

ITU-D REGIONAL DEVELOPMENT FORUM
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The model network methodology for NGN technical means testing

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Reasons of necessity of NGN testing

- **Growth of the manufactured equipment nomenclature and software** which realizes NGN functionality and appear a lot of unify equipment (router with gateway functionality and etc.)
- **Appear of new set of services** which is realized without changes of network and independent of technologies
- **Absence of guarantee quality** of network performance in comparison with existent TDM networks

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Purpose of NGN testing

NGN technologies harmonization is the global principle on implementation and operation of NGN networks development and usages

Current situation in testing standardization area in ITU-T

■ Present time

Conformance testing which includes protocols and interfaces testing (*TTCN 1 (X.292-1995), TTCN 2 (X.292-1998), TTCN 3 (Z.140-2003)*)

TSS&TP, PICS/PIXIT proformas for different protocols testing)

■ Future

NGN based on the functional entity which interworks using some protocols

Interoperability testing

(Q.3901 for NGN, Draft Q.3904 for IMS)

The new approach of NGN testing (implementing of WTSA-08 Res.76)

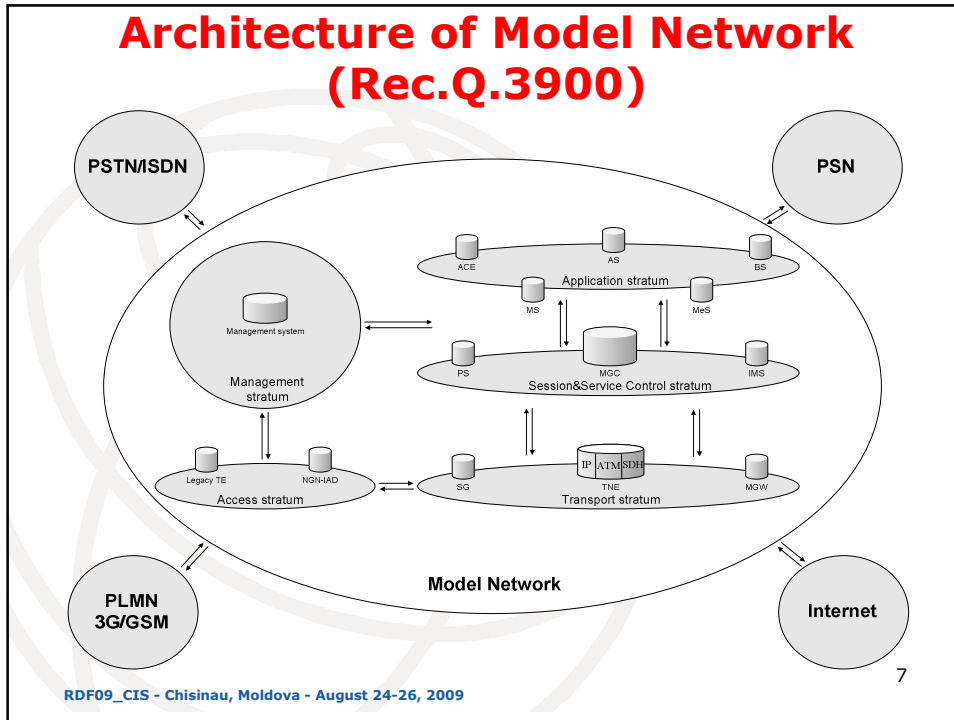
- **Functional Interop. testing** – verification the functionality on TM (EUT) and system-network solutions (NUT) different vendors for compatibility in accordance with basic ITU-T Recs.
- **Service testing** – testing the services on “end-to-end” scenarios including call flow testing and testing with existent provider’s operation systems (Billing, OSS/BSS and etc.)
- **QoS testing** – testing the QoS parameters and RACF functionality

Model Network as a Global instrument for NGN testing

Model network – a network which simulates the capabilities similar to those available in present telecommunication networks, has a similar architecture and functionality and uses the same telecommunication equipment

Model networks facilities – simulation different abnormal situation, testing in complex system solutions, testing new services and etc.

Architecture of Model Network (Rec.Q.3900)



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Classification of NGN TM (Rec. Q.3900)

Call Session Control System	
Media Gateway Controller (MGC)	S3, S7, S9, S10, S12 T10, T11, T12, T13
Proxy Server SIP (PS)	S2, S3, S7, S11, S12 T10, T11, T12, T13
IP Multimedia Subsystem (IMS)	S1, S3, S6, S7, S8, S10, S12, S13 T10, T11, T12, T13, T14, T15, T16, T17
Voice and signaling transmit system	
Media Gateway (GW)	T7, T8
Signaling Gateway (SG)	T8, T9
Transport Network Environment (TNE)	T5, T6, T8
Application servers	
Application Server (AS)	S4, S5, S6, S14, S15
Media server (MS)	S4, S5, S6, S14, S15
Messaging Server (MeS)	S4, S5, S6, S14, S15

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Testing methodology

NGN TM local testing

- Functional testing
- Load&Stress testing
- Conformance testing

Network Under Test (NUT)

- Functional testing
- Interconnect testing
- Services testing
- Ent-to-End testing
- QoS testing
- Mobility&Roaming testing

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History of testing research area in ITU-T

■ WTSA-04 (Brasilia, Oct. 2004)

Creation of Q.8/11 "NGN test specification"

■ WTSA-08 (RSA, Dec.08)

Creation **WP4/11** "Test specifications"

Continuation of **Q.8/11** "Protocol Test Specifications for NGN"

Creation of new questions

Q.9/11 "Monitoring parameters for NGN protocols"

Q.10/11 "Service test specification for NGN"

Q.11/11 "QoS tests specification for NGN"

Q.12/11 "NID and USN test specification"

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The SG11 achievements under responsibility of testing

- ✓ **Q.3900** Methods of testing and model network architecture for NGN technical means testing as applied to public telecommunication networks (approved 09/06)
- ✓ **Q.3901** Integral testing. Tests and services' distribution for NGN technical means testing in the model and operator networks (approved 01/08)
- ✓ **Q.3902** Parameters to be monitored in the process of operation when introducing NGN in PSTN (approved 01/08)
- ✓ **Q.3903** Formalized presentation of testing results (approved 09/08)
- ✓ **Q.3904** The scenarios, list and types of tests for TM local and NUT testing for IMS on the Model networks (on development)

Plans of WP4/11 ITU-T

- ✓ **IMS TM and NUT testing**
- ✓ **IMS/PES benchmarking**
- ✓ **NIT between NGN and TDM protocols**
- ✓ **NGN services testing (TIP/TIR, OIP/OIR, HOLD etc)**
- ✓ **IPTV testing**
- ✓ **NACF and RACF testing**
- ✓ **Broadband Access testing (fixed and wireless)**
- ✓ **"end-to-end" NGN testing (TS1, TS2)**
- ✓ **QoS testing**

Resume for Model networks usages

- **To find and solve disagreements in the equipment realization before introduction into the live network**
- **Solving compatibility issues and interchangeability of equipment from different vendors**
- **Accumulation of experience in part of solving compatibility problems on current operator networks**
- **Maintenance of new services and development procedures of its introduction into the live networks**

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Thank you for attention



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