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Core Network and Interoperability Testing (INT);
Explicit Communication Transfer (ECT) using
IP Multimedia (IM) Core Network (CN) subsystem;
Conformance Test Specification (3GPP™ Release 12);
Part 2: Test Suite Structure and Test Purposes (TSS&TP)

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ETSI

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

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

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

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Core Network and Interoperability Testing (INT).

The present document is part 2 of a multi-part deliverable covering the Conformance Test Specification of Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem, as identified below:

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

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

Modal verbs terminology

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1 Scope

The present document provides the Test Suite Structure and Test Purposes (TSS&TP) for the protocol specification Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem as defined in ETSI TS 124 629 [1] in compliance with the relevant requirements.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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

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The following referenced documents are necessary for the application of the present document.

- [1] ETSI TS 124 629: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.629 Release 12)".
- [2] ETSI TS 101 594-1: "Core Network and Interoperability Testing (INT); Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem; Conformance Test Specification (3GPP **M* Release 12); Part J: Protocol Implementation Conformance Statement (PICS)".
- [3] ETSI TS 124 628: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Common Basic Communication procedures using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.628 Release 12)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

Not applicable.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI TS 124 629 [1] apply.

3.2 Symbols

URI

For the purposes of the present document, the symbols given in ETSI TS 124 629 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 124 629 [1] and the following apply:

ACR-CB	Anonymous Communication Rejection- Communication Barring
ISC	IM-CN Service Control
IUT	Implementation Under Test
NNI	Network Network Interface
PIXIT	Protocol Implementation eXtra Information for Testing
SIP	Session Initiation Protocol
SUT	System Under Test
TP	Test Purpose
UE	User Equipment

Uniform Resource Identifier

4 Test Suite Structure (TSS) and configuration

Test Suite Structure 4.1 Netw TransferorAS ECT_N01_xxx **TransfereeAS** ECT_N02_xxx User Transferor ECT_U01_xxx **Transferee** ECT_U02_xxx TransferTarget ECT_U03_xxx ECT_N03_xxx Interaction OIR ACR-CB ECT_N04_xxx CONF ECT_N05_xxx **ECT** ECT_N06_xxx

Figure 4.1.1: Test suite structure

4.2 Configuration

The scope of the present document is to test the signalling and procedural aspects of the stage 3 requirements as described in ETSI TS 124 629 [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 4.2.1 points to this.

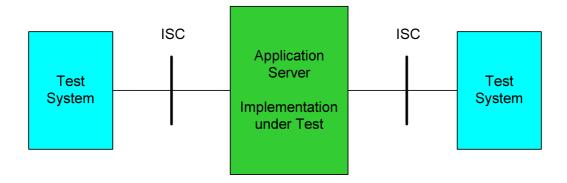


Figure 4.2.1: Applicable interface to test AS functionalities

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 4.2.2). 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.

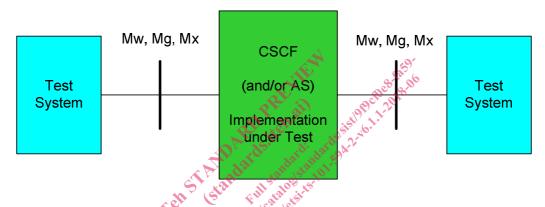


Figure 4.2.2: Applicable interfaces to test using the (generic) NNI interface

Figure 4.2.2 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.

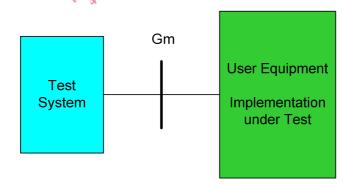


Figure 4.2.3: Applicable configuration to test the User Equipment

5 Test Purposes (TP)

Introduction 5.1

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 5.1.1).

Table 5.1.1: TP identifier naming convention scheme

Identifie	Identifier: <ss>_<iut><group>_<nnn></nnn></group></iut></ss>						
<ss></ss>	> =	supplementary service	supplementary service: e.g. "ECT"				
<iut></iut>	<iut> = type of IUT: U User N Network</iut>						
<gre< th=""><th>up> =</th><th>group</th><th>2 digit field</th><th>representing group reference according to TSS</th></gre<>	up> =	group	2 digit field	representing group reference according to TSS			
<nnı< th=""><th>า> =</th><th>sequential number</th><th>(001-999)</th><th></th></nnı<>	า> =	sequential number	(001-999)				

5.1.2 Test strategy

As the base standard ETSI TS 124 629 [1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PCCS. As the base standard ETSLTS 124 629 [1] contains no explicit requirements for testing, the result of an analysis of the base standard and the PICS specification ETSLTS 101 594-1 [2].

5.2 Signalling requirements

5.2.1 Actions at the Transferor UE

TSS	TP	Reference	Selection expression
User/Transferor	ECT_U01_001	4.5.2.1	PICS 4.5.1/1 AND
			PICS 4.6.1/1

Test purpose

The UE transfers a communication with a Transferee to the Transfer Target (Transferor, blind transfer). Ensure that the UE is able to transfer a communication with the Transferee, optionally 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 ÚRI

CASE Contact header of session #1 contains a GRUU

Target-Dialog: <Call-ID of session #1>;local-tag=<From tag of session #1>; remote-tag=<To tag of session #1>

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)					
CASE A	Establishment of session #1					
REFER 2xx OK REFER	Establishment of session #1 Session #1 on hold Session #1 on hold REFER 2xx OK REFER BYE 200 OK (BYE) NOTIFY(100) 200 OK NOTIFY NOTIFY(200) 200 OK NOTIFY REFER 202 Accepted					
BYE 200 OK (BYE)	Tell St Ata	ica lesiteia	BYE 200 OK (BYE)			
NOTIFY(100) 200 OK NOTIFY	£6	Sitelian 3 Clar	NOTIFY(100) 200 OK NOTIFY			
NOTIFY(200) 200 OK NOTIFY	s: Ilstandar.	→ •	NOTIFY(200) 200 OK NOTIFY			
CASE B REFER 202 Accepted	Http://diagram	→	REFER 202 Accepted			
BYE 200 OK (BYE)		→	BYE 200 OK (BYE)			
NOTIFY(100) 200 OK NOTIFY		← →	NOTIFY(100) 200 OK NOTIFY			
NOTIFY(200) 200 OK NOTIFY		← →	NOTIFY(200) 200 OK NOTIFY			

TSS	TP	Reference	Selection expression
User/Transferor	ECT_U01_002	4.5.2.1	PICS 4.5.1/1 AND
			PICS 4.6.1/2

Test purpose

The UE transfers a communication with a Transferee to the Transfer Target (Transferor, assured transfer). Ensure that the UE is able to transfer a communication with the Transferee, optionally 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.

SIP header values:

REFER: Request URI: Gm#2

Refer-To contains Gm#3 URI; method=invite

Referred-By contains Gm#1 URI

CASE Contact header of session #1 contains a GRUU

Target-Dialog: <Call-ID of session #1>; local-tag=<From tag of session #1>;

remote-tag=<To tag of session #1>

NOTIFY(100):Event contains refer

message/sipfrag contains SIP/2.0 100 Trying						
NOTIFY(200):Event contains refer						
message/sipfrag contains SIP/2.0 20	UOK					
Comments: UE (Gm#1)		Test equipment (Gm#2)				
	hment of session	• • • •				
CASE A						
Session #1 on hold	_					
REFER	→	REFER				
2xx OK REFER		2xx OK REFER				
NOTIFY(100)	211	NOTEXMON				
200 OK NOTIFY	R. All	200 OK NOTIFY				
	el reli	المارية				
INVITE(inactive/sendonly)	7. 45.1 di 1218	NVITE(inactive/sendonly)				
200 OK INVITE(inactive/recvonly)	Ale adal and	200 OK INVITE(inactive/recvonly)				
ACK	J. Starraget and	ACK				
NOTIFY(200)	Fill Lall Sirts	NOTIFY(200)				
200 OK NOTIFY	ail Alet	200 OK NOTIFY				
	tell 13de					
BYE	M1 →	BYE				
200 OK (BYE)	←	200 OK (BYE)				
CASE B		REFER 2xx OK REFER NOTIFY(100) 200 OK NOTIFY NVITE(inactive/sendonly) 200 OK INVITE(inactive/recvonly) ACK NOTIFY(200) 200 OK NOTIFY BYE 200 OK (BYE) REFER 202 Accepted				
REFER MESTINGEN	→	REFER				
202 Accepted	-	202 Accepted				
[NOTIF (100)	~	NOTIF (100)				
200 OK NOTIFY	→	200 OK NOTIFY				
INVITE(inactive/sendonly)		INVITE(inactive/sendonly)				
200 OK INVITE(inactive/recvonly)		200 OK INVITE(inactive/recvonly)				
ACK		ACK				
NOTIFY(200)	(NOTIFY(200)				
200 OK NOTIFY	→	200 OK NOTIFY				
BYE	→	BYE				
200 OK (BYE)	-	200 OK (BYE)				

TSS	TP	Reference	Selection expression
User/Transferor	ECT_U01_003	4.5.2.1	PICS 4.5.1/1 AND
			PICS 4.6.1/3

Test purpose

The UE transfers a communication with a Transferee to the Transfer Target (Transferor, consultative transfer). Ensure that the UE is able to transfer a communication with the Transferee, optionally put on hold before, to the Transfer Target, having a session, optionally put on hold before, using the consultative transfer method. The REFER request contains a replaces header escaped in the Refer-To header to request the termination of the session between Transferor and Transfer Target (session #2).

SIP header values:

REFER: Request URI: Gm#2

Refer-To: contains Gm#3 URI; method=invite?Replaces=call-id1%3Bto-tag%3DSession1%3B from-tag%3DSession1& Require=replaces

Referred-By contains Gm#1 URI

CASE Contact header of session #1 contains a GRUU

Target-Dialog: <Call-ID of session #1>; local-tag=<From tag of session #1>; remote-tag=<To tag of session #1>

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)							
	Establishment of session #1						
	(Session #1 on hold)						
	Establishment of session	n #2 %- ^[8]					
REFER 2xx OK REFER	(Session #2 on hold)	REFER OK REFER					
CASE A NOTIFY(100) 200 OK NOTIFY	Establishment of session (Session #2 on hold) (Session #2 on hold) (Session #2 on hold)	NOTIFY(100) 200 OK NOTIFY					
NOTIFY(200) 200 OK NOTIFY	ilett a ett killing begin	NOTIFY(200) 200 OK NOTIFY					
BYE #1 200 OK (BYE)	ndard of British	BYE 200 OK (BYE)					
BYE 200 OK (BYE)	http://grap.15.3e° +	BYE #2 200 OK (BYE)					
CASE B NOTIFY(100) 200 OK NOTIFY	← →	NOTIFY(100) 200 OK NOTIFY					
BYE 200 OK (BYE)	← →	BYE #2 200 OK (BYE)					
NOTIFY(200) 200 OK NOTIFY	← →	NOTIFY(200) 200 OK NOTIFY					
BYE #1 200 OK (BYE)	→	BYE 200 OK (BYE)					

TSS	TP	Reference	Selection expression
User/Transferor	ECT_U01_004	4.5.2.1	PICS 4.5.1/1 AND
			PICS 4.6.1/3 AND
			PICS 4.6.1/6

Test purpose

The UE transfers a communication with a Transferee to the Transfer Target (Transferor, consultative transfer). Ensure that the UE is able to transfer a communication with the Transferee, optionally put on hold before, to the Transfer Target, having a session, optionally put on hold before, using the consultative transfer method. The REFER request contains a replaces header escaped in the Refer-To header to request the termination of the session between Transferor and Transfer Target (session #2).

If the transfer attempt is not completed, the transfer is terminated by sending a REFER request and the method parameter of the Refer-To is set to 'cancel'.

SIP header values:

REFER1: Request URI: Gm#2

Refer-To: contains **Gm#3 URI**; method=invite?Replaces=**call-id1**%3B**to-tag**%3D**Session1**%3B **from-tag**%3D**Session1**& Require=replaces

NOTIFY(100):Event contains refer

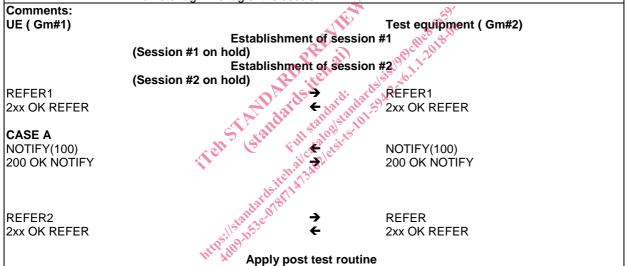
message/sipfrag contains SIP/2.0 100 Trying

REFER2: Request URI: Gm#2

Refer-To: contains **Gm#3 URI**; method=**cancel CASE** Contact header of session #1 contains a GRUU

Target-Dialog: <Call-ID of session #1>; local-tag=<From tag of the session #1>;

remote-tag=<To tag of the session #1>



5.2.2 Actions at the Transferor AS

TSS	TP	Reference	Selection expression
Netw/TransferorAS	ECT_N01_001	4.5.2.4	PICS 4.5.1/2 AND
			PICS 4.7.1/2 AND
			NOT (PICS 4.7.1/4 OR
			PICS 4.7.1/5)

Test purpose

Communication transfer: Assured transfer. Transferor was originator of the originating call.

Ensure that a Transferor can successfully transfer the communication with the transferee set on hold before and the Transferor is notified about the processing. After the communication between the Transferee and the Transfer Target is confirmed, the communication between Transferor and Transferee is terminated. The Transferor was the initiator of the originating communication.

SIP header values:

REFER 1: Refer-To contains ISC#3 URI; method=invite

Referred-By contains ISC#1 URI

CASE: Request received on a separate dialogue

Target-Dialog: <Call-ID of session #1> ;local-tag=<From tag of the session #1e>; remote-tag=<To tag of the session #1>

CASE: Request received on the same dialogue

Call-ID: <session #1>

REFER 2: Refer-To contains ECT Session Identifier URI; method=invite

Referred-By contains ISC#ISC#1 URI

INVITE 3: Request URI = ECT Session Identifier URI

INVITE 4: Request URI = **ISC#3** URI NOTIFY(100):Event contains **refer**

Subscription-State: active; expires=(any value)

message/sipfrag contains SIP/2.0 100 Trying

NOTIFY(200):Event contains refer

message/sipfrag contains SIP/2.0 200 OK

Subscription-State: terminated:reason=noresource

Comments:	on-State: terminated;reason=nore AS Transferor	ndard ISC#2	ISC#3		
INVITE 1 180 Ringing 200 OK (INVITE) ACK	AS Transferor Session #1 AS Transferor Session #1 REFER	INVITE 180 Ringing ← 200 OK (INVITE) → ACK			
INVITE 2 (sendonly) 200 OK (recvonly) ACK	→ https://standare.ps/	→ INVITE (sendonly) ← 200 OK (recvonly) → ACK			
REFER 1 2xx OK REFER	→ RĚFÉR REFER 2 2xx OK REFER • 2xx OK REFER	→ REFER ← 2xx OK REFER			
INVITE (inactive) 200 OK (inactive) ACK	← 2xx ON REFER ← → ←	← INVITE (inactive)→ 200 OK (inactive)← ACK			
NOTIFY(100) 200 OK NOTIFY	← → INVITE INVITE 4	 ← NOTIFY(100) → 200 OK NOTIFY ← INVITE 3 ← 	→ INVITE ← 180 Ringing		
	180 Ringing 180 Ringing 200 OK 200 OK	→ 180 Ringing ← → 200 OK	← 180 Ringing← 200 OK		
NOTIFY(200) 200 OK NOTIFY BYE 200 OK (BYE)	← → ←	ACK ← NOTIFY(200) → 200 OK NOTIFY → BYE ← 200 OK (BYE)	→ ACK		
Communication ISC#2 with ISC#3 Apply post test routine					