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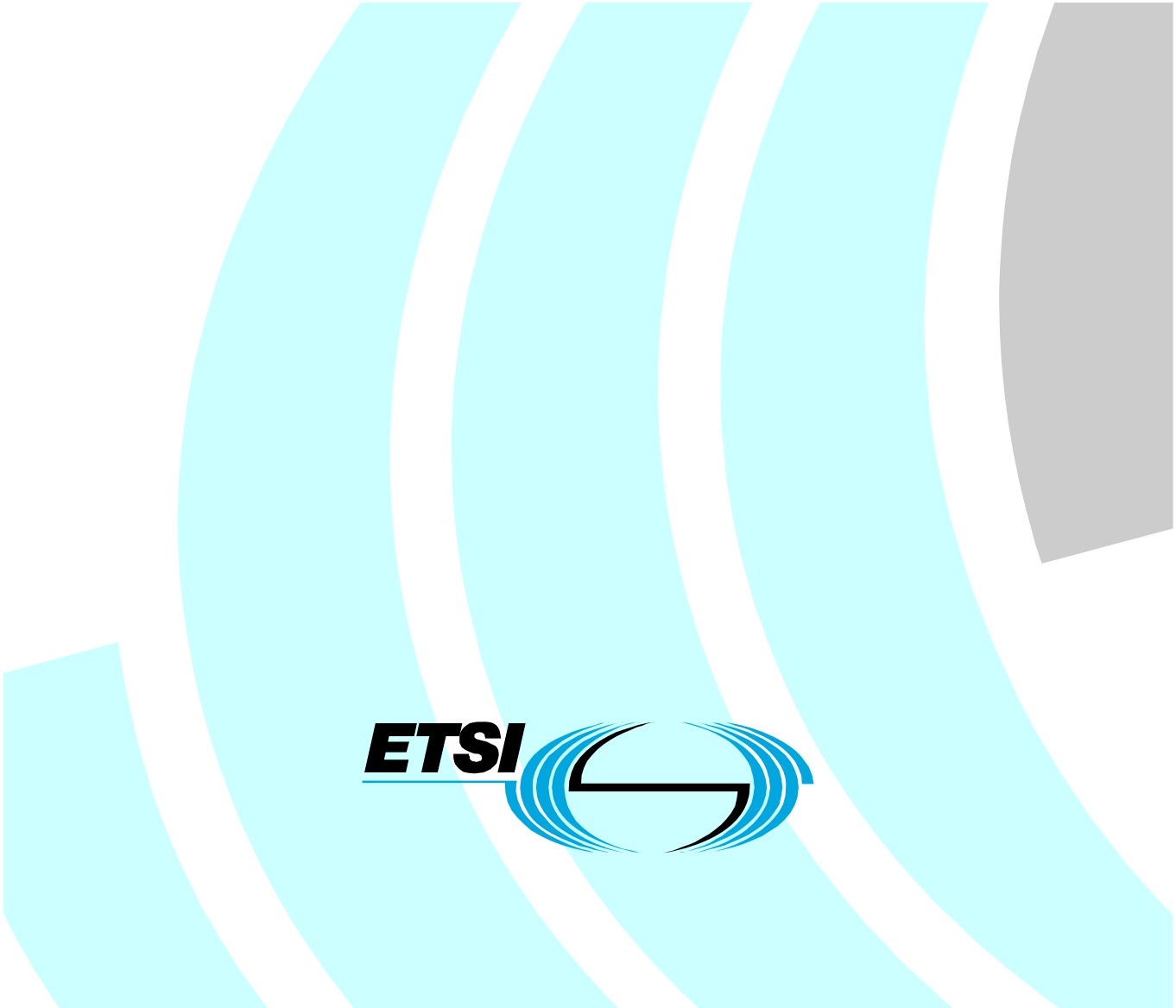
Technical Specification

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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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".

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.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

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NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

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

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).

Table 1: TP identifier naming convention scheme

Identifier: **<ss>_<iut><group>_<nnn>**				
<ss>	=	supplementary service:	e.g. "CUG"	
<iut>	=	type of IUT:	U N	User – equipment 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

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

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

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

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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_003	TS 183 054 [1] clause 4.5.2.4	PICS 1/3

Test purpose

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

In case of subscription “CUG and Outgoing access, implicit outgoing access for all communications 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+OAI 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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_004	TS 183 054 [1] clause 4.5.2.4	PICS 1/4

Test purpose

CUG with preference: INVITE with CUG index and no outgoingAccessRequest, successful

In case of subscription “CUG with 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 with 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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_005	TS 183 054 [1] clause 4.5.2.4	PICS 1/5

Test purpose

CUG+OAE with preference: INVITE with CUG index and no outgoingAccessRequest, successful

In case of subscription “CUG and Outgoing access, explicit request required with 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 with prefer*ence*

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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_006	TS 183 054 [1] clause 4.5.2.4	PICS 1/6

Test purpose
CUG+OAI with preference: INVITE with CUG index and no outgoingAccessRequest, successful
In case of subscription "CUG and Outgoing access, implicit outgoing access for all communications with 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+OAI with 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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_007	TS 183 054 [1] clause 4.5.2.4	

Test purpose
No CUG: INVITE with CUG index and no outgoingAccessRequest, unsuccessful
In case of subscription "No CUG", ensure that the validation check for the CUG request contained in an INVITE with CUGIndex and without outgoingAccessRequest is not successful. The Application Server sends a 403 Forbidden.

Preconditions: No CUG subscription

SIP header values:

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

Comments:

UA C		SUT	UA S
INVITE	→		
403 Forbidden	←		
ACK	→		

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_008	TS 183 054 [1] clause 4.5.2.4	PICS 1/1

Test purpose

CUG without preference: INVITE with CUG index and 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 outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to "10" (outgoing access allowed).

Preconditions: CUG without preference

SIP header values:

INVITE:

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

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_009	TS 183 054 [1] clause 4.5.2.4	PICS 1/2

Test purpose

CUG+OAE without preference: INVITE with CUG index and 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 outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to "10" (outgoing access allowed).

Preconditions: CUG+OAE without preference

SIP header values:

INVITE:

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

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_010	TS 183 054 [1] clause 4.5.2.4	PICS 1/3

Test purpose

CUG+OAI without preference: INVITE with CUG index and outgoingAccessRequest, successful

In case of subscription “CUG and Outgoing access, implicit outgoing access for all communications without preference“, ensure that the validation check for the CUG request contained in an INVITE with CUGIndex and outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to “10” (outgoing access allowed).

Preconditions: CUG+OAI without preference

SIP header values:

INVITE:

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

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_011	TS 183 054 [1] clause 4.5.2.4	PICS 1/4

Test purpose

CUG with preference: INVITE with CUG index and outgoingAccessRequest, successful

In case of subscription “CUG with preference“, ensure that the validation check for the CUG request contained in an INVITE with CUGIndex and outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to “10” (outgoing access allowed).

Preconditions: CUG with preference

SIP header values:

INVITE:

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

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_012	TS 183 054 [1] clause 4.5.2.4	PICS 1/5

Test purpose

CUG+OAE with preference: INVITE with CUG index and outgoingAccessRequest, successful

In case of subscription “CUG and Outgoing access, explicit request required with preference“, ensure that the validation check for the CUG request contained in an INVITE with CUGIndex and outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to “10” (outgoing access allowed).

Preconditions: CUG+OAE with preference

SIP header values:

INVITE:

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

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_013	TS 183 054 [1] clause 4.5.2.4	PICS 1/6

Test purpose
CUG+OAI with preference: INVITE with CUG index and outgoingAccessRequest, successful
In case of subscription "CUG and Outgoing access, implicit outgoing access for all communications with preference", ensure that the validation check for the CUG request contained in an INVITE with CUGIndex and outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to "10" (outgoing access allowed).

Preconditions: CUG+OAI with preference

SIP header values:
INVITE 1:

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

INVITE 2:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_014	TS 183 054 [1] clause 4.5.2.4	

Test purpose
No CUG: INVITE with CUG index and outgoingAccessRequest, unsuccessful
In case of subscription "No CUG", ensure that the validation check for the CUG request contained in an INVITE with CUGIndex and outgoingAccessRequest is not successful. The Application Server sends a 403 Forbidden.

Preconditions: No CUG subscription

SIP header values:
INVITE:

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

403 Forbidden:

Comments:

UA C		**SUT**	**UA S**
INVITE	→		
403 Forbidden	←		
ACK	→		

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_015	TS 183 054 [1] clause 4.5.2.4	PICS 1/1

Test purpose
CUG without preference: INVITE without CUG index and no outgoingAccessRequest, unsuccessful
In case of subscription "CUG without preference", ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and *without* outgoingAccessRequest is successful. The Application Server sends a 403 Forbidden.

Preconditions: CUG without preference

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

Comments:

UA C		**SUT**	**UA S**
INVITE	→		
403 Forbidden	←		
ACK	→		

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_016	TS 183 054 [1] clause 4.5.2.4	PICS 1/2

Test purpose
CUG+OAE without preference: INVITE without CUG index and no outgoingAccessRequest, unsuccessful
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 *without* CUGIndex and *without* outgoingAccessRequest is successful. The Application Server sends a 403 Forbidden.

Preconditions: CUG+OAE without preference

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

Comments:

UA C		**SUT**	**UA S**
INVITE	→		
403 Forbidden	←		
ACK	→		

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_017	TS 183 054 [1] clause 4.5.2.4	PICS 1/3

Test purpose
CUG+OAI without preference: INVITE without CUG index and no outgoingAccessRequest, no CUG call
In case of subscription "CUG and Outgoing access, implicit outgoing access for all communications without preference", ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and *without* outgoingAccessRequest is successful. The sent INVITE does not contain the cugInterlockBinaryCode, the networkIndicator and cugCommunicationIndicator.

Preconditions: CUG+OAI without preference

SIP header values:
INVITE 1:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest> FALSE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```
INVITE 2:
No <cug> XML attachment

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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_018	TS 183 054 [1] clause 4.5.2.4	PICS 1/4

Test purpose
CUG with preference: INVITE without CUG index and no outgoingAccessRequest, successful
In case of subscription "CUG with preference", ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and *without* outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (preferential CUG PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: CUG with preference

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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_019	TS 183 054 [1] clause 4.5.2.4	PICS 1/5

Test purpose

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

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

Preconditions: CUG+OAE with preference

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest> FALSE</outgoingAccessRequest>
    </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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_020	TS 183 054 [1] clause 4.5.2.4	PICS 1/6

Test purpose
CUG+OAI with preference: INVITE without CUG index and no outgoingAccessRequest, successful
In case of subscription "CUG and Outgoing access, implicit outgoing access for all communications with preference", ensure that the validation check for the CUG request contained in an INVITE *without* 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+OAI with preference

SIP header values:
INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest> FALSE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```
INVITE:
```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
```
or
```
    <cugCommunicationIndicator>10</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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_021	TS 183 054 [1] clause 4.5.2.4	

Test purpose
No CUG: INVITE without CUG index and no outgoingAccessRequest, unsuccessful
In case of subscription "No CUG", ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and *without* outgoingAccessRequest is not successful. The Application Server sends a 403 Forbidden.

Preconditions: No CUG subscription

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

Comments:

UA C		SUT	UA S
INVITE	→		
403 Forbidden	←		
ACK	→		

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_022	TS 183 054 [1] clause 4.5.2.4	PICS 1/1

Test purpose
CUG without preference: INVITE without CUG index and outgoingAccessRequest, unsuccessful
In case of subscription "CUG without preference", ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and outgoingAccessRequest is successful. The Application Server sends a 403 Forbidden.

Preconditions: CUG without preference

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

Comments:

UA C		**SUT**		**UA S**
INVITE	→			
403 Forbidden	←			
ACK	→			

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_023	TS 183 054 [1] clause 4.5.2.4	PICS 1/2

Test purpose
CUG+OAE without preference: INVITE without CUG index and outgoingAccessRequest, no CUG call
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 *without* CUGIndex and outgoingAccessRequest is successful. The Application Server sends a 403 Forbidden.

Preconditions: CUG+OAE without preference

SIP header values:
INVITE 1:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```
INVITE 2:
No <cug> XML attachment

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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_024	TS 183 054 [1] clause 4.5.2.4	PICS 1/3

Test purpose
CUG+OAI without preference: INVITE without CUG index and outgoingAccessRequest, no CUG call
In case of subscription "CUG and Outgoing access, implicit outgoing access for all communications without preference", ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and outgoingAccessRequest is successful. The sent INVITE does not contain the cugInterlockBinaryCode, the networkIndicator and cugCommunicationIndicator.

Preconditions: CUG+OAI without preference

SIP header values:
INVITE 1:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```
INVITE 2:
No <cug> XML attachment

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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_025	TS 183 054 [1] clause 4.5.2.4	PICS 1/4

Test purpose
CUG with preference: INVITE without CUG index and outgoingAccessRequest, unsuccessful
In case of subscription "CUG with preference", ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and outgoingAccessRequest is successful. The Application Server sends a 403 Forbidden.

Preconditions: CUG with preference

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

Comments:

UA C		SUT	UA S
INVITE	→		
403 Forbidden	←		
ACK	→		

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_026	TS 183 054 [1] clause 4.5.2.4	PICS 1/5

Test purpose
CUG+OAE with preference: INVITE without CUG index and outgoingAccessRequest, no CUG call
In case of subscription “CUG and Outgoing access, explicit request required with preference“, ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and outgoingAccessRequest is successful. The sent INVITE does not contain the cugInterlockBinaryCode, the networkIndicator and cugCommunicationIndicator.

Preconditions: CUG+OAE with preference

SIP header values:
INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```
INVITE 2:
No <cug> XML attachment

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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_027	TS 183 054 [1] clause 4.5.2.4	PICS 1/6

Test purpose
CUG+OAI with preference: INVITE without CUG index and outgoingAccessRequest, successful
In case of subscription “CUG and Outgoing access, implicit outgoing access for all communications with preference“, ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to “10” (outgoing access allowed).

Preconditions: CUG+OAI with preference

SIP header values:
INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```
INVITE:
```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_028	TS 183 054 [1] clause 4.5.2.4	

Test purpose
No CUG: INVITE without CUG index and outgoingAccessRequest, unsuccessful
In case of subscription "No CUG", ensure that the validation check for the CUG request contained in an INVITE *without* CUGIndex and outgoingAccessRequest is not successful. The Application Server sends a 403 Forbidden.

Preconditions: No CUG subscription

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

Comments:

UA C		**SUT**	**UA S**
INVITE	→		
403 Forbidden	←		
ACK	→		

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_022	TS 183 054 [1] clause 4.5.2.4	PICS 1/1

Test purpose
CUG without preference: INVITE for Non-CUG communication, unsuccessful
In case of subscription "CUG without preference", ensure that the validation check for the CUG request in an INVITE *without* CUGIndex and outgoingAccessRequest is successful. The Application Server sends a 403 Forbidden.

Preconditions: CUG without preference

SIP header values:
INVITE:
No <cug> XML attachment
403 Forbidden:

Comments:

UA C		**SUT**	**UA S**
INVITE	→		
403 Forbidden	←		
ACK	→		

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_023	TS 183 054 [1] clause 4.5.2.4	PICS 1/2

Test purpose
CUG+OAE without preference: INVITE for Non-CUG communication, unsuccessful
In case of subscription "CUG and Outgoing access, explicit request required without preference", ensure that the validation check for a non CUG request in an INVITE is successful. The Application Server sends a 403 Forbidden.

Preconditions: CUG+OAE without preference

SIP header values:
INVITE 1:
No <cug> XML attachment
403 Forbidden:

Comments:

UA C		**SUT**	**UA S**
INVITE	→		
403 Forbidden	←		
ACK	→		

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_024	TS 183 054 [1] clause 4.5.2.4	PICS 1/3

Test purpose
CUG+OAI without preference: INVITE for Non-CUG communication, no CUG call
In case of subscription "CUG and Outgoing access, implicit outgoing access for all communications without preference", ensure that the validation check for a non the CUG request in an INVITE is successful. The sent INVITE does not contain the cugInterlockBinaryCode, the networkIndicator and cugCommunicationIndicator.

Preconditions: CUG+OAI without preference

SIP header values:
INVITE 1:
No <cug> XML attachment
INVITE 2:
No <cug> XML attachment

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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_025	TS 183 054 [1] clause 4.5.2.4	PICS 1/4

Test purpose
CUG with preference: INVITE for Non-CUG communication, successful
In case of subscription "CUG with preference", ensure that the validation check for a non CUG request in an INVITE *without* CUGIndex and outgoingAccessRequest is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to "10" (outgoing access allowed).

Preconditions: CUG with preference

SIP header values:
INVITE 1:
No <cug> XML attachment

INVITE 2:
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_026	TS 183 054 [1] clause 4.5.2.4	PICS 1/5

Test purpose

CUG+OAE with preference: INVITE for Non-CUG communication, successful

In case of subscription “CUG and Outgoing access, explicit request required with preference“, ensure that the validation check for a non CUG request in an INVITE is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to “10” (outgoing access allowed).

Preconditions: CUG+OAE with preference

SIP header values:

INVITE:
No <cug> XML attachment

INVITE 2:
<cug>
<networkIndicator >[PIXIT]</ networkIndicator>
<cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
<cugCommunicationIndicator>10</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

TSS	TP	CUG reference	Selection expression
CUG/originating_AS	CUG_N01_027	TS 183 054 [1] clause 4.5.2.4	PICS 1/6

Test purpose

CUG+OAI with preference: INVITE for Non-CUG communication, successful

In case of subscription “CUG and Outgoing access, implicit outgoing access for all communications with preference“, ensure that the validation check for a non CUG request in an INVITE is successful. The sent INVITE contains the cugInterlockBinaryCode (PIXIT), the networkIndicator (PIXIT) and cugCommunicationIndicator set to “10” (outgoing access allowed).

Preconditions: CUG+OAI with preference

SIP header values:

INVITE:
No <cug> XML attachment

INVITE:
<cug>
<networkIndicator >[PIXIT]</ networkIndicator>
<cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode>
<cugCommunicationIndicator>10</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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_028	TS 183 054 [1] clause 4.5.2.4	

Test purpose
No CUG: INVITE for Non-CUG communication, unsuccessful
In case of subscription "No CUG", ensure that the validation check for a non CUG request in an INVITE is not successful. The sent INVITE does not contain the cugInterlockBinaryCode, the networkIndicator and cugCommunicationIndicator.

Preconditions: No CUG subscription

SIP header values:
INVITE:
No <cug> XML attachment
INVITE 2:
No <cug> XML attachment

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

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_029	TS 183 054 [1] clause 4.5.2.4	

Test purpose
Outgoing communications barring applies, the call is rejected.
Ensure that a CUG request and outgoing communications barring applies is rejected with a 603 Decline final response

Preconditions: CUG without preference

SIP header values:
INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[PIXIT]</cugIndex>
    </cugCallOperation>
</cug>
```
603 Decline:

Comments:

UA C		**SUT**	**UA S**
INVITE	→		
603 Decline	←		
ACK	→		

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS	CUG_N01_030	TS 183 054 [1] clause 4.5.2.4	

Test purpose
Outgoing communications barring applies, a non CUG call is delivered to the terminating user.
Ensure that a CUG request and outgoing communications barring applies is delivered toward the terminating user

Preconditions: CUG+OAI without preference

SIP header values:
INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[PIXIT]</cugIndex>
    </cugCallOperation>
</cug>
```
603 Decline:

Comments:

UA C		**SUT**	**UA S**
INVITE	→		
603 Decline	←		
ACK	→		

5.2.3 Actions at the AS of the terminating User

TSS CUG/terminating_AS	**TP** CUG_N02_001	**CUG reference** TS 183 054 [1] clause 4.5.2.4	**Selection expression**

Test purpose

Preconditions:

SIP header values:
INVITE:

Comments:

UA C		**SUT**		**UA S**
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

At the AS of the terminating User a validation check of the acceptability of a communication is made according to the rule shown in table 5.2.3 the terminating party (as indicated by a cugInterlockBinaryCode and networkIndicator in the INVITE received) or the originating party belongs to a CUG. The call set-up is continued only in cases where the information received checks with the information stored at the AS of the terminating. Table 5.2.3 indicates the action to be taken.
In cases where a communication is rejected as the result of the validation check because of incompatible CUG information, a 603 response as shown in table 5.2.3 shall be sent.

Table 5.2.3: Handling of a CUG communication at the AS of the terminating User

CUG cugCommunicationIndicator in INVITE	**CUG match check**	**Class of terminating user**				
		CUG		**CUG+IA**		**No CUG**
		No ICB	ICB	No ICB	ICB	
CUG with OA not allowed	**Match**	CUG call	Sent 603	CUG call	Sent 603	Sent 403
	No match	Sent 403		Sent 403		
CUG with OA allowed	**Match**	CUG call	Sent 603	CUG+OA call	Non-CUG call	Non-CUG call
	No match	Sent 403		Non-CUG call		
Non-CUG	**–**	Sent 403		Non-CUG call		Non-CUG call

IA Incoming access.
OA Outgoing access.
ICB Incoming communications barred.
Match The interlock code in the received INVITE matches one of the CUGs to which the user belongs.
No match The interlock code does not match any of the CUGs to which the terminating user belongs.
NOTE: As OA attribute of the terminating user is of no concern at the AS of the terminating User , CUG+OA class is equivalent to CUG, and CUG+IA class is equivalent to CUG+IA in this table. Subscription of preferential CUG by the terminating user is also of no concern in this table.

In case of each successful CUG Check an INVITE **without** a CUG xml MIME shall be sent towards the terminating user. Therefore the received CUG xml MIME shall be discarded.

5.3 Interaction with other services

5.3.1 Conference calling (CONF)

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/interaction/CONF	CUG_N03_001	TS 183 054 [1] clause 4.5.2.4	
Test purpose			
Preconditions:			
SIP header values: INVITE:			
Comments:			

UA C		**SUT**		**UA S**
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

When the communication involving the first conferee is added to the conference, then the conference shall assume the CUG of that communication.
In order to add a subsequent communication to the conference, then the CUG of that communication shall be checked against the CUG of the conference.

5.3.2 Communication Diversion Services (CDIV)

5.3.2.1 Communication Forwarding Unconditional (CFU)

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/interaction/CDIV	CUG_N04_001	TS 183 054 [1] clause 4.5.2.4	
Test purpose			
Preconditions:			
SIP header values: INVITE:			
Comments:			

UA C		**SUT**		**UA S**
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

CUG restrictions shall be checked and met for the communication between the originating party and the forwarding party. The information of a CUG applied by the NGN on the original communication shall be used for the communication forwarding and by this means CUG restrictions shall be checked and met for the communication between the originating party and the forwarded-to party.

In the case of multiple forwarding, CUG restrictions between the originating party and the forwarding party have to be checked and met at each intermediate forwarding point. In addition, CUG restrictions between the originating party and forwarded-to party shall be met end-to-end.

The outgoing communication barring information of the forwarding party shall not be used to determine whether the communication can be forwarded.

The CUG information sent to the "forwarded-to" destination shall be the same CUG information of the originating party that was sent from the originating network.

5.3.2.2 Communication Forwarding Busy (CFB)

See interactions with CFU (TS 183 054 [1] clause 4.6.7.1).

5.3.2.3 Call Forwarding No Reply (CFNR)

See interactions with CFU (TS 183 054 [1] clause 4.6.7.1).

NOTE: CUG restrictions were checked and met for the communication between the originating party and the forwarding party when the communication was offered to the forwarding party.

5.3.2.4 Communication Forwarding on Not Logged-in (CFNL)

See interactions with CFU 4.6.7.1.

5.3.2.5 Communication Forwarding on subscriber Not Reachable (CFNRc)

See interactions with CFU 4.6.7.1.

5.3.2.6 Communication Deflection (CD)

The information of a CUG applied by the NGN on the original communication shall be used for the deflected part of the communication and by this means CUG restrictions shall be checked and met for the communication between the originating party and the deflected-to party.

In the case of multiple deflections, CUG restrictions between the originating party and the deflecting party have to be checked and met at each intermediate deflecting point. In addition, CUG restrictions between the originating party and deflected-to party shall be met end-to-end.

When a communication is deflected, a new check of the CUG restrictions between the originating party and the deflected-to party is made at the "deflected-to" destination. The CUG information sent to the "deflected-to" destination is the same CUG information of the originating party that was sent from the originating network.

The outgoing communication barring information of the deflecting party shall not be used to determine whether the communication can be deflected.

NOTE: CUG restrictions were checked and met for the communication between the originating party and the deflecting party when the communication was offered to the deflecting party.

5.3.3 Explicit Communication Transfer (ECT)

TSS CUG/interaction/ECT		**TP** CUG_N05_001		**CUG reference** TS 183 054 [1] clause 4.5.2.4	**Selection expression**
Test purpose					
Preconditions:					
SIP header values: INVITE:					
Comments:					
UA C		**SUT**		**UA S**	
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	

The two communications shall use the same CUG for the transfer to be successful.

NOTE: CUG restrictions between users will have been checked when the first communication is established. Similarly, CUG restrictions between users will have been checked when establishing the second communication.

5.4 Test purposes for the ISUP/SIP Interworking

5.4.1 Interworking at the I-MGCF

TP516001	**SIP reference: RFC 3261 [4]**	**ISUP reference: 4.7.1.1 (TS 183 054 [1])**
TSS reference:	SIP-ISUP/SS/CUG/	
SIP selection criteria:		
ISUP selection criteria:	PICS 5/7	
Test purpose:	*Mapping of <cug> XML element in the received INVITE cugCommunicationIndicator value "00"* Ensure that the <cugCommunicationIndicator> value "00" contained in the INVITE <cug> XML body is sent in a optional forward call indicator - CUG call indicator, if any other value of the optional forward call indicator have to be set not equal "0". No mapping of <networkIndicator> and <cugInterlockBinaryCode> into Closed User Group interlock code	
SIP Parameter values:	INVITE: <cug> <networkIndicator>[PIXIT]</networkIndicator> <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode> <cugCommunicationIndicator>00</cugCommunicationIndicator> </cug>	
ISUP Parameter values:	IAM: Optional Forward Call Indicator CUG call indicator = "00" When optional forward call indicator have to be sent in case of an other indicator is not set to "0"	
Comments:	**SIP** **SUT** **ISUP** INVITE → → IAM 180 Ringing ← ← ACM Ringing tone 200 OK INVITE ← ← ANM ACK → Conversation BYE ← ← REL 200 OK BYE → → RLC	

TP516002	SIP reference: RFC 3261 [4]	ISUP reference: 4.7.1.1 (TS 183 054 [1])
TSS reference:	SIP-ISUP/SS/CUG/	
SIP selection criteria:		
ISUP selection criteria:	PICS 5/7	
Test purpose:	*Mapping of <cug> XML element in the received INVITE cugCommunicationIndicator value "01"* Ensure that the <cugCommunicationIndicator> value "01" contained in the INVITE <cug> XML body is not sent in an optional forward call indicator - CUG call indicator. If the optional forward call indicator has to be sent, the CUG call indicator is set to "00" no CUG call. No mapping of <networkIndicator> and <cugInterlockBinaryCode> into Closed User Group interlock code	
SIP Parameter values:	INVITE: <cug> <networkIndicator>[PIXIT]</networkIndicator> <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode> <cugCommunicationIndicator>01</cugCommunicationIndicator> </cug>	
ISUP Parameter values:	IAM: Optional Forward Call Indicator CUG call indicator = "00" When optional forward call indicator have to be sent in case of an other indicator is not set to "0"	

Comments:

SIP		SUT		ISUP
INVITE	→		→	IAM
180 Ringing	←		←	ACM
		Ringing tone		
200 OK INVITE	←		←	ANM
ACK	→			
		Conversation		
BYE	←		←	REL
200 OK BYE	→		→	RLC

TP516003	**SIP reference: RFC 3261 [4]**	**ISUP reference: 4.7.1.1 (TS 183 054 [1])**
TSS reference:	SIP-ISUP/SS/CUG/	
SIP selection criteria:		
ISUP selection criteria:	PICS 5/7	
Test purpose:	*Mapping of <cug> XML element in the received INVITE cugCommunicationIndicator value "10"* Ensure that the <cugCommunicationIndicator> value "10" contained in the INVITE <cug> XML body is sent in a optional forward call indicator - CUG call indicator ="10". The XML <cug> <**networkIndicator**> is mapped into the IAM Closed User Group interlock code **Network identity** and the XML <cug> <**cugInterlockBinaryCode**> is mapped into the IAM Closed User Group interlock code **Binary code**	
SIP Parameter values:	INVITE: <cug> <networkIndicator>[PIXIT]</networkIndicator> <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode> <cugCommunicationIndicator>10</cugCommunicationIndicator> </cug>	
ISUP Parameter values:	IAM: Optional Forward Call Indicator CUG call indicator = "10" Closed User Group interlock code **Binary code** derived from INVITE XML body <**cugInterlockBinaryCode**> **Network identity** derived from INVITE XML body <**networkIndicator**>	
Comments:	**SIP** **SUT** **ISUP** INVITE → → IAM 180 Ringing ← ← ACM Ringing tone 200 OK INVITE ← ← ANM ACK → Conversation BYE ← ← REL 200 OK BYE → → RLC	

TP516004	SIP reference: RFC 3261 [4]	ISUP reference: 4.7.1.1 (TS 183 054 [1])
TSS reference:	SIP-ISUP/SS/CUG/	
SIP selection criteria:		
ISUP selection criteria:	PICS 5/7	
Test purpose:	*Mapping of <cug> XML element in the received INVITE cugCommunicationIndicator value "11"* Ensure that the <cugCommunicationIndicator> value "11" contained in the INVITE <cug> XML body is sent in a optional forward call indicator - CUG call indicator ="11". The XML <cug> <**networkIndicator**> is mapped into the IAM Closed User Group interlock code **Network identity** and the XML <cug> <**cugInterlockBinaryCode**> is mapped into the IAM Closed User Group interlock code **Binary code**.	
SIP Parameter values:	INVITE: <cug> <networkIndicator>[PIXIT]</networkIndicator> <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode> <cugCommunicationIndicator>11</cugCommunicationIndicator> </cug>	
ISUP Parameter values:	IAM: Optional Forward Call Indicator CUG call indicator = "11" Closed User Group interlock code **Binary code** derived from INVITE XML body <**cugInterlockBinaryCode**> **Network identity** derived from INVITE XML body <**networkIndicator**>	
Comments:	**SIP** **SUT** **ISUP** INVITE → → IAM 180 Ringing ← ← ACM Ringing tone 200 OK INVITE ← ← ANM ACK → Conversation BYE ← ← REL 200 OK BYE → → RLC	

TP516005	SIP reference: RFC 3261 [4]	ISUP reference: 4.7.1.1 (TS 183 054 [1])
TSS reference:	SIP-ISUP/SS/CUG/	
SIP selection criteria:		
ISUP selection criteria:	NOT PICS 5/7	
Test purpose:	*Mapping of <cug> XML element in the received INVITE cugCommunicationIndicator value "10". The PSTN/ISDN network does not support CUG.* Ensure that the <cugCommunicationIndicator> value "10" contained in the INVITE <cug> XML body is not sent in a optional forward call indicator - CUG call indicator ="10" when the PSTN/ISDN does not support CUG. If the optional forward call indicator has to be sent, the CUG call indicator is set to "00" no CUG call. No mapping of <networkIndicator> and <cugInterlockBinaryCode> into Closed User Group interlock code	
SIP Parameter values:	INVITE: <cug> <networkIndicator>[PIXIT]</networkIndicator> <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode> <cugCommunicationIndicator>10</cugCommunicationIndicator> </cug>	
ISUP Parameter values:	IAM: Optional Forward Call Indicator CUG call indicator = "00" When optional forward call indicator have to be sent in case of an other indicator is not set to "0"	

Comments:	SIP		SUT		ISUP
	INVITE	→		→	IAM
	180 Ringing	←		←	ACM
			Ringing tone		
	200 OK INVITE	←		←	ANM
	ACK	→			
			Conversation		
	BYE	←		←	REL
	200 OK BYE	→		→	RLC

TP516006	SIP reference: RFC 3261 [4]	ISUP reference: 4.7.1.1 (TS 183 054 [1])
TSS reference:	SIP-ISUP/SS/CUG/	
SIP selection criteria:		
ISUP selection criteria:	NOT PICS 5/7	
Test purpose:	*Mapping of <cug> XML element in the received INVITE cugCommunicationIndicator value "11". The PSTN/ISDN network does not support CUG.* Ensure that the <cugCommunicationIndicator> value "11" contained in the INVITE <cug> XML body is sent in a optional forward call indicator - CUG call indicator ="11". The XML <cug> <**networkIndicator**> is mapped into the IAM Closed User Group interlock code **Network identity** and the XML <cug> <**cugInterlockBinaryCode**> is mapped into the IAM Closed User Group interlock code **Binary code**	
SIP Parameter values:	INVITE: <cug> <networkIndicator>[PIXIT]</networkIndicator> <cugInterlockBinaryCode>[PIXIT]</cugInterlockBinaryCode> <cugCommunicationIndicator>11</cugCommunicationIndicator> </cug>	
ISUP Parameter values:		

Comments:	SIP		SUT	ISUP
	INVITE	→		
	403 Forbidden	←		
	ACK	→		

5.4.2 Interworking at the O-MGCF

TP608001	**SIP reference: RFC 3261 [4]**	**ISUP reference: 4.7.1.2 (TS 183 054 [1])**
TSS reference:	ISUP-SIP/SS/CUG/	
SIP selection criteria:	NOT PICS 5/7	
ISUP selection criteria:		
Test purpose:	*SIP network does not support CUG; CUG with outgoing access allowed is interworked in a normal call.* Ensure that the SUT if an IAM is received with Optional forward call indicator, CUG call indicator coded as "**CUG call with outgoing access**" and CUG interlock code or CUG call indicator coded as "Non CUG call" or Optional forward call indicator is absent, the SIP signalling procedure is not disrupted	
SIP Parameter values:	No mapping	
ISUP Parameter values:		
Comments:	**ISUP/BICC** **SUT** **SIP** IAM → → INVITE ACM ← ← 180 Ringing Ringing tone ANM ← ← 200 OK INVITE → ACK Conversation REL → → BYE RLC ← ← 200 OK BYE	

TP608002	**SIP reference: RFC 3261 [4]**	**ISUP reference: TS 129 163 [6], clause 7.4.16**
TSS reference:	ISUP-SIP/SS/CUG/	
SIP selection criteria:	NOT PICS 5/7	
ISUP selection criteria:		
Test purpose:	*SIP network does not support CUG; CUG with outgoing access not allowed is rejected.* Ensure that the SUT if an IAM is received with Optional forward call indicator, CUG call indicator coded as "**CUG call without outgoing access**" and CUG interlock code, a **REL** is sent. No INVITE is sent into the SIP network	
SIP Parameter values:	No action	
ISUP Parameter values:	REL: Cause #29	
Comments:	**ISUP/BICC** **SUT** **SIP** IAM → REL ← RLC →	

TP608003	SIP reference: RFC 3261 [4]	ISUP reference: 4.7.1.2 (TS 183 054 [1])
TSS reference:	ISUP-SIP/SS/CUG/	
SIP selection criteria:	PICS 5/7	
ISUP selection criteria:		
Test purpose:	*SIP network supports CUG. CUG call indicator value "10" received.* Ensure that Optional Forward Call Indicator Parameter **CUG call indicator** is mapped into <cug> < cugCommunicationIndicator>, the Closed user group interlock code Parameter **Network identity** is mapped into <cug> <networkIndicator> and the **Binary code** is mapped into the <cug> <cugInterlockBinaryCode>	
SIP Parameter values:	INVITE: <cug> <networkIndicator>[derived from IAM **Network identity**]</networkIndicator> <cugInterlockBinaryCode>[derived from IAM **Binary code**]</cugInterlockBinaryCode> <cugCommunicationIndicator>10</cugCommunicationIndicator> </cug>	
ISUP Parameter values:	IAM: Optional Forward Call Indicator CUG call indicator = "10" Closed User Group interlock code **Binary code** derived from INVITE XML body <**cugInterlockBinaryCode**> **Network identity** derived from INVITE XML body <**networkIndicator**>	
Comments:	**ISUP/BICC** **SUT** **SIP** IAM → → INVITE ACM ← ← 180 Ringing Ringing tone ANM ← ← 200 OK INVITE → ACK Conversation REL → → BYE RLC ← ← 200 OK BYE	

TP608004	SIP reference: RFC 3261 [4]	ISUP reference: 4.7.1.2 (TS 183 054 [1])
TSS reference:	ISUP-SIP/SS/CUG/	
SIP selection criteria:	PICS 5/7	
ISUP selection criteria:		
Test purpose:	*SIP network supports CUG. CUG call indicator value "11" received.* Ensure that Optional Forward Call Indicator Parameter **CUG call indicator** is mapped into <cug> < cugCommunicationIndicator>, the Closed user group interlock code Parameter **Network identity** is mapped into <cug> <networkIndicator> and the **Binary code** is mapped into the <cug> <cugInterlockBinaryCode>.	
SIP Parameter values:	INVITE: <cug> <networkIndicator>[derived from IAM **Network identity**]</networkIndicator> <cugInterlockBinaryCode>[derived from IAM **Binary code**]</cugInterlockBinaryCode> <cugCommunicationIndicator>11</cugCommunicationIndicator> </cug>	
ISUP Parameter values:	IAM: Optional Forward Call Indicator CUG call indicator = "11" Closed User Group interlock code **Binary code** derived from INVITE XML body <**cugInterlockBinaryCode**> **Network identity** derived from INVITE XML body <**networkIndicator**>	
Comments:	**ISUP/BICC** **SUT** **SIP** IAM → → INVITE ACM ← ← 180 Ringing Ringing tone ANM ← ← 200 OK INVITE → ACK Conversation REL → → BYE RLC ← ← 200 OK BYE	

History

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