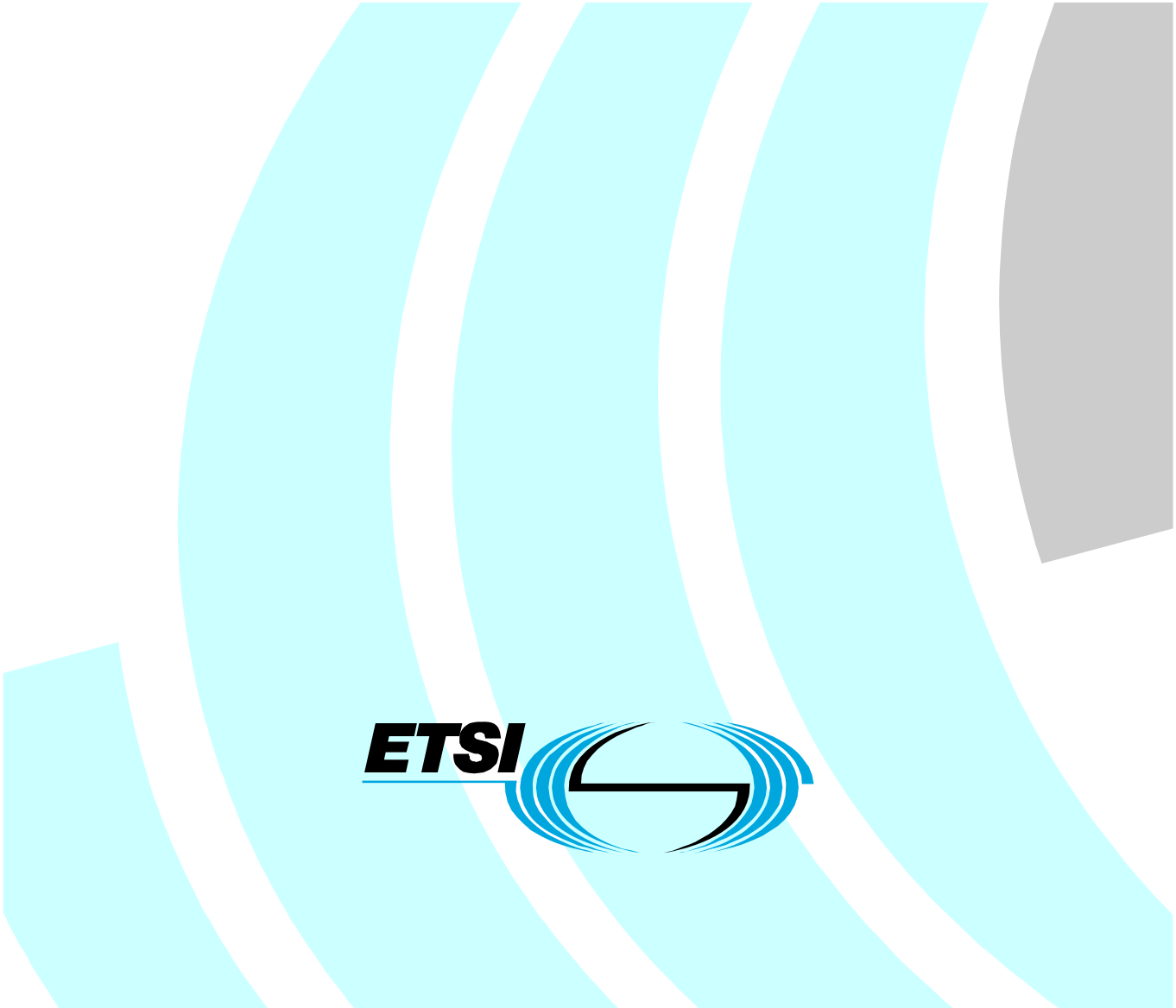
ETSI TS 186 021-2 V2.1.1 (2009-07)

Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services; Completion of Communications to Busy Subscriber (CCBS) Completion of Communications by No Reply (CCNR); Part 2: Test Suite Structure and Test Purposes (TSS&TP)



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Foreword

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

The present document is part 2 of a multi-part deliverable covering test suite structure and test purposes for the Completion of Communications to Busy Subscriber (CCBS) Completion of Communications by No Reply (CCNR), as identified below:

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

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

Part 3: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

1 Scope

The present document specifies the test suite structure and test purposes of the Completion of Communications to Busy Subscriber (CCBS) service and the Completion of Communication on no Reply (CCNR) service, based on stage three of the IMS simulation services. Within the Next Generation Network (NGN) the stage 3 description is specified using the IP-Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP).

2 References

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

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

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

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

2.1 Normative references

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

[1] ETSI TS 183 042 (V2.1.1): "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN Simulation Services; Completion of Communications to Busy Subscriber (CCBS), Completion of Communications by No Reply (CCNR); Protocol Specification".

[2] ETSI TS 186 021-1: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services; Completion of Communications to Busy Subscriber (CCBS) Completion of Communications by No Reply (CCNR); Part 1: Protocol Implementation Conformance Statement (PICS)".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Not applicable.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [1] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in [1] apply.

4 Test Suite Structure (TSS)

CC			
	originating_AS	Invocation	CC_N01_xxx
		Revocation	CC_N02_xxx
		Operation	CC_N03_xxx
	terminating_AS	possibleIndication	CC_N04_xxx
		Invocation	CC_N05_xxx
		Revocation	CC_N06_xxx
		CCOperation	CC_N07_xxx
	Interaction	CDIV	CC_N08_xxx

4.1 Configuration

The scope of the current specification is to test the signalling and procedural aspects of the stage 3 requirements as described in [1]. The stage 3 description respects the requirements to several network entities and also to requirements regarding to end devices. Therefore several interfaces (reference points) are addressed to satisfy the test of the different entities.

Therefore to test the appropriate entities the configurations below are applicable:

Testing of the Application Server: This entity is responsible to perform the service. Hence the ISC interface is the appropriate access point. Figure 1 points to this.

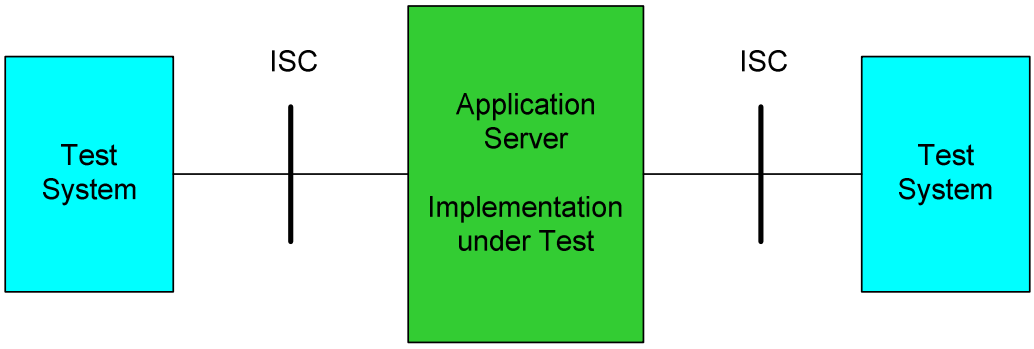


Figure 1: Applicable interface to test AS functionalities

If the ISC interface is not accessible it is also applicable to perform the test of the AS using any NNI (Mw, Mg, Mx) interface (consider figure 2). In case only the Gm interface is accessible this shall be used instead. In this case, be aware that the verification of several requirements is impeded.

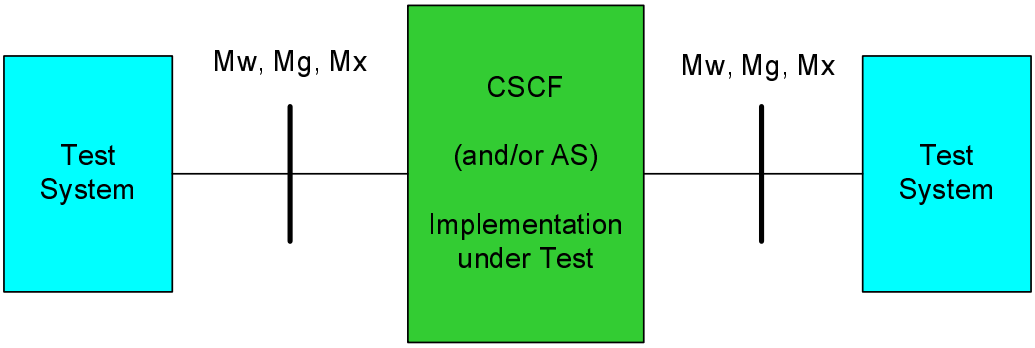


Figure 2: Applicable interfaces to test using the (generic) NNI interface

Figure 3 illustrates the usage of any NNI interface.

Testing of User Equipment: There are several requirements regarding to the end devices. Therefore a special configuration appears.

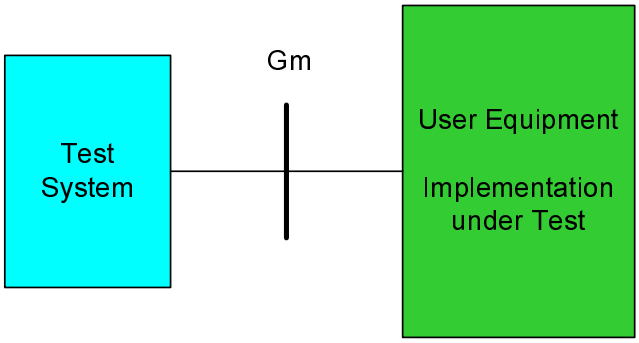


Figure 3: Applicable configuration to test the User Equipment

Testing of the IBCF functionality: The IBCF is the division between the trusted and the untrusted networks.

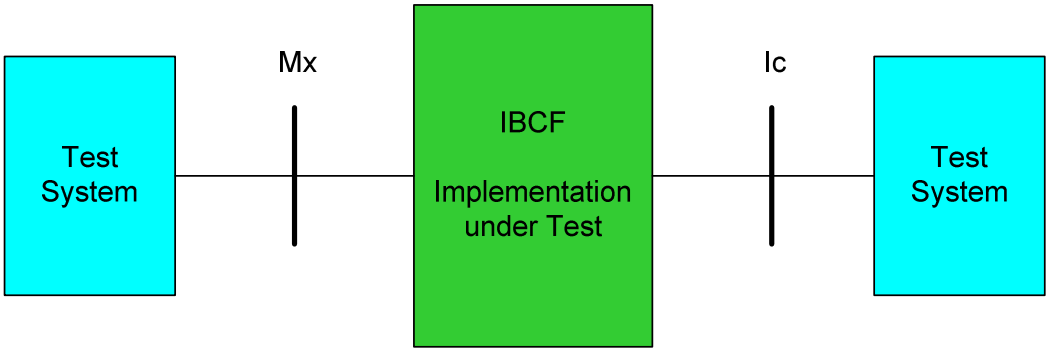


Figure 3: Applicable configuration to test the IBCF

If the Mx interface is not accessible it is also applicable to perform the test of the IBCF using any NNI (Mw, Mg, Mx) interface (consider figure 2). In case only the Gm interface is accessible this shall be used instead. In this case, be aware that the verification of several requirements is impeded.

5 Test Purposes (TP)

5.1 Introduction

For each test requirement a TP is defined.

5.1.1 TP naming convention

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

Table 1: TP identifier naming convention scheme

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

5.1.2 Test strategy

As the base standard TS 183 042 [1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification TS 186 021-1 [2]. The criteria applied include the following:

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

5.2 Actions at the originating AS

5.2.1 CC Invocation

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_001	4.5.4.2.1	

Test purpose
Successful CCBS request.

A 486 (Busy Here) is received from the terminating AS containing a Call-Info header field a purpose parameter set to call-completion and the m parameter is set to BS. Ensure that the AS withholds the 486 and sends a 183 Session Progress and starts to play an announcement to inform the originating user that Call Completion is possible. The originating user activates via inband interaction the CCBS call completion service. Ensure that the AS sends a SUBSCRIBE to the terminating AS. The NOTIFY received from the terminating AS confirms the successful invocation of the CC service.

Preconditions:

SIP header values:
486 Busy Here:
Call-Info: <sip:UE-B>;purpose=call-completion;m=BS
SUBSRIBE sip:T-AS;m=BS
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
NOTIFY sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: queued
service-retention

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	486 (Busy Here)
183 Session Progress	←		→	ACK
Announcement that CCBS is possible				
Inband-interaction procedures for the CC activation				
			→	SUBSCRIBE
			←	202 Accepted
			←	NOTIFY
			→	200 OK NOTIFY
Confirm to the caller that the invocation was successful				
486 (Busy Here)	←			
ACK	→			
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_002	4.5.4.2.1	

Test purpose
CCBS not possible, no CCBS indication received.

A 486 (Busy Here) is received from the terminating user containing and no Call-Info header field is contained. The originating AS does not starts announcement to provide the activation of the call completion service and pass thru the 486 response.

Preconditions:

SIP header values:
486 Busy Here:

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here)	←		←	486 (Busy Here)
ACK	→		→	ACK

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_003	4.5.4.2.1	

Test purpose
CCBS not possible, A CC queue limit has been exceeded.

Ensure that the AS does not offer the activation of the call completion service if the user A CCBS queue limit has been exceeded. The 486 is passed thru.

Preconditions: CCBS queue limit exceeded

SIP header values:
486 Busy Here:
Call-Info: <sip:UE-B>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Set the A queue to limit		
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here)	←		←	486 (Busy Here)
ACK	→		→	ACK

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_004	4.5.4.2.1	PICS 1/3

Test purpose
CCBS not possible, further identical request (communication parameters).

Ensure that the AS does not offer the activation of the CCBS call completion service if a request was activated for an identical communication, determined by the stored basic communication information.

Preconditions:

SIP header values:
486 Busy Here:
Call-Info: <sip:UE-B>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke a successful CCBS request		
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here)	←		←	486 (Busy Here)
ACK	→		→	ACK

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_005	4.5.4.2.1	

Test purpose

CCNR successful request.

A 180 (Ringing) is received from the terminating AS containing a Call-Info header field a purpose parameter set to call-completion and the m parameter is set to BS. Ensure that the sends a 180 (Ringing) without the Call-Info header and starts to play an announcement to inform the originating user that Call Completion is possible. The originating user activates via inband interaction the CCNR call completion service. Ensure that the AS sends a SUBSCRIBE to the terminating AS. The NOTIFY received from the terminating AS confirms the successful invocation of the CC service.

Preconditions:

SIP header values:

180 Ringing 2:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=NR
SUBSRIBE sip:T-AS;m=NR
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion
NOTIFY sip:O-AS
    Event:call-completion
    Content-Type: application/call-completion
        state: queued
        service-retention

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	180 Ringing 1
180 Ringing 2	←			
Announcement that CCNR is possible				
Inband-interaction procedures for the CC activation				
			→	SUBSCRIBE
			←	202 Accepted
			←	NOTIFY
			→	200 OK NOTIFY
Confirm to the caller that the invocation was successful				
CANCEL	→		→	CANCEL
200 OK CANCEL	←		←	200 OK CANCEL
487 Request Terminated	←		←	487 Request Terminated
ACK	→		→	ACK
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_006	4.5.4.2.1	

Test purpose

CCNR not possible, no CCBS indication received.

Ensure that the originating AS does not offer the call completion service if a 180 (Ringing) is received and a Call-Info header is not present. The 180 (Ringing) is passed unchanged.

Preconditions:

SIP header values:

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	180 Ringing
180 Ringing	←			
CANCEL	→		→	CANCEL
200 OK CANCEL	←		←	200 OK CANCEL
487 Request Terminated	←		←	487 Request Terminated
ACK	→		→	ACK

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_007	4.5.4.2.1	

Test purpose
CCNR not possible, A CC queue limit has been exceeded.

Ensure that the originating AS does not offered the call completion service if a 180 (Ringing) is received and a Call-Info header with a purpose parameter set to call-completion and a m parameter set to NR is received and the CCBS queue limit is exceeded.

Preconditions: CCBS queue limit exceeded

SIP header values:
180 Ringing 2:
Call-Info: <sip:UE-B>;purpose=call-completion;m=NR

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Set the A queue to limit		
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	180 Ringing 1
180 Ringing 2	←			
CANCEL	→		→	CANCEL
200 OK CANCEL	←		←	200 OK CANCEL
487 Request Terminated	←		←	487 Request Terminated
ACK	→		→	ACK

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_008	4.5.4.2.1	PICS 1/3

Test purpose
CCNR not possible, further identical request (communication parameters).

Ensure that the AS does not offer the activation of the CCNR call completion service if a request was activated for an identical communication, determined by the stored basic communication information.

Preconditions:

SIP header values:
180 Ringing 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=NR

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Successful CCNR request		
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	180 Ringing 1
180 Ringing 2	←			
		No offer to invoke CCNR		
CANCEL	→		→	CANCEL
200 OK CANCEL	←		←	200 OK CANCEL
487 Request Terminated	←		←	487 Request Terminated
ACK	→		→	ACK

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_009	4.5.4.2.1	

Test purpose

Unsuccessful CCBS request.

Ensure that the originating AS does not confirm the CCBS request to the originating user, if the request sent to the terminating AS is rejected by the terminating AS indicated in a NOTIFY request and the Subscription-State header is set to terminated.

Preconditions:

SIP header values:

486 Busy Here:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=BS
SUBSRIBE sip:T-AS;m=BS
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion
NOTIFY sip:O-AS
    Event:call-completion
    Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	486 (Busy Here)
			→	ACK
183 Session Progress	←			
Announcement that CCBS is possible				
Inband-interaction procedures for the CC activation				
			→	SUBSCRIBE
			←	202 Accepted
			←	NOTIFY
			→	200 OK NOTIFY
Indication to the caller that the invocation was unsuccessful				
486 (Busy Here)	←			
ACK	→			

TSS	TP	Reference	Selection expression
CC/originating_AS/Invocation	CC_N01_010	4.5.4.2.1	

Test purpose

CCNR unsuccessful request.

Ensure that the originating AS does not confirm the CCNR request to the originating user, if the request sent to the terminating AS is rejected by the terminating AS indicated in a NOTIFY request and the Subscription-State header is set to terminated.

Preconditions:

SIP header values:

180 Ringing 2:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=NR
SUBSRIBE sip:T-AS;m=NR
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion
NOTIFY sip:O-AS
    Event:call-completion
    Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	180 Ringing 1
180 Ringing 2	←			
Announcement that CCNR is possible				
Inband-interaction procedures for the CC activation				
			→	SUBSCRIBE
			←	202 Accepted
			←	NOTIFY
			→	200 OK NOTIFY
Indication to the caller that the invocation was unsuccessful				
CANCEL	→		→	CANCEL
200 OK CANCEL	←		←	200 OK CANCEL
487 Request Terminated	←		←	487 Request Terminated
ACK	→		→	ACK
Apply post test routine				

5.2.2 CC Revocation

TSS	**TP**	**Reference**	**Selection expression**
CC/originating_AS/Revocation	CC_N02_001	4.5.4.2.2	PICS 1/8

Test purpose

CCBS revocation request received from the user.

Ensure that the originating AS sends a SUBCRIBE request and the Expires header is set to zero when the originating user revokes the outstanding CCBS request. The revocation is performed by an INVITE request and the userpart of the Request URI is set to the service code command to cancel a CCBS request.

Preconditions:

SIP header values:

INVITE: Request URI= **Service Code Command (revoke CCBS request)**
SUBSRIBE sip:T-AS;m=BS
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
Expires=0
NOTIFY sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)	**SUT**	**SIP 2 (ISC)**
Establish a successful CCBS request		
Revocation request from the user		
INVITE	→	
200 OK INVITE	←	
ACK	→	
	→	SUBSCRIBE
	←	202 Accepted
	←	NOTIFY
	→	200 OK NOTIFY
Confirm to the caller that the revocation was successful		
BYE	→	
200 OK BYE	←	

TSS	TP	Reference	Selection expression
CC/originating_AS/Revocation	CC_N02_002	4.5.4.2.2	PICS 1/8

Test purpose

CCNR revocation request received from the user.

Ensure that the originating AS sends a SUBCRIBE request and the Expires header is set to zero when the originating user revokes the outstanding CCNR request. The revocation is performed by an INVITE request and the userpart of the Request URI is set to the service code command to cancel a CCNR request.

Preconditions:

SIP header values:

INVITE: Request URI= **Service Code Command (revoke CCNR request)**
SUBSRIBE sip:T-AS;m=NR
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
Expires=0
NOTIFY sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)	SUT	SIP 2 (ISC)
	Establish a successful CCBS request	
	Revocation request from the user	
INVITE	→	
200 OK INVITE	←	
ACK	→	
	→	SUBSCRIBE
	←	202 Accepted
	←	NOTIFY
	→	200 OK NOTIFY
	Confirm to the caller that the revocation was successful	
BYE	→	
200 OK BYE	←	

TSS	TP	Reference	Selection expression
CC/originating_AS/Revocation	CC_N02_003	4.5.4.2.2	

Test purpose

CCBS revocation caused by timer expiry.

Ensure that the originating AS revokes the outstanding CCBS request if the CC service duration timer CC-T3 expires.

Preconditions:

SIP header values:

SUBSRIBE sip:T-AS;m=BS
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
Expires=0
NOTIFY sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)	SUT	SIP 2 (ISC)
	Establish a successful CCBS request	
	Start CC-T3	
	Timeout CC-T3	
	→	SUBSCRIBE
	←	202 Accepted
	←	NOTIFY
	→	200 OK NOTIFY

TSS	TP	Reference	Selection expression
CC/originating_AS/Revocation	CC_N02_004	4.5.4.2.2	

Test purpose

CCBS revocation caused by timer expiry.

Ensure that the originating AS revokes the outstanding CCNR request if the CC service duration timer CC-T3 expires.

Preconditions:

SIP header values:

SUBSRIBE sip:T-AS;m=NR
- From:<UE-A>
- To:<UE-B>
- Contact:<O-AS>
- Event:call-completion
- Expires=0

NOTIFY sip:O-AS
- Event:call-completion
- Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)	SUT		SIP 2 (ISC)
	Establish a successful CCBS request		
	Start CC-T3		
	Timeout CC-T3		
		→	SUBSCRIBE
		←	202 Accepted
		←	NOTIFY
		→	200 OK NOTIFY

5.2.3 CC Operation

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_001	4.5.4.2.3	NOT PICS 1/4

Test purpose

CCBS Recall successful by sending a REFER request to the originating user.

Ensure that the originating AS starts the CCBS recall procedure when the indication that the callee is available to recall indicated in a NOTIFY request and the state header in the call-completion MIME body is set to "ready". A REFER request is sent to the caller. The m parameter of the Request line is set to BS in the INVITE request sent to the callee as the result of the received INVITE request from the caller.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: ready

REFER: sip: SIP 1; m=BS
Refer-To; SIP 2; method=INVITE

INVITE 1: sip: SIP 2; m=BS
From: SIP 1
To: SIP 2

NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
CCBS request confirmed by AS				
				Terminating user available for recall
			NOTIFY ←	NOTIFY 1
			200 OK NOTIFY →	200 OK NOTIFY
REFER	←	REFER		
202 Accepted	→	202 Accepted		
NOTIFY (100)	→	NOTIFY (100)		
200 OK NOTIFY	←	200 OK NOTIFY		
INVITE	→	INVITE		
			INVITE 1 →	INVITE
180 Ringing	←		←	180 Ringing
			NOTIFY ←	NOTIFY 2
			200 OK NOTIFY →	200 OK NOTIFY
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
NOTIFY (200)	→	NOTIFY (200)		
200 OK NOTIFY	←	200 OK NOTIFY		
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_002	4.5.4.2.3	NOT PICS 1/4

Test purpose

CCNR Recall successful by sending a REFER request to the originating user.

Ensure that the originating AS starts the CCNR recall procedure when the indication that the callee is available to recall indicated in a NOTIFY request and the state header in the call-completion MIME body is set to "ready". A REFER request is sent to the caller. The m parameter of the Request line is set to NR in the INVITE request sent to the callee as the result of the received INVITE request from the caller.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: ready

REFER: sip: SIP 1; m=NR
Refer-To; SIP 2; method=INVITE

INVITE 1: sip: SIP 2; m=NR
From: SIP 1
To: SIP 2

NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCNR request				
CCNR request confirmed by AS				
				Terminating user available for recall
			NOTIFY ←	NOTIFY 1
			200 OK NOTIFY →	200 OK NOTIFY
REFER	←	REFER		
202 Accepted	→	202 Accepted		
NOTIFY (100)	→	NOTIFY (100)		
200 OK NOTIFY	←	200 OK NOTIFY		
INVITE	→	INVITE		
			→	INVITE 1
180 Ringing	←		←	180 Ringing
			NOTIFY ←	NOTIFY 2
			200 OK NOTIFY →	200 OK NOTIFY
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
NOTIFY (200)	→	NOTIFY (200)		
200 OK NOTIFY	←	200 OK NOTIFY		
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_003	4.5.4.2.3	PICS 1/4

Test purpose

CCBS Recall successful by using the special REFER interworking. Sending an INVITE request to the originating user.

Ensure that the originating AS starts the CCBS recall procedure when the indication that the callee is available to recall indicated in a NOTIFY request and the state header in the call-completion MIME body is set to "ready". An INVITE request is sent to the caller. When the session with the caller is answered, an INVITE request is sent to the callee and the m parameter in the Request line is set to BS. When the callee answers the session, caller and callee are connected.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: ready

INVITE 2: sip: SIP 2; m=BS
From: SIP 1
To: SIP 2

NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCBS request		
		CCBS request confirmed by AS		
				Terminating user available for recall
			NOTIFY ←	NOTIFY 1
			200 OK NOTIFY →	200 OK NOTIFY
INVITE	←	INVITE 1		
180 Ringing	→	180 Ringing		
200 OK INVITE	→	200 OK INVITE		
ACK	←	ACK		
			→	INVITE 2
			←	180 Ringing
			NOTIFY ←	NOTIFY 2
			200 OK NOTIFY →	200 OK NOTIFY
			←	200 OK INVITE
			→	ACK
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_004	4.5.4.2.3	PICS 1/4

Test purpose

CCNR Recall successful by using the special REFER interworking. Sending an INVITE request to the originating user.

Ensure that the originating AS starts the CCNR recall procedure when the indication that the callee is available to recall indicated in a NOTIFY request and the state header in the call-completion MIME body is set to "ready". An INVITE request is sent to the caller. When the session with the caller is answered, an INVITE request is sent to the callee and the m parameter in the Request line is set to NR. When the callee answers the session, caller and callee are connected.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: ready

INVITE 2: sip: SIP 2; m=NR
From: SIP 1
To: SIP 2

NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCNR request		
		CCNR request confirmed by AS		
				Terminating user available for recall
			NOTIFY ←	NOTIFY 1
			200 OK NOTIFY →	200 OK NOTIFY
INVITE	←	INVITE 1		
180 Ringing	→	180 Ringing		
200 OK INVITE	→	200 OK INVITE		→ INVITE 2
ACK	←	ACK		← 180 Ringing
			NOTIFY ←	NOTIFY 2
			200 OK NOTIFY →	200 OK NOTIFY
				← 200 OK INVITE
				→ ACK
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_005	4.5.4.2.3	

Test purpose

CCBS Recall not accepted by originating user. CC-T4 expires.

Ensure that the originating AS revokes the outstanding CCBS request after having received the notification that the CCBS recall to the callee is possible and the caller does not accept the recall offer. A SUBCRIBE is sent to the terminating AS and the Expires header is set to zero.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: ready
REFER: sip: SIP 1; m=BS
Refer-To; SIP 2; method=INVITE
SUBSRIBE sip:T-AS;m=BS
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
Expires=0
NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCBS request		
		CCBS request confirmed by AS		
				Terminating user available for recall
			NOTIFY ←	NOTIFY 1
			200 OK NOTIFY →	200 OK NOTIFY
REFER	←	REFER		
202 Accepted	→	202 Accepted		
		Start Timer CC-T4		
		↓		
		Timeout Timer CC-T4		
			SUBSCRIBE →	SUBSCRIBE
			202 Accepted ←	202 Accepted
			NOTIFY ←	NOTIFY 2
			200 OK NOTIFY →	200 OK NOTIFY
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_006	4.5.4.2.3	

Test purpose

CCNR Recall not accepted by originating user.

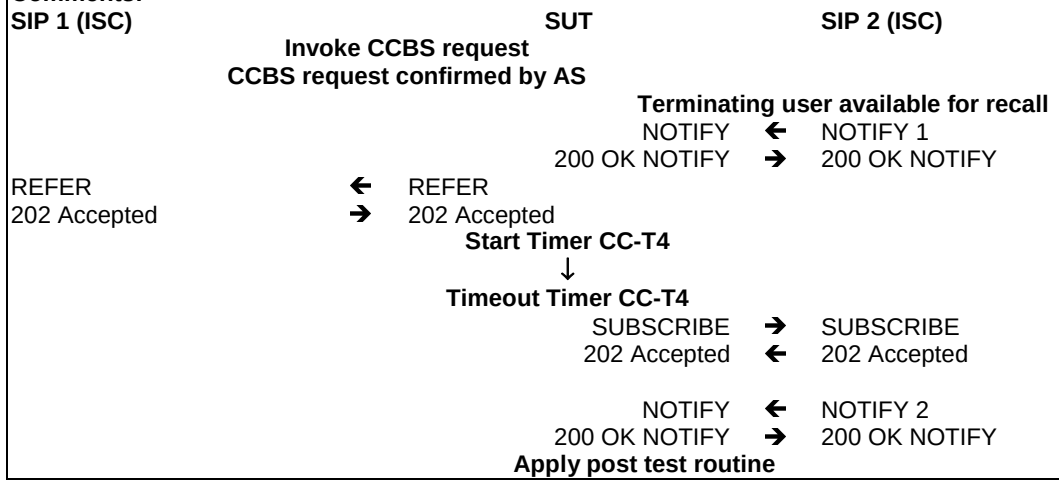
Ensure that the originating AS revokes the outstanding CCNR request after having received the notification that the CCNR recall to the callee is possible and the caller does not accept the recall offer. A SUBCRIBE is sent to the terminating AS and the Expires header is set to zero.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: ready
REFER: sip: SIP 1; m=NR
Refer-To; SIP 2; method=INVITE
SUBSRIBE sip:T-AS;m=NR
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
Expires=0
NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:



TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_007	4.5.4.2.3.2.2	

Test purpose

CCBS Caller is found to be busy, when a CC recall notification has been received.

Ensure that when the caller is found to be busy, when a CCBS CC recall notification has been received, then the originating AS shall suspend the CC request until the caller becomes not busy. The originating AS shall send a PUBLISH request to the terminating AS containing a presence XML body status set to "closed". The originating AS shall send a PUBLISH request to the terminating AS containing a presence XML body status set to "open" when the caller is not longer busy.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: ready

REFER: sip: SIP 1; m=BS
Refer-To; SIP 2; method=INVITE

PUBLISH 1: sip T-AS
To: SIP 2
Event: presence
Content-Type: application/pidf+xml

```
<?xml version="1.0" encoding="UTF-8"?>
<presence
    <status>
        <basic>closed</basic>
```

NOTIFY 2 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: queued
service-retention

PUBLISH 2: sip T-AS
To: SIP 2
Event: presence
Content-Type: application/pidf+xml

```
<?xml version="1.0" encoding="UTF-8"?>
<presence
    <status>
        <basic>open</basic>
```

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCBS request		
		CCBS request confirmed by AS		
				Terminating user available for recall
		Establish a session to SIP 2		
		NOTIFY 1	←	NOTIFY 1
		200 OK NOTIFY	→	200 OK NOTIFY
REFER	←	REFER		
486 (Busy Here)	→	486 (Busy Here)		
		PUBLISH 1	→	PUBLISH
		200 OK PUBLISH	←	200 OK PUBLISH
		NOTIFY 1	←	NOTIFY 2
		200 OK NOTIFY	→	200 OK NOTIFY
		Disconnect session to SIP 2		
		PUBLISH 2	→	PUBLISH
		200 OK PUBLISH	←	200 OK PUBLISH
		NOTIFY 1	←	NOTIFY 2
		200 OK NOTIFY	→	200 OK NOTIFY
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_008	4.5.4.2.3.2.2	

Test purpose

CCNR Caller is found to be busy, when a CC recall notification has been received.

Ensure that when the caller is found to be busy, when a CCNR CC recall notification has been received, then the originating AS shall suspend the CC request until the caller becomes not busy. The originating AS shall send a PUBLISH request to the terminating AS containing a presence XML body status set to "closed". The originating AS shall send a PUBLISH request to the terminating AS containing a presence XML body status set to "open" when the caller is not longer busy.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: ready

REFER: sip: SIP 1; m=NR
Refer-To; SIP 2; method=INVITE

PUBLISH 1: sip T-AS
To: SIP 2
Event: presence
Content-Type: application/pidf+xml

```
<?xml version="1.0" encoding="UTF-8"?>
<presence
    <status>
        <basic>closed</basic>
```

NOTIFY 2 sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: queued
service-retention

PUBLISH 2: sip T-AS
To: SIP 2
Event: presence
Content-Type: application/pidf+xml

```
<?xml version="1.0" encoding="UTF-8"?>
<presence
    <status>
        <basic>open</basic>
```

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCNR request		
		CCNR request confirmed by AS		
				Terminating user available for recall
		Establish a session to SIP 2		
		NOTIFY 1	←	NOTIFY 1
		200 OK NOTIFY	→	200 OK NOTIFY
REFER	←	REFER		
486 (Busy Here)	→	486 (Busy Here)		
		PUBLISH 1	→	PUBLISH
		200 OK PUBLISH	←	200 OK PUBLISH
		NOTIFY 1	←	NOTIFY 2
		200 OK NOTIFY	→	200 OK NOTIFY
		Disconnect session to SIP 2		
		PUBLISH 2	→	PUBLISH
		200 OK PUBLISH	←	200 OK PUBLISH
		NOTIFY 1	←	NOTIFY 2
		200 OK NOTIFY	→	200 OK NOTIFY
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_009	4.5.4.2.3.2.3	NOT PICS 1/3

Test purpose

The caller initiates another communication to the same destination B and activates the same CC service CCBS again. The two communications are identical. The AS discards the current request.

Ensure that the caller initiates another communication to the same destination B and activates the same CC service (CCBS) again then the originating AS retain the original request and discards the current request and informs the caller that the request has not been accepted because a CC request had already been stored against the requested callee.

Preconditions:

SIP header values:

486 Busy Here:
Call-Info: <sip:UE-B>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
CCBS request confirmed by AS				
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
		486 (Busy Here)	←	486 (Busy Here)
183 Session Progress	←	183 Session Progress	→	ACK
Announcement that CCBS is possible				
Inband-interaction procedures for the CC activation				
Announcement that CCBS is not invoked				
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_010	4.5.4.2.3.2.3	NOT PICS 1/3

Test purpose

The caller initiates another communication to the same destination B and activates the same CC service CCNR again. The two communications are identical. The AS discards the current request.

Ensure that the caller initiates another communication to the same destination B and activates the same CC service (CCNR) again then the originating AS retain the original request and discards the current request and informs the caller that the request has not been accepted because a CC request had already been stored against the requested callee.

Preconditions:

SIP header values:

180 Ringing 2:
Call-Info: <sip:UE-B>;purpose=call-completion;m=NR

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCNR request				
CCNR request confirmed by AS				
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	180 Ringing 1
180 Ringing 2	←			
Announcement that CCNR is possible				
Inband-interaction procedures for the CC activation				
Announcement that CCBS is not invoked				
CANCEL	→		→	CANCEL
200 OK CANCEL	←		←	200 OK CANCEL
487 Request Terminated	←		←	487 Request Terminated
ACK	→		→	ACK
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_011	4.5.4.2.3.2.3	PICS 1/3

Test purpose

The caller initiates another communication to the same destination B and activates the same CC service CCBS again. The two communications are identical. The AS treat this as a new CC request.

Ensure that the caller initiates another communication to the same destination B and activates the same CC service (CCBS) again, the originating AS shall treat this as a new CC request, A SUBSRIBE request is sent to the terminating AS indicating a CCBS request - a m parameter set to "BS" is attached at the Request line.

Preconditions:

SIP header values:

486 Busy Here:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=BS
SUBSRIBE sip:T-AS;m=BS
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion
NOTIFY sip:O-AS
    Event:call-completion
    Content-Type: application/call-completion
        state: queued
        service-retention

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
CCBS request confirmed by AS				
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
		486 (Busy Here)	←	486 (Busy Here)
183 Session Progress	←	183 Session Progress	→	ACK
Announcement that CCBS is possible				
Inband-interaction procedures for the CC activation				
			→	SUBSCRIBE
			←	202 Accepted
			←	NOTIFY
			→	200 OK NOTIFY
Confirm to the caller that the invocation was successful				
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_012	4.5.4.2.3.2.3	PICS 1/4

Test purpose

The caller initiates another communication to the same destination B and activates the same CC service CCNR again. The two communications are identical. The AS treat this as a new CC request.

Ensure that the caller initiates another communication to the same destination B and activates the same CC service (CCNR) again, the originating AS shall treat this as a new CC request, A SUBSRIBE request is sent to the terminating AS indicating a CCBS request - a m parameter set to "NR" is attached at the Request line.

Preconditions:

SIP header values:

180 Ringing 2:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=NR
SUBSRIBE sip:T-AS;m=NR
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion
NOTIFY sip:O-AS
    Event:call-completion
    Content-Type: application/call-completion
        state: queued
        service-retention

Comments:

SIP 1 (ISC)	SUT	SIP 2 (ISC)
	Invoke CCNR request	
	CCNR request confirmed by AS	
INVITE	→	→ INVITE
100 Trying	←	← 100 Trying
		← 180 Ringing 1
180 Ringing 2	←	
	Announcement that CCNR is possible	
	Inband-interaction procedures for the CC activation	
		→ SUBSCRIBE
		← 202 Accepted
		← NOTIFY
		→ 200 OK NOTIFY
	Confirm to the caller that the invocation was successful	
CANCEL	→	→ CANCEL
200 OK CANCEL	←	← 200 OK CANCEL
487 Request Terminated	←	← 487 Request Terminated
ACK	→	→ ACK
	Apply post test routine	

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_013	4.8.1	

Test purpose

CCBS request. Timeout CC-T2.

Ensure that the CC request operation timer CC-T2 is started after CCBS request is received from caller. When the timer CC-T2 is expired because no NOTIFY is received from the terminating user as an confirmation that the CCBS request was successful at the terminating AS the CCBS request is rejected. The caller is informed.

Preconditions:

SIP header values:

486 Busy Here:
Call-Info: <sip:UE-B>;purpose=call-completion;m=BS
SUBSRIBE sip:T-AS;m=BS
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	486 (Busy Here)
183 Session Progress	←		→	ACK

Announcement that CCBS is possible

Inband-interaction procedures for the CC activation

			→	SUBSCRIBE
			←	202 Accepted

Start Timer CC-T2

↓

Timeout Timer CC-T2

Confirm to the caller that the invocation was not successful

486 (Busy Here)	←			
ACK	→			

Apply post test routine

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_014	4.8.1	

Test purpose

CCNR request. Timeout CC-T2.

Ensure that the CC request operation timer CC-T2 is started after CCNR request is received from caller. When the timer CC-T2 is expired because no NOTIFY is received from the terminating user as an confirmation that the CCBS request was successful at the terminating AS the CCNR request is rejected. The caller is informed.

Preconditions:

SIP header values:

180 Ringing 2:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=NR
SUBSRIBE sip:T-AS;m=NR
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
			←	180 Ringing 1
180 Ringing 2	←			
		Announcement that CCBS is possible		
		Inband-interaction procedures for the CC activation		
			→	SUBSCRIBE
			←	202 Accepted
		Start Timer CC-T2		
		↓		
		Timeout Timer CC-T2		
		Confirm to the caller that the invocation was not successful		
CANCEL	→		→	CANCEL
200 OK CANCEL	←		←	200 OK CANCEL
487 Request Terminated	←		←	487 Request Terminated
ACK	→		→	ACK
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_015	4.8.1	

Test purpose
CCBS request. Timeout CC-T3.

Ensure that the CC service duration timer CC-T3 is started. When CC-T3 expires, the call completion request is deleted. The CCBS request is revoked indicated by sending a SUBSCRIBE request containing an Expires header set to zero.

Preconditions:

SIP header values:
SUBSRIBE sip:T-AS;m=BS
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
Expires=0
NOTIFY sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)	SUT	SIP 2 (ISC)
	Invoke CCBS request	
	CCBS request confirmed by AS	
	Start Timer CC-T3	
	↓	
	Timeout Timer CC-T3	
	SUBSCRIBE →	SUBSCRIBE
	202 Accepted ←	202 Accepted
	NOTIFY ←	NOTIFY
	200 OK NOTIFY →	200 OK NOTIFY
	Apply post test routine	

TSS	TP	Reference	Selection expression
CC/originating_AS/Operation	CC_N03_016	4.8.1	

Test purpose
CCNR request. Timeout CC-T3.

Ensure that the CC service duration timer CC-T3 is started. When CC-T3 expires, the call completion request is deleted. The CCNR request is revoked indicated by sending a SUBSCRIBE request containing an Expires header set to zero.

Preconditions:

SIP header values:
SUBSRIBE sip:T-AS;m=NR
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
Expires=0
NOTIFY sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)	SUT	SIP 2 (ISC)
	Invoke CCNR request	
	CCNR request confirmed by AS	
	Start Timer CC-T3	
	↓	
	Timeout Timer CC-T3	
	SUBSCRIBE →	SUBSCRIBE
	202 Accepted ←	202 Accepted
	NOTIFY ←	NOTIFY
	200 OK NOTIFY →	200 OK NOTIFY
	Apply post test routine	

5.3 Actions at the terminating AS

5.3.1 CC possible indication

TSS	**TP**	**Reference**	**Selection expression**
CC/terminating_AS/possibleIndication	CC_N04_001	4.5.4.3.1	

Test purpose
The terminating AS inserts a Call-Info header in the 486 final response received from the terminating user.

Ensure that the terminating AS inserts a Call-Info header and the purpose parameter is set to call-completion and the mparameter is set to BS in the 486 (Busy Here) received from the callee and forwards to the originating AS.

Preconditions:

SIP header values:
486 (Busy Here) 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		**SUT**		**SIP 2 (ISC)**
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK

Apply post test routine

TSS	**TP**	**Reference**	**Selection expression**
CC/terminating_AS_AS/possibleIndication	CC_N04_002	4.5.4.3.1	

Test purpose
The terminating AS inserts a Call-Info header in the 486 final response in case of NDUB.

Ensure that the terminating AS in case of NDUB sends a 486 (Busy Here) containing a Call-Info header and the purpose parameter is set to call-completion and the mparameter is set to BS to the originating AS.

Preconditions: Callee is network determined user busy

SIP header values:
486 (Busy Here) 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		**SUT**	**SIP 2 (ISC)**
INVITE	→		
100 Trying	←		
486 (Busy Here) 1	←		
ACK	→		

Apply post test routine

TSS	**TP**	**Reference**	**Selection expression**
CC/terminating_AS_AS/possibleIndication	CC_N04_003	4.5.4.3.1	

Test purpose
The terminating AS inserts a Call-Info header in the 180 provisional response.

Ensure that the terminating AS inserts a Call-Info header in the 180 (Ringing) and the purpose parameter is set to call-completion and the mparameter is set to NR received from the callee and forwards to the originating AS.

Preconditions:

SIP header values:
180 (Ringing) 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=NR

Comments:

SIP 1 (ISC)		**SUT**		**SIP 2 (ISC)**
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 (Ringing) 1	←		←	180 (Ringing)

Apply post test routine

TSS	TP	Reference	Selection expression
CC/terminating_AS_AS/possibleIndication	CC_N04_004	4.5.4.3.1.1	

Test purpose
Terminating user does not subscribe to the CCBS service. No Call-Info header field included.

Ensure that no Call-Info header is included in the 486 (Busy Here) If the terminating AS knows that the CC is not possible on destination B (callee).

Preconditions: Terminating user does not subscribe to the CC service

SIP header values:
486 (Busy Here) 1:
Call-Info not included

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK

Apply post test routine

TSS	TP	Reference	Selection expression
CC/terminating_AS_AS/possibleIndication	CC_N04_005	4.5.4.3.1.1	

Test purpose
Terminating user does not subscribe to the CCNR service. No Call-Info header field included.

Ensure that no Call-Info header is included in the 180 (Ringing) If the terminating AS knows that the CC is not possible on destination B (callee).

Preconditions: Terminating user does not subscribe to the CC service

SIP header values:
180 (Ringing) 1:
Call-Info not included

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 (Ringing) 1	←		←	180 (Ringing)

Apply post test routine

5.3.2 CC Invocation

TSS	TP	Reference	Selection expression
CC/terminating_AS/Invocation	CC_N05_001	4.5.4.3.2	

Test purpose

CCBS service invocation successful at the terminating AS.

Ensure that the terminating AS is able to queue the CCBS request received in a SUBSCRIBE request from the originating AS and responds with a NOTIY request. In the NOTIFY request the state header of the call-completion MIME body is set to queued.

Preconditions:

SIP header values:

486 (Busy Here) 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=BS
SUBSRIBE sip:T-AS;m=BS
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
NOTIFY sip:O-AS
Event:call-completion
Content-Type: application/call-completion
state: queued

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK
SUBSCRIBE	→			
202 Accepted	←			
NOTIFY	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/Invocation	CC_N05_002	4.5.4.3.2	

Test purpose

CCNR service invocation successful at the terminating AS.

Ensure that the terminating AS is able to queue the CCNR request received in a SUBSCRIBE request from the originating AS and responds with a NOTIY request. In the NOTIFY request the state header of the call-completion MIME body is set to queued.

Preconditions:

SIP header values:

180 Ringing 1:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=NR
SUBSRIBE sip:T-AS;m=NR
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion
NOTIFY sip:O-AS
    Event:call-completion
    Content-Type: application/call-completion
        state: queued

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 Ringing 1	←		←	180 Ringing
SUBSCRIBE	→			
202 Accepted	←			
NOTIFY	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/Invocation	CC_N05_003	4.5.4.3.2	

Test purpose

CCBS service invocation unsuccessful at the terminating AS. Maximum number of queue entries is reached.

Ensure that the terminating AS responds to the SUBSCRIBE request containing the CCBS invoke received from the originating AS with a 480 (Temporarily Unavailable) if the callee's B queue limit is reached.

Preconditions:

SIP header values:

486 (Busy Here) 1:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=BS
SUBSRIBE sip:T-AS;m=BS
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Set the B queue to limit		
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK
SUBSCRIBE	→			
480 Temporarily Unavailable	←			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/Invocation	CC_N05_004	4.5.4.3.2	

Test purpose

CCBS service invocation unsuccessful at the terminating AS. To header of the SUBSCRIBE is not available for the service request.

Ensure that the terminating AS responds to the SUBSCRIBE request containing the CCBS invoke received from the originating AS with a 403 Forbidden if the URI in the To header field of the SUBSCRIBE request is not available for the requested CC service at the terminating AS.

Preconditions:

SIP header values:

486 (Busy Here) 1:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=BS
SUBSRIBE sip:T-AS;m=BS
    From:<UE-A>
    To:<other URI (PIXIT)>
    Contact:<O-AS>
    Event:call-completion

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK
SUBSCRIBE	→			
403 Forbidden	←			

TSS	TP	Reference	Selection expression
CC/terminating_AS/Invocation	CC_N05_005	4.5.4.3.2	

Test purpose

CCNR service invocation unsuccessful at the terminating AS. Maximum number of queue entries is reached.

Ensure that the terminating AS responds to the SUBSCRIBE request containing the CCNR invoke received from the originating AS with a 480 (Temporarily Unavailable) if the callee's B queue limit is reached.

Preconditions:

SIP header values:

180 Ringing 1:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=NR
SUBSRIBE sip:T-AS;m=NR
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Set the B queue to limit		
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 Ringing 1	←		←	180 Ringing
SUBSCRIBE	→			
480 Temporarily Unavailable	←			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/Invocation	CC_N05_006	4.5.4.3.2	

Test purpose

CCNR service invocation unsuccessful at the terminating AS. To header of the SUBSCRIBE is not available for the service request.

Ensure that the terminating AS responds to the SUBSCRIBE request containing the CCNR invoke received from the originating AS with a 403 Forbidden if the URI in the To header field of the SUBSCRIBE request is not available for the requested CC service at the terminating AS.

Preconditions:

SIP header values:

180 Ringing 1:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=NR
SUBSRIBE sip:T-AS;m=NR
    From:<UE-A>
    To:<other URI (PIXIT)>
    Contact:<O-AS>
    Event:call-completion

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK
SUBSCRIBE	→			
403 Forbidden	←			

TSS	TP	Reference	Selection expression
CC/terminating_AS/Invocation	CC_N05_007	4.5.4.3.2	PICS 1/2

Test purpose

CCBS service invocation successful at the terminating AS. Retain option supported.

Ensure that the terminating AS is able to queue the CCBS request received in a SUBSCRIBE request from the originating AS and responds with a NOTIY request. In the NOTIFY request the state header of the call-completion MIME body is set to queued and the service-retention header is present.

Preconditions:

SIP header values:

486 (Busy Here) 1:
    Call-Info: <sip:UE-B>;purpose=call-completion;m=BS
SUBSRIBE sip:T-AS;m=BS
    From:<UE-A>
    To:<UE-B>
    Contact:<O-AS>
    Event:call-completion
NOTIFY sip:O-AS
    Event:call-completion
    Content-Type: application/call-completion
        state: queued
        service-retention

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK
SUBSCRIBE	→			
202 Accepted	←			
NOTIFY	←			
200 OK NOTIFY	→			

Apply post test routine

TSS	TP	Reference	Selection expression
CC/terminating_AS/Invocation	CC_N05_008	4.5.4.3.2	NOT PICS 1/2

Test purpose

CCNR service invocation successful at the terminating AS. Retain option not supported.

Ensure that the terminating AS is able to queue the CCBS request received in a SUBSCRIBE request from the originating AS and responds with a NOTIY request. In the NOTIFY request the state header of the call-completion MIME body is set to queued and the service-retention header is **not** present.

Preconditions:

SIP header values:

180 Ringing 1:
  Call-Info: <sip:UE-B>;purpose=call-completion;m=NR
SUBSRIBE sip:T-AS;m=NR
  From:<UE-A>
  To:<UE-B>
  Contact:<O-AS>
  Event:call-completion
NOTIFY sip:O-AS
  Event:call-completion
  Content-Type: application/call-completion
    state: queued

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 Ringing 1	←		←	180 Ringing
SUBSCRIBE	→			
202 Accepted	←			
NOTIFY	←			
200 OK NOTIFY	→			
		Apply post test routine		

5.3.3 CC Revocation

TSS	TP	Reference	Selection expression
CC/terminating_AS/Revocation	CC_N06_001	4.5.4.3.3	

Test purpose

CCBS service revocation successful at the terminating AS.

Ensure that the terminating AS is able to respond a NOTIFY request and the Subscription-State header is set to terminated and the reason parameter is set to rejected for a CCBS queue entry if a SUBSCRIBE request is received and the Expires header is set to zero.

Preconditions:

SIP header values:

SUBSRIBE sip:T-AS;m=BS
  From:<UE-A>
  To:<UE-B>
  Contact:<O-AS>
  Event:call-completion
  Expires=0
NOTIFY sip:O-AS
  Event:call-completion
  Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT	SIP 2 (ISC)
	Invoke CCBS request		
SUBSCRIBE	→		
202 Accepted	←		
NOTIFY	←		
200 OK NOTIFY	→		
		Apply post test routine	

TSS	TP	Reference	Selection expression
CC/terminating_AS/Revocation	CC_N06_002	4.5.4.3.3	

Test purpose
CCNR service revocation successful at the terminating AS.

Ensure that the terminating AS is able to respond a NOTIFY request and the Subscription-State header is set to terminated and the reason parameter is set to rejected for a CCNR queue entry if a SUBSCRIBE request is received and the Expires header is set to zero.

Preconditions:

SIP header values:
SUBSRIBE sip:T-AS;m=NR
From:<UE-A>
To:<UE-B>
Contact:<O-AS>
Event:call-completion
Expires=0
NOTIFY sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
SUBSCRIBE	→			
202 Accepted	←			
NOTIFY	←			
200 OK NOTIFY	→			
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/terminating_AS/Revocation	CC_N06_003	4.5.4.3.3	

Test purpose
CCBS service revocation at the terminating AS. CC-T7 expires.

Ensure that the terminating AS is able to revoke a CCBS queue entry if the CC service duration timer CC-T7 expires. A NOTIFY request is sent to the originating AS and the Subscription-State header is set to "terminated" and the reason header is set to "rejected".

Preconditions:

SIP header values:
NOTIFY sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
		Start CC-T7		
		↓		
		CC-T7 expires		
NOTIFY	←			
200 OK NOTIFY	→			
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/terminating_AS/Revocation	CC_N06_004	4.5.4.3.3	

Test purpose
CCNR service revocation at the terminating AS. CC-T7 expires.

Ensure that the terminating AS is able to revoke a CCNR queue entry if the CC service duration timer CC-T7 expires. A NOTIFY request is sent to the originating AS and the Subscription-State header is set to "terminated" and the reason header is set to "rejected".

Preconditions:

SIP header values:
NOTIFY sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
	Invoke CCNR request			
		Start CC-T7		
		↓		
		CC-T7 expires		
NOTIFY	←			
200 OK NOTIFY	→			
		Apply post test routine		

5.3.4 CC Operation

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_001	4.5.4.3.4.1.1	

Test purpose
Callee becomes not busy, CC recall procedure performed. Retain option is not supported.

Ensure that the terminating AS starts the call completion recall procedure if the callee becomes not busy. The terminating AS starts the Destination B idle guard timer CC-T8. When the timer CC-T8 expires, a NOTIFY request is sent to the originating AS. The state header in the call-completion MIME body is set to "ready", the service-retention header is not present.

Preconditions:

SIP header values:
NOTIFY sip:O-AS
From: Sip 2
To: SIP 1
Event:call-completion
Content-Type: application/call-completion
state: ready

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
	Invoke CCBS request			
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_002	4.5.4.3.4.1.1	PICS 1/2

Test purpose

Callee becomes not busy after having initiated an activity, CC recall procedure performed. Retain option is not supported.

Ensure that the terminating AS starts the call completion recall procedure if the callee is having initiated an activity. The terminating AS starts the Destination B idle guard timer CC-T8. When the timer CC-T8 expires, a NOTIFY request is sent to the originating AS. The state header in the call-completion MIME body is set to "ready", the service-retention header is not present.

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCNR request				
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_003	4.5.4.3.4.1.1	PICS 1/2

Test purpose

Callee becomes not busy, CC recall procedure performed. Retain option is supported.

Ensure that the terminating AS starts the call completion recall procedure if the callee becomes not busy. The terminating AS starts the Destination B idle guard timer CC-T8. When the timer CC-T8 expires, a NOTIFY request is sent to the originating AS. The state header in the call-completion MIME body is set to "ready", the service-retention header is present.

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready
  - service-retention

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_004	4.5.4.3.4.1.1	PICS 1/2

Test purpose

Callee becomes not busy after having initiated an activity, CC recall procedure performed. Retain option is supported.

Ensure that the terminating AS starts the call completion recall procedure if the callee having initiated an activity. The terminating AS starts the Destination B idle guard timer CC-T8. When the timer CC-T8 expires, a NOTIFY request is sent to the originating AS. The state header in the call-completion MIME body is set to "ready", the service-retention header is present.

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready
  - service-retention

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCNR request		
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_005	4.5.4.3.4.1.3, 4.5.4.3.4.1.4	

Test purpose

CCBS: An INVITE request received while a CC recall is processed. CC call indicator present in the Request line.

Ensure that when an INVITE request is received from the originating AS while CC-T9 is running and in the Request line the m parameter is present set to "BS", this INVITE is processed to the callee. An INVITE is sent to the callee and the m parameter is not present in the Request line. When a 180 (Ringing) is received from the callee a NOTIFY request is sent to the originating AS and Subscription-State header is set to "terminated" and the reason header is set to "rejected".

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
  From: Sip 2
  To: SIP 1
  Event:call-completion
  Content-Type: application/call-completion
    state: ready
INVITE 1: sip: SIP 2; m=BS
NOTIFY 2 sip:O-AS
  Event:call-completion
  Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE 1	→		→	INVITE
180 Ringing	←		←	180 Ringing
NOTIFY 2	←			
200 OK NOTIFY	→			
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_006	4.5.4.3.4.1.3, 4.5.4.3.4.1.4	

Test purpose

CCNR: An INVITE request received while a CC recall is processed. CC call indicator present in the Request line.

Ensure that when an INVITE request is received from the originating AS while CC-T9 is running and in the Request line the m parameter is present set to "NR", this INVITE is processed to the callee. An INVITE is sent to the callee and the m parameter is not present in the Request line. When a 180 (Ringing) is received from the callee a NOTIFY request is sent to the originating AS and Subscription-State header is set to "terminated" and the reason header is set to "rejected".

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

INVITE 1: sip: SIP 2; m=NR

NOTIFY 2 sip:O-AS
- Event:call-completion
- Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCNR request				
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE 1	→		→	INVITE
180 Ringing	←		←	180 Ringing
NOTIFY 2	←			
200 OK NOTIFY	→			
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_007	4.5.4.3.4.1.3, 4.5.4.3.4.1.4	PICS 1/9

Test purpose

CCBS: An INVITE request received while a CC recall is processed. CC call indicator not present in the Request line. Service requirements and destination selection information are identical to the stored values. The call is offered.

Ensure that the terminating AS has sent a NOTIFY request and the state parameter in the call-completion MIME body was set to "ready" after the terminating AS receives an INVITE request and there is no m parameter in the Request line the terminating AS compares the destination selection information and service requirements with the stored value received in the CCBS request. If the match is true the call is offered to the callee. When a 180 (Ringing) is received from the callee a NOTIFY request is sent to the originating AS and Subscription-State header is set to "terminated" and the reason header is set to "rejected".

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

INVITE 1: sip: SIP 2
- **destination selection information** and **Service requirements** as used in the dialogue as CCBS was requested

NOTIFY 2 sip:O-AS
- Event:call-completion
- Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE 1	→		→	INVITE
180 Ringing	←		←	180 Ringing
NOTIFY 2	←			
200 OK NOTIFY	→			
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_008	4.5.4.3.4.1.3, 4.5.4.3.4.1.4	PICS 1/9

Test purpose

CCNR: An INVITE request received while a CC recall is processed. CC call indicator not present in the Request line. Service requirements and destination selection information are identical to the stored values. The call is offered.

Ensure that the terminating AS has sent a NOTIFY request and the state parameter in the call-completion MIME body was set to "ready" after the terminating AS receives an INVITE request and there is no m parameter in the Request line the terminating AS compares the destination selection information and service requirements with the stored value received in the CCNR request. If the match is true the call is offered to the callee. When a 180 (Ringing) is received from the callee a NOTIFY request is sent to the originating AS and Subscription-State header is set to "terminated" and the reason header is set to "rejected".

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

INVITE 1: sip: SIP 2
- **destination selection information** and **Service requirements** as used in the dialogue as CCNR was requested

NOTIFY 2 sip:O-AS
- Event:call-completion
- Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCNR request				
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE 1	→		→	INVITE
180 Ringing	←		←	180 Ringing
NOTIFY 2	←			
200 OK NOTIFY	→			
200 OK INVITE	←		←	200 OK INVITE
ACK	→		→	ACK
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_009	4.5.4.3.4.1.3, 4.5.4.3.4.1.4	NOT PICS 1/9

Test purpose

CCBS: An INVITE request received while a CC recall is processed. CC call indicator not present in the Request line. Service requirements and destination selection information are not identical to the stored values. The call is rejected.

Ensure that the terminating AS has sent a NOTIFY request to a CCBS entry and the state parameter in the call-completion MIME body was set to "ready" after the terminating AS receives an INVITE request and there is no m parameter in the Request line the terminating rejects the call.

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

INVITE: sip: SIP 2
- **destination selection information** and **Service requirements** not identical as used in the dialogue as CCBS was requested

NOTIFY 2 sip:O-AS
- Event:call-completion
- Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE	→			
4xx	←			
ACK	→			
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_010	4.5.4.3.4.1.3, 4.5.4.3.4.1.4	NOT PICS 1/9

Test purpose

CCNR: An INVITE request received while a CC recall is processed. CC call indicator not present in the Request line. Service requirements and destination selection information are not identical to the stored values. The call is rejected.

Ensure that the terminating AS has sent a NOTIFY request to a CCNR entry and the state parameter in the call-completion MIME body was set to "ready" after the terminating AS receives an INVITE request and there is no m parameter in the Request line the terminating rejects the call.

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

INVITE: sip: SIP 2
- **destination selection information** and **Service requirements** not identical as used in the dialogue as CCNR was requested

NOTIFY 2 sip:O-AS
- Event:call-completion
- Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCNR request				
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE	→			
4xx	←			
ACK	→			
Apply post test routine				

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_011	4.5.4.3.4.2	

Test purpose

CCBS: Terminating user becomes busy while CC-T8 is running.

If in case of CCBS, upon expiry of the destination B idle guard timer CC-T8, the callee is busy (e.g. the callee has initiated an outgoing communication), then the terminating AS shall defer servicing of the destination B CC queue until the callee becomes not busy again. After the callee is not busy, the terminating AS starts the recall procedure again.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
- From: Sip 2
- To: SIP 1 (S2)
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCBS request		
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Start CC-T8		
		↓		
INVITE (S1)	←		←	INVITE
200 OK INVITE	→		→	200 OK INVITE
ACK	←		←	ACK
		CC-T8 expires		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY 1	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_012	4.5.4.3.4.2	

Test purpose

CCNR: Terminating user becomes busy while CC-T8 is running.

If in case of CCNR, upon expiry of the destination B idle guard timer CC-T8, the callee is busy (e.g. the callee has initiated an outgoing communication), then the terminating AS shall defer servicing of the destination B CC queue until the callee becomes not busy again. After the callee is not busy, the terminating AS starts the recall procedure again.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
- From: Sip 2
- To: SIP 1 (S2)
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready
  - service-retention

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCNR request				
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
		Start CC-T8		
		↓		
INVITE (S1)	←		←	INVITE
200 OK INVITE	→		→	200 OK INVITE
ACK	←		←	ACK
		CC-T8 expires		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY 1	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_013	4.5.4.3.4.2	NOT PICS 1/2

Test purpose

CCBS: The callee is busy upon arrival of the CC call. Retain option not supported.

Ensure that if the callee is busy upon arrival of the CC call and the retain option is not supported at the terminating AS, the terminating AS shall cancel the corresponding CCBS request; **the terminating AS shall send a 486 (Busy Here) response with an Call-Info header field** with a "purpose" header field parameter set to "call-completion" and a m parameter set to "BS" to the originating AS.

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

INVITE 1: sip: SIP 2; m=BS

486 (Busy Here):
- Call-Info: <sip:UE-B>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
	Invoke CCBS request			
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE	←		←	INVITE (S1)
200 OK INVITE	→		→	200 OK INVITE
ACK	←		←	ACK
INVITE 1 (S2)	→			
486 (Busy Here)	←			
ACK	→			
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Terminating user is not monitored, CC-T8 is not started		
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_014	4.5.4.3.4.2	NOT PICS 1/2

Test purpose

CCNR: The callee is busy upon arrival of the CC call. Retain option not supported.

Ensure that if the callee is busy upon arrival of the CC call and the retain option is not supported at the terminating AS, the terminating AS shall cancel the corresponding CCNR request; **the terminating AS shall send a 486 (Busy Here) response with an Call-Info header field** with a "purpose" header field parameter set to "call-completion" and a m parameter set to "BS" to the originating AS.

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

INVITE 1: sip: SIP 2; m=NR

486 (Busy Here):
- Call-Info: <sip:UE-B>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
	Invoke CCNR request			
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE	←		←	INVITE (S1)
200 OK INVITE	→		→	200 OK INVITE
ACK	←		←	ACK
INVITE 1 (S2)	→			
486 (Busy Here)	←			
ACK	→			
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Terminating user is not monitored, CC-T8 is not started		
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_015	4.5.4.3.4.2	PICS 1/2

Test purpose

CCBS: The callee is busy upon arrival of the CC call. Retain option supported.

Ensure that if the callee is busy upon arrival of the CC call and the retain option is supported at the terminating AS, **the terminating AS shall** retain the original CCBS request in the queue; in this case the terminating AS shall continue to monitor destination B, shall not restart the timer CCBS-T7, shall stop timer CC-T9 and shall **send a 486 (Busy Here) response with an Call-Info header field** with a "purpose" header field parameter set to "call-completion" and the m parameter set to "BS" to the originating AS. After the callee becomes not busy, the recall procedure is started again.

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready
  - service-retention

INVITE 1: sip: SIP 2; m=BS

486 (Busy Here):
- Call-Info: <sip:UE-B>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCBS request		
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE	←		←	INVITE (S1)
200 OK INVITE	→		→	200 OK INVITE
ACK	←		←	ACK
INVITE 1 (S2)	→			
486 (Busy Here)	←			
ACK	→			
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY 1	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_016	4.5.4.3.4.2	PICS 1/2

Test purpose

CCNR: The callee is busy upon arrival of the CC call. Retain option supported.

Ensure that if the callee is busy upon arrival of the CC call and the retain option is supported at the terminating AS, **the terminating AS shall** retain the original CCNR request in the queue; in this case the terminating AS shall continue to monitor destination B, shall not restart the timer CCBS-T7, shall stop timer CC-T9 and shall **send a 486 (Busy Here) response with an Call-Info header field** with a "purpose" header field parameter set to "call-completion" and the m parameter set to "BS" to the originating AS. After the callee becomes not busy, the recall procedure is started again.

Preconditions:

SIP header values:

NOTIFY sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready
  - service-retention

INVITE 1: sip: SIP 2; m=NR

486 (Busy Here):
- Call-Info: <sip:UE-B>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCNR request		
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
NOTIFY 1	←			
200 OK NOTIFY	→			
INVITE	←		←	INVITE (S1)
200 OK INVITE	→		→	200 OK INVITE
ACK	←		←	ACK
INVITE 1 (S2)	→			
486 (Busy Here)	←			
ACK	→			
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY 1	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_017	4.5.4.3.4.2	

Test purpose

CCBS: Recall does not apply, CC-T9 expires.

Ensure that the terminating As revokes the CCBS request after the Recall timer. CC-T9 is expired. The terminating AA sends a NOTIFY request to the originating AS and the Subscription-State header is set to "terminated" and the reason header is set to "rejected".

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
- From: Sip 2
- To: SIP 1
- Event:call-completion
- Content-Type: application/call-completion
  - state: ready

NOTIFY 2 sip:O-AS
- Event:call-completion
- Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
	Invoke CCBS request			
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY 1	←			
200 OK NOTIFY	→			
		Start CC-T9		
		↓		
		CC-T9 expires		
NOTIFY 2	←			
200 OK NOTIFY	→			

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_018	4.5.4.3.4.2	

Test purpose
CCNR: Recall does not apply, CC-T9 expires.

Ensure that the terminating As revokes the CCNR request after the Recall timer. CC-T9 is expired. The terminating AA sends a NOTIFY request to the originating AS and the Subscription-State header is set to "terminated" and the reason parameter is set to "rejected".

Preconditions:

SIP header values:
NOTIFY sip:O-AS
From: Sip 2
To: SIP 1
Event:call-completion
Content-Type: application/call-completion
state: ready
NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
	Invoke CCNR request			
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY 1	←			
200 OK NOTIFY	→			
		Start CC-T9		
		↓		
		CC-T9 expires		
NOTIFY 2	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_019	4.8.2	

Test purpose
CCBS: Service duration timer, CC-T7 expires.

Ensure that the terminating AS revoke the CCBS request after the CC service duration timer CC-T7 expires. A NOTIFY is sent to the originating AS and the Subscription-State header is set to "terminated" and the reason parameter is set to "rejected".

Preconditions:

SIP header values:
NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT	SIP 2 (ISC)
	Invoke CCBS request		
		Start CC-T7	
		Callee is busy	
		↓	
		CC-T7 expires	
NOTIFY 2	←		
200 OK NOTIFY	→		

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_020	4.8.2	

Test purpose

CCNR: Service duration timer, CC-T7 expires.

Ensure that the terminating AS revoke the CCNR request after the CC service duration timer CC-T7 expires. A NOTIFY is sent to the originating AS and the Subscription-State header is set to "terminated" and the reason parameter is set to "rejected".

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
	Invoke CCBS request			
		Start CC-T7		
		Callee is idle		
		↓		
		CC-T7 expires		
NOTIFY 1	←			
200 OK NOTIFY	→			

TSS	TP	Reference	Selection expression
CC/terminating_AS/CCOperation	CC_N07_021	4.5.4.3.4.2	

Test purpose

CCBS: Caller becomes busy while CC recall procedure.

Ensure that the terminating AS after expiry of the B idle guard timer CC-T8 sends again the remote user free indication after the caller indicates no longer busy. A NOTIFY is sent an den MIME body contains the state parameter set to "queued".

Preconditions:

SIP header values:

```
NOTIFY 1 sip:O-AS
    From: Sip 2
    To: SIP 1
    Event:call-completion
    Content-Type: application/call-completion
        state: ready
PUBLISH 1   sip:T-AS
            Event: presence
            Content-Type: application/pidf+xml
            <?xml version="1.0" encoding="UTF-8"?>
            <presence
                <status>
                    <basic>closed</basic>
PUBLISH 2   sip:T-AS
            Event: presence
            Content-Type: application/pidf+xml
            <?xml version="1.0" encoding="UTF-8"?>
            <presence
                <status>
                    <basic>copen</basic>
NOTIFY 2 sip:O-AS
    Event:call-completion
    Content-Type: application/call-completion
        state: queued
```

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
	Invoke CCBS request			
		Callee is busy		
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
NOTIFY 1	←	NOTIFY 1		
200 OK NOTIFY	→	200 OK NOTIFY		
PUBLISH	→	PUBLISH		
200 OK PUBLISH	←	200 OK PUBLISH		
NOTIFY 2	←	NOTIFY 2		
200 OK NOTIFY	→	200 OK NOTIFY		
PUBLISH	→	PUBLISH		
200 OK PUBLISH	←	200 OK PUBLISH		
NOTIFY 2	←	NOTIFY 2		
200 OK NOTIFY	→	200 OK NOTIFY		
		Start CC-T8		
		↓		
		CC-T8 expires		
NOTIFY 1	←	NOTIFY 1		
200 OK NOTIFY	→	200 OK NOTIFY		
		Apply post test routine		

5.4 Interaction of Call-Completion with other services

5.4.1 Communication diversion services (CDIV)

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_001	4.6.8.2	PICS 1/7

Test purpose

CCBS: indication is sent if the original call was unconditional diverted.

In case of a callee is busy and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCBS is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion unconditional occurred.

Preconditions:

SIP header values:

INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=302>;index=1.1
486 (Busy Here) 1:
Call-Info: <sip:SIP 2>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK

Apply post test routine

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_002	4.6.8.2	PICS 1/7

Test purpose

CCNR: indication is sent if the original call was unconditional diverted.

In case of a callee does not answer the communication request and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCNR is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion unconditional occurred.

Preconditions:

SIP header values:

INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=302>;index=1.1
180 (Ringing) 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=NR

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 (Ringing) 1	←		←	180 (Ringing)

Apply post test routine

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_003	4.6.8.2	NOT PICS 1/7

Test purpose
CCBS: indication is not sent if the original call was unconditional diverted.

In case of a callee is busy and the callee has subscribed the call completion service, ensure that terminating AS does not inform the caller that CCBS is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion unconditional occurred.

Preconditions:

SIP header values:
INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=302>;index=1.1
486 (Busy Here) 1:
Call-Info: not present

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK

Apply post test routine

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_004	4.6.8.2	

Test purpose
CCNR: indication is not sent if the original call was unconditional diverted.

In case of a callee does not answer the communication request and the callee has subscribed the call completion service, ensure that terminating AS does not inform the caller that CCNR is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion unconditional occurred.

Preconditions:

SIP header values:
INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=302>;index=1.1
180 (Ringing) 1:
Call-Info: not present

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 (Ringing) 1	←		←	180 (Ringing)

Apply post test routine

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_005	4.6.8.2	

Test purpose
CCBS request is cancelled after the callee activates CFU.

Ensure that the terminating AS revokes the outstanding CCBS request if the callee activates Communication Forwarding unconditional.

Preconditions:

SIP header values:
NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
				Terminating user activates CFU
NOTIFY	←		←	NOTIFY
200 OK NOTIFY	→		→	200 OK NOTIFY

Apply post test routine

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_006	4.6.8.2	

Test purpose
CCNR request is cancelled after the callee activates CFU.

Ensure that the terminating AS revokes the outstanding CCNR request if the callee activates Communication Forwarding unconditional.

Preconditions:

SIP header values:
NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCNR request		
				Terminating user activates CFU
NOTIFY	←		←	NOTIFY
200 OK NOTIFY	→		→	200 OK NOTIFY
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_007	4.6.8.3	

Test purpose
CCBS indication is sent if the original call was diverted on Busy.

In case of a callee is busy and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCBS is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion busy occurred.

Preconditions: Communication Forwarding Busy is activated

SIP header values:
INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=486>;index=1.1
486 (Busy Here) 1:
Call-Info: <sip:SIP 2>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_008	4.6.8.3	

Test purpose
CCNR indication is sent if the original call was diverted on Busy.

In case of a callee does not answer the communication request and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCNR is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion Busy occurred.

Preconditions:

SIP header values:
INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=486>;index=1.1
180 (Ringing) 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=NR

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 (Ringing) 1	←		←	180 (Ringing)
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_009	4.6.8.3	

Test purpose
CCBS indication is not sent if the original call was diverted on Busy.

In case of a callee is busy and the callee has subscribed the call completion service, ensure that terminating AS does not inform the caller that CCBS is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion busy occurred.

Preconditions: Communication Forwarding Busy is activated

SIP header values:
INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=486>;index=1.1
486 (Busy Here) 1:
Call-Info: not present

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK

Apply post test routine

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_010	4.6.8.3	

Test purpose
CCBS recall after the callee activates CFB. Recall is considered as being busy.

Ensure that the terminating AS considers a CCBS recall to a busy callee that has activated CFB as being busy. The entry is removed from the queue and a CCBS possible indication is sent to the caller.

Preconditions:

SIP header values:
NOTIFY 1 sip:O-AS
From: Sip 2
To: SIP 1
Event:call-completion
Content-Type: application/call-completion
state: ready
486 (Busy Here) 2
Call-Info: <sip:UE-B>;purpose=call-completion;m=BS
NOTIFY 2 sip:O-AS
Event:call-completion
Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
Invoke CCBS request				
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
NOTIFY	←	NOTIFY 1		
200 OK NOTIFY	→	200 OK NOTIFY		
Terminating user activates CFB				
INVITE	←		←	INVITE
200 OK INVITE	→		→	200 OK INVITE
ACK	←		←	ACK
INVITE	→		→	INVITE
486 (Busy Here) 2	←		←	486 (Busy Here)
ACK	→		→	ACK
NOTIFY	←	NOTIFY 2		
200 OK NOTIFY	→	200 OK NOTIFY		

Apply post test routine

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_011	4.6.8.2	

Test purpose

CCBS: indication is sent if the original call was diverted on no Reply.

In case of a callee is busy and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCBS is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion on No Reply occurred.

Preconditions:

SIP header values:

INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=408>;index=1.1
486 (Busy Here) 1:
Call-Info: <sip:SIP 2>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_012	4.6.8.3	

Test purpose

CCNR indication is sent if the original call was diverted on no Reply.

In case of a callee does not answer the communication request and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCNR is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion on No Reply occurred.

Preconditions:

SIP header values:

INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=408>;index=1.1
180 (Ringing) 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=NR

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 (Ringing) 1	←		←	180 (Ringing)
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_013	4.6.6	

Test purpose

CCBS: Recall after CCNR was activated.

Ensure that the CC AS applies the procedures for CCNR when the callee activates CFNR after the CCBS recall procedure was started by the CC AS. After the 180 was sent to the caller AS, a NOTIFY is sent to indicate the CCBS request is removed from the queue.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
    From: Sip 2
    To: SIP 1
    Event:call-completion
    Content-Type: application/call-completion
        state: ready
INVITE 1: sip: SIP 2; m=BS
NOTIFY 2 sip:O-AS
    Event:call-completion
    Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
		Invoke CCBS request		
				Callee is busy
BYE	←		←	BYE
200 OK BYE	→		→	200 OK BYE
NOTIFY 1	←			
200 OK NOTIFY	→			
				Callee activates CCNR
INVITE 1	→		→	INVITE
180 Ringing	←		←	180 Ringing
NOTIFY 2	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_014	4.6.6	

Test purpose

CCNR: Recall after CCNR was activated.

Ensure that the CC AS applies the procedures for CCNR when the callee activates CFNR after the CCNR recall procedure was started by the CC AS. After the 180 was sent to the caller AS, a NOTIFY is sent to indicate the CCNR request is removed from the queue.

Preconditions:

SIP header values:

NOTIFY 1 sip:O-AS
  From: Sip 2
  To: SIP 1
  Event:call-completion
  Content-Type: application/call-completion
    state: ready
INVITE 1: sip: SIP 2; m=NR
NOTIFY 2 sip:O-AS
  Event:call-completion
  Subscription-State: terminated; reason=rejected

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
	Invoke CCBS request			
		Callee is idle		
INVITE	←		←	INVITE
486 Busy Here	→		→	486 Busy Here
ACK	←		←	ACK
NOTIFY 1	←			
200 OK NOTIFY	→			
				Callee activates CCNR
INVITE 1	→		→	INVITE
180 Ringing	←		←	180 Ringing
NOTIFY 2	←			
200 OK NOTIFY	→			
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_015	4.6.8.2	

Test purpose

CCBS: indication is sent if the original call was diverted on not Logged-in.

In case of a callee is busy and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCBS is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion on Not Logged-in occurred.

Preconditions:

SIP header values:

INVITE: sip SIP 2
  History-Info: <SIP 1>;index=1, <SIP 2; cause=404>;index=1.1
486 (Busy Here) 1:
  Call-Info: <sip:SIP 2>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_016	4.6.8.3	

Test purpose
CCNR indication is sent if the original call was diverted on not Logged-in.

In case of a callee does not answer the communication request and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCNR is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication diversion on Not Logged-in occurred.

Preconditions:

SIP header values:
INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=404>;index=1.1
180 (Ringing) 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=NR

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 (Ringing) 1	←		←	180 (Ringing)
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_017	4.6.8.2	

Test purpose
CCBS: indication is sent if the original call was deflected.

In case of a callee is busy and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCBS is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication is deflected.

Preconditions:

SIP header values:
INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=487>;index=1.1
486 (Busy Here) 1:
Call-Info: <sip:SIP 2>;purpose=call-completion;m=BS

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
486 (Busy Here) 1	←		←	486 (Busy Here)
ACK	→		→	ACK
		Apply post test routine		

TSS	TP	Reference	Selection expression
CC/Interaction/CDIV	CC_N08_018	4.6.8.3	

Test purpose
CCNR indication is sent if the original call was deflected.

In case of a callee does not answer the communication request and the callee has subscribed the call completion service, ensure that terminating AS inform the caller that CCNR is possible at the callee if the INVITE request contains a History-Info header that indicates that a communication is deflected.

Preconditions:

SIP header values:
INVITE: sip SIP 2
History-Info: <SIP 1>;index=1, <SIP 2; cause=487>;index=1.1
180 (Ringing) 1:
Call-Info: <sip:UE-B>;purpose=call-completion;m=NR

Comments:

SIP 1 (ISC)		SUT		SIP 2 (ISC)
INVITE	→		→	INVITE
100 Trying	←		←	100 Trying
180 (Ringing) 1	←		←	180 (Ringing)
		Apply post test routine		

History

Document history		
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