ITU-T STUDY GROUP 11 in STUDY PERIOD 2017-2020

Signalling requirements, protocols, test specifications and combating counterfeit products

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• Statistic of SG11, Study Period (2013-2016)
• Areas of study and leadership of SG11
• Strategic goals of SG11, Study Period (2017-2020)
• Key tools of SG11 for achieving the goals
• Highlight of last meeting
STATISTICS OF SG11
Study Period (2013-2016)

Note: more details are available in the presentation of SG11 Chairman, WTSA-16
SG11 in numbers, positive trend

Total publications and new Recs. approved

- 2008-2012: New Recs Approved, Documents Published (Recs, Supplements, TRs, Guidelines)
- 2013-2016: New Recs Approved, Documents Published (Recs, Supplements, TRs, Guidelines)

Average number of participants per SG11 meeting

- 2008-2012: 56
- 2013-2016: 106

Contributions Submitted

- 2008-2012: 304
- 2013-2016: 503

Number of TDs (PLEN + GEN)

- 2008-2012: 1090
- 2013-2016: 1354
AREAS OF STUDY AND LEADERSHIP OF 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
Structure

- **SG11**
  - **CASC**
    - **WP1** Signalling requirements and protocols for emerging telecommunications networks
      - Q1/11, Q2/11, Q3/11, Q4/11, Q5/11
    - **WP2** Control and management protocols for IMT-2020
      - Q6/11, Q7/11, Q8/11
    - **WP3** Conformance and interoperability testing, combating counterfeit ICT and mobile device theft
      - Q9/11, Q10/11, Q11/11, Q12/11, Q13/11, Q14/11, Q15/11
  - **SG11RG-AFR**
  - **SG11RG-RCC**
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
STRATEGIC GOALS OF SG11
Study Period (2017-2020)
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
Achieved results

Control plane of SDN

Q.3051: Signalling architecture for the control plane of distributed service networking

Resource control protocols for SDN

Q.3711: Signalling requirements for software-defined broadband access network
Q.3712: Scenarios and signalling requirements of unified intelligent programmable interface for IPv6

Services (e.g. cloud computing)

Q.4040: The framework and overview of cloud computing interoperability testing

Current activities

Control plane of SDN

Q.SCO Scenarios and signalling requirements for SDN based Central Office (timing: end of 2017)
Q.SMO Signalling requirements of Software-defined Metro Orchestration (timing: end of 2017)
Q.SVDC Signalling requirements of the Sew interface for Virtual Data Center (timing: end of 2017)
Q.BNG-IAP Signalling requirements of IP address pool based on broadband network gateway by SDN technologies (timing: end of 2018)
Q.NEA-REQ Signalling Requirements of NFV Entity Management for Network Attachment (timing: end of 2018)
Q.SAN-MIM Signalling requirements of SDN-based access networks with media independent management capabilities (timing: end of 2017)

Services (e.g. cloud computing)

Q.rrp Request routing protocol for content delivery (timing: end of 2017)
Q.CCP Set of parameters of cloud computing for monitoring (timing: end of 2017)
Potential new directions

• global overview on 5G control plane (protocols – which/where/when)

• protocols to be used for interconnection of 5G’s slices (interoperability of slices)

• protocols/procedures to be used for benchmarking of 5G slice’s (e.g. monitoring procedures)

• Signalling requirements for Multilevel TI-5G/IMT-2020 networks

• requirements for protocols to be used for 5G services (e.g. flying ad hoc networks, IoT, TI, AR, robotics network etc.)
INTERCONNECTION OF 4G (VoLTE/ViLTE) AND IMT-2020 NETWORKS

ACHEIVED RESULTS

• Started work item on VoLTE/ViLTE interconnection framework (Q.30xx)
• Resolution 93 of WTSA-16
  “Interconnection of 4G, IMT-2020 networks and beyond”
  NOTE: instructs Study Group 11 to develop ITU T Recommendations which specify the framework and signalling architectures to be used for establishing interconnection among 4G, 5G/IMT-2020 networks and beyond to achieve interoperability worldwide

THE WAY FORWARD

• To continue developing the framework for interconnection of 4G networks, including interconnection of existing legacy PSTN/PLMN networks
  NOTE: close collaboration with SG2 on ENUM architecture to be used for 4G Interconnection
• To study issues related to 5G interconnection
TESTING SPECIFICATIONS

Potential new directions

• testing specifications for **testing 5G** (protocols/services/benchmarking)
• testing specifications for **4G/5G interconnection**
• **cloud interoperability** testing
• methodology for testing of **network’s sustainability to IoT traffic**
• methodology for testing **HetNet with ultra low latency**
• methodology for testing **HetNet gateways**, including gateways to be used in self-organizing robotics networks
• procedures to be used for **monitoring** (e.g. IoT traffic, probes)
• **IoT testing** (e.g. IoT identifiers, IoT applications)
• testing specifications for **benchmarking of ICT products**
• **Internet performance related testing**
  (e.g. e2e bit rate, KPI, apps, tactile Internet, remote testing)
• **Testing Laboratory Recognition procedure and joint certification schemes**
  (e.g. IEC, GCF)
Internet performance measurements

**Vision:** Unified methodology of Internet speed measurement usable by end-users on the fixed and mobile networks

**Two types of measurements:**
- Network Internet access speed
- Internet resources access speed

![Diagram showing Internet performance measurements](http://itu.int/en/ITU-T/C-I/Pages/IM/Internet-speed.aspx)
IMPLEMENTATION OF ITU C&I PROGRAMME

Rev. Resolution 76 of WTSA-16

“Studies related to conformance and interoperability testing, assistance to developing countries, and a possible future ITU Mark programme”

• SG11 coordinates the Sector's activities related to the ITU C&I programme across all study groups
  
  • Living list of key technologies suitable for C&I
    [http://itu.int/go/key-technologies](http://itu.int/go/key-technologies)
  
  • Reference table of ITU-T Recs suitable for C&I
    [http://itu.int/go/reference-table](http://itu.int/go/reference-table)
  
  • List of pilot projects on C&I
    [http://itu.int/go/pilot-projects](http://itu.int/go/pilot-projects)
  
  • Interop test events
    [http://www.itu.int/en/ITU-T/C-I/interop/Pages/default.aspx](http://www.itu.int/en/ITU-T/C-I/interop/Pages/default.aspx)

• Conformity Assessment Steering Committee (CASC)
  
  • Developing TL’s recognition procedure
  
  • Establishing the joint certification schemes with external certification bodies (IEC, GCF)
  
  • List of ITU-T Recs for joint certification scheme
COMBATING COUNTERFEIT AND STOLEN ICT DEVICES

RESOLUTION 96 (WTSA-16) “ITU Telecommunication Standardization Sector studies for combating counterfeit telecommunication/information communication technology devices”

RESOLUTION 97 (WTSA-16) “Combating mobile telecommunication device theft”

New potential areas of study:

- methods of assessing and verifying identifiers used for purposes of combating counterfeit production
- list of technologies/products, used for testing conformance with ITU-T Recommendations, in order to help in efforts to combat counterfeit ICT production
- solutions to address the problem of duplication of unique identifiers
Key tools of ITU-T SG11

- SG11 meetings (regular meetings and interim meetings)
- Collaboration with ETSI TC INT
- Regional Groups SG11RG-AFR and SG11RG-RCC
- Conformity Assessment Steering Committee (CASC)
- ITU Conformance and Interoperability Programme (C&I Portal – www.itu.int/go/citest)
BACKGROUND OF COLLABORATION BETWEEN SG11 AND ETSI TC INT

Topics for collaboration:

• SIP-IMS conformity testing (web)
• Internet related performance measurements (web)
• Framework of an interconnection among VoLTE/ViLTE-based networks
• Requirements and test specifications for signalling protocol “DIAMETER” to be used in the IMS-based network for VoLTE/ViLTE interconnection

Joint meetings: 1 (Sept. 2015, Vienna); 2 (March 2016, Sofia Antipolis; June 2016, Geneva)

Outcomes:

• finalized the SIP-IMS Work plan (Rel.10)
• ITU-T SG11 approved Rec. ITU-T Q.3960 (July 2016)
• The testing method of e2e bitrate is under development now (draft ITU-T Q.3961)

NOTE: ETSI incorporates the Q.3960 and Q.3961 into one standard

• Started work item on VoLTE/ViLTE interconnection framework (Q.30xx)
CASC (Conformity Assessment Steering Committee)

- **Established in April 2015** by ITU-T SG11 to elaborate detailed procedures for the implementation of a test laboratory recognition in ITU-T (enforced by mandate of SG11 in WTSA-16 Resolution 2)
- **Conducted 3 meetings**
- **Works** in accordance with the ITU-T SG11 Guideline “**Testing laboratories recognition procedure**” which describes the procedure for recognition of TL that have competence for testing against ITU-T Recommendations
- Established a **list of ITU-T Recommendations** (e.g. ITU-T P.1140, ITU-T P.1100, ITU-T P.1110 and K.116) which will become subjects of the **future joint certification schemes** according to member's request
- SG11 approved **Guidelines for appointment of ITU-T experts in Feb 2017**
- IECEE/CMC (Certification Management Committee) established a joint **Task Force “ITU Requirements”** focus on defining the ITU requirements for the inclusion of a TL and joint certification program with IECEE

More information is available on the [web page](#)
CASC's FUTURE PLANS

• To continue working on the guidelines
  • Guideline on ITU-T CASC collaboration procedure with established accreditation bodies to assess TLs in the scope of approved ITU-T Recommendations
  • Guideline on ITU-T CASC procedure to recognize Testing Laboratories

• To start a pilot joint ITU/IEC certification scheme with regards “... to promote the visibility of ITU standards (ensure interoperability), by means of having an ITU testing mark regime” (Res.76 of WTSA-16)

• To extend collaboration with different certification/accreditation bodies and testing laboratories (e.g. GCF, national certification bodies, TLs etc.)

• “... to identify a list of technologies/products, used for testing conformance with ITU-T Recommendations, in order to help in efforts to combat counterfeit ICT production” (Res.96 of WTSA-16)
Highlight of last meeting

• New leadership and new structure
• Action plan for study period 2017-2020
• Approval of appointment of Rapporteurs
• Appointment of liaison officer and representatives
• Agreed Work plan for interim Working Party and Rapporteur meetings
• 9 new work items approved
Approved and Consented Recommendations, Guidelines and TR

- ITU-T Q.3053 (formerly Q.Arc-IPSMS) on Signalling architecture and requirements for IP based short message service over ITU-T defined NGN (Q1/11)
- ITU-T Q.3630 v.1 Inter-IMS Network to Network Interface (NNI) (Q2/11)
- ITU-T Q.3713 (formerly Q.BNG-Pool) Signalling requirements for BNG (Broadband Network Gateway) pool (Q5/11)
- ITU-T CASC procedure to appoint ITU-T technical experts (CASC)
- Survey report on counterfeit ICT devices in Africa region (Q15/11)
VoLTE/ViLTE interconnection

• Made progress on Q.30xx_VoLTE_Interconnection_FW “Framework of interconnection of VoLTE/ViLTE-based networks”
• Revised Recommendation ITU-T Q.1912.5 “Interworking between Session Initiation Protocol (SIP) and Bearer Independent Call Control protocol or ISDN User Part”
• Started new work items
  – Q.suppl.VoLTE_ETS_Interconnection “Signalling requirements for interconnection between VoLTE-based network and other networks supporting emergency telecommunications service (ETS)”;
  – Q.VoLTE_INT_TEST “VoLTE/ViLTE interconnection testing for interworking and roaming scenarios including relevant QoS/QoE testing”.

ITU
SDN 5G/IMT-2020 and SS7 security

• Made progress on ongoing work items relating to signalling requirements of SDN-based access network and NFV Entity Management for Network attachment, Managed P2P communications

• Started working to new amendment to Q.731.3 which has discussion of mechanism of authentication for caller id
Testing and Combating counterfeit

• Made progress on Internet performance measurement with alignment of the title with SG11 mandates
• Approved technical report of Africa counterfeit ICT devices
• Started new work item Framework for combating the use of Stolen Mobile ICT Devices
• Two draft technical reports have been revised:
  – Q.FW_CCF: Framework for solution to combat counterfeit ICT Devices
• Created implementation of WTSA-16 Resolution 96 and 97 relating to combating counterfeit and stolen ICT devices
• Started a new work item Q.Het_IoT_Gateway_Test for testing methodology of the heterogeneous network gateway used for IoT devices communications
• Made progress on ongoing work items related to IoT testing
  – Q.39_IoT_MN_test "The architecture and facilities of Model network for IoT testing"
  – Q.FW_IoT/Test “Framework for IoT Testing”
  – Q.39_FW_Test_ID_IoT “The framework of testing of identification systems used in IoT”
Conclusion

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
Hope to see you in SG11 meetings

Thank you for your attention!

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