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TECHNICAL SPECIFICATION

**Core Network and Interoperability Testing (INT);
Conformance tests;
(3GPP Release 10);
Interworking between SIP-I based circuit-switched
core network and other networks;
Part 2: SIP-I/SIP NNI
Test Suite Structure and Test Purposes (TSS&TP)**

Reference

RTS/INT-00110-2

Keywords

SIP, SIP-I, testing, TSS&TP

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Core Network and Interoperability Testing (INT).

The present document is part 2 of a multi-part deliverable covering SIP NNI - SIP-I Interworking described in the clauses 7.2 and 7.3 of TS 129 235 [1] (Release 10), as identified below:

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

Part 2: "SIP-I/SIP NNI Test Suite Structure and Test Purposes (TSS&TP)".

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**may not**", "**need**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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1 Scope

The present document specifies the Test Suite Structure and Test Purposes for SIP - SIP-I Interworking described in the clauses 7.2 and 7.3 of TS 129 235 [1] (Release 10).

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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

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2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 129 235 (V10.1.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Interworking between SIP-I based circuit-switched core network and other networks (3GPP TS 29.235 version 10.1.0 Release 10) ".

[2] ETSI TS 129 163: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Interworking between the IP Multimedia (IM) Core Network (CN) subsystem and Circuit Switched (CS) networks (3GPP TS 29.163 Release 8)".

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

[4] Recommendation ITU-T T.38: "Procedures for real-time Group 3 facsimile communication over IP networks".

[5] Void.

[6] ETSI TS 101 572-1: "Core Network and Interoperability Testing (INT); Conformance tests according to 3GPP[TM] 29.235 Release 10; Interworking between SIP-I based circuit-switched core network and other networks; Part 1: Protocol Implementation Conformance Statement (PICS)".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] Recommendation ITU-T E.164: "The international public telecommunication numbering plan".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 129 235 [1] and the following apply:

Implementation Under Test (IUT): Refer to ISO/IEC 9646-1 [3].

System Under Test (SUT): Refer to ISO/IEC 9646-1 [3].

Test Purpose (TP): Refer to ISO/IEC 9646-1 [3].

3.2 Symbols

For the purposes of the present document, the symbols given in TS 129 235 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TS 129 235 [1] and the following apply:

ACM	Address Complete Message
IAM	Initial Address Message
IUT	Implementation Under Test
oBCI	optional Backward Call Indicator
REL	RELease message
SUT	System Under Test
TP	Test Purpose

4 Test Suite Structure (TSS)

The Test Suite Structure is in close alignment with TS 129 235 [1] and TS 129 163 [2].

SIP NNI -SIP-I			
	Basic call	Sending_of_INVITE (IAM)	TP_101_xxx
			TP_102_xxx
			TP_103_xxx
			TP_104_xxx
			TP_105_xxx
			TP_106_xxx
			TP_107_xxx

SIP-I –SIP NNI			
	Basic call	Sending_of_INVITE	TP_201_xxx
			TP_202_xxx
			TP_203_xxx
			TP_204_xxx
			TP_205_xxx
			TP_206_xxx
			TP_207_xxx
			TP_208_xxx
			TP_209_xxx
			TP_211_xxx

PSTN-SS		
	PSTN-SS/COL	TP_302_xxx
	PSTN-SS/MCID	TP_303_xxx
	PSTN-SS/SUB	TP_304_xxx
	PSTN-SS/CDIV	TP_305_xxx
	PSTN-SS/ECT	TP_306_xxx
	PSTN-SS/HOLD	TP_308_xxx
	PSTN-SS/CCBS	TP_309_xxx
	PSTN-SS/CCNR	TP_310_xxx
	PSTN-SS/TP	TP_311_xxx
	PSTN-SS/CONF	TP_312_xxx
	PSTN-SS/MLPP	TP_314_xxx
	PSTN-SS/GVNS	TP_315_xxx
	PSTN-SS/REV	TP_316_xxx

IMS-SS		
	IMS-SS/OIP-OIR	TP_401_xxx
	IMS-SS/TIP-TIR	TP_402_xxx
	IMS-SS/CDIV	TP_403_xxx
	PSTN-SS/CONF	TP_404_xxx
	IMS-SS/MCID	TP_406_xxx
	IMS-SS/CUG	TP_407_xxx
	IMS-SS/CC/	TP_408_xxx
	IMS-SS/CW	TP_409_xxx

5 Test Purposes (TP)

5.1 Introduction

For each requirement in TS 129 163 [2] a TP is defined.

5.1.1 TP naming convention

TPs are numbered, starting at 001, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite and whether it applies to the network or the user (see table 5.1.1-1).

Table 5.1.1-1: TP identifier naming convention scheme

Identifier: **TP_<group>_<nnn>**			
<group>	=	group	3 digit field representing group reference according to TSS
<nnn>	=	TP number	3 digit sequential number (001 to 999)

5.1.2 Test strategy

As the base standard TS 129 235 [1] and TS 129 163 [2] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification TS 101 572-1 [6]. The criteria applied include the following:

- whether or not a test case can be built from the TP is not considered.

5.1.3 Test purpose structure

The test purpose structure is according to the test suite structure (TSS). The Reference column in each Test Purpose refers to the basic specification except stated explicitly.

6 Test purposes (TP)

6.1 SIP NNI -SIP-I protocol interworking

6.1.1 Signalling Interworking of a Call from the IP Multimedia Subsystem towards the SIP-I based circuit-switched core network

6.1.1.1 Sending of INVITE (IAM)

TP number	TP_101_001	**Reference**	[1], clause 7.2.1 [2], clause 7.2.3.1.1
TSS reference	SIP NNI - SIP-I/Basic call/Sending_of_ SIP-INVITE request /		
Selection criteria			
Test Purpose name	Sending of SIP-INVITE request		
Test Purpose	Ensure that on reception of a SIP-INVITE requesting a session, the I-MGCF sends a SIP-INVITE request with encapsulated IAM message.		
ISUP Parameter values			
SIP Parameter values			
Comments			
Message flows	**SIP NNI**	**MGCF**	**SIP-I**
	INVITE →		→ INVITE (IAM)
	100 Trying ←		← 100 Trying
	Apply post test routine		

TP number	TP_101_002	**Reference**	[1], clause 7.2.4 [2], clause 7.2.3.1.1
TSS reference	SIP NNI - SIP-I/Basic call/Sending_of_ SIP-INVITE request /		
Selection criteria	PICS 6.1.1/1 AND PICS 6.2.1/1 AND PICS 6.2.1/2		
Test Purpose name	Preconditions support indicated in the **Supported** header		
Test Purpose	Ensure that the Preconditions procedure is successful if the support of Precondition is indicated in the Supported header. The INVITE with encapsulated IAM is immediately sent. The Nature of connection indicator is set to 'continuity check performed on a previous circuit' or 'continuity check required'. After the UPDATE was received, a UPDATE is sent		
ISUP Parameter values	**IAM:** Nature of connection indicator = 'continuity check performed on a previous circuit' or 'continuity check required'		
SIP Parameter values	**INVITE:** Supported: precondition, 100rel SDP a=curr:qos local none a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos none remote sendrecv 183: Require: 100rel SDP a=curr:qos local none a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv a=conf:qos remote sendrecv UPDATE: SDP a=curr:qos local sendrecv a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv 200 OK UPDATE SDP a=curr:qos local sendrecv a=curr:qos remote sendrecv a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv		
Comments			

Message flows	**SIP NNI**	**MGCF**	**SIP-I**
	INVITE →	→	INVITE (IAM)
	100 Trying ←	←	100 Trying
	183 Session Progress ←	←	183 Session Progress
	PRACK →	→	PRACK
	200 OK (PRACK) ←	←	200 OK (PRACK)
	UPDATE →	→	UPDATE
	200 OK (UPDATE) ←	←	200 OK (UPDATE)
	Apply post test routine		

TP number	TP_101_003	**Reference**	[1], clause 7.2.4 [2], clause 7.2.3.1.1
TSS reference	SIP NNI - SIP-I/Basic call/Sending_of_ SIP-INVITE request /		
Selection criteria	PICS 6.1.1/1 AND PICS 6.2.1/1 AND NOT PICS 6.2.1/2		
Test Purpose name	Preconditions support indicated in the **Supported** header		
Test Purpose	Ensure that the Preconditions procedure is successful if the support of Precondition is indicated in the Supported header. The INVITE with encapsulated IAM is sent after the UPDATE was received. The Nature of connection indicator is set to 'continuity check is not required'.		
ISUP Parameter values	**IAM:** Nature of connection indicator = 'continuity check is not required'		
SIP Parameter values	**INVITE:** Supported: precondition, 100rel SDP a=curr:qos local none a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos none remote sendrecv 183: Require: 100rel SDP a=curr:qos local none a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv a=conf:qos remote sendrecv UPDATE: SDP a=curr:qos local sendrecv a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv 200 OK UPDATE SDP a=curr:qos local sendrecv a=curr:qos remote sendrecv a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv		
Comments			
Message flows	**SIP NNI** → **MGCF** → **SIP-I** INVITE → 100 Trying ← 183 Session Progress ← PRACK → 200 OK (PRACK) ← UPDATE → → INVITE (IAM) 200 OK (UPDATE) ← **Apply post test routine**		

TP number	TP_101_006	**Reference**	[1], clause 7.2.4 [2], clause 73.3.1.1
TSS reference	SIP NNI - SIP-I/Basic call/Sending_of_ SIP-INVITE request /		
Selection criteria	PICS 6.1.1/2 AND PICS 6.2.1/1 AND PICS 6.2.1/2; BICC support		
Test Purpose name	Preconditions support indicated in the Supported header COT procedure supported		
Test Purpose	Ensure that the Preconditions procedure is successful if the support of Precondition is indicated in the Supported header. The internal ISUP Continuity check procedure is not supported. The INVITE with encapsulated IAM is immediately sent. The Nature of connection indicator is set to 'COT to be expected'. After the UPDATE was received, an UPDATE is sent		
ISUP Parameter values	**IAM:** Nature of connection indicator = 'COT to be expected'		
SIP Parameter values	**INVITE:** Supported: precondition, 100rel SDP a=curr:qos local none a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos none remote sendrecv 183: Require: 100rel SDP a=curr:qos local none a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv a=conf:qos remote sendrecv UPDATE: SDP a=curr:qos local sendrecv a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv 200 OK UPDATE SDP a=curr:qos local sendrecv a=curr:qos remote sendrecv a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv		
Comments			

Message flows

SIP NNI		MGCF		SIP-I
INVITE	→		→	INVITE (IAM)
100 Trying	←		←	100 Trying
183 Session Progress	←		←	183 Session Progress
PRACK	→		→	PRACK
200 OK (PRACK)	←		←	200 OK (PRACK)
UPDATE	→		→	UPDATE
200 OK (UPDATE)	←		←	200 OK (UPDATE)
Apply post test routine				

TP number	TP_101_007	**Reference**	[1], clause 7.2.4 [2], clause 7.3.3.1.1
TSS reference	SIP NNI - SIP-I/Basic call/Sending_of_ SIP-INVITE request /		
Selection criteria	PICS 6.1.1/2 AND PICS 6.2.1/1 AND NOT PICS 6.2.1/2		
Test Purpose name	Preconditions support indicated in the Supported header		
Test Purpose	Ensure that the Preconditions procedure is successful if the support of Precondition is indicated in the Supported header. The INVITE with encapsulated IAM) is sent after the UPDATE was received. The Nature of connection indicator is set to 'no COT to be expected'.		
ISUP Parameter values	**IAM:** Nature of connection indicator = 'no COT to be expected'		
SIP Parameter values	**INVITE:** Supported: precondition, 100rel SDP a=curr:qos local none a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos none remote sendrecv 183: Require: 100rel SDP a=curr:qos local none a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv a=conf:qos remote sendrecv UPDATE: SDP a=curr:qos local sendrecv a=curr:qos remote none a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv 200 OK UPDATE SDP a=curr:qos local sendrecv a=curr:qos remote sendrecv a=des:qos mandatory local sendrecv a=des:qos mandatory remote sendrecv		
Comments			
Message flows	**SIP NNI** INVITE → 100 Trying ← 183 Session Progress ← PRACK → 200 OK (PRACK) ← UPDATE → 200 OK (UPDATE) ←	**MGCF** → **Apply post test routine**	**SIP-I** INVITE (IAM)