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Technical Specification

Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Protocol specification Closed User Group (CUG); Part 2: Test Suite Structure and Test Purposes (TSS&TP)

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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document is part 2 of a multi-part deliverable covering Test Suite Structure and Test Purposes for the Closed User Group (CUG) service, as identified below:

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

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

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 test suite structure and test purposes of the Closed User Group (CUG) service, based on stage three of the IMS Closed User Group (CUG) simulation services. Within the Next Generation Network (NGN) the stage 3 description is specified using the IP-Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP).

2 References

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.
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  - for informative references.

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2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1] ETSI TS 183 054: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services; Protocol specification Closed User Group (CUG)".

[2] ETSI TS 186 016-1: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN) PSTN/ISDN simulation services: Closed User Group (CUG); Protocol Conformance Implementation Statement (PICS), Release 2".

[3] ETSI TS 181 002: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Multimedia Telephony with PSTN/ISDN simulation services".

[4] IETF RFC 3261: "SIP: Session Initiation Protocol".

[5] ETSI ES 283 027: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Endorsement of the SIP-ISUP Interworking between the IP Multimedia (IM) Core Network (CN) subsystem and Circuit Switched (CS) networks [3GPP TS 29.163 (Release 7), modified]".

[6] ETSI TS 129 163: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Interworking between the IP Multimedia (IM) Core Network (CN) subsystem and Circuit Switched (CS) networks (3GPP TS 29.163 version 7.9.0 Release 7)".

2.2 Informative references

Not applicable.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 181 002 [3] and the following apply:

escaped character: See RFC 3261 [4].

NOTE: This may contain additional information.

3.2 Abbreviations

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

ACK	ACKnowledgement
CD	Communication Deflection
CDIV	Communication DIVersion services
CFB	Communication Forwarding Busy
CFNL	Communication Forwarding Not Logged-in
CFNR	Communication Forwarding No Reply
CFNRc	Communication Forwarding on subscriber Not Reachable
CFU	Communication Forwarding Unconditional
CONF	CONFerence calling
CUG	Closed User Group
ECT	Explicit Communication Transfer
HOLD	communication HOLD
I-MGCF	Incoming - Media Gateway Control Function
IMS	IP Multimedia Subsystem
IP	Internet Protocol
ISDN	Integrated Service Data Network
ISUP	Integrated Service digital network User Part
NGN	Next Generation Network
O-MGCF	Outgoing - Media Gateway Control Function
PSTN	Public Switched Telephone Network
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SUB	SUBaddressing
UA	User Agent
UE	User Equipment
XML	eXtensible Markup Language

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4 Test Suite Structure (TSS)

CUG			
	originating_UE		CUG_U01_xxx
	originating_AS		CUG_N01_xxx
	terminating_AS		CUG_N02_xxx
	interaction	CONF	CUG_N03_xxx
		CDIV	CUG_N04_xxx
		ECT	CUG_N05_xxx
SIP-ISUP			
	SS	CUG	TP516xxx
ISUP-SIP			
	SS	CUG	TP608xxx

5 Test Purposes (TP)

5.1 Introduction

For each test requirement 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 1).

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Table 1: TP identifier naming convention scheme

Identifier: **<ss>_<iut><group>_<nnn>**				
<ss>	=	supplementary service:	e.g. "CUG"	
<iut>	=	type of IUT:	U	User – equipment
			N	Network
<group>	=	group	2 digit field representing group reference according to TSS	
<nnn>	=	sequential number	(001-999)	

5.1.2 Test strategy

As the base standard TS 183 054 [1] 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 186 016-1 [2]. The criteria applied include the following:

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

5.2 Test Purposes for Closed User Group (CUG)

5.2.1 TPs at the originating UA

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_UE	CUG_U01_001	clause 4.5.2.1	

Test purpose

Explicit request of CUG service

The originating user requests explicitly the CUG service by including in the initial INVITE an xml CUGrequestType containing the preferred CUG and an outgoing access request.

Preconditions:

SIP header values:

```
INVITE:
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[PIXIT]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

UA C				**Test equipment**
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 Ringing	←		←	180 Ringing
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
		Communication		
BYE	→		→	BYE
200 OK BYE	←		←	200 OK BYE

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_UE	CUG_U01_002	clause 4.5.2.1	

Test purpose

Explicit request of CUG service

The originating user requests explicitly the CUG service by including in the initial INVITE an xml CUGrequestType does not contain the preferred CUG and an outgoing access request.

Preconditions:

SIP header values:

```
INVITE:
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[PIXIT]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

UA C				**Test equipment**
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 Ringing	←		←	180 Ringing
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
		Communication		
BYE	→		→	BYE
200 OK BYE	←		←	200 OK BYE

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TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_UE	CUG_U01_003	clause 4.5.2.1	

Test purpose
Explicit request of CUG service
The originating user requests explicitly the CUG service by including in the initial INVITE an xml CUGrequestType containing the preferred CUG and an outgoing access request.

Preconditions:

SIP header values:
INVITE:
<cug>
<cugCallOperation>
<outgoingAccessRequest>TRUE</outgoingAccessRequest>
</cugCallOperation>
</cug>

Comments:

UA C				**Test equipment**
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 Ringing	←		←	180 Ringing
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
		Communication		
BYE	→		→	BYE
200 OK BYE	←		←	200 OK BYE

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_UE	CUG_U01_004	clause 4.5.2.1	

Test purpose
Explicit request of CUG service
The originating user requests explicitly the CUG service by including in the initial INVITE an xml CUGrequestType does not contain the preferred CUG and an outgoing access request.

Preconditions:

SIP header values:
INVITE:
<cug>
<cugCallOperation>
<outgoingAccessRequest>FALSE</outgoingAccessRequest>
</cugCallOperation>
</cug>

Comments:

UA C				**Test equipment**
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 Ringing	←		←	180 Ringing
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
		Communication		
BYE	→		→	BYE
200 OK BYE	←		←	200 OK BYE

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TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_UE	CUG_U01_005	clause 4.5.2.1	

Test purpose
Implicit request of CUG service
The originating user with CUG subscription requests the CUG service without including a xml CUGrequestType in the initial INVITE

Preconditions:

SIP header values:
INVITE:

Comments:

UA C				**Test equipment**
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 Ringing	←		←	180 Ringing
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
		Communication		
BYE	→		→	BYE
200 OK BYE	←		←	200 OK BYE

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5.2.2 Test Purposes at the Application Server of the originating User

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_001	TS 183 054 [1] clause 4.5.2.4	PICS 1/1

Test purpose

CUG without preference: INVITE with CUG index and no outgoingAccessRequest, successful

In case of subscription “CUG without preference“, ensure that the validation check for the CUG request contained in an INVITE with CUGIndex and without outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to “11” (CUG without outgoing access).

Preconditions: CUG without preference

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[PIXIT]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

UA C		**SUT**		**UA S**
INVITE 1	→		→	INVITE 2
100 Trying	←		←	100 Trying
180 Ringing	←		←	180 Ringing
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
		Communication		
BYE	→		→	BYE
200 OK BYE	←		←	200 OK BYE

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TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_002	TS 183 054 [1] clause 4.5.2.4	PICS 1/2

Test purpose

CUG+OAE without preference: INVITE with CUG index and no outgoingAccessRequest, successful

In case of subscription “CUG and Outgoing access, explicit request required without preference“, ensure that the validation check for the CUG request contained in an INVITE with CUGIndex and without outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to “11” (CUG without outgoing access).

Preconditions: CUG+OAE without preference

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[PIXIT]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

UA C		**SUT**		**UA S**
INVITE 1	→		→	INVITE 2
100 Trying	←		←	100 Trying
180 Ringing	←		←	180 Ringing
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
		Communication		
BYE	→		→	BYE
200 OK BYE	←		←	200 OK BYE

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