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IMS NNI Interoperability Test Specifications;
Part 1: Test Purposes for IMS NNI Interoperability

Reference

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Foreword

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

The present document is part 1 of a multi-part deliverable covering the IMS NNI Interoperability Test Specifications, as identified below:

- Part 1: "Test Purposes for IMS NNI Interoperability";
- Part 2: "Test Descriptions for IMS NNI Interoperability".
- Part 3: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT)".

Introduction

The IP Multimedia core network Subsystem (IMS) is a key component in the ETSI NGN architecture. Each IMS consists of multiple functional entities and interfaces. The goal of this work is to provide the interoperability tests for standardized network to network interfaces (NNI) of the IMS core network that are based on SIP messages.

Test purposes defined in the present document have been developed based on the requirements stated in the 3GPP IMS Release 9 specification.

1 Scope

The present document specifies interoperability Test Purposes (TPs) for IMS NNI interworking based on the IP Multimedia Call Control Protocol based on Stage 3 Session Initiation Protocol (SIP) and Session Description Protocol (SDP) standard, TS 124 229 [1].

TPs are defined using the TPLan notation also described in ES 202 553 [4]. Test purposes have been written based on the test specification framework described in TS 102 351 [2] and the interoperability testing methodology defined in TS 102 237-1 [3], i.e. interoperability testing with conformance checking.

The scope of these test purposes is not to cover all requirements specified in TS 124 229 [1]. TPs have been only specified for requirements that are observable at the interface between two IMS core network implementations, i.e. IMS NNI. For the purpose of the present document an IMS core network as a whole - not its components - are considered to be under test.

In a separate section a set of test purposes has been developed to cover the MGCF aspects as defined in clause 5.5 of TS 124 229 [1]. To trigger events at the Mg and Mj reference point the IMS core network will connect to a PSTN network via an MGCF. The interworking between IMS and PSTN is described in TS 129 163 [6].

NOTE: Requirements pertaining to a UE or an AS implementation or IMS core network requirements that can only be observed at the interface between UE and IMS CN are explicitly not within the scope of the present document. The latter requirements have been dealt with from a UE and conformance perspective in TS 134 229-3 [5].

2 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 reference document (including any amendments) applies.

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 necessary for the application of the present document.

- [1] ETSI TS 124 229 (V9.5.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 version 9.5.0 Release 9)".
- [2] ETSI TS 102 351: "Methods for Testing and Specification (MTS); Internet Protocol Testing (IPT); IPv6 Testing: Methodology and Framework".
- [3] ETSI TS 102 237-1: "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 4; Interoperability test methods and approaches; Part 1: Generic approach to interoperability testing".
- [4] ETSI ES 202 553: "Methods for Testing and Specification (MTS); TPLan: A notation for expressing Test Purposes".
- [5] ETSI TS 134 229-3 (V7.2.0): "Universal Mobile Telecommunications System (UMTS); LTE; Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Part 3: Abstract test suite (ATS) (3GPP TS 34.229-3 version 7.2.0 Release 7)".

- [6] ETSI TS 129 163 (V9.4.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Interworking between the IP Multimedia (IM) Core Network (CN) subsystem and Circuit Switched (CS) networks (3GPP TS 29.163 version 9.4.0 Release 9)".
- [7] RCS-e Advanced Communications: "Services and Client Specification Version 1.1".

2.2 Informative references

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 Abbreviations

For the purposes of the present document, the following abbreviations apply:

3GPP 3rd Generation Partnership Project
ACM Address Complete Message

AKA Authentication and Key Agreement

ANM Answer Message

AS (IMS) Application Server
ATS Abstract Test Suite
CF (Test) Configuration
CN Core Network

CPG Call ProGress Message
CSCF Call Session Control Function

DB Data Base

DNS Domain Name System
ENUM E.164 Number Mapping

GRUU Globally Routable User agent URI

HSS Home Subscriber Server IAM Initial Address Message

IBCF Interconnection Border Control Gateway

I-CSCF Interrogating CSCF
IMS IP Multimedia Subsystem
IOI Inter Operator Identifier
IP Internet Protocol

IPTV IP TeleVision
IUT Implementation Under Test

MGCF Media Gateway Control Function
MRFC Multimedia Resource Function Controller

NAPTR Naming Authority Pointer Record

NGN Next Generation Network
NNI Network-to-Network Interface

NWK NetWorK

PCO Point of Control and Observation

P-CSCF Proxy CSCF

PSTN Public Switched Telephone Network

RC Requirements Catalogue

REL RELease RQ Requirement S-CSCF Serving CSCF

SDP Session Description Protocol SIP Session Initiation Protocol

TP Test Purpose

TPLan Test Purpose Notation
TSS Test Suite Structure
TTL Time To Live

UE User Equipment

URI Uniform Record Identifier

4 Test Suite Structure (TSS)

The Test Suite Structure is based on a Requirements Catalogue which was established prior to test purpose specification. This RC extracts all requirements from [1] which are relevant to the scope of this work. The TSS is defined by the groups within the following TPLan specification of test purposes. The numbering is not contiguous so that new TPs can be added at a later date without the need to completely renumber the TSS groups.

NOTE: The requirements catalogue is at this point not accessible as an ETSI document. Requirement identifiers of the catalogue have been replaced in the present document with the location of the requirement in the base specification, i.e. base specification type, identifier, version, clause and paragraph.

EXAMPLE: TS 124 229 (V8.10.0), clause 5.2.6.3 ¶66

The test purposes have been divided into 6 major groups:

- 1) General Capabilities
- 2) Registration procedures
- 3) Dialog procedures
- 4) Messaging procedures
- 5) Supplementary services
- 6) MGCF tests for IMS-PSTN interconnection

These groups have been further divided into subgroups according to IMS components as follows:

```
Group 1: IMST2 NNI IOP
Group 1.1: General Capabilities
Group 1.2: Registration procedures
Group 1.2.1: Registration at P-CSCF
Group 1.2.2: Registration at S-CSCF
Group 1.2.3: Registration at I-CSCF
Group 1.2.4: Registration at IBCF
Group 1.3: Dialog procedures
Group 1.3.1: Dialog at P-CSCF
Group 1.3.2: Dialog at S-CSCF
Group 1.3.3: Dialog at I-CSCF
Group 1.3.4: Dialog at IBCF
Group 1.4: Messaging procedures
Group 1.4.1: Messaging at P-CSCF
Group 1.4.2: Messaging at S-CSCF
Group 1.5: Supplementary service procedures
Group 1.5.1: Supplementary services at S-CSCF
```

5 Test Purposes (TP)

The test purposes have been written in the notation TPLan [4] which has been developed at ETSI to express test purposes in a more formal manner. All TPLan TPs have been converted into a symbolic tabular presentation format which is shown in this clause. TPs in the standardized textual TPLan syntax are collected in archive ts_18601101v040101p0.zip that is included in the electronic annex of the present document. The two presentation formats, i.e. textual and symbolic tabular, contain the same information and shall therefore be considered equivalent. In the case that there appears to be syntactical or semantic differences between the two then the files in the electronic annex take precedence over the following tables. Configurations that are referenced by test purposes are shown in Annex B.

5.1 The tabular symbolic TPLan presentation format

Each table contains header fields and a description part. The header fields identify the TP, list the related clause reference the base specification that the TP was derived from, introduce the TP with a short summary, references the related test configuration and test case in the ATS.

The description part presents the TP using two sections:

- a) initial conditions that have to be fulfilled for the test purpose body to be valid; and
- b) the test purpose body which is illustrated with one or more stimulus/response pairs.

Both sections are further substructured with columns for affected entities from the test configurations, i.e. IUT, UE, UE2, IMS (test system component) and AS.

The condition section lists one or more conditions that have to be fulfilled in order for the test purpose body to apply. Each condition has a description and either "\sqrt or "\x" marks to indicate all the entities affected by this condition. "\sqrt marks indicates a positive condition, e.g. "A is registered in B", whereas "\x"marks indicate a negative condition, e.g. "B not configured for feature Z". If there is no mark in a column then the condition does not apply for that entity, e.g. entity A is not involved in the condition "B not configured for feature Z". It is assumed that all listed conditions have to be fulfilled in the order listed, i.e. the list reflects an "and" relation.

Table 1 shows an example condition section illustrating all of the above examples.

Entities Condition

A B

✓ A registered in B

× B not configured for feature Z

Table 1: Example TP condition section

The test purpose body section contains one or more steps identified with a number in the first column. Steps belonging IUT stimuli are shown with a green background whereas steps related to IUT responses are shown with a beige background. All listed steps are assumed to be carried out in increasing step number, i.e. they reflect an "and" relation. "or" relations at the level of entire messages are shown with lowercase letters following the step number identifying the different alternatives, e.g. "2a" versus "2b". Each step indicates the exchange of a message from a source entity (identified by the direction symbols "\$" or "\$"), e.g. entity A sends the message, to a destination entity (identified by the direction symbols "\$" or "\$"), e.g. entity B receives the message. The use of the "||" symbol in combination with the direction symbols, e.g. "||\$\mathscr{\pi}"\$, indicates that a particular message shall either not be sent or received by an entity, e.g. entity B did not send the message.

Additional information about valid as well as invalid message content is presented in the "Message" column. First general information about message, e.g. its type, destination, attributes, etc, are shown in bold font. Below this information message headers or parameter content that must be present in that message are listed using "\scriments" symbols whereas headers or parameter content that must *not* be present are listed using the "\scriments" symbols. The "\scriments" symbol indicates a valid message parameter value where as the "\scriments ||"symbol indicates an invalid message parameter value. Any content, e.g. header or parameter, which is not explicitly mentioned in a message description of a TP is not restricted by that TP. The "\scriments ||"symbol together with "\scriments ||"symbol means that the message header MUST be present but it cannot contain a specific message parameter value. The "\scriments ||"symbol together with "\scriments ||"symbol means that the message header MAY be present but it cannot contain a specific message parameter value.

Finally, the interface identifier to which a message exchange pertains may be shown in the column labelled "IF".

Table 2 shows an example test purpose body section illustrating all of the above examples.

Table 2: Example TP body section

	Α	В		
Step	Direction		Message	IF
1	₩,	ъ́Э	some request ✓ this header ✓ this one parameter → this value ✓ this other parameter → that value ✗ that parameter ✗ that header	Хх
2a	Ŷ Ŀ	À	failure response	Xx
2b	%	4	no message	Xx

5.2 General Capabilities

					Test Purpose		
Identif	ier:	TP_IMS_4	002_01		•		
Summ	ary:	IMS CN co	mponents s	shall suppo	ort SIP messages > 1 300 bytes		
IUT Ro	ole:	IMS A	•		•		
Refere	nces:	TS 124 22	9 (V9.5.0) [1], clause	Config Ref:	CF_INT_CALL	
	4.2A ¶1		-				
	Entities				Condition	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	UE A	IMS A	IMS B	UE B	-		
Step		Direc	tion		Message	:	IF
1	₩,	Ð			MESSAGE addressed to UE B		
	♦	Ð∕			✓ a Message Body greater than 1 300 bytes		
		М.	^		MESSAGE		
2		₽	Ð		✓ the Message Body greater that	an 1 300 bytes	

5.3 Registration Procedures

5.3.1 Registration at P-CSCF

				Test Purpose		
Identif	ier:	TP_IMS_5005_01		•		
Summ	ary:	The P-CSCF shall	support the Pa	ath header		
IUT Ro	ole:	IMS A	- 1 1			
References:		TS 124 229 (V9.5. clause 5.2.1 ¶8	0), [1]	Config Ref: CF_ROAM_R		
		Entities		Condition		
	IMS A IMS B		UE B			
		✓	✓	IMS B has challenged win	· · · · · · · · · · · · · · · · · · ·	
	IMS A	IMS B	UE B			
Step		Direction			Message	IF
1	€ Ø		protected REGISTER a ✓ a Path header	ddressed to IMS B		
2	! ፟፟፟፟፟፟ ፟፟ ፟		REGISTER ✓ a Path header			

				Test Purpose			
Identif	entifier: TP_IMS_5011_01						
Summ	nary:			nechanism the P-CSCF shall forward REGISTEF the home network	R requests received		
IUT R	ole:	IMS A	• •				
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.2.2.1 ¶16 (2 nd numbered list) and 5.2.2.2		Config Ref: CF_ROAM_	_REG		
	Entities			Condition			
	IMS A	IMS B	UE B				
	×			IMS A not configured for topology hiding			
		✓	✓	user of UE B existing in IMS B			
	×		×	UE B has not established a security association	n with IUT		
	IMS A	IMS B	UE B				
Step		Direction		Message	IF		
1	र्दे		À	unprotected REGISTER ✓ a Security-Client header			
2	₩,	ਜੁੰ		REGISTER ✓ a Path header ✓ P-CSCF SIP URI of IMS A ✓ a Require header ✓ a path option tag ✓ a P-Charging-Vector header ✓ an icid-value parameter ✓ an orig-ioi parameter ✓ an orig-ioi parameter ✓ a term-ioi parameter ✓ a Authorization header ✓ an integrity-protected parameter → no * a Security-Verify header * a Security-Client header ✓ a P-Visited-Network-ID header → the visited network at the home network			

				Test Purpose			
Identif	entifier: TP_IMS_5011_02						
Summ	ary:	In case of IMS AKA from the UE to the			forward REGISTER requests re	eceived	
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229 (V9.5.0) [1], clauses 5.2.2.1 ¶1 ¶16 (2 nd numbered list) and 5.2.2.2		Config Ref:	CF_ROAM_REG		
		Entities		Сог	ndition		
	IMS A	IMS B	UE B				
	×			IMS A not configured for top			
		✓	✓	user of UE B existing in IMS			
	✓		✓	UE B has established a sec	urity association with IUT		
	IMS A	IMS B	UE B				
Step		Direction			essage	IF	
1	Ŷ a		¢ħ	protected REGISTER ✓ a Security-Client heade	er		
2	₩,	±₽		REGISTER ✓ a Path header ✓ P-CSCF SIP URI of II ✓ a Require header ✓ a path option tag ✓ a P-Charging-Vector he ✓ an icid parameter ✓ an orig-ioi parameter ✓ IMS A ✗ a term-ioi parameter ✓ a Authorization header ✓ an integrity-protected → yes ✗ a Security-Verify headel ✗ a P-Visited-Network-ID → the visited network a	parameter r r header		

				Test Purpose		
Identif	fier:	TP_IMS_5011_03				
Summ	nary:			nechanism the P-CSCF shall forward REGISTER requests point in the home network	3	
IUT Role: IMS A			,			
Refere	ences:	TS 124 229 (V9.5.0) [1], clauses 5.2.2.1 ¶16 (2 nd numbered list) and 5.2.2.3		Config Ref: CF_ROAM_REG		
	Entities			Condition		
	IMS A IMS B UE B		UE B			
	×		,	IMS A not configured for topology hiding		
		✓ ✓		user of UE B existing in IMS B		
		x x		UE B has not established a security association with IUT		
	IMS A	IMS B	UE B			
Step		Direction	ч	Message		
1	Ŷ <u>E</u>		Ϋ́À	unprotected REGISTER		
2	₩,	ਜੁੰ∕		REGISTER ✓ a Path header ✓ P-CSCF SIP URI of IMS A ✓ a Require header ✓ a path option tag ✓ a P-Charging-Vector header ✓ an icid-value parameter ✓ an orig-ioi parameter → IMS A ✗ a term-ioi parameter ✓ a Authorization header ✓ an integrity-protected parameter → ip-assoc-pending or ✗ an integrity-protected parameter ✓ a P-Visited-Network-ID header → the visited network at the home network		

				Test Purpose		
Identif	ier:	TP_IMS_5011_04				
Summ	ary:	In case of IMS dige	est as security	mechanism the P-CSCF shall forw	ard REGISTER requests	
		received from the	JE to the entry	point in the home network	•	
IUT Ro		IMS A				
Refere	ences:	TS 124 229 (V9.5.		Config Ref:	CF_ROAM_REG	
		clauses 5.2.2.1 ¶1				
		(2 nd numbered list)	and 5.2.2.3			
		Entities		Condition	1	
	IMS A	IMS B	UE B			
	x			IMS A not configured for topology I	hiding	
		✓	✓	user of UE B existing in IMS B		
	x		×	UE B has established a security as	ssociation with IUT	
	IMS A	IMS B	UE B			
Step		Direction		Message		IF
1	Ŷ:		ŶŊ.	protected REGISTER		
				REGISTER		
				✓ a Path header		
				✓ P-CSCF SIP URI of IMS A		
				✓ a Require header		
				✓ a path option tag		
				✓ a P-Charging-Vector header		
	P	_		✓ an icid parameter		
2	₩	Ð		✓ an orig-ioi parameter→ IMS A		
				2		
				 ★ a term-ioi parameter ✓ a Authorization header 		
				✓ an integrity-protected param	eter	
				ip-assoc-yes ip-assoc-yes	ic ici	
				✓ a P-Visited-Network-ID heade	r	
				the visited network at the house		
				2 the violed network at the ric	JIIIO IIOCIIOIIC	

				Test Purpose				
Identif	dentifier: TP_IMS_5203_01							
Summary: The P-CSCF have received a REGISTER request from the UE and modified a number of header and forwarded the request to an entry point with no response					ders			
IUT Ro	ole:	IMS A						
Refere		TS 124 229 (V9.5. clause 5.2.2.1 ¶33 2 nd numbered list)	(item 6 in	Config Ref:	CF_ROAM_REG			
		Entities		Condition				
	IMS A	IMS B	UE B					
	✓		✓	UE B having sent an initi	al REGISTER to IMS A			
	✓	✓		IMS A configured with m	ultiple entry points for IMS B			
	IMS A	IMS B	UE B					
Step	Step Direction			Message	IF			
1 🖎 #		Any response						
2	₩	Ð		REGISTER addressed to	o another entry point			

				Test Purpose			
Identif	dentifier: TP_IMS_5203_02						
Summary: The P-CSCF have received a REGISTER request from the UE and modified a number of he and forwarded the request to an entry point with 3xx							
IUT Ro	ole:	IMS A	A				
References:		TS 124 229 (V9.5.0) [1], clause 5.2.2.1 ¶33 (item 6 in 2 nd numbered list)		Config Ref: CF_ROAM_REG			
		Entities		Condition			
	IMS A	IMS B	UE B				
	✓		✓	UE B having sent an initial REGISTER to IMS A			
	✓	✓		IMS A configured with multiple entry points for IMS B			
	IMS A	IMS B	UE B				
Step Direction			Message	IF			
1 😉 🧳			3xx response				
2	2 🖔 🕏			REGISTER addressed to another entry point			

				Test Purpose			
Identif	lentifier: TP_IMS_5203_03						
Summ	The P-CSCF have received a REGISTER request from the UE and modified a number of headers and forwarded the request to an entry point with 480					ers	
IUT Ro							
Refere	References: TS 124 229 (V9.5.0) [1], clause 5.2.2.1 ¶33 (item 6 in 2 nd numbered list)		Config Ref:	CF_ROAM_REG			
		Entities		Condition	1		
	IMS A	IMS B	UE B				
	✓		✓	UE B having sent an initial REGISTER to IMS A			
	✓	✓		IMS A configured with multiple entry points for IMS B			
	IMS A	IMS B	UE B				
Step	Step Direction		Message	·	IF		
1	€ ₽		480 response				
2	₩ Đ			REGISTER addressed to another	entry point		

				Test Purpose					
Identif	ier:	TP_IMS_5044_01							
Summ				EGISTER request from the UE and entry point	modified a number of hea	ders			
IUT R	ole:	IMS A	'	71					
Refere	References: TS 124 229 (V9.5.0) [1], clause 5.2.3 ¶2 (1 st numbered list)		Config Ref:	CF_ROAM_REG					
	Entities			Condition	1				
	IMS A	IMS B	UE B						
	√		✓	UE B having sent a protected REG					
	X	1140 D		IMS A not configured for topology I	niding				
Chair	IMS A	IMS B	UE B	Manage		IF			
Step 1	Ŷ	Direction		Message		IF			
- 1	42	々	_	200 response SUBSCRIBE					
2	₩,	र्छ		 ✓ a Request URI ✓ "the resource to which the P subscribe to" and ✓ a From header ✓ P-CSCF_SIP_URI of IM ✓ a To_header ✓ the default_public_user_ ✓ an Event_header ✓ the reg event package at an Expires_header ✓ a P-Asserted-Identity_header ✓ the P-CSCF_SIP_URI of a P-Charging-Vector header ✓ an icid-value parameter 	IS_A and identity of UE_B and and e one in the oo_response" and				

5.3.2 Registration at S-CSCF

				Test Purpose	
Identifi	ier:	TP_IMS_5088_0		•	
Summa	ary:	S-CSCF shall de	register unexpire	d registration upon receipt of a new REGISTER with new	contact
		information			
IUT Ro		IMS B		<u>, </u>	
Refere	nces:	TS 124 229 (V9.	5.0) [1],	Config Ref: CF_ROAM_REG	
		clause 5.4.1.2.1	¶7 (item 2 in 1 st		
		numbered list)			
	1110 4	Entities		Condition	
	IMS A		UE B		
	√	√	✓	UE B registered in IMS B via IMS A	
	✓	√	4-	IMS A within the trust domain of IMS B	
		×	×	UE B not de-registered in IMS B	
01	IMS A	IMS B	UE B	N.	
Step		Direction		Message	IF
				initial REGISTER	
1a		Ŷ Ŀ	₹ ÿ	✓ an Authorization header	
				✓ an integrity-protected parameter	
				→ no or tls-pending or ip-assoc-pending	
1b		Ŷ£.	Ŷħ	initial REGISTER	
ID	in A		<₽	✓ an Authorization header	
		_		* an integrity-protected parameter	
				NOTIFY	
				✓ a Request URI	
				→ the P-CSCF SIP URI of IMS A	
				✓ an Event header	
				the reg event package	
				✓ a P-Charging-Vector header	
				✓ an icid-value parameter✓ a Route header	
				→ the original Route header from	
				SUBSCRIBE	
				✓ a Message Body	
				✓ for each registered public identity of UE B	
2	ݱ	4		a registration element	
				✓ an aor attribute	
				→ registered public identity of UE B	
				✓ a state attribute	
				→ terminated	
				✓ a contact subelement	
				✓ an event attribute	
				→ deactivated or rejected	
				✓ a state attribute	
				→ terminated	
				✓ a URI subelement	
				→ the contact address of UE B	

				Test Purpose		
Identif	ier:	TP_IMS_5089_01		•		
Summ	ary:			nechanism the S-CSCF shall return	401 (Unauthorized) upon rec	eipt
			om an UE not	previously registered		
IUT Ro		IMS B				
Refere	ences:	TS 124 229 (V9.5. 5.4.1.2.1A ¶1	0) [1], clause	Config Ref:	CF_ROAM_REG	
		Entities		Condition	ı	
	IMS A IMS B UE B					
		✓	✓	user of UE B existing in IMS B		
		×	×	UE B not registered in IMS B		
	✓		✓	UE B visiting IMS A		
	✓	✓		IMS A within the trust domain of IM	IS B	
	IMS A	IMS B	UE B			
Step		Direction		Message		IF
1	\$	£		initial REGISTER ✓ an Authorization header ✓ an integrity-protected param → no	eter	
2	€ ±	Ф		 401 response ✓ an WWW-Authenticate header ✓ a realm parameter → the operator identifier of II ✓ a nonce parameter ✓ a RAND parameter ✓ an AUTN parameter) ✓ an algorithm parameter → AKAv1-MD5 ✓ an ik parameter ✓ a ck parameter 		

				Test Purpose	
Identif	ier:	TP_IMS_5089_02		•	
Summ	Summary: In case of SIP digest as security me receipt of a REGISTER from an UE			mechanism the S-CSCF shall return 401 (Unauthorized) upout the previously registered	on
IUT Role: IMS B				<u> </u>	
Refere	ences:	TS 124 229 (V9.5. clause 5.4.1.2.1B		Config Ref: CF_ROAM_REG	
		Entities		Condition	
	IMS A	IMS B	UE B		
		✓	✓	user of UE B existing in IMS B	
		×	x	UE B not registered in IMS B	
	✓		✓	UE B visiting IMS A	
	✓	✓		IMS A within the trust domain of IMS B	
	IMS A	IMS B	UE B		
Step		Direction		Message	IF
1	₽	卦		initial REGISTER ✓ an Authorization header	
2	Ŷ a	Ф		 401 response ✓ an WWW-Authenticate header ✓ a realm parameter → the operator identifier of IMS B ✓ a nonce parameter ✓ an algorithm parameter → MD5 ✓ a qop parameter → auth 	

					Test Purpose	
Identif	ier:	TP_	IMS_5092_01			
Summ	ary:	200	OK on REGIS	TER from UE	to the S-CSCF	
IUT Ro	ole:	IMS	В			
Refere	ences:	TS 1	124 229 (V9.5.	0) [1],	Config Ref: CF_ROAM_REG	
			se 5.4.1.2.2F			
			Entities		Condition	
	IMS A		IMS B	UE B		
	✓		✓	user of UE B existing in IMS B		
	✓			✓	UE B visiting IMS A	
			x	×	UE B not registered in IMS B	
			✓		IMS B has challenged with a 401 response the REGISTER	
			v		request	
	IMS A		IMS B	UE B	·	
Step			Direction		Message	
1	1 🖔 🗊			protected REGISTER		
•	7		Б			
2	€t.		φ		200 response ✓ the same Path header as in the protected REGISTER ✓ a P-Associated-URI header ✓ all registered public identities its associated set of implicitly registered public user identities → first the default public user identity no barred public user identities ✓ a Service-Route header → the S-CSCF SIP URI of IMS B ✓ a P-Charging-Vector header ✓ a term-ioi parameter → operator identifier of IMS B ✓ a Contact header → all contact addresses for the default public user identity of UE B	

				Test Purpose		
Identif	ier:	TP_IMS_5096_01				
Summ	ary:	The network shall	handle incomi	ng SUBSCRIBE correctly		
IUT Ro	UT Role: IMS B					
Refere	nces:	TS 124 229 (V9.5.		Config Ref:	CF_ROAM_REG	
		clause 5.4.2.1.1 ¶1				
		Entities		Condition	1	
	IMS A	IMS B	UE B			
		✓	✓	UE B registered in IMS B		
	✓		✓	UE B visiting IMS A		
	IMS A	IMS B	UE B			
Step		Direction		Message		īF
				SUBSCRIBE		
1	♦	Ð		✓ an Event header		
				the reg event package		
				2xx response		
2	√ on E		✓ an Expires header			
2		₩	ਡੋ∕	the same or lower expiry tir	ne than	
				specified in the initial SUBSCRIBE		

		I		Test Purpose	
Identif		TP_IMS_5093_01			
Summ			egister in networ	k-initiated de-registration	
IUT Ro		IMS B	0) [4]	Confin Bot	
Refere	ences:	TS 124 229 (V9.5.		Config Ref: CF_ROAM_REG	
		clause 5.4.1.5 ¶6 (numbered list)	Condition	
	IMS A	IMS B	UE B	Condition	
		IIIIO B	∀	UE B registered in IMS B via IMS A	
	✓ ·	√		IMS A within the trust domain of IMS B	
	IMS A	IMS B	UE B	me / t main the tract dollars of the B	
Step		Direction	<u> </u>	Message	IF
1	₽	Ð		network initiated deregistration event	
2	ंदेच	Ŷ		NOTIFY ✓ a Request URI → UE_B ✓ an Event header → the reg event package ✓ a P-Charging-Vector header ✓ an icid-value parameter ✓ a Route header → the original Route header from SUBSCRIBE ✓ a Message Body ✓ for each registered public identity of UE B a registration element ✓ an aor attribute → registered public identity of UE B ✓ a state attribute → terminated ✓ a contact subelement ✓ an event attribute → deactivated or rejected ✓ a state attribute → terminated ✓ a URI subelement → the contact address of UE B	
3	िंच	φ		NOTIFY ✓ a Request URI → UE_A ✓ an Event header → the reg event package ✓ a P-Charging-Vector header ✓ an icid-value parameter ✓ a Route header → the original Route header from SUBSCRIBE ✓ a Message Body ✓ for each registered public identity of UE A a registration element ✓ an aor attribute → registered public identity of UE A ✓ a state attribute → terminated ✓ a contact subelement ✓ an event attribute → deactivated or rejected ✓ a state attribute → terminated ✓ a URI subelement → the contact address of UE A	

				Test Purpose	
Identif		TP_IMS_5094_01		•	
Summ			ster in netwo	rk-initiated re-authentication	
IUT Ro		IMS B	0) [4]	Config Ref: CF_ROAM_REG	
Keiere	ences:	TS 124 229 (V9.5. clause 5.4.1.6 ¶2	0) [1],	Config Ref: CF_ROAM_REG	
		Entities		Condition	
	IMS A	IMS B	UE B		
	✓	✓	✓	UE B registered in IMS B via IMS A	
	✓	✓		IMS A within the trust domain of IMS B	
		√		IMS B receives an event to reauthenticate UE_B	
Cton	IMS A	IMS B	UE B	Manage	IF
Step 1	\$	Direction	I	Message network initiated reauthentication event	IF
•	\Diamond	ΣÝ		NOTIFY	
2	िंद	Фħ		 ✓ a Request URI → UE_B ✓ an Event header → the reg event package ✓ a P-Charging-Vector header ✓ an icid-value parameter ✓ a Route header → the original Route header from SUBSCRIBE ✓ a Message Body ✓ for each registered public identity of UE B a registration element ✓ an aor attribute → registered public identity of UE B ✓ a state attribute → active ✓ a contact subelement ✓ an event attribute → shortened ✓ a state attribute → active ✓ a URI subelement → the contact address of UE B 	
3	ĈĦ	Ф		NOTIFY ✓ a Request URI → the P-CSCF_SIP_URI of IMS_A ✓ an Event header → the reg event package ✓ a P-Charging-Vector header ✓ an icid-value parameter ✓ a Route header → the original Route header from SUBSCRIBE ✓ a Message Body ✓ for each registered public identity of UE A a registration element ✓ an aor attribute → registered public identity of UE B ✓ a state attribute → active ✓ a contact subelement ✓ an event attribute → shortened ✓ a state attribute → active ✓ a URI subelement → the contact address of UE B	

5.3.3 Registration at I-CSCF

	Interoperability Test Purpose								
Identif	dentifier: TP_IMS_5129_01								
Summ	ary:	If a request is I-CSCF	received from a no	n-trusted domain, a 403	(Forbidden) response shall be re	eturned by			
IUT Ro	ole:	IMS B							
Refere	References: TS 124 229 (V9.5.0) [1], clause 5.3.1.2 ¶1			Config Ref:	CF_ROAM_REG				
	Entities				Condition				
	IMS A	IMS B	UE B						
		✓	✓	user of UE B existing i	n IMS B				
	×	×		IMS A not within the tru	ust domain of IMS B				
	IMS A	IMS B	UE B						
Step	Step Direction			Message	IF				
1	₽	Ð		valid initial REGISTER					
2	ŶĿ	Ą		403 response	403 response				

5.3.4 Registration at IBCF

			Interd	operability Test Purpos	se	
Identif	ier:	TP_IMS_5134_01				
Summary: If a request includes a Path header the IBCF shall add the routeable SIP URI of an IBCF to the to the Path header					to the top of	
IUT Ro	UT Role: IMS A					
Refere	References: TS 124 229 (V9.5.0) [1], clause 5.10.4.1 ¶5			Config Ref:	CF_ROAM_REG	
	Entities			Condition		
	IMS A	IMS B	UE B			
	✓			IMS A configured for to	ppology hiding	
	IMS A	IMS B	UE B			
Step		Direction			Message	IF
1	Ŷ <u>E</u>		⇔	REGISTER		
2	\$		REGISTER ✓ an additional topm → the IBCF SIP U			

			Interop	erability Test Purpose		
Identif	ier:	TP_IMS_5401_01	•	•		
Summ	ary:	IBCF shall, if topol	ogy hiding is re	equired, apply the encryp	tion for the Path header	
IUT Role: IMS A						
References: TS 124 229 (V9.5.0) [1], Config Ref: CF_ROAM_REG clause 5.10.2.1 ¶1		CF_ROAM_REG				
Entities Condition		Condition				
	IMS A	IMS B	UE B			
	✓			IMS A configured for to	pology hiding	
	IMS A	IMS B	UE B			
Step		Direction			Message	IF
1	Ŷŧ		Ą	REGISTER ✓ Path header		
2	₩	€Ŷ		REGISTER ✓ a Path header ✓ encrypted conse ✓ tokenized-by par	ecutive header entries rameter	

	Interoperability Test Purpose							
Identif	ier:	TP_IMS_5	402_01	•				
Summ	ary:	IBCF shall	select a new entry p	oint and forward the original REGIST	TER request on no respon	se.		
IUT Ro	ole:	IMS A						
References: TS 124 229 (V9.5.0) [1], clause 5.10.2.1 ¶1 (item 3 in 1st numbered list)		Config Ref:	CF_ROAM_REG					
	Entities		Condition	n				
	IMS	S A	IMS B					
	✓			IMS A configured for topology hiding				
	✓		✓	IMS A configured with multiple enti-	ry points in IMS B			
	✓		✓	IMS A having sent an initial REGIS	STER to IMS B			
	IMS	S A	IMS B					
Step		Direction		Message	;	IF		
1	Ŷ	:	4	Any response				
2	ŕ	>	Ð	original REGISTER addressed to	another entry point			

Interoperability Test Purpose							
Identif	ier:	TP_IMS_5	402_02	-			
Summ	ary:	IBCF shall	select a new entry po	int and forward the origina	al REGISTER request on 3xx i	esponse.	
IUT Role: IMS A							
Refere	References: TS 124 229 (V9.5.0) [1			Config Ref:	CF_ROAM_REG		
	clause 5.10.2.1 ¶1 (item 3 in 1st numbered list)						
	Entities			Condition			
	IMS	Α	IMS B				
	✓			IMS A configured for to			
	✓	•	✓		multiple entry points for IMS B		
	✓		✓	IMS A having sent an ir	nitial REGISTER to IMS B		
	IMS	Α	IMS B				
Step	ep Direction			Message	IF		
1	Ŷ:	•	À	3xx response			
2	₽		Ð	original REGISTER ad	ddressed to another entry poir	t	

			Inter	operability Test Purpose		
Identif	ier:	TP_IMS_54	402_03			
Summ	ary:	IBCF shall	select a new entry p	oint and forward the original REGIST	TER request on 480 respo	nse.
IUT Ro	ole:	IMS A	•		•	
References: TS 124 clause			9 (V9.5.0) [1], 0.2.1 ¶1 (item 3 in ed list)	Config Ref:	CF_ROAM_REG	
		Entit	ies	Condition	1	
	IMS	S A	IMS B			
	✓			IMS A configured for topology hidir	ng	
	✓		✓	IMS A configured with multiple entr	ry points for IMS B	
	✓		✓	IMS A having sent an initial REGIS	STER to IMS B	
	IMS	S A	IMS B			
Step		Direc	tion	Message		IF
1	Ŷ	Z	Â	480 response		
2	Ŕ	>	Ð	original REGISTER addressed to	another entry point	

			Interd	perability Test Purpose		
Identif	ier:	TP_IMS_5				
Summ	ary:	If a request IBCF	t is received from a n	on-trusted domain, a 403 (Fo	orbidden) response shall be retur	ned by
IUT Ro	ole:	IMS B				
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.10.3.1 ¶1 (item 1 in 1 st numbered list)		Config Ref:	CF_ROAM_REG	
		Ent	ities	C	ondition	
	IMS	S A	IMS B			
			✓	IMS B configured for topo		
	:	x	x	IMS A not within the trust	domain of IMS B	
	IMS	SA	IMS B			
Step			ction	N	lessage	IF
1	Á	\$		valid REGISTER		
2	<	Ę.	4	403 response		

5.4 Dialog Procedures

5.4.1 Dialog at P-CSCF

					Test Purpose		
Identif		TP_IMS_50	46_01				
Summ	ary:				ial INVITE request for a dialog fro	m a UE for which a Servi	ce-
		Route head	er list exist	s without top	ology hiding		
IUT Ro	ole:	IMS A					
Refere	nces:	TS 124 229	(V9.5.0) [1],	Config Ref:	CF_ROAM_CALL	
		clause 5.2.6	5.3.3 ¶1 (1 ^s	^t numbered			
		list)					
		Enti	ities		Condition	on	
	UE A			UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
		×			IMS A not configured for topolog	y hiding	
	UE A	IMS A	IMS B	UE B			
Step			ction		Messag	e	IF
1		Ŷ Ŀ		⇔	initial INVITE		
2		Ф.	£		INVITE ✓ a topmost Route header → the P-CSCF SIP URI of IN ✓ a Route header ✓ the list of Service Route he from the registration ✓ an additional Via header ✓ the P-CSCF via port numb ✓ the P-CSCF-IP address of ✓ an additional topmost Recor ✓ the P-CSCF port number of subsequent requests from ✓ the P-CSCF-IP address of the × P-Preferred-Identity header ✓ a P-Asserted-Identity header ✓ an address of UE B ✓ a P-Charging-Vector header	eader URIs per ess or of the IMS A rd-Route header where it awaits UE A ess or the e IMS A	

				Te	est Purpose		
Identifier	r:	TP_IMS_5	046_02		•		
Summar	y:	When the	P-CSCF re		al INVITE request for a dialog t	rom a UE for which a Servi	ce-
		Route hea	der list exi	sts with topolo	gy hiding		
IUT Role		IMS A					
Reference	es:	TS 124 22	9 (V9.5.0)	[1],	Config Ref:	CF_ROAM_CALL	
		clause 5.2.6.3.3 ¶1 (1 st numbered					
		list)					
		_	tities		Condit	ion	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
		√			IMS A configured for topology	hiding	
	UE A	IMS A	IMS B	UE B			
Step			ection	Т	Messa	ige	IF
1		Ŷ Ŀ		À	initial INVITE		
2		₩	Ď		INVITE		
					✓ a topmost Route header		
					the IBCF SIP URI of IM		
					→ the P-CSCF SIP URI of	IMS A	
					✓ a Route header		
					✓ the list of Service Route	header URIs	
					from the registration		
					✓ an additional Via header		
					✓ the P-CSCF via port nur	mber	
					✓ the P-CSCF-FQDN add	ress or	
					the P-CSCF-IP address	s of the IMS A	
					✓ an additional topmost Red		
					✓ the P-CSCF port number		
					subsequent requests fro		
					✓ the P-CSCF-FQDN add		
					P-CSCF-IP address of		
					▶ P-Preferred-Identity header		
					✓ a P-Asserted-Identity hear	der	
					✓ an address of UE A		
					✓ a P-Charging-Vector head	ler	
					✓ an icid-value parameter		

					Test Purpose	
Identifie	er:	TP_IMS_50	046_03		•	
Summa	ry:	When the F			nitial request for a dialog from a UE for which a Service-Rout y hiding	е
IUT Role	e:	IMS A			•	
Referen	ces:	TS 124 229 (V9.5.0) [1], clause 5.2.6.3.3 ¶1 (1 st numbered list)		1],	Config Ref: CF_ROAM_CALL	
	11E A	Entities IMS A IMS B UE B		LIE D	Condition	
	UE A	IIVIS A	IMS B	UE B		
	V	V	✓	√	UE A registered in IMS A	
		×	٧	V	UE B registered in IMS B	
	115 4		IMC D	IIE D	IMS A not configured for topology hiding	
Step	UE A	IMS A	IMS B	UE B	Message	IF
1		\tag{c}	Stion	₽	SUBSCRIBE	IF
1	_	47	-	⟨₹		_
2		φ	±Ŷ		SUBSCRIBE ✓ a topmost Route header → the P-CSCF SIP URI of IMS A ✓ a Route header ✓ the list of Service Route header URIs from the registration ✓ an additional Via header ✓ the P-CSCF via port number ✓ the P-CSCF-FQDN address or the P-CSCF-IP address of the IMS A ✓ an additional topmost Record-Route header ✓ the P-CSCF port number where it awaits subsequent requests from UE A ✓ the P-CSCF-FQDN address or the P-CSCF-IP address of the IMS A × P-Preferred-Identity header ✓ a P-Asserted-Identity header ✓ an address of UE A ✓ a P-Charging-Vector header ✓ an icid-value parameter	

					Test Purpose		
Identific	er:	TP_IMS_50	46_04		•		
Summa	ıry:			eives an i	nitial request for a dialog from a	υΕ for which a Service-Rou	ıte
		header list e	exists with	topology h	iding		
IUT Rol		IMS A					
Referen	ices:	TS 124 229		l],	Config Ref:	CF_ROAM_CALL	
		clause 5.2.6	3.3.3 ¶ 1				
		(1 st number					
	Entities		Cond	lition			
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
		✓			IMS A configured for topology	hiding	
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion	.м	Mes	sage	IF
1	_	È		Ą	SUBSCRIBE		
2		₩	∌		SUBSCRIBE ✓ a topmost Route header → the IBCF SIP URI of IN → the P-CSCF SIP URI of ✓ a Route header ✓ the list of Service Route from the registration ✓ an additional Via header ✓ the P-CSCF via port nu ✓ the P-CSCF-FQDN add the P-CSCF-IP addres ✓ an additional topmost Re ✓ the P-CSCF port number subsequent requests free ✓ the P-CSCF-IP address of × P-Preferred-Identity head	mber Iress or s of the IMS A cord-Route header er where it awaits om UE A Iress or the IMS A	

					Test Purpose		
Identif	ier:	TP_IMS_5	048_01				
Summ	ary:	P-CSCF fo	rwards a ta	rget refresh	request from the UE		
IUT Ro	ole:	IMS A			•		
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.2.6.3.5 ¶1 (1 st numbered list)			Config Ref: CF_	_ROAM_CALL	
	Entities				Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE B has initiated a dialog with UE A		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Message		IF
1		Ý L		À	subsequent INVITE		
2		₩	∌ੇ		INVITE ✓ a topmost Route header → the P-CSCF SIP URI of IMS A ✓ an additional Via header ✓ the P-CSCF via port number ✓ the P-CSCF-FQDN address or the P-CSCF-IP address of the IMS A		

					Test Purpose		
Identif	ier:	TP_IMS_5	052_01				
Summ	ary:	The P-CSC successful			other than a target refresh request	t, from the UE subsequent	to a
IUT Ro	ole:	IMS A	•				
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.2.6.3.9 ¶1 (1 st numbered list)			Config Ref:	CF_ROAM_CALL	
	Entities				Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE B has initiated a dialog with UE A		
	UE A	IMS A	IMS B	UE B			
Step		Direc	ction		Messago	е	IF
1		ŶĿ		Ą	BYE		
2		\$	∌		BYE * a Route header √ the P-CSCF SIP URI of IMS A √ the same Record-Route header as in the previous ACK √ a P-Charging-Vector header √ an icid-value parameter		

					Test Purpose		
Identif	ier:	TP_IMS_5	053_01		•		
Summ	ary:	P-CSCF re	ceives from	the UE a	request for an unknown method w	ithout topology hiding	
IUT Ro	ole:	IMS A			•		
Refere	nces:	TS 124 229	9 (V9.5.0) [[*]	1],	Config Ref:	CF_ROAM_CALL	
		clause 5.2. (1 st numbe					
	Entities				Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
		×			IMS A not configured for topology hiding		
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Messag	e	IF
1	\$	Ð			Unknown Method addressed to	UE B	
2		\$	₽Ŷ		Unknown Method ✓ a Route header → the list of Service Route header from the registration * a P-Preferred-Identity header ✓ a P-Asserted-Identity header ✓ an address of UE A	r	

					Test Purpose		
Identif	ier:	TP_IMS_5	053_02		•		
Summ	ary:	P-CSCF re	ceives fron	n the UE a	request for an unknown method wi	th topology hiding	
IUT Ro	IUT Role: IMS A				•	-	
Refere	ences:	TS 124 229	9 (V9.5.0) [1],	Config Ref:	CF_ROAM_CALL	
		clause 5.2.6.3.11 ¶1 (1 st numbered list)					
	Entities				Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
		✓			IMS A configured for topology hidi	ng	
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	e	IF
1	₿	Ð			Unknown Method addressed to U	JE B	
2		\$	∌		Unknown Method ✓ a Route header → the list of Service Route he from the registration x a P-Preferred-Identity header ✓ a P-Asserted-Identity header ✓ an address of UE A		

					Test Purpose			
Identif	ier:	TP_IMS_5	055_01		•			
Summ	ary:	The P-CSC	CF receives	a 180 resp	onse to an initial request for a dialog f	from the UE		
IUT Ro		IMS A			·			
Refere	ences:	clause 5.2.		1],	Config Ref:	F_ROAM_CALL		
		(1 st numbe			2 122			
		Enti			Condition			
	UE A	IMS A	IMS B	UE B				
	✓	✓			UE A registered in IMS A			
			✓	✓	UE B registered in IMS B			
	✓			✓	UE A has received an initial request for a dialog from UE B			
	UE A	IMS A	IMS B	UE B		_		
Step		Direc	ction		Message		ī	
1	\$	Ð			180 response			
2		₩	₽Ŷ		180 response ✓ a Record-Route header → the P-CSCF SIP URI and port where it expects subsequent × a comp parameter × a P-Preferred-Identity header ✓ a P-Asserted-Identity sent in P-Ca header sent in the initial requ	requests alled Party-ID		

					Test Purpose		
Identi	fier:	TP IMS 5	055_02		•		
Summ	nary:	The P-CSC	CF receives	a 2xx resi	ponse to an initial request for a dialog from the UE		
IUT R	ole:	IMS A			1		
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.2.6.4.4 ¶1 (1 st numbered list)			Config Ref: CF_ROAM_CALL		
	Entities				Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has received an initial request for a dialog from UE B		
	UE A	IMS A	IMS B	UE B			
Step		Direc	ction		Message	IF	
1	₽	Ð			200 response		
2		\$	±Î		200 response ✓ a Record-Route header → the P-CSCF SIP URI and port number of IMS A where it expects subsequent requests ✗ a comp parameter ✗ a P-Preferred-Identity header ✓ a P-Asserted-Identity header ✓ the public identity sent in P-Called Party-ID header sent in the initial request		

					Test Purpose		
Identif	ier:	TP_IMS_5	067_01		•		
Summ	ary:				cess-network-charging-info parameted by the UE	eter in the P-Charging-Vect	tor
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229 clause 5.2.	9 (V9.5.0) [7.2 ¶ 5	1],	Config Ref:	CF_ROAM_CALL	
		Ent	ities		Condition	on	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Messag	е	IF
1		ŶĿ		Ŷ.	initial INVITE		
2		\$	ΣŶ		INVITE ✓ a P-Charging-Vector header ✓ a access-network-charging		

					Test Purpose					
Identif	ier:	TP_IMS_5	070_01							
Summ	ary:	The P-CSC network	F shall res	pond with a	100 (Trying) provisional respon	se on initial INVITE in termina	ating			
IUT Ro	ole:	IMS A								
Refere	nces:	TS 124 229 clause 5.2.		1],	Config Ref:	CF_ROAM_CALL				
		Ent	ities		Condi	tion				
	UE A	IMS A	IMS B	UE B						
	✓	✓			UE A registered in IMS A					
			✓	✓	UE B registered in IMS B					
	UE A	IMS A	IMS B	UE B						
Step		Dire	ction		Messa	age	IF			
1		ÝE.	ি ৺ initial INVITE							
2		₩	र्छ		100 response					

Test Purpose											
Identif	ier:	TP_IM	S_5072_	_01		•					
Summ	ary:	P-CSC	F sends	CANCEL	in case i	ts UE goes down during dialog init	iation				
IUT Ro	ole:	IMS A									
Refere	References: TS 124 229 (V9.5.0) [1],				Config Ref:	CF_ROAM_CALL					
clause 5.2.8.1.1 ¶1											
			Entities			Condition	n				
	UE A	JE A NWK IMS A IMS B UE B									
	✓		\checkmark			UE A registered in IMS A					
				\checkmark	✓	UE B registered in IMS B					
	/				1	UE B has received 180 on initial i	request for dialog from				
					·	UE A					
	UE A	NWK	IMS A	IMS B	UE B						
Step			Direction	n		Message	9	IF			
1		₽>	Ď			an indication that UE B is no lon	iger available				
2			Å,			CANCEL					
	Ŷ ,					✓ a Reason header					
4		✓ a status code parameter									
						→ 503 Service Unavailable	•				
3			\$	Ď		503 response					

						Test Purpose	
Identif	ier:	TP_IM	IS_5073_	01			
Summ	ary:	P-CSC	CF sends	BYE in c	ase its ca	alling UE goes down in ongoing dialog	
IUT Ro	ole:	IMS B					
Refere	ences:	clause	5.2.8.1.2 nbered li	9.5.0) [1], 2 ¶1 (item st)		Config Ref: CF_INT_CALL	
	Entities IMC A NIMIC IMC B LIE B					Condition	
	UEA IMSA NWK IMSB UEB		UE B				
	✓				UE A registered in IMS A		
			√ √			UE B registered in IMS B	
	✓				\checkmark	UE B has initiated a dialog with UE A	
	UE A	IMS A NWK IMS B UE B					
Step		Direction				Message	IF
1			₿	Ð		an indication that UE B is no longer available	
2		Ĉ±.		Ą		BYE ✓ Request URI → Contact header value of UE A ✓ To header → initial 200 OK To value from UE A ✓ From header → initial INVITE From value from UE B ✓ Call-ID header → initial INVITE Call Id value from UE B ✓ CSeq header ✓ an incremented Sequence Number ✓ Route header → dialog specific routing information for UE A ✓ Reason header → 503 Service Unavailable ✓ further headers based on local policy or call release reason	

						Test Purpose				
Identif	lentifier: TP_IMS_5074_01 ummary: P-CSCF sends BYE in case its called UE goes down in ongoing dialog									
Summ	nary:	P-CSC	CF sends	BYE in c	ase its ca	alled UE goes down in ongoing dialog				
IUT Ro	ole:	IMS A								
Refere	ences:	clause		9.5.0) [1], 2 ¶1 (item		Config Ref: CF_INT_CALL				
	Entities					Condition				
	UEA IMSA NWK IMSB UEB				UE B	Condition				
	✓ ✓			UE A registered in IMS A						
			√ √ √		✓	UE B registered in IMS B				
	✓		✓ MAC A NIMIC IMO D. LIE D.			UE A has initiated a dialog with UE B				
	UE A	.				on the state of th				
Step			Direction	n	_	Message	IF			
1			₽	Ð		an indication that UE B is no longer available				
2		ेंदेर		৵		BYE ✓ Request URI → Contact header value of UE A ✓ To header → initial 200 OK From value from UE B ✓ From header → initial INVITE To value from UE A ✓ Call-ID header → initial INVITE Call Id value from UE A ✓ Cseq header ✓ an incremented Sequence Number ✓ Route header → dialog specific routing information for UE A ✓ Reason header → 503 Service Unavailable ✓ further headers based on local policy or call release reason				

					Test Purpose					
Identif	ier:	TP_IMS_5	080_01		•					
Summ	ary:	The P-CSC	CF shall incl	ude the upd	ated access-network-charging-inf	o parameter from P-Char	ging-			
		Vector hea	der when so	ending subs	ing subsequent INVITE to the S-CSCF.					
IUT Ro	ole:	IMS A								
Refere	nces:	TS 124 229	9 (V9.5.0) [[*]	1],	Config Ref:	CF_ROAM_CALL				
		clause 5.2.9.1 ¶2								
		Ent	ities		Conditio	n				
	UE A	IMS A	IMS B	UE B						
	✓	✓			UE A registered in IMS A					
			✓	✓	UE B registered in IMS B					
	✓			✓	UE B has initiated a dialog with L	JE A				
	UE A	IMS A	IMS B	UE B						
Step		Dire	ction		Message	е	IF			
1		Ŷ Ŀ		Ą	subsequent INVITE					
					INVITE					
2		R	πŶ		✓ a P-Charging-Vector header					
2		45	ਡੋ∕		✓ an updated access-networ	k-charging-info				
					parameter					

					Test Purpose		
Identif	ier:	TP_IMS_5	080_02		•		
Summ	ary:				odated access-network-charging-info subsequent UPDATE to the S-CSC		ing-
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229 clause 5.2.		0),	Config Ref:	CF_ROAM_CALL	
		Entit	ties		Condition	1	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE B has initiated a dialog with UE A		
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message		IF
1		ŶĿ.		ŶĬ	subsequent UPDATE		
2	2 ₺ 並				 UPDATE ✓ a P-Charging-Vector header ✓ an updated access-network-parameter 	charging-info	

					Test Purpose		
Identif	ier:	TP_IMS_5	081_01		-		
Summ	ary:	P-CSCF 10	00 response	e to a re-IN\	/ITE		
IUT Role: IMS A							
Refere	nces:	TS 124 229	9 (V9.5.0) [1],	Config Ref:	CF_ROAM_CALL	
		clause 5.2.	9.2 ¶1				
		Ent	ities		Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has initiated a dialog with L	JE B	
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Messag	е	IF
1		ŶĿ	À		subsequent INVITE addressed	to UE B	
2		₩	Ð		100 response		

					Test Purpose				
Identif	ier:	TP_IMS_5	082_01		•				
Summ	ary:	P-CSCF se	ends 200 re	sponse to	a target refresh request with P-Cha	rging-Vector			
IUT Ro	ole:	IMS A							
Refere	ences:		9 (V9.5.0) [1	1],	Config Ref:	CF_ROAM_CALL			
	clause 5.2.9.2 ¶2 Entities				Condition	1			
	UE A	IMS A	IMS B	UE B					
	✓	✓			UE A registered in IMS A	E A registered in IMS A			
			✓	✓	UE B registered in IMS B				
	✓	✓			UE A has initiated a dialog with UE	В			
		✓		✓	IMS B has received a target refres	h request in a dialog			
	UE A	IMS A	IMS B	UE B					
Step		Direc	ction		Message	·	IF		
1		Ŷ Ŀ		À	200 response				
2	2 ♣ 🕏			200 response ✓ a P-Charging-Vector header ✓ an updated access-network- parameter	-charging-info				

5.4.2 Dialog at S-CSCF

					Test Purpose		
Identif	ier:	TP_IMS_5	097_01		•		
Summ	ary:				ameter, remove access-network-ch ore sending initial INVITE or a initia		P-
IUT Ro	ole:	IMS A			J	-	
Refere		TS 124 229 clause 5.4. (1 st numbe		1],	Config Ref:	CF_INT_CALL CF_ROAM_AS	
		Enti			Condition	n	
	UEA IMSA IMSB UEB						
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
		×			IMS A not configured for topology	hiding	
	UE A	IMS A	IMS B	UE B			
Step		Direc	ction		Message		IF
1	\$	卦			initial INVITE addressed to UE B SUBSCRIBE)	(also valid for	
2		₩,	÷		initial INVITE * a Route header → the S-CSCF SIP URI of IM: √ a P-Charging-Vector header √ an icid-value parameter √ an orig-ioi parameter → IMS A * an access-network-charging * a term-ioi parameter ✓ a Record-Route header → the originating S-CSCF SIF * a P-Access-Network-Info head	g-info parameter	

					Test Purpose	
Identif	ier:	TP_IMS_5	097_02		•	
Summ	ary:			ond P-Asse ent in initial	rted-Identity header indicating a registered tel URI or sip UR INVITE	I
IUT Ro	IUT Role: IMS A					
Refere	ences:		9 (V9.5.0) [.3.2 ¶11 (ite ed list)		Config Ref: CF_INT_CALL	
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
		√		✓	UE B registered in IMS B	
	✓				UE A registered public identities containing a Tel URI and a SIP URI	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1	₩	Ď			initial INVITE addressed to UE B	
2				initial INVITE ✓ a P-Asserted-Identity header → the SIP URI of UE A ✓ a P-Asserted-Identity header → the Tel URI of UE A		

						Test Purpose				
Identif	ier:	TP_IN	IS_5097_	04		-				
Summ		S-CSC	CF uses E	ENUM/DI	NS to tran	slate Tel URIs to SIP URIs in initial INVITE requests				
IUT Ro	ole:	IMS A								
Refere	ences:	TS 12	4 229 (V	9.5.0) [1]	,	Config Ref: CF_INT_CALL				
		clause	5.4.3.2	¶11 (item	10					
		1 st nur	mbered li	st)						
		Entities			Condition					
	UE A	IMS A	ENUM	IMS B	UE B					
			_DB							
	✓	✓				UE A registered in IMS A				
				✓	✓	UE B registered in IMS B				
		✓				ENUM_DB configured with an ENUM entry for Tel URI				
						E.164 Number of UE B				
	UE A IMS A ENUM IMS B UE B		UE B							
			_D B							
Step			Direction	n	1	Message	IF			
_	м					initial INVITE addressed to UE B				
1	₩	Ð				✓ a Request URI				
						→ a Tel URI				
2		4>	Ð			NAPTR Query				
		Y	ΣV			✓ the Tel URI E.164 Number				
						NAPTR Response				
3		Ý£	邻			✓ NAPTR Resource Record				
						→ the SIP URI of UE B				
						initial INVITE				
						✓ a Request URI				
4		₩,		Ð		→ a SIP URI of UE B				
		, i				✓ a P-Charging-Vector header				
						* an access-network-charging-info parameter				
						* an access-network-charging-into parameter				

					Test Purpose			
Identifier: TP_IMS_5106_01								
Summary: S-CSCF must handle subsequen					nt INVITE prior to sending it over NNI			
IUT Ro	ole:	IMS A		•				
Refere	nces:	TS 124 229	9 (V9.5.0) [1],	Config Ref: CF_IN	T_CALL		
		clause 5.4.3.2 ¶108 (6 th numbered list)						
		Enti	ties		Condition			
	UE A	IMS A	IMS B	UE B				
	✓	✓			UE A registered in IMS A			
			✓	✓	UE B registered in IMS B			
	✓			✓	UE A has initiated a dialog with UE B			
	UE A	IMS A	IMS B	UE B				
Step		Direc	tion		Message		IF	
1	₩	Ď			subsequent INVITE addressed to UE B			
2		₩	∌		subsequent INVITE ✓ a Record-Route header → the S-CSCF SIP URI of IMS A * Route header → the S-CSCF SIP URI of IMS A ✓ a P-Charging-Vector header * an access-network-charging-info par	ameter		

					Test Purpose	
Identif	ier:	TP_IMS_5	106_02		•	
Summ	ary:	S-CSCF m	ust handle	UPDATE p	prior to sending it over NNI	
IUT Ro	ole:	IMS A		•		
Refere	nces:	TS 124 229	9 (V9.5.0) [[*]	1],	Config Ref: CF_INT_CALL	
		clause 5.4.3.2 ¶108 (6 th numbered list)				
		Enti	ties		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has initiated a dialog with UE B	
	UE A	IMS A	IMS B	UE B		
Step		Direc	ction		Message	IF
1	₿	Ð			UPDATE addressed to UE B	
2		\$	₽Ŷ		 UPDATE ✓ a Record-Route header ✓ the S-CSCF SIP URI of IMS A ✗ Route header → the S-CSCF SIP URI of IMS A ✓ a P-Charging-Vector header ✗ an access-network-charging-info parameter 	

					Test Purpose				
Identif	ier:	TP_IMS_5	107_01						
Summ	ary:	S-CSCF re	moves its c	wn SIP UR	I from the route header before sen	nding BYE			
IUT Ro	ole:	IMS A							
Refere	nces:	TS 124 229	9 (V9.5.0) [[*]	1],	Config Ref:	CF_INT_CALL			
		clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)							
		Enti	ties		Condition	n			
	UE A	IMS A	IMS B	UE B					
	✓	✓			UE A registered in IMS A				
			✓	✓	UE B registered in IMS B				
	✓			✓	UE A has initiated a dialog with UI	EΒ			
	UE A	IMS A	IMS B	UE B					
Step		Direc	tion		Message	9	IF		
1	₩	ΣŶ			BYE addressed to UE B				
					BYE				
2		♠	Ð		✗ Route header				
					→ the S-CSCF SIP URI of IM	SA			

					Test Purpose		
Identif	ier:	TP_IMS_5	107_02		-		
Summary: S-CSCF removes its own SIP URI					I from the route header before sending AG	CK	
IUT Ro	ole:	IMS A					
Refere	nces:	TS 124 229	9 (V9.5.0) [[*]	1],	Config Ref: CF_IN	IT_CALL	
		clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)		em 1 in			
	Entities				Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has received 2000K on initial reque	est for dialog UE	
	UE A	IMS A	IMS B	UE B			
Step		Direc	ction		Message		IF
1	\$	Ð			ACK addressed to UE B		
					ACK		
2		₩	Ð		✗ Route header		
					→ the S-CSCF SIP URI of IMS A		

					Test Purpose			
Identif	Identifier: TP_IMS_5107_03							
Summary: S-CSCF removes its own SIP URI from the route header before sending						ding CANCEL		
IUT Ro	ole:	IMS A						
Refere	nces:	TS 124 229	9 (V9.5.0) [[*]	1],	Config Ref:	CF_INT_CALL		
		clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)		em 1 in				
	Entities				Condition			
	UE A	IMS A	IMS B	UE B				
	✓	✓			UE A registered in IMS A			
			✓	✓	UE B registered in IMS B			
	✓			✓	UE A has received 180 on initial re	equest for dialog from UE		
	UE A	IMS A	IMS B	UE B				
Step		Direc	ction		Message		IF	
1	₩	ŵ			CANCEL addressed to UE B			
					CANCEL			
2		₩,	Ď		★Route header			
					→ the S-CSCF SIP URI of IMS	S A		

					Test Purpose				
Identif	ier:	TP_IMS_5	107_04		•				
					RI from the route header before sending REFER				
IUT Ro	ole:	IMS A							
References:		TS 124 229 (V9.5.0) [1], clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)			Config Ref: CF_INT_CALL				
		Entities			Condition				
	UE A	IMS A	IMS B	UE B					
	✓	✓			UE A registered in IMS A				
			✓	✓	UE B registered in IMS B				
	✓			✓	UE A has received 2000K on initial request for dialog to MRFC AS in IMS A				
	UE A	IMS A	IMS B	UE B					
Step		Direc	ction		Message	IF			
1	₩	ΣŶ			REFER addressed to UE B				
2		₩	ਤੰ		REFER ★ Route header → the S-CSCF SIP URI of IMS A				

					Test Purpose		
Identif	ier:	TP_IMS_5	108_05		•		
Summ	ary:	S-CSCF re	jects barre	d users on ir	nitial INVITE		
IUT Ro	ole:	IMS B	•				
References:		TS 124 229 (V9.5.0) [1], clause 5.4.3.3 ¶8 (item 1 in 1 st numbered list)			Config Ref:	CF_INT_CALL	
		Ent	ities		Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
			✓	✓	UE B barred user in IMS B		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Messag	je	IF
1		₩	ŵ		initial INVITE addressed to UE ✓ a Request URI	В	
•		Y	2		→ a harred user in IMS B		
2		È	À		404 response		

					Test Purpose					
Identif	ier:	TP_IMS_5	115_01		•					
Summary:			S-CSCF include term-ioi parameter and restores orig-ioi in 180 responses from UE to initial requests in terminating network							
IUT Ro	ole:	IMS B	•							
References:		TS 124 229 (V9.5.0) [1], clause 5.4.3.3 ¶91 (item 2 in 4 th numbered list)			Config Ref: CF_INT_CALL					
	Entities			Condition						
	UE A	IMS A	IMS B	UE B						
	✓	✓			UE A registered in IMS A					
			✓	✓	UE B registered in IMS B					
	✓			✓	UE B has received an initial request for a dialog from UE A					
	UE A	IMS A	IMS B	UE B						
Step		Direc	ction		Message	IF				
1			Ŷ _E	À	180 response addressed to UE A					
2		€त	Ą		180 response ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS A ✓ a term-ioi parameter → operator identifier of IMS B					

					Test Purpose				
Identif	ier:	TP_IMS_5	115_02		·				
Summ	ary:		G-CSCF include term-ioi parameter and restores orig-ioi in 2xx responses from UE to initial requests a terminating network						
IUT Ro	ole:	IMS B	_						
References:		clause 5.4.3.3 ¶91 (item 2 in			Config Ref: CF_INT_CALL				
		4 th numbered list)							
		Entities			Condition				
	UE A	IMS A	IMS B	UE B					
	✓	✓			UE A registered in IMS A				
			✓	✓	UE B registered in IMS B				
	✓			✓	UE A has received 180 on initial request for dialog from UE B				
	UE A	IMS A	IMS B	UE B					
Step		Direc	tion		Message				
1			Ŷ <u>E</u>	Ą	2xx response addressed to UE A				
2		€ a	Ą		2xx response ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS A ✓ a term-ioi parameter → operator identifier of IMS B				

					Test Purpose	
Identif	ier:	TP_IMS_5	5115_03		•	
Summ	ary:		nserts a sec I whichever		erted-Identity header in 1xx response indicating a registered t ent	el URI
IUT Ro	ole:	IMS B		•		
Refere	References: TS		9 (V9.5.0) [1],	Config Ref: CF_INT_CALL	
		clause 5.4 4 th numbe	.3.3 ¶92 (ite red list)	em 3 in		
		Enti	ities		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
			/		UE B registered public identities containing a Tel URI and SIP URI	
	✓			✓	UE B has received an initial request for a dialog from UE A	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1			Ŷ Ŀ	Ą	1xx response addressed to UE A	
2		Ŷŧ	Ŷħ		1xx response ✓ a P-Asserted-Identity header → the SIP URI of UE B ✓ a P-Asserted-Identity header → the Tel URI of UE B	

					Test Purpose		
Identif	ier:	TP_IMS_5	115_04		•		
Summ	ary:	S-CSCF in	serts a sec	ond P-Ass	erted-Identity header in 2xx response indicating a registered	tel URI	
		or SIP URI	whichever	is not pres	sent		
IUT Ro	le:	IMS B					
Refere	nces:		9 (V9.5.0) [⁻		Config Ref: CF_INT_CALL		
		clause 5.4. 4 th number	3.3 ¶92 (ite ed list)	m 3 in			
		Enti	ties		Condition		
	UE A	IMS A	IMS B	UE B			
	\checkmark	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
				✓	UE B registered public identities containing a Tel URI		
				✓	UE B default registered public identity is a SIP URI		
	✓			✓	UE A has received 180 on initial request for dialog from UE B		
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	IF	
1			È	Ą	2xx response addressed to UE A		
	_				2xx response		
					√ a P-Asserted-Identity header		
2		Ŷ	^A A		→ the SIP URI of		
		4	4		UE B		
					√ a P-Asserted-Identity header		
					→ the Tel URI of UE B		

					Test Purpose		
Identif	ier:	TP_IMS_5	120_01				
Summ	ary:	S-CSCF m header on			om the Route header and insert its	SIP-URI in the Record Rou	ute
IUT Ro	ole:	IMS B					
Refere	ences:	TS 124 229 clause 5.4. in 7 th numb			Config Ref:	CF_ROAM_CALL	
		Enti	ties		Condition	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has initiated a dialog with UE B		
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	•	IF
1	₩		Ð		subsequent INVITE addressed to	UE B	
2		€च	Ą		INVITE ★ a topmost Route header → the S-CSCF SIP URI of IMS ✓ a Record-Route header ✓ the S-CSCF SIP URI	S B	

					Test Purpose					
Identif	ier:	TP_IMS_5	120_02							
Summ	ary:				om the Route header and insert its	SIP-URI in the Record Rou	ute			
IUT Ro		IMS B								
References:		TS 124 229 (V9.5.0) [1], clause 5.4.3.3 ¶99 (item 3 and 5 in 7 th numbered list)			Config Ref:	CF_ROAM_CALL				
		Enti	ties		Condition	n				
	UE A	IMS A	IMS B	UE B						
	✓	✓			UE A registered in IMS A					
			✓	✓	UE B registered in IMS B					
	✓			✓	UE A has initiated a dialog with UE B					
	UE A	IMS A	IMS B	UE B						
Step		Direc	tion		Message		IF			
1	₿		Ď		UPDATE addressed to UE B					
					UPDATE					
					✗ a topmost Route header					
2		Ý L	4		→ the S-CSCF SIP URI of IMS B					
					✓ a Record-Route header					
					✓ the S-CSCF SIP URI					

					Test Purpose	
Identif	ier:	TP_IMS_5	121_01		•	
Summ	ary:	S-CSCF re		ss-network	c-charging-info parameter from 1xx response to subsequent of	or target
IUT Ro	ole:	IMS B				
References:		TS 124 229 clause 5.4. (9 th numbe	9 (V9.5.0) [.3.3 ¶123 red list)	1],	Config Ref: CF_INT_CALL	
		Enti [,]	ties		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B has received a subsequent or target refresh request in a dialog	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1			Ŷ <u>E</u>	À	1xx response addressed to UE A	
2		Ŷ <u>t</u>	ф		1xx response ✓ a P-Charging-Vector header * an access-network-charging-info parameter	

					Test Purpose	
Identif	ier:	TP_IMS_5	121_02		•	
Summ	ary:	S-CSCF re		ess-netwo	rk-charging-info parameter from 2xx response to subsequent	or target
IUT Ro	ole:	IMS B				
References:		TS 124 22 clause 5.4 (9 th numbe	9 (V9.5.0) [.3.3 ¶123 ered list)	1],	Config Ref: CF_INT_CALL	
		Enti	ties		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B has received a subsequent or target refresh request in a dialog	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1			Ŷ Ŀ	À	2xx response addressed to UE A	
2		Ŷ Ŀ	¢ħ		2xx response ✓ a P-Charging-Vector header * an access-network-charging-info parameter	

					Test Purpose		
Identif	ier:	TP_IMS_5	301_01		•		
Summ	ary:	S-CSCF sh			g a subsequent request remove its one	own URI from the Route he	ader
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229 (V9.5.0) [1],			Config Ref:	CF_ROAM_CALL	
		clause 5.4.3.3 ¶126 (10 th numbered list)			_		
		Enti	ties		Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has initiated a dialog with UE B		
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	e	IF
1	₩	Ď			BYE		
2		砕	£		PYE ✓ Route header → the S-CSCF SIP URI of IM ✓ a topmost Record-Route head → the S-CSCF SIP URI of IMS	der	

						Test Purpose	
Identif			IS_5139_				
Summ	ary:		e an exis			calling user and the S-CSCF receives a network internal indicates including registration lifetime expiration of the last publication.	
IUT Ro Refere		clause	4 229 (V9 5.4.5.1.2 number Entities	2 ¶1 (item		Config Ref: CF_INT_CALL Condition	
	UE A	NWK	IMS A	IMS B	UE B	Collation	
	σΕ A	14441	√ /	IIIIO B	OL D	UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
	✓				✓	UE A has initiated a dialog with UE B	
	UE A	NWK	IMS A	IMS B	UE B	•	
Step			Direction			Message	IF
1		₽	Ď			network internal indication that the lifetime of the last public user identity has expired	
2			₩		₽		
2	ŶŒ		Ϋ́A			BYE ✓ a Request URI → Contact address of UE A ✓ a To header → the From header of the initial INVITE ✓ a From header → the To header of the 200 response to initial ✓ a Call-ID header → the Call-ID header of the initial INVITE ✓ a CSeq header → CSeq header → CSeq header of the called user incremented by one ✓ a Route header → routing information towards the calling user as stored for the dialog ✓ a Reason header ✓ further headers, based on local policy or the requested session release reason	

						Test Purpose	
Identif			IS_5139_				
Summ		releas identity	e an exis y			called user and the S-CSCF receives a network internal indica ession including registration lifetime expiration of the last publ	
IUT Ro		IMS B					
Refere	ences:	clause		9.5.0) [1], 2 ¶1 (item ed list)		Config Ref: CF_INT_CALL	
			Entities			Condition	
	UE A	IMS A	IMS B	NWK	UE B		
	√	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
	√				✓	UE A has initiated a dialog with UE B	
	UE A	IMS A	IMS B	NWK	UE B	DETAILED ITMERCOLOUGH AND DEED	
Step	UL A		Direction	1	02.5	Message	IF
				⟨ J		network internal indication that the lifetime of the last	••
1			Æ	V		public user identity has expired	
	_			_		-	_
						 BYE ✓ a Request URI → Contact header value of UE A 	
						✓ a To header	
						the From header of the initial INVITE	
						✓ a From header	
						→ the To header of the 200 response to initial INVITE	
						✓ a Call-ID header	
2	Ŷ Ŀ		Ć₽			→ the Call-ID header of the initial INVITE	
			,			✓ a CSeq header	
						→ CSeq header of the called user	
						incremented by one	
						✓ a Route header	
						routing information towards the calling	
						user as stored for the dialog	
						✓ a Reason header	
						✓ further headers, based on local policy or the	
						requested session release reason	
						BYE	
						✓ a Request URI	
						→ Contact address of UE A	
						✓ a To header	
						→ the To header of the 200 response to initial INVITE	
						✓ a From header	
						→ the From header of the initial INVITE	
						✓ a Call-ID header	
			м			→ the Call-ID header of the initial INVITE	
2			₩		Ď	✓ a CSeq header	
						→ CSeq header of the calling user	
						incremented by one	
						✓ a Route header	
						→ routing information towards the calling	
						user as stored for the dialog	
						✓ a Reason header	
						✓ further headers, based on local policy or the	
						requested session release reason	
						roquested session release reason	

5.4.3 Dialog at I-CSCF

				7	Test Purpose		
Identif	ier:	TP_IMS_5	131_01		•		
Summ	ary:	I-CSCF sh	all remove F	² -Charging-F	unction-Addresses header from 180 response to initial req	uest	
IUT Ro	ole:	IMS B					
Refere	nces:	TS 124 22	9 (V9.5.0) [1	1],	Config Ref: CF_INT_CALL		
		clause 5.3.	.2.1 ¶62 (aft	er note 11)			
	Entities				Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE B has received an initial request for a dialog from UE A		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ection		Message	IF	
1			Ŷ <u>E</u>	Ą	180 response addressed to UE A		
2		Ŷ Ŀ	À		180 response * a P-Charging-Function-Addresses header		

					Test Purpose	
Identif	ier:	TP_IMS_5	131_02		•	
Summ	ary:	I-CSCF sha	all remove I	P-Charging-	-Function-Addresses header from 200 response to initial rec	uest
IUT Ro	ole:	IMS B				
Refere	ences:		9 (V9.5.0) [2.1 ¶Clauso note 11)		Config Ref: CF_INT_CALL	
		Ent	ities		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has received 180 on initial request for dialog from UE B	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1			Ŷ <u>E</u>	À	2xx response addressed to UE A	
2		Ŷ£.	À		2xx response * a P-Charging-Function-Addresses header	

				T	est Purpose	
Identif	ier:	TP_IMS_5	132_01		·	
Summ	ary:	I-CSCF sh	all return ar	appropriate i	response to initial request to non-existent user	
IUT Ro	ole:	IMS B			•	
Refere	nces:		9 (V9.5.0) [[*]		Config Ref: CF_INT_CALL	
			.2.1 ¶54 (aft	er 5 th		
	numbered list)					
		Er	itities		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
		x			IMS B not configured with local policy to attempt	
					request routeing	
			×	×	UE B not registered in IMS B	
	UE A	IMS A	IMS B	UE B		
Step		Dir	ection		Message	IF
					initial INVITE addressed to UE B	
1		₩	Ð		✓ a Request URI	
					→ a non existing user in IMS B	
2a		Ŷ:	Ą		404 response	
2b		仓	Ą		604 response	

					Test Purpose		
Identif	ier:	TP_IMS_5	133_01		•		
Summ	ary:	I-CSCF sha	all return ur	nsuccessful	response to initial request to non-r	egistered user	
IUT Ro	ole:	IMS B			•		
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.3.2.1 ¶55 (before 6 th numbered list)			Config Ref:	CF_INT_CALL	
		Ent	ities		Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			×	×	UE B not registered in IMS B		
			×	×	IMS B not configured with a term criterion for UE B	inating unregistered filter	
	UE A	IMS A	IMS B	UE B			
Step			ction		Message		IF
1		₽	Ð		initial INVITE addressed to UE E	3	
2		Ŷ _E	Ą		4xx response		

5.4.4 Dialog at IBCF

					Test Purpose	
Identif	ier:	TP_IMS_51	35_01		•	
Summ	ary:	If a request top of the R			oute header the IBCF shall add its own routeable SIP URI	to the
IUT Ro	ole:	IMS A				
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.10.4.1 ¶7 (after note 4)			Config Ref: CF_INT_CALL	
			Entities		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			√	✓	UE B registered in IMS B	
		✓			IMS A configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step			Direction		Message	IF
1	₩	Ð			initial INVITE	
2		\$	ъĴ		initial INVITE ✓ an additional topmost Record-Route header ✓ the IBCF SIP URI of IMS A	

					Test Purpose		
Identif	ier:	TP_IMS_5	137_01		•		
Summ	ary:	The IBCF	shall perfore	m encryptio	n for topology hiding before an initial INVITE request is sent		
IUT Ro	ole:	IMS A	•				
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.10.4.2 ¶1 (items 7 & 8 in 1 st numbered list)			Config Ref: CF_INT_CALL		
			ities		Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
		✓			IMS A configured for topology hiding		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Message		
1	♦	zŷ			initial INVITE addressed to UE B		
2		\$	∌		initial INVITE ✓ a Via header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter		

					Test Purpose	
Identif	ier:	TP_IMS_5	137_02		•	
Summ	ary:	The IBCF s	shall perforr	m encryption	n for topology hiding before 180 response is sent	
IUT Ro	ole:	IMS B	-			
Refere		TS 124 229 (V9.5.0) [1],			Config Ref: CF_INT_CALL	
		clause 5.10.4.2 ¶1 (item 8 in 1 st numbered list)				
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓	√		✓	UE B has received an initial request for a dialog from UE A	
			✓		IMS B configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	ī
1			Ŷ <u>E</u>	Ą	180 response addressed to UE A	
					180 response	
					✓ Via header	
2		Ý L	4		→ the IBCF SIP URI of IMS A	
					✓ encrypted consecutive header entries	
					✓ a tokenized-by parameter	

					Test Purpose			
Identif	ier:	TP_IMS_5	137_03					
Summ	ary:	The IBCF	shall perforr	m encryptio	n for topology hiding before 200 response is sent			
IUT Ro	ole:	IMS B	•	71		•		
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.10.4.2 ¶(item 8 in 1 st numbered list)			Config Ref:	CF_INT_CALL		
		Ent	ities		Condition	n		
	UE A	IMS A	IMS B	UE B				
	✓	✓			UE A registered in IMS A			
			✓	✓	UE B registered in IMS B			
	✓			✓	UE A has received 180 on initial UE B			
			✓		IMS B configured for topology his	ding		
	UE A	IMS A	IMS B	UE B		•		
Step		Dire	ction		Messag	e	IF	
1			Ŷ Ŀ	Ŷħ	200 response addressed to UE	A		
2		€ेंच	Ŷħ		200 response ✓ a Via header → the IBCF SIP URI of IMS ✓ encrypted consecutive hea ✓ a tokenized-by parameter	ader entries		

					Test Purpose			
Identif	fier:	TP_IMS_5	137_04		•			
Summ	nary:	The IBCF	shall perfor	m encryption	for topology hiding	before an initi	al REGISTER reques	t is sent
IUT Ro	ole:	IMS A						
Refere	ences:		9 (V9.5.0)		Config Ref:		CF_ROAM_REG	
		clauses 5.10.4.1 and 5.10.4.2 ¶1 (1 st numbered list)						
	Entities					Conditio	n	
	UE B	IMS A	IMS B		<u> </u>		·	
		✓		IMS A confi	gured for topology hi	iding		
	UE B	IMS A	IMS B					
Step								IF
1	♦	Ď		unprotecte	d REGISTER addre	ssed to IMS E	3	
2		₩.	ъ́г	 ✓ encry ✓ a Route ✓ the IBO ✓ encry ✓ a toke ✓ a Path → the IE ✓ encry 	eader BCF SIP URI of IMS reted consecutive he enized-by parameter e header CF SIP URI of IMS A reted consecutive he enized-by parameter	ader entries ader entries A ader entries A ader entries		

					Test Purpose	
Identif	ier:	TP_IMS_5	404_01		•	
Summ	ary:	IBCF shall	remove P-0	Charging-F	unction-Addresses header from initial INVITE request	
IUT Ro	ole:	IMS A			•	
Refere	nces:	TS 124 229 (V9.5.0) [1],			Config Ref: CF_INT_CALL	
		clause 5.10.2.2 ¶1 (item 8 in 1st numbered list)				
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
		✓			IMS A configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1	B	Ð			initial INVITE addressed to UE B	
•	♦	ΣÝ			✓ a P-Charging-Function-Addresses header	
2		M			initial INVITE	
2		₩	Ð		★ a P-Charging-Function-Addresses header	

					Test Purpose		
Identif	ier:	TP_IMS_5	408_01		•		
Summ	ary:	The IBCF	shall perforr	m encryption	n for topology hiding before ACK request is sent		
IUT Ro	ole:	IMS A	•		· · · · · · · · · · · · · · · · · · ·		
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.10.2.3 ¶1 (item 4 in 1st numbered list)			Config Ref: CF_INT_CALL		
		Entities			Condition		
	UEA IMSA IMSB UEB						
	√	· · · · · · · · · · · · · · · · · · ·		0_2	UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has received 200OK on initial request for dialog from UE B		
		✓			IMS A configured for topology hiding		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Message	IF	
1	\$	Ð			ACK addressed to UE B		
2		₩,	±Ŷ		ACK ✓ a Via header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter		

					Test Purpose	
Identif	ier:	TP_IMS_5	408_02		•	
Summ	ary:	The IBCF	shall perforr	n encryptio	n for topology hiding before CANCEL request is sent	
IUT Ro	ole:	IMS A	•			
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.10.2.3 ¶1 (item 4 in 1 st numbered list)			Config Ref: CF_INT_CALL	
		Ent	ities		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has received 180 on initial request for dialog from UE A	
		✓			IMS A configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1	₩	Ď			CANCEL addressed to UE B	
2		\$	∌		CANCEL ✓ a Via header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter	

					Test Purpose		
Identif	ier:	TP_IMS_5	408_03		•		
Summ	ary:			n encryption	n for topology hiding before BYEre	quest is sent	
IUT Ro		IMS A		••		•	
Refere	nces:	TS 124 229 (V9.5.0) [1],			Config Ref:	CF_INT_CALL	
		clause 5.10.2.3 ¶1 (item 4 in 1st numbered list)					
		Entities			Conditio	n	
	UEA IMSA IMSB UEB						
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has initiated a dialog with L	JE B	
		✓			IMS A configured for topology hiding		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Message	e	IF
1	₽	Ð			BYE addressed to UE B		
2		\$	±₽		BYE ✓ a Via header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter		

					Test Purpose			
Identif	ier:	TP_IMS_5	408_04		•			
Summ	ary:	The IBCF	shall perforr	n encryptio	on for topology hiding before subsequent INVITE request is sent			
IUT Ro		IMS A	•	71	1 2/			
Refere	ences:	TS 124 229 (V9.5.0) [1], clause 5.10.2.3 ¶1 (item 4 in 1 st numbered list)			Config Ref: CF_INT_CALL			
			ities		Condition			
	UE A	IMS A	IMS B	UE B				
	✓	✓			UE A registered in IMS A			
			✓	✓	UE B registered in IMS B			
	✓			✓	UE A has initiated a dialog with UE B			
		✓			IMS A configured for topology hiding			
	UE A	IMS A	IMS B	UE B				
Step		Dire	ction		Message			
1	₩	Ð			subsequent INVITE addressed to UE B			
2		\$	£		subsequent INVITE ✓ a Via header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header → the IBCF SIP URI of IMS A ✓ encrypted consecutive header entries ✓ a tokenized-by parameter			

					Test Purpose		
Identif	ier:	TP_IMS_5	414_01		•		
Summ	ary:	When IBCF response	receives a	an initial INV	ITE request and it shall respond	with a 100 (Trying) provision	nal
IUT Ro	le:	IMS B					
References:		TS 124 229 (V9.5.0) [1], clause 5.10.3.2 ¶12 (item 1 in 1st numbered list)		2'	Config Ref:	CF_INT_CALL	
		Entities			Condition	Condition	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
			✓		IMS B configured for topology h	iding	
	UE A	IMS A	IMS B	UE B			
Step	Direction				Messag	ge	IF
1		₩	ΣŶ		initial INVITE addressed to UE B		
2		Ŷ Ŀ					

				To	est Purpose		
Identif	ier:	TP_IMS_C	ONTENT_S	HARE_01	•		
Summ	ary:	The IBCF s	hall pass co	ontent share s	pecific information in the OPT	TONS request	
IUT Ro	IUT Role: IMS A					•	
Refere	ences:	Rich Comm Release 2, clause 8.1		uite ealization [7],	Config Ref:	CF_INT_CALL	
		En	tities		Cond	ition	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has initiated a dialog with UE B		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ection		Mess	sage	IF
1	♠	Ð			OPTIONS addressed to UE	В	
2		#	ъ́		OPTIONS ✓ a Contact header → +g.3gpp.cs-voice feat ✓ a Accept-Contact heade → +g.3gpp.cs-voice feat	r	

				To	est Purpose		
Identif	ier:	TP_IMS_C	ONTENT_S	HARE_02	•		
Summ	ary:	The IBCF s	hall pass co	ontent share s	pecific information in the subsec	quent INVITE request	
IUT Ro	ole:	IMS A	•				
Refere	nces:	Rich Comm	unication S	uite	Config Ref:	CF_INT_CALL	
		Release 2,	Technical re	ealization [7],			
		clause 8.1					
		En	tities		Conditi	on	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
		✓ ✓			UE B registered in IMS B		
	✓			✓	UE A has initiated a dialog with		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ection		Messag		IF
1	₩	Ð			subsequent INVITE addresse	d to UE B	
					subsequent INVITE		
					✓ a Contact header		
2		₩	Ď		→ +g.3gpp.cs-voice feature	e tag	
					✓ a Accept-Contact header		
					→ +g.3gpp.cs-voice feature	e tag	

				To	est Purpose		
Identif	ier:	TP_IMS_C	ONTENT_S	SHARE_03			
Summ	ary:	The IBCF s	hall transpo	ort content sha	ring rejection in 603 response		
IUT Ro	le:	IMS A	•				
References:		Rich Comm Release 2, clause 8.1		Suite ealization [7],	Config Ref:	CF_INT_CALL	
		En	tities		Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has initiated a dialog with	UE B	
	UE A	IMS A	IMS B	UE B			
Step		Dire	ection		Messag	je	IF
1			Ŷ Ŀ	Ŷ.	603 response		
2		ŶĿ	À		603 response		

				To	est Purpose		
Identif	ier:	TP_IMS_C	ONTENT_S	SHARE_04	<u>-</u>		
Summ	ary:	The IBCF s	hall transpo	ort content sha	ring rejection in 603 response		
IUT Ro	ole:	IMS A					
Refere	ences:	Rich Comm Release 2, clause 8.1		Suite ealization [7],	Config Ref:	CF_INT_ROAM	
		En	tities		Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has initiated a dialog with	UE B	
	UE A	IMS A	IMS B	UE B			
Step	Step Direction				Messag	je	IF
1		€		4	603 response		
2		₩	Ð		603 response		

5.5 Messaging Procedures

5.5.1 Messaging at P-CSCF

					Test Purpose	
Identif	ier:	TP_IMS_5	050_01		•	
Summ	ary:		P-CSCF recout topology		SSAGE request from a UE for which a Service-Route hea	ader list
IUT Ro	ole:	IMS A	1 0.	,		
Refere	ences:		9 (V9.5.0) [.6.3.3 ¶(1 st		Config Ref: CF_ROAM_CALL	
		Ent	ities		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
		×			IMS A not configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step			ction		Message	IF
1		Ýs.		4	MESSAGE	
2		ψ,	€Ŷ		MESSAGE ✓ a Route header → the P-CSCF SIP URI of IMS A → the list of Service Route header URIs from registration x a P-Preferred-Identity header ✓ P-Asserted-Identity header ✓ an address of UE A ✓ the P-Charging-Vector header ✓ an icid-value parameter	

5.5.2 Messaging at S-CSCF

					Test Purpose						
Identif	ier:	TP IMS 5	097 05								
Summ	ary:	S-CSCF m	C-CSCF must inserts orig-ioi parameter, remove access-network-charging-info parameter before ending MESSAGE over NNI								
IUT Ro	ole:	IMS A									
References:		TS 124 22 clause 5.4	9 (V9.5.0) .3.2 ¶ 1	[1],	Config Ref: CF_INT_CALL						
		Enti			Condition						
	UE A	IMS A	IMS B	UE B							
	✓	√			UE A registered in IMS A						
			✓	✓	UE B registered in IMS B						
		×			IMS A not configured for topology hiding						
	UE A	IMS A	IMS B	UE B							
Step		Direc	ction	*	Message	IF					
1	₩,	Ð			MESSAGE addressed to UE B						
2		\$	ਜੁੰਮ		MESSAGE * a Route header → the S-CSCF SIP URI of IMS A ✓ a P-Charging-Vector header ✓ an icid-value parameter ✓ an orig-ioi parameter → IMS A * an access-network-charging-info parameter * a term-ioi parameter						

					Test Purpose		
Identif	ier:	TP_IMS_5	097_06		•		
Summ	ary:	S-CSCF in	serts a sec	ond P-Asse	rted-Identity header indicating a te	I URI	
IUT Ro	le:	IMS A			·		
Refere	nces:		9 (V9.5.0) [Config Ref:	CF_INT_CALL	
		clause 5.4.3.2 ¶11 (item 9 in 1 st numbered list)					
	Entities				Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓				UE A registered public identities containing a SIP URI		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Message	9	IF
1	Đ	Đ			MESSAGE addressed to UE B		
					MESSAGE		
					✓ a P-Asserted-Identity header	•	
2		₩,	₹Ŷ		→ the SIP URI of		
		₩	₽		UE A		
					✓ a P-Asserted-Identity header	•	
					→ the Tel URI of UE A		

					Test Purpose	
Identif	ier:	TP_IMS_5	5097_07		1	
Summ	ary:	S-CSCF ir	nserts a sec	ond P-Asse	erted-Identity header indicating a SIP URI	
IUT Ro	ole:	IMS A			•	
Refere	ences:	TS 124 229 (V9.5.0) [1],			Config Ref: CF_INT_CALL	
		clause 5.4.3.2 ¶11 (item 9 in				
		1 st numbered list)				
		Ent	ities		Condition	
	UE A	IMS A	IMS B	UE B		
	\checkmark	✓			UE A registered in IMS A	
		✓ ✓		✓	UE B registered in IMS B	
	✓				UE A registered public identities containing a Tel URI	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1	₩	並			MESSAGE addressed to UE B	
					MESSAGE	
					✓ a P-Asserted-Identity header	
2		P	5€		→ the SIP URI of	
2		45	□ □		UE A	
					✓ a P-Asserted-Identity header	
					→ the Tel URI of UE A	

						Test Purpose	
Identif	ier:	TP_IM	IS_5097_	08		•	
Summ	ary:	S-CSC	CF uses E	ENUM/DN	IS to trans	slate Tel URIs to SIP URIs in MESSAGE requests	
IUT Ro	ole:	IMS A					
Refere	nces:	TS 12	4 229 (VS	9.5.0) [1],		Config Ref: CF_INT_CALL	
		clause	5.4.3.2	11 (item	10		
		in1 st n	umbered)			
	Entities					Condition	
	UE A	IMS A	ENUM _DB	IMS B	UE B		
	✓	✓				UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
			/	ENLIM DR configured with an ENLIM entry for Tol LIPI			
			•	E.164 Number of UE B			
	UE A	IMS A	ENUM	IMS B	UE B		
_			_DB				
Step			Direction	1	T	Message	IF
	M					MESSAGE addressed to UE B	
1	₩	Ð				✓ a Request URI	
						→ a Tel URI	
2		₩,	Ð			NAPTR Query	
_		Ψ	<i>D</i>			✓ the Tel URI E.164 Number	
						NAPTR Response	
3		ÝE.	<₽			✓ NAPTR Resource Record	
						→ the SIP URI of UE B	
						MESSAGE addressed to UE B	
						✓ a Request URI	
4		₽		Ð		→ a SIP URI of UE B	
						✓ a P-Charging-Vector header	
						an access-network-charging-info parameter	

						Test Purpose	
Identif	ier:	TP IM	IS_5097_	10			
Summ					S-CSCF	with matching filter criteria AS	
IUT Ro		IMS B		idinig by	0 0001	with matering inter-enterial to	
	References: TS 124 229 (V9.5.0) [1],			9.5.0) [1],		Config Ref: CF_ROAM_AS	
	clause 5.4.3.2 ¶11 (item 5 ar in 1 st numbered list)			¶11 (item I list)	5 and 8		
	Entities					Condition	
	UEA IMSA IMSB ASB UEB				UE B		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
		✓	✓ UE B visiting IMS A				
		✓ ✓			IMS B configured with filter criteria to contact AS B		
			✓	✓		AS B within the trust domain of IMS B	
	UE A	IMS A	IMS B	AS B	UE B		
Step			Direction	า		Message	IF
1		\$	Ð			MESSAGE addressed to UE A	
2			₽	ъ̂		MESSAGE ✓ a Route header → the SIP URI of AS B ✓ a P-Charging-Function-Addresses header ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ an orig-ioi parameter → IMS A	

					Test Purpose	
Identif	ier:	TP_IMS_5	108_01		•	
Summ	ary:	Standalone	e request; te	erminate	d at the served user	
IUT Ro	ole:	IMS B	•			
Refere	nces:	TS 124 229	9 (V9.5.0) [1],	Config Ref: CF_ROAM_CALL	
		clause 5.4.3.3 ¶5				
		(1 st numbe	red list)			
		Entiti	es		Condition	
	UEA IMSA IMSB UEB					
	\checkmark	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	UE A	IMS A	IMS B	UE B		
Step		Direct	ion		Message	IF
					INVITE addressed to UE B	
1		♦	Ð		✓ a P-Charging-Vector header	
					√ an icid-value parameter	
					INVITE	
					✓ Route header	
					→ the S-CSCF SIP URI of IMS B	
_			.м		✓ a P-Charging-Vector header	
2		Æ	Å.		✓ the same icid-value parameter	
					≭ ioi parameters	
					✓ a Record-Route header	
					√ the S-CSCF SIP URI of IMS B	

					Test Purpose		
Identif	ier:	TP_IMS_5	108_02				
Summ	ary:	Standalone	e request; te	erminated at	the served user		
IUT Ro	ole:	IMS B					
Refere	ences:	clause 5.4.3.3 ¶5 (1 st numbered list)			Config Ref:	CF_ROAM_CALL	
	Entities				Cond	dition	
	UEA IMSA IMSB UEB						
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Mes	sage	IF
1		♦	Ð		MESSAGE addressed to UE ✓ a P-Charging-Vector hea ✓ an icid-value paramete	ader	
2		₹ a	Ą		MESSAGE ✓ Route header → the S-CSCF SIP UR ✓ a P-Charging-Vector hea ✓ the same icid-value pa * ioi parameters ✓ a Record-Route header ✓ the S-CSCF SIP URLO		

					Test Purpose	
Identif	ier:	TP_IMS_5	108_06		•	
Summ	ary:	S-CSCF re	jects barred	d users on N	MESSAGE	
IUT Ro	ole:	IMS B				
Refere	nces:	TS 124 229	9 (V9.5.0) [⁻	1],	Config Ref: CF_INT	Γ_CALL
		clause 5.4. in1 st number		n 1		
		Ent	ities		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
			✓	✓	UE B barred user in IMS B	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	lF IF
					MESSAGE addressed to UE B	
1		₩	Ď		✓ a Request URI	
					→ a barred user in IMS B	
2		€	À		404 response	

					Test Purpose	
Identif	ier:	TP_IMS_5	117_01		•	
Summ	ary:	S-CSCF re transaction		ess-networ	k-charging-info parameter from 1xx response to standalon	е
IUT Ro	ole:	IMS B				
Refere	ences:	TS 124 229 clause 5.4. 5 th number	3.3 ¶100 (i		Config Ref: CF_INT_CALL	
		Entit	ties		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	√	UE B registered in IMS B	
				✓	UE B has received a standalone request	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1			Ŷ	¢ħ	1xx response addressed to UE A	
2		Ŷŧ.	Ф		1xx response ✓ a P-Charging-Vector header * an access-network-charging-info parameter	

					Test Purpose	
Identif	ier:	TP_IMS_5	117_02		•	
Summ	ary:	S-CSCF re		ss-network	c-charging-info parameter from 2xx response to standalone	
IUT Ro	ole:	IMS B				
Refere	ences:	TS 124 229 clause 5.4. 5 th number	3.3 ¶100 (i		Config Ref: CF_INT_CALL	
		Enti	ties		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B has received a standalone request	
	UE A	IMS A	IMS B	UE B	·	
Step		Direc	ction		Message	IF
1			ݱ.	Ą	2xx response addressed to UE A	
2		Ŷ u	À		2xx response ✓ a P-Charging-Vector header x an access-network-charging-info parameter	

					Test Purpose		
Identif	ier:	TP_IMS_5	117_05		•		
Summ	ary:			ond P-Asse SIP URI if i	rted-Identity header in 1xx respons not present	se from UE for initial reque	st
IUT Ro	ole:	IMS B			·		
Refere	ences:	TS 124 229 clause 5.4. numbered		1], 1 in 5 th	Config Ref:	CF_INT_CALL	
		Ent	ities		Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
			✓		UE B registered_public_identities containing a Tel_URI and a SIP_URI		
	✓			✓	UE B has received a standalone request from UE A		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Message	e	IF
1			Ŷ <u>E</u>	Ą	1xx response addressed to UE	A	
2		Œ	Ą		1xx response ✓ a P-Asserted-Identity header → the tel URI of UE B ✓ a P-Asserted-Identity header → a SIP URI of UE B		

					Test Purpose		
Identif	ier:	TP_IMS_5	117_06		-		
Summ	ary:				erted-Identity header in 2xx response from UE for initial requ f not present	est	
IUT Ro	ole:	IMS B			•		
Refere	ences:	TS 124 229 clause 5.4. 5 th number	3.3 ¶100 (it		Config Ref: CF_INT_CALL		
		Entit	ies		Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
				✓	UE B registered_public_identities containing a Tel_URI and a SIP_URI		
	✓			✓	UE B has received a standalone request from UE A		
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	IF	
1			Æ.	¢ħ	2xx response addressed to UE A		
2		Ŷ <u>a</u>	Ą		2xx response ✓ a P-Asserted-Identity header → the tel URI of UE B ✓ a P-Asserted-Identity header → the SIP URI of UE B		

					Test Purpose					
Identif	ier:	TP_IMS_5	118_01		-					
Summ	ary:	S-CSCF in	clude term-	ioi paramet	er and restores orig-ioi in 200 responses to standalone requ	ests				
IUT Ro	ole:	IMS B	···• =							
Refere	nces:	TS 124 229	9 (V9.5.0) [1], clause	Config Ref: CF_INT_CALL					
		5.4.3.3 ¶10 6 th number	05 (item 2 in ed list)	1						
		Ent	ities		Condition					
	UE A	IMS A	IMS B	UE B						
	✓	✓			UE A registered in IMS A					
			✓	✓	UE B registered in IMS B					
	✓			✓	UE B has received a standalone request from UE A					
	UE A	IMS A	IMS B	UE B						
Step		Dire	ction		Message	IF				
1			℃	Ŷ.	200 response addressed to UE A					
2		€ेंच	Ą		200 response ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS A ✓ a term-ioi parameter → operator identifier of IMS B					

5.6 Application Server Handling Procedures

5.6.1 Application Server Handling at S-CSCF

						Test Purpose		
Identif	fier:	TP IN	IS 5097	09				
Summ	nary:				a handling	by S-CSCF with matching filter of	riteria AS	
IUT R		IMS B			J	, . ,		
Refere	ences:	clause	4 229 (V9 5.4.3.2 ¶ numbered	[11 (item:	s 5 and 8	Config Ref:	CF_ROAM_AS	
			Entities			Condition	n	
	UE A	IMS A	IMS B	AS B	UE B			
li .	\checkmark	✓				UE A registered in IMS A		
			✓		✓	UE B registered in IMS B		
		✓			✓	UE B visiting IMS A		
			✓	✓		IMS B configured with filter criter	ia to contact AS B	
			✓	✓		AS B within the trust domain of I	MS B	
	UE A	IMS A	IMS B	AS B	UE B			
Step			Direction	1		Messag	е	IF
1		₿	ΣŶ			initial INVITE addressed to UE A	A	
2			\$	Ð		initial INVITE ✓ a Route header → the SIP URI of AS B ✓ a P-Charging-Function-Addr ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS × a term-ioi parameter ✓ access-network-charging-in	S A	

						Test Purpose		
Identif	fier:	TP_IM	IS_5097_	13		•		
Summ	nary:	Standa	alone req	uest han	dling by S	-CSCF with matching filter criteria	AS	
IUT Ro	ole:	IMS B	•			-		
Refere	ences:	clause	4 229 (V9 5.4.3.2 ¶ numbered	11 (item:	s 5 and 8	Config Ref:	CF_ROAM_AS	
			Entities			Conditio	n	
	UE A	IMS A	IMS B	AS B	UE B			
	\checkmark	✓				UE A registered in IMS A		
			\checkmark		✓	UE B registered in IMS B		
		✓			✓	UE B visiting IMS A		
			✓	✓		IMS B configured with filter criter	ia to contact AS B	
			✓	✓		AS B within the trust domain of II	MS B	
	UE A	IMS A	IMS B	AS B	UE B			
Step			Direction	1		Messag	e	IF
1		\$	Ď			PUBLISH sent by UE_B		
2			\$	∌		PUBLISH ✓ a Route header → the SIP URI of AS B ✓ a P-Charging-Function-Addr ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS × a term-ioi parameter ✓ access-network-charging-ing	S A	

						Test Purpose	
Identif	ier:	TP_IM	S_5097_	14			
Summ	ary:	Initial r	equest fo	or a dialo	g handling	g by S-CSCF with matching filter criteria AS	
IUT Ro	ole:	IMS A					
Refere	ences:	clause	4 229 (V9 5.4.3.2 ¶ umbered	11 (item:	s 5 and 8	Config Ref: CF_IP_TV	
			Entities			Condition	
	UE A	IMS A		AS A			
	✓	✓				UE A registered in IMS A	
		✓		✓		IMS A configured with filter criteria to contact AS A	
	UE A	IMS A		AS A			
Step			Direction	1		Message	IF
1		\$		₽Ŷ		SUBSCRIBE ✓ a Route header → the SIP URI of AS A ✓ a P-Charging-Function-Addresses header ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS A × a term-ioi parameter ✓ access-network-charging-info	

						Test Purpose	
Identif	ier:	TP_IN	IS_5108_	03		•	
Summ	ary:	Reque	est for a in	nitial dialo	g termina	ated at the served user	
IUT Ro	ole:	IMS B					
Refere	ences:	clause	4 229 (V9 5.4.3.3 9 ered list)			Config Ref: CF_INT_AS	
			Entities			Condition	
	UE A	IMS A	IMS B	AS B	UE B		
	✓	✓				UE A registered in IMS A	
		✓			\checkmark	UE B registered in IMS A	
			\checkmark	✓		IMS B configured with filter criteria to contact AS B	
	UE A	IMS A	IMS B	AS B	UE B		
Step			Direction	1		Message	IF
1		₩	Ď			initial INVITE addressed to UE B	
2			\$	∌े		INVITE ✓ a topmost Route header → the SIP URI of AS B ✓ a Route header → the S-CSCF SIP URI of IMS B ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS A × a term-ioi parameter	

						Test Purpose	
Identif	ier:	TP IN	IS_5108_	04		•	
Summ	ary:				ninated a	t the served user	
IUT R		IMS B		,			
Refere	ences:	clause	4 229 (V9 e 5.4.3.3 • ered list)	9.5.0) [1], ¶5 (item 4	1 in1 st	Config Ref: CF_INT_AS	
			Entities			Condition	
	UE A	IMS A	IMS B	AS B	UE B		
1	✓	√				UE A registered in IMS A	
		✓			✓	UE B registered in IMS B	
	✓ ✓					IMS B configured with filter criteria to contact AS B	
	UEA IMSA IMSB ASB UEB				UE B		
Step			Direction	n		Message	IF
1		₩,	Ð			MESSAGE addressed to UE B	
2			₩,	₽Ŷ		MESSAGE ✓ a topmost Route header → the SIP URI of AS B ✓ a Route header → the S-CSCF SIP URI of IMS B ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS A × a term-ioi parameter	

						Test Purpose	
Identif	ier:	TP_IN	IS_5108_	07		•	
Summ	ary:	Reque	est for a in	nitial dial	og termir	nated at the served user (SUBSCRIBE)	
IUT Ro	ole:	IMS B			•		
Refere	ences:	TS 12	4 229 (V	9.5.0) [1],	ı	Config Ref: CF_INT_AS	
		clause 1 st nur	5.4.3.3 • nbered li	¶(item 4 i st)	n	-	
			Entities			Condition	
	UE A	IMS A	IMS B	AS B	UE B		
	✓	✓				UE A registered in IMS A	
		✓			✓	UE B registered in IMS A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
	UE A	IMS A	IMS B	AS B	UE B		
Step			Direction			Message	IF
1		₩	Ð			SUBSCRIBE addressed to UE B	
2			\$	€		SUBSCRIBE ✓ a topmost Route header → the SIP URI of AS B ✓ a Route header → the S-CSCF SIP URI of IMS B ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS A × a term-ioi parameter	

					Test Purpose	
Identif	ier:	TP_IMS_5	109_01			
Summ	ary:				nse to initial terminating INVITE when there is n lue SESSION_TERMINATED	o response from AS
IUT Ro	ole:	IMS B				
References: TS 124 229 (V9.5.0) [1], clause 5.4.3.3 ¶76 (after 2 nd numbered list)					Config Ref: CF_INT_CA CF_ROAM_	
		Ent	ities		Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
				×	UE B not registered	
			✓	✓	IMS B configured with a terminating unregister criterion for UE B indicating SESSION TERMINITE	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1		₩	ΣŶ		initial INVITE addressed to UE B	
2a	€ Å				408 response	
2b		Ŷ.	Ą		5xx response	

						Test Purpose		
Identif	ier:	TP_IM	IS_5110_	01		•		
Summ	ary:	Forwa	rd 200 fro	om AS on	final res	ponse to an initial request for a dia	log or a standalone reques	st
IUT Ro	ole:	IMS A				•	•	
Refere	References: TS 124 229 (V9.5.0) [1], clause 5.4.3.3 ¶79 (after 6 th dashed list)					Config Ref:	CF_INT_AS CF_ROAM_AS	
			Entities			Condition	ı	
	UE A	AS A	IMS A	IMS B	UE B			
	\checkmark		✓			UE A registered in IMS A		
				✓	✓	UE B registered in IMS B		
		✓	✓			IMS A configured with filter criteria	to contact AS A	
	✓				✓	UE B has received 180 on initial re UE A	equest for dialog from	
	UE A	AS A	IMS A	IMS B	UE B			
Step			Direction			Message	÷	F
1		₿	Ð			200 response addressed to UE B		
2			₽	Ð		200 response		

					Test Purpose		
Identif	ier:	TP_IMS_5	114_01		•		
Summ	ary:	S-CSCF sh	nould turn d	own initial	dialog request when terminated at t	the not registered served ι	ıser
IUT Ro	le:	IMS B				-	
Refere					Config Ref:	CF_INT_CALL CF_ROAM_CALL	
		Enti	ties		Condition	n	
	UE A	IMS A	IMS B	UE B			
	✓		✓		UE A registered in IMS B		
				×	UE B not registered		
			×		IMS B not configured with filter cri	teria to contact any AS	
	UE A	IMS A	IMS B	UE B			
Step		Direc	ction		Message	•	IF
1		₿	Ð		initial INVITE addressed to UE B		
2		Ŷ:	À		4xx response		

					Test Purpose		
Identif	ier:	TP_IMS_5	114_02		•		
Summ	ary:	S-CSCF sh	nould turn d	own standa	lone request when terminated at the	ne not registered served us	ser
IUT Ro	ole:	IMS B		•	-		
Refere	nces:	TS 124 229 clause 5.4.	9 (V9.5.0) [*		Config Ref:	CF_INT_CALL CF_ROAM_CALL	
		3 rd number	ed list)	111 3 111		CF_ROAW_CALL	
		Ent	ities		Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
				×	UE B not registered		
			×		IMS B not configured with filter c	riteria to contact any AS	
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Messag	e	IF
1		₩	ΣŶ		MESSAGE addressed to UE B		
2		र्दे	À		4xx response		

						Test Purpose		
Identif	ier:	TP_IM	S_5115_	07		•		
Summ	ary:		CF include ninating n		paramet	ter and restores orig-ioi in 1xx responses from AS to initia	al requests	
IUT Ro	ole:	IMS B						
Refere	References: TS 124 229 (V9.5.0) [1], clause 5.4.3.3 ¶89 (4 th numbered list)					Config Ref: CF_ROAM_AS CF_INT_AS		
			Entities			Condition		
	UE A	IMS A	IMS B	AS B	UE B			
	✓	✓				UE A registered in IMS A		
			\checkmark	✓		IMS B configured with filter criteria to contact AS B		
	✓			\checkmark		AS B has received an initial request for a dialog from UE A		
	UE A	IMS A	IMS B	AS B	UE B			
Step			Direction			Message	IF	
1			Ý£	Ą		1xx response addressed to UE A		
2		Œ.	Ą			1xx response ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS A ✓ a term-ioi parameter → operator identifier of IMS B		

						Test Purpose		
Identif	fier:	TP_IN	S_5115_	08		•		
Summ	nary:		F includ		i parame	eter and restores orig-ioi in 2xx res	oonses from AS to initial rec	quests
Clause	e:							
					1	Config Ref:	CF_ROAM_AS CF_INT_AS	
IUT R d	ole:	ÎMS B		•		Test Case:	TC_IMS_5115_08	
			Entities			Condition	n	
	UE A	IMS A	IMS B	AS B	UE B			
	\checkmark	✓				UE A registered in IMS A		
	✓			✓		AS B has received an initial reque	est for a dialog from UE A	
	UE A	IMS A	IMS B	AS B	UE B			
Step			irection			Messag	e	IF
1			ŶĿ	Ą		2xx response addressed to UE A	1	
2		€	Ą			2xx response ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS ✓ a term-ioi parameter → operator identifier of IMS		

						Test Purpose			
Identif	ier:	TP_IM	S_5118_	02		•			
Summ	ary:	S-CSC	F include	e term-ioi	paramet	ter and restores orig-ioi in 200 responses from AS to standalone			
		reques	sts						
IUT Ro	ole:	IMS B							
Refere	References: TS 124 229 (V9.5.0) [1],					Config Ref:	CF_ROAM_AS		
	clause 5.4.3.3 ¶106 (item 2 in 6 th numbered list)				n 2 in		CF_INT_AS		
			Entities			Condition	ı		
	UE A	IMS A	IMS B	AS B	UE B				
	✓	✓				UE A registered in IMS A			
		✓ ✓				IMS B configured with filter criteria	a to contact AS B		
	✓			\checkmark		AS B has received a standalone re	equest from UE A		
	UE A	IMS A	IMS B	AS B	UE B				
Step			Direction			Message		IF	
1			Ý:	Ą		200 response addressed to UE A			
2		€द	Ŷħ			200 response ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → operator identifier of IMS ✓ a term-ioi parameter → operator identifier of IMS			

						Test Purpose		
Identif	ier:	TP_IM	IS_5302_	01		•		
Summ	ary:		-CSCF sh r a 1xx oi			tess-network-charging-info parameter in the P-Charging-Veo AS	ctor	
IUT Ro	ole:	IMS B		•				
Refere	clause 5.4.3.3 ¶(after 11 th numbered list)					Config Ref: CF_ROAM_AS CF_INT_AS		
			Entities			Condition		
	UE A	IMS A	IMS B	AS B	UE B			
	✓	✓				UE A registered in IMS A		
			✓		✓	UE B registered in IMS B		
	✓				✓	UE B has received a subsequent request in a dialog from UE A		
			✓	✓		IMS B configured with filter criteria to contact AS B		
			✓	✓		AS B within the trust domain of IMS B		
	UE A	IMS A	IMS B	AS B	UE B			
Step			Direction			Message	IF	
1		₽	Ď			2xx response addressed to UE A		
2			₩	र्च		2xx response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter		

						Test Purpose			
Identif	ier:	TP_IM	IS_5302_	02		·			
Summ	ary:					xx response and not AS in same trust domain then it shall remove parameter in the P-Charging-Vector header			
IUT Ro	ole:	IMS B			0 0				
Refere	clause 5.4.3.3 ¶(after 11 th numbered list)					Config Ref: CF_ROAM_AS CF_INT_AS			
			Entities			Condition			
	UE A	IMS A	IMS B	AS B	UE B				
	✓	✓				UE A registered in IMS A			
		✓ ✓				UE B registered in IMS B			
	✓	1				UE B has received a subsequent request in a dialog from UE A			
			✓	✓		IMS B configured with filter criteria to contact AS B			
				×		AS B not within the trust domain			
	UE A	IMS A	IMS B	AS B	UE B				
Step			Direction			Message	IF		
1		₽	Ď			2xx response addressed to UE A			
2			₩	र्च		2xx response ✓ a P-Charging-Vector header x an access-network-charging-info parameter			

			Test Pu	rpose (TO BE REVISITED)	
Identif	ier:	TP_IMS_5206_01			
Summ	ary:	REGISTER reque	st if there is at	t least on AS that matches Filter Criteria	
IUT Ro	ole:	IMS B			
Refere	nces:	TS 124 229 (V9.5.		Config Ref: CF_ROAM_AS	
		clause 5.4.1.2.2F	¶15 (before		
		note 3)			
	1110 D	Entities		Condition	
	IMS B	AS B	UE B		
		✓	✓	UE B configured with filter criteria to contact AS B	
	✓		✓	IMS B has challenged with a 401 response the REGISTER	
				request of UE B	
	IMS B	AS B	UE B		
	_				
Step		Direction		Message	IF
Step				protected REGISTER	IF
Step				protected REGISTER ✓ an Authorization header	IF
Step				protected REGISTER ✓ an Authorization header ✓ an integrity-protected parameter set on	IF
Step 1	Ŷ a		ل	protected REGISTER ✓ an Authorization header ✓ an integrity-protected parameter set on (yes or	IF
	े च		\$	protected REGISTER ✓ an Authorization header ✓ an integrity-protected parameter set on (yes or tls-pending or	IF
	ŶĠ.		\$	protected REGISTER ✓ an Authorization header ✓ an integrity-protected parameter set on (yes or tls-pending or tls-yes or	IF
	ंदेच		\$	protected REGISTER ✓ an Authorization header ✓ an integrity-protected parameter set on (yes or tls-pending or tls-yes or ip-assoc-pending or	IF
1	_	Direction	ф	protected REGISTER ✓ an Authorization header ✓ an integrity-protected parameter set on (yes or tls-pending or tls-yes or ip-assoc-pending or ip-assoc-yes)	IF
	₹\$.		ф	protected REGISTER ✓ an Authorization header ✓ an integrity-protected parameter set on (yes or tls-pending or tls-yes or ip-assoc-pending or ip-assoc-yes) third party REGISTER	IF
1	_	Direction	Ф	protected REGISTER ✓ an Authorization header ✓ an integrity-protected parameter set on (yes or tls-pending or tls-yes or ip-assoc-pending or ip-assoc-yes) third party REGISTER ✓ a P-Access-Network-Info header	IF
1	_	Direction	Ф	protected REGISTER ✓ an Authorization header ✓ an integrity-protected parameter set on (yes or tls-pending or tls-yes or ip-assoc-pending or ip-assoc-yes) third party REGISTER	IF

						Test Purpose	
denti	fier:	TP_IN	IS_5308_	_01		-	
Summ	nary:	Retair	the acce	ess-netwo	rk-chargi	ng-info parameter from the P-Charging-Vector header in 180	to AS
UT R	ole:	IMS A					
Refere	ences:		4 229 (V9 5.4.4.2.2	9.5.0) [1], 2 ¶ 2		Config Ref: CF_INT_AS CF_ROAM_AS	
			Entities	3		Condition	
	UE A	AS A	IMS A	IMS B	UE B		
	✓		✓			UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
		✓	✓			IMS A configured with filter criteria to contact AS A	
		✓			✓	AS A has received an initial request for a dialog from UE B	
	UE A	AS A	IMS A	IMS B	UE B		
Step		<u> </u>	Direction	n		Message	IF
1	₩		£			180 response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	
2		Ŷ <u>E</u>	Ą			180 response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	

						Test Purpose	
Identif	fier:	TP_IN	IS_5308_	02		•	
Summ	nary:	Retain	the acce	ess-netwo	rk-chargi	ng-info parameter from the P-Charging-Vector header in 200	0 to AS
IUT Ro	ole:	IMS A					
Refere	ences:		4 229 (V9 5.4.4.2.2	9.5.0) [1], 2 ¶ 2		Config Ref: CF_INT_AS CF_ROAM_AS	
			Entities			Condition	
	UE A	AS A	IMS A	IMS B	UE B		
	✓		✓			UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
		✓	✓			IMS A configured with filter criteria to contact AS A	
		✓			✓	AS A has received 180 on initial request for dialog from UE B	
	UE A	AS A	IMS A	IMS B	UE B		
Step			Direction	n		Message	IF
1	₩		Đ			200 response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	
2		Ŷ a	ŶÜ			200 response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	

						Test Purpose					
Identif	lentifier: TP_IMS_5310_01										
Summ	nary:	Retain	ing the a	ccess-ne	twork-cha	arging-info parameter from the P-C	harging-Vector				
IUT Ro	ole:	IMS B				· ·					
Refere	References: TS 124 229 (V9.5.0) [1], clause 5.4.6.1.2 ¶1				Config Ref:	CF_ROAM_AS					
	Entities					Conditio	n				
	UE A IMS A IMS B AS B UE B				UF B	Condition					
	✓	✓		7.0 _	-	UE A registered in IMS A					
			✓		✓	UE B registered in IMS B					
	✓				✓	UE B has initiated a dialog with L	JE A				
		✓ ✓				IMS B configured with filter criter					
				✓		AS B is within the trust domain o	f IMS B				
	UE A	IMS A	IMS B	AS B	UE B						
Step			Direction	1		Messag	e	IF			
1		\$	र्ज			subsequent INVITE ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter					
2			₩	र्च		INVITE ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter					

					Test Purpose					
dentifier: TP_IMS_5310_02										
ary:	Not re	taining th	e access	-network-	charging-info parameter from the	P-Charging-Vector				
ole:						5 0				
nces:					Config Ref:	CF_ROAM_AS				
					Condition					
11E A	INAC A		AC D	LIE D	Condition	оп				
	IIVIS A	IINI2 B	A5 B	UEB	115 4 11 1140 4					
V	٧									
,										
✓				✓						
	✓ ✓				IMS B configured with filter criter	ria to contact AS B				
			×		AS B is not within the trust doma	in of IMS B				
UE A	IMS A	IMS B	AS B	UE B						
		Direction	า		Messag	e	IF			
					subsequent INVITE					
	М.	_			✓ P-Charging-Vector header					
	4	±3∕°				na-info				
					parameter					
					INVITE					
		М.	_		✓ a P-Charging-Vector header					
		4	立							
						<u></u>				
	ary: ile: nces: UE A	ary: Not re lle: IMS B nces: TS 12 clause UE A IMS A	ary: Not retaining the le: IMS B nces: TS 124 229 (VS clause 5.4.6.1.2 Entities UE A IMS A IMS B V UE A IMS A IMS B Direction	ary: Not retaining the access lie: IMS B nces: TS 124 229 (V9.5.0) [1], clause 5.4.6.1.2 ¶1 Entities UE A IMS A IMS B AS B V V V UE A IMS A IMS B AS B Direction	ary: Not retaining the access-network- le: IMS B TS 124 229 (V9.5.0) [1], clause 5.4.6.1.2 ¶1 Entities UE A IMS A IMS B AS B UE B V V V V UE A IMS A IMS B AS B UE B Direction	ier: TP_IMS_5310_02 ary: Not retaining the access-network-charging-info parameter from the lie: IMS B nces: TS 124 229 (V9.5.0) [1], clause 5.4.6.1.2 ¶1 Entities Condition UE A IMS A IMS B AS B UE B V V UE A registered in IMS A UE B registered in IMS B AS B has initiated a dialog with the lims become a subsequent with filter criter and a subsequent INVITE V P-Charging-Vector header V a P-Charging-Vector header V a P-Charging-Vector header	In the control of the			

	Test Purpose										
Identif	ier:	TP_IM	IS_5310_	_03		<u>-</u>					
Summ	ary:	Retain	ing in UF	PDATE th	e acces	s-network-charging-info parameter f	rom the P-Charging-Vecto	r			
IUT Ro	ole:	IMS B				<u> </u>					
Refere	ences:		4 229 (V9 5.4.6.1.2			Config Ref:	CF_ROAM_AS				
	Entities					Condition	1				
	UE A IMS A IMS B AS B UE B			UE B							
	✓	✓				UE A registered in IMS A					
			✓		✓	UE B registered in IMS B					
	✓				✓	JE B has initiated a dialog with UE A					
			✓	✓		IMS B configured with filter criteria to contact AS B					
				✓		AS B is within the trust domain of I	MS B				
	UE A	IMS A	IMS B	AS B	UE B						
Step			Direction	,		Message		IF			
						subsequent UPDATE					
1		P	₹Ŷ			√ a P-Charging-Vector header					
		⇒	₽⁄			✓ an access-network-charging	-info				
						parameter					
						UPDATE					
			М.	^		✓ a P-Charging-Vector header					
2			₽	侴		✓ an access-network-charging	-info				
						parameter					

						Test Purpose			
Identif	ier:	TP_IM	IS_5310_	04		•			
Summ	ary:	Not re	taining in	UPDATE	E the acc	cess-network-charging-info paramet	er from the P-Charging-Ve	ector	
IUT Ro	ole:	IMS B	•			 			
Refere	nces:	TS 12	4 229 (VS	9.5.0) [1],	ı	Config Ref:	CF_ROAM_AS		
		clause	5.4.6.1.2	2 ¶1		_			
			Entities			Condition	1		
	UEA IMSA IMSB ASB UEB								
	✓	✓				UE A registered in IMS A			
			✓		✓	UE B registered in IMS B			
	✓				✓	UE B has initiated a dialog with UE A			
			✓	✓		IMS B configured with filter criteria to contact AS B			
				×		AS B is not within the trust domain	of IMS B		
	UE A	IMS A	IMS B	AS B	UE B				
Step			Direction			Message		IF	
						subsequent UPDATE			
1		₽	, \$⁄			✓ P-Charging-Vector header			
•		\ \ \ \ \ \	Σ/			✓ an access-network-charging	-info		
						parameter			
						UPDATE			
2	2		✓ a P-Charging-Vector header						
2			4	ਡੁ∕		* an access-network-charging-	-info		
						parameter			

						Test Purpose		
Identif	ier:	TP_IM	IS_5312_	01		-		
Summ	ary:	Retain respor	•	ccess-ne	twork-ch	narging-info parameter from the P-Charging-Vector on 200 (OF	K)	
IUT Ro	ole:	IMS B						
Refere	References: TS 124 229 (V9.5.0) [1], clause 5.4.6.1.3 ¶1			Config Ref: CF_ROAM_AS CF_INT_AS				
			Entities			Condition		
	UE A	IMS A	IMS B	AS B	UE B			
	✓	✓				JE A registered in IMS A		
			✓		✓	UE B registered in IMS B		
	✓				✓	UE B has initiated a dialog with UE A		
			✓	✓		IMS B configured with filter criteria to contact AS B		
	✓				✓	UE B having sent subsequent INVITE or UPDATE to UE A		
	UE A	IMS A	IMS B	AS B	UE B	-		
Step			Direction			Message	IF	
1		\$	र्ज			200 response addressed to UE B ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter		
2			₽	र्चे		200 response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter		

						Test Purpose	
Identif	ier:	TP_IM	IS_5313 __	_01		<u> </u>	
Summ	ary:	Retain reques		ccess-ne	twork-ch	narging-info parameter from the P-Charging-Vector on any SII	Р
IUT Ro	ole:	IMS B					
Refere	ences:		4 229 (V9 5.4.6.1.3	9.5.0) [1], 3 ¶ 2		Config Ref: CF_INT_AS CF_ROAM_AS	
	Entities					Condition	
	UE A AS A IMS A IMS B UE B		UE B				
	✓		✓			UE A registered in IMS B	
				✓	UE B registered in IMS B		
		✓ ✓			IMS A configured with filter criteria to contact AS A		
		✓ ✓		✓	AS A has initiated a dialog with UE B		
		✓				AS A is within the trust domain of IMS A	
	UE A	AS A	IMSA	IMS B	UE B		
Step			Direction			Message	IF
1			रिंद	Ą		a response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	
2	2 & #			The response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter			

						Test Purpose		
Identif	ier:	TP_IM	IS_5313_	02		•		
Summ	ary:		taining th		-network	c-charging-info parameter from the I	P-Charging-Vector on any	SIP
Clause) :	<u> </u>						
Refere	References:		4 229 (V9 5.4.6.1.3	9.5.0) [1], 3 ¶ 2		Config Ref:	CF_INT_AS	
IUT Ro	UT Role: IMS A				Test Case:	TC_IMS_5313_02		
			Entities			Condition	1	
	UE A	AS A	IMS A	IMS B	UE B			
	✓		✓			UE A registered in IMS A		
				✓	✓	UE B registered in IMS B		
		✓	✓			IMS A configured with filter criteria	to contact AS A	
		✓			✓	AS A has initiated a dialog with UE	В	
		x				AS A is not within the trust domain	of IMS A	
	UE A	AS A	IMS A	IMS B	UE B			
Step			Direction			Message		Ŧ
1			र्देच	Ą		a response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter		
2		Ŷŧ.	Ą			the response ✓ a P-Charging-Vector header × access-network-charging-inf	fo parameter	

						Test Purpose	
Identif	ier:	TP_IM	IS_5320_	01			
Summ	ary:		CF is failir		eive a SI	P response or receive 408 (Request Timeout) response or a 5	бхх
IUT Ro	ole:	IMS B					
Refere	References:		TS 124 229 (V9.5.0) [1], clause 5.4.3.2 ¶91 (after note 15)			Config Ref: CF_ROAM_AS CF_INT_AS	
	Entities					Condition	
	UE A	IMS A IMS B AS B UE B					
	✓				UE A registered in IMS A		
			✓		✓	UE B registered in IMS B	
				✓	✓	AS B has received an initial request for a dialog from UE B	
			✓	✓		AS B filter criteria default handling in IMS B set to SESSION TERMINATED	
	UE A	IMS A	IMS B	AS B	UE B		
Step			Direction			Message	IF
1			€ ∥	4		Any response	
2a			₽		Ð	408 response	
2b			₽		Ð	5xx response	

5.7 MGCF tests for IMS-PSTN interconnection

				Test Purpose				
Identifier: TP_IMS_MGCF_01								
Summ	ary:	MGCF shall send	NVITE due to	indication of an incoming ca	II			
Clause	Clause: TS 124 229 [1], clause 5.5.3.1.1			-				
Refere			Config Ref:	CF_PSTN				
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_01			
	Entities			Col	ndition			
	IMS_A IUT PSTN							
	√		IMS A and PSTN with peer-	to-peer arrangement				
	IMS_A IUT PSTN							
Step	tep Direction			essage	IF			
1	€ 4		initial IAM					
2	€त	Ą		INVITE ✓ a Request URI → Tel URI E.164 Number or (Sip URI E.164 Number ✓ a Contact header → anyvalue GRUU form ✓ a Supported header ✓ an 100rel value ✓ a P-Asserted-Identity he ✓ a P-Charging-Vector he → an icid-value paramet ✓ a SDP → codec supported curr	with user portion phone) eader eader ter			

					Test Purpose		
Identif	ier:	TP_II	MS_MGCF_0	2			
Summ	ary:	MGC	F shall send	100 response	e due to indication of an incoming IN	VITE	
Clause) :	TS 12	24 229 [1], cla	ause 5.5.3.1.2	2		
Refere	References: RQ_24.229_5.5.3.1.2				Config Ref:	CF_PSTN	
IUT Ro	IUT Role: MGCF				Test Case:	TC_IMS_MGCF_02	
			Entities		Condition	า	
	IMS_A		IUT	PSTN			
	✓			✓	IMS A and PSTN with peer-to-pee	r arrangement	
	IMS_A		IUT	PSTN			
Step	Step Direction		Message		IF		
1	₩ 🖈		initial INVITE				
2	Æ Ø		100 response				

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_0)3	•		
Summ	ary:	MGCF shall send	183 response	e codec found or not required		
Clause	Hause: TS 124 229 [1], clause 5.5.3.1.			2		
Refere	nces:	RQ_24.229_5.5.3	.1.2	Config Ref:	CF_PSTN	
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_03	
	Entities			Conditio	n	
	IMS_A	IUT	PSTN			
			✓	IMS A and PSTN with peer-to-pee	r arrangement	
	IMS_A	IUT	PSTN			
Step		Direction		Message	9	IF
1	\$	Ð		initial INVITE		
2	Ŷ Ŀ	Ą		100 response		
3 €		ф		 183 response ✓ Require header → 100rel value ✓ a P-Charging-Vector header ✓ a term-ioi parameter → the operator identifier of III 	MS A	

					Test Purpose		
Identif	ier:	TP_	IMS_MGCF_0)5	•		
Summ	ary:	MGC	CF shall send	UPDATE requ	iest		
Clause: TS 124 229 [1], clause 5.5.3.2.1				ause 5.5.3.2.1			
References: RQ 24.229 5.5.3.2.1			24.229_5.5.3	2.1	Config Ref:	CF_PSTN	
IUT Ro	IUT Role: MGCF				Test Case:	TC_IMS_MGCF_05	
	Entities				Condition	n	
	IMS_A		IUT	PSTN			
	✓			✓	IMS A and PSTN with peer-to-pee	r arrangement	
	IMS_A		IUT	PSTN		-	
Step	Step Direction		Message		IF		
1	\$		200 response for PRACK condition	ons fulfilled			
2	Ŷŧ Ø			UPDATE			

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_0	6			
Summ	ary:	MGCF shall send	180 response d	due to indication of an ACM/CPG		
Clause				TS 124 229 [1], clause 5.5.3.2.2		
Refere	nces:	RQ_29.163_7.2.3.	1.4	Config Ref:	CF_PSTN	
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_06	
	Entities		Condition			
	IMS A IUT PSTN					
	✓		✓	IMS A and PSTN with peer-to-peer arrangement		
	IMS_A	IUT	PSTN			
Step		Direction		Message		IF
1a		Ýc.	Ŷħ	ACM		
		42	<	subscriber free		
1b		Ýc.	ŶŊ.	CPG		
		A	4	→ ALERTING		
2	Ŷ Ŀ	¢ħ		180 response		

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_0	07			
Summ	ary:	MGCF shall send	200 response	due to indication of ANM		
Clause	e:	TS 129 163 [6], cl	ause 7.2.3.1.5,	TS 124 229 [1], clause 5.5.3.2.2		
Refere	nces:	RQ_29.163_7.2.3	.1.5	Config Ref:	CF_PSTN	
IUT Ro	IUT Role: MGCF		Test Case:	TC_IMS_MGCF_07		
	Entities			Condition		
	IMS_A	IUT	PSTN			
	✓		✓	IMS A and PSTN with peer-to-pee	er arrangement	
	IMS_A	IUT	PSTN			
Step	Direction		Messag	е	IF	
1		Ŷ±.	Ą	ANM		
2	È	ф		200 response		

					Test Purpose		
Identif	ier:	TP_	IMS_MGCF_0	08	•		
Summ	ary:	MGC	CF shall send	BYE response	e due to indication of release		
Clause	e :	TS 1	29 163 [6], cl	ause 7.2.3.1.8	3, TS 124 229 [1], clause 5.5.4.1		
References: RQ_29.163_7.2.3.1.8		Config Ref:	CF_PSTN				
IUT Role: MGCF		Test Case:	TC_IMS_MGCF_08				
	Entities		Condition				
	IMS_A		IUT	PSTN			
	✓			✓	IMS A and PSTN with peer-to-pee	er arrangement	
	IMS_A		IUT	PSTN			
Step	Direction		Messag	Message			
1			Œ	Ą	REL		
2	Ŷ:		Ą		BYE		

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_0	9	•		
Summ	ary:	MGCF shall send	486 response	due to indication of release	with cause indicator 17	
Clause	e:	TS 129 163 [6], cla	ause 7.2.3.1.8			
Refere	References: RQ_29.163_7.2.3.1.8		Config Ref:	CF_PSTN		
IUT Ro	IUT Role: MGCF			Test Case:	TC_IMS_MGCF_09	
	Entities				Condition	
	IMS_A	IUT	PSTN			
	✓		✓	IMS A and PSTN with peer-to-peer arrangement		
	IMS_A	IUT	PSTN			
Step		Direction			Message	IF
1		Ŷ L	À	REL		
		4	4	→ cause17		
2	È	Ą		486 response		

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_1	0	<u>-</u>		
Summ	ary:	MGCF shall send	REL with caus	se #17 or #34 with Diagnos	tic due to 486 Busy here	
Clause	e:	TS 129 163 [6], cla	ause 7.2.3.2.1	2	•	
Refere	References: RQ_29.163_7.2.3.2.12		Config Ref:	CF_PSTN		
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_10	
		Entities			Condition	
	IMS_A IUT P		PSTN			
	✓		✓	IMS A and PSTN with peer-to-peer arrangement		
	IMS_A	IUT	PSTN		-	
Step		Direction			Message	IF
1	₩	Ð		486 response		
2		₩	Ð	REL → cause17 or cause34		

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_1	1	•		
Summ	•	MGCF shall send from IMS	CPG with a 're	mote hold' Generic notification indic	cator on receipt of HOLD r	equest
Clause	e:	TS 129 163 [6], cla	ause 7.4.10.1			
Refere	nces:	RQ_29.163_7.4.1	0.1	Config Ref:	CF_PSTN	
IUT Ro	IUT Role: MGCF			Test Case:	TC_IMS_MGCF_11	
	Entities			Condition	n	
	IMS_A	IUT	PSTN			
	✓		✓	IMS A and PSTN with peer-to-pee	er arrangement	
	✓		✓	IMS A and PSTN call active		
	IMS_A	IUT	PSTN			
Step		Direction		Message	•	IF
1	\$	र्ज		UPDATE or a target refresh INVIT✓ a SDP→ sendonly	Ē	
2		\$	₽	CPG → remote hold		

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_	12	•		
Summ	-	MGCF shall send request from IMS	CPG with a 'r	remote retrieve' Generic n	otification indicator on receipt	of Resume
Clause	e:	TS 129 163 [6], cl	ause 7.4.10.1			
References: RQ_29.163_7.4.10.1		Config Ref:	CF_PSTN			
IUT Ro	UT Role: MGCF			Test Case:	TC_IMS_MGCF_1	2
		Entities			Condition	
	IMS_A	IUT	PSTN			
	✓		✓	IMS A and PSTN with p	IMS A and PSTN with peer-to-peer arrangement	
	✓		✓	IMS A and PSTN call o	IMS A and PSTN call on hold	
	IMS_A	IUT	PSTN			
Step		Direction			Message	IF
				UPDATE or a target re	resh INVITE	
1	♠	Ð		✓ a SDP		
				→ sendrecv		
2		\$	£	CPG		
2		\$	Ď	→ remote retrieve		

				Test Purpose			
Identif	ier:	TP_IMS_MGCF_1	3	•			
Summ	•	MGCF shall send of from IMS	CPG with a 're	mote hold' Generic notification in	dicator on receipt of HOLD r	equest	
Clause	e:	TS 129 163 [6], cla	use 7.4.10.2				
Refere	References: RQ_29.163_7.4.10.2).2	Config Ref:	CF_PSTN		
IUT Ro	ole:	MGCF		Test Case: TC_IMS_MGCF_13			
	Entities			Conditi	ion		
	IMS_A	IUT	PSTN				
	✓		✓	IMS A and PSTN with peer-to-peer arrangement			
	✓		✓	IMS A and PSTN call active			
	IMS_A	IUT	PSTN				
Step		Direction		Messa	ge	IF	
1		ीं	Ą	CPG → remote hold			
2	Œ	₽		UPDATE or a target refresh INV✓ a SDP→ sendonly	(ITE		

				Test Purpose			
Identif	ier:	TP_IMS_MGCF_1	4	•			
Summ	•	MGCF shall send (request from IMS	CPG with a 're	emote retrieve' Generic notif	ication indicator on receipt of Re	sume	
Clause	e:	TS 129 163 [6], cla	use 7.4.10.2				
Refere	References: RQ 29.163 7.4.10.2		Config Ref:	CF_PSTN			
IUT Ro	ole:	MGCF		Test Case: TC_IMS_MGCF_14			
	Entities		С	Condition			
	IMS_A	IUT	PSTN				
	✓		✓	IMS A and PSTN with peer-to-peer arrangement			
	✓		✓	IMS A and PSTN call on hold			
	IMS_A	IUT	PSTN				
Step		Direction		N	lessage	IF	
1		रिंद	ф	CPG → remote retrieve			
2	ींच	¢ħ		UPDATE or a target refrest✓ a SDP→ sendonly	sh INVITE		

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_1	5	•		
Summary: MGCF sha		MGCF shall send.	ACM/CPG due	to indication of a 180 response	onse	
Clause	e:	TS 129 163 [6], cla				
Refere	References: RQ 29.163 7.2.3.2.4 and 6		Config Ref:	CF_PSTN		
IUT Ro	IUT Role: MGCF		Test Case:	TC_IMS_MGCF_15		
	Entities			С	ondition	
	IMS_A	IUT	PSTN			
	✓		✓	IMS A and PSTN with peer-to-peer arrangement		
	IMS_A	IUT	PSTN			
Step		Direction		N	lessage	IF
1	₽	Đ		180 response		
2		₩	र्ज	ACM → subscriber free or sends a CPG → ALERTING		

	Test Purpose								
Identif	ier:	TP_IMS	_MGCF_1	6					
Summ	ary:	MGCF sl	hall send /	ANM due to ir	dication of a 200 response				
Clause									
Refere	References: RQ_29.163_7.2.3.2.8		Config Ref:	CF_PSTN					
IUT Ro	IUT Role: MGCF		Test Case:	TC_IMS_MGCF_16					
	Entities		Condition	1					
	IMS_A		IUT	PSTN					
	✓			✓	IMS A and PSTN with peer-to-peer	arrangement			
	IMS_A		IUT	PSTN					
Step	Direction			Message		Ŧ			
1	\$ \$			200 response					
2			\$	Ð	ANM				

Test Purpose								
Identif	ier:	TP_II	MS_MGCF_1	7				
Summ	ary:	MGC	F shall send I	REL due to ind	lication of a BYE			
Clause	ə:	TS 12	29 163 [6], cla	use 7.2.3.2.13	3			
References: RQ_29.163_7.2.3.2.13		Config Ref:	CF_PSTN					
IUT Ro	IUT Role: MGCF		Test Case:	TC_IMS_MGCF_17				
	Entities		Condition					
	IMS_A		IUT	PSTN				
	✓			✓	IMS A and PSTN with peer-to-pee	r arrangement		
	IMS_A		IUT	PSTN				
Step	Direction		Message	•	IF			
1	\$ \$			BYE				
2			₩	Ð	REL			

5.8 ENUM tests for Tel-URI Resolution

						Test Purpose		
			IMS_ENUM_01					
Summ	ary:	The E	The ENUM DB resolves a Tel URI into a SIP URI					
IUT Ro	ole:	IMS A						
References:		TS124 229 (V9.5.0) [1],				Config Ref: CF_INT_CALL		
			5.4.3.2		10			
		1 st nur	nbered lis	st)				
		Entities				Condition		
	UE A	IMS A	ENUM _DB	IMS B	UE B			
	✓	✓				UE A registered in IMS A		
				\checkmark	✓	UE B registered in IMS B		
			✓		✓	ENUM_DB configured with an ENUM entry for Tel URI E.164 Number of UE B		
	UE A	IMS A	ENUM _DB	IMS B	UE B			
Step			Direction			Message	IF	
			Direction			initial INVITE addressed to UE B	IF	
Step 1	₩	±ŷ	Direction			initial INVITE addressed to UE B ✓ a Request URI	IF	
	₩,		Direction			initial INVITE addressed to UE B	IF	
1	₽	र्छ				initial INVITE addressed to UE B ✓ a Request URI	IF	
	₩		Direction			initial INVITE addressed to UE B ✓ a Request URI → a Tel URI	IF	
1	₽,	र्छ				initial INVITE addressed to UE B ✓ a Request URI → a Tel URI NAPTR Query ✓ the derived Tel URI E.164 Number NAPTR Response	IF	
1	₩	र्छ				initial INVITE addressed to UE B ✓ a Request URI → a Tel URI NAPTR Query ✓ the derived Tel URI E.164 Number	IF	
1	\$	र्छ				initial INVITE addressed to UE B ✓ a Request URI → a Tel URI NAPTR Query ✓ the derived Tel URI E.164 Number NAPTR Response ✓ NAPTR Resource Record	IF	
1	₩	र्छ				initial INVITE addressed to UE B ✓ a Request URI → a Tel URI NAPTR Query ✓ the derived Tel URI E.164 Number NAPTR Response ✓ NAPTR Resource Record → the TTL of the NAPTR record	IF	
1 2	₩	₽	∌̂			initial INVITE addressed to UE B ✓ a Request URI → a Tel URI NAPTR Query ✓ the derived Tel URI E.164 Number NAPTR Response ✓ NAPTR Resource Record → the TTL of the NAPTR record → the service type E2U+sip	IF	
1 2	₩	₽	∌̂			initial INVITE addressed to UE B ✓ a Request URI → a Tel URI NAPTR Query ✓ the derived Tel URI E.164 Number NAPTR Response ✓ NAPTR Resource Record → the TTL of the NAPTR record → the service type E2U+sip → the regular expression !^(.*)\$!	IF	
1 2	₩	₽	∌̂			initial INVITE addressed to UE B ✓ a Request URI → a Tel URI NAPTR Query ✓ the derived Tel URI E.164 Number NAPTR Response ✓ NAPTR Resource Record → the TTL of the NAPTR record → the service type E2U+sip → the regular expression !^(.*)\$! → the SIP URI of UE B	IF	

Annex A (normative): Zip file with TPLan code

The test purposes defined in the present document have been automatically generated from the TPLan text files in the archive file ts_18601101v040101p0.zip which accompanies the present document. The raw text files has been converted to a symbolic table format to allow better readability.

Annex B (normative): IMS NNI Interoperability Test Configurations

IMS NNI interoperability test configuration identifiers have been composed using on the following abbreviations:

• REG: Only one UE

• CALL: One or two UEs

• AS: One or two UEs plus Application Server for one UE

• ROAM: UE B is roaming in home network of UE A

• INT: UE A and B are in interoperating home networks

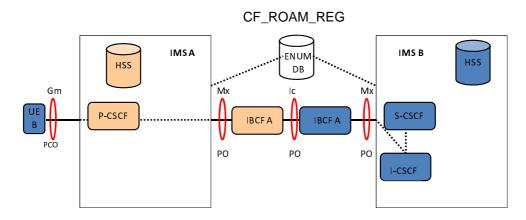
• PSTN: One user is located in the PSTN

IPTV: Only one UE, AS for IPTV present

• CONF: Two UEs, AS for Conference present

Note that all test configurations assume that observable interfaces are indicated as a solid line, non-observable interfaces as indicated dashed lines, and that IBCF acts in a "pass-through" mode if topology hiding is not required.

Roaming Registration



Precondition:

Different network operators performing origination and termination, UE_B roaming in visited network A (ROAM). UE_B not yet registered (REG), neither UE_A nor AS involved, a common interconnect ENUM DB and local ENUM is involved, IBCF is involved but no topology hiding performed.

Test configuration for:

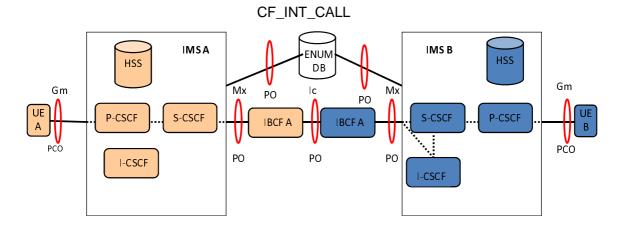
Registration requests and responses from UE_B

Example:

REGISTER prior to IMS VoIP voice call from UE_B

Figure B.1: CF_ROAM_REG

Interworking Call



Precondition:

Different network operators performing origination and termination, both Ues or only UE_A in home networks (INT), both Ues registered, no AS, a common interconnect ENUM DB and local ENUM is involved, IBCF is involved, topology hiding may apply.

Test configuration for:

Requests and responses between UE_A and UE_B in call (CALL) and messaging scenarios. Unsuccessful initiall requests and responses from UE_A (when UE_B is nor registered)

Example:

Initial INVITE in IMS Vol Pvoice call from UE A to UE B

Figure B.2: CF_INT_CALL

Roaming Call

CF_ROAM_CALL Gm **IMSA IMSB** ENUM HSS HSS DΒ Mx Мx PCO P-CSCF РΟ РО РО I-CSCF **I-CSCF** В PCO

Precondition:

Different network operators performing origination and termination, UE_B roaming (ROAM) via IMS_A, UE_A in home network, both Ues are registered, no AS, a common interconnect ENUM DB and local ENUM is involved, IBCF is involved, topology hiding may apply.

Test configuration for:

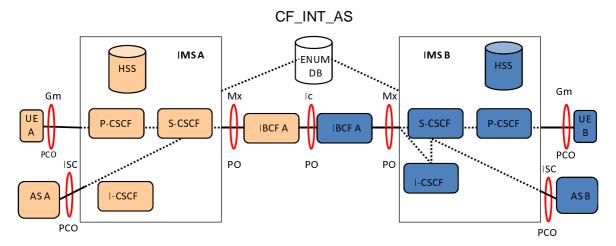
Requests and responses between UE_B and UE_A in call (CALL) and messaging scenarios

Example:

Initial INVITE in IMS VoIP voice call from UE_B to UE_A

Figure B.3: CF_ROAM_CALL

Interworking Application Server



Precondition:

Different network operators performing origination and termination, UE_A and UE_B in home networks INT), both UEs registered, AS for UE_A and UE_B (AS), a common interconnect ENUM DB and local ENUM is involved, IBCF is involved, topology hiding may apply.

Test configuration for:

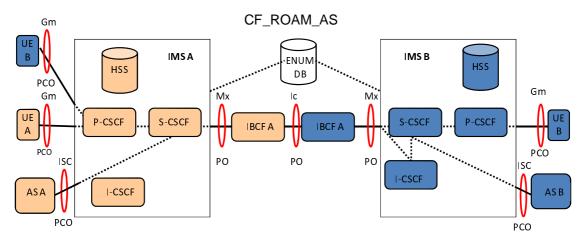
Requests and responses between ASes and UEs

Example:

Initial INVITE in IMS Vol P voice call unconditionally forwarded to UE_B by AS_A (CFU), AS_A acts as routing AS

Figure B.4: CF_INT_AS

Roaming Application Server



Precondition:

Different network operators performing origination and termination, UE_B roaming (ROAM) via IMS_A, UE_A in home network, both Ues are registered, AS for UE_A and UE_B may be involved (AS), a common interconnect ENUM DB and local ENUM is involved, IBCF is involved, topology hiding may apply.

Test configuration for:

Requests and responses between AS_B and UEs

Example:

 $Initial\ |\ NV|\ TE\ in\ |\ MS\ Vol\ P\ voice\ call\ unconditionally\ forwarded\ to\ UE_B\ by\ AS_B\ (CFU),\ AS_B\ acts\ as\ routing\ AS$

Figure B.5: CF_ROAM_AS

Interworking Conference Server

CF_INT_CONF_AS IMS A **IMSB** ENUM HSS HSS DB Gm Gm **I-CSCF** S-CSCF P-CSCF Mw PCO PCO S-CSCF ISC **I-CSCF** PΟ Conf **MRFP MRFC** AS A **MRFP** Mb

Precondition:

PCO

Different network operators performing origination and termination, both Ues or only UE_A in home networks (INT), both UEs registered, CONF AS is involved in IMS_A, a common interconnect ENUM DB and local ENUM is involved, IMS_A and IMS_B both include MRFC and MRFP

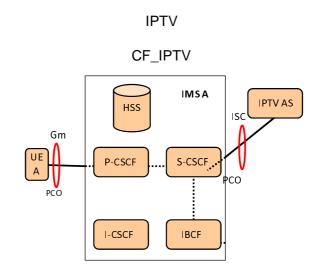
Test configuration for:

Requests and responses between UE_A and UE_B in an Ad-hoc Conference call (CONF_CALL)

Example:

Initial INVITE from UE_A to initiate an ad-hoc Conference call in IMS_A, and subsequent invitation to UE_B to join (via REFER method from UE_A)

Figure B.6: CF_INT_CONF_CALL



Precondition:

 $\label{eq:UEAR} \mbox{UE_A registered in home network, $|\mbox{PTV_AS involved}$} \\ \mbox{Test configuration for:}$

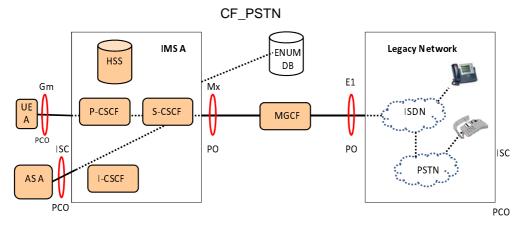
Requests and responses between UE_A and IPTV AS

Example:

 $|\ \, \text{Initial}\ |\ \, \text{INV}\ |\ \, \text{TE}\ from\ UE_A\ to\ initiate\ an\ |\ \, \text{PTV}\ Broadcast\ session$

Figure B.7: CF_IPTV

PSTN Interworking



Precondition:

Different network operators performing origination and termination, UE_A and UE_B in home networks INT), both UEs registered, AS for UE_A and UE_B (AS), a common interconnect ENUM DB and local ENUM is involved, IBCF is involved, topology hiding may apply.

Test configuration for:

Requests and responses between ASes and UEs

Example:

 $Initial \, |\, NV \, |\, TE\, in \, |\, MS\, Vo \, |\, P\, voice\, call\, \, unconditionally\, forwarded\, to\, UE_B\, \, by\, AS_A\, (CFU),\, AS_A\, acts\, as\, routing\, AS$

Figure B.8: CF_PSTN

History

Document history							
V1.0.0	April 2008	Publication					
V1.1.1	March 2009	Publication					
V2.1.1	February 2009	Publication					
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V3.1.1	June 2011	Publication					
V4.1.1	October 2011	Publication					