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Storitve in protokoli za napredna omrežja (SPAN) – Preskušanje integracije omrežja med H.323, ISDN in PSTN – 1. del: Zgradba preskušalnega niza in namen preskušanja (TSS&TP)

Services and Protocols for Advanced Networks (SPAN) – Network Integration Testing between H.323, ISDN and PSTN – Part 1: Test Suite Structure and Test purposes (TSS&TP)

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ETSI TS 102 169-1 V1.1.1 (2003-02)

Technical Specification

**Services and Protocols for Advanced Networks (SPAN);
Network Integration Testing between H.323, ISDN and PSTN;
Part 1: Test Suite Structure and Test purposes (TSS&TP)**

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 1 of a multi-part deliverable covering the Network Integration Testing between H.323, ISDN and PSTN, as identified below:

**Part 1:	"Test Suite Structure and Test purposes (TSS&TP)";**

Part 2:	"Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

1   Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) for Network Integration Testing (NIT) to verify the overall compatibility of ITU-T Recommendation H.323 [3], ISDN and non-ISDN (PSTN) over the national or international ISUP between networks. The TSS&TP specification covers the procedures described in ITU-T Recommendation H.323 [3] , ITU-T Recommendation H.225.0 [4] as specified in TS 101 883 [1] and ITU-T Recommendation Q.931 [5]".

All test purposes are written with reference to ITU-T Recommendation H.246 annex C [10] which implies the following test architecture:
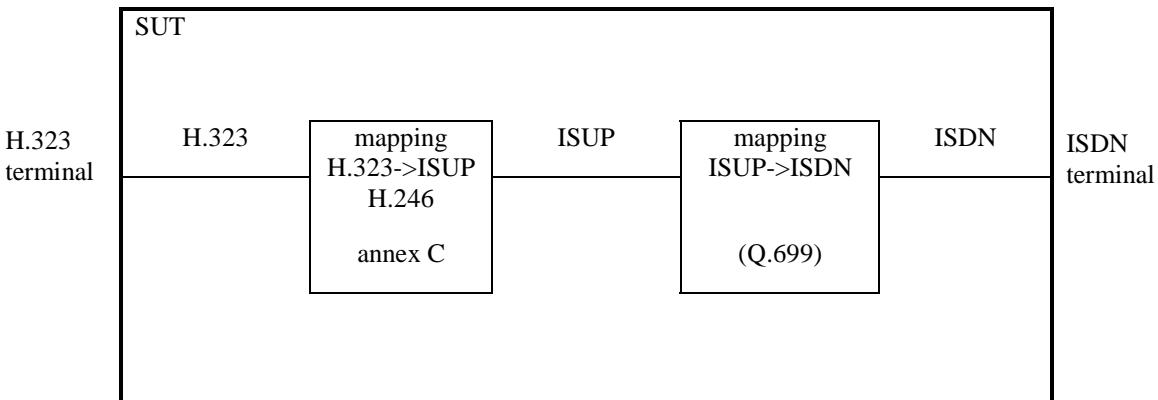
H.323-ISDN inter-working testing architecture via ISUP

Two mapping functions are involved. They are specified in ITU-T Recommendation H.246 annex C [10] (H.323-ISUP) and ITU-T Recommendation Q.699 [23] (ISDN-ISUP).

2   References

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

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

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 101 883: "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 3; Technology Mapping; Implementation of TIPHON architecture using H.323".

[2]   Void.

[3]   ITU-T Recommendation H.323 (2000): "Packet-based multimedia communication".

[4]   ITU-T Recommendation H.225.0 (2000): "Call signalling protocols and media stream packetization for packet-based multimedia communication systems".

[5]   ITU-T Recommendation Q.931: "ISDN user-network interface layer 3 specification for basic call control".

[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]   ITU-T Recommendation H.245 (2001): "Control protocol for multimedia communication.

[10]   ITU-T Recommendation H.246 annex C (2000): "ISDN User Part Function - H.225.0 Interworking".

[11]   ETSI EN 300 403-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".

[12]   Void.

[13]   ETSI TBR 008: "Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice; Attachment requirements for handset terminals".

[14]   ETSI EG 201 018: "Integrated Services Digital Network (ISDN);Application of the Bearer Capability (BC), High Layer Compatibility (HLC) and Low Layer Compatibility (LLC) information elements by terminals supporting ISDN services".

[15]   ETSI ETS 300 092-1: "Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[16]   ETSI ETS 300 093-1: "Integrated Services Digital Network (ISDN); Calling Line Identification Restriction (CLIR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[17]   ETSI ETS 300 097-1: "Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[18]   ETSI ETS 300 098-1: "Integrated Services Digital Network (ISDN); Connected Line Identification Restriction (COLR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[19]   ETSI ETS 300 267-1: "Integrated Services Digital Network (ISDN); Telephony 7 kHz and videotelephony teleservices; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[20]   ETSI ETR 018: "Integrated Services Digital Network (ISDN); Application of the Bearer Capability (BC), High Layer Compatibility (HLC) and Low Layer Compatibility (LLC) information elements by terminals supporting ISDN services".

[21]   ETSI ETS 300 092-1/Amendment 2: "Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[22]   ETSI ETS 300 097-1/Amendment 1: "Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[23]   ITU-T Recommendation Q.699: "Interworking between ISDN access and non-ISDN access over ISDN User Part of Signalling System No. 7".

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.323 [3];

- terms defined in ITU-T Recommendation H.225.0 [4];

- terms defined in ISO/IEC 9646 parts 1 [6] to 3 [8].

Basic Call Control (BCC): signalling protocol associated with the DSS1 - ISDN Basic Call control procedures of ITU-T Recommendation Q.931 (EN 300 403-1)

inopportune: specifies a test purpose covering a signalling procedure where an inopportune message (type of message not expected in the IUT current state) is sent to the IUT

syntactically invalid: specifies a test purpose covering a signalling procedure where a valid (expected in the current status of the IUT) but not correctly encoded (unknown or incorrect parameter values) message is sent to the IUT, which shall react correctly and eventually reject the message

test purpose: non-formal test description, mainly using text. This test description can be used as the basis for a formal test specification (e.g. Abstract Test Suite in TTCN). See ISO/IEC 9646.

valid: specifies a test purpose covering a signalling procedure where all the messages sent to or received from the IUT are valid (expected in the current status of the IUT) and correctly encoded

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

I	Inopportune
IPTN	IP Transmit Network
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
S	Syntactically invalid
SCN	Switched Circuit Network
TP	Test Purpose
TSS	Test Suite Structure
V	Valid

4   Architecture and Test Suite Structure (TSS)

4.1   Architecture

Figure 1 shows the different types of networks that may inter-operate for calls. A specific call may not involve all network types. Each network will include any required interconnecting and interworking functions.

Figure 1: Network architecture
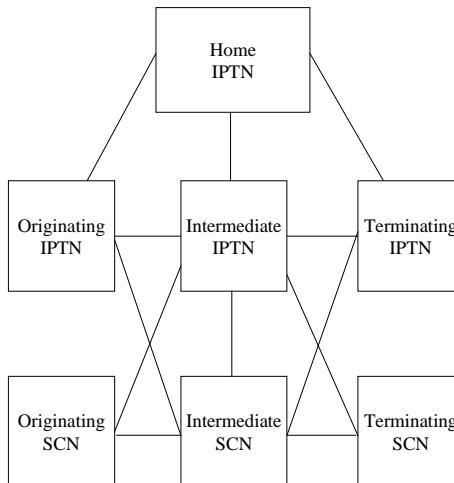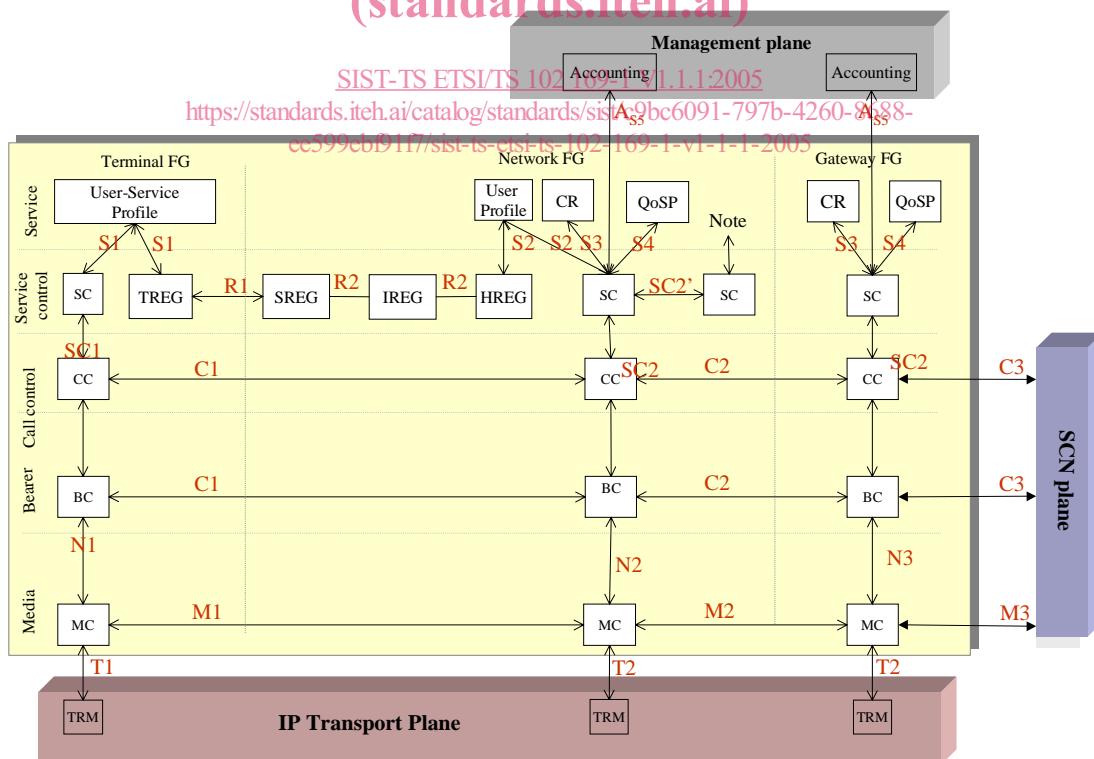
Figure 2: General reference configuration

4.2   Test Suite Structure (TSS)

4.2.1   ISDN-H.323

C - Plane /U - Plane

Basic_Call	Successful	Speech	IH___ SP __ xx
		3,1 kHz audio	IH___ AU __ xx
		UDI	IH___ UD __ xx
C - Plane	Unsuccessful		IH____xx___Uxx
Supplementary			
Services		CLIP	IH___xxSSCLIP xx
		CLIR	IH___xxSSCLIR xx
		COLP	IH___xxSSCOLP xx
		COLR	IH___xxSSCOLR xx

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4.2.2   H.323-ISDN   (standards.iteh.ai)

C - Plane /U - Plane

Basic_Call	Successful	Speech	HI___ SP ___xx
		3,1 kHz audio	HI___ AU ___xx
		UDI	HI___ UD __ _xx
C - Plane	Unsuccessful		HI___ xx __ Uxx
Supplementary			
Services		CLIP	HI___xxSSCLIP xx
		CLIR	HI___xxSSCLIR xx
		COLP	HI___xxSSCOLP xx
		COLR	HI___xxSSCOLR xx

4.2.3   PSTN-H.323

C - Plane /U - Plane

Basic_Call	Successful	PH___ AU __ xx
	Unsuccessful	PH___ AU __Uxx

4.2.4   H.323-PSTN

C - Plane /U - Plane

Basic_Call	Successful	Speech	HP___ SP __ xx
		3,1 kHz audio	HP___ AU __ xx
	Unsuccessful		HP___ xx __U xx

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4.2.5   H.323-H.323 (PC-PC)

C - Plane /U - Plane

Basic_Call	Successful	HH___xx __ xx
	Unsuccessful	HH___xx __ Uxx

5   Numbering Scheme

Pos. 1:   Network of the A-Subscriber

Pos. 2:   Network of the B-Subscriber

Pos. 3:   Network of the C-Subscriber

Pos. 4:   Network of the D-Subscriber

Pos. 5:   Network of the E-Subscriber

The following Network Codes apply:

_: No such network used (used e.g. for C-Subscriber in successful A to B Calls)
        (underscore makes it easier to read the name)

P: PSTN

I: ISDN

H: H.323

(Extensions will be added when needed)

Pos. 6 and 7:   Bearer- or Teleservice involved

xx: defined per PIXIT value

NOTE: This may be appropriate for Test Purposes (provided the Test Purpose states for which Bearer- and/or
           Tele Services it should be tested). It is however NOT appropriate for Test Cases since it would be
           detrimental to Test Automation

SP: Speech

AU: 3,1 kHz Audio

UD: UDI

UT: UDI/TA

Pos. 8 and 9:

__: No Supplementary Services Involved /Successful

_U: No Supplementary Services Involved /Unsuccessful

SS: Supplementary Services Involved

SI: Supplementary Services interaction

SN: Nonsymmetrical Supplementary Services Involved

ST: Supplementary Services transparent

Speech					IH___SP__xx					

1	2	3	4	5	6	7	8	9	10	11
I	H	_	_	_	S	P	_	_	x	x

Supplementary Services

CLIP					**IH___xxSSCLIP xx**					

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
I	H	_	_	_	X	X	S	S	C	L	I	P	x	x

6   Test purposes

6.1   Test purposes for ISDN-H.323 Basic call Successful - Speech

Successful
Speech

IH___SP__01	**ISDN ref. to:** Q.931 [5], § 5.1.5.1 Q.699 [23], § 2.1.1	**PBN ref. to:** H.225.0 [4] § 7.2.2.1, § 7.3.10, § 7.3.2 TS 101 883 [1] § 5.1, § B.1.3.8, § B.1.3.2 H.246 annex C [10] § C.7.1
TSS reference:	ISDN-H.323 [3]/Basic_call/Successful/Speech	
Selection criteria:		
Test purpose:	Ensure that call establishment using en-bloc sending is performed correctly. Ensure that the SETUP message on the H.323 [3] interface is sent including the fastStart field and on receipt of a CALL PROCEEDING message including the fastStart field, call establishment continues. Ensure that in the active call state (N10) the voice transfer on the media and B-channels is performed correctly (e.g. testing QoS parameters). The fastStart element indicates the CODEC value in a H.245 [9] OpenLogicalChannel structure.	
ISDN Parameter values:	BC=speech, no HLC	
H.323 [3] Parameter values:	BC=speech, no HLC	
Comments:		

IH___SP__02	**ISDN ref. to:** Q.931 [5], § 5.1.5.1 Q.699 [23], § 2.1.1	**PBN ref. to:** H.225.0 [4] § 7.2.2.1, § 7.3.10, § 7.3.2 TS 101 883 [1] § 5.1, § B.1.3.8, § B.1.3.1 H.246 annex C [10] § C.7.1
TSS reference:	ISDN-H.323 [3]/Basic_call/Successful/Speech	
Selection criteria:		
Test purpose:	Ensure that call establishment using en-bloc sending is performed correctly. Ensure that the SETUP message on the H.323 [3] interface is sent including the fastStart field and on receipt of an ALERTING message including the fastStart field, call establishment continues. Ensure that in the active call state (N10) the voice transfer on the media and B-channels is performed correctly (e.g. testing QoS parameters). The fastStart element indicates the CODEC value in a H.245 [9] OpenLogicalChannel structure.	
ISDN Parameter values:	BC=speech, no HLC	
H.323 [3] Parameter values:	BC=speech, no HLC	
Comments:		