ITU-T SG11 Highlights

Signalling requirements, protocols, test specifications and combating counterfeit products

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SG11 in a nutshell

SG11 is home to **SS7** and holds expertise in:

Combating counterfeit ICT and mobile device theft	**Signalling architectures, requirement and protocols for legacy and future networks**	**Conformance & Interoperability**
Internet performance measurements		**Test methodologies and specifications**

Our Mission

To develop protocols and test specifications to achieve consistent end-to-end interoperability of systems and networks

SG11 in numbers, positive trend 🙂
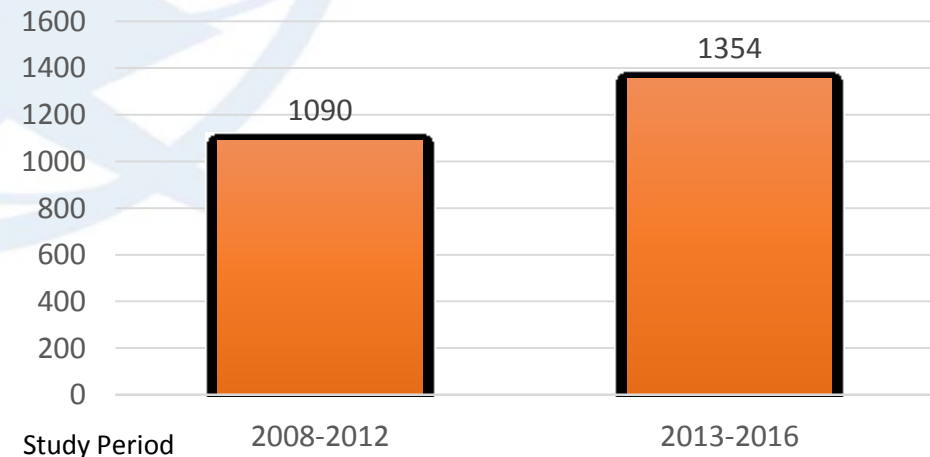
Total publications and new Recs. approved

```
150
100   47    71              88   109
 50
  0
Study Period   2008-2012        2013-2016
```

■ New Recs Approved
■ Documents Published (Recs, Supplements, TRs, Guidelines)

Average number of participants per SG11 meeting

```
120                              106
100
 80
 60        56
 40
 20
  0
Study Period   2008-2012        2013-2016
```

Contributions Submitted

```
600
500                      503
400
300    304
200
100
  0
Study Period   2008-2012        2013-2016
```

Number of TDs (PLEN + GEN)

```
1600
1400                      1354
1200
1000   1090
 800
 600
 400
 200
   0
Study Period   2008-2012        2013-2016
```

Achievements

SDN (software-defined networking)
Signalling and Protocols

COMPLETED WORK

Supplement 67 (2015/04) to Q-series
"Framework of signalling for SDN"
Q.3711 (2016/08) *"Signalling requirements for software-defined broadband access network"*

Q.3712 (2016/08) *"Scenarios & signalling requirements of unified intelligent programmable interface for IPv6"*

Q.3713 (2017/02) *"Signalling requirements for Broadband Network Gateway (BNG) pool"*
(under AAP)

ON-GOING WORK

Five ongoing draft Recommendations on SDN signaling requirements

Broadband Network Gateway
(Q.BNG-DBoD, Q.BNG-IAP, Q.BNG-CFS, Q.SD-WAN)

Mapping physical/virtual networks
(Q.PVMapping, Q.SVDC)

Metro orchestration (Q.SMO)

Central office (Q.SCO)

Other Signaling and Protocols

IPv6

2 Completed
ITU-T Q.3404, Q.3712
1 On-going
Q.IPv6ProBB

Network attachment

4 Completed
ITU-T Q.3228, Q.3229,
Q.3231, Q.3232
2 On-going
Q. NEA-REQ,
Q.SAN-MIM

Peer2Peer communication, multimedia streaming

3 Completed
ITU-T X.609, X.609.1, X.609.2
(joint texts with ISO/IEC)
4 On-going
Draft ITU-T Q.rrp, X.mp2p-
msomp, X.mp2p-mspp,
X.mp2p-mssr

Control plane of Distributed Service Networking

1 Completed
ITU-T Q.3051

IP-based SMS over NGN

1 Completed
ITU-T Q.3053 (under
AAP)

Emergency Telecommunications

Four Supplements to Q-series approved
ITU-T Sup. 49, 62,
63, 68

Combating counterfeit and stolen ICT equipment

International trade in counterfeit: hundreds of billion USD

Growing problem particularly in developing countries

Economic impacts on manufacturers and Governments

Affects operators networks

Dangers to the health

Past Events

Workshop on Combating counterfeit and substandard ICT devices *(November 2014)*

DEMO

Demo on a solution to combat Counterfeiting of ICT products based on the Digital Object Architecture *(April 2015)*

Workshop on Combating counterfeit using conformance and interoperability solutions *(June 2016)*

PP-14 Resolution 188 *(BUSAN, 2014)*
Combating counterfeit telecommunication/information and communication technology devices

WTSA-16 Resolution 96 *(HAMMAMET, 2016)*
ITU Telecommunication Standardization Sector studies for combating counterfeit telecommunication/information and communication technology devices

WTSA-16 Resolution 97 *(HAMMAMET, 2016)*
Combating mobile telecommunication device theft

COMPLETED WORK

Technical Report on "Counterfeit ICT Equipment" *(2014, rev. 2015)*

Technical Report QTR-CICT
Survey report on counterfeit ICT devices in Africa region *(2017)*

ON-GOING WORK

Draft Rec. Q.FW_CCF "Framework for solution to combat counterfeit ICT Device"

Two frameworks and technical reports ongoing

Internet related performance measurements

The Framework for Internet related performance measurements which can be established at the national or international level, providing customers of the existing public telecommunication operator's networks the possibility **to measure the customer's connection to the Internet** [REF. ITU-T Q.3960]

Two test scenarios:

- **Test Scenario 1**: testing the customer's communication path to the Internet

- **Test Scenario 2**: testing the customer's communication path to the particular Internet resource (IR)
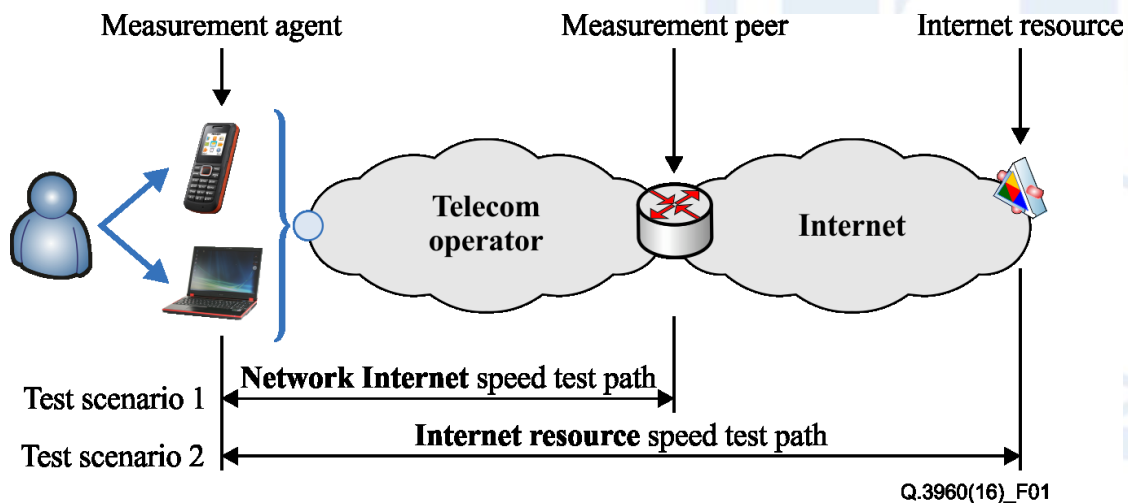

Fig.1 - Global scenario and test definition [REF. ITU-T Q.3960]

ITU-T Q.3960 (July 2016)

Framework of Internet related performance measurements

Ongoing work:

Draft ITU-T Q.3961

Testing methodologies of Internet related performance measurements including e2e bit rate within the fixed and mobile operator's networks

http://itu.int/en/ITU-T/C-I/Pages/IM/Internet-speed.aspx

Framework for VoLTE Interconnection

Current issues of interconnection of VoLTE-based networks

➡ Roaming issues and scenarios
➡ Roaming charges
➡ Numbering/addressing
➡ Emergency services

Operators Challenges

➡ different VoLTE interconnection/roaming solutions available
➡ these solutions are not always interoperable
➡ VoLTE roaming procedures are not agreed and therefore may not be implemented

SG11 Related Activities

➡ Workshop on Voice and Video Services Interoperability Over Fixed-Mobile Hybrid Environments, Including IMT-Advanced (LTE) (Geneva, 1 December 2015)
➡ New draft Recommendation: "Framework of interconnection of VoLTE/ViLTE-based networks"
➡ New draft Recommendation: "VoLTE/ViLTE interconnection testing for interworking and roaming scenarios including relevant QoS/QoE testing"

Stakeholders involved:
SG11, SG2, ETSI TC INT, GSMA

Conformance & Interoperability

Conformity Assessment Steering Committee (CASC)

→ Working on a test laboratory recognition procedure in ITU-T

→ Collaboration with IECEE, ILAC, GCF

→ Two guidelines approved

→ Two guidelines ongoing

Recommendations

→ SIP-IMS conformity assessment work plan (**57** new Recs)

→ Benchmarking of IMS platform work plan (**10** new Recs)

→ Conformance test plan for Number Portability requirements in Q Sup.4 (Q.3905)

→ Cloud computing test specifications (Q.4040, Q-Sup.65)

Tools

→ Living list of key technologies suitable for C&I testing

→ Reference table of ITU-T Recs and test specifications

→ Pilot projects among SGs

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Mandate and structure of the SG11, Study Period (2017-2020)

ITU-T SG11 Management

CHAIRMAN: Andrey KUCHERYAVY (Russia)

VICE-CHAIRMAN:

- Isaac BOATENG (Ghana)
- Mario FRIGERIO (Argentina)
- Shin-Gak KANG (Korea (Rep. of)
- Karim LOUKIL (Tunisia)
- Awad Ahmed Ali Hmed MULAH (Sudan)
- Khoa NGUYEN VAN (Viet Nam)
- João Alexandre Moncaio ZANON (Brazil)
- Xiaojie ZHU (China)

SECRETARIAT
(Telecommunication Standardization Bureau – TSB)

- **ADVISOR:** Denis ANDREEV
- **ADMINISTRATIVE ASSISTANT:** Emma NORTON VIARD

Resolution 2 of WTSA-16

"ITU Telecommunication Standardization Sector study group responsibility and mandates"

ITU-T SG11 Lead study group on:

- **signalling and protocols**, including for **IMT-2020** technologies

- establishing **test specifications**, conformance and interoperability testing **for all types of networks, technologies and services** that are the subject of study and standardization by all ITU-T study groups

- **combating counterfeiting** of ICT devices

- combating the use of **stolen ICT devices**

AREAS OF STUDY OF ITU-T SG11

- **network signalling and control architectures** in emerging telecommunication environments *(e.g. SDN, NFV, FN, cloud computing, VoLTE/ViLTE, IMT-2020 technologies, etc.)*
- **services and application control** and signalling requirements and protocols
- **session control** and signalling requirements and protocols
- **resource control** and signalling requirements and protocols
- **signalling and control requirements and protocols** to support attachment in emerging
- telecommunication environments
- signalling and control requirements and protocols to support **broadband network gateways**
- signalling and control requirements and protocols to support **emerging multimedia services**
- signalling and control requirements and protocols to support emergency telecommunication services (**ETS**)
- signalling requirements for establishing the **interconnection of packet-based networks**, including VoLTE/ViLTE-based networks, IMT-2020 and beyond
- **test methodologies** and test suites as well as monitoring of parameters set for emerging network technologies and their applications, including cloud computing, SDN, NFV, IoT, VoLTE/ViLTE, IMT-2020 technologies, etc., to enhance interoperability
- **conformance, interoperability testing** and network/system/service testing, including **benchmark testing**, a testing methodology and testing specification of standardized network parameters in relation to the framework for **Internet-related performance measurement**, etc.
- **combating counterfeiting** of ICT devices

SG 11 Structure

Conformity Assessment Steering Committee

CASC Chairman:
Isaac Boateng (NCA)
Vice-chair: Khoa Nguyen Van (NTA,MIC)
Vice-chair: Karim Loukil (CERT)

CASC

SG11

SG11 Chairman:
Andrey Kucheryavy
(Russia)

Signalling requirements and protocols for emerging telecommunications networks

WP1   WP 1 Chairman: Xiaojie Zhu (China Telecom)

Q1/11, Q2/11, Q3/11, Q4/11, Q5/11

Control and management protocols for IMT-2020

WP2   WP 2 Chairman: Shin-Gak Kang (ETRI)

Q6/11, Q7/11, Q8/11

Regional Group for Africa

RG-AFR Chairman:
Isaac Boateng (NCA)
RG-AFR Vice-Chair:
Karim Loukil (CERT)

SG11RG-AFR

Conformance and interoperability testing, combating counterfeit ICT and mobile device theft

WP3

WP 3 Chairman: Kaoru Kenyoshi (NEC)
WP 3 Vice-chair: Awad Ahmed Ali Hmed Mulah (NTC)
WP 3 Vice-chair: João Alexandre Moncaio Zanon (NTA)

Q9/11, Q10/11, Q11/11, Q12/11, Q13/11, Q14/11, Q15/11

Regional Group for RCC

RG-RCC Chairman:
Alexey Borodin
(Rostelecom)

SG11RG-RCC

List of questions of SG11

Question number	Title
Q1/11	Signalling and protocol architectures in emerging telecommunication environments and guidelines for implementations
Q2/11	Signalling requirements and protocols for services and applications in emerging telecommunication environments
Q3/11	Signalling requirements and protocols for emergency telecommunications
Q4/11	Protocols for control, management and orchestration of network resources
Q5/11	Protocols and procedures supporting services provided by broadband network gateways
Q6/11	Protocols supporting control and management technologies for IMT-2020
Q7/11	Signalling requirements and protocols for network attachment including mobility and resource management for future networks and IMT-2020
Q8/11	Protocols supporting distributed content networking and information centric network (ICN) for future networks and IMT-2020, including end-to-end multi-party communications
Q9/11	Service and networks benchmark testing, remote testing including Internet related performance measurements
Q10/11	Testing of emerging IMT-2020 technologies
Q11/11	Protocols and networks test specifications; frameworks and methodologies
Q12/11	Testing of internet of things, its applications and identification systems
Q13/11	Monitoring parameters for protocols used in emerging networks, including cloud computing and software-defined networking/network function virtualization (SDN/NFV)
Q14/11	Cloud interoperability testing
Q15/11	Combating counterfeit and stolen ICT equipment

STRATEGIC GOALS OF SG11, STUDY PERIOD (2017-2020)

- **Signalling requirements for existing and emerging technologies/services** *(Tactile Internet (TI), Augmented Reality (AR) and Flying Ad Hoc Networks)*

- **SS7 security** (e.g. new authorizations procedures are needed, SS7 firewall/router, etc.) *Note: see the [summary](#) of the ITU Workshop "[SS7 Security](#)"*

- **5G/IMT-2020 control plane and signaling requirements for 5G's services**

- **Interconnection of 4G (VoLTE/ViLTE) and 5G/IMT-2020 networks**

- **Implementation of C&I Programme**

    - Testing specifications for all types of technologies, networks and services, including testing of Internet technologies/services/apps (e.g. IoT, Tactile Internet, Augmented Reality, Flying Ad Hoc Networks, robotics network etc.)

    - Recognition procedure of testing laboratories and joint ITU/IEC certification schemes (through ITU-T CASC)

- **Combating counterfeit and mobile devices theft**

Source: presentation of SG11 Chairman, [TD56 (GEN/11)](#)

More details about ITU-T SG11 strategic goals are available in its action plan, [TD173 (GEN/11)](#)

Conclusion

- SG11 is the lead SG on **signalling requirement and protocols (including IMT-2020), test specifications** and **conformance & interoperability testing**

- SG11 will study protocols and test specifications for new service and new network e.g. **NGN enhance, Cloud computing, SDN, IPv6** etc.

- SG11 would take **the lead coordinating role in the harmonization of various protocol standards** based on the concept of consistent end-to-end interoperability

- SG11, as a lead group, will study ways to combat **counterfeiting** and the use of **stolen ICT devices**

- SG11 will study testing methodologies related to **Internet performance measurements**

- SG11 study a way to implement a **testing laboratory recognition procedure** (CASC)

SG11 MEETINGS IN 2017

- **19 Rapporteur meetings (full list is available [here](#))**

- **Regional groups meetings:**

  - **[SG11RG-AFR](#) (6 April 2017, Cairo)**

  - **[SG11RG-RCC](#) (22 June 2017, TBC)**

- **CASC meeting (e-meeting), 12 July 2017 (see CASC's [web page](#))**

- **Next SG11 meeting (8-17 November 2017)**

SG11 contacts

www.itu.int/itu-t/go/sg11

tsbsg11@itu.int