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Technical Specification

**Telecommunications and Internet converged Services and
Protocols for Advanced Networking (TISPAN);
PSTN/ISDN simulation services:
Explicit Communication Transfer (ECT);
Part 2: Test Suite Structure and Test Purposes (TSS&TP)**



Reference

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Keywords

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Contents

Intellectual Property Rights	4
Foreword.....	4
1 Scope	5
2 References	5
2.1 Normative references	5
2.2 Informative references.....	5
3 Definitions and abbreviations.....	6
3.1 Definitions.....	6
3.2 Abbreviations	6
4 Test Suite Structure (TSS) and configuration	6
4.1 Configuration	6
5 Test Purposes (TP)	7
5.1 Introduction	7
5.1.1 TP naming convention	7
5.1.2 Test strategy.....	8
5.2 Signalling requirements.....	9
5.2.1 Actions at the Transferor AS	9
5.2.2 Action at the Transferee AS.....	30
5.2.3 Action at the User equipment	37
5.2.3.1 Actions at the Transferor UE	37
5.2.3.2 Actions at the Transferee UE	39
5.2.3.3 Actions at the Transfer target UE.....	42
5.2.4 Interaction with other services	43
5.2.4.1 Originating identification restriction (OIR)	43
5.2.4.2 Anonymous Communication Rejection and Communication Barring (ACR/CB).....	45
5.2.4.3 CONFerence Calling (CONF).....	46
5.2.4.4 Explicit Communication Transfer (ECT).....	47
Annex A (informative): Bibliography.....	50
History	51

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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 Test Suite Structure and Test Purposes (TSS&TP) of the Explicit Communication transfer (ECT) simulation service, based on stage one and two of the ISDN ECT supplementary service. Within the Next Generation Network (NGN) the stage 3 description is specified using the IP-Multimedia Communication Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP) as described below:

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

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

1 Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) of the Explicit Communication transfer (ECT) simulation service, based on stage one and two of the ISDN ECT supplementary service. 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), TS 183 029 [1].

A further part of the present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma based on the present document.

Within the TISPAN 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 183 029: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services: Explicit Communication Transfer (ECT); Protocol specification".
- [2] ETSI TS 186 015-1: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services: Explicit Communication Transfer (ECT); 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 specified in [1] apply.

3.2 Abbreviations

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

4 Test Suite Structure (TSS) and configuration

Netw	TransferorAS	ECT_N01_XXX
	TransfereeAS	ECT_N02_XXX
User	Transferor	ECT_U01_XXX
	Transferee	ECT_U02_XXX
	TransferTarget	ECT_U03_XXX
Interaction	OIR	ECT_N03_XXX
	ACR-CB	ECT_N04_XXX
	CONF	ECT_N05_XXX
	ECT	ECT_N06_XXX

Figure 1: Test suite structure

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 2 points to this.

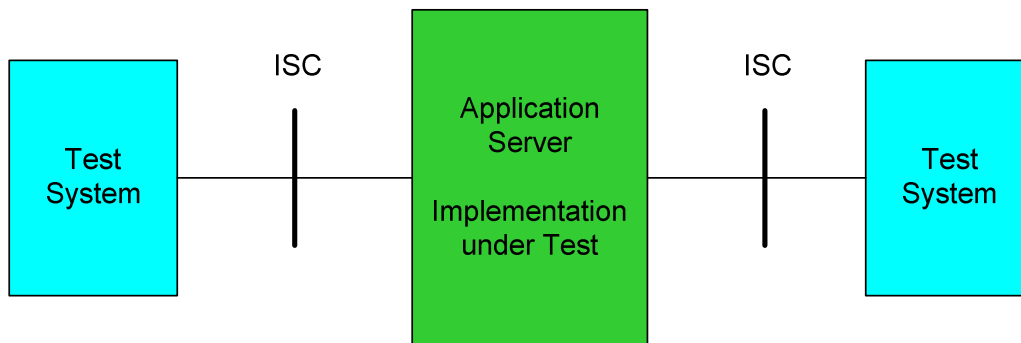


Figure 2: Applicable interface to test AS functionalities

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 3). 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.

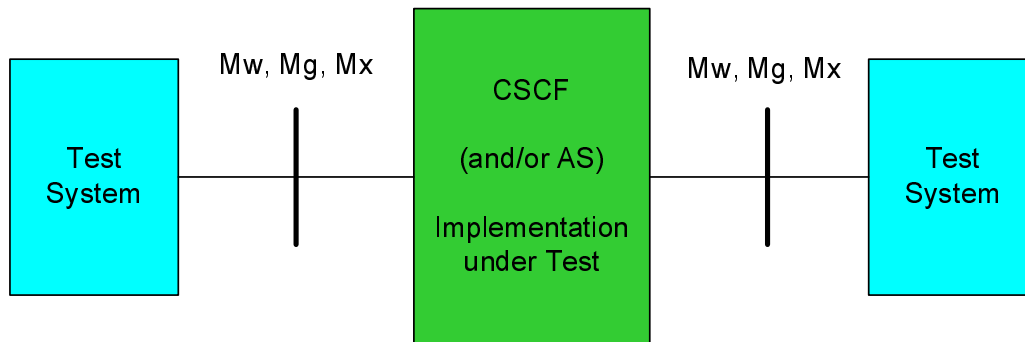


Figure 3: Applicable interfaces to test using the (generic) NNI interface

Figure 4 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.

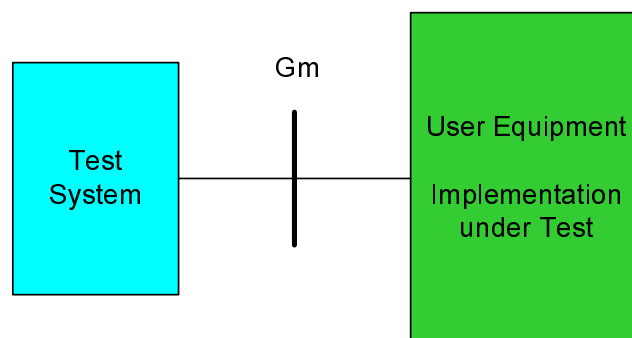


Figure 4: Applicable configuration to test the User Equipment

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. "ECT"	
<iut>	=	type of IUT:	
		U	User
		N	Network
<group>	=	group	2 digit field representing group reference according to TSS
<nnn>	=	sequential number	(001-999)

5.1.2 Test strategy

As the base standard TS 183 029 [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 186 015-1 [2].

5.2 Signalling requirements

5.2.1 Actions at the Transferor AS

TSS	TP	Reference	Selection expression																																																																																																																																												
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TSS	TP	Reference	Selection expression
Netw/TransferorAS	ECT_N01_005	4.5.2.4 [1]	PICS 1/3 AND NOT (PICS 1/4 OR PICS 1/5)
BYE	→		→ BYE
200 OK (BYE)	←		← 200 OK (BYE)
			Communication ISC#2 with ISC#3
	BYE	←	← BYE 2
	BYE	→	BYE
	200 OK (BYE)	←	← 200 OK (BYE)
	200 OK (BYE)	→	200 OK (BYE)

TSS	TP	Reference	Selection expression
Netw/TransferorAS	ECT_N01_006	4.5.2.4 [1]	PICS 1/3 AND NOT (PICS 1/4 OR PICS 1/5)
Test purpose			
<i>Communication transfer: Consultative transfer. Transferee was originator of the originating call.</i>			
Ensure that a Transferor can successfully transfer the communication with the transferee set on hold before and the Transferor is notified about the processing. The Transferor has a session with Transferee and the Transfer target. The Transferor refers the Transferee to establish a session to the Transfer target. After the successful session between Transferee and Transfer target set on hold, the sessions of the Transferor are released by the Transferor. The Transferee was the initiator of the originating communication.			
SIP header values:			
REFER 1: Require=replaces; Refer-To contains ISC#3 URI ?Replaces= call-id1 %3B to-tag=S1 %3B from-tag=S1 ; method=invite Referred-By contains ISC#1 URI			
REFER 2: Require=replaces; Refer-To contains ECT Session Identifier URI ?Replaces= call-id1 %3B to-tag=S1 %3B from-tag=S1 ; method=invite Referred-By contains ISC#1 URI			
INVITE 3: Request URI = ECT Session Identifier URI ; Replaces= call-id1 ; to-tag=S1 ; from-tag=S1			
INVITE 4: Request URI = ISC#3 URI ; Replaces= call-id1 ; to-tag=S1 ; from-tag=S1			
NOTIFY(100):Event contains refer message/sipfrag contains SIP/2.0 100 Trying			
NOTIFY(200):Event contains refer message/sipfrag contains SIP/2.0 200 OK			
Comments:			
ISC#1	AS Transferor	ISC#2	ISC#3
Establishment of session #1			
INVITE	←	← INVITE 1	
180 Ringing	→	→ 180 Ringing	
200 OK (INVITE)	→	→ 200 OK (INVITE)	
ACK	←	← ACK	
INVITE (sendonly)	→	→ INVITE (sendonly)	
200 OK (recvonly)	←	← 200 OK (recvonly)	
ACK	→	→ ACK	
Establishment of session #2			
INVITE 2	→		→ INVITE
180 Ringing	←		← 180 Ringing
200 OK (INVITE)	←		← 200 OK (INVITE)
ACK	→		→ ACK
ISC#1 transfers ISC#2 to ISC#3			
REFER 1	→ REFER		
		→ REFER 2	
	202 Accepted	← 202 Accepted	
202 Accepted	← 202 Accepted		
INVITE (inactive)	←	← INVITE (inactive)	
200 OK (inactive)	→	→ 200 OK (inactive)	
ACK	←	← ACK	
NOTIFY(100)	←	← NOTIFY(100)	
200 OK NOTIFY	→	→ 200 OK NOTIFY	
	INVITE	← INVITE 3	
	INVITE 4	→	→ INVITE
	180 Ringing	←	← 180 Ringing
	180 Ringing	→	180 Ringing
	200 OK	←	← 200 OK

TSS	TP	Reference	Selection expression
Netw/TransferorAS	ECT_N01_006	4.5.2.4 [1]	PICS 1/3 AND NOT (PICS 1/4 OR PICS 1/5)
200 OK → 200 OK			
NOTIFY(200)	←	← NOTIFY(200)	ACK → ACK
200 OK NOTIFY	→	→ 200 OK NOTIFY	
BYE	←		← BYE
200 OK (BYE)	→		→ 200 OK (BYE)
BYE	→	→ BYE	
200 OK (BYE)	←	← 200 OK (BYE)	
Communication ISC#2 with ISC#3			
		BYE ← BYE 2	
		BYE →	→ BYE
	200 OK (BYE) ←		← 200 OK (BYE)
	200 OK (BYE) →	200 OK (BYE)	

TSS	TP	Reference	Selection expression
Netw/TransferorAS	ECT_N01_007	4.5.2.4.1.2.2 [1]	
Test purpose			
<i>The method in the Refer-To header is not the INVITE method.</i>			
Ensure that the REFER request is rejected if the Method in the Refer-To header used in this dialogue is not the INVITE method e.g. BYE.			
SIP header values:			
REFER: :Refer-To contains ISC#3 URI; method=BYE			
Referred-By contains ISC#1 URI			
Comments:			
ISC#1	AS Transferor	ISC#2	ISC#3
Establishment of session #1			
INVITE	→	→ INVITE	
180 Ringing	←	← 180 Ringing	
200 OK (INVITE)	←	← 200 OK (INVITE)	
ACK	→	→ ACK	
INVITE (sendonly)	→	→ INVITE (sendonly)	
200 OK (recvonly)	←	← 200 OK (recvonly)	
ACK	→	→ ACK	
ISC#1 transfers ISC#2 to ISC#3			
REFER	→ REFER		
4xx or 5xx Response	← 4xx or 5xx Response		
Apply post test routine			

TSS	TP	Reference	Selection expression
	ECT_N01_008	4.5.2.4.1.2.2 [1]	
Test purpose			
<i>The request-URI is not targeted at the same UE instance that is involved in the dialog.</i>			
Ensure that the ECT simulation service does not apply if the Request URI is not the Transferee URI. The REFER request is rejected.			
SIP header values:			
REFER: Request URI contained the other URI (PIXIT) Refer-To contains the URI of ISC#3 , method=invite Referred-By contains SIP or tel URI of ISC#1			
Comments:			
ISC#1	AS Transferor	ISC#2	ISC#3
INVITE	→	→	INVITE
180 Ringing	←	←	180 Ringing
200 OK (INVITE)	←	←	200 OK (INVITE)
ACK	→	→	ACK
INVITE (sendonly)	→	→	INVITE (sendonly)
200 OK (recvonly)	←	←	200 OK (recvonly)
ACK	→	→	ACK
REFER	→		REFER
4xx or 5xx Response	←		4xx or 5xx Response
Apply post test routine			

TSS	TP	Reference	Selection expression
Netw/TransferorAS	ECT_N01_009	4.5.2.4.1.2.2 [1]	
Test purpose			
<i>There is no method parameter contained in the Refer-To header.</i>			
Ensure that the REFER request is rejected if there is no Method parameter contained in the Refer-To header.			
SIP header values:			
REFER: Refer-To To contains ISC#3 URI (no method parameter) Referred-By contains ISC#1 URI			
Comments:			
ISC#1	AS Transferor	ISC#2	ISC#3
	Establishment of session #1		
INVITE	→	→	INVITE
180 Ringing	←	←	180 Ringing
200 OK (INVITE)	←	←	200 OK (INVITE)
ACK	→	→	ACK
INVITE (sendonly)	→	→	INVITE (sendonly)
200 OK (recvonly)	←	←	200 OK (recvonly)
ACK	→	→	ACK
	ISC#1 transfers ISC#2 to ISC#3		
REFER	→		REFER
4xx or 5xx Response	←		4xx or 5xx Response
Apply post test routine			

TSS	TP	Reference	Selection expression																																																																																
Netw/TransferorAS	ECT_N01_011	4.5.2.4.2.3 [1]	NOT (PICS 1/4 OR PICS 1/5)																																																																																
Test purpose <i>The REFER request does not contain a Referred-By header.</i> If no Referred-By header is available in the REFER request a Referred-By header is added that matches the REFER method's P-Asserted-Identity.																																																																																			
SIP header values: REFER 1: Request URI: ISC#2 Referred-By not present P-Asserted-Identity= ISC#1 REFER 1: Request URI: ISC#2 Referred-By contains ISC#1 URI																																																																																			
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Netw/TransferorAS	ECT_N01_012	4.5.2.4.2.1 [2]	NOT (PICS 1/4 OR PICS 1/5)																																																																																								
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Netw/TransferorAS	ECT_N01_014	4.5.2.4.1.2.3 [1]	PICS 1/2 AND PICS 1/4																																																																																				
<p>Test purpose</p> <p>Assured transfer. The AS receives a 403 Forbidden indicating the Transferee does not support the REFER method.</p> <p>Ensure that three party call control applies when a 403 Forbidden is received upon a REFER was sent to the Transferee:</p> <ul style="list-style-type: none"> • A 202 Accepted for the REFER is sent. • An INVITE is sent to the Transfer Target containing the P-Asserted_identity of the Transferee and the Referred-By header with the identity of the Transferor. • After the 200 OK is received, a reINVITE is sent to the Transferee containing the P-Asserted_identity of the Transfer Target and the Referred-By header with the identity of the Transferor. 																																																																																							
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200 OK NOTIFY	→ 200 OK NOTIFY																																																																																										
	INVITE 4 →	INVITE																																																																																									
	200 OK ←	200 OK																																																																																									
	ACK →	ACK																																																																																									
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200 OK (BYE)	→ 200 OK (BYE)																																																																																										
BYE	→ BYE																																																																																										
200 OK (BYE)	← 200 OK (BYE)																																																																																										

5.2.2 Action at the Transferee AS

TSS	TP	Reference	Selection expression
Netw/TransfereeAS	ECT_N02_001	4.5.2.7/ [1]	
Test purpose			
Communication transfer: Assured transfer applicable at the Transferee AS. Ensure that the Transferee AS can act as a proxy when receives the REFER request, the INVITE request and the BYE request for the call that is transferred as an assured transfer.			
SIP header values:			
REFER 1: Refer-To ISC#2 URI; method=invite Referred-By contains ISC#1 URI			
REFER 2: Refer-To ISC#2 URI; method=invite Referred-By contains ISC#1 URI			
INVITE 3: Request URI = ISC#3 URI			
INVITE 4: Request URI = ISC#3 URI			
NOTIFY(100):Event contains refer message/sipfrag contains SIP/2.0 100 Trying			
NOTIFY(200):Event contains refer message/sipfrag contains SIP/2.0 200 OK			
Comments:			
ISC#2	AS Transferee	ISC#3	ISC#1
	Establishment of session #1		Session #1 on hold
	ISC#1 transfers ISC#2 to ISC#3		
	REFER ←		← REFER 1
REFER	← REFER 2		
202 Accepted	→ 202 Accepted		
	202 Accepted →		→ 202 Accepted
INVITE (S2 inactive)	→ INVITE (inactive)		
200 OK (inactive)	← 200 OK (S2 inactive)		
ACK	→ ACK		
NOTIFY(100)	→		→ NOTIFY(100)
200 OK NOTIFY	←		← 200 OK NOTIFY
INVITE 3 (S2)	→ INVITE		
	INVITE 4 → INVITE		
180 Ringing	← 180 Ringing	← 180 Ringing	
		← 200 OK	
	200 OK ← 200 OK		
	ACK →	→ ACK	
NOTIFY(200)	→		→ NOTIFY(200)
200 OK NOTIFY	←		← 200 OK NOTIFY
BYE	←		← BYE (S1)
200 OK (BYE)	→		→ 200 OK (BYE)
Apply post test routine			

TSS	TP	Reference	Selection expression
Netw/TransfereeAS	ECT_N02_002	4.5.2.7 [1]	
Test purpose			
Communication transfer: Blind transfer applicable at the Transferee AS. Ensure that the Transferee AS can act as a proxy when receives the REFER request, the INVITE request and the BYE request for the call that is transferred as a blind transfer.			
SIP header values:			
REFER 1: Refer-To ISC#3 URI; method=invite Referred-By contains ISC#1 URI			
REFER 2: Refer-To ISC#3 URI; method=invite Referred-By contains ISC#1 URI			
INVITE 3: Request URI = ISC#3 URI			
INVITE 4: Request URI = ISC#3 URI			
NOTIFY(100):Event contains refer message/sipfrag contains SIP/2.0 100 Trying			
NOTIFY(200):Event contains refer message/sipfrag contains SIP/2.0 200 OK			
Comments:			
ISC#2	AS Transferee	ISC#3	ISC#1
	Establishment of session #1		Session #1 on hold
	ISC#1 transfers ISC#2 to ISC#3		
	REFER	←	← REFER 1
REFER	← REFER 2		
202 Accepted	→ 202 Accepted		
	202 Accepted	→	→ 202 Accepted
BYE	←		← BYE (S1)
200 OK (BYE)	→		→ 200 OK (BYE)
NOTIFY(100)	→		→ NOTIFY(100)
200 OK NOTIFY	←		← 200 OK NOTIFY
INVITE 3	→ INVITE		
	INVITE 4	→	→ INVITE
180 Ringing	← 180 Ringing	←	← 180 Ringing
		←	← 200 OK
200 OK	← 200 OK		
ACK	→	→	→ ACK
NOTIFY(200)	→		→ NOTIFY(200)
200 OK NOTIFY	←		← 200 OK NOTIFY
Apply post test routine			

TSS	TP	Reference	Selection expression
Netw/TransfereeAS	ECT_N02_003	4.5.2.7 [1]	
Test purpose			
Communication transfer: Consultative transfer applicable at the Transferee AS.			
Ensure that the Transferee AS can act as a proxy when receives the REFER request, the INVITE request and the BYE request for the call that is transferred as a <i>Consultative</i> transfer.			
SIP header values:			
REFER 1: Refer-To ISC#3 URI; method=invite Referred-By contains ISC#1 URI			
REFER 2: Refer-To contains ISC#3 URI; method=invite Referred-By contains ISC#1 URI			
INVITE 3: Request URI = ISC#3 URI			
INVITE 4: Request URI = ISC#3 URI			
NOTIFY(100):Event contains refer message/sipfrag contains SIP/2.0 100 Trying			
NOTIFY(200):Event contains refer message/sipfrag contains SIP/2.0 200 OK			
Comments:			
ISC#2	AS Transferee	ISC#3	ISC#1
	Establishment of session #1		
	Session #1 on hold		
	Establishment of session #2		
	ISC#1 transfers ISC#2 to ISC#3		
		REFER ←	← REFER 1
REFER	← REFER 2		
202 Accepted	→ 202 Accepted		
	202 Accepted →		→ 202 Accepted
INVITE (S2 inactive)	→ INVITE (inactive)		
200 OK (inactive)	← 200 OK (S2 inactive)		
ACK	→ ACK		
BYE	←		← BYE
200 OK (BYE)	→		→ 200 OK (BYE)
NOTIFY(100)	→		→ NOTIFY(100)
200 OK NOTIFY	←		← 200 OK NOTIFY
INVITE 3	→ INVITE		
		INVITE 4 → INVITE	
		180 Ringing ← 180 Ringing	
180 Ringing	← 180 Ringing		
		← 200 OK	
	200 OK ← 200 OK		
	ACK → ACK		
		ACK → ACK	
NOTIFY(200)	→		→ NOTIFY(200)
200 OK NOTIFY	←		← 200 OK NOTIFY
BYE	←		← BYE (S1)
200 OK (BYE)	→		→ 200 OK (BYE)
		BYE ← BYE	
		BYE →	→ BYE
		200 OK (BYE) ←	← 200 OK (BYE)
		200 OK (BYE) → 200 OK (BYE)	
Apply post test routine			

TSS	TP	Reference	Selection expression																																																																																								
Netw/TransfereeAS	ECT_N02_004	4.5.2.7.3 [1]	PICS 1/7																																																																																								
Test purpose <i>The Referred-By header in the received INVITE does not contain the valid identity of the served user. Value is replaced.</i> If a Referred-By header is available in the INVITE request sent to the Transfer Target, the AS verifies if the provided Referred-By header contains with the value stored in the received REFER request. If no match is found, the value of the Referred-By header is replaced by the value of the Referred-By header received in the REFER request.																																																																																											
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TSS	TP	Reference	Selection expression																																																																
Netw/TransfereeAS	ECT_N02_005	4.5.2.7.3 [1]	PICS 1/6																																																																
<p>Test purpose <i>The Referred-By header in the received INVITE does not contain the valid identity of the served user. Request is rejected.</i></p> <p>If a Referred-By header is available in the INVITE request sent to the Transfer Target, the AS verifies if the provided Referred-By header contains with the value stored in the received REFER request. If no match is found, the value of the Referred-By header is replaced by the value of the Referred-By header received in the REFER request.</p>																																																																			
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TSS	TP	Reference	Selection expression
Netw/TransfereeAS	ECT_N02_006	4.5.2.7.3 [1]	PICS 1/8
Test purpose			
The received INVITE does not contain a Referred-By header. If no Referred-By header is available in the INVITE request sent to the Transfer Target, the AS inserts a Referred-By header and the value is equal to the value stored in the received REFER request.			
SIP header values:			
REFER 2: Refer-To URI; method=invite Referred-By ISC#1			
INVITE 3: (no Referred-By header)			
INVITE 4: Referred-By ISC#1			
Comments:			
ISC#2	AS Transferee	ISC#3	ISC#1
	Establishment of session #1		Session #1 on hold
	Establishment of session #2		ISC#1 transfers ISC#2 to ISC#3
		REFER ←	← REFER 1
REFER	← REFER 2		
202 Accepted	→ 202 Accepted		
	202 Accepted →		→ 202 Accepted
INVITE (S2 inactive)	→ INVITE (inactive)		
200 OK (inactive)	← 200 OK (S2 inactive)		
ACK	→ ACK		
NOTIFY(100)	→		→ NOTIFY(100)
200 OK NOTIFY	←		← 200 OK NOTIFY
INVITE 3	→ INVITE		
	INVITE 4 →	INVITE	
180 Ringing	← 180 Ringing	← 180 Ringing	
		← 200 OK	
200 OK	← 200 OK		
ACK	→ ACK		
		ACK →	ACK
NOTIFY(200)	→		→ NOTIFY(200)
200 OK NOTIFY	←		← 200 OK NOTIFY
BYE	←		← BYE
200 OK (BYE)	→		→ 200 OK (BYE)
Apply post test routine			

TSS	TP	Reference	Selection expression																								
Netw/TransfereeAS	ECT_N02_007	4.5.2.7.3 [1]	PICS 1/6																								
Test purpose The method in the Refer-To header is not the INVITE method. Ensure that the REFER request is rejected if the Method in the Refer-To header used in this dialogue is not the INVITE method e.g. BYE.																											
SIP header values: REFER 2: Refer-To ISC#2URI; method=BYE Referred-By ISC#1																											
Comments: <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">ISC#2</td> <td style="width: 25%;">AS Transferee</td> <td style="width: 25%;">ISC#3</td> <td style="width: 25%;">ISC#1</td> </tr> <tr> <td></td> <td>Establishment of session #1</td> <td></td> <td>Session #1 on hold</td> </tr> <tr> <td></td> <td>Establishment of session #2</td> <td></td> <td>ISC#1 transfers ISC#2 to ISC#3</td> </tr> <tr> <td></td> <td>REFER ←</td> <td></td> <td>← REFER 1</td> </tr> <tr> <td></td> <td>4xx →</td> <td></td> <td>→ 4xx</td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">Apply post test routine</td> </tr> </table>				ISC#2	AS Transferee	ISC#3	ISC#1		Establishment of session #1		Session #1 on hold		Establishment of session #2		ISC#1 transfers ISC#2 to ISC#3		REFER ←		← REFER 1		4xx →		→ 4xx		Apply post test routine		
ISC#2	AS Transferee	ISC#3	ISC#1																								
	Establishment of session #1		Session #1 on hold																								
	Establishment of session #2		ISC#1 transfers ISC#2 to ISC#3																								
	REFER ←		← REFER 1																								
	4xx →		→ 4xx																								
	Apply post test routine																										

TSS	TP	Reference	Selection expression																								
Netw/TransfereeAS	ECT_N02_008	4.5.2.7.3 [1]	PICS 1/6																								
Test purpose The request-URI is not targeted at the same UE instance that is involved in the dialog. Ensure that the ECT simulation service does not apply if the Request URI is not the Transferee URI. The REFER request is rejected.																											
SIP header values: REFER 2: Refer-To other URI (PIXIT) ; method=invite Referred-By ISC#1																											
Comments: <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">ISC#2</td> <td style="width: 25%;">AS Transferee</td> <td style="width: 25%;">ISC#3</td> <td style="width: 25%;">ISC#1</td> </tr> <tr> <td></td> <td>Establishment of session #1</td> <td></td> <td>Session #1 on hold</td> </tr> <tr> <td></td> <td>Establishment of session #2</td> <td></td> <td>ISC#1 transfers ISC#2 to ISC#3</td> </tr> <tr> <td></td> <td>REFER ←</td> <td></td> <td>← REFER 1</td> </tr> <tr> <td></td> <td>4xx →</td> <td></td> <td>→ 4xx</td> </tr> <tr> <td></td> <td colspan="3" style="text-align: center;">Apply post test routine</td> </tr> </table>				ISC#2	AS Transferee	ISC#3	ISC#1		Establishment of session #1		Session #1 on hold		Establishment of session #2		ISC#1 transfers ISC#2 to ISC#3		REFER ←		← REFER 1		4xx →		→ 4xx		Apply post test routine		
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	4xx →		→ 4xx																								
	Apply post test routine																										

TSS	TP	Reference	Selection expression																								
Netw/TransfereeAS	ECT_N02_009	4.5.2.7.3 [1]	PICS 1/6																								
Test purpose There is no method parameter contained in the Refer-To header. Ensure that the REFER request is rejected if there is no Method parameter contained in the Refer-To header.																											
SIP header values: REFER 2: Refer-To ISC#2URI Referred-By ISC#1																											
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ISC#2	AS Transferee	ISC#3	ISC#1																								
	Establishment of session #1		Session #1 on hold																								
	Establishment of session #2		ISC#1 transfers ISC#2 to ISC#3																								
	REFER ←		← REFER 1																								
	4xx →		→ 4xx																								
	Apply post test routine																										

5.2.3 Action at the User equipment

5.2.3.1 Actions at the Transferor UE

TSS	TP	Reference	Selection expression																														
User/Transferor	ECT_U01_001	4.5.2.1 [1]	PICS 2/1																														
Test purpose <i>The UE transfers a communication with a Transferee to the Transfer Target (Transferor, blind transfer).</i> Ensure that the UE is able to transfer a communication with the Transferee, put on hold before, to the Transfer Target using the blind transfer method. The session with user Transferee is terminated before information about the progress of the transfer is received.																																	
SIP header values: REFER: Request URI: Gm#2 Refer-To contains Gm#3 URI; method=invite Referred-By contains Gm#1 URI NOTIFY(100):Event contains refer message/sipfrag contains SIP/2.0 100 Trying NOTIFY(200):Event contains refer message/sipfrag contains SIP/2.0 200 OK																																	
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UE (Gm#1)	Establishment of session #1	Test equipment (Gm#2)																															
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TSS	TP	Reference	Selection expression																																				
User/Transferor	ECT_U01_002	4.5.2.1 [1]	PICS 2/2																																				
Test purpose <i>The UE transfers a communication with a Transferee to the Transfer Target (Transferor, assured transfer).</i> Ensure that the UE is able to transfer a communication with the Transferee, put on hold before, to the Transfer Target using the assured transfer method. The session with Transferee is terminated after information about the progress of the transfer is received.																																							
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Apply post test routine																																							

TSS	TP	Reference	Selection expression																																																				
User/Transferor	ECT_U01_003	4.5.2.1 [1]	PICS 2/3																																																				
Test purpose <i>The UE transfers a communication with a Transferee to the Transfer Target (Transferor, consultative transfer).</i> Ensure that the UE is able to transfer a communication with the Transferee, put on hold before, to the Transfer Target, having an active session, using the consultative transfer method. The Transfer Target receives a replaces header to request the termination of the session between Transferor and Transfer Target.																																																							
SIP header values: REFER 1: Request URI: Gm#2 Require=replaces; Refer-To contains Gm#3 URI?Replaces=call-id1%3Bto-tagSession1%3Bfrom-tagSession1; method=invite Referred-By contains Gm#1 URI NOTIFY(100):Event contains refer message/sipfrag contains SIP/2.0 100 Trying NOTIFY(200):Event contains refer message/sipfrag contains SIP/2.0 200 OK																																																							
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200 OK (BYE)	→		→ 200 OK (BYE)																																																				
Apply post test routine																																																							

5.2.3.2 Actions at the Transferee UE

TSS	TP	Reference	Selection expression
User/Transferee	ECT_U02_001	4.5.2.5 [1]	PICS 2/1 AND PICS 2/5
Test purpose			
<p>UE establishes a session with the Transfer target in blind transfer modus (Transferee).</p> <p>Ensure that UE set on hold is able to establish a session with the Transfer target after a REFER referring this session was received. The session with the Transferor is terminated by the Transferor before information about the success of the session to the Transfer target was sent.</p>			
SIP header values:			
<p>REFER: Request URI=Gm#1, Refer-To contains Gm#3 URI; method=invite Referred-By contains Gm#2 URI</p> <p>INVITE: Request URI= Gm#3, Referred-By=Gm#2</p> <p>NOTIFY(100):Event contains refer message/sipfrag contains SIP/2.0 100 Trying</p> <p>NOTIFY(200):Event contains refer message/sipfrag contains SIP/2.0 200 OK</p>			
Comments:			
UE (Gm#1)	Test equipment (Gm#2)	Test equipment (Gm#3)	
	Establishment of session #1		
	Session #1 on hold		
REFER	← REFER		
202 Accepted	→ 202 Accepted		
BYE	← BYE (S1)		
200 OK (BYE)	→ 200 OK (BYE)		
NOTIFY(S1 100)	→ NOTIFY(100)		
200 OK NOTIFY	← 200 OK NOTIFY		
INVITE (S2)		→ INVITE	
180 Ringing		← 180 Ringing	
200 OK (INVITE)		← 200 OK (INVITE)	
ACK		→ ACK	
NOTIFY(S1 200)	→ NOTIFY(200)		
200 OK NOTIFY	← 200 OK NOTIFY		
Apply post test routine			

TSS	TP	Reference	Selection expression
User/Transferee	ECT_U02_002	4.5.2.5 [1]	PICS 2/2 AND PICS 2/5
Test purpose <i>UE establishes a session with the Transfer target in assured transfer modus (Transferee).</i> Ensure that UE set on hold is able to establish a session with the Transfer target after a REFER referring this session was received. The session with the Transferor is terminated by the Transferor after information about the success of the session to the Transfer target was sent.			
SIP header values: REFER: Request URI=Gm#1, Refer- Gm#3 URI; method=invite Referred-By Gm#2 URI INVITE: Request URI= Gm#3, Referred-By=Gm#2 NOTIFY(100):Event contains refer message/sipfrag contains SIP/2.0 100 Trying NOTIFY(200):Event contains refer message/sipfrag contains SIP/2.0 200 OK			
Comments:			
UE (Gm#1)		Test equipment (Gm#2)	Test equipment (Gm#3)
		Establishment of session #1	
		Session #1 on hold	
REFER	←	REFER	
202 Accepted	→	202 Accepted	
NOTIFY(100)	→	NOTIFY(100)	
200 OK NOTIFY	←	200 OK NOTIFY	
INVITE (S2)			→ INVITE
180 Ringing			← 180 Ringing
200 OK (INVITE)			← 200 OK (INVITE)
ACK			→ ACK
NOTIFY(200)	→	NOTIFY(200)	
200 OK NOTIFY	←	200 OK NOTIFY	
BYE	←	BYE (S1)	
200 OK (BYE)	→	200 OK (BYE)	
		Apply post test routine	

TSS	TP	Reference	Selection expression																																																																											
User/Transferee	ECT_U02_003	4.5.2.5 [1]	PICS 2/1 AND PICS 2/5																																																																											
Test purpose <i>UE establishes a session with the Transfer target in consultative transfer modus (Transferee).</i> Ensure that UE set on hold is able to establish a session with the Transfer target after a REFER referring this session was received. The session with the Transferor is terminated by the Transferor after information about the success of the session to the Transfer target was sent.																																																																														
SIP header values: REFER: Request URI=Gm#1, Refer-To=Gm#3; method=INVITE, Referred-By=Gm#2 INVITE: Request URI= Gm#3, Referred-By=Gm#2 NOTIFY(100):Event contains refer message/sipfrag contains SIP/2.0 100 Trying NOTIFY(200):Event contains refer message/sipfrag contains SIP/2.0 200 OK																																																																														
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UE (Gm#1)		Test equipment (Gm#2)		Test equipment (Gm#3)																																																																										
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TSS	TP	Reference	Selection expression																								
User/Transferee	ECT_U02_004	4.5.2.5 [1]	NOT PICS 2/5																								
Test purpose <i>UE has not the capability to handle the REFER request.</i> Ensure that the UE is able to send a 403 Forbidden or 501 Not implemented unsuccessful final response if the REFER handling is not implemented.																											
SIP header values: REFER: Request URI=Gm#1, Refer-To other URI (PIXIT); method=invite Referred-By contains Gm#2 URI																											
Comments: <table border="0"> <thead> <tr> <th>UE (Gm#1)</th> <th></th> <th>Test equipment (Gm#2)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td style="text-align:center">Establishment of session #1</td> </tr> <tr> <td></td> <td></td> <td style="text-align:center">Session #1 on hold</td> </tr> <tr> <td>REFER</td> <td>←</td> <td>REFER</td> </tr> <tr> <td>CASE A</td> <td></td> <td></td> </tr> <tr> <td>403 Forbidden</td> <td>→</td> <td>403 Forbidden</td> </tr> <tr> <td>CASE A</td> <td></td> <td></td> </tr> <tr> <td>501 Not implemented</td> <td>→</td> <td>501 Not implemented</td> </tr> </tbody> </table> <p style="text-align:center">Apply post test routine</p>				UE (Gm#1)		Test equipment (Gm#2)			Establishment of session #1			Session #1 on hold	REFER	←	REFER	CASE A			403 Forbidden	→	403 Forbidden	CASE A			501 Not implemented	→	501 Not implemented
UE (Gm#1)		Test equipment (Gm#2)																									
		Establishment of session #1																									
		Session #1 on hold																									
REFER	←	REFER																									
CASE A																											
403 Forbidden	→	403 Forbidden																									
CASE A																											
501 Not implemented	→	501 Not implemented																									

5.2.3.3 Actions at the Transfer target UE

TSS	TP	Reference	Selection expression															
User/TransferTarget	ECT_U03_001	4.5.2.17 [1]	PICS 2/1 OR PICS 2/2															
Test purpose <i>Transfer Target is in communication with user Gm#2 (Transferee) in Blind/Assured mode.</i> Ensure that the UE in a session with the (Transferee). is transferred and receives a Referred-By header in the received INVITE identifying the Transferor.																		
SIP header values: INVITE: Request URI = UE (Gm#1) ReferredBy=URI x (PIXIT) BYE																		
Comments: <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">UE C (Gm#1)</td> <td style="width: 30%;"></td> <td style="width: 30%;">Test equipment (Gm#2)</td> </tr> <tr> <td>INVITE</td> <td style="text-align: center;">←</td> <td>INVITE</td> </tr> <tr> <td>180 Ringing</td> <td style="text-align: center;">→</td> <td>180 Ringing</td> </tr> <tr> <td>200 OK (INVITE)</td> <td style="text-align: center;">→</td> <td>200 OK (INVITE)</td> </tr> <tr> <td>ACK</td> <td style="text-align: center;">←</td> <td>ACK</td> </tr> </table> <p style="text-align: center;">Apply post test routine</p>				UE C (Gm#1)		Test equipment (Gm#2)	INVITE	←	INVITE	180 Ringing	→	180 Ringing	200 OK (INVITE)	→	200 OK (INVITE)	ACK	←	ACK
UE C (Gm#1)		Test equipment (Gm#2)																
INVITE	←	INVITE																
180 Ringing	→	180 Ringing																
200 OK (INVITE)	→	200 OK (INVITE)																
ACK	←	ACK																

TSS	TP	Reference	Selection expression																								
User/TransferTarget	ECT_U03_002	4.5.2.17 [1]	PICS 2/3																								
Test purpose <i>Transfer Target is in communication with the Transferor and the Transferee in consultative transfer mode.</i> Ensure that the UE in a session with the Transferor) and the Transferee can be transferred in a session with the Transferee. In order to terminate the session with the Transferor a Replaces header containing the session information of the session with the Transferor is received in the INVITE received from the Transferee, the session with the Transferor is terminated by UE.																											
SIP header values: INVITE: Replaces=call-id1; to-tag=S1; from-tag=S1 Referred-By= URI x (PIXIT)																											
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UE C (Gm#1)	Test equipment (Gm#2)	Test equipment (Gm#3)																									
	Establishment of session #1 (S1)																										
INVITE	←	← INVITE (S2)																									
180 Ringing	→	→ 180 Ringing																									
200 OK (INVITE)	→	→ 200 OK (INVITE)																									
ACK	←	← ACK																									
BYE (S1)	→	BYE																									
200 OK (BYE)	←	200 OK (BYE)																									

5.2.4 Interaction with other services

5.2.4.1 Originating identification restriction (OIR)

TSS	TP	Reference	Selection expression																																																																																								
Interaction/OIR	ECT_N03_001	4.6.5																																																																																									
Test purpose <i>Referred-By header is removed from the INVITE to the Transfer Target due to the OIR service.</i> Ensure that a Referred-By header is removed from the INVITE request to the Transfer Target if a Privacy header that contains the value "user" received from the Transferor regarding the OIR service of the served user.																																																																																											
SIP header values: REFER 1: Refer-To contains ISC#3 URI; method=invite Referred-By contains ISC#1 URI Privacy contains "user" INVITE 3: Referred-By contains ISC#1 URI INVITE 4: (no Referred-By header)																																																																																											
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5.2.4.2 Anonymous Communication Rejection and Communication Barring (ACR/CB)

TSS	Interaction/ACR-CB	TP	Reference	Selection expression
		ECT_N04_001	4.6.9	
Test purpose				
<i>transfer requests with a Transfer Target that is barred by the served users Outgoing Communication Barring (OCB) rules.</i>				
Ensure that the As does not accept a transfer requests with a transfer Target that is barred by the Transferor's Outgoing Communication Barring (OCB) rules.				
Precondition: The Transfer Target is barred by the Transferor's Outgoing Communication Barring rules.				
SIP header values:				
REFER 1: Refer-To contains ISC#3 URI; method=invite Referred-By contains ISC#1 URI				
Comments:				
ISC#1	AS Transferor		ISC#2	ISC#3
	Establishment of session #1			
INVITE	←	←	INVITE 1	
180 Ringing	→	→	180 Ringing	
200 OK (INVITE)	→	→	200 OK (INVITE)	
ACK	←	←	ACK	
INVITE 2 (sendonly)	→	→	INVITE (sendonly)	
200 OK (recvonly)	←	←	200 OK (recvonly)	
ACK	→	→	ACK	
	ISC#1 transfers ISC#2 to ISC#3			
REFER 1	→ REFER			
403 Forbidden	← 403 Forbidden			
Apply post test routine				

5.2.4.3 CONFerence Calling (CONF)

TSS	TP	Reference	Selection expression																																																																																								
Interaction/CONF	ECT_N05_001	4.6.6 [1]	PICS 1/1																																																																																								
<p>Test purpose <i>ECt does not apply if the Refer-To header of the REFER request contains the "isfocus" parameter. Ensure that ECt does not apply if the "Isfocue" parameter is present in the Refer-To header in the received REFER request. The ECT AS does not replace the value of the Refer-To header with a created ECT session identifier. The request line of the INVITE destined for the Transfer Target is passed unchanged.</i></p>																																																																																											
<p>SIP header values: INVITE 1: Request URI=conference factory URI 200 OK (INVITE) 1: Contact: conference URI; isfocus REFER 1: Request URI=ISC#2 Refer-To conference URI; isfocus; method=invite Referred-By ISC#1 URI REFER 2: Request URI=ISC#2 Refer-To conference URI; isfocus; method=invite Referred-By ISC#1 URI INVITE 2: Request URI = conference URI; isfocus Referred-By ISC#1 URI INVITE 3: Request URI = conference URI; isfocus Referred-By ISC#1 URI</p>																																																																																											
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5.2.4.4 Explicit Communication Transfer (ECT)

TSS	TP	Reference	Selection expression																																																																												
Interaction/ECT	ECT_N06_001	4.6.10.2, 4.6.10.3 [1]	PICS 1/1																																																																												
Test purpose <i>Interaction with ECT: Blind transfer.</i> Ensure that if the INVITE dialog on which the REFER is received is a previously transferred communication indicated by the presence of a Referred-By header in the INVITE request the <ul style="list-style-type: none"> REFER is forwarded and the value of the Refer-To header is replaced by the ECT session Identifier. The Request URI of the INVITE request received to forward to the Transfer Target is replaced with the value of the Transfer Target. 																																																																															
SIP header values: INVITE 1: Request URI = ISC#2 ; Referred-By=other URI (PIXIT) REFER 1: Refer-To ISC#3 URI; method=invite Referred-By ISC#1 URI REFER 2: Refer-To ECT Session Identifier URI; method=invite Referred-By ISC#1 URI INVITE 2: Request URI = ECT Session Identifier URI Referred-By ISC#1 URI INVITE 3: Request URI = ISC#3 URI Referred-By ISC#1 URI																																																																															
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TSS	TP	Reference	Selection expression																																																																
Interaction/ECT	ECT_N06_002	4.6.10.2, 4.6.10.3 [1]	PICS 1/2																																																																
Test purpose <i>Interaction with ECT: Assured transfer.</i> Ensure that if the INVITE dialog on which the REFER is received is a previously transferred communication indicated by the presence of a Referred-By header in the INVITE request the <ul style="list-style-type: none"> REFER is forwarded and the value of the Refer-To header is replaced by the ECT session Identifier. The Request URI of the INVITE request received to forward to the Transfer Target is replaced with the value of the Transfer Target. 																																																																			
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TSS	TP	Reference	Selection expression																																																																																																																																																																																																											
Interaction/ECT	ECT_N06_003	4.6.10.2, 4.6.10.3 [1]	PICS 1/3																																																																																																																																																																																																											
Test purpose <i>Interaction with ECT: Consultative transfer.</i> Ensure that if the INVITE dialog on which the REFER is received is a previously transferred communication indicated by the presence of a Referred-By header in the INVITE request the <ul style="list-style-type: none"> REFER is forwarded and the value of the Refer-To header is replaced by the ECT session Identifier. The Request URI of the INVITE request received to forward to the Transfer Target is replaced with the value of the Transfer Target. 																																																																																																																																																																																																														
SIP header values: INVITE 1: Request URI = ISC#2 ; Referred-By=other URI (PIXIT) REFER 1: Require=replaces Refer-To ISC#3 URI ?Replaces= call-id-S2; to-tag=S2; from-tag=S2 ; method=invite Referred-By ISC#1 URI REFER 2: Require=replaces; Refer-To contains ECT Session Identifier URI ?Replaces= call-id-S2; to-tag=S2; from-tag=S2 ; method=invite Referred-By contains ISC#1 URI INVITE 2: Request URI = ECT Session Identifier URI Replaces= call-id-S2; to-tag=S2; from-tag=S2 Referred-By ISC#1 URI INVITE 3: Request URI = ISC#3 URI Replaces= call-id-S2; to-tag=S2; from-tag=S2 Referred-By ISC#1 URI																																																																																																																																																																																																														
Comments: <table border="0"> <thead> <tr> <th>ISC#1</th> <th></th> <th>AS Transferor</th> <th></th> <th>ISC#2</th> <th></th> <th>ISC#3</th> </tr> </thead> <tbody> <tr> <td>INVITE 1 (S1)</td> <td>→</td> <td></td> <td></td> <td>→</td> <td></td> <td>INVITE</td> </tr> <tr> <td>180 Ringing</td> <td>←</td> <td></td> <td></td> <td>←</td> <td></td> <td>180 Ringing</td> </tr> <tr> <td>200 OK (INVITE)</td> <td>←</td> <td></td> <td></td> <td>←</td> <td></td> <td>200 OK (INVITE)</td> </tr> <tr> <td>ACK</td> <td>→</td> <td></td> <td></td> <td>→</td> <td></td> <td>ACK</td> </tr> <tr> <td colspan="7" style="text-align: center;">Session #1 on hold</td> </tr> <tr> <td colspan="7" style="text-align: center;">Establishment of session #2</td> </tr> <tr> <td>REFER 1</td> <td>→</td> <td>REFER</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>REFER 2</td> <td>→</td> <td>REFER</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>202 Accepted</td> <td>←</td> <td>202 Accepted</td> <td></td> <td></td> </tr> <tr> <td>202 Accepted</td> <td>←</td> <td>202 Accepted</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>INVITE (inactive)</td> <td>←</td> <td></td> <td></td> <td>←</td> <td></td> <td>INVITE (inactive)</td> </tr> <tr> <td>200 OK (inactive)</td> <td>→</td> <td></td> <td></td> <td>→</td> <td></td> <td>200 OK (inactive)</td> </tr> <tr> <td>ACK</td> <td>←</td> <td></td> <td></td> <td>←</td> <td></td> <td>ACK</td> </tr> <tr> <td>NOTIFY(100)</td> <td>←</td> <td></td> <td></td> <td>←</td> <td></td> <td>NOTIFY(100)</td> </tr> <tr> <td>200 OK NOTIFY</td> <td>→</td> <td></td> <td></td> <td>→</td> <td></td> <td>200 OK NOTIFY</td> </tr> <tr> <td></td> <td></td> <td>INVITE</td> <td>←</td> <td>INVITE 2 (S3)</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>INVITE 3</td> <td>→</td> <td></td> <td></td> <td>→ INVITE</td> </tr> <tr> <td></td> <td></td> <td>180 Ringing</td> <td>←</td> <td></td> <td></td> <td>← 180 Ringing</td> </tr> <tr> <td></td> <td></td> <td>180 Ringing</td> <td>→</td> <td>180 Ringing</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>200 OK</td> <td>←</td> <td></td> <td></td> <td>← 200 OK</td> </tr> <tr> <td></td> <td></td> <td>200 OK</td> <td>→</td> <td>200 OK</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>ACK</td> <td>→ ACK</td> </tr> <tr> <td>NOTIFY(200)</td> <td>←</td> <td></td> <td></td> <td>←</td> <td></td> <td>NOTIFY(200)</td> </tr> <tr> <td>200 OK NOTIFY</td> <td>→</td> <td></td> <td></td> <td>→</td> <td></td> <td>200 OK NOTIFY</td> </tr> <tr> <td>BYE</td> <td>←</td> <td></td> <td></td> <td></td> <td></td> <td>← BYE (S2)</td> </tr> <tr> <td>200 OK (BYE)</td> <td>→</td> <td></td> <td></td> <td></td> <td></td> <td>→ 200 OK (BYE)</td> </tr> <tr> <td>BYE (S1)</td> <td>→</td> <td></td> <td></td> <td>→</td> <td></td> <td>BYE</td> </tr> <tr> <td>200 OK (BYE)</td> <td>←</td> <td></td> <td></td> <td>←</td> <td></td> <td>200 OK (BYE)</td> </tr> </tbody> </table>				ISC#1		AS Transferor		ISC#2		ISC#3	INVITE 1 (S1)	→			→		INVITE	180 Ringing	←			←		180 Ringing	200 OK (INVITE)	←			←		200 OK (INVITE)	ACK	→			→		ACK	Session #1 on hold							Establishment of session #2							REFER 1	→	REFER							REFER 2	→	REFER					202 Accepted	←	202 Accepted			202 Accepted	←	202 Accepted					INVITE (inactive)	←			←		INVITE (inactive)	200 OK (inactive)	→			→		200 OK (inactive)	ACK	←			←		ACK	NOTIFY(100)	←			←		NOTIFY(100)	200 OK NOTIFY	→			→		200 OK NOTIFY			INVITE	←	INVITE 2 (S3)					INVITE 3	→			→ INVITE			180 Ringing	←			← 180 Ringing			180 Ringing	→	180 Ringing					200 OK	←			← 200 OK			200 OK	→	200 OK								ACK	→ ACK	NOTIFY(200)	←			←		NOTIFY(200)	200 OK NOTIFY	→			→		200 OK NOTIFY	BYE	←					← BYE (S2)	200 OK (BYE)	→					→ 200 OK (BYE)	BYE (S1)	→			→		BYE	200 OK (BYE)	←			←		200 OK (BYE)
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Annex A (informative): Bibliography

ETSI TS 123 228: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS); Stage 2 (3GPP TS 23.228 version 8.9.0 Release 8)".

History

Document history		
V2.1.1	July 2009	Publication