3G TS 22.08x and 22.09x series of 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 is not having the subscription.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.011 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 011	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16912
T1	T1.3GPP.23.011V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.011 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_011_R4_.zip
TTC	TS-3GA-23.011 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23011rel4v400.pdf

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 a 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
CWTS	CWTS-TSD-CN 23.012 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 012	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13410
T1	T1.3GPP.23.012V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.012(R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_012_R4_.zip
TTC	TS-3GA-23.012 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23012rel4v400.pdf

10.3.8 TS 23.014 – Support of Dual-Tone Multiple Frequency (DTMF) signalling

The document describes how Dual-Tone Multiple Frequency (DTMF) signals are supported in the GSM system.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.014 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 014	4.0.0	Published	17-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13435
T1	T1.3GPP.23.014V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.014 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_014_R4_.zip
TTC	TS-3GA-23.014 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23014rel4v400.pdf

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
CWTS	CWTS-TSD-CN 23.015 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 015	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16913
T1	T1.3GPP.23.015V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.015 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_015_R4_.zip
TTC	TS-3GA-23.015 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23015rel4v400.pdf

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 scope of this specification. The GPRS context update from the SGSN to the GGSN is out of scope of this specification.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.016 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 016	4.1.0	Published	12-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15725
T1	T1.3GPP.23.016V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.016 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.016(R4-4.1.0).pdf
TTC	TS-3GA-23.016 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts23016rel4v410.pdf

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 routeing (TS 23.079). The use of the Provide Subscriber Information message flow is shown in TS 23.078 and TS 23.079.

The specification of the handling of data calls re-routed to a SIWFS is described in TS 23.054.

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
CWTS	CWTS-TSD-CN 23.018 (R4)	4.6.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 018	4.6.0	Published	12-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15728
T1	T1.3GPP.23.018V460-2002	4.6.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.018 (R4-4.6.0)	4.6.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.018(R4-4.6.0).pdf
TTC	TS-3GA-23.018 (Rel4)v4.6.0	1	TTC published	28-05-01	http://www.ttc.or.jp/imt2000/ts/ts23018rel4v460.pdf

10.3.12   TS 23.032 – Universal Geographical Area Description (GAD)

The document defines an intermediate universal Geographical Area Description that subscriber applications or GSM services can use and the network can convert into an equivalent radio coverage map.

For GSM 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).

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
CWTS	CWTS-TSD-CN 23.032 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 032	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13440
T1	T1.3GPP.23.032 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.032 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_032_R4_.zip
TTC	TS-3GA-23.032 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23032rel4v400.pdf

10.3.13   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. HSCSD utilizes the multislot mechanism, i.e., using multiple traffic channels (/bearers) for the communication. In Iu mode, one bearer can provide all needed data rates, and the multislot mechanism is therefore not needed. The Iu mode aspects concerning HSCSD are described exclusively.

In analogy with ITU-T Rec. I.130 [27] (refer to Annex A) and with reference to ITU-T Rec. Q.65 [34] (Stage 2 of the method for characterization of services supported by an ISDN), 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
CWTS	CWTS-TSD-CN 23.034 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 034	4.0.0	Published	17-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13441
T1	T1.3GPP.23.034V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.034 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_034_R4_.zip
TTC	TS-3GA-23.034 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23034rel4v400.pdf

10.3.14   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 command.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.035 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 035	4.0.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16356
T1	T1.3GPP.23.035V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.035 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.035(R4-4.0.0).pdf

10.3.15   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-T63-23.038V4.4.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23038-440.pdf
CWTS	CWTS-TSD-CN 23.038 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 038	4.4.0	Published	15-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15335
T1	T1.3GPP.23.038 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.038 (R4-4.4.0)	4.4.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.038(R4-4.4.0).zip

10.3.16   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 routeing 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 PLMN's as they see fit.

The required and assumed network service offered to the higher layers is defined in the present document.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-23.040.V4.6.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23040-460.pdf
CWTS	CWTS-TSD-CN 23.040 (R4)	4.6.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 040	4.6.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15731
T1	T1.3GPP.23.040V 460-2002	4.6.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.040 (R4-4.6.0)	4.6.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.040(R4-4.6.0).zip

10.3.17   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 UMTS it defines the interface requirements for the Cell Broadcast Center – 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-T63-23.041V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23041-420.pdf
CWTS	CWTS-TSD-CN 23.041 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 041	4.2.0	Published	17-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15338
T1	T1.3GPP.23.041V 420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.041 (R4-4.2.0)	4.2.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.042(R4-4.0.1).zip

10.3.18 TS 23.042 – Compression algorithm for SMS

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-T63-23.042V4.0.1	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23042-401.zip
CWTS	CWTS-TSD-CN 23.042 (R4)	4.0.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 042	4.0.1	Published	19-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14967
T1	T1.3GPP.23.042V401-2002	4.0.1	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.042 (R4-4.0.1)	4.0.1	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.042(R4-4.0.1).zip

10.3.19 TS 23.048 – Security Mechanisms for the (U)SIM application toolkit; Stage 2

The document specifies the structure of the Secured Packets in a general format and in implementations using Short Message Service Point-to-Point (SMS-PP) and Short Message Service Cell Broadcast (SMS-CB).

Furthermore, the coding is specified for a set of common application commands within the secured packets. This set is a subset of commands specified in TS 51.011 and allows remote management of files on the UICC in conjunction with SMS and the Data Download to UICC feature of TS 31.111.

For UICCs based on TS 43.019, the set of commands used in the remote applet management is defined in the present document. This is based on the Open Platform card management specification. For UICCs based on other technologies, other loading mechanisms may be used.

The document is applicable to the exchange of secured packets between an entity in a 3G or GSM PLMN and an entity in the UICC.

Secured Packets contain application messages to which certain mechanisms according to TS 22.048 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 UICC. 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-T63-23.048V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23048-430.pdf
CWTS	CWTS-TSD-CN 23.048 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 048	4.3.0	Published	12-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15630
T1	T1.3GPP.23.048 V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.048 (R4-4.3.0)	4.3.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.048(R4-4.3.0).zip

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 Rec. I.130 [27] and with reference to ITU-T Rec. Q.65 [34] (Stage 2 of the method for the characterisation of services supported by an ISDN), 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-T63-23.053V4.0.1	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23053-401.pdf
CWTS	CWTS-TSD-CN 23.053 (R4)	4.0.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 053	4.5.0	Published	12-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14933
T1	T1.3GPP.23.053V401-2002	4.0.1	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.053 (R4-4.0.1)	4.0.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.053(R4-4.0.1).pdf

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 devised 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-T63-23.057V4.5.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23057-450.pdf
CWTS	CWTS-TSD-CN 23.057 (R4)	4.5.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 057	4.5.0	Published	08-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15636
T1	T1.3GPP.23.057 V450-2002	4.5.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.057 (R4-4.5.0)	4.5.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.057(R4-4.5.0).zip

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 packet domain, which includes the General Packet Radio Service (GPRS) in GSM and UMTS. ITU-T Rec. I.130 [27] describes a three-stage method for characterization of telecommunication services, and ITU-T Rec. Q.65 [34] defines Stage 2 of the method.

The document does not cover the Access Network functionality. GSM 03.64 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.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.060 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 060	4.4.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15646
T1	T1.3GPP.23.060V 440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.060 (R4-4.4.0)	4.4.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.060(R4-4.4.0).zip
TTC	TS-3GA-23.060 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts23060rel4v440.pdf

10.3.23 TS 23.066 – Support of GSM Mobile Number Portability (MNP); 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 of the document 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
CWTS	CWTS-TSD-CN 23.066 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 066	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16915
T1	T1.3GPP.23.066V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.066 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_066_R4_.zip
TTC	TS-3GA-23.066 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23066rel4v400.pdf

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 Pre-emption 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
CWTS	CWTS-TSD-CN 23.067 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 067	4.1.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16916
T1	T1.3GPP.23.067V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.067 (R4)	4.1.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_067_R4_.zip
TTC	TS-3GA-23.067 (Rel4)v4.1.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts23067rel4v410.pdf

10.3.25 TS 23.072 – Call Deflection 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
CWTS	CWTS-TSD-CN 23.072 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 072	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16917
T1	T1.3GPP.23.072V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.072 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_072_R4_.zip
TTC	TS-3GA-23.072 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23072rel4v400.pdf

10.3.26 TS 23.078 – Customized Applications for Mobile network Enhanced Logic (CAMEL); Phase 3 Stage 2

The document specifies the Stage 2 description for the third 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 GSM 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 specification, 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.

In the third phase the CAMEL feature supports:

– mobile-originated and forwarded calls;

– mobile terminating calls;

– any time interrogation;

– active location information retrieval;

– suppression of announcements;

– announcements, in-band user interaction;

– charging features;

– supplementary service invocation notifications;

– USSD interaction with the gsmSCF;

– North American carrier selection;

– Mobility Management event notifications;

– change of Calling Line Identification Presentation indicator for an MO call to restricted;

– subscribed dialled services;

– serving network dialled services;

– MO SMS;

–	GPRS data transmission;

–	mobility management;

–	notification to CSE of change of subscriber data;

–	any-time modification;

–	any-time interrogation of subscription information;

–	T-BCSM in the VMSC and terminating AoC;

–	interworking with location services;

–	Multiple Subscriber Profile;

–	active location retrieval;

–	call gapping.

Note that CAMEL is not applicable to Emergency Setup (TeleService 12), i.e., in case an Emergency call has been requested the gsmSSF shall not be invoked.

The mechanism described in this standard 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 standard. 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 that 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 that is controlled by the HPLMN.

The specification of operator-specific services is outside the scope of this standard.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.078 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 078	4.4.0	Published	09-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15648
T1	T1.3GPP.23.078 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.078 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.078(R4-4.4.0).pdf
TTC	TS-3GA-23.078 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts23078rel4v440.pdf

### 10.3.27	TS 23.079 – Support of Optimal Routeing (SOR); Technical realization; Stage 2

The document specifies the technical realization of the first phase of the network feature Support of Optimal Routeing (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 routeing described in the first bullet point above with the optimal routeing described in the second bullet point above.

Optimal Routeing of a call is permitted only if all entities involved in handling the call support Optimal Routeing.

Other cases of optimal routeing (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
CWTS	CWTS-TSD-CN 23.079 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 079	4.0.0	Published	12-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13415
T1	T1.3GPP.23.079V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.079 (R4)	4.0.0	Approved	19-12-02	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_079_R4_.zip
TTC	TS-3GA-23.079 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23079rel4v400.pdf

10.3.28   TS 23.081 – Line Identification Supplementary Services; Stage 2

The present 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
CWTS	CWTS-TSD-CN 23.081 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 081	4.0.0	Published	12-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13416
T1	T1.3GPP.23.081V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.081 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_081_R4_.zip
TTC	TS-3GA-23.081 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23081rel4v400.pdf

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 Busy (CFB);

– Call Forwarding on No Reply (CFNR);

– Call Forwarding on Terminal Not Reachable (CFNRc).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.082 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 082	4.2.0	Published	12-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14659
T1	T1.3GPP.23.082V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.082 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.082(R4-4.2.0).pdf
TTC	TS-3GA-23.082 (Rel4)v4.2.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts23082rel4v420.pdf

10.3.30 TS 23.083 – Call Waiting (CW) and Call Hold (HOLD) Supplementary Service; Stage 2

The present 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
CWTS	CWTS-TSD-CN 23.083 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 083	4.3.0	Published	17-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15345
T1	T1.3GPP.23.083V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.083 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.083(R4-4.3.0).pdf
TTC	TS-3GA-23.083 (Rel4)v4.3.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts23083rel4v430.pdf

10.3.31   TS 23.084 – Multiparty (MPTY) Supplementary Service; Stage 2

The document gives the Stage 2 description of the multiparty supplementary services.

Only one multiparty supplementary service has been defined, this is the Multiparty (MPTY) service.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.084 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 084	4.0.0	Published	17-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13451
T1	T1.3GPP.23.084V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.084 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_084_R4_.zip
TTC	TS-3GA-23.084 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23084rel4v400.pdf

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
CWTS	CWTS-TSD-CN 23.085 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 085	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13418
T1	T1.3GPP.23.085V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.085 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_085_R4_.zip
TTC	TS-3GA-23.085 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23085rel4v400.pdf

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
CWTS	CWTS-TSD-CN 23.086 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 086	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13419
T1	T1.3GPP.23.086V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.086 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_086_R4_.zip
TTC	TS-3GA-23.086 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23086rel4v400.pdf

10.3.34   TS 23.087 – User-to-User Signalling (UUS); 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
CWTS	CWTS-TSD-CN 23.087 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 087	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13420
T1	T1.3GPP.23.087V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.087 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_087_R4_.zip
TTC	TS-3GA-23.087 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23087rel4v400.pdf

10.3.35   TS 23.088 – Call Barring (CB) Supplementary Service; 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
CWTS	CWTS-TSD-CN 23.088 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 088	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13421
T1	T1.3GPP.23.088V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.088 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_088_R4_.zip
TTC	TS-3GA-23.088 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23088rel4v400.pdf

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 shows how handling of USSD is carried out independently of the applications.
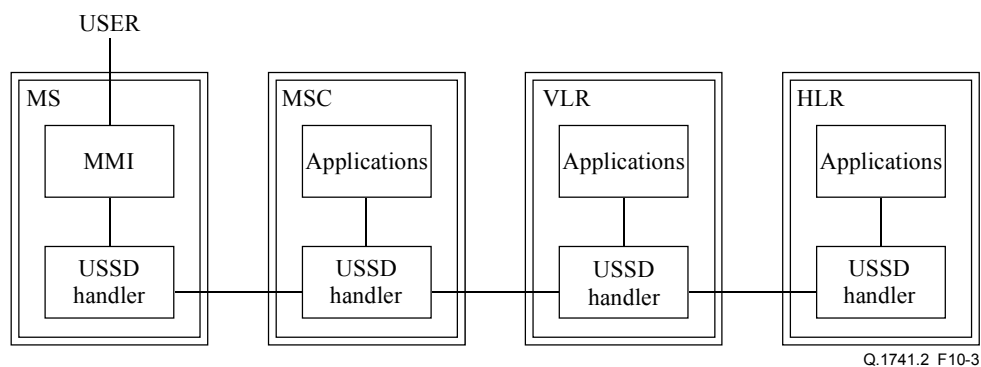
Figure 10-3/Q.1741.2 – Handling of USSD

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, routeing 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
CWTS	CWTS-TSD-CN 23.090 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 090	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13422
T1	T1.3GPP.23.090V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.090 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_090_R4_.zip
TTC	TS-3GA-23.090 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23090rel4v400.pdf

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 the present document.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.091 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 091	4.0.0	Published	17-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13452
T1	T1.3GPP.23.091V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.091 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_091_R4_.zip
TTC	TS-3GA-23.091 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23091rel4v400.pdf

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
CWTS	CWTS-TSD-CN 23.093 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 093	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13423
T1	T1.3GPP.23.093V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.093 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_093_R4_.zip
TTC	TS-3GA-23.093 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23093rel4v400.pdf

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
CWTS	CWTS-TSD-CN 23.094 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 094	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13424
T1	T1.3GPP.23.094 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.094 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_094_R4_.zip
TTC	TS-3GA-23.094 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23094rel4v400.pdf

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:

– Calling name presentation (CNAP).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.096 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 096	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13425
T1	T1.3GPP.23.096V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.096 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_096_R4_.zip
TTC	TS-3GA-23.096 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23096rel4v400.pdf

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
CWTS	CWTS-TSD-CN 23.097 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 097	4.0.0	Published	10-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13426
T1	T1.3GPP.23.097V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.097 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_097_R4_.zip
TTC	TS-3GA-23.097 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23097rel4v400.pdf

10.3.42   TS 23.101 – General UMTS architecture

This Technical Specification defines the basic physical and functional separation of UMTS. The contents of this specification are limited to those features that are common to all UMTS networks independently of their origin. It identifies and names the reference points and functional groupings appearing at this level.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.101 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 101	4.0.0	Published	17-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13453
T1	T1.3GPP.23.101V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.101(R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_101_R4_.zip
TTC	TS-3GA-23.101 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23101rel4v400.pdf

10.3.43   TS 23.107 – Quality of Service, 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-T63-23.107V4.4.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23107-440.pdf
CWTS	CWTS-TSD-CN 23.107 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 107	4.4.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15661
T1	T1.3GPP.23.107 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.107 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.107(R4-4.4.0).pdf

10.3.44   TS 23.110 – UMTS Access Stratum services and functions

The document specifies the services provided by the Access Stratum to the rest of the system. The adopted architecture is given by 3G TS 23.101.

The 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 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
CWTS	CWTS-TSD-CN 23.110 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 110	4.0.0	Published	17-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13456
T1	T1.3GPP.23.110V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.110 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_110_R4_.zip
TTC	TS-3GA-23.110 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23110rel4v400.pdf

10.3.45 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
CWTS	CWTS-TSD-CN 23.116 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 116	4.2.0	Published	17-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15349
T1	T1.3GPP.23.116V 420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.116 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.116(R4-4.2.0).pdf
TTC	TS-3GA-23.116 (Rel4)v4.2.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts23116rel4v420.pdf

10.3.46 TS 23.119 – Gateway Location Register (GLR); Stage 2

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
CWTS	CWTS-TSD-CN 23.119 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 119	4.0.0	Published	19-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13458
T1	T1.3GPP.23.119V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.119 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_119_R4_.zip
TTC	TS-3GA-23.119 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23119rel4v400.pdf

10.3.47 TS 23.122 – Non-Access-Stratum 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.

This Technical Specification outlines how the requirements of the 22-series Technical Specifications (especially GSM 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
CWTS	CWTS-TSD-CN 23.122 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 122	4.1.0	Published	24-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14307
T1	T1.3GPP.23.122V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.122 (R4)	4.1.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_122_R4_.zip
TTC	TS-3GA-23.122 (Rel4)v4.1.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts23122rel4v410.pdf

10.3.48   TS 23.127 – Virtual Home Environment; Stage 2

The document specifies the Stage 2 of the Virtual Home Environment.

Virtual Home Environment (VHE) is defined as a concept for Personal Service Environment (PSE) portability across network boundaries and between terminals. The concept of VHE is such that users are consistently presented with the same personalized features, User Interface customization and services in whatever network and whatever terminal (within the capabilities of the terminal and the network), wherever the user may be located.

For Release 4, e.g., CAMEL, MExE, OSA and USAT are considered the mechanisms supporting the VHE concept.

Stage 2 specifications for CAMEL, MExE and USAT are addressed in other TS documents. However, there is no separate Stage 2 specification document for OSA. Therefore, the specification addresses Stage 2 aspects for OSA.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.127 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 127	4.3.0	Published	18-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15662
T1	T1.3GPP.23.127V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.127 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.127(R4-4.3.0).pdf
TTC	TS-3GA-23.127 (Rel4)v4.3.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts23127rel4v430.pdf

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
CWTS	CWTS-TSD-CN 23.135 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 135	4.0.0	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16210
T1	T1.3GPP.23.135V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.135 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_135_R4_.zip
TTC	TS-3GA-23.135 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23135rel4v400.pdf

10.3.50   TS 23.140 – Multimedia Messaging Service (MMS); Functional description; Stage 2

The document defines the Stage 2 and Stage 3 description of the non-real time Multimedia Messaging Service, MMS. 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 non real-time Multimedia Messaging Service, MMS, which are sufficient to provide a basic service.

MMS uses a number of technologies to realize the requirements of the Stage 1 description (3G TS 22.140). The document describes how the service requirements are realized with the selected technologies. As far as possible existing protocols (e.g., WAP, SMTP, ESMTP as transfer protocols; lower layers to provide push, pull, notification) and existing message formats (e.g., SMIL, MIME) shall be used for the realization of the Multimedia Messaging Service.

This specification serves as a foundation for the development of MMS.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-23.140V4.6.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23140-460.pdf
CWTS	CWTS-TSD-CN 23.140 (R4)	4.6.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 140	4.6.0	Published	19-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15678
T1	T1.3GPP.23.140V 460-2002	4.6.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.140 (R4-4.6.0)	4.6.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.140(R4-4.6.0).zip

10.3.51 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 Rec. V.25 *bis* [54] is outdated. References to V.25 *bis* procedures need to be replaced by corresponding procedures based on ITU-T Rec. V.250 and TS 27.007.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 23.146 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 146	4.1.0	Published	25-10-01	http://pda.etsi.org/pda/home.asp?wki_id=11516
T1	T1.3GPP.23.146V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.146(R4)	4.1.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_146_R4_.zip
TTC	TS-3GA-23.146 (Rel4)v4.1.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts23146rel4v410.pdf

10.3.52 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
CWTS	CWTS-TSD-CN 23.153 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 153	4.4.0	Published	17-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15351
T1	T1.3GPP.23.153 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.153 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.153(R4-4.4.0).pdf
TTC	TS-3GA-23.153 (Rel4)v4.4.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts23153rel4v440.pdf

10.3.53 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 Rec. H.248 [22] (which is specified in ITU-T Rec. H.248 [22]). 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.
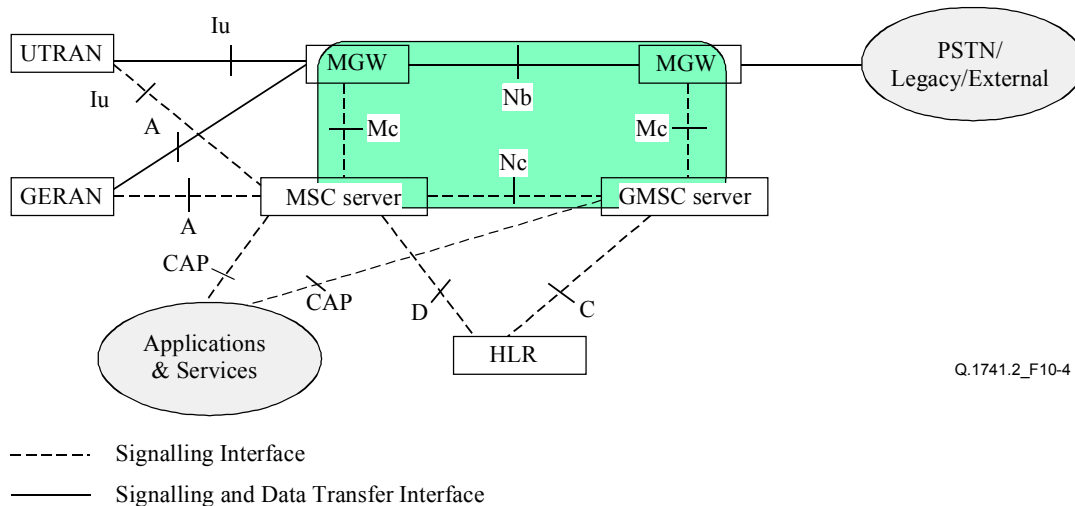
Figure 10-4/Q.1741.2 – CS core network logical architecture

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
CWTS	CWTS-TSD-CN 23.205 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 205	4.5.0	Published	01-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16407
T1	T1.3GPP.23.205V 440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.205 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.205(R4-4.4.0).pdf
TTC	TS-3GA-23.205 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts23205rel4v440.pdf

10.3.54 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
CWTS	CWTS-TSD-CN 23.221 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 221	4.1.0	Published	26-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14456
T1	T1.3GPP.23.221V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.221 (R4)	4.1.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/TTAE_3G-23_221_R4_.zip
TTC	TS-3GA-23.221 (Rel4)v4.1.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts23221rel4v410.pdf

10.3.55 TS 23.227 – Application and user interaction in the UE; Principles and specific requirements

This Technical Specification defines the principles for scheduling resources between applications in different application execution environment (e.g., MExE, USAT, etc.) and internal and external peripherals (e.g., infra-red, Bluetooth, USIM, radio interface, MMI, memory, etc.).

This specification is divided in two parts: Definitions of a framework for event handling, and some specific issues.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-23.227V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A23227-420.pdf
CWTS	CWTS-TSD-CN 23.227 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 227	4.2.0	Published	09-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15683
T1	T1.3GPP.23.227V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.227 (R4-4.2.0)	4.2.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.227(R4-4.2.0).zip

10.3.56 TS 23.271 – Functional Stage 2 description of location services

The document specifies the 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 the present 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
CWTS	CWTS-TSD-CN 23.271 (R4)	4.5.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 123 271	4.6.0	Published	24-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16414
T1	T1.3GPP.23.271V450-2002	4.5.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-23.271 (R4-4.5.0)	4.5.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-23.271(R4-4.5.0).pdf
TTC	TS-3GA-23.271 (Rel4)v4.5.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts23271rel4v450.pdf

10.4   24-Series – Signalling protocols (User Equipment-Core 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 UE-UTRAN (in 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 UE-UTRAN (in Iu mode) interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.002 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 002	4.0.0	Published	19-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13492
T1	T1.3GPP.24.002V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.002 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.002(R4-4.0.0).pdf
TTC	TS-3GA-24.002 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24002rel4v400.pdf

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 sub layers are distributed by use of abstract service primitives. But only externally observable behaviour resulting from the description is normatively prescribed by the present 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
CWTS	CWTS-TSD-CN 24.008 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 008	4.2.0	Published	02-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16474
T1	T1.3GPP.24.008V 460-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.008 (R4-4.6.0)	4.1.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.007(R4-4.6.0).zip
TTC	TS-3GA-24.008 (Rel4)v4.6.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts24008rel4v460.pdf

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
CWTS	CWTS-TSD-CN 24.008 (R4)	4.6.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 008	4.7.0	Published	02-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16474
T1	T1.3GPP.24.008V 460-2002	4.6.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.008 (R4-4.6.0)	4.6.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.008(R4-4.6.0).zip
TTC	TS-3GA-24.008 (Rel4)v4.6.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts24008rel4v460.pdf

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 are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

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 in the TS 22.08x and 22.09x series.

Technical realization of supplementary services is described in TS 23.011 and in the 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.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.010 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 010	4.2.0	Published	15-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15363
T1	T1.3GPP.24.010V 420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.010 (R4-4.2.0)	4.2.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.010(R4-4.2.0).zip
TTC	TS-3GA-24.010 (Rel4)v4.2.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts24010rel4v420.pdf

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 (SM-RL) for both circuit switched in A/Gb mode and GPRS.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.011 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 011	4.1.1	Published	17-07-02	http://pda.etsi.org/pda/home.asp?wki_id=17050
T1	T1.3GPP.24.011V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.011 (R4-4.1.0)	4.1.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.011(R4-4.1.0).zip
TTC	TS-3GA-24.011 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts24011rel4v410.pdf

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 (ISO/IEC 7498) [16]. It is based on ideas contained in ISO/IEC 3309 [14], ISO/IEC 4335 [15] and ISO/IEC 7809 [17] (HDLC of ISO) as well as ITU-T Rec. X.25 [61] and ITU-T Recs Q.92x [35]-[38] (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 Rec. X.212 │ ISO/IEC 8886) [18].

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);

−	X.25 LAP-B [61].

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 29.006 and TS 29.007.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.022 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 022	4.0.0	Published	19-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13499
T1	T1.3GPP.24.022 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.022 (R4-4.0.0)	4.0.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.022(R4-4.0.0).zip
TTC	TS-3GA-24.022 (Rel4)v4.0.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts24022rel4v400.pdf

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 domains.

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
CWTS	CWTS-TSD-CN 24.030 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 030	4.2.0	Published	15-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15365
T1	T1.3GPP.24.030V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.030 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.030(R4-4.2.0).pdf
TTC	TS-3GA-24.030 (Rel4)v4.2.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts24030rel4v420.pdf

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 are administrative matters 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 in the TS 22.08x and 22.09x series. TS 22.067 is related specially to eMLPP.

Technical realization of supplementary services is described in TS 23.011 and in the TS 23.08x and 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 procedure for Radio Resource management at layer 3 radio interface is defined in GSM 04.18 (for GSM) and TS 25.331 (for UMTS).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.067 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 067	4.1.0	Published	24-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14341
T1	T1.3GPP.24.067V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.067 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.067(R4-4.1.0).pdf
TTC	TS-3GA-24.067 (Rel4)v4.1.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts24067rel4v410.pdf

10.4.9 TS 24.072 – Call Deflection 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 GSM 04.02) for normal operation of Call Deflection (CD) supplementary service. Provision and withdrawal of supplementary services are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.072 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 072	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16918
T1	T1.3GPP.24.072V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.072 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.072(R4-4.0.0).pdf
TTC	TS-3GA-24.072 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24072rel4v400.pdf

10.4.10 TS 24.080 – Mobile radio Layer 3 supplementary service specification; Formats and coding

The document contains the coding of information necessary for 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 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
CWTS	CWTS-TSD-CN 24.080 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 080	4.3.0	Published	02-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16482
T1	T1.3GPP.24.080V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.080 (R4-4.2.0)	4.2.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.080(R4-4.2.0).zip
TTC	TS-3GA-24.080 (Rel4)v4.2.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts24080rel4v420.pdf

10.4.11 TS 24.081 – Line identification supplementary service; 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 are administrative matters 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 in the 3G TS 22.08x and 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 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 the present 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
CWTS	CWTS-TSD-CN 24.081 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 081	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16919
T1	T1.3GPP.24.081V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.081 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.081(R4-4.0.0).pdf
TTC	TS-3GA-24.081 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24081rel4v400.pdf

10.4.12   TS 24.082 – Call forwarding supplementary service; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in GSM 04.02) for normal operation, registration, erasure, activation, deactivation, interrogation and network invocation of call offering supplementary services. Provision and withdrawal of supplementary services are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In GSM 04.10, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

GSM 04.80 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in GSM 02.04 and in the GSM 02.8x and GSM 02.9x series. GSM 02.82 is related specially to call offering supplementary services.

Technical realization of supplementary services is described in GSM 03.11 and in the GSM 03.8x and GSM 03.9x series. GSM 03.82 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 GSM 04.07 and GSM 04.08.

The following supplementary services belong to the call offering supplementary services and are described in the present document:

−   Call forwarding unconditional (CFU);

−   Call forwarding busy (CFB);

−   Call forwarding on no reply (CFNR);

−   Call forwarding on terminal not reachable (CFNRc).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.082 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 082	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16920
T1	T1.3GPP.24.082V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.082 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.082(R4-4.0.0).pdf
TTC	TS-3GA-24.082 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24082rel4v400.pdf

10.4.13   TS 24.083 – Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 3

The document specifies the procedures used at the radio interface (Reference point Um as defined in GSM 04.02) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call completion supplementary services. Provision and withdrawal of supplementary services are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In GSM 04.10 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

GSM 04.80 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in GSM 02.04 and in the GSM 02.8x and GSM 02.9x series. GSM 02.83 is related specially to call completion supplementary services.

Technical realization of supplementary services is described in GSM 03.11 and in the GSM 03.8x and GSM 03.9x series.

GSM 03.83 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 GSM 04.07 and GSM 04.08.

The following supplementary services belong to the call completion supplementary services and are described in the present document:

–   Call waiting (CW);
–   Call hold (HOLD).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.083 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 083	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16921
T1	T1.3GPP.24.083V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.083 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.083(R4-4.0.0).pdf
TTC	TS-3GA-24.083 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24083rel4v400.pdf

10.4.14 TS 24.084 – MultiParty (MPTY) supplementary service; Stage 3

The document specifies the procedures used at the radio interface (Reference point Um as defined in GSM 04.02) for normal operation and invocation of MultiParty supplementary services.

In GSM 04.10 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

GSM 04.80 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in GSM 02.04 and in the GSM 02.8x and GSM 02.9x series.

GSM 02.84 is related specially to MultiParty supplementary services.

Technical realization of supplementary services is described in GSM 03.11 and in the GSM 03.8x and GSM 03.9x series.

GSM 03.84 is related specially to MultiParty supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in GSM 04.07 and GSM 04.08.

The following supplementary service belongs to the MultiParty supplementary services and is described in the present document:

– MultiParty service (MPTY).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.084 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 084	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16922
T1	T1.3GPP.24.084V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.084 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.084(R4-4.0.0).pdf
TTC	TS-3GA-24.084 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24084rel4v400.pdf

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 GSM 04.02) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of community of interest supplementary services. The provision and withdrawal of supplementary services are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In GSM 04.10, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

GSM 04.80 specifies the formats coding for the supplementary services.

Definitions and descriptions of supplementary services are given in GSM 02.04 and in the GSM 02.8x and GSM 02.9x series. GSM 02.85 is related to the community of interest supplementary services.

Technical realization of supplementary services is described in technical specifications GSM 03.11 and in the GSM 03.8x and 03.9x series. GSM 03.85 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 GSM 04.07 and GSM 04.08.

Signalling interworking for supplementary services between GSM 09.02 and GSM 04.08 and between GSM 09.02 and GSM 04.80 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
CWTS	CWTS-TSD-CN 24.085 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 085	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16923
T1	T1.3GPP.24.085V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.085 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.085(R4-4.0.0).pdf
TTC	TS-3GA-24.085 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24085rel4v400.pdf

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 GSM 04.02) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of charging supplementary services. The provision and withdrawal of supplementary services are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In GSM 04.10 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

GSM 04.80 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in GSM 02.04 and in the GSM 02.8x and GSM 02.9x series. GSM 02.24 and 02.86 are related to the charging supplementary services.

Technical realization of supplementary services is described in GSM 03.11 and in the GSM 03.8x and GSM 03.9x series. GSM 03.86 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 GSM 04.07 and GSM 04.08.

The following supplementary services belong to the charging supplementary services and are described in the present document:

– Advice of Charge (Information) (AoCI);

– Advice of Charge (Charging) (AoCC).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.086 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 086	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16924
T1	T1.3GPP.24.086 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.086 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.086(R4-4.0.0).pdf
TTC	TS-3GA-24.086 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24086rel4v400.pdf

10.4.17 TS 24.087 – User-to-User Signalling (UUS); 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
CWTS	CWTS-TSD-CN 24.087 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 087	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16925
T1	T1.3GPP.24.087V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.087 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.087(R4-4.0.0).pdf
TTC	TS-3GA-24.087 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24087rel4v400.pdf

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 GSM 04.02) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call barring supplementary services. Provision and withdrawal of supplementary services are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In GSM 04.10 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

GSM 04.80 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in GSM 02.04 and in the GSM 02.8x and GSM 02.9x series.

Technical realization of supplementary services is described in GSM 03.11 and in the GSM 03.8x and GSM 03.9x series.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in GSM 04.07 and GSM 04.08.

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
CWTS	CWTS-TSD-CN 24.088 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 088	4.0.1	Published	25-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16926
T1	T1.3GPP.24.088V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.088 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.088(R4-4.0.0).pdf
TTC	TS-3GA-24.088 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24088rel4v400.pdf

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
CWTS	CWTS-TSD-CN 24.090 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 090	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16927
T1	T1.3GPP.24.090V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.090 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.090(R4-4.0.0).pdf
TTC	TS-3GA-24.090 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24090rel4v400.pdf

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 GSM 04.02) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call transfer supplementary services. Provision and withdrawal of supplementary services are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In GSM 04.10, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

GSM 04.80 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in GSM 02.04 and in the GSM 02.8x and GSM 02.9x series. GSM 02.91 is related specifically to call transfer supplementary services.

The technical realization of supplementary services is described in GSM 03.11 and in the GSM 03.8x and GSM 03.9x series. GSM 03.91 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 GSM 04.07 and GSM 04.08.

The following supplementary services belong to the call transfer supplementary services and are described in the present document:

–   Explicit Call Transfer (ECT).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.091 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.ht m
ETSI	TS 124 091	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?w ki_id=16928
T1	T1.3GPP.24.091V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/s earch.asp?committee=S24
TTA	TTAE.3G-24.091 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/st nfile/TTAE.3G-24.091(R4-4.0.0).pdf
TTC	TS-3GA-24.091 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts2 4091rel4v400.pdf

10.4.21   TS 24.093 – Call Completion 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 GSM 04.02) for normal operation, activation, deactivation, invocation and interrogation of the completion of calls to busy subscriber supplementary services. Provision and withdrawal of supplementary services are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In GSM 04.10, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

GSM 04.80 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in GSM 02.04 and in the GSM 02.8x and GSM 02.9x series. Technical specification GSM 02.93 is related specifically to the Completion of Calls to Busy Subscriber supplementary service.

The technical realization of supplementary services is described in technical specifications GSM 03.11 and in the GSM 03.8x and 03.9x series. GSM 03.93 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 GSM 04.07 and GSM 04.08.

The following supplementary services belong to the call completion supplementary services and are described in the present document:

–   Completion of Calls to Busy Subscriber (CCBS).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.093 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.h tm
ETSI	TS 124 093	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp? wki_id=16929
T1	T1.3GPP.24.093V4 00-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/ search.asp?committee=S24
TTA	TTAE.3G-24.093(R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/s tnfile/TTAE.3G-24.093(R4-4.0.0).pdf
TTC	TS-3GA-24.093(Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts2 4093rel4v400.pdf

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 are administrative matters between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In GSM 04.10 the general aspects of the specification of supplementary services at the layer 3 radio interface are given. GSM 04.80 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in GSM 02.04 and in the GSM 02.8x and 02.9x series. GSM 02.96 is related specially to name identification supplementary services.

Technical realization of supplementary services is described in GSM 03.11 and in the GSM 03.8x and 03.9x series. Technical specification GSM 03.96 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 GSM 04.07 and GSM 04.08.

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
CWTS	CWTS-TSD-CN 24.096 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 096	4.0.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16930
T1	T1.3GPP.24.096V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.096 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.096(R4-4.0.0).pdf
TTC	TS-3GA-24.096 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts24096rel4v400.pdf

10.4.23 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 are administrative matters between the mobile subscriber and the service provider and cause 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, in the 3G TS 22.08x and 3G TS 22.09x series and in 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, in the 3G TS 23.08x and 23.09x series and in 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 the present document:

–   Multicall (MC).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 24.135 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 124 135	4.1.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16931
T1	T1.3GPP.24.135V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-24.135 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-24.135(R4-4.1.0).pdf
TTC	TS-3GA-24.135 (Rel4)v4.1.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts24135rel4v410.pdf

10.5   26-Series – Codecs (speech, video, etc.)

10.5.1   TS 26.071 – AMR speech Codec; General description

The document is an introduction to the speech processing parts of the narrowband 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-T63-26.071V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26071-400.pdf
CWTS	CWTS-TSD-CN 26.071 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 071	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13603
T1	T1.3GPP.26.071V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.071 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.071(R4-4.0.0).pdf

10.5.2 TS 26.073 – AMR speech Codec; C-source code

The document contains an electronic copy of the ANSI-C code for the Adaptive Multi-Rate codec. The ANSI-C 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-T63-26.073V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26073-410.pdf
CWTS	CWTS-TSD-CN 26.073 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 073	4.1.0	Published	18-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15235
T1	T1.3GPP.26.073V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.073 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.073(R4-4.1.0).pdf

10.5.3 TS 26.074 – 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-T63-26.074V4.0.1	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26074-401.pdf
CWTS	CWTS-TSD-CN 26.074 (R4)	4.0.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 074	4.0.1	Published	23-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14297
T1	T1.3GPP.26.074V401-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.074 (R4-4.0.1)	4.0.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.074(R4-4.0.1).pdf

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-T63-26.077V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26077-400.pdf
CWTS	CWTS-TSD-CN 26.077 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 077	4.0.0	Published	04-05-01	http://pda.etsi.org/pda/home.asp?wki_id=13868
T1	T1.3GPP.26.077 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.077(R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.077(R4-4.0.0).pdf

10.5.5 TS 26.090 – AMR speech Codec; Transcoding functions

The document describes the detailed mapping from input blocks of 160 speech samples in 13-bit 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 (ANSI-C code) of these requirements contained in 3G TS 26.073, the description in 3G TS 26.073 will prevail. The ANSI-C code is not described in the present document; see 3G TS 26.073 for a description of the ANSI-C 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-T63-25.090V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26090-400.pdf
CWTS	CWTS-TSD-CN 26.090 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htmh
ETSI	TS 126 090	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13620
T1	T1.3GPP.26.090 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.090 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.090(R4-4.0.0).pdf

10.5.6 TS 26.091 – 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 Equipment (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-T63-26.091V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26091-400.pdf
CWTS	CWTS-TSD-CN 26.091 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 091	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13621
T1	T1.3GPP.26.091V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.091(R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.091(R4-4.0.0).pdf

10.5.7 TS 26.092 – AMR speech Codec; comfort noise for AMR speech traffic channels

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 the present 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-T63-26.092V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26092-400.pdf
CWTS	CWTS-TSD-CN 26.092 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 092	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13622
T1	T1.3GPP.26.092V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.092(R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.092(R4-4.0.0).pdf

10.5.8   TS 26.093 – 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 Type GSM_AMR for the GSM system. 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-T63-26.093V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26093-400.pdf
CWTS	CWTS-TSD-CN 26.093 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 093	4.0.0	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16215
T1	T1.3GPP.26.093V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.093 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.093(R4-4.0.0).pdf

10.5.9   TS 26.094 – AMR Speech Codec; Voice Activity Detector for AMR speech traffic channels

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	Statushr	Issued date	Location
ARIB	ARIB STD-T63-26.094V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26094-400.pdf
CWTS	CWTS-TSD-CN 26.094 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 094	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13623
T1	T1.3GPP.26.094V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.094 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.094(R4-4.0.0).pdf

10.5.10   TS 26.101 – 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-T63-26.101V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26101-420.pdf
CWTS	CWTS-TSD-CN 26.101 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 101	4.2.0	Published	18-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15835
T1	T1.3GPP.26.101V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.101 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.101(R4-4.2.0).pdf

10.5.11   TS 26.102 – AMR speech Codec; Interface to Iu and Uu

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 PCM 64 kbit/s (ITU-T Rec. G.711 [20]) coded speech to the Nb Interface.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-26.102V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26102-400.pdf
CWTS	CWTS-TSD-CN 26.102 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 102	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13626
T1	T1.3GPP.26.102V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.102(R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.102(R4-4.0.0).pdf

10.5.12   TS 26.103 – Codec lists

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-T63-26.103V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26103-420.pdf
CWTS	CWTS-TSD-CN 26.103 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 103	4.3.0	Published	11-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16633
T1	T1.3GPP.26.103V 420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.103 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.103(R4-4.2.0).pdf

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., H.323 [23]) 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 ANSI-C 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-T63-26.104V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26104-430.pdf
CWTS	CWTS-TSD-CN 26.104 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 104	4.3.0	Published	18-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16082
T1	T1.3GPP.26.104V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.104 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.104(R4-4.3.0).pdf

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-T63-26.110V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26110-410.pdf
CWTS	CWTS-TSD-CN 26.110 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 110	4.1.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13629
T1	T1.3GPP.26.110V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.110 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.110(R4-4.1.0).pdf

10.5.15 TS 26.111 – Codec for circuit-switched multimedia telephony service; Modifications to ITU-T Rec. H.324

Annex C/H.324 [24] 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-T63-26.111V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26111-400.pdf
CWTS	CWTS-TSD-CN 26.111 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 111	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13630
T1	T1.3GPP.26.111V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.111 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.111(R4-4.0.0).pdf

10.5.16   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-T63-26.115V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26115-400.pdf
CWTS	CWTS-TSD-CN 26.115 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 115	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13631
T1	T1.3GPP.26.115V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.115 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.115(R4-4.0.0).pdf

10.5.17   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-T63-26.131V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26131-410.pdf
CWTS	CWTS-TSD-CN 26.131 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 131	4.1.0	Published	19-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14677
T1	T1.3GPP.26.131V 410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.131 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.131(R4-4.1.0).pdf

10.5.18   TS 26.132 – Narrow-band (3.1 kHz) speech and video telephony terminal acoustic test specification

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 test methods to allow the minimum performance requirements for the acoustic characteristics of 3G terminals when used to provide narrow-band or wideband telephony to be assessed.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-26.132V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26132-420.pdf
CWTS	CWTS-TSD-CN 26.132 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 132	4.2.0	Published	18-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16084
T1	T1.3GPP.26.132V 420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.132 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.132(R4-4.2.0).pdf

10.5.19   TS 26.233 – End-to-end transparent streaming service; 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.V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26233-420.pdf
CWTS	CWTS-TSD-CN 26.233 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 233	4.2.0	Published	18-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16099
T1	T1.3GPP.26.233V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.233 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.233(R4-4.2.0).pdf

10.5.20   TS 26.234 – End-to-end transparent streaming service; Protocols and codecs

The document specifies the protocols and codecs for the PSS within the 3G system. Protocols for control signalling, scene description, media transport and media encapsulations are specified. Codecs for speech, audio, video, still images, bitmap graphics, and text are specified.

The document is applicable to IP-based packet-switched networks.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-26.234V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A26234-430.pdf
CWTS	CWTS-TSD-CN 26.234 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 126 234	4.4.0	Published	11-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16636
T1	T1.3GPP.26.234V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-26.234(R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-26.234(R4-4.3.0).pdf

10.6   27-Series – Data

10.6.1   TS 27.001 – General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)

The document is based on the principles of terminal adaptor functions presented in the ITU-T I-series Recommendations (ITU-T Recs I.460 to I.463 [30]-[33]).

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 this document is to outline the functions needed for the terminal adaptation.

In TS 22.002, the bearer services are described. The general network configuration is described in TS 23.002 and the GSM PLMN access reference configuration is defined in TS 04.02. The various connection types used in the GSM PLMN are presented in TS 43.010. Terminology used in the present document is presented in TS 01.04, TR 21.905 and TS 29.990. For support of data services between a PLMN and other networks, see TS 29.007.

The document is valid for a 2nd generation PLMN (GSM) as well as for a 3rd generation PLMN (UMTS). If text applies only for one of these systems it is explicitly mentioned by using the terms "GSM" and "UMTS". 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
CWTS	CWTS-TSD-CN 27.001 (R4)	4.7.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 127 001	4.7.0	Published	03-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15836
T1	T1.3GPP.27.001V470-2002	4.7.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-27.001 (R4-4.7.0)	4.7.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-27.001(R4-4.7.0).pdf
TTC	TS-3GA-27.001 (Rel4)v4.7.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts27001rel4v470.pdf

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 (TAF) 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.

The present document covers support of these services for the following interfaces and procedures:

i)   ITU-T Rec. V.14 [49] procedures;

ii)   ITU-T Rec. V.21 [50] DTE/DCE interface;

iii)   ITU-T Rec. V.22 *bis* [52] DTE/DCE interface;

iv)   ITU-T Rec. V.32 [57] DTE/DCE procedures;

v)   ITU-T Rec. I.420 [29] S interface;

vi)   ITU-T Rec. V.250 [59] 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
CWTS	CWTS-TSD-CN 27.002 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 127 002	4.0.0	Published	03-08-01	http://pda.etsi.org/pda/home.asp?wki_id=14101
T1	T1.3GPP.27.002V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-27.002 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-27.002(R4-4.0.0).pdf
TTC	TS-3GA-27.002 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts27002rel4v400.pdf

10.6.3 TS 27.003 – Terminal Adaptation Functions (TAF) for services using synchronous bearer capabilities

The document defines Terminal Adaptation Functions (TAF) 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 the present 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. The present document covers support of synchronous data services (see TS 22.002) for the following interfaces and procedures:

– ITU-T Rec. V.22 [51] DTE/DCE interface;

– ITU-T Rec. V.22 *bis* [52] DTE/DCE interface;

– ITU-T Rec. V.26 *ter* [56] DTE/DCE interface;

– ITU-T Rec. X.21 *bis* [60] DTE/DCE interface;

– ITU-T Rec. X.32 [62] procedure;

– ITU-T Rec. V.25 *bis* [54] procedure.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 27.003 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 127 003	4.1.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13646
T1	T1.3GPP.27.003V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-27.003 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-27.003(R4-4.1.0).pdf
TTC	TS-3GA-27.003 (Rel4)v4.1.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts27003rel4v410.pdf

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 Rec. V.25 *ter* [55]. 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 10-5.

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 V.25 *ter* [55] "command" state or "on-line command" state.

The "Text" and "PDU" modes are not in themselves V.25 *ter* [55] states but are simply sets of commands that will operate in either the V.25 *ter* [55] "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 V.25 *ter* [55] "command" state or "on-line command" state. Whilst in the V.25 *ter* [55] "command" state, the MS is available to handle incoming and outgoing calls such as Data or Facsimile.
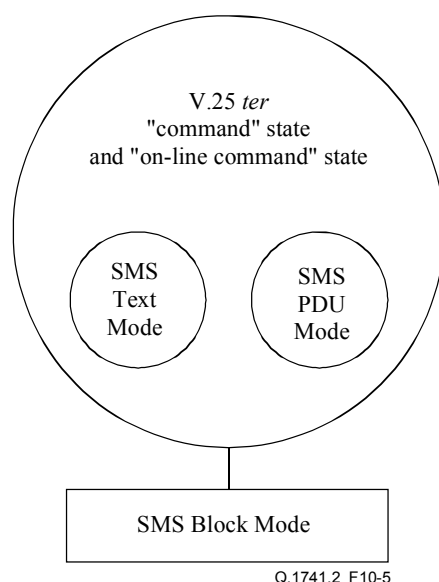
Figure 10-5/Q.1741.2 – Block, text and PDU modes

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-T63-27.005V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A27005-410.pdf
CWTS	CWTS-TSD-CN 27.005 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 127 005	4.2.0	Published	05-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16640
T1	T1.3GPP.27.005 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-27.005 (R4-4.1.0)	4.1.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-27.005(R4-4.1.0).zip

10.6.5 TS 27.007 – AT command set for 3G 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 Rec. V.25 *ter* [55]. The present document has also the syntax details used to construct these extended GSM/UMTS commands. Commands from ITU-T Rec. V.25 *ter* [55] and existing digital cellular standards (TIA IS-99 [63] and TIA IS-135 [64]) are used whenever applicable. Some of the new commands are defined such way that they can be easily applied to MT of networks other than GSM/UMTS. ITU-T Recs T.31 [47] and T.32 [48] 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. The present document assumes an abstract architecture comprising a TE (e.g., a computer) and a MT interfaced by a TA (see Figure 10-6). 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.
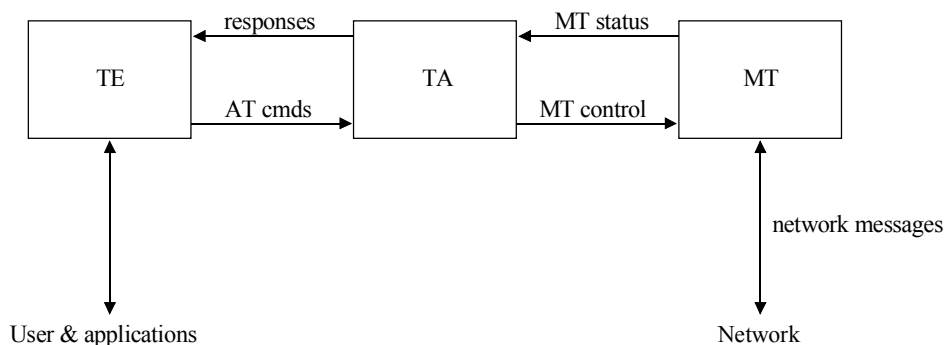
Q.1741.2_F10-6

Figure 10-6/Q.1741.2 – Set-up

The commands described in the present 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 Rec. V.24 [53]) 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 TE-TA 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-617 [65] and ITU-T Rec. V.80 [58].) Interface between TA and MT is dependent on the interface in the MT.

	Document No.	**Version**	**Status**	**Issued date**	**Location**
ARIB	ARIB STD-T63-27.007V4.4.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A27007-440.pdf
CWTS	CWTS-TSD-CN 27.007 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 127 007	4.4.0	Published	18-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15838
T1	T1.3GPP.27.007V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-27.007 (R4-4.4.0)	4.4.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-27.007(R4-4.4.0).zip

10.6.6   TS 27.010 – Terminal Equipment to User Equipment (TE-UE) multiplexer protocol User Equipment (UE)

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-T63-27.010V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A27010-420.pdf
CWTS	CWTS-TSD-CN 27.010 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 127 010	4.2.0	Published	18-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15840
T1	T1.3GPP.27.010V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-27.010 (R4-4.2.0)	4.2.0	Approved	29-05-02	http://www.tta.or.kr/imt2000/TTAE.3G-27.010(R4-4.2.0).zip

10.6.7   TS 27.060 – Packet domain; Mobile Stations (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 the present document and existing TS 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 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 TE-MT 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
CWTS	CWTS-TSD-CN 27.060 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 127 060	4.1.0	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16644
T1	T1.3GPP.27.060V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-27.060 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-27.060(R4-4.0.0).pdf
TTC	TS-3GA-27.060 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts27060rel4v400.pdf

10.6.8 TS 27.103 – Wide Area Network Synchronization

This specification provides a definition of a Wide Area Synchronization protocol. The synchronization protocol is based upon current synchronization industry standards.

The document covers Wide Area Network Synchronization between current and future mobile communication end-user devices, desktop applications and server-based information servers. This is a living document and, as such, it will evaluate new technologies (e.g., XML) for inclusion as they become readily available.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-27.103V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A27103-400.pdf
CWTS	CWTS-TSD-CN 27.103 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 127 103	4.0.0	Published	25-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13655
T1	T1.3GPP.27.103V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-27.103 (R4-4.0.0)	4.0.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-27.103(R4-4.0.0).zip

10.7   28-Series – Signalling protocols (RSS-CN)

10.7.1   TS 28.062 – Inband 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-T63-28.062V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A28062-430.pdf
CWTS	CWTS-TSD-CN 28.062 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 128 062	4.4.0	Published	11-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16648
T1	T1.3GPP.28.062V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-28.062 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-28.062(R4-4.3.0).pdf

10.8 29-Series – Signalling protocols (NSS)

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 (MSs). Signalling System No. 7 specified by ITU-T is used to transfer this information.

The present 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
CWTS	CWTS-TSD-CN 29.002 (R4)	4.7.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 002	4.8.0	Published	05-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16651
T1	T1.3GPP.29.002V470-2002	4.7.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.002 (R4-4.7.0)	4.7.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.002(R4-4.7.0).pdf
TTC	TS-3GA-29.002 (Rel4)v4.7.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29002rel4v470.pdf

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 D-channel signalling.

Within this document, the requirements for voice and non-voice (data) calls are considered separately.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.007 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 007	4.4.0	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16654
T1	T1.3GPP.29.007V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.007 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.007(R4-4.3.0).pdf
TTC	TS-3GA-29.007 (Rel4)v4.3.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts29007rel4v430.pdf

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 – MCS) 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
CWTS	CWTS-TSD-CN 29.010 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 010	4.3.0	Published	02-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16657
T1	T1.3GPP.29.010V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.010 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.010(R4-4.2.0).pdf
TTC	TS-3GA-29.010 (Rel4)v4.2.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts29010rel4v420.pdf

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
CWTS	CWTS-TSD-CN 29.011 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 011	4.0.1	Published	05-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16949
T1	T1.3GPP.29.011V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.011 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.011(R4-4.0.0).pdf
TTC	TS-3GA-29.011 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts29011rel4v400.pdf

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 CCBS-ASE and MAP.

The MAP protocol for CCBS service is specified in GSM 09.02. The ISDN CCBS-ASE protocol is specified in ETS 300 356-18 [13]. 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
CWTS	CWTS-TSD-CN 29.013 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 013	4.0.1	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=17048
T1	T1.3GPP.29.013V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.013 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.013(R4-4.0.0).pdf
TTC	TS-3GA-29.013 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts29013rel4v400.pdf

10.8.6 TS 29.016 – Serving GPRS Support Node SGSN; Visitors 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 routeing between the SGSN and the VLR. The SCCP routeing 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
CWTS	CWTS-TSD-CN 29.016 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 016	4.1.0	Published	05-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16661
T1	T1.3GPP.29.016V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.016 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.016(R4-4.0.0).pdf
TTC	TS-3GA-29.016 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts29016rel4v400.pdf

10.8.7 TS 29.018 – Serving GPRS Support Node SGSN; Visitors Location Register (VLR); Gs interface Layer 3 specification

The document specifies or references procedures used on the Serving GPRS Support Node (SGSN) to Visitors Location Register (VLR) interface for interoperability between GSM circuits-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
CWTS	CWTS-TSD-CN 29.018 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 018	4.4.0	Published	05-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16664
T1	T1.3GPP.29.018V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.018 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.018(R4-4.3.0).pdf
TTC	TS-3GA-29.018 (Rel4)v4.3.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29018rel4v430.pdf

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**
CWTS	CWTS-TSD-CN 29.060 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 060	4.4.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15848
T1	T1.3GPP.29.060V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.060 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.060(R4-4.4.0).pdf
TTC	TS-3GA-29.060 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29060rel4v440.pdf

10.8.9 TS 29.061 – Interworking between the Public Land Mobile Network (PLMN) supporting Packet-Based services and Public Data Networks (PDN)

The document defines the requirements for Packet Domain interworking between:

a)   PLMN and PDN;

b)   PLMN and PLMN.

	Document No.	**Version**	**Status**	**Issued date**	**Location**
CWTS	CWTS-TSD-CN 29.061 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 061	4.5.0	Published	18-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16669
T1	T1.3GPP.29.061V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.061 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.061(R4-4.4.0).pdf
TTC	TS-3GA-29.061 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29061rel4v440.pdf

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 EN 301 140-1 [12]. Descriptions and definitions provided by EN 301 140-1 [12] 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
CWTS	CWTS-TSD-CN 29.078 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 078	4.5.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16671
T1	T1.3GPP.29.078V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.078 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.078(R4-4.4.0).pdf
TTC	TS-3GA-29.078 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29078rel4v440.pdf

10.8.11 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
CWTS	CWTS-TSD-CN 29.108 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 108	4.2.0	Published	10-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16673
T1	T1.3GPP.29.108V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.108 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.108(R4-4.1.0).pdf
TTC	TS-3GA-29.108 (Rel4)v4.1.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts29108rel4v410.pdf

10.8.12 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
CWTS	CWTS-TSD-CN 29.119 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 119	4.0.0	Published	04-05-01	http://pda.etsi.org/pda/home.asp?wki_id=13872
T1	T1.3GPP.29.119V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.119 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.119(R4-4.0.0).pdf
TTC	TS-3GA-29.119 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts29119rel4v400.pdf

10.8.13 TS 29.120 – Mobile Application Part (MAP) specification for Gateway Location Register (GLR); Stage 3

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
CWTS	CWTS-TSD-CN 29.120 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 120	4.0.0	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16228
T1	T1.3GPP.29.120V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.120 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.120(R4-4.0.0).pdf
TTC	TS-3GA-29.120 (Rel4)v4.0.0	1	TTC published	29-05-01	http://www.ttc.or.jp/imt2000/ts/ts29120rel4v400.pdf

10.8.14 TS 29.198-01 – Open Service Access (OSA) Application Programming Interface (API); Part 1: Overview

The document is the first part of the Specification defining the Application Programming Interface (API) for Open Service Access (OSA), and provides an overview of the content and structure of the various parts of this specification, and of the relation to other standards documents.

The OSA specifications define an architecture that enables service application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-01 (R4)	4.3.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-01	4.3.1	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15942
T1	T1.3GPP.29.198-01 V431-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-1 (R4-430)	4.3.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-1(R4-430).pdf
TTC	TS-3GA-29.198-01 (Rel4)v4.3.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts29198-01rel4v430.pdf

10.8.15 TS 29.198-02 – Open Service Access (OSA) Application Programming Interface (API); Part 2: Common data

The document is Part 2 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

The document specifies the Common Data definitions of the OSA. The Common Data definitions contain data-types that are common across the rest of the OSA API.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-02 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-02	4.4.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15853
T1	T1.3GPP.29.198-02 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-2 (R4-440)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-2(R4-440).pdf
TTC	TS-3GA-29.198-02 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29198-02rel4v440.pdf

10.8.16 TS 29.198-03 – Open Service Access (OSA) Application Programming Interface (API); Part 3: Framework

The document is Part 3 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

The document specifies the Framework aspects of the interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-03 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-03	4.5.0	Published	18-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16679
T1	T1.3GPP.29.198-03 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-3 (R4-440)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-3(R4-440).pdf
TTC	TS-3GA-29.198-03 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29198-03rel4v440.pdf

10.8.17 TS 29.198-04 – Open Service Access (OSA) Application Programming Interface (API); Part 4: Call control

The document is Part 4 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

The document specifies the Call Control Service Capability Feature (SCF) aspects of the interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-04 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-04	4.4.0	Published	18-07-02	http://pda.etsi.org/pda/home.asp?wki_id=17035
T1	T1.3GPP.29.198-04 V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-4 (R4-430)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-4(R4-430).pdf
TTC	TS-3GA-29.198-04 (Rel4)v4.3.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29198-04rel4v430.pdf

10.8.18 TS 29.198-05 – Open Service Access (OSA) Application Programming Interface (API); Part 5: Generic user interaction

This document is Part 5 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

The document specifies the User Interaction (UI) Service Capability Feature (SCF) aspects of the interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-05 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-05	4.4.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=17035
T1	T1.3GPP.29.198-05 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-5 (R4-440)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-5(R4-440).pdf
TTC	TS-3GA-29.198-05 hr(Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29198-05rel4v440.pdf

10.8.19 TS 29.198-06 – Open Service Access (OSA) Application Programming Interface (API); Part 6: Mobility

The document is Part 6 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

The document specifies the Mobility Service Capability Feature (SCF) aspects of the interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-06 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-06	4.4.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15857
T1	T1.3GPP.29.198-06 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-6 (R4-440)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-6(R4-440).pdf
TTC	TS-3GA-29.198-06 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29198-06rel4v440.pdf

10.8.20 TS 29.198-07 – Open Service Access (OSA) Application Programming Interface (API); Part 7: Terminal capabilities

The document is part of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

The document specifies the Terminal Capabilities Service Capability Feature (SCF) aspects of the interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-07 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-07	4.4.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15858
T1	T1.3GPP.29.198-07 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-7 (R4-440)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-7(R4-440).pdf
TTC	TS-3GA-29.198-07 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29198-07rel4v440.pdf

10.8.21 TS 29.198-08 – Open Service Access (OSA) Application Programming Interface (API); Part 8: Data session control

The document is Part 8 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

The document specifies the Data Session Control Service Capability Feature (SCF) aspects of the interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-08 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-08	4.4.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15859
T1	T1.3GPP.29.198-08 V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-8 (R4-440)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-8(R4-440).pdf
TTC	TS-3GA-29.198-08 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29198-08rel4v440.pdf

10.8.22 TS 29.198-11 – Open Service Access (OSA) Application Programming Interface (API); Part 11: Account management

The document is Part 11 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

The document specifies the Account Management Service Capability Feature (SCF) aspects of the interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-11 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-11	4.3.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15860
T1	T1.3GPP.29.198-11V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-11(R4-430)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-11(R4-430).pdf
TTC	TS-3GA-29.198-11(Rel4)v4.3.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29198-11rel4v430.pdf

10.8.23   TS 29.198-12 – Open Service Access (OSA) Application Programming Interface (API); Part 12: Charging

The document is Part 12 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e., the OSA APIs. The concepts and the functional architecture for the OSA are contained in TS 23.127. The requirements for OSA are contained in TS 22.127.

The document specifies the Charging Service Capability Feature (SCF) aspects of the interface.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.198-12 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 198-12	4.3.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15861
T1	T1.3GPP.29.198-12V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.198-12(R4-430)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.198-12(R4-430).pdf
TTC	TS-3GA-29.198-12(Rel4)v4.3.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29198-12rel4v430.pdf

10.8.24   TS 29.202 – SS7 signalling transport in Core Network; Stage 3

The document defines the possible protocol architectures for transport of SS7 signalling protocols in the core network.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.202 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 202	4.1.1	Published	04-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16951
T1	T1.3GPP.29.202V 410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.202(R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.202(R4-4.1.0).pdf
TTC	TS-3GA-29.202 (Rel4)v4.1.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts29202rel4v410.pdf

10.8.25 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 the ITU-T Recs Q.1902.x series [41]-[46] "Bearer Independent Call Control" is used as call control protocol in a 3G Bearer Independent CS core network TS 23.205. The ITU-T Recs Q.1902.x series operate between (G)MSC servers. The BICC architecture as described in the ITU-T Recs Q.1902.x series 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 TS 23.205 and TS 23.153.

NOTE – The ITU-T Recs Q.1902.x series can be used in other network architectures than the one defined in TS 23.205.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.205 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 205	4.2.0	Published	19-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14694
T1	T1.3GPP.29.205V 420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.205 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.205(R4-4.2.0).pdf
TTC	TS-3GA-29.205 (Rel4)v4.2.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts29205rel4v420.pdf

10.8.26 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 Rec. H.248 [22]/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 ITU-T Rec. H.248 [22]/MEGACO which are needed to handle 3G specific traffic cases. This is done by using the ITU-T Rec. H.248 [22]/MEGACO standard extension mechanism.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.232 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 232	4.5.0	Published	01-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16700
T1	T1.3GPP.29.232V 440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.232 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.232(R4-4.4.0).pdf
TTC	TS-3GA-29.232 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29232rel4v440.pdf

10.8.27   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. The present document assumes that the implementation of the split of the call control and the bearer transport and control, as specified in TS 23.205; see Figure 10-7. 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.

Signalling Interface

Signalling and Data Transfer Interface
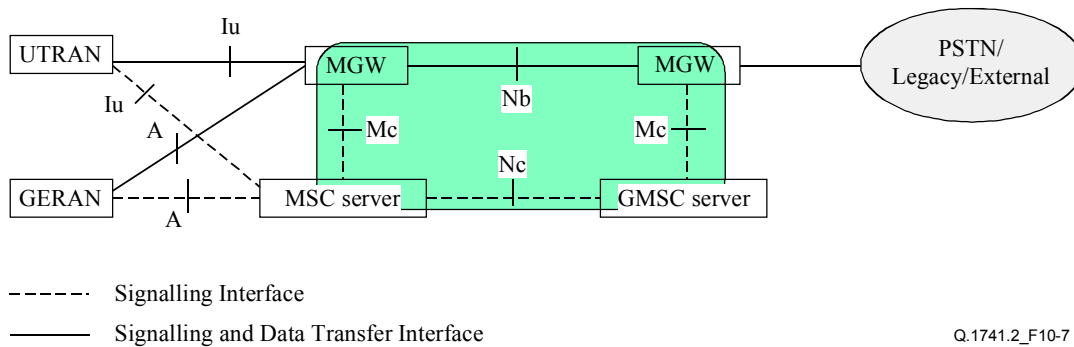
Q.1741.2_F10-7

Figure 10-7/Q.1741.2 – CS core network logical architecture

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.414 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 414	4.4.0	Published	03-04-02	http://pda.etsi.org/pda/home.asp?wki_id=15863
T1	T1.3GPP.29.414V 440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.414 (R4-4.4.0)	4.4.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.414(R4-4.4.0).pdf
TTC	TS-3GA-29.414 (Rel4)v4.4.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts29414rel4v440.pdf

10.8.28   TS 29.415 – 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. The present document assumes the implementation of the split between call control and the bearer transport and control, as specified in TS 23.205, see Figure 10-8. Note that the document does not preclude an implementation of a combined MSC Server and MGW.

------ Signalling Interface

――― Signalling and Data Transfer Interface

Q.1741.2_F10-8
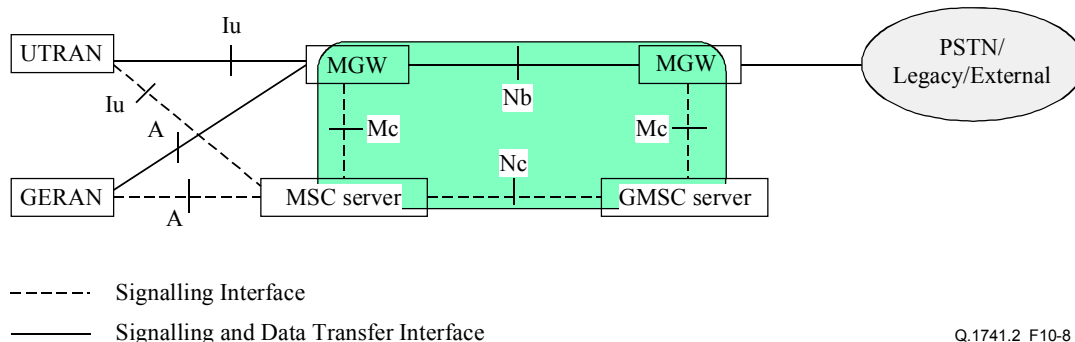
Figure 10-8/Q.1741.2 – CS core network logical architecture

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 29.415 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 129 415	4.2.0	Published	25-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15282
T1	T1.3GPP.29.415V 420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-29.415 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-29.415(R4-4.2.0).pdf
TTC	TS-3GA-29.415 (Rel4)v4.2.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts29415rel4v420.pdf

10.9   31-Series – UIM User Identity Module

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-T63-31.101V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A31101-400.pdf
CWTS	CWTS-TSD-CN 31.101 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 131 101	4.0.0	Published	04-05-01	http://pda.etsi.org/pda/home.asp?wki_id=13886
T1	T1.3GPP.31.101V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-31.101 (R4-4.0.0)	4.0.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-31.101(R4-4.0.0).zip

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-T63-31.102V4.4.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A31102-440.pdf
CWTS	CWTS-TSD-CN 31.102 (R4)	4.4.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 131 102	4.5.0	Published	16-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16712
T1	T1.3GPP.31.102V440-2002	4.4.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-31.102 (R4-4.4.0)	4.4.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-31.102(R4-4.4.0).zip

10.9.3   TS 31.110 – Numbering system for telecommunication IC card applications

The document describes the numbering system for Application IDentifiers (AID) for 3G telecommunication Integrated Circuits (IC) card applications.

The numbering system described in this document provides a means for an application and related services offered by a provider to identify if a given card contains the elements required by its application and related services.

An AID is used to address an application in the card. It consists of a Registered application provider IDentifier (RID) and a Proprietary application Identifier eXtension (PIX).

The present document describes the coding of the PIX.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-31.110V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A31110-410.pdf
CWTS	CWTS-TSD-CN 31.110 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 131 110	4.1.0	Published	25-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15287
T1	T1.3GPP.31.110V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-31.110(R4-4.1.0)	4.1.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-31.110(R4-4.1.0).zip

10.9.4   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-T63-31.111V4.6.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A31111-460.pdf
CWTS	CWTS-TSD-CN 31.111 (R4)	4.6.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 131 111	4.7.0	Published	16-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16716
T1	T1.3GPP.31.111V460-2002	4.6.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-31.111 (R4-4.6.0)	4.6.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-31.111(R4-4.6.0).zip

10.9.5   TS 31.121 – UICC-terminal interface; USIM application test specification

The document provides the UICC (Universal IC Card)-Terminal Interface Conformance Test Specification between the 3rd Generation Terminal and USIM (Universal Subscriber Identity Module) as an application on the UICC and the Terminal for 3G telecom 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.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-31.121V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A31121-400.pdf
CWTS	CWTS-TSD-CN 31.121 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 131 121	4.1.0	Published	24-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16722
T1	T1.3GPP.31.121V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-31.121 (R4-4.0.0)	4.0.0	Approved	29-05-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-31.121(R4-4.0.0).zip

10.10   32-Series – Operation and Maintenance

10.10.1   TS 32.101 – 3G Telecom 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, the present 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 Specification 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
CWTS	CWTS-TSD-CN 32.101 (R4)	4.2.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 101	4.2.1	Published	18-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16005
T1	T1.3GPP.32.101V421-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.101 (R4-4.2.1)	4.2.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.101(R4-4.2.1).pdf
TTC	TS-3GA-32.101 (Rel4)v4.2.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts32101rel4v420.pdf

10.10.2   TS 32.102 – 3G Telecom 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 Specification addressing the management of UMTS, except TS 32.101.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.102 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 102	4.2.0	Published	23-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14878
T1	T1.3GPP.32.102V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.102 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.102(R4-4.2.0).pdf
TTC	TS-3GA-32.102 (Rel4)v4.2.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts32102rel4v420.pdf

10.10.3   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 the present 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 the present 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
CWTS	CWTS-TSD-CN 32.111-1 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 111-1	4.0.0	Published	30-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14467
T1	T1.3GPP.32.111V1V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.111-1(R4-400)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.111-1(R4-400).pdf
TTC	TS-3GA-32.111-1 (Rel4)v4.0.0	1	TTC published	28-08-01	http://www.ttc.or.jp/imt2000/ts/ts32111-1rel4v400.pdf

10.10.4   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
CWTS	CWTS-TSD-CN 32.111-2 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 111-2	4.3.0	Published	17-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16019
T1	T1.3GPP.32.111V 2V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32. 111-2(R4-430)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.111-2(R4-430).pdf
TTC	TS-3GA-32.111-2(Rel4)v4.3.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32111-2rel4v430.pdf

10.10.5   TS 32.111-3 – Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1

The document specifies the CORBA Solution Set (SS) for the IRP whose semantics is specified in Alarm IRP: Information Service (IS) (3G TS 32.111-2).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.111-3 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 111-3	4.3.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16725
T1	T1.3GPP.32.111 V3V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32. 111-3(R4-420)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.111-3(R4-420).pdf
TTC	TS-3GA-32.111-3(Rel4)v4.2.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32111-3rel4v420.pdf

10.10.6 TS 32.111-4 – Telecommunication Management; Fault Management; Part 4: Alarm integration reference point: CMIP solution set

The document defines the alarm integration reference point for the CMIP solution set.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.111-4 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 111-4	4.3.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16726
T1	T1.3GPP.32.111V 4V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32. 111-4(R4-420)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.111-4(R4-420).pdf
TTC	TS-3GA-32.111-4 (Rel4)v4.2.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32111-4rel4v420.pdf

10.10.7 TS 32.200 – Telecommunication management; Charging management; Charging principles

The document describes the principles of charging and billing for the provision of service and services by a 3G system.

The document elaborates on the charging requirements described in the Charging Principles in TS 22.101. It allows the generation of accurate charging information to be used in the commercial and contractual relationships between the parties concerned. The document is not intended to duplicate existing standards or standards being developed by other groups on these topics, and references these where appropriate.

The charging data records (CDRs) generated by the network elements of the 3G network are required for a number of telecom management activities including, but not limited to, the following:

– the billing of home subscribers, either directly or via service providers, for network utilization charges;

– the settlement of accounts for traffic carried or services performed by fixed network operators and other operators;

– the settlement of accounts with other PLMNs for roaming traffic via the transferred account procedure;

– statistical analysis of service usage;

– as archival information in dealing with customer service and billing complaints.

In addition to the information collected from network elements, network management functions are required for the administration of charging data.

The document is part of a series of documents specifying charging functionality in UMTS networks. The UMTS charging architecture and principles are specified in the document, which provides an umbrella for other charging documents that specify the structure and content of the CDRs and the interface protocol that is used to transfer them to the collecting node. The CDRs used in the circuit-switched (CS) domain are specified in TS 32.205. The CDRs content and transport within the PS domain are described in TS 32.215, while CDRs used for application services are defined in TS 32.235.

The relationship among these charging specifications is illustrated in Figure 10-9.
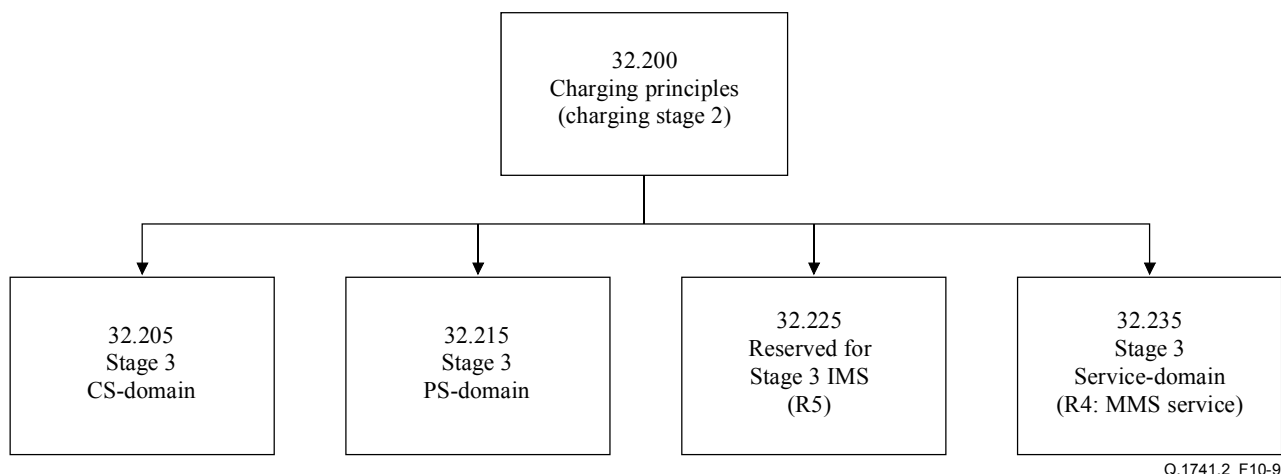

Figure 10-9/Q.1741.2 – Charging documents structure

For the purpose of the document, the charging data is considered to be generated and collected by charging functions in the network elements.

Charging data fields are collected and CDRs generated by the network elements for transfer to the billing system. For the packet-switched domain, the CDRs are first sent to the Charging Gateway Function (CGF) for storage and further processing. The CGF may be a distinct network element or may be integrated into the packet domain network elements themselves.

The objectives of the present document are:

– to describe principles of charging in a 3G network;

– to provide a description of the charging architecture; and

– to provide the descriptions of events and triggers for the generation of Charging Data Records (CDRs).

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.200 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 200	4.2.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16728
T1	T1.3GPP.32.200V410-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.200 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.200(R4-4.1.0).pdf
TTC	TS-3GA-32.200 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32200rel4v410.pdf

10.10.8 TS 32.205 – Telecommunication management; Charging management; Charging data description for the Circuit-switched (CS) domain

The GSM and UMTS PLMNs support a wide range of circuit-based services. In order to enable operators the ability to provide a commercially viable service, there is a need to provide charging functions.

The document is part of a series of documents specifying charging functionality in UMTS networks. The UMTS charging architecture and principles are specified in TS 32.200 that provides an umbrella for other charging documents that specify the structure and content of the CDRs and the interface protocol that is used to transfer them to the collecting node.

The document specifies the structure and the contents of the CDRs that are collected by the relevant network elements for circuit-switched services in 2G (GSM) and 3G (UMTS) networks. It also defines the syntax for the transfer of these CDRs from the collecting nodes to billing post-processing systems using standard file transfer protocols.

The CDRs content and transport within the PS domain are described in TS 32.215 document, while CDRs used for application services are defined in TS 32.235.

The relationship among these charging specifications is illustrated in Figure 10-10.

Q.1741.2_F10-10
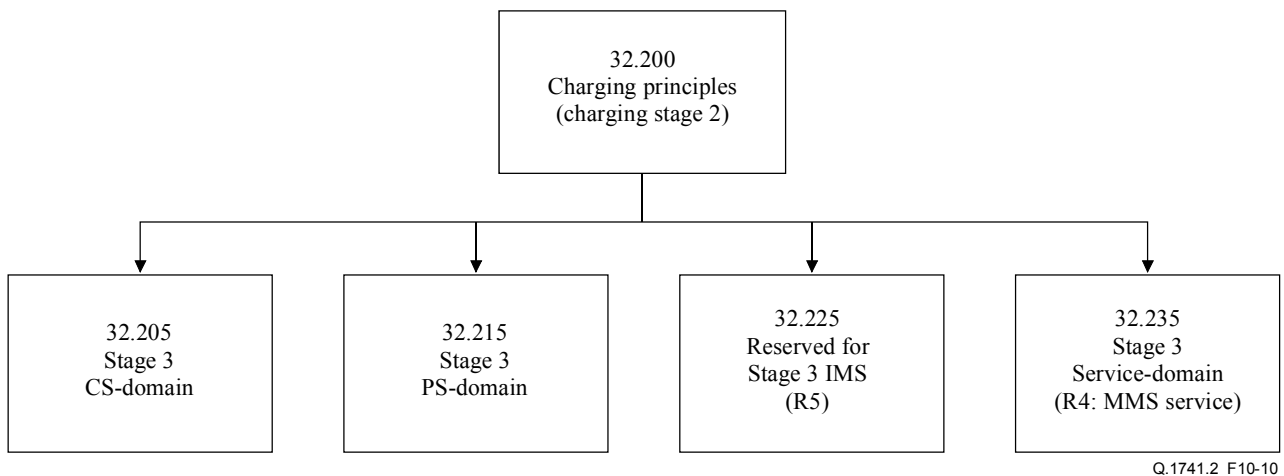
Figure 10-10/Q.1741.2 – Charging documents structure

The interface definitions of GSM 12.05 are maintained for 2G, in order to assure backward compatibility to earlier GSM releases.

The charging architecture and principles that the present document is based on are specified in TS 32.200.

All references, abbreviations, definitions, descriptions, principles and requirements that are common to charging in UMTS domains or subsystems are provided in the umbrella document TS 32.200. To avoid unnecessary duplications, they are not repeated in the present document unless it is essential.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.205 (R4)	4.1.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 205	4.2.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16952
T1	T1.3GPP.32.205V411-2002	4.1.1	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.205 (R4-4.1.1)	4.1.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.205(R4-4.1.1).pdf
TTC	TS-3GA-32.205 (Rel4)v4.1.1	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32205rel4v411.pdf

10.10.9 TS 32.215 – Telecom management; Charging management; Charging data description for the packet-switched (PS) domain

The GSM and UMTS PLMN support a wide range of packet-based services by means of the General Packet Radio Service (GPRS), as defined in TS 22.060 and TS 23.060. In order to enable operators the ability to provide a commercially viable service, there is a need to provide charging functions. For GPRS these functions include the generation of Charging Data Records (CDRs) by the Serving GPRS Support Node (SGSN) and the Gateway GPRS Support Node (GGSN) as well as the transport of these CDRs to a Billing System (BS) through a Charging Gateway Function (CGF).

The document is part of a series of documents specifying charging functionality in UMTS networks. The UMTS charging architecture and principles are specified in TS 32.200 that provides an umbrella for other charging documents that specify the structure and content of the CDRs and the interface protocol that is used to transfer them to the collecting node. The CDRs content and transport within the PS domain are described in the document. The CDRs used in the circuit-switched (CS) domain are specified in TS 32.205 while CDRs used for application services are defined in TS 32.235. The document structure is depicted in Figure 10-11.

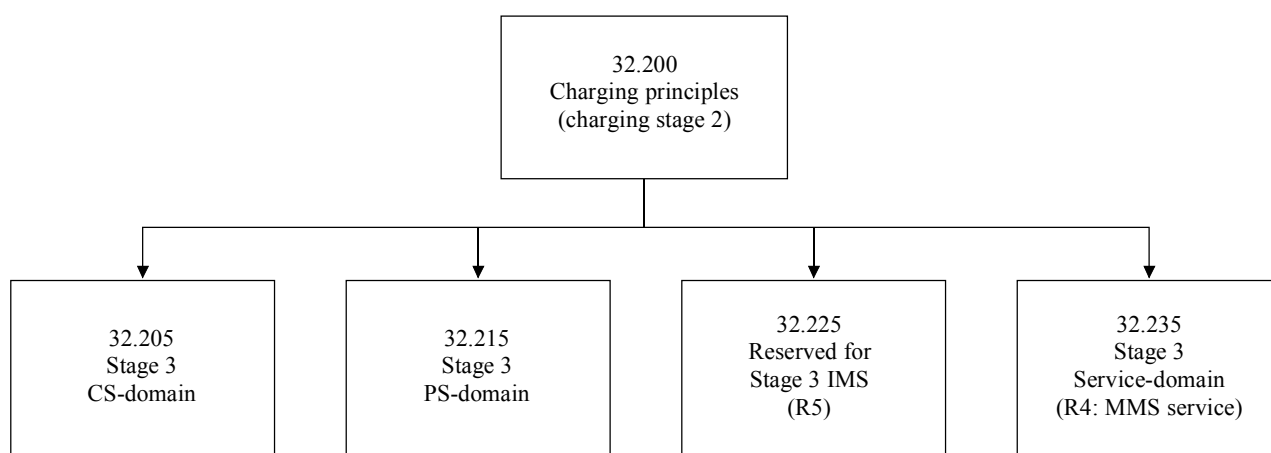**Figure 10-11/Q.1741.2 – Charging documents structure**

All references, abbreviations, definitions, descriptions, principles and requirements that are common to charging in UMTS domains or subsystems are provided in the umbrella document TS 32.200. To avoid unnecessary duplications, they are not repeated in the present document unless it is essential.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.215 (R4)	4.2.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 215	4.3.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16990
T1	T1.3GPP.32.215V421-2002	4.2.1	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.215 (R4-4.2.1)	4.2.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.215(R4-4.2.1).pdf
TTC	TS-3GA-32.215 (Rel4)v4.2.1	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32215rel4v421.pdf

10.10.10 TS 32.235 – Telecommunication management; Charging management; Charging data description for application services

The document is part of a series of documents specifying charging functionality in UMTS network with application services. The UMTS core network charging principles are specified in TS 32.200, which provides an umbrella for other charging documents that specify the structure and content of the CDRs and the interface protocol that is used to transfer them to the collecting node. The document structure is defined in Figure 10-12. The CDR content and transport for application services are described in the present document especially for MMS. As the basis and reference for this work is taken, the functional description of the MMS specified for Stage 1 in TS 22.140 and Stage 2 in TS 23.140.
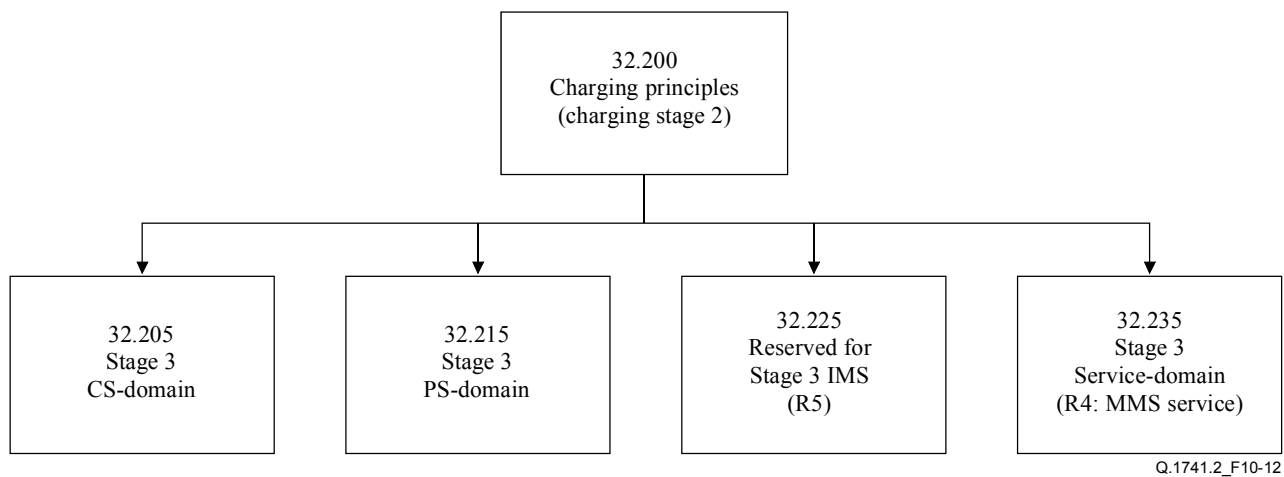

Figure 10-12/Q.1741.2 – Charging document structure

All references, abbreviations, definitions, descriptions, principles and requirements that are common are defined in the 3G Vocabulary TR 21 905 [66]-[69] and specialized to charging in UMTS domains or subsystems are provided in the umbrella document TS 32.200.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.235 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 235	4.2.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16991
T1	T1.3GPP.32.235V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.235 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.235(R4-4.1.0).pdf
TTC	TS-3GA-32.235 (Rel4)v4.1.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32235rel4v410.pdf

10.10.11   TS 32.300 – Telecommunication management; Configuration management; Part 8: 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
CWTS	CWTS-TSD-CN 32.300 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 300	4.1.0	Published	25-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15294
T1	T1.3GPP.32.300V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.300 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.300(R4-4.1.0).pdf
TTC	TS-3GA-32.300 (Rel4)v4.1.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts32300rel4v410.pdf

10.10.12   TS 32.301 – Telecommunication Management; Configuration Management; Notification 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 the present document.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.301 (R4)	4.0.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 301	4.0.1	Published	19-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16008
T1	T1.3GPP.32.301V401-2002	4.0.1	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.301 (R4-4.0.1)	4.0.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.301(R4-4.0.1).pdf
TTC	TS-3GA-32.301 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32301rel4v400.pdf

10.10.13 TS 32.302 – Telecommunication management; Configuration Management; Notification Integration Reference Point; Information Service version 1

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 the present 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 the present document.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.302 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 302	4.1.0	Published	25-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15295
T1	T1.3GPP.32.302V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.302 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.302(R4-4.1.0).pdf
TTC	TS-3GA-32.302 (Rel4)v4.1.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts32302rel4v410.pdf

10.10.14 TS 32.303 – Telecommunication Management; Configuration Management; Notification Integration Reference Point; CORBA solution set version 1:1

The document specifies the Common Object Request Broker Architecture (CORBA) Solution Set (SS) for the IRP whose semantics is specified in Notification IRP: Information Service 3G TS 32.302.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.303 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 303	4.2.0	Published	19-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16029
T1	T1.3GPP.32.303V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.303 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.303(R4-4.2.0).pdf
TTC	TS-3GA-32.303 (Rel4)v4.2.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32303rel4v420.pdf

10.10.15 TS 32.304 – Telecommunication Management; Configuration Management; Notification Integration Reference Point; CMIP Solution Set Version 1:1

The document specifies the Common Management Information Protocol (CMIP) Solution Set (SS) for the Notification Integration Reference Point (IRP): Information Service defined in 3G TS 32.302.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.304 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 304	4.2.0	Published	19-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16031
T1	T1.3GPP.32.304 V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.304 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.304(R4-4.2.0).pdf
TTC	TS-3GA-32.304 (Rel4)v4.2.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32304rel4v420.pdf

10.10.16 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
CWTS	CWTS-TSD-CN 32.311 (R4)	4.0.1	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 311	4.0.1	Published	30-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14437
T1	T1.3GPP.32.311V 401-2002	4.0.1	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.311 (R4-4.0.1)	4.0.1	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.311(R4-4.0.1).pdf
TTC	TS-3GA-32.311 (Rel4)v4.0.1	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32311rel4v401.pdf

10.10.17 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
CWTS	CWTS-TSD-CN 32.312 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 312	4.0.0	Published	30-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14438
T1	T1.3GPP.32.312V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.312 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.312(R4-4.0.0).pdf
TTC	TS-3GA-32.312 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32312rel4v400.pdf

10.10.18   TS 32.401 – Telecommunication management; Performance Management (PM); Concept and requirements

The 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 how an EM administers the performance measurements and how the results can be collected are defined in detail in clause 5. Annex A specifies the file format for the bulk transfer of performance measurement results to the NM, while Annex B discusses the file transfer procedure utilized on that interface. A set of measurements available for collection by NEs are described in TS 52.402 for GSM and in TS 32.403 for UMTS and combined UMTS/GSM systems, effort has been made to ensure consistency in the definition of measurements between different NEs and generations.

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 re-used and enhanced where particular requirements, peculiar to the mobile telephony environment, have been recognized.

The 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 document.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.401 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 401	4.1.0	Published	25-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15296
T1	T1.3GPP.32.401 V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.401 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.401(R4-4.1.0).pdf
TTC	TS-3GA-32.401 (Rel4)v4.1.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts32401rel4v410.pdf

### 10.10.19	TS 32.403 – Telecommunication management; Performance Management (PM); Performance measurements; UMTS and combined UMTS/GSM

The document describes the measurements for UMTS and combined UMTS/GSM.

The TS 32.401 describe Performance Management concepts and requirements.

The 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 this TS, measurements defined within other standards bodies, or vendor-specific measurement types.

Only measurement types that are specific to UMTS or combined UMTS/GSM networks are defined within the present documents. I.e., vendor-specific measurement types and measurements related to "external" technologies used in UMTS and combined UMTS/GSM networks, 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 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
CWTS	CWTS-TSD-CN 32.403 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 403	4.2.1	Published	01-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16953
T1	T1.3GPP.32.403V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.403 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.403(R4-4.2.0).pdf
TTC	TS-3GA-32.403 (Rel4)v4.2.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32403rel4v420.pdf

10.10.20   TS 32.600 – Telecommunication Management; Configuration Management; 3G configuration management; Concept and main requirements

The document describes the Configuration Management (CM) aspects of managing a 3G network. This is described from the management perspective in TS 32.101 and TS 32.102.

The present document defines a set of controls to be employed to effect set-up and changes to a 3G network in such a way that operational capability and Quality of Service (QoS), network integrity and system interworking are ensured. In this way, the present document describes the interface definition and behaviour for the management of relevant 3G 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 32.101 and TS 32.102. 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. These IRPs are defined in separate specifications.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.600 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 600	4.0.0	Published	30-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14491
T1	T1.3GPP.32.600V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.600 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.600(R4-4.0.0).pdf
TTC	TS-3GA-32.600 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32600rel4v400.pdf

10.10.21 TS 32.601 – Telecommunication Management; Configuration Management; Basic CM 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: Basic Configuration Management IRP.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.601 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 601	4.0.0	Published	24-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14394
T1	T1.3GPP.32.601V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.601 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.601(R4-4.0.0).pdf
TTC	TS-3GA-32.601 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32601rel4v400.pdf

10.10.22 TS 32.602 – Telecommunication Management; Configuration Management; Basic configuration management IRP information model

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 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. 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
CWTS	CWTS-TSD-CN 32.602 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 602	4.1.0	Published	23-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14905
T1	T1.3GPP.32.602V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.602 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.602(R4-4.1.0).pdf
TTC	TS-3GA-32.602 (Rel4)v4.1.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts32602rel4v410.pdf

10.10.23 TS 32.603 – Telecommunication Management; Configuration Management; Basic configuration management IRP; CORBA solution set

The purpose of this *Basic Configuration Management (CM) IRP: CORBA Solution Set* is to define the mapping of the Basic CM IRP: IS (see TS 32.602) to the protocol specific details necessary for implementation of this IRP in a CORBA/IDL environment.

This document defines NRM independent data types, methods and notifications.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.603 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 603	4.3.1	Published	14-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16738
T1	T1.3GPP.32.603V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.603 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.603(R4-4.2.0).pdf
TTC	TS-3GA-32.603 (Rel4)v4.2.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32603rel4v420.pdf

10.10.24 TS 32.604 – Telecommunication Management; Configuration Management; Basic configuration management IRP CMIP solution set

The document specifies the Common Management Information Protocol (CMIP) Solution Set (SS) for the Basic CM Integration Reference Point (IRP): Information Service defined in TS 32.602.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.604 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 604	4.2.0	Published	25-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15297
T1	T1.3GPP.32.604V420-2002	4.2.0	Approved	26-07-02	http://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.604 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.604(R4-4.2.0).pdf
TTC	TS-3GA-32.604 (Rel4)v4.2.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts32604rel4v420.pdf

10.10.25 TS 32.611 – Telecommunication management; Configuration management; 3G configuration management; Bulk CM 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 Itf-N 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
CWTS	CWTS-TSD-CN 32.611 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 611	4.0.0	Published	30-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14398
T1	T1.3GPP.32.611 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.611 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.611(R4-4.0.0).pdf
TTC	TS-3GA-32.611 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32611rel4v400.pdf

10.10.26 TS 32.612 – Telecommunication management; Configuration management; 3G configuration management: Bulk configuration management 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
CWTS	CWTS-TSD-CN 32.612 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 612	4.2.0	Published	01-07-02	http://pda.etsi.org/pda/home.asp?wki_id=16742
T1	T1.3GPP.32.612V 410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.612 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.612(R4-4.1.0).pdf
TTC	TS-3GA-32.612 (Rel4)v4.1.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts32612rel4v410.pdf

10.10.27 TS 32.613 – Telecommunication management; Configuration management; 3G configuration management; Bulk configuration management IRP; CORBA solution set

The purpose of this *Bulk CM IRP: CORBA Solution Set* is to define the mapping of the IRP information service (see TS 32.612) to the protocol specific details necessary for implementation of this IRP in a CORBA/IDL environment.

The document does not describe any Network Resource Model (NRM) – they are described in Generic Network Resources IRP: NRM TS 32.622, UTRAN Network Resources IRP: NRM TS 32.642.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.613 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 613	4.2.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16744
T1	T1.3GPP.32.613V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.613 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.613(R4-4.1.0).pdf
TTC	TS-3GA-32.613 (Rel4)v4.1.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts32613rel4v410.pdf

10.10.28 TS 32.614 – Telecommunication management; Configuration management; 3G configuration management; Bulk configuration management IRP; CMIP solution set

The document specifies the Common Management Information Protocol (CMIP) Solution Set (SS) for the Bulk CM Integration Reference Point (IRP): Information Service defined in TS 32.612.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.614 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 614	4.2.0	Published	27-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16746
T1	T1.3GPP.32.614V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.614 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.614(R4-4.1.0).pdf
TTC	TS-3GA-32.614 (Rel4)v4.1.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts32614rel4v410.pdf

10.10.29 TS 32.615 – Telecommunication management; Configuration management; 3G configuration management; Bulk configuration management IRP; XML file format definition

The document defines the XML file formats for the configuration data files and session log files of Bulk CM IRP IS TS 32.612.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.615 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 615	4.2.0	Published	10-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16064
T1	T1.3GPP.32.615V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.615 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.615(R4-4.2.0).pdf
TTC	TS-3GA-32.615 (Rel4)v4.2.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32615rel4v420.pdf

10.10.30 TS 32.621 – Telecommunication Management; Configuration Management; Generic 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: Generic Network Resources IRP.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.621 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 621	4.0.0	Published	30-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14403
T1	T1.3GPP.32.621V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.621 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.621(R4-4.0.0).pdf
TTC	TS-3GA-32.621 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32621rel4v400.pdf

10.10.31 TS 32.622 – Telecommunication Management; Configuration Management; Generic network resources IRP; 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 and 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
CWTS	CWTS-TSD-CN 32.622 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 622	4.3.0	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16750
T1	T1.3GPP.32.622V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.622 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.622(R4-4.2.0).pdf
TTC	TS-3GA-32.622 (Rel4)v4.2.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32622rel4v420.pdf

10.10.32 TS 32.623 – Telecommunication Management; Configuration Management; Generic network resources IRP; CORBA solution set

The TS 32.620 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 series of documents specifies a generic Network Resource Model, NRM (also referred to as a Management Information Model – MIM) with definitions of Information Object Classes and Managed Object Classes.

The document specifies the CORBA Solution set.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.623 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 623	4.2.0	Published	25-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15300
T1	T1.3GPP.32.623V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.623 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.623(R4-4.2.0).pdf
TTC	TS-3GA-32.623 (Rel4)v4.2.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts32623rel4v420.pdf

10.10.33 TS 32.624 – Telecommunication Management; Configuration Management; Generic network resources; IRP CMIP solution set

The document specifies the Common Management Information Protocol (CMIP) Solution Set (SS) for the Generic Network Resource Integration Reference Point (IRP): Network Resource Model defined in TS 32.622.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.624 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 624	4.4.0	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16753
T1	T1.3GPP.32.624V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.624 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.624(R4-4.3.0).pdf
TTC	TS-3GA-32.624 (Rel4)v4.3.0	1	TTC published	28-05-02	http://www.ttc.or.jp/imt2000/ts/ts32624rel4v430.pdf

10.10.34 TS 32.631 – Telecommunication Management; Configuration Management; 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
CWTS	CWTS-TSD-CN 32.631 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 631	4.0.0	Published	30-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14407
T1	T1.3GPP.32.631V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.631 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.631(R4-4.0.0).pdf
TTC	TS-3GA-32.631 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32631rel4v400.pdf

10.10.35 TS 32.632 – Telecommunication Management; Configuration Management; Core Network Resources IRP; 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 sub-classing, 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 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.

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
CWTS	CWTS-TSD-CN 32.632 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 632	4.2.0	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16756
T1	T1.3GPP.32.632V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.632 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.632(R4-4.1.0).pdf
TTC	TS-3GA-32.632 (Rel4)v4.1.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts32632rel4v410.pdf

10.10.36 TS 32.633 – Telecommunication Management; Configuration Management; Core network resources IRP; CORBA solution set

The purpose of this *Core Network Resources IRP: CORBA Solution Set* is to define the mapping of the IRP information model (see TS 32.632) to the protocol-specific details necessary for implementation of this IRP in a CORBA/IDL environment.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.633 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 633	4.1.0	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16758
T1	T1.3GPP.32.633V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.633 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.633(R4-4.0.0).pdf
TTC	TS-3GA-32.633 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32633rel4v400.pdf

10.10.37 TS 32.634 – Telecommunication Management; Configuration Management; Core network resources IRP; CMIP solution set

The document specifies the Common Management Information Protocol (CMIP) Solution Set (SS) for the CN Network Resource Integration Reference Point (IRP): Network Resource Model defined in TS 32.632.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.634 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 634	4.1.0	Published	23-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14913
T1	T1.3GPP.32.634V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.634 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.634(R4-4.1.0).pdf
TTC	TS-3GA-32.634 (Rel4)v4.1.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts32634rel4v410.pdf

10.10.38   TS 32.641 – Telecommunication Management; Configuration Management; 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
CWTS	CWTS-TSD-CN 32.641 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 641	4.0.0	Published	31-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14411
T1	T1.3GPP.32.641V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.641 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.641(R4-4.0.0).pdf
TTC	TS-3GA-32.641 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32641rel4v400.pdf

10.10.39   TS 32.642 – Telecommunication Management; Configuration Management; 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 [16], 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 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.

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 that is applicable is outside the scope of this document.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.642 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 642	4.1.0	Published	05-08-02	http://pda.etsi.org/pda/home.asp?wki_id=16762
T1	T1.3GPP.32.642V 400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.642 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.642(R4-4.0.0).pdf
TTC	TS-3GA-32.642 (Rel4)v4.0.0	1	TTC published	29-08-01	http://www.ttc.or.jp/imt2000/ts/ts32642rel4v400.pdf

10.10.40 TS 32.643 – Telecommunication Management; Configuration Management; UTRAN network resources IRP; CORBA solution set

The purpose of this UTRAN Network Resources IRP: CORBA Solution Set is to define the mapping of the IRP information model (see TS 32.642) to the protocol-specific details necessary for implementation of this IRP in a CORBA/IDL environment.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.643 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 643	4.1.0	Published	25-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15303
T1	T1.3GPP.32.643V 410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.643 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.643(R4-4.1.0).pdf
TTC	TS-3GA-32.643 (Rel4)v4.1.0	1	TTC published	26-02-02	http://www.ttc.or.jp/imt2000/ts/ts32643rel4v410.pdf

10.10.41 TS 32.644 – Telecommunication Management; Configuration Management; UTRAN network resources IRP; CMIP solution set

The document specifies the Common Management Information Protocol (CMIP) Solution Set (SS) for the UTRAN Network Resource Integration Reference Point (IRP): Network Resource Model defined in TS 32.642.

	Document No.	Version	Status	Issued date	Location
CWTS	CWTS-TSD-CN 32.644 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 132 644	4.1.0	Published	23-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14914
T1	T1.3GPP.32.644V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-32.644 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-32.644(R4-4.1.0).pdf
TTC	TS-3GA-32.644 (Rel4)v4.1.0	1	TTC published	28-11-01	http://www.ttc.or.jp/imt2000/ts/ts32644rel4v410.pdf

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 address 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-T63-33.102V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A33102-430.pdf
CWTS	CWTS-TSD-CN 33.102 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 133 102	4.4.0	Published	24-06-02	http://pda.etsi.org/pda/home.asp?wki_id=16772
T1	T1.3GPP.33.102V 430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-33.102 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-33.102(R4-4.3.0).pdf

10.11.2   TS 33.103 – 3G security; Integration guidelines

This technical specification defines how elements of the 3G security architecture are to be integrated into the following entities of the system architecture.

–   Home Environment Authentication Centre (HE/AuC);

–   Serving Network Visited Location Register (VLR/SGSN);

–   Radio Network Controller (RNC);

–   Mobile station User Identity Module (UIM);

–   Mobile Equipment (ME).

This specification is derived from 3G "Security architecture" 3G TS 33.102.

The structure of this technical specification is a series of tables, which describe the security information and cryptographic functions to be stored in the above entities of the 3G system.

For security information, this is in terms of multiplicity, lifetime, parameter length and whether mandatory or optional.

For the cryptographic functions, the tables also include an indication of whether the implementation needs to be standardized or can be proprietary.

The equivalent information for the alternative Temporary Key proposal is included in an appendix to this document.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-33.103V4.2.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A33103-420.pdf
CWTS	CWTS-TSD-CN 33.103 (R4)	4.2.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 133 103	4.2.0	Published	19-10-01	http://pda.etsi.org/pda/home.asp?wki_id=14919
T1	T1.3GPP.33.103 V420-2002	4.2.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-33.103 (R4-4.2.0)	4.2.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-33.103(R4-4.2.0).pdf

10.11.3   TS 33.105 – 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-T63-33.105V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A33105-410.pdf
CWTS	CWTS-TSD-CN 33.105 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 133 105	4.1.0	Published	31-07-01	http://pda.etsi.org/pda/home.asp?wki_id=14228
T1	T1.3GPP.33.105V410-2002	4.1.0	Approved	26-07-02	http://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-33.105 (R4-4.1.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-33.105(R4-4.1.0).pdf

10.11.4   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-T63-33.106V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A33106-400.pdf
CWTS	CWTS-TSD-CN 33.106 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 133 106	4.0.0	Published	27-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13701
T1	T1.3GPP.33.106 V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-33.106 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-33.106(R4-4.0.0).pdf

10.11.5   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-T63-33.107V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A33107-430.pdf
CWTS	CWTS-TSD-CN 33.107 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 133 107	4.3.0	Published	10-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16039
T1	T1.3GPP.33.107V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-33.107 (R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-33.107(R4-4.3.0).pdf

10.11.6   TS 33.120 – Security objectives and principles

The document gives the objectives and principles of 3G security.

The principles state what is to be provided by 3G security as compared to the security of second generation systems. The principles will also ensure that 3G security can secure the new services and new service environments offered by 3G systems.

The objectives give general, high-level requirements for 3G security, which will be expanded upon in TS 21.133.

The priorities for the implementation of 3G security are also given.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-33.120V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A33120-400.pdf
CWTS	CWTS-TSD-CN 33.120 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 133 120	4.0.0	Published	27-04-01	http://pda.etsi.org/pda/home.asp?wki_id=13705
T1	T1.3GPP.33.120V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-33.120 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-33.120(R4-4.0.0).pdf

10.11.7 TS 33.200 – Network Domain Security; MAP

This technical specification covers the security mechanisms and procedures necessary to protect the MAP protocol. The complete set of enhancements and extensions to facilitate security protection for the MAP protocol is termed MAPsec and it covers transport security in the MAP protocol itself and the security management procedures.

The security mechanisms specified for MAP are on the application layer. This means that MAPsec is independent of the network and transport protocols to be used.

This technical specification contains the Stage-2 specification for security protection of the MAP protocol. The actual implementation (Stage-3) specification can be found in the MAP Stage-3 specification, TS 29.002.

	Document No.	Version	Status	Issued date	Location
ARIB	ARIB STD-T63-33.200V4.3.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A33200-430.pdf
CWTS	CWTS-TSD-CN 33.200 (R4)	4.3.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 133 200	4.3.0	Published	10-04-02	http://pda.etsi.org/pda/home.asp?wki_id=16041
T1	T1.3GPP.33.200V430-2002	4.3.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-33.200(R4-4.3.0)	4.3.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-33.200(R4-4.3.0).pdf

10.12 35-Series – Algorithm specifications

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-T63-35.201V4.1.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A35201-410.pdf
CWTS	CWTS-TSD-CN 35.201 (R4)	4.1.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 135 201	4.1.0	Published	25-01-02	http://pda.etsi.org/pda/home.asp?wki_id=15318
T1	T1.3GPP.35.201V410-2002	4.1.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-35.201 (R4-4.0.0)	4.1.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-35.201(R4-4.1.0).pdf

10.12.2 TS 35.202 – Specification of the 3GPP confidentiality and integrity algorithms; Document 2: KASUMI algorithm 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-T63-35.202V4.0.0	3.00	ARIB published	30-05-02	http://www.arib.or.jp/IMT-2000/ARIB-STD/ITU-T/Rel4T/A35202-400.pdf
CWTS	CWTS-TSD-CN 35.202 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 135 202	4.0.0	Published	29-08-01	http://pda.etsi.org/pda/home.asp?wki_id=14570
T1	T1.3GPP.35.202V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-35.202 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-35.202(R4-4.0.0).pdf

10.12.3 TS 35.203 – 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 realization of the algorithms.

	Document No.	Version	Status	Issued date	Location
ETSI	TS 135 203	4.0.0	Published	29-08-01	http://pda.etsi.org/pda/home.asp?wki_id=14571
TTA	TTAE.3G-35.203 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-35.203(R4-4.0.0).pdf

10.12.4 TS 35.204 – 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
ETSI	TS 135 204	4.0.0	Published	29-08-01	http://pda.etsi.org/pda/home.asp?wki_id=14572
TTA	TTAE.3G-35.204 (R4-4.0.0)	4.0.0	Approved	28-10-02	http://www.tta.or.kr/standardDB/stnfile/TTAE.3G-35.204(R4-4.0.0).pdf

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
CWTS	CWTS-TSD-CN 35.205 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 135 205	4.0.0	Published	21-05-01	http://pda.etsi.org/pda/home.asp?wki_id=14032
T1	T1.3GPP.35.205V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-35.205 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/2001-389.zip

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 *f1*, *f1**, *f2*, *f3*, *f4*, *f5* and *f5**. (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
CWTS	CWTS-TSD-CN 35.206 (R4)	4.0.0	Published	25-09-02	http://www.cwts.org/cwts/itu_r4.htm
ETSI	TS 135 206	4.0.0	Published	25-06-01	http://pda.etsi.org/pda/home.asp?wki_id=14033
T1	T1.3GPP.35.206V400-2002	4.0.0	Approved	26-07-02	https://www.atis.org/atis/docstore/search.asp?committee=S24
TTA	TTAE.3G-35.206 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/2001-390.zip

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 contains an example set of algorithms which may be used as the authentication and key generation functions *f1*, *f1**, *f2*, *f3*, *f4*, *f5* and *f5**. (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.

The test data sets for the kernel function Rijndael have been chosen in a way that, provided all data sets are tested:

–   Every S-Box entry is being used.

–   Each input bit has been in both the '0' and '1' state.

The test data sets for all seven functions are based on the test data sets above. The values for OP, K and RAND have been chosen such that the input values of the first encryption are the test data sets of Rijndael. This way, the following coverage is being reached, provided all test data sets are tested:

–   The conditions for Rijndael seen above.

–   Each input bit for the functions has been in both the '0' and '1' state.

	Document No.	Version	Status	Issued date	Location
ETSI	TS 135 207	4.0.0	Published	25-06-01	http://pda.etsi.org/pda/home.asp?wki_id=14034
TTA	TTAE.3G-35.207 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/2001-391.zip

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 contains an example set of algorithms which may be used as the authentication and key generation functions *f1*, *f1**, *f2*, *f3*, *f4*, *f5* and *f5**. (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.

For each of the algorithms the test data sets have been selected such that, provided the entire set of tests is run:

–   each input bit of the Rijndael kernel function will have been in both the '0' and '1' states;

–   each input bit of the modes (RAND, K, SQN, AMF) will have been in both the '0' and '1' states;

–   every S-Box entry of the Rijndael kernel function will have been used.

	Document No.	Version	Status	Issued date	Location
ETSI	TS 135 208	4.0.0	Published	25-06-01	http://pda.etsi.org/pda/home.asp?wki_id=14035
TTA	TTAE.3G-35.208 (R4)	4.0.0	Approved	19-12-01	http://www.tta.or.kr/standardDB/stnfile/2001-392.zip

SERIES OF ITU-T RECOMMENDATIONS

Series A   Organization of the work of ITU-T

Series B   Means of expression: definitions, symbols, classification

Series C   General telecommunication statistics

Series D   General tariff principles

Series E   Overall network operation, telephone service, service operation and human factors

Series F   Non-telephone telecommunication services

Series G   Transmission systems and media, digital systems and networks

Series H   Audiovisual and multimedia systems

Series I   Integrated services digital network

Series J   Cable networks and transmission of television, sound programme and other multimedia signals

Series K   Protection against interference

Series L   Construction, installation and protection of cables and other elements of outside plant

Series M   TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits

Series N   Maintenance: international sound programme and television transmission circuits

Series O   Specifications of measuring equipment

Series P   Telephone transmission quality, telephone installations, local line networks

Series Q   Switching and signalling

Series R   Telegraph transmission

Series S   Telegraph services terminal equipment

Series T   Terminals for telematic services

Series U   Telegraph switching

Series V   Data communication over the telephone network

Series X   Data networks and open system communications

Series Y   Global information infrastructure and Internet protocol aspects

Series Z   Languages and general software aspects for telecommunication systems