

Report on the results of the Questionnaire on the status of Conformance and Interoperability of Equipment and Systems

Following the [Regional ITU Consultation on Conformance Assessment and Interoperability for the Africa Region](#) Nairobi, Kenya, 30-31 July 2010 and the [ITU-BDT workshop "NGN conformity and interoperability testing centres"](#) Nairobi, 2 - 4 August 2010 a Survey : Questionnaire on Conformance and Interoperability Testing and Capacity Building was sent out to the ITU Membership. The Questionnaire may be found at the following website: <http://www.itu.int/ITU-D/CDS/gg/generic/questionnaire.asp?ProjectID=193> . The purpose of the Questionnaire was to collect information from ITU Members on the status of Conformance and Interoperability of Equipment and Systems

The deadline for response was June 2011 and some 26 responses were received to date, many with detailed answers to the questions posed. This report provides a summary of those responses. For reasons of confidentiality specific countries are not named except for one case where the relevant data is already published under that country's name, nor are specific equipment manufacturers or service providers identified.

The report is in two sections, the first being in the form of a slide presentation which identifies three groupings of responders. Group 1 where no equipment types are listed in the responses, and where service provision is largely or completely provided by a single service provider. Group 2 where the responders tended to have a dominant equipment supplier and a few service providers, and Group 3 where there was a wide mix of equipment suppliers and a number of service providers.

The second section of the report deals with two significant areas of the Questionnaire and where detailed response text is provided herein unchanged except for small editing to enhance the clarity of the response. These two areas are:

1. Listing of the main conformance and interoperability problems experienced in the Member State's fixed and mobile networks, and
2. The impact of these conformance and interoperability problems on the technical and economical aspects (for example Quality of Services network modifications, competitiveness, company image, additional costs to solve problems, etc).

PART I – Summary of the replies to the Questionnaire

http://www.itu.int/ITU-D/tech/NGN/ConformanceInterop/Questionnaire/QuestionnaireCI_Replies.pdf

PART II

1.0 List the main conformance and interoperability problems experienced on your fixed and mobile networks

- Legacy IN signalling, services behaviour when replacing equipment, signalling in mobile network (access, core, SMS)
- lack of conformity and interoperability between equipments from different vendors
- equipment from different manufacturers, due to application of non-standardized interfaces or protocols (for example: integration of IPTV system with IMS solutions, integration of NGN international softswitch and other manufacturer IMS element, integration of 3G-WLAN controller into the network, incompatibility of IMS solutions and SIP client, etc.);
- equipment from one manufacturer, but with different software revisions resulting in incompatible SIP clients
- conformity of STB equipment of different IPTV middleware manufacturers.
- Bandwidth: Capacity of transmission of voice, data and video when users add much to our network.
- Complexity of networks to achieve interoperability through integration of networks and devices is necessary to hire a third party who is knowledgeable in various brands of equipment.
- There are services that were launched with some providers do not provide infrastructure and support teams to enable interoperability with other operators.
- Defining the methodology for adopting standards, especially on equipment owned a supplier and you can also use proprietary interfaces.
- During the process of achieving interoperability between networks are affected important statistics such as: Completion of inbound calls to the mobile network carrier to interference ratio, etc.
- Loss of independence of the network, little robustness and low speed to emergency response.
- The management of the CDR for billing
- Implementation of new features and services on all platforms
- See the presentations related to Egypt in the following URL, which lists the problems experienced <http://www.itu.int/ITU-T/worksem/wtsa-08/res76/201007/Africa/programme.html>
- As the interoperability of the networks is required of the service providers, the technical problems are averted during the interconnection procedures.
- Since every fixed and mobile communications networks in our Member State should follow the procedures on conformity assessment and obligatory certification, so up to the present moment any problems weren't observed with conformity or interoperability.
- Different charging model, IMS does not support IN triggering and etc.
- New technology cannot interoperate with legacy equipment
- No testing centres and facilities
- Lack of trained personnel to undertake

- In our Member State we have established a type approval regime since many years so we don't have conformance and interoperability problems except for the informal market on which is dumped non-type approved equipments.
- IP MSAN with Softswitch
- CPEs/routers with DSLAM and IP routers
- MSAN-Soft switch conformity problems
- Soft switch (A vendor) & IMS core (B vendor) problems
- ISDN support problems
- User terminal problems both for IMS and SSW cores
- In general conformity and interoperability issues are based on software features that are provided by vendors. For example new release software may cause interoperability issues with other vendor equipment or services in the network. It is also even possible to come across compatibility/interoperability issues between different versions of the same equipment from the same vendor.
- One other issue may be interoperability issues between services and terminal equipment that customers use.
- Main interoperability issues are due to proprietary and non-standard interfaces of Vendors. Because of the market and regulatory requirements and some service requirements we are using some proprietary extensions on signalling systems and some proprietary protocols.
- In our Member State in general Mobile system interoperability works well and in fixed systems there is no problem with conformance to the standards. However regarding IP phone service, there have been complaints from consumers about the case of connecting terminals that have no function for emergency reporting.

2.0 What is the impact of these conformance and interoperability problems on the technical and economical aspects (for example Quality of Services network modifications, competitiveness, company image, additional costs to solve problems, etc)?

- Loss of quality
- The quality deterioration of public services in emergencies.
- additional costs to solve problems, quality of services
- Impact of conformance and interoperability problems on the **technical aspects**:
 - Inability to introduce attractive services promptly, to integrate existing and new services;
 - Inability to ensure and monitor QoS and service availability (lack of compatibility with operational support systems does not allow reduction of unnecessary administrative activities);
 - Frequent need for software modifications and/or addition of new elements;
 - Introduction of one new element or its software update causes hardware/software updates of other integrated elements;
 - Discrepancy of operators' expectations and real implementation possibilities, especially in relation to integration with existing elements.

- Impact of conformance and interoperability problems on the economical aspects:
 - Hardware/software updates require additional investments, since they are usually not included in contracts;
 - Inability to introduce attractive services reflects negatively on operator's competitiveness;
 - Inadequate quality of services undermines in the long run company's reputation;
 - Conformance and interoperability problems negatively impact income of the company.
- Adjusting prices of telecommunications services available to the public by poor service quality.
- Consolidation of continuous service, while maintaining access to the service and applications.
- The criteria for decision making, Service Availability, Customer Service and Quality.
- The participation and market positioning and has required establishing partnerships with integrators and solution providers at additional cost
- Costs increase because you have to use many resources to make the desired changes.
- See the presentations related to Egypt in the following URL, which lists the problems experienced: <http://www.itu.int/ITU-T/worksem/wtsa-08/res76/201007/Africa/programme.html>
- We have managed it with full cooperation from the vendors and network operators
- We are unaware of the magnitude of such impact. Because of the costs of testing the smaller service providers find that the bigger operators make impossible the use of the required equipment in general. This may cause competition problem as well, however the secure operation and the maintenance of an adequate service quality are the primary considerations even in such cases.
- Longer and more pricy integration, some exceptions appears in new services, more complex new services delivery and etc.
- It became costly for the general public to buy new devices as old devices cannot access the new technology, e.g. With the 3G technology, some of the services offered by the telecom operators on 3G cannot accessed on old handsets
- Poor Quality of services if the operators use a different model of equipment which does not conform to the standards.
- Sometimes, having bought an equipment which is not interoperable with the existing network, operators are required to modify the network in cases when they want to upgrade their networks, this can cause QoS to be compromised and also may be costly which in the end affects the end user.
- supply of poor quality equipment and systems
- dangerous equipment
- not conforming to standards
- no interoperability even within one supplier's equipment
- counterfeit equipment
- The impact due to Interoperability problems in the service in turn will affect the customer experience and the service provider might end up losing the customers
- Additional costs to solve problems

- Company image damaged
- Quality of Services network modifications
- Additional time to fix the problems
- Project schedule, scope change
- The answer for our country's mobile networks:
 - For all of the items mentioned in the question, the actual impact is based on where, when and how the problem occurred. The result may be from a simple alarm to an actual outage of the service resulting in commercial, quality and end user experienced problems
- Delay of the projects, multi-vendor implications, extra costs for upgrades, extra test needs after upgrades

The above responses provide a good idea of the kind of non interoperability problems and their impacts being experienced in practice. They provide food for thought as to what areas the ITU, within its scope and mandate, can provide assistance and relief. It is clear that capacity building and access to expertise is an essential ingredient as well as other initiatives to promote the use of global testable standards, product implementations tested for compliance and checked for interoperability in system interoperability test events.

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22-07-11