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| **Telecommunication StandardizationBureau** | ITU logo |
|  | Geneva, 25 July 2014 |
| Ref: | **TSB Circular 109**COM 11/SP | - To Administrations of Member States of the Union |
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| E-mail: | tsbsg11@itu.int  | **Copy:**- To ITU-T Sector Members;- To ITU-T Associates;- To ITU-T Academia;- To the Chairman and Vice-Chairmen of Study Group 11;- To the Director of the Telecommunication Development Bureau;- To the Director of the Radiocommunication Bureau |
| Subject: | **Approval of revised Question 11/11** |

Dear Sir/Madam,

1 At the request of the Chairman of Study Group 11 *Signalling requirements, protocols and test specifications*, I have the honour to inform you that, in accordance with the procedure described in Resolution 1, Section 7, § 7.2.2, of WTSA (Dubai, 2012), Member States and Sector Members present at the last meeting of this Study Group which was held in Geneva from 9 to 16 July 2014, agreed by reaching consensus to approve the following revised Question:

*Question 11/11, Protocols and networks test specifications; frameworks and methodologies* (see Annex 1)

2 **Question 11/11 is therefore approved.**

3 The resulting Recommendations are assumed to fall under the Alternative approval process (AAP).

Yours faithfully,

Malcolm Johnson
Director of the Telecommunication
Standardization Bureau

**Annex: 1**

**ANNEX 1**

**(to TSB Circular 109)**

**Protocols and networks test specifications; frameworks and methodologies**

(Continuation of Question 8/11 and part of Question 14/17)

**1 Motivation**

ITU-T Resolution 76 – Studies related to conformance and interoperability testing, assistance to developing countries, and a possible future ITU Mark programme – resolves that ITU-T Study Group 11 coordinates the sector’s activities related to the ITU Conformance and Interoperability (C&I) programme across all study groups and reviews the recommendations in the Conformance and Interoperability Business Plan for the long term implementation of the C&I programme.

ITU T is producing a large number of Recommendations. To achieve interoperability and conformity, one of the important aspects of the ITU C&I Programme concerns the development and maintenance of testing frameworks and methodologies.

It is essential that conformance and interoperability testing methodologies used by all study groups engaged in testing are aligned and consistent with each other. To achieve interoperability on a global scale, the ITU-T Recommendations must be developed and maintained with conformance and interoperability in mind according to the relevant methodology.

The objective of conformance testing is to determine how completely and correctly the requirements stated in the Recommendation have been met by the implementation. On the contrary, in interoperability testing, the objective is to determine if two or more implementations of the same Recommendation communicate and correctly exchange information with each other. It is generally assumed that the conformity of an implementation have been tested prior to perform an interoperability testing assessment.

Methodology experts from this Question will interact with experts from other study groups engaged in developing test specifications in their respective areas of responsibility.

Under the conditions surrounding the conversion of public telecommunication networks from circuit-switched digital networks into packet-switched ones, besides resolving the issues of building the network architecture, quality of service, network management, etc., the issues of NGN equipment testing, both in terms of compatibility for various manufacturers and in terms of compatibility of new services with the existing ones under NGN equipment operation, are gaining paramount importance. It is even more important for the ubiquitous networking paradigm.

Several simultaneous proceeding processes are contributing to that:

1 The increase in the range of equipment manufacturers due to the growth of the software product share in the implementation of telecommunication technical means, and a greater market openness.

2 The reduction of the new service development and introduction period.

3 The increase in the testing cost as compared to the cost of testing for circuit-switched networks, due to the equipment's greater functionality.

All these processes leads to the model networks testing as an efficient type of testing.

Many organizations are now involved in network testing.

The set of ITU‑T recommendations based on the model network concept were developed by SG 11 during the 2005-2008 and 2009-2012 study periods.

The most important part of the model network testing concept is the network under testing (NUT). According to the experience of international testing centres created under ITU‑D supervision, the NUT is the best instrument to perform interoperability testing.

However, the NGN concept is more widely deployed now. The DSN technologies are always ready, IPv6 replaces IPv4, home networking (HN) is part of the network. Furthermore, the Internet of things (IoT), web of things (WoT), ubiquitous sensor networks (USN), VANET, etc., are the new networking challenges for testing research. The IoT, WoT, USN will be studied by Q.12/11. The VANET testing will be under Q.11/11 responsibility.

This Question is responsible for Q.39xx-series (testing for next generation networks), Q.1912.x-series, X.290-series (except X.292), X.Suppl.4, X.Suppl.5 and Z.500.

**2 Question**

Study items to be considered include, but are not limited to:

– What extensions or enhancements to existing Recommendations are required to achieve Conformity and Interoperability?

– Which technologies that are being developed for the ICT market require conformity and interoperability testing (taking into account market needs)?

– What new Recommendations, Supplements or other provisions are required (if any) to define or revise the definitions of testing methodologies and frameworks?

– What types of protocols need a testing description?

– What are the testing specifications for signalling and data protocols?

– Should the architecture of model networks (Q.3900) be modernized to DSN, VANET, HN, IPv6 NUT testing?

– What is the DSN tests list and types for NUT?

– What is the VANET tests list and types for NUT?

– What is the HN tests list and types for NUT?

– What is the IPv6 tests list and types for NUT?

– What are the testing scenarios for NUT tests for DSN?

– What are the testing scenarios for NUT tests for VANET?

– What are the testing scenarios for NUT tests for HN?

– What are the testing scenarios for NUT tests for IPv6?

– What are the general test procedures for conformance testing?

– What are the existing Recommendations which include test suites?

**3 Tasks**

Tasks include, but are not limited to:

– develop interoperability testing methodology and framework for general use, giving consideration to the testing of existing and emerging network (e.g. NGN, FNs, etc.) as well as off-the-shelf software components;

– coordinate conformance and interoperability testing activity with all other ITU-T study groups and the JCA-CIT;

– assist Recommendation developers in all study groups in applying conformance and interoperability testing methodology to their specific needs;

– develop and maintain a living list of technologies that require conformity and interoperability testing;

– develop tutorial material on conformance and interoperability testing methodology and framework;

– identify case by case the best way (e.g. by using TTCN-3 language) to develop test specification for existing ITU‑T Recommendations;

– analyse the possibility to use the model network architecture, in accordance with Q.3900, to test DSN, VANET, HN, IPv6 and different telecommunication protocols;

– identify the list and types of tests for signalling and data protocols;

– identify the list and types of tests for NUT testing for DSN;

– identify the list and types of tests for NUT testing for VANET;

– identify the list and types of tests for NUT testing for HN;

– identify the list and types of tests for NUT testing for IPv6;

– develop the testing program and testing specifications for signalling and data protocols;

– develop the testing program and testing specifications for NUT testing for DSN;

– develop the testing program and testing specifications for NUT testing for VANET;

– develop the testing program and testing specifications for NUT testing for HN;

– develop the testing program and testing specifications for IPv4/IPv6 networks interoperability;

– specify general methodologies for conformance testing of equipment to Recommendations of the ITU Telecommunication Standardization Sector (ITU-T).

An up-to-date status of work under this Question is contained in the SG 11 work programme (<http://itu.int/ITU-T/workprog/wp_search.aspx?Q=11/11>)

**4 Relationships**

**Recommendations**

– Q, Y, H, G, I, M, X, Z and F-series

**Questions**

– ~~3/11, 8/11, 10/11 and 12/11~~All ITU-T SG11 Questions

**Study groups**

– ITU‑T SG 13 on NGN architecture and IoT, USN, VANET, IPv6

– ITU‑T SG 16 on multimedia services and applications

– ITU-T SG17 which is responsible for languages and description techniques, including TTCN-3

– All other ITU-T SGs that are involved with C&I activities

**Standardization bodies**

– IETF, ETSI, IEEE

– Regional SDOs and other organizations dealing with NGN, IoT, USN and VANET

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