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Harmonizacija telekomunikacij in internetnega protokola prek omrežij (TIPHON), 3. izdaja - Specifikacija tehnološke ustreznosti - Profil TIPHON za ITU-T H.248 - 3. del: Abstraktni preskušalni niz (ATS) in delna dodatna informacija za preskušanje izvedbe protokola (PIXIT) - Proforma specifikacija

Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 3; Technology Compliance Specification; TIPHON profile for ITU-T H.248; Part 3: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification

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Technical Specification

Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 3; Technology Compliance Specification; TIPHON profile for ITU-T H.248; Part 3: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification

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Foreword

This Technical Specification (TS) has been produced by ETSI Project Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON).

The present document is part 3 of a multi-part deliverable covering Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON); Technology Compliance Specification; TIPHON profile for ITU-T Recommendation H.248, as identified below:

Part 1:   "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 2:   "Test Suite Structure and Test Purposes (TSS&TP) specification";

Part 3:   "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

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1 Scope

The present document specifies the Abstract Test Suite (ATS) for TIPHON profile for ITU-T Recommendation H.248, according to TS 101 885 [1].

The objective of the present document is to provide a basis for conformance tests for TIPHON profile for ITU-T Recommendation H.248 equipment giving a high probability of inter-operability between different manufacturer's TIPHON profile for ITU-T Recommendation H.248 equipments.

The present document covers the procedures described in TS 101 885 [1] and ITU-T Recommendation H.248 [4].

The ISO standard for the methodology of conformance testing (ISO/IEC 9646-1 [6] and ISO/IEC 9646-2 [7]) as well as the ETSI rules for conformance testing (ETS 300 406 [5]) are used as a basis for the test methodology.

Annex A provides the Tree and Tabular Combined Notation (TTCN) part of the ATS.

Annex B provides the partial Protocol Implementation eXtra Information for Testing (PIXIT) Proforma of the ATS.

Annex C provides the Protocol Conformance Test Report (PCTR) proforma of the ATS.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

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ca2115bc3323/sist-ts-ts-101-889-3-v1-1-1-2004

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

[1] ETSI TS 101 885: "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 3; Technology Mapping; Technology Mapping of TIPHON reference point N to H.248/MEGACO protocol".

[2] ETSI TS 101 889-1: "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 3; Technology Compliance Specification; TIPHON profile for ITU-T H.248; Part 1: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3] ETSI TS 101 889-2: "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 3; Technology Compliance Specification; TIPHON profile for ITU-T H.248; Part 2: Test Suite Structure and Test Purposes (TSS&TP) specification".

[4] ITU-T Recommendation H.248 v2 (2002/02): "Gateway control protocol".

[5] ETSI ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

[6] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[7] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".

[8] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".

[9]   ISO/IEC 9646-4: " Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realization".

[10]   ISO/IEC 9646-5: "Information Technology-OSI Conformance Testing Methodology and Framework, Part 5: Requirements on test laboratories and clients for the conformance assessment process".

[11]   ISO/IEC 9646-6: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol profile test specification".

[12]   ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".

3   Definitions and abbreviations

3.1   Definitions

For the purposes of the present document, the following terms and definitions apply:

- Terms defined in ITU-T Recommendation H.248 [4];

- Terms defined in TS 101 885 [1];

- Terms defined in ISO/IEC 9646-1 [6] and in ISO/IEC 9646-2 [7].

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3.2   Abbreviations

For the purposes of the present document, the abbreviations given in ISO/IEC 9646-1 [6], ISO/IEC 9646-6 [11], ISO/IEC 9646-7 [12], TS 101 885 [1] and the following apply:

AC	Audit Capabilities command
AD	ADd command
AM	Administration and Maintenance
ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
AV	Audit Value command
BI	Invalid behaviour
BO	Inopportune behaviour
BV	Valid behaviour
IUT	Implementation Under Test
LT	Lower Tester
MD	MoDify command
MG	Media Gateway
MGC	Media Gateway Controller
MO	MOve command
MTC	Main Test Component
N	NOtify command
PCO	Point of Control and Observation
PCTR	Protocol Conformance Test Report
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PTC	Parallel Test Component
SC	Service Change command
SU	SUbtract command
SUT	System Under Test
TC	Test Cases
TP	Test Purpose

TR   TRansport
TSS   Test Suite Structure
TTCN   Tree and Tabular Combined Notation
UT   Upper Tester

4   Abstract Test Method (ATM)

This clause describes the ATM used to test the TIPHON profile for ITU-T Recommendation H.248 [4], according to TS 101 885 [1].

4.1   Network architecture

The IUT to be tested can be one of the following: Media Gateway or Media Gateway Controller (see figure 1).
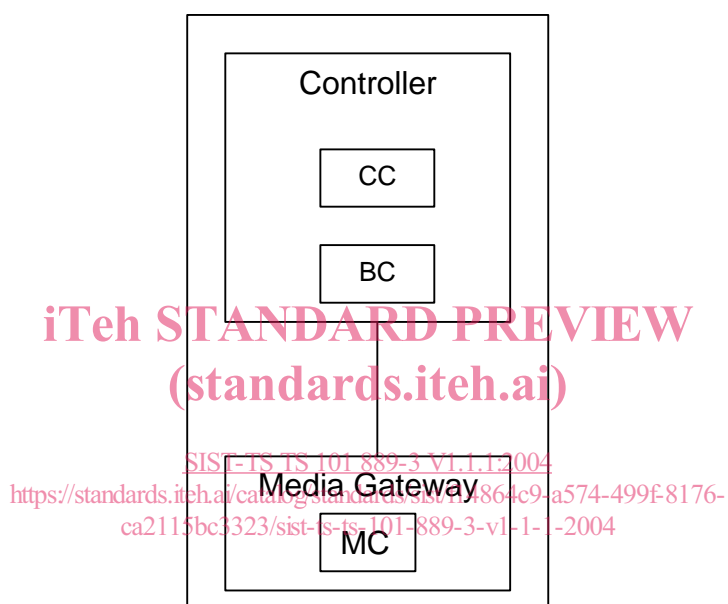

Figure 1: Network architecture

4.2   Protocol architecture

The Implementation Under Test (IUT) for which this test case specification consists of the H.248 protocol (see figure 2).
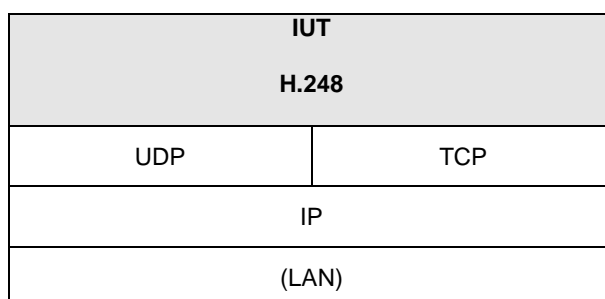

Figure 2: TIPHON protocol architecture

4.3   Test architecture

It is possible to specify an ATS based on a Single party (remote) test method for such an IUT when acting as an end entity. However, it is considered that an ATS based on such an approach is of limited use as the only way to specify IUT generated PDUs is to use the "implicit send" statement. Many users of such an ATS would replace the "implicit send" statements with descriptions of the behaviour at other interfaces.

An ATS based on a multi-party test method is considered to be more useful as it is closer to the way a real test suite would be constructed. Such a test method specifies behaviour at multiple network interfaces. One very important limitation here is that tests are focussed on one particular interface. Hence the test system is made up of a Main Test Component (MTC) plus one or more Parallel Test Components (PTC), see figure 4.
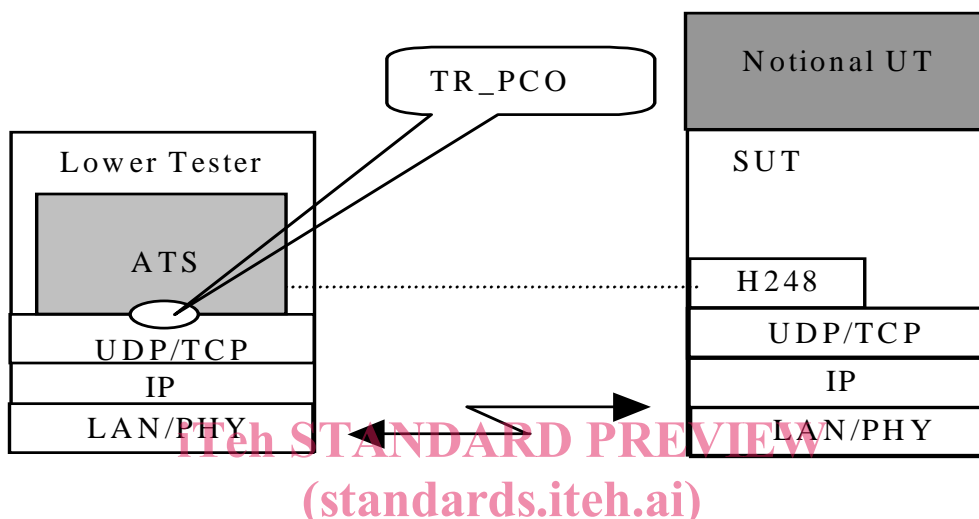
Figure 3: Test architecture

A single-party testing concept is used, which consists of the following abstract testing functions:

Lower Tester: A Lower Tester (LT) is located in the remote test system. It controls and observes the behaviour of the IUT.

ATS: The Abstract Test Suite (ATS), defined in the present document, and located in the remote test system.

CHN_PCO: A Point of Control and Observation (PCO) located at a virtual SAP corresponding to the H.248 port over the TCP/IP or UDP/IP protocol. All test events at the PCO are specified in terms of Abstract Service Primitives (ASP) containing complete PDU.

Notional UT: No explicit Upper Tester (UT) exists in the system under test. Nevertheless, some specific actions to cover implicit send events and to obtain feedback information are necessary for the need of the test procedures. A black box covering these requirements is used in the SUT as a notional U. This notional UT is considered as part of the test system.
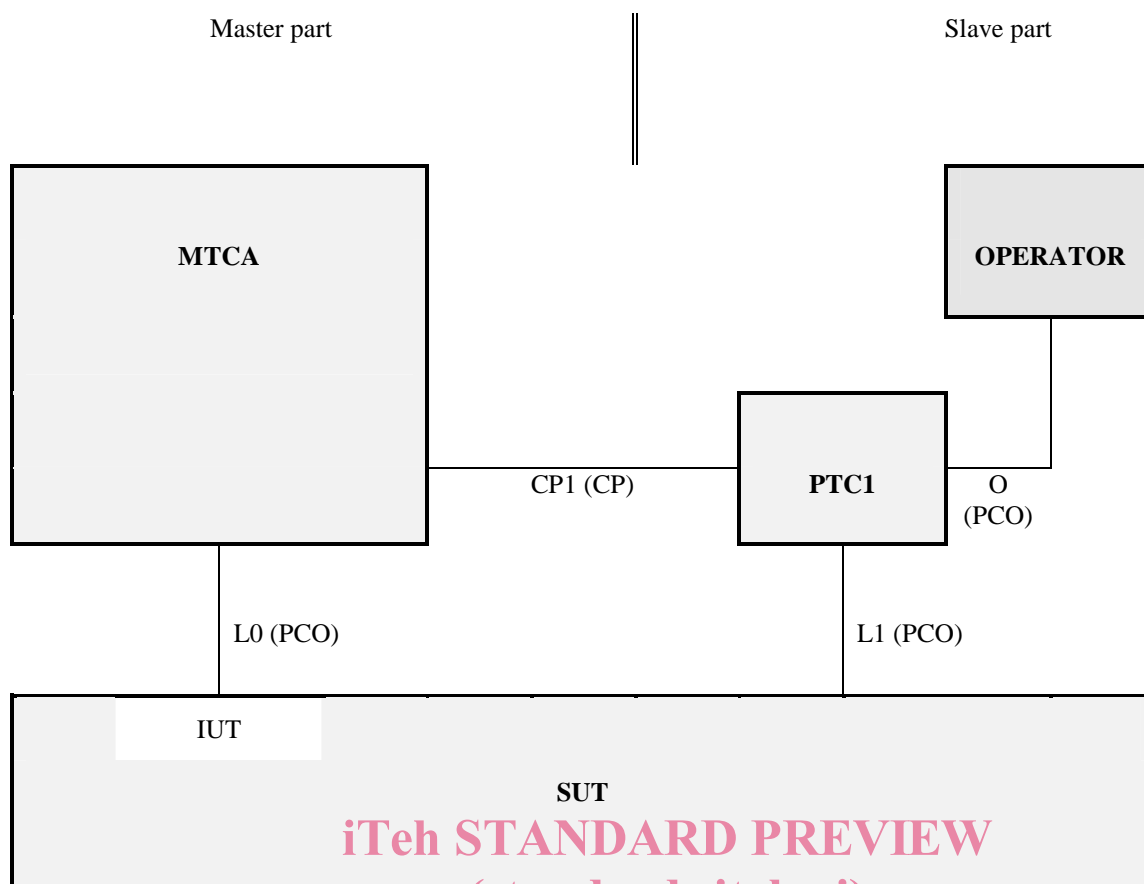
Master part   Slave part

Figure 4: Multi-party test method

In a master/slave arrangement, the MTC is considered to be the master while the PTCs are the slaves. The "slave" testers are only an explicit description of how to deal with the remote interfaces during the testing process, i.e. "how to make the IUT send the required message".

This means, in particular, that the verdict will only be assigned from the protocol aspects observed on the interface under test (i.e. by the "master" tester), as it would be observed by a terminal connected to this interface. A failure in the correlation between the protocol at the different interfaces to which the different testers are connected, i.e. in the mechanism of the functional service itself, will not cause a FAIL verdict. For instance, if the IUT fails to send a message on the tested interface after another interface has received the proper stimulus, the verdict will be INCONCLUSIVE.

The MTC **MTCA** has two functions in this configuration. Firstly, it has the MTC function of controlling the one PTC. Thus it is responsible for starting the PTC and afterwards coordinates activities by exchanging Coordination Messages (CM) with the PTCs. Secondly it is responsible for the behaviour of the Lower Tester (LT) at TR_PCO.

4.4   Primitives at TR_PCO

The primitive rcv_pdu (*port_number, PDU_message*) is used to receive H.248 messages from the IUT. The *port_number* value shall be obtained by using primitives at TT_PCO at the beginning of the test case.

The primitive snd_pdu (*port_number, PDU_message*) is used to transmit H.248 messages to the IUT. The *channel_number* value shall be obtained by using primitives at TT_PCO at the beginning of the test case.

5   Untestable Test Purposes (TP)

There are no untestable test purposes.