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SERIES Q: SWITCHING AND SIGNALLING

Testing specifications – Testing specifications for SIP-IMS

Closed user group using IP multimedia core network subsystem; Conformance test specification – Part 2: Test suite structure and test purposes; Network side

Recommendation ITU-T Q.4011.2

ITU-T Q-SERIES RECOMMENDATIONS

SWITCHING AND SIGNALLING

SIGNALLING IN THE INTERNATIONAL MANUAL SERVICE	Q.1–Q.3
INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING	Q.4–Q.59
FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN	Q.60–Q.99
CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS	Q.100–Q.119
SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4, 5, 6, R1 AND R2	Q.120–Q.499
DIGITAL EXCHANGES	Q.500–Q.599
INTERWORKING OF SIGNALLING SYSTEMS	Q.600–Q.699
SPECIFICATIONS OF SIGNALLING SYSTEM No. 7	Q.700–Q.799
Q3 INTERFACE	Q.800–Q.849
DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1	Q.850–Q.999
PUBLIC LAND MOBILE NETWORK	Q.1000–Q.1099
INTERWORKING WITH SATELLITE MOBILE SYSTEMS	Q.1100–Q.1199
INTELLIGENT NETWORK	Q.1200–Q.1699
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR IMT-2000	Q.1700–Q.1799
SPECIFICATIONS OF SIGNALLING RELATED TO BEARER INDEPENDENT CALL CONTROL (BICC)	Q.1900–Q.1999
BROADBAND ISDN	Q.2000–Q.2999
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR THE NGN	Q.3000–Q.3709
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR SDN	Q.3710–Q.3899
TESTING SPECIFICATIONS	Q.3900–Q.4099
Testing specifications for next generation networks	Q.3900–Q.3999
Testing specifications for SIP-IMS	**Q.4000–Q.4039**
Testing specifications for Cloud computing	Q.4040–Q.4059

For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T Q.4011.2

Closed user group using IP multimedia core network subsystem; Conformance test specification – Part 2: Test suite structure and test purposes; Network side

Summary

Recommendation ITU-T Q.4011.2 provides the testing requirements for the supplementary service "Closed user group (CUG) using IP multimedia (IM) core network (CN) subsystem; Conformance Test Specification – Part 2: Test suite structure and test purposes (TSS&TP); Network side" (based on Recommendation ITU-T Q.3627 v.1).

The version number, v.1, indicates that this is version one of Recommendation ITU-T Q.4011.2, and that it relates to Release 10 of the relevant 3GPP/ETSI standard.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T Q.4011.2 v.1	2016-08-29	11	11.1002/1000/13005

Keywords

IMS, IP multimedia subsystem , malicious communication identification, MCID, testing, test suite structure and test purposes, TSS&TP.

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* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

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Table of Contents

Recommendation ITU-T Q.4011.2

Closed user group using IP multimedia core network subsystem; Conformance test specification – Part 2: Test suite structure and test purposes; Network side

1 Scope

This Recommendation is Part 2 of a multi-part deliverable covering closed user group (CUG) using IP multimedia (IM) core network (CN) subsystem; Conformance test specification, as identified below:

Part 1: "Protocol implementation conformance statement (PICS)";

Part 2: "Test suite structure and test purposes (TSS&TP); Network side";

Part 3: "Test suite structure and test purposes (TSS&TP); User side".

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T Q.3627 v.1] Recommendation ITU-T Q.3627 v.1 (2016): *Closed user group using IP multimedia core network subsystem – Protocol Specification*.

[ITU-T Q.4011.1 v.1] Recommendation ITU-T Q.4011.1 v.1 (2016): *Closed user group using IP multimedia core network subsystem; Conformance test specification – Part 1: Protocol implementation conformance statement*.

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AS Application Server

CD Communication Deflection

CDIV Communication Diversion service

CFB Communication Forwarding on Busy

CFNL Communication Forwarding on Not Logged-in

CFNR Communication Forwarding on no Reply

CFU Communication Forwarding Unconditional

CONF Conference calling

CSCF Call Session Control Function

CUG Closed User Group

ECT Explicit Communication Transfer

IA Incoming Access

ICB Incoming Communication Barring within a CUG

IMS IP Multimedia Subsystem

IP Internet Protocol

ISC Reference point between Serving CSCF and Application Server

IUT Implementation Under Test

NNI Network-to-Network Interface

OA Outgoing Access

OAE Outgoing Access, explicit request required

OAI Outgoing Access, implicit outgoing access for all communications

OCB Outgoing Communication Barring within a CUG

PIXIT Protocol Implementation extra Information for Testing

SIP Session Initiation Protocol

SUT System Under Test

TP Test Purposes

TSS Test Suite Structure

UE User Equipment

5 Conventions

None.

6 Test suite structure

Table 6-1 – Test suite structure

CUG			
	originating_AS		
		CUG without preference	CUG_N01_xxx
		CUG without preference + OAE	CUG_N02_xxx
		CUG without preference + OAI	CUG_N03_xxx
		CUG with preference	CUG_N04_xxx
		CUG with preference + OAE	CUG_N05_xxx
		CUG with preference + OAI	CUG_N06_xxx
		No CUG	CUG_N07_xxx
	terminating_AS		
		CUG with OA not allowed	CUG_N08_xxx
		CUG with OA allowed	CUG_N09_xxx
		No CUG	CUG_N10_xxx
	Services	CONF	CUG_N11_xxx
		CDIV	CUG_N12_xxx
		ECT	CUG_N13_xxx

6.1.1 Testing of the application server

The application server (AS) entity is responsible for performing and managing services. The reference point between serving call session control function (CSCF) and application server (ISC) interface is the appropriate access point for testing, see Figure 6.1.1-1.

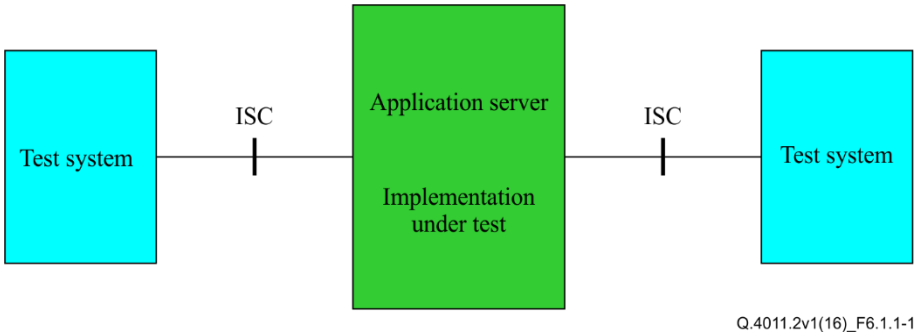

Figure 6.1.1-1 – Applicable interface to test AS functionalities

If the ISC interface is not accessible it is also possible to perform the test of the AS using any network-to-network interface (NNI) (i.e., Mw, Mw, Mx) (see Figure 6.1.1-2). In case only the Gm interface is accessible this interface can be used instead for testing, but the verification of all requirements may not be possible.

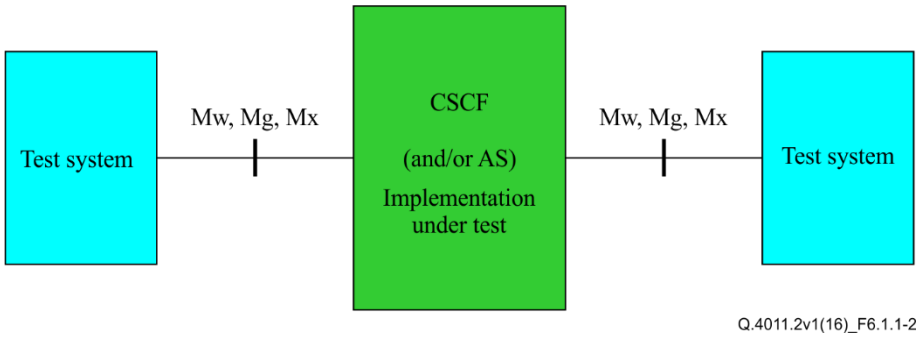

Figure 6.1.1-2 – Applicable interfaces for tests using a (generic) NNI

7 Test purposes

7.1 Introduction

For each test requirement a test purpose (TP) is defined.

7.1.1 TP naming convention

Test purposes (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 entity
<group>	= group	2 digit field representing group reference according to TSS	
<nnn>	= sequential number	(001-999)	

7.1.2 Test strategy

As the base standard [ITU-T Q.3627 v.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 [ITU-T Q.4011.1 v.1]. The criteria applied include the following:

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

7.2 Test purposes for closed user group

7.2.1 Actions at the AS of the originating user

7.2.1.1 CUG without preference

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS/CUG without preference	CUG_N01_001	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/1 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference: INVITE with CUG index, successful.

Ensure that the system under test (SUT) on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - registered CUGIndex,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG

Options for registered CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

SIP header values:

INVITE1:

```
<cug>
        <cugCallOperation>
            <outgoingAccessRequest>FALSE</outgoingAccessRequest>
            <cugIndex>[registered CUG index]</cugIndex>
        </cugCallOperation>
</cug>
```

INVITE2:

```
Content-Disposition: …;handling=required
<cug>
        <networkIndicator >[PIXIT]</ networkIndicator>
        <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
        <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		**AS**		**Test equipment (ISC, Mw)**
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference	CUG_N01_002	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/1 AND PICS 4.7.1/10 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OCB: INVITE with CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
rejects the INVITE request by sending a 603 Decline due to outgoing communication barring (OCB).

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: OCB
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS
INVITE	→	
603 Decline	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference	CUG_N01_003	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/1 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference: INVITE with unallocated CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
unregistered CUGIndex,
rejects the INVITE request by sending a 403 Forbidden due to not allocated CUG index.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[unregistered CUG]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference	CUG_N01_004	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/1 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference: INVITE with CUG index and outgoingAccessRequest = true, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - registered CUGIndex,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG

Options for registered CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:

```
Content-Disposition: …;handling=required
<cug>
    <networkIndicator >[registered CUG index]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference	CUG_N01_005	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/1 AND PICS 4.7.1/10 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference +OCB: INVITE with CUG index and outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true and
registered CUGIndex,
rejects the INVITE request by sending a 603 Decline due to outgoing communication barring.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: OCB
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed

SIP header values:

INVITE:
<cug>
<cugCallOperation>
<outgoingAccessRequest>TRUE</outgoingAccessRequest>
<cugIndex>[registered CUG index]</cugIndex>
</cugCallOperation>
</cug>

Comments:

Test equipment (Gm)		AS
INVITE	→	
603 Decline	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference	CUG_N01_006	clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/1 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference: INVITE with unallocated CUG index and outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true and
unregistered CUGIndex,
rejects the INVITE request by sending a 403 Forbidden due to not allocated CUG index.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed

SIP header values:

INVITE:
<cug>
<cugCallOperation>
<outgoingAccessRequest>TRUE</outgoingAccessRequest>
<cugIndex>[unregistered CUG]</cugIndex>
</cugCallOperation>
</cug>

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference	CUG_N01_007	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/1 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference: INVITE without CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = false,
rejects the INVITE request by sending a 403 Forbidden due to missing CUGindex.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed

SIP header values:

INVITE:

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

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference	CUG_N01_008	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/1 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference: INVITE without CUG index and with outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true,
rejects the INVITE request by sending a 403 Forbidden due to missing CUGindex.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference	CUG_N01_009	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/1 [ITU-T Q.4011.1 v.1]

Test purpose
CUG without preference: INVITE for non-CUG communication, unsuccessful.
Ensure that the SUT on receipt of an INVITE request containing no xml element cug,
rejects the INVITE request by sending a 403 Forbidden due to missing cug XML element.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed

SIP header values:
INVITE:
No xml element <cug>

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

7.2.1.2 CUG without preference + OAE

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAE	CUG_N02_001	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/2 [ITU-T Q.4011.1 v.1]

Test purpose
CUG without preference + OAE: INVITE with CUG index, successful.
Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
forwards an INVITE request containing an xml element cug with
cugInterlockBinaryCode related to registered CUG index,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed per communication

SIP header values:
INVITE1:
<cug>
<cugCallOperation>
<outgoingAccessRequest>FALSE</outgoingAccessRequest>
<cugIndex>[registered CUG index]</cugIndex>
</cugCallOperation>
</cug>

INVITE2:
Content-Disposition: …;handling=required
<cug>
<networkIndicator >[PIXIT]</ networkIndicator>
<cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
<cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	→		→	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAE	CUG_N02_002	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/2 AND PICS 4.7.1/10 [ITU-T Q.4011.111 v.1]

Test purpose

CUG without preference + OAE + OCB: INVITE with CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
rejects the INVITE request by sending a 603 Decline due to Outgoing Communication Barring.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: OCB
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed per communication

SIP header values:

INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS
INVITE	→	
603 Decline	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAE	CUG_N02_003	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAE: INVITE with unallocated CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
unregistered CUGIndex,
rejects the INVITE request by sending a 403 Forbidden due to not allocated CUG index.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed per communication

SIP header values:

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

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS/CUG without preference + OAE	CUG_N02_004	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAE: INVITE with CUG index and outgoingAccessRequest = true, successful non CUG communication.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - registered CUGIndex,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access).

Preconditions: Originating user has subscribed to CUG

Options for registered CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: allowed per communication

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		**AS**		**Test equipment (ISC, Mw)**
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAE	CUG_N02_005	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAE + OCB within CUG: INVITE with CUG index and outgoingAccessRequest = true, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true and
registered CUGIndex,
forwards the INVITE request containing no xml element cug.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: **OCB** within CUG
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed per communication

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAE	CUG_N02_006	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAE: INVITE with unallocated CUG index and outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true and
unregistered CUGIndex,
rejects the INVITE request by sending a 403 Forbidden due to non allocated CUG index.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed per communication

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[unregistered CUG]</cugIndex>
    </cugCallOperation>
</cug>
```

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	➔	
403 Forbidden	➔	
ACK	➔	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAE	CUG_N02_007	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAE: INVITE without CUG index, unsuccessful outgoing access not allowed.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = false,
rejects the INVITE request by sending a 403 Forbidden due to outgoing access not allowed.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed per communication

SIP header values:

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

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAE	CUG_N02_008	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAE: INVITE without CUG index and with outgoingAccessRequest = true, successful outgoing access allowed.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true,
forwards the INVITE request containing no xml element cug due to outgoing access allowed.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed per communication

SIP header values:

INVITE1:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	→		→	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAE	CUG_N02_009	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/2 [ITU-T Q.4011.1 v.1]

Test purpose
CUG without preference + OAE: INVITE for non-CUG communication, unsuccessful.
Ensure that the SUT on receipt of an INVITE request containing no xml element cug,
rejects the INVITE request by sending a 403 Forbidden.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed per communication

SIP header values:
INVITE:
No xml element <cug>

403 Forbidden
Reason: …

Comments:

Test equipment (ISC)		AS
INVITE	➔	
403 Forbidden	➔	
ACK	➔	

7.2.1.3 CUG without preference + OAI

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAI	CUG_N03_001	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/3 [ITU-T Q.4011.1 v.1]

Test purpose
CUG without preference + OAI: INVITE with CUG index, successful.
Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
forwards an INVITE request containing an xml element cug with
cugInterlockBinaryCode related to registered CUG index,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "10" (CUG with outgoing access).

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed permanent

SIP header values:
INVITE1:
<cug>
<cugCallOperation>
<outgoingAccessRequest>FALSE</outgoingAccessRequest>
<cugIndex>[registered CUG index]</cugIndex>
</cugCallOperation>
</cug>

INVITE2:
<cug>
<networkIndicator >[PIXIT]</ networkIndicator>
<cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
<cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAI	CUG_N03_002	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/3 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAI and OCB within CUG*: INVITE with CUG index, successful.*

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
forwards an INVITE request containing no xml element cug.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: OCB within CUG
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed permanent

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAI	CUG_N03_003	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/3 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAI: INVITE with unregistered CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
unregistered CUGIndex,
rejects the INVITE request by sending a 403 Forbidden due to non allocated CUG index.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed permanent

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[unregistered CUG]</cugIndex>
    </cugCallOperation>
</cug>
```

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	➔	
403 Forbidden	←	
ACK	➔	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAI	CUG_N03_004	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/3 [ITU-T Q.4011.1 v.1]

Test purpose

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

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - registered CUGIndex,

forwards the INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access).

Preconditions: Originating user has subscribed to CUG

Options for registered CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: allowed permanent

SIP header values:

INVITE1:

```
<cug>
        <cugCallOperation>
            <outgoingAccessRequest>TRUE</outgoingAccessRequest>
            <cugIndex>[                    registered                    CUG]</cugIndex>
        </cugCallOperation>
</cug>
```

INVITE2:

```
<cug>
        <networkIndicator >[PIXIT]</ networkIndicator>
        <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
        <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAI	CUG_N03_005	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/3 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAI and OCB within CUG*: INVITE with CUG index and outgoingAccessRequest = true, successful.*

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - registered CUGIndex,

forwards an INVITE request containing no xml element cug.

Preconditions: Originating user has subscribed to CUG
- **Options for registered CUG index:**
- Intra CUG restrictions: OCB within CUG
- **Options for public identity in use:**
- Preferential CUG: None designated
- Outgoing access: allowed permanent

SIP header values:

INVITE1:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAI	CUG_N03_006	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/3 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAI: INVITE with unregistered CUG index and outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - unregistered CUGIndex,

rejects the INVITE request by sending a 403 Forbidden due to non allocated CUG index.

Preconditions: Originating user has subscribed to CUG
- **Options for registered CUG index:**
- Intra CUG restrictions: None designated (-OCB)
- **Options for public identity in use:**
- Preferential CUG: None designated
- Outgoing access: allowed permanent

SIP header values:

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

403 Forbidden
- Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	➔	
403 Forbidden	➔	
ACK	➔	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAI	CUG_N03_007	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/3 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAI: INVITE without CUG index, successful outgoing access allowed.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = false,
forwards an INVITE request containing no xml element cug.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed permanent

SIP header values:

INVITE1:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAI	CUG_N03_008	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/3 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAI: INVITE without CUG index and with outgoingAccessRequest = true, successful outgoing access allowed.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true,
forwards an INVITE request containing no xml element cug.

Preconditions: Originating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: allowed permanent

SIP header values:

INVITE1:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG without preference + OAI	CUG_N03_009	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/3 [ITU-T Q.4011.1 v.1]

Test purpose

CUG without preference + OAI: INVITE for non-CUG communication, successful.

Ensure that the SUT on receipt of an INVITE request containing no xml element cug, forwards an INVITE request containing no xml element cug.

Preconditions: Originating user has subscribed to CUG

Options for registered CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: allowed permanent

SIP header values:

INVITE1:

No xml element <cug>

INVITE2:

No xml element <cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

7.2.1.4 CUG with preference

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference	CUG_N04_001	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/4 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference: INVITE with CUG index, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
forwards an INVITE request containing an xml element cug with
cugInterlockBinaryCode related to registered CUG index,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: registered CUG

Outgoing access: not allowed

SIP header values:

INVITE1:

```
<cug>
        <cugCallOperation>
            <outgoingAccessRequest>FALSE</outgoingAccessRequest>
            <cugIndex>[registered CUG index]</cugIndex>
        </cugCallOperation>
</cug>
```

INVITE2:

```
Content-Disposition: …;handling=required
<cug>
        <networkIndicator >[PIXIT]</ networkIndicator>
        <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
        <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference	CUG_N04_002	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/4 AND PICS 4.7.1/10 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OCB: INVITE with CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
rejects the INVITE request by sending a 603 Decline due to Outgoing Communication Barring.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: OCB
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: not allowed

SIP header values:

INVITE:
<cug>
<cugCallOperation>
<outgoingAccessRequest>FALSE</outgoingAccessRequest>
<cugIndex>[registered CUG index]</cugIndex>
</cugCallOperation>
</cug>

Comments:

Test equipment (Gm)		AS
INVITE	→	
603 Decline	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference	CUG_N04_003	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/4 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference: INVITE with unregistered CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
unregistered CUGIndex,
rejects the INVITE request by sending a 403 Forbidden due to non allocated CUG index.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: not allowed

SIP header values:

INVITE:
<cug>
<cugCallOperation>
<outgoingAccessRequest>FALSE</outgoingAccessRequest>
<cugIndex>[unregistered CUG]</cugIndex>
</cugCallOperation>
</cug>

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference	CUG_N04_004	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/4 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference: INVITE with CUG index and outgoingAccessRequest = true, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - registered CUGIndex,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: registered CUG

Outgoing access: not allowed

SIP header values:

INVITE1:

```
<cug>
        <cugCallOperation>
            <outgoingAccessRequest>TRUE</outgoingAccessRequest>
            <cugIndex>[registered CUG index]</cugIndex>
        </cugCallOperation>
</cug>
```

INVITE2:

```
Content-Disposition: …;handling=required
<cug>
        <networkIndicator >[registered CUG index]</ networkIndicator>
        <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
        <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference	CUG_N04_005	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/4 AND PICS 4.7.1/10 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference +OCB: INVITE with CUG index and outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - registered CUGIndex,

rejects the INVITE request by sending a 603 Decline due to outgoing communication barring.

Preconditions: Originating user has subscribed to CUG
- **Options for registered and preferred CUG index:**
- Intra CUG restrictions: OCB
- **Options for public identity in use:**
- Preferential CUG: registered CUG
- Outgoing access: not allowed

SIP header values:

INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS
INVITE	→	
603 Decline	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference	CUG_N04_006	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/4 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference: INVITE with unregistered CUG index and outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - unregistered CUGIndex,

rejects the INVITE request by sending a 403 Forbidden due to non allocated CUG index.

Preconditions: Originating user has subscribed to CUG
- **Options for registered and preferred CUG index:**
- Intra CUG restrictions: None designated (-OCB)
- **Options for public identity in use:**
- Preferential CUG: registered CUG
- Outgoing access: not allowed

SIP header values:

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

403 Forbidden
- Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference	CUG_N04_007	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/4 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference: INVITE without CUG index, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = false,
forwards an INVITE request containing an xml element cug with
cugInterlockBinaryCode related to preferred CUG index,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: not allowed

SIP header values:

INVITE1:

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

INVITE2:

```
Content-Disposition: …;handling=required
<cug>
    <networkIndicator >[registered CUG index]</ networkIndicator>
    <cugInterlockBinaryCode>[related to preferred CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference	CUG_N04_008	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/4 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference: INVITE without CUG index and with outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true,
rejects the INVITE request by sending a 403 Forbidden due to outgoing access not allowed.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: not allowed

SIP header values:

INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference	CUG_N04_009	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/4 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference: INVITE for non-CUG communication, successful.

Ensure that the SUT on receipt of an INVITE request containing no xml element cug,
forwards an INVITE request containing an xml element cug with
cugInterlockBinaryCode related to preferred CUG index,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: not allowed

SIP header values:

INVITE1:
No xml element <cug>

INVITE2:
Content-Disposition: …;handling=required
```
<cug>
    <networkIndicator >[registered CUG index]</ networkIndicator>
    <cugInterlockBinaryCode>[related to preferred CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	→		→	INVITE2

7.2.1.5 CUG with preference + OAE

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS/CUG with preference + OAE	CUG_N05_001	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/5 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAE: INVITE with CUG index, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - registered CUGIndex,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG
- **Options for registered and preferred CUG index:**
- Intra CUG restrictions: None designated (-OCB)
- **Options for public identity in use:**
- Preferential CUG: registered CUG
- Outgoing access: allowed per communication

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:

```
Content-Disposition: …;handling=required
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		**AS**		**Test equipment (ISC, Mw)**
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAE	CUG_N05_002	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/5 AND PICS 4.7.1/10 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAE + OCB: INVITE with CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
rejects the INVITE request by sending a 603 Decline to Outgoing Communication Barring.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: OCB
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed per communication

SIP header values:

INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS
INVITE	→	
603 Decline	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAE	CUG_N05_003	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/5 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAE: INVITE with unregistered CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
unregistered CUGIndex,
rejects the INVITE request by sending a 403 Forbidden due to not allocated CUG index.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed per communication

SIP header values:

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

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAE	CUG_N05_004	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/5 [ITU-T Q.4011.1 v.1]

Test purpose

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

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - registered CUGIndex,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access).

Preconditions: Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: registered CUG

Outgoing access: allowed per communication

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS/CUG with preference + OAE	CUG_N05_005	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/5 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAE + OCB within CUG*: INVITE with CUG index and outgoingAccessRequest = true, successful.*

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true and
registered CUGIndex,
forwards an INVITE request containing no xml element cug.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: OCB within CUG
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed per communication

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		**AS**		**Test equipment (ISC, Mw)**
INVITE1	➔		➔	INVITE2

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS/CUG with preference + OAE	CUG_N05_006	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/5 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAE: INVITE with unregistered CUG index and outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true and
unregistered CUGIndex,
rejects the INVITE request by sending a 403 Forbidden due to non allocated CUG index.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed per communication

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[unregistered CUG]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		**AS**
INVITE	➔	
403 Forbidden	➔	
ACK	➔	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAE	CUG_N05_007	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/5 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAE: INVITE without CUG index and with outgoingAccessRequest = false, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = false,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to preferred CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: registered CUG

Outgoing access: allowed per communication

SIP header values:

INVITE1:

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

INVITE2:

```
Content-Disposition: …;handling=required
<cug>
        <networkIndicator >[PIXIT]</ networkIndicator>
        <cugInterlockBinaryCode>[related to preferred CUG index]</cugInterlockBinaryCode>
        <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAE	CUG_N05_008	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/5 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAE: INVITE without CUG index and with outgoingAccessRequest = true, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true,
forwards an INVITE request containing no xml element cug.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed per communication

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAE	CUG_N05_009	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/5 [ITU-T Q.4011.1 v.1]

Test purpose

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

Ensure that the SUT on receipt of an INVITE request containing no xml element cug,
returns an INVITE request containing an xml element cug with
cugInterlockBinaryCode related to preferred CUG index,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "11" (CUG without outgoing access).

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed per communication

SIP header values:

INVITE1:
No xml element <cug>

INVITE2:
Content-Disposition: …;handling=required

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to preferred CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

7.2.1.6 CUG with preference + OAI

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_001	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAI: INVITE with CUG index, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - registered CUGIndex,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access).

Preconditions: Originating user has subscribed to CUG
- **Options for registered and preferred CUG index:**
- Intra CUG restrictions: None designated (-OCB)
- **Options for public identity in use:**
- Preferential CUG: registered CUG
- Outgoing access: allowed permanent

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_002	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 AND PICS 4.7.1/10 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAI and OCB: INVITE with CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
rejects the INVITE request by sending a 603 Decline due to outgoing communication barring.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: OCB
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed permanent

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS
INVITE	→	
603 Decline	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_003	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAI and OCB within CUG: INVITE with CUG index, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
registered CUGIndex,
forwards an INVITE request containing no xml element cug is present

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: OCB within CUG
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed permanent

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		AS		
INVITE1	→		→	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_004	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAI: INVITE with unregistered CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
unregistered CUGIndex,
rejects the INVITE request by sending a 403 Forbidden due to non allocated CUG index.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed permanent

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[unregistered                                CUG]</cugIndex>
    </cugCallOperation>
</cug>
```

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_005	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAI: INVITE with CUG index and outgoingAccessRequest = true, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true and
  - registered CUGIndex,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access).

Preconditions: Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: registered CUG

Outgoing access: allowed permanent

SIP header values:

INVITE1:

```
<cug>
        <cugCallOperation>
            <outgoingAccessRequest>TRUE</outgoingAccessRequest>
            <cugIndex>[registered                                   CUG]</cugIndex>
        </cugCallOperation>
</cug>
```

INVITE2:

```
<cug>
        <networkIndicator >[PIXIT]</ networkIndicator>
        <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
        <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_006	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 AND PICS 4.7.1/10 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAI and OCB: INVITE with CUG index and outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true and
registered CUGIndex,
rejects the INVITE request by sending a 603 Decline due to outgoing communication barring.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: OCB
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed permanent

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[registered                                CUG]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE	→			
603 Decline	←			
ACK	→			

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_007	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAI and OCB within CUG: INVITE with CUG index and outgoingAccessRequest = true, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true and
registered CUGIndex,
forwards an INVITE request containing no xml element cug is present

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: OCB within CUG
Options for public identity in use:
Preferential CUG: registered CUG
Outgoing access: allowed permanent

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
        <cugIndex>[registered                                CUG]</cugIndex>
    </cugCallOperation>
</cug>
```

INVITE2:
No xml element <cug>

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	→		→	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_008	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAI: INVITE with unregistered CUG index and outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with

cugCallOperation containing

outgoingAccessRequest = true and

unregistered CUGIndex,

rejects the INVITE request by sending a 403 Forbidden due to not allocated CUG index.

Preconditions: Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: registered CUG

Outgoing access: allowed permanent

SIP header values:

INVITE:

```
<cug>
        <cugCallOperation>
            <outgoingAccessRequest>TRUE</outgoingAccessRequest>
            <cugIndex>[unregistered                                    CUG]</cugIndex>
        </cugCallOperation>
</cug>
```

403 Forbidden

Reason: …

Comments:

Test equipment (Gm)		**AS**
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_009	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 [ITU-T Q.4011.1 v.1]

Test purpose

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

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true,

forwards an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to preferred CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access).

Preconditions: Originating user has subscribed to CUG
- **Options for registered and preferred CUG index:**
- Intra CUG restrictions: None designated (-OCB)
- **Options for public identity in use:**
- Preferential CUG: registered CUG
- Outgoing access: allowed permanent

SIP header values:

INVITE1:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```

INVITE2:
```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to preferred CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/CUG with preference + OAI	CUG_N06_010	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 AND PICS 4.7.1/6 AND PICS 4.7.1/10 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with preference + OAI and OCB: INVITE without CUG index and with outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugCallOperation containing
  - outgoingAccessRequest = true,

rejects the INVITE request by sending a 603 Decline due to outgoing communication barring.

Preconditions: Originating user has subscribed to CUG
- **Options for registered and preferred CUG index:**
- Intra CUG restrictions: OCB
- **Options for public identity in use:**
- Preferential CUG: registered CUG
- Outgoing access: allowed permanent

SIP header values:

INVITE:
```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS
INVITE	➔	
603 Decline	➔	
ACK	➔	

7.2.1.7 No CUG

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS/No CUG	CUG_N07_001	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose
No CUG: INVITE with CUG index, unsuccessful.
Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
any CUGIndex,
rejects the INVITE request by sending a 403 Forbidden.

Preconditions: Originating user has **not** subscribed to CUG

SIP header values:
INVITE:
<cug>
<cugCallOperation>
<outgoingAccessRequest>FALSE</outgoingAccessRequest>
<cugIndex>[any CUG index]</cugIndex>
</cugCallOperation>
</cug>

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		**AS**
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/originating_AS/No CUG	CUG_N07_002	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose
No CUG: INVITE with CUG index and outgoingAccessRequest = true, unsuccessful.
Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true and
any CUGIndex,
rejects the INVITE request by sending a 403 Forbidden.

Preconditions: Originating user has **not** subscribed to CUG

SIP header values:
INVITE:
<cug>
<cugCallOperation>
<outgoingAccessRequest>TRUE</outgoingAccessRequest>
<cugIndex>[any CUG index]</cugIndex>
</cugCallOperation>
</cug>

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		**AS**
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/No CUG	CUG_N07_003	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

No CUG: INVITE without CUG index, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = false,
rejects the INVITE request by sending a 403 Forbidden.

Preconditions: Originating user has **not** subscribed to CUG

SIP header values:

INVITE:

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

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/originating_AS/No CUG	CUG_N07_004	Clause 4.5.2.4 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

No CUG: INVITE without CUG index and with outgoingAccessRequest = true, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugCallOperation containing
outgoingAccessRequest = true,
rejects the INVITE request by sending a 403 Forbidden.

Preconditions: Originating user has **not** subscribed to CUG

SIP header values:

INVITE:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>TRUE</outgoingAccessRequest>
    </cugCallOperation>
</cug>
```

403 Forbidden
Reason: …

Comments:

Test equipment (Gm)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

7.2.2 Actions at the AS of the terminating user

7.2.2.1 CUG with outgoing access (OA) not allowed

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/ terminating _AS/CUG with OA not allowed	CUG_N08_001	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA not allowed: INVITE with interlock code matching registered CUG index and without outgoing access, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access),

forwards an INVITE request containing no xml element cug.

Preconditions: Terminating user has subscribed to CUG

Options for registered CUG index:

Intra CUG restrictions: None designated (-ICB)

Options for public identity in use:

Incoming access: not allowed

SIP header values:

INVITE1:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

INVITE2:

No XML <cug> element

Comments:

Test equipment (ISC, Mw)		**AS**		**Test equipment (Gm)**
INVITE1	➔		➔	INVITE2

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/ terminating _AS/CUG with OA not allowed	CUG_N08_002	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA not allowed and ICB: INVITE with interlock code matching registered CUG index and without outgoing access, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access),

rejects the INVITE request by sending a 603 Decline due to incoming calls barred.

Preconditions: Terminating user has subscribed to CUG

Options for registered CUG index:

Intra CUG restrictions: ICB

Options for public identity in use:

Incoming access: not allowed

SIP header values:

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (ISC, Mw)		**AS**
INVITE	➔	
603 Decline	➔	
ACK	➔	

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA not allowed	CUG_N08_003	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA not allowed: INVITE with interlock code not matching registered CUG index and without outgoing access, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode not related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access),

rejects the INVITE request by sending a 403 Forbidden due to not matched CUG index.

Preconditions: Terminating user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

SIP header values:

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[not related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (ISC, Mw)		AS
INVITE	➔	
403 Forbidden	➔	
ACK	➔	

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA not allowed	CUG_N08_004	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA allowed: INVITE with interlock code matching registered CUG index and without outgoing access, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access),

forwards an INVITE request containing no xml element cug.

Preconditions: Terminating user has subscribed to CUG

Options for registered CUG index:

Intra CUG restrictions: None designated (-ICB)

Options for public identity in use:

Incoming access: allowed

SIP header values:

INVITE1:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

INVITE2:

No XML <cug> element

Comments:

Test equipment (ISC, Mw)		AS		Test equipment (Gm)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA not allowed	CUG_N08_005	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA allowed and ICB: INVITE with interlock code matching registered CUG index and without outgoing access, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugInterlockBinaryCode related to registered CUG index,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "11" (CUG without outgoing access),
rejects the INVITE request by sending a 603 Decline due to incoming calls barred.

Preconditions: Terminating user has subscribed to CUG
Options for registered CUG index:
Intra CUG restrictions: ICB
Options for public identity in use:
Incoming access: allowed

SIP header values:

INVITE:
<cug>
<networkIndicator>[PIXIT]</networkIndicator>
<cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
<cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>

Comments:

Test equipment (ISC, Mw)		AS
INVITE	→	
603 Decline	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA not allowed	CUG_N08_006	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA allowed: INVITE with interlock code not matching registered CUG index and without outgoing access, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugInterlockBinaryCode not related to registered CUG index,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "11" (CUG without outgoing access),
rejects the INVITE request by sending a 403 Forbidden due to not matched CUG index.

Preconditions: Terminating user has subscribed to CUG
Options for public identity in use:
Incoming access: allowed

SIP header values:

INVITE:
<cug>
<networkIndicator>[PIXIT]</networkIndicator>
<cugInterlockBinaryCode>[not related to registered CUG index]</cugInterlockBinaryCode>
<cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>

Comments:

Test equipment (ISC, Mw)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA not allowed	CUG_N08_007	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

No CUG: INVITE with interlock code and without outgoing access, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "11" (CUG without outgoing access),

rejects the INVITE request by sending a 403 Forbidden due to 'Outgoing access not allowed'.

Preconditions: Terminating user has not subscribed to CUG

SIP header values:

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to any CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>11</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (ISC, Mw)		AS
INVITE	➔	
403 Forbidden	➔	
ACK	➔	

7.2.2.2 CUG with OA allowed

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA allowed	CUG_N09_001	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA not allowed: INVITE with interlock code matching registered CUG index and with outgoing access, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access),

forwards an INVITE request containing no xml element cug.

Preconditions: Terminating user has subscribed to CUG
- **Options for registered CUG index:**
- Intra CUG restrictions: None designated (-ICB)
- **Options for public identity in use:**
- Incoming access: not allowed

SIP header values:

INVITE1:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

INVITE2:

No XML <cug> element

Comments:

Test equipment (ISC, Mw)		AS		Test equipment (Gm)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA allowed	CUG_N09_002	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA not allowed and ICB: INVITE with interlock code matching registered CUG index and with outgoing access, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access),

rejects the INVITE request by sending a 603 Decline due to incoming calls barred.

Preconditions: Terminating user has subscribed to CUG

Options for registered CUG index:

Intra CUG restrictions: ICB

Options for public identity in use:

Incoming access: not allowed

SIP header values:

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (ISC, Mw)		AS
INVITE	→	
603 Decline	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA allowed	CUG_N09_003	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA not allowed: INVITE with interlock code not matching registered CUG index and with outgoing access, unsuccessful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode not related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access),

rejects the INVITE request by sending a 403 Forbidden due to not matched CUG index.

Preconditions: Terminating user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

SIP header values:

INVITE:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[not related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

Comments:

Test equipment (ISC, Mw)		AS
INVITE	→	
403 Forbidden	←	
ACK	→	

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA allowed	CUG_N09_004	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA allowed: INVITE with interlock code matching registered CUG index and with outgoing access, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access),

forwards an INVITE request containing no xml element cug.

Preconditions: Terminating user has subscribed to CUG
- **Options for registered CUG index:**
- Intra CUG restrictions: None designated (-ICB)
- **Options for public identity in use:**
- Incoming access: allowed

SIP header values:

INVITE1:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

INVITE2:

No XML <cug> element

Comments:

Test equipment (ISC, Mw)		AS		Test equipment (Gm)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA allowed	CUG_N09_005	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA allowed and ICB: INVITE with interlock code matching registered CUG index and with outgoing access, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
- cugInterlockBinaryCode related to registered CUG index,
- networkIndicator (PIXIT) and
- cugCommunicationIndicator set to "10" (CUG with outgoing access),

forwards an INVITE request containing no xml element cug.

Preconditions: Terminating user has subscribed to CUG
- **Options for registered CUG index:**
- Intra CUG restrictions: ICB
- **Options for public identity in use:**
- Incoming access: allowed

SIP header values:

INVITE1:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

INVITE2:

No XML <cug> element

Comments:

Test equipment (ISC, Mw)		AS		Test equipment (Gm)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA allowed	CUG_N09_006	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with IA allowed: INVITE with interlock code not matching registered CUG index and with outgoing access, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugInterlockBinaryCode not related to registered CUG index,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "10" (CUG with outgoing access),
forwards an INVITE request containing no xml element cug.

Preconditions: Terminating user has subscribed to CUG
Options for public identity in use:
Incoming access: allowed

SIP header values:

INVITE1:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[not related to registered CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

INVITE2:
No XML <cug> element

Comments:

Test equipment (ISC, Mw)		AS		Test equipment (Gm)
INVITE1	➔		➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/ terminating _AS/CUG with OA allowed	CUG_N09_007	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose

No CUG: INVITE with interlock code and with outgoing access, successful.

Ensure that the SUT on receipt of an INVITE request containing an xml element cug with
cugInterlockBinaryCode,
networkIndicator (PIXIT) and
cugCommunicationIndicator set to "10" (CUG with outgoing access),
forwards an INVITE request containing no xml element cug.

Preconditions: Terminating user has not subscribed to CUG

SIP header values:

INVITE1:

```
<cug>
    <networkIndicator >[PIXIT]</ networkIndicator>
    <cugInterlockBinaryCode>[related to any CUG index]</cugInterlockBinaryCode>
    <cugCommunicationIndicator>10</cugCommunicationIndicator>
</cug>
```

INVITE2:
No XML <cug> element

Comments:

Test equipment (ISC, Mw)		AS		Test equipment (Gm)
INVITE1	➔		➔	INVITE2

7.2.2.3 No CUG

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/ terminating _AS/No CUG	CUG_N10_001	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose
CUG with IA not allowed: INVITE without xml element cug, unsuccessful.
Ensure that the SUT on receipt of an INVITE request containing no xml element cug, rejects the INVITE request by sending a 403 Forbidden.

Preconditions: Terminating user has subscribed to CUG
Options for public identity in use:
Incoming access: not allowed

SIP header values:
INVITE:
No xml element <cug>

Comments:

Test equipment (ISC)		**AS**
INVITE	➔	
403 Forbidden	➔	
ACK	➔	

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/ terminating _AS/No CUG	CUG_N10_002	Clause 4.5.2.10 of [ITU-T Q.3627 v.1]	PICS 4.5.1/2 [ITU-T Q.4011.1 v.1]

Test purpose
CUG with IA allowed: INVITE without xml element cug, successful.
Ensure that the SUT on receipt of an INVITE request containing no xml element cug, forwards an INVITE request containing no xml element cug.

Preconditions: Terminating user has subscribed to CUG
Options for public identity in use:
Incoming access: allowed

SIP header values:
INVITE1:
No xml element <cug>

INVITE2:
No XML <cug> element

Comments:

Test equipment (ISC, Mw)		**AS**		**Test equipment (Gm)**
INVITE1	➔		➔	INVITE2

7.3 Interaction with other services

7.3.1 Conference calling (CONF)

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/Services/CONF	CUG_N11_001	Clause 4.6.6 of [ITU-T Q.3627 v.1]	PICS 4.7.1/7 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: First added conferee join the conference, successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with
cugCallOperation containing
registered CUGIndex,
the conference focus allows to join the created conference as the first conferee.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed

SIP header values:

INVITE:
Request Line <conference URI>
<cug>
<cugCallOperation>
<outgoingAccessRequest>FALSE</outgoingAccessRequest>
<cugIndex>[registered CUG index]</cugIndex>
</cugCallOperation>
</cug>

Comments:

Test equipment (Gm)		**AS**
		A conference is already created
INVITE	→	
200 OK	←	

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/Services/CONF	CUG_N11_002	Clause 4.6.6 of [ITU-T Q.3627 v.1]	PICS 4.7.1/7 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Subsequent conferee added to the conference, successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with
cugCallOperation containing
registered CUGIndex,
the conference focus allows to join the created conference as a subsequent conferee and belongs to the same closed user group.

Preconditions: Originating user has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed

SIP header values:

INVITE:
Request Line <conference URI>
<cug>
<cugCallOperation>
<outgoingAccessRequest>FALSE</outgoingAccessRequest>
<cugIndex>[registered CUG index]</cugIndex>
</cugCallOperation>
</cug>

Comments:

Test equipment (ISC, Mw)		**AS**
		A conference is already created
		A CUG user is already added to the conference
INVITE	→	
200 OK	←	

7.3.2 Communication Diversion Services (CDIV)

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/Services/CDIV	CUG_N12_001	Clause 4.6.7.1 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarding party, communication forwarding unconditional (CFU) successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party and the forwarding party and performs the Communication Diversion Service CFU.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding Unconditional (CFU)

Originating party and forwarding party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		**AS**		**Test equipment (ISC, Mw)**
INVITE1	➔			
			➔	INVITE2

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/Services/CDIV	CUG_N12_002	Clause 4.6.7.1 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFU successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFU) and the communication to the forwarded-to party is successful.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding Unconditional (CFU)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)	**AS**	**Test equipment (Gm)**
INVITE1	➔	
	➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_003	Clause 4.6.7.1 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFU unsuccessful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFU) and the communication to the forwarded-to party is unsuccessful. The SUT rejects the INVITE request by sending a 403 Forbidden due to not matched CUG data.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding Unconditional (CFU)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in different CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS
INVITE1	➔	
403 Forbidden	➔	
ACK	➔	

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_004	Clause 4.6.7.2 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

*CUG with OA not allowed: Call setup between originating party and forwarding party, c*ommunication forwarding on busy *(CFB) successful.*

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party and the forwarding party and performs the communication diversion service CFB.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on Busy user (CFB)

Originating party and forwarding party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (Gm)		Test equipment (ISC, Mw)
INVITE1	→		→	INVITE2		
			←	486 Busy Here		
			→	ACK		
			→		→	INVITE3

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_005	Clause 4.6.7.2 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFB successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFB) and the communication to the forwarded-to party is successful.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on Busy user (CFB)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (Gm)		Test equipment (Gm)
INVITE1	→		→	INVITE2		
			←	486 Busy Here		
			→	ACK		
					→	INVITE3

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_006	Clause 4.6.7.2 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFB unsuccessful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFB) and the communication to the forwarded-to party is unsuccessful. The SUT rejects the INVITE request by sending a 403 Forbidden due to not matched CUG data.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on Busy user (CFB)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in different CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (Gm)
INVITE1	→		→	INVITE2
			←	486 Busy Here
			→	ACK
403 Forbidden	←			
ACK	→			

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_007	Clause 4.6.7.3 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarding party, communication forwarding on no reply (CFNR) successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party and the forwarding party and performs the Communication Diversion Service CFNR.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on no Reply (CFNR)

Originating party and forwarding party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)	AS	Test equipment (Gm)	Test equipment (ISC, Mw)
INVITE1	→	→ INVITE2	
		← 180 Ringing	
			→ INVITE3

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_008	Clause 4.6.7.3 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFNR successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFNR) and the communication to the forwarded-to party is successful.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on no Reply (CFNR)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (Gm)		Test equipment (Gm)
INVITE1	→		→	INVITE2		
			←	180 Ringing		
					→	INVITE3

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_009	Clause 4.6.7.3 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFNR unsuccessful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFNR) and the communication to the forwarded-to party is unsuccessful. The SUT rejects the INVITE request by sending a 403 Forbidden due to not matched CUG data.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on no Reply (CFNR)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in different CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (Gm)
INVITE1	→		→	INVITE2
			←	180 Ringing
403 Forbidden	←			
ACK	→			

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_010	Clause 4.6.7.4 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarding party, communication forwarding on not logged-in (CFNL) successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party and the forwarding party and performs the Communication Diversion Service CFNL.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on Not Logged-in (CFNL)

Originating party and forwarding party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (ISC, Mw)
INVITE1	➔			
			➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_011	Clause 4.6.7.4 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFNL successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFNL) and the communication to the forwarded-to party is successful.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on Not Logged-in (CFNL)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (Gm)
INVITE1	➔			
			➔	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_012	Clause 4.6.7.4 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFNL unsuccessful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFNL) and the communication to the forwarded-to party is unsuccessful. The SUT rejects the INVITE request by sending a 403 Forbidden due to not matched CUG data.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on Not Logged-in (CFNL)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in different CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		**AS**
INVITE1	➔	
403 Forbidden	➔	
ACK	➔	

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_013	Clause 4.6.7.5 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarding party, CNRc successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party and the forwarding party and performs the Communication Diversion Service CFNRc.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on Subscriber Not Reachable (CFNRc)

Originating party and forwarding party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)	AS	Test equipment (Gm)	Test equipment (ISC, Mw)
INVITE1	➔	➔ INVITE2	
			➔ INVITE3

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_014	Clause 4.6.7.5 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFNRc successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFNRc) and the communication to the forwarded-to party is successful.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on Subscriber Not Reachable (CFNRc)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS	Test equipment (Gm)		Test equipment (Gm)
INVITE1	➔		INVITE2		
				➔	INVITE3

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_015	Clause 4.6.7.5 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CFNRc unsuccessful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the forwarding party and the forwarded-to party (CFNRc) and the communication to the forwarded-to party is unsuccessful. The SUT rejects the INVITE request by sending a 403 Forbidden due to not matching CUG data.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Forwarding user has subscribed to CDIV

Communication Forwarding on Subscriber Not Reachable (CFNRc)

Forwarded-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and forwarding party are in the same CUG

Originating party and forwarded-to party are in different CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS	Test equipment (Gm)	Test equipment (Gm)
INVITE1	→		INVITE2	
403 Forbidden	←			
ACK	→			

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_016	Clause 4.6.7.6 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and deflecting party, communication deflection (CD) successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party and the deflecting party and performs the communication diversion service CD.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Forwarding user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Deflecting user has subscribed to CDIV

Communication Deflection (CD)

Originating party and deflecting party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (Gm)	Test equipment (ISC, Mw)
INVITE1	→		→	INVITE2	
			←	180 Ringing	
			←	302 Moved Temporarily	
			→	ACK	
					→ INVITE3

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_017	Clause 4.6.7.6 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and forwarded-to party, CD successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the deflecting party and the deflected-to party (CD) and the communication to the deflected-to party is successful.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Deflecting user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Deflected-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and deflecting party are in the same CUG

Originating party and deflected-to party are in the same CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (Gm)	Test equipment (Gm)
INVITE1	→		→	INVITE2	
			←	180 Ringing	
			←	302 Moved Temporarily	
			→	ACK	
					→ INVITE3

TSS	TP	CUG reference	Selection expression
CUG/Services/CDIV	CUG_N12_018	Clause 4.6.7.6 of [ITU-T Q.3627 v.1]	PICS 4.7.1/8 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call setup between originating party and deflected-to party, CD unsuccessful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the originating party, the deflecting party and the deflected-to party (CD) and the communication to the deflected-to party is unsuccessful. The SUT rejects the INVITE request by sending a 403 Forbidden due to not matched CUG data.

Preconditions:

Originating user has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Deflecting user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

deflected-to user has subscribed to CUG

Options for public identity in use:

Incoming access: not allowed

Originating party and deflecting party are in the same CUG

Originating party and deflected-to party are in different CUG

SIP header values:

INVITE1:

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)		AS		Test equipment (Gm)
INVITE1	→		→	INVITE2
			←	180 Ringing
			←	302 Moved Temporarily
			→	ACK
403 Forbidden	←			
ACK	→			

7.3.3 Explicit communication transfer (ECT)

TSS	**TP**	**CUG reference**	**Selection expression**
CUG/Services/ECT	CUG_N13_001	Clause 4.6.10 of [ITU-T Q.3627 v.1]	PICS 4.7.1/9 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Communication transfer - transferor and transferee in the same CUG, successful.

Ensure that on receipt of an INVITE request containing an xml element **cug** with
cugCallOperation containing
registered CUGIndex,
the SUT checks the CUG restrictions for the transferor and the transferee. The communication is successful

Preconditions:

Transferor has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed
Transferee has subscribed to CUG
Options for registered and preferred CUG index:
Intra CUG restrictions: None designated (-OCB)
Options for public identity in use:
Preferential CUG: None designated
Outgoing access: not allowed
Transferor and transferee are in the same CUG

SIP header values:

INVITE:
Request Line <conference URI>
<cug>
<cugCallOperation>
<outgoingAccessRequest>FALSE</outgoingAccessRequest>
<cugIndex>[registered CUG index]</cugIndex>
</cugCallOperation>
</cug>

Comments:

Test equipment (Gm)		**AS**		**Test equipment (Gm)**
INVITE	→		→	INVITE
180 Ringing	←		←	180 Ringing
200 OK	←		←	200 OK
ACK	→		→	ACK

TSS	TP	CUG reference	Selection expression
CUG/Services/ECT	CUG_N13_001	Clause 4.6.10 of [ITU-T Q.3627 v.1]	PICS 4.7.1/9 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call communication transfer transferee and transfer target in the same CUG, successful blind transfer.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the transferee and the transfer target and performs the communication transfer service (Blind transfer).

Preconditions:

Transferor has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Transferee has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Transferor and transferee are in the same CUG

SIP header values:

INVITE1:

Request Line <conference URI>

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)	AS	Test equipment (Gm)	Test equipment (ISC, Mw)
	A communication between transferor and transferee already exits		
REFER	→		
202 Accepted	←		
BYE	→		
200 OK (BYE)	←		
		INVITE1 →	INVITE2

TSS	TP	CUG reference	Selection expression
CUG/Services/ECT	CUG_N13_001	Clause 4.6.10 of [ITU-T Q.3627 v.1]	PICS 4.7.1/9 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call communication transfer transferee and transfer target in the same CUG, successful assured transfer.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the transferee and the transfer target and performs the communication transfer service (assured transfer).

Preconditions:

Transferor has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Transferee has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Transferor and transferee are in the same CUG

SIP header values:

INVITE1:

Request Line <conference URI>

```
<cug>
    <cugCallOperation>
        <outgoingAccessRequest>FALSE</outgoingAccessRequest>
        <cugIndex>[registered CUG index]</cugIndex>
    </cugCallOperation>
</cug>
```

Comments:

Test equipment (Gm)	AS	Test equipment (Gm)	Test equipment (ISC, Mw)
	A communication between transferor and transferee already exits		
REFER	➔		
202 Accepted	➔		
			INVITE1 ➔ INVITE2

TSS	TP	CUG reference	Selection expression
CUG/Services/ECT	CUG_N13_001	Clause 4.6.10 of [ITU-T Q.3627 v.1]	PICS 4.7.1/9 [ITU-T Q.4011.1 v.1]

Test purpose

CUG with OA not allowed: Call Communication transfer transferee and transfer target in the same CUG, successful consultative transfer.

Ensure that on receipt of an INVITE request containing an xml element **cug** with

cugCallOperation containing

registered CUGIndex,

the SUT checks the CUG restrictions for the transferee and the transfer target and performs the communication transfer service (assured transfer).

Preconditions:

Transferor has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Transferee has subscribed to CUG

Options for registered and preferred CUG index:

Intra CUG restrictions: None designated (-OCB)

Options for public identity in use:

Preferential CUG: None designated

Outgoing access: not allowed

Transferor and transferee are in the same CUG

SIP header values:

INVITE1:

Request Line <conference URI>

<cug>

<cugCallOperation>

<outgoingAccessRequest>FALSE</outgoingAccessRequest>

<cugIndex>[registered CUG index]</cugIndex>

</cugCallOperation>

</cug>

Comments:

Test equipment (Gm) AS Test equipment (Gm) Test equipment (ISC, Mw)

A communication between transferor and transferee already exits

A communication between transferor and transfer target already exits

REFER ➔

202 Accepted ➔

INVITE1 ➔ INVITE2

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Series G	Transmission systems and media, digital systems and networks
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