# ETSI TS 186 011-1 V5.1.1 (2013-10)



Core Network and Interoperability Testing (INT); IMS NNI Interoperability Test Specifications (3GPP Release 10); Part 1: Test purposes for IMS NNI Interoperability

Reference RTS/INT-00085-1

Keywords IMS, interoperability, interworking, NNI, testing

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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 10 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 [5].

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.

### 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 <a href="http://docbox.etsi.org/Reference">http://docbox.etsi.org/Reference</a>.

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 (V10.10.0): "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 10.10.0 Release 10)". [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 129 163 (V10.8.0): "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 10.8.0 Release 10)".

[6] GSMA RCS V5.1: "Rich Communication Suite 5.1; Advanced Communications Services and Client Specification; Version 1.0; 13 August 2012".

NOTE: Available at http://www.gsma.com/rcs/wp-content/uploads/2012/10/RCS5.1-UNI-V1.0.zip.

#### 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	3 <sup>rd</sup> Generation Partnership Project
ACK	(positive) ACKnowledgement
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
DD DNS	Domain Name System
ENUM	E.164 Number Mapping
GRUU	Globally Routable User agent URI
GSMA	GSM Association
HSS	Home Subscriber Server
IAM	Initial Address Message
IBCF	Interconnection Border Control Gateway
I-CSCF	
IMS	Interrogating CSCF IP Multimedia Subsystem
IOI	Inter Operator Identifier
IP	Internet Protocol
IP IPTV	IP TeleVision
IUT	
	Implementation Under Test
MGCF	Media Gateway Control Function
MRFC	Multimedia Resource Function Controller
NAPTR	Naming Authority Pointer Record Next Generation Network
NGN	
NNI	Network-to-Network Interface NetWorK
NWK	
PCO	Point of Control and Observation
P-CSCF	Proxy CSCF
PRACK	Provisional ACKnowledge
PSTN	Public Switched Telephone Network
RC	Requirements Catalogue
RCS	Rich Communication Services
REL	RELease
RQ	Requirement
S-CSCF	Serving CSCF
SDP	Session Description Protocol
SIP	Session Initiation Protocol
TC	Test Case
TP	Test Purpose

Test Purpose Notation
Test Suite Structure
Time To Live
User Equipment
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 (V10.10.0), 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:

Crown	1: IMST2 NNI IOP
-	
-	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\_18601101v050101p0.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 and reference 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 " $\checkmark$ " or " $\times$ " marks to indicate all the entities affected by this condition. " $\checkmark$ " marks indicates a positive condition, e.g. "A is registered in B", whereas " $\times$ " 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.

#### Table 1: Example TP condition section

Entitie	25	Condition
A B		
$\checkmark$		A registered in B
x		B not configured for feature Z

The test purpose body section contains one or more steps identified with a number in the first column. Steps belonging to 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 " $\clubsuit$ " or " $\bigstar$ "), e.g. entity A sends the message, to a destination entity (identified by the direction symbols " $\clubsuit$ " or " $\bigstar$ "), e.g. entity B receives the message. The use of the "||" symbol in combination with the direction symbols, e.g. "|| $\bigstar$ ", 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 shall be present in that message are listed using " $\checkmark$ " symbols whereas headers or parameter content that shall *not* be present are listed using the " $\star$ " symbols. The " $\rightarrow$ " symbol indicates a valid message parameter value where as the " $\rightarrow$ ||"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 " $\checkmark$ " symbol together with " $\rightarrow$ ||"symbol means that the message header SHALL be present but it cannot contain a specific message parameter value. The " $\star$ " symbol together with " $\rightarrow$ " symbol means that the message header SHALL 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.

	Α	В		
Step	Direc	tion	Message	IF
1	Ŕ	£	<pre>some request</pre>	Xx
2a	रिंद	Ą	failure response	Хх
2b	<u>د</u>		no message	Хх

#### Table 2: Example TP body section

### 5.2 General Capabilities

					Test Purpose		
Identif	ier:	TP_IMS_4	002_01		-		
Summ	ary:	IMS CN co	mponents :	shall suppo	ort SIP messages > 1 300 bytes		
IUT Ro	ole:	IMS A	•				
References:		TS 124 229 (V10.10.0) [1], clause 4.2A ¶1		) [1],	Config Ref:	CF_INT_CALL	
		Entities		Conditio	n		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			$\checkmark$	✓	UE B registered in IMS B		
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	9	IF
1	\$	Ť			MESSAGE addressed to UE B ✓ a Message Body greater than 1 300 bytes		
2		₹\$	Ť		MESSAGE ✓ the Message Body greater than 1 300 bytes		

### 5.3 Registration Procedures

## 5.3.1 Registration at P-CSCF

				Test Purpose		
Identif	ier:	TP_IMS_5005_01				
Summary:		The P-CSCF shall	support the Pa	th header		
IUT Role:		IMS A	••			
References:		TS 124 229 (V10.10.0), [1] clause 5.2.1 ¶8		Config Ref:	CF_ROAM_REG	
	Entities		Conditio	n .		
	IMS A	IMS B	UE B			
		✓	<b>~</b>	IMS B has challenged with a 401 REGISTER request of UE B	response the	
	IMS A	IMS B	UE B	•		
Step		Direction		Messag	е	IF
1	<del>े</del> त्त		Ą	<pre>protected REGISTER addresse</pre>	d to IMS B	
2	₿	Ď		<b>REGISTER</b> ✓ a Path header		

				Test Purpose			
Identif	fier:	TP_IMS_5011_01					
Summary:		In case of IMS AK	A as security n	nechanism the P-CSCF shall forward REGISTER requests re	eceived		
•		from the UE to the	entry point in	the home network			
IUT Ro		IMS A					
References:		TS 124 229 (V10.1		Config Ref: CF_ROAM_REG			
		clause 5.2.2.1 ¶16					
		(2 <sup>nd</sup> numbered list)	and 5.2.2.2				
		Entities		Condition			
	IMS A	IMS B	UE B				
	x			IMS A not configured for topology hiding			
		✓	✓	user of UE B existing in IMS B			
	×		×	UE B has not established a security association with IUT			
	IMS A	IMS B	UE B				
Step		Direction	I	Message	IF		
1	Ŷ <del>Ŀ</del>		4 <sup>1</sup>	unprotected REGISTER			
•	4		Ŷ	✓ a Security-Client header			
2	ţ	÷		REGISTER <ul> <li>✓ a Path header</li> <li>✓ P-CSCF SIP URI of IMS A</li> <li>✓ IMS flow token</li> <li>✓ SIP URI parameter "ob"</li> <li>✓ a Require header</li> <li>✓ a path option tag</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an orig-ioi parameter</li> <li>✓ an orig-ioi parameter</li> <li>✓ an orig-ioi parameter</li> <li>✓ an Authorization header</li> <li>✓ an integrity-protected parameter</li> <li>✓ an integrity-protected parameter</li> <li>✓ a Security-Verify header</li> <li>× a Security-Verify header</li> <li>× a Security-Client header</li> <li>✓ a P-Visited-Network-ID header</li> <li>✓ the visited network at the home network</li> </ul>			

				Test Purpose	
Identi	fier:	TP_IMS_5011_02			
Summary:				nechanism the P-CSCF shall forward REGISTER requests	received
		from the UE to the	entry point in	the home network	
IUT Re		IMS A			
References:		TS 124 229 (V10.		Config Ref: CF_ROAM_REG	
		clauses 5.2.2.1 ¶1	¶16		
		(2 <sup>nd</sup> numbered list	) and 5.2.2.2		
	Entities			Condition	
	IMS A	IMS B	UE B		
	x			IMS A not configured for topology hiding	
1		✓	✓	user of UE B existing in IMS B	
		$\checkmark$		UE B has established a security association with IUT	
	IMS A	IMS B	UE B		
Step		Direction	Т	Message	IF
1	1 😪 🥠		¢.	protected REGISTER	
-	_		· ·	✓ a Security-Client header	
2	τţ	τŶ		REGISTER         ✓ a Path header         ✓ P-CSCF SIP URI of IMS A         ✓ a Require header         ✓ a path option tag         ✓ a P-Charging-Vector header         ✓ an orig-ioi parameter         ✓ an orig-ioi parameter         ✓ an Authorization header         ✓ an integrity-protected parameter         ✓ an integrity-protected parameter         ✓ as Security-Verify header         × a Security-Verify header         × a Security-Client header         ✓ a P-Visited-Network-ID header         ✓ the visited network at the home network	

				Test Purpose					
Identif	ier:	TP_IMS_5011_03							
Summary:			n case of IMS digest as security mechanism the P-CSCF shall forward REGISTER requests eceived from the UE to the entry point in the home network						
IUT Role: References:		IMS A							
References:		TS 124 229 (V10.10.0) [1], clauses 5.2.2.1 ¶16 (2 <sup>nd</sup> numbered list) and 5.2.2.3		Config Ref: CF_ROAM_REG					
		Entities		Condition					
	IMS A	IMS B	UE B						
	x	x		IMS A not configured for topology hiding					
		$\checkmark$	✓	user of UE B existing in IMS B					
	x			UE B has not established a security association with IUT					
	IMS A				IF				
Step		Direction		Message					
1	৾৸								
2	ų,	Ð		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         ✓ an term-ioi parameter         ✓ an Authorization header         ✓ an integrity-protected parameter         ✓ a P-Visited-Network-ID header         ✓ the visited network at the home network					

				Test Purpose				
Identifier:		TP_IMS_5011_04						
Summary:		In case of IMS dig	n case of IMS digest as security mechanism the P-CSCF shall forward REGISTER requests received from the UE to the entry point in the home network					
IUT Role:		IMS A						
References:		TS 124 229 (V10.1 clauses 5.2.2.1 ¶1 (2 <sup>nd</sup> numbered list)	¶16	Config Ref:	CF_ROAM_REG			
	IMS A IMS B UE B		Condition	1				
		IMS B	UE B					
	×	x 🗸 🗸		IMS A not configured for topology I user of UE B existing in IMS B	niding			
			✓	UE B has established a security as	ssociation with IUT			
			UE B					
Step		Direction		Message		IF		
1	ŶĿ		슈	<pre>protected REGISTER </pre> ✓ an Authorization header				
2	Ŕ	ъŶ		REGISTER         ✓ a Path header         ✓ P-CSCF SIP URI of IMS A         ✓ a Require header         ✓ a path option tag         ✓ a P-Charging-Vector header         ✓ an orig-ioi parameter         ✓ an orig-ioi parameter         ✓ an term-ioi parameter         ✓ an Authorization header         ✓ an integrity-protected param         → ip-assoc-yes         ✓ a P-Visited-Network-ID heade         → the visited network at the horizon of the parameter	r			

				Test Purpose				
Identif	ntifier: TP_IMS_5203_01							
Summ				GISTER request from the UE and y point with no response	d modified a number of head	ers and		
IUT Ro	ole:	IMS A						
References:		TS 124 229 (V10.10.0) [1], clause 5.2.2.1 ¶33 (item 6 in 2 <sup>nd</sup> numbered list)		Config Ref:	CF_ROAM_REG			
		Entities		Condition				
	IMS A	IMS B	UE B					
	✓		✓	UE B having sent an initial RE	GISTER to IMS A			
	✓	√		IMS A configured with multiple	entry points for IMS B			
	IMS A	IMS B	UE B					
Step		Direction		Messa	age	IF		
1	<b>€</b> ∥	令		Any response				
2	Ŕ	Ť		REGISTER addressed to anot	her entry point			

				Test Purpose				
Identif	ier:	TP IMS 5203 02						
Summ	ary:	The P-CSCF has	received a RE	GISTER request from the	UE and modified a number of hea	ders and		
		forwarded the req	uest to an ent	ry point and received a 3x	x response			
IUT Ro	ole:	IMS A		• •	· · · · · · · · · · · · · · · · · · ·			
Refere	ences:	TS 124 229 (V10.	10.0) [1],	Config Ref:	CF_ROAM_REG			
		clause 5.2.2.1 ¶33 (item 6 in		_				
	2 <sup>nd</sup> numbered list)							
		Entities			Condition			
	IMS A	IMS B	UE B					
	✓		$\checkmark$	UE B having sent an ir	nitial REGISTER to IMS A			
	✓	✓		IMS A configured with	IMS A configured with multiple entry points for IMS B			
	IMS A	IMS B	UE B					
Step		Direction			Message	IF		
1	रित	4		3xx response				
2	Ŕ	Ð		<b>REGISTER</b> addressed	I to another entry point			

				Test Purpose	
Identif	ier:	TP_IMS_5203_03			
Summ				EGISTER request from the UE and ry point and received a 480 respon	
IUT Ro	IUT Role: IMS A				
		TS 124 229 (V10.10.0) [1], clause 5.2.2.1 ¶33 (item 6 in 2 <sup>nd</sup> numbered list)		Config Ref:	CF_ROAM_REG
		Entities		Condition	
	IMS A	IMS B	UE B		
	$\checkmark$		$\checkmark$	UE B having sent an initial REGIS	STER to IMS A
	$\checkmark$	√		IMS A configured with multiple en	try points for IMS B
	IMS A	IMS B	UE B		
Step		Direction		Messag	e IF
1	Ŷ <u>u</u>	4		480 response	
2	Ф,	Ť		REGISTER addressed to another	r entry point

				Test Purpose		
Identif	ier:	TP_IMS_5044_01		·		
Summ	ary:	The P-CSCF has r SUBSCRIBE	eceived a 200	0 OK in response to a REGISTER re	equest from the UE and se	nds a
IUT Ro	ole:	IMS A				
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.2.3 ¶2 (1 <sup>st</sup> numbered list)		Config Ref:	CF_ROAM_REG	
	Entities		Condition	1		
	IMS A	IMS B	UE B			
	✓		✓	UE B having sent a protected REG		
	x			IMS A not configured for topology I	hiding	
	IMS A	IMS B	UE B			
Step		Direction		Message		IF
1	৾৸	ų 🖓		200 response		
2	Ð	ъŶ		<ul> <li>SUBSCRIBE</li> <li>✓ a Request URI</li> <li>✓ "the resource to which the P subscribe to" and</li> <li>✓ a From header</li> <li>✓ P-CSCF_SIP_URI of IM</li> <li>✓ a To_header</li> <li>✓ the default_public_user_</li> <li>✓ an Event_header</li> <li>✓ the reg event package a</li> <li>✓ an Expires_header</li> <li>✓ a P-Asserted-Identity_header</li> <li>✓ the P-CSCF_SIP_URI of</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an icid-value parameter</li> </ul>	IS_A and identity of UE_B and nd e one in the 00_response" and	

## 5.3.2 Registration at S-CSCF

				Test Purpose				
Identif	-	TP_IMS_5088_01						
Summ	ary:	S-CSCF shall deregister unexpired registration upon receipt of a new REGISTER with new contact						
		information						
IUT Ro		IMS B						
Refere	nces:	TS 124 229 (V10.	10.0) [1],	Config Ref: CF_ROAM_REG				
		clause 5.4.1.2.1 ¶7 (item 2 in 1 <sup>st</sup>						
		numbered list)						
	Entities IMS A IMS B UE B			Condition				
			UE B					
	✓ ✓	 ✓	v	UE B registered in IMS B via IMS A				
	v	×	×	IMS A within the trust domain of IMS B				
	IMS A	IMS B	UE B	UE B not de-registered in IMS B				
Ctore	INS A		UEB	Meessawa	IF			
Step		Direction	1	Message				
				initial REGISTER ✓ an Authorization header				
1a		ित	Å	<ul> <li>✓ an Authonization neader</li> <li>✓ an integrity-protected parameter</li> </ul>				
				<ul> <li>An integrity-protected parameter</li> <li>no or tls-pending or ip-assoc-pending</li> </ul>				
				initial REGISTER				
1b		<u>^</u>	Ęħ	✓ an Authorization header				
10		2	¥	* an integrity-protected parameter				
				NOTIFY				
				✓ a Request URI				
				→ the P-CSCF SIP URI of IMS A ✓ an Event header				
				<ul> <li>the reg event package</li> </ul>				
				✓ a P-Charging-Vector header				
				✓ an icid-value parameter				
				✓ a Route header				
				→ the original Route header from				
				SUBSCRIBE				
				✓ a Message Body				
•	Ŷ <del>r</del>	ų,		✓ for each registered public identity of UE B				
2	'দ্র	<i>4</i>		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		
Identi	fier:	TP_IMS_5089_01				
Sumn	nary:			mechanism the S-CSCF shall retu t previously registered	rn 401 (Unauthorized) upo	n receipt
IUT R	ole:	IMS B				
Refer	ences:	TS 124 229 (V10. clause 5.4.1.2.1A	10.0) [1], ¶1	Config Ref:	CF_ROAM_REG	
		Entities		Condit	on	
	IMS A	IMS B	UE B			
		✓	✓	user of UE B existing in IMS B		
		×	×	UE B not registered in IMS B		
	$\checkmark$		✓	UE B visiting IMS A		
	$\checkmark$	√		IMS A within the trust domain of	IMS B	
	IMS A	IMS B	UE B			
Step		Direction		Messa	ge	IF
1	Ŕ	£Ŷ		initial REGISTER ✓ an Authorization header ✓ an integrity-protected para → no	ameter	
2	Æ	ţ		<ul> <li>401 response</li> <li>✓ an WWW-Authenticate head</li> <li>✓ a realm parameter</li> <li>→ the operator identifier of</li> <li>✓ a nonce parameter</li> <li>✓ a RAND parameter</li> <li>✓ an AUTN parameter</li> <li>✓ an algorithm parameter</li> <li>→ AKAv1-MD5</li> <li>✓ an ik parameter</li> <li>✓ a ck parameter</li> </ul>		

				Test Purpose			
Identif	ier:	TP_IMS_5089_02					
Summ	ary:			mechanism the S-CSCF		401 (Unauthorized) upo	'n
			STER from an L	JE not previously registe	ered		
IUT Ro		IMS B		T	T		
References:		TS 124 229 (V10. clause 5.4.1.2.1B		Config Ref:	C	F_ROAM_REG	
		Entities			Condition		
	IMS A	IMS B	UE B				
		$\checkmark$	√	user of UE B existing	in IMS B		
		×	×	UE B not registered in	IMS B		
	✓		$\checkmark$	UE B visiting IMS A			
	$\checkmark$	✓		IMS A within the trust	domain of IM	S B	
	IMS A	IMS B	UE B				
Step		Direction			Message		IF
1	₽Ş	Ť		initial REGISTER			
•	Ŷ	D		an Authorization h	neader		
2	Ŷ <u>Ŀ</u>	ά		<ul> <li>401 response</li> <li>✓ an WWW-Authen</li> <li>✓ a realm parame</li> <li>→ the operator i</li> <li>✓ a nonce parame</li> <li>✓ an algorithm pa</li> <li>→ MD5</li> <li>✓ a qop paramete</li> <li>→ auth</li> </ul>	ter identifier of IM eter rameter		

				Test Purpose	
Identif	fier:	TP_IMS_5092_01			
Summ	nary:	200 OK on REGIS	TER from UE	E to the S-CSCF	
IUT Ro	ole:	IMS B			
Refere	ences:	TS 124 229 (V10.1	10.0) [1],	Config Ref: CF_ROAM_REG	
		clause 5.4.1.2.2F	¶1		
		Entities	1	Condition	
	IMS A IMS B UE B				
	_	$\checkmark$	✓	user of UE B existing in IMS B	
	$\checkmark$		✓	UE B visiting IMS A	
		×	×	UE B not registered in IMS B	
		$\checkmark$		IMS B has challenged with a 401 response the REGISTER	
				request	
	IMS A	IMS B	UE B		
Step		Direction	1	Message	IF
1	Ŕ	ъŶ		protected REGISTER	
2	Ť	ţ		<ul> <li>200 response</li> <li>✓ the same Path header as in the protected REGISTER</li> <li>✓ a P-Associated-URI header</li> <li>✓ all registered public identities its associated set of implicitly registered public user identities</li> <li>→ first the default public user identity no barred public user identities</li> <li>✓ a Service-Route header</li> <li>→ the S-CSCF SIP URI of IMS B</li> <li>✓ a term-ioi parameter</li> <li>→ operator identifier of IMS B</li> <li>✓ a Contact header</li> <li>→ all contact addresses for the default public user identity of UE B</li> </ul>	

				Test Purpose	
Identif	ier:	TP_IMS_5096_01		•	
Summ	ary:	The network shall	handle incon	ning SUBSCRIBE correctly	
IUT Ro	ole:	IMS B		<b>x x</b>	
Refere		TS 124 229 (V10. clause 5.4.2.1.1 ¶		Config Ref: CF_ROAM_REG	
		Entities		Condition	
	IMS A	IMS B	UE B		
		$\checkmark$	✓	UE B registered in IMS B	
	✓		$\checkmark$	UE B visiting IMS A	
	IMS A	IMS B	UE B		
Step		Direction		Message	IF
1	Ð	Ê		SUBSCRIBE ✓ an Event header → the reg event package	
2		Ŕ	Ð	<ul> <li>2xx response</li> <li>✓ an Expires header</li> <li>→ the same or lower expiry tir specified in the initial SUBS</li> </ul>	

				Test Purpose	
Identi		TP_IMS_5093_01		· · · · · · · · · · · · · · · · · · ·	
Summ			egister in case o	f network-initiated de-registration	
IUT Ro	ole: ences:	IMS B TS 124 229 (V10.1	0.0)[1]	Config Ref: CF_ROAM_REG	
Reiere	511669.	clause 5.4.1.5 ¶6 (			
		Entities		Condition	
	IMS A	IMS B	UE B		
	✓	✓	✓	UE B registered in IMS B via IMS A	
	$\checkmark$	✓		IMS A within the trust domain of IMS B	
	IMS A	IMS B	UE B		
Step	M.	Direction	1	Message network initiated deregistration event	IF
1	₽\$	ъŶ	<b>-</b>		
				NOTIFY ✓ a Request URI	
				✓ 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	रिंद	47		a registration element	
				✓ an aor attribute	
				registered public identity of UE B	
				✓ a state attribute	
				→ terminated	
				<ul> <li>✓ a contact subelement</li> <li>✓ an event attribute</li> </ul>	
				→ deactivated or rejected	
				✓ a state attribute	
				→ terminated	
				✓ a URI subelement	
				the contact address of UE B	
				NOTIFY	
				✓ a Request URI → UE_A	
				✓ OE_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	
•	_	м		✓ for each registered public identity of UE A	
3	रित	47		a registration element	
				✓ an aor attribute	
				registered public identity of UE A	
				<ul> <li>✓ a state attribute</li> <li>→ terminated</li> </ul>	
				✓ a contact subelement	
				✓ an event attribute	
				→ deactivated or rejected	
				✓ a state attribute	
				→ terminated	
				✓ a URI subelement	
				the contact address of UE A	

				Test Purpose	
Identi		TP_IMS_5094_01	otoria a	of notwork initiated to extraction	
Sumn IUT R		IMS B	ster in case o	of network-initiated re-authentication	
	ences:	TS 124 229 (V10. <sup>2</sup>	10 0) [1]	Config Ref: CF_ROAM_REG	
Neien	ences.	clause 5.4.1.6 ¶2	10.0) [1],		
		Entities		Condition	
	IMS A	IMS B	UE B		
	✓	✓ ×	✓ <i>✓</i>	UE B registered in IMS B via IMS A	
	✓	✓		IMS A within the trust domain of IMS B	
		$\checkmark$		IMS B receives an event to reauthenticate UE_B	
	IMS A	IMS B	UE B		
Step		Direction		Message	IF
1	Ŕ	Ð		network initiated reauthentication event	
2	र्देष	ζ		NOTIFY <ul> <li>a Request URI</li> <li>UE_B</li> <li>an Event header</li> <li>the reg event package</li> <li>a P-Charging-Vector header</li> <li>an icid-value parameter</li> <li>a Route header</li> <li>the original Route header from SUBSCRIBE</li> <li>a Message Body</li> <li>for each registered public identity of UE B a registration element</li> <li>an aor attribute</li> <li>registered public identity of UE B</li> <li>a state attribute</li> <li>active</li> <li>a contact subelement</li> <li>a state attribute</li> <li>shortened</li> <li>a state attribute</li> <li>a state attribute</li> <li>a contact subelement</li> <li>a state attribute</li> <li>bhortened</li> <li>a state attribute</li> <li>bhortened</li> <li>a ture</li> <li>active</li> <li>a URI subelement</li> <li>bhe contact address of UE B</li> </ul>	
3	र्रम	ζĻ		<ul> <li>NOTIFY</li> <li>✓ a Request URI</li> <li>→ the P-CSCF_SIP_URI of IMS_A</li> <li>✓ an Event header</li> <li>→ the reg event package</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an icid-value parameter</li> <li>✓ a Route header</li> <li>→ the original Route header from SUBSCRIBE</li> <li>✓ a Message Body</li> <li>✓ for each registered public identity of UE A a registration element</li> <li>✓ an aor attribute</li> <li>→ registered public identity of UE B</li> <li>✓ a state attribute</li> <li>→ active</li> <li>✓ a contact subelement</li> <li>✓ an event attribute</li> <li>→ shortened</li> <li>✓ a state attribute</li> <li>→ active</li> <li>✓ a URI subelement</li> <li>→ the contact address of UE B</li> </ul>	

			Interop	erability Test Purpose		
Identif	ier:	TP_IMS_5129_01	•			
Summ	ary:	If a request is rece I-CSCF	eived from a no	n-trusted domain, a 403 (F	orbidden) response shall be re	turned by
IUT Ro	IUT Role: IMS B					
		TS 124 229 (V10. clause 5.3.1.2 ¶1	10.0) [1],	Config Ref:	CF_ROAM_REG	
	Entities			Condition		
	IMS A	IMS B	UE B			
		$\checkmark$	✓	user of UE B existing in		
	×	x		IMS A not within the trus	t domain of IMS B	
	IMS A	IMS B	UE B			
Step	Direction				Message	IF
1	Ø	Ť		valid initial REGISTER		
2	<del>ر</del>	4		403 response		

### 5.3.4 Registration at IBCF

			Inter	operability Test Purpose		
Identif	ier:	TP_IMS_5134_01				
Summ	ary:	If a request include the Path header	es a Path hea	ader the IBCF shall add the routa	ble SIP URI of an IBCF to the	ne top of
IUT Ro	ole:	IMS A				
Refere	ences:	TS 124 229 (V10. clause 5.10.4.1 ¶5	/	Config Ref:	CF_ROAM_REG	
		Entities		Cond	ition	
	IMS A IMS B		UE B			
	✓			IMS A configured for topology I	niding	
	IMS A	IMS B	UE B		~	
Step		Direction		Mess	age	IF
1	৾৸		Ą	REGISTER		
2	Ŕ	ਡੀ		REGISTER ✓ an additional topmost Path → the IBCF SIP URI of IMS		

			Inter	operability Test Purpose		
Identif	ier:	TP_IMS_54	402_01			
Summ	ary:	<b>IBCF</b> shall	select a new entry p	oint and forward the original REGIS	TER request on no respon	se
IUT Ro	ole:	IMS A				
Refere	References: TS 124 229 (V10.10.0) clause 5.10.2.1 ¶1 (item 1 <sup>st</sup> numbered list)		0.2.1 ¶1 (item 3 in	Config Ref:	CF_ROAM_REG	
		Entit	ties	Conditio	n	
	IMS	S A	IMS B			
	✓			IMS A configured for topology hid	ing	
	✓		$\checkmark$	IMS A configured with multiple en	try points in IMS B	
	✓		✓	IMS A having sent an initial REGI	STER to IMS B	
	IMS	S A	IMS B			
Step		Direction		Messag	e	IF
1	<del>رك</del>	۲ <b>  </b>	冬	Any response		
2	Ŕ	>	Ť	original REGISTER addressed to	o another entry point	

			Intero	perability Test Purpose	Interoperability Test Purpose								
Identif	ier:	TP_IMS_5	402_02	· · · ·									
Summ	ary:	IBCF shall	select a new entry po	int and forward the origina	I REGISTER request on 3xx respo	onse							
IUT Ro	ole:	IMS A			· · · · ·								
References:			9 (V10.10.0) [1], ).2.1 ¶1 (item 3 in ed list)	Config Ref:	CF_ROAM_REG								
	Entities				Condition								
	IMS	S A	IMS B										
	×			IMS A configured for top	pology hiding								
	×		$\checkmark$	IMS A configured with n	nultiple entry points for IMS B								
	×		✓	IMS A having sent an in	nitial REGISTER to IMS B								
	IMS	S A	IMS B										
Step		Dire	ction		Message	IF							
1	Ŷ	х Z	Ŷ	3xx response									
2	\$ €			original REGISTER ad	dressed to another entry point								

	Interoperability Test Purpose								
Identif	ier:	TP_IMS_54	402_03						
Summ	ary:	IBCF shall	select a new entry p	oint and forward the original REGIST	ER request on 480 respo	onse			
IUT Ro	ole:	IMS A							
Refere	References: TS		) (V10.10.0) [1],	Config Ref:	CF_ROAM_REG				
	clause 5.10.2.1 ¶1 (item 3 in 1 <sup>st</sup> numbered list)								
		Entit	ies	Condition	1				
	IMS	S A	IMS B						
	~	1		IMS A configured for topology hidir	ng				
	~	1	$\checkmark$	IMS A configured with multiple enti	ry points for IMS B				
	~		$\checkmark$	IMS A having sent an initial REGIS	TER to IMS B				
	IMS	S A	IMS B						
Step		Direct	tion	Message		IF			
1	Ŷ	Σ.	4	480 response					
2	Ŕ	>	Ť	original REGISTER addressed to	another entry point				

			Interc	perability Test Purpose		
Identif	ier:	TP_IMS_54	411_01			
Summ	ary:	If a request IBCF	t is received from a n	on-trusted domain, a 403	(Forbidden) response shall be retur	rned by
IUT Ro	ole:	IMS B				
Refere	ences:		9 (V10.10.0) [1], ).3.1 ¶1 (item 1 in ed list)	Config Ref:	CF_ROAM_REG	
		Enti	ities	Condition		
	IMS	SA	IMS B			
			$\checkmark$	IMS B configured for to	opology hiding	
	د	ĸ	x	IMS A not within the tr	ust domain of IMS B	
	IMS	SA	IMS B			
Step	Direction				Message	IF
1	Ŕ	>	ъŶ	valid REGISTER		
2	Ŷ	दे	4	403 response		

# 5.4 Dialog Procedures

# 5.4.1 Dialog at P-CSCF

					Test Purpose	
Identif	ier:	TP_IMS_50	46_01			
Summ	ary:				ial INVITE request for a dialog from a UE for which a Service	<del>)</del> -
			er list exist	s without top	pology hiding	
IUT Ro		IMS A				
Refere	ences:	TS 124 229	(V10.10.0	<u>)</u> [1],	Config Ref: CF_ROAM_CALL	
		clause 5.2.6	5.3.3 ¶1 (1°	" numbered		
		list)				
	Entities			Condition		
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	✓			UE A registered in IMS A	
			✓	$\checkmark$	UE B registered in IMS B	
		×			IMS A not configured for topology hiding	
01	UE A	IMS A	IMS B	UE B	Manager	15
Step		Dire	ction		Message	IF
1	-	रित		4	initial INVITE	
2		ζ	Ð		<ul> <li>INVITE</li> <li>✓ a topmost Route header</li> <li>→    the P-CSCF SIP URI of IMS A</li> <li>✓ a Route header</li> <li>✓ the list of Service Route header URIs from the registration</li> <li>✓ an additional Via header</li> <li>✓ the P-CSCF via port number</li> <li>✓ the P-CSCF-FQDN address or the P-CSCF-IP address of the IMS A</li> <li>✓ an additional topmost Record-Route header</li> <li>✓ the P-CSCF port number where it awaits subsequent requests from UE A</li> <li>✓ the P-CSCF-IP address of the IMS A</li> <li>✓ an additional topmost Record-Route header</li> <li>✓ the P-CSCF port number where it awaits subsequent requests from UE A</li> <li>✓ the P-CSCF-FQDN address or the P-CSCF-IP address of the IMS A</li> <li>✓ a P-Asserted-Identity header</li> <li>✓ an address of UE B</li> <li>✓ a P-Charging-Vector header</li> </ul>	

				Te	est Purpose	
Identifier		TP_IMS_5	5046_02			
Summar	y:	When the	P-CSCF re	eceives an initi	ial INVITE request for a dialog from a UE for which a Se	ervice-
		Route hea	der list exi	sts with topolo	ogy hiding	
IUT Role		IMS A				
Reference	es:	TS 124 22	9 (V10.10.	0) [1], 1 <sup>st</sup> numbered	Config Ref: CF_ROAM_CALL	
			6.3.3 ¶1 (*	1 <sup>st</sup> numbered		
		list)				
	Entities				Condition	
	UEA	IMS A	IMS B	UE B		
	$\checkmark$	✓			UE A registered in IMS A	
			✓	$\checkmark$	UE B registered in IMS B	
		$\checkmark$			IMS A configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step		1	ection		Message	IF
1		Ŷ <u>Ŀ</u>		Å	initial INVITE	
2		Ŕ	Ť		INVITE	
					✓ a topmost Route header	
					→ the IBCF SIP URI of IMS A	
					→   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	

	<ul> <li>✓ the P-CSCF via port number</li> <li>✓ the P-CSCF-FQDN address or the P-CSCF-IP address of the IMS A</li> <li>✓ an additional topmost Record-Route header</li> <li>✓ the P-CSCF port number where it awaits subsequent requests from UE A</li> <li>✓ the P-CSCF-FQDN address or the P-CSCF-IP address of the IMS A</li> <li>✓ P-Preferred-Identity header</li> <li>✓ a P-Asserted-Identity header</li> <li>✓ an address of UE A</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an icid-value parameter</li> </ul>	
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					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 clause 5.2. (1 <sup>st</sup> numbe		) [1],	Config Ref: CF_ROAM_CALL	
	Er		ities		Condition	
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	✓			UE A registered in IMS A	
			$\checkmark$	✓	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		৾৸		Ą	subsequent INVITE	
2		Ψ\$	ਡੀ		<ul> <li>INVITE</li> <li>✓ a topmost Route header</li> <li>→   the P-CSCF SIP URI of IMS A</li> <li>✓ an additional Via header</li> <li>✓ the P-CSCF via port number</li> <li>✓ the P-CSCF-FQDN address or</li> <li>the P-CSCF-IP address of the IMS A</li> </ul>	

					Test Purpose		
Identif	ier:	TP_IMS_5	052_01				
Summ	ary:		CF modifies initial reque		other than a target refresh reques	t, from the UE subsequent	to a
IUT Ro	ole:	IMS A			*		
Refere	ences:	TS 124 229 clause 5.2. (1 <sup>st</sup> numbe		) [1],	Config Ref:	CF_ROAM_CALL	
		Enti			Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	<ul> <li>✓</li> </ul>			UE A registered in IMS A		
			$\checkmark$	$\checkmark$	UE B registered in IMS B		
	$\checkmark$			$\checkmark$	UE B has initiated a dialog with U	EA	
	UE A	IMS A	IMS B	UE B	_		
Step		Direc	ction		Message	9	IF
1		\ <sup>€</sup> E		Ą	BYE		
2		Ŕ	ਜ਼ੀ		<ul> <li>BYE</li> <li>★ a Route header</li> <li>✓ the P-CSCF SIP URI of IMS</li> <li>✓ the same Record-Route head previous ACK</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an icid-value parameter</li> </ul>		

					Test Purpose	
Identif	ier:	TP_IMS_5	053_01		· · · · ·	
Summ	ary:	P-CSCF re	ceives from	n the UE a	request for an unknown method without topology hiding	2
IUT Ro	ole:	IMS A				
Refere	nces:	TS 124 229 clause 5.2. (1 <sup>st</sup> number	6.3.11 ¶1	) [1],	Config Ref: CF_ROAM_CALL	
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	$\checkmark$			UE A registered in IMS A	
			$\checkmark$	✓	UE B registered in IMS B	
		x			IMS A not configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1	Ŷ	ъŶ			Unknown Method addressed to UE B	
2		Ŕ	ਜ਼ੀ		<ul> <li>Unknown Method</li> <li>✓ a Route header</li> <li>→ the list of Service Route header URIs from the registration</li> <li>* a P-Preferred-Identity header</li> <li>✓ a P-Asserted-Identity header</li> <li>✓ an address of UE A</li> </ul>	

					Test Purpose	
Identif	ier:	TP_IMS_5	053_02			
Summ	ary:	P-CSCF re	ceives fron	n the UE a	a request for an unknown method with topology hiding	
IUT Ro	ole:	IMS A				
Refere	ences:	TS 124 229		) [1],	Config Ref: CF_ROAM_CALL	
		clause 5.2.				
		(1 <sup>st</sup> numbe	red list)			
		Entit	ties	-	Condition	
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	✓			UE A registered in IMS A	
			✓	$\checkmark$	UE B registered in IMS B	
		$\checkmark$			IMS A configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1	Ŕ	ъŶ			Unknown Method addressed to UE B	
2		ų,	£Ŷ		Unknown Method ✓ a topmost Route header → the IBCF SIP URI of IMS A ✓ a Route header → the list of Service Route header URIs	
					from the registration ★ 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	s a 180 res	ponse to an initial request for a dialog from the UE							
IUT Ro	ole:	IMS A										
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.2.6.4.4 ¶1 (1 <sup>st</sup> numbered list)			Config Ref: CF_ROAM_CALL							
		Enti	e	1	Condition							
	UE A	IMS A	IMS B	UE B								
	$\checkmark$	$\checkmark$			UE A registered in IMS A							
			$\checkmark$	$\checkmark$	UE B registered in IMS B							
	$\checkmark$			$\checkmark$	UE A has received an initial request for a dialog from UE B							
	UE A	IMS A	IMS B	UE B								
Step		Direc	tion		Message	IF						
1	¢	Ť			180 response							
2		Ŕ	Ð		<ul> <li>180 response</li> <li>✓ a Record-Route header</li> <li>→ the P-CSCF SIP URI and port number of IMS A where it expects subsequent requests</li> <li>× a comp parameter</li> <li>× a P-Preferred-Identity header</li> <li>✓ a P-Asserted-Identity header</li> <li>✓ the public identity sent in P-Called Party-ID header sent in the initial request</li> </ul>							

					Test Purpose		
Identi	fier:	TP_IMS_5	055_02				
Summ	nary:	The P-CSO	CF receives	a 2xx resp	oonse to an initial request for a dialog	g from the UE	
IUT Re	ole:	IMS A					
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.2.6.4.4 ¶1 (1 <sup>st</sup> numbered list)			Config Ref:	CF_ROAM_CALL	
	Entities				Condition		
	UEA IMSA IMSB UEB						
	$\checkmark$	✓			UE A registered in IMS A		
			$\checkmark$	✓	UE B registered in IMS B		
	$\checkmark$			✓	UE A has received an initial reques	t for a dialog from UE B	
	UE A	IMS A	IMS B	UE B			
Step		Direc	ction		Message		IF
1	₽\$	Ď			200 response		
2		ų,	÷		<ul> <li>200 response</li> <li>✓ a Record-Route header</li> <li>→ the P-CSCF SIP URI and port number of IMS A where it expects subsequent requests</li> <li>★ a comp parameter</li> <li>★ a P-Preferred-Identity header</li> <li>✓ a P-Asserted-Identity header</li> <li>✓ the public identity sent in P-Called Party-ID header sent in the initial request</li> </ul>		

					Test Purpose		
Identif	ier:	TP_IMS_5	067_01				
Summ	ary:				ess-network-charging-info parame ed by the UE	eter in the P-Charging-Veo	ctor
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.2.7.2 ¶5			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		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Messag	е	IF
1		\frac{1}{2}		Ą	initial INVITE		
2		ĘŶ	Ð		INVITE ✓ a P-Charging-Vector header ✓ a access-network-charging		

	Test Purpose													
Identif	ier:	TP_IMS_5	P_IMS_5070_01											
Summ	ary:	The P-CSC network	CF shall res	pond with a	100 (Trying) provisional response	on initial INVITE in terminating								
IUT Ro	ole:	IMS A												
Refere	ences:	TS 124 229 clause 5.2.	•	) [1],	Config Ref: CF_ROAM_CALL									
		Enti	ities		Condition									
	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	ction		Messag	e IF								
1		<del>رك</del>		♂ initial INVITE										
2		Ŕ	Ť		100 response									

	Test Purpose											
Identif	ier:	TP_IM	S_5072	01								
Summ	ary:	P-CSC	CF sends	CANCEL	in case it	s UE goes down during dialog init	iation					
IUT Ro	ole:	IMS A										
Refere					1],	Config Ref:	CF_ROAM_CALL					
	clause 5.2.8.1.1 ¶1											
			Entities			Conditio	n					
	UE A	NWK	IMS A	IMS B	UE B							
	✓		$\checkmark$			UE A registered in IMS A						
				$\checkmark$	✓	UE B registered in IMS B						
	~				~	UE B has received 180 on initial I UE A	equest for dialog from					
	UE A	NWK	IMS A	IMS B	UE B							
Step			Directio	า		Message	)	IF				
1		₹¢	ъŶ			an indication that UE B is no lon	ger available					
2			Å			CANCEL						
	<u>(</u>					✓ a Reason header						
	74					✓ a status code parameter						
						→ 503 Service Unavailable						
3			Ŕ	ъŶ		503 response						

						Test Purpose		
Identi	fier:	TP_IM	S_5073	01				
Summ	nary:	P-CSC	CF sends	BYE in c	ase its ca	alling UE goes down in ongoing dialog		
IUT Re	ole:	IMS B						
Refere	ences:	clause		10.10.0) [ 2 ¶1 (item st)		Config Ref: CF_INT_CALL		
			1	Condition				
	UEA IMSA NWK IMSB UEB		UE B					
	$\checkmark$	$\checkmark$		,		UE A registered in IMS A		
				$\checkmark$	<ul> <li>✓</li> </ul>	UE B registered in IMS B		
	✓				✓	UE B has initiated a dialog with UE A		
	UE A	IMS A	NWK	IMS B	UE B			
Step		1	Directio		1	Message	IF	
1			Ŕ	ъŶ		an indication that UE B is no longer available		
2		Ť		Ę.		<ul> <li>BYE</li> <li>✓ Request URI</li> <li>→ Contact header value of UE A</li> <li>✓ To header</li> <li>→ initial 200 OK To value from UE A</li> <li>✓ From header</li> <li>→ initial INVITE From value from UE B</li> <li>✓ Call-ID header</li> <li>→ initial INVITE Call Id value from UE B</li> <li>✓ CSeq header</li> <li>✓ an incremented Sequence Number</li> <li>✓ Route header</li> <li>→ dialog specific routing information for UE A</li> <li>✓ Reason header</li> <li>→ 503 Service Unavailable</li> <li>✓ further headers based on local policy or call release reason</li> </ul>		

Test Purpose Identifier: TP_IMS_5074_01											
Identif	ier:         TP_IMS_5074_01           ary:         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	5.2.8.1.2	10.10.0) [ 2 ¶1 (item		Config Ref: CF_INT_CALL					
	1 <sup>st</sup> numbered list) Entities										
						Condition					
	UE A	IMS A	NWK	IMS B	UE B						
	<b>v</b>	✓		$\checkmark$	$\checkmark$	UE A registered in IMS A					
	✓			V		UE B registered in IMS B					
	UE A			IMS B	UE B	UE A has initiated a dialog with UE B					
Stop	UEA	IMS A	NWK		UEB	Macaga	IF				
Step 1		1	Direction	⊥ £∕	1	Message an indication that UE B is no longer available	IF				
l			$\nabla$	5/							
2		र्रेय		ζ		<ul> <li>BYE</li> <li>✓ Request URI</li> <li>→ Contact header value of UE A</li> <li>✓ To header</li> <li>→ initial 200 OK From value from UE B</li> <li>✓ From header</li> <li>→ initial INVITE To value from UE A</li> <li>✓ Call-ID header</li> <li>→ initial INVITE Call Id value from UE A</li> <li>✓ CSeq header</li> <li>✓ an incremented Sequence Number</li> <li>✓ Route header</li> <li>→ dialog specific routing information for UE A</li> <li>✓ Reason header</li> <li>→ 503 Service Unavailable</li> <li>✓ further headers based on local policy or call release reason</li> </ul>					

					Test Purpose		
Identif	ier:	TP_IMS_5	080_01				
Summ	ary:				lated access-network-charging-inf equent INVITE to the S-CSCF	o parameter from P-Charg	ging-
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.2.9.1 ¶2			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		
	✓			$\checkmark$	UE B has initiated a dialog with L	JE A	
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Messag	е	IF
1		<del>رك</del>		Ą	subsequent INVITE		
2		Ę)	ਜ਼ੀ		INVITE ✓ a P-Charging-Vector header ✓ an updated access-networ parameter		

					Test Purpose		
Identif	ier:	TP_IMS_5	080_02				
Summ	ary:				dated access-network-charging-inf subsequent UPDATE to the S-CS0		ing-
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229 [1] (V10.10.0), clause 5.2.9.1 ¶2			Config Ref:	CF_ROAM_CALL	
	Entities				Condition	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	$\checkmark$	UE B registered in IMS B		
	<ul> <li>✓</li> </ul>			✓	UE B has initiated a dialog with UE A		
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	•	IF
1		ŶĿ		Å	subsequent UPDATE		
2	\$, <u>→</u>				<ul> <li>UPDATE</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an updated access-network parameter</li> </ul>	-charging-info	

					Test Purpose		
Identif	ier:	TP_IMS_5	081_01				
Summ	ary:	P-CSCF 10	0 respons	e to a re-IN	VITE		
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229	9 (V10.10.0	) [1],	Config Ref:	CF_ROAM_CALL	
		clause 5.2.	9.2 ¶1				
		Ent	ities		Conditio	n	
	UE A	IMS A	A IMSB UEB				
	$\checkmark$	✓			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	ep Direction				Messag	е	IF
1	1		subsequent INVITE addressed	to UE B			
2		Ð	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-Charging-Vector	
IUT Ro	ole:	IMS A				
Refere	ences:	TS 124 229	9 (V10.10.0	) [1],	Config Ref: CF_ROAM_CALL	
		clause 5.2.	9.2 ¶2			
		Enti	ties		Condition	
	UEA IMSA IMSB UEB					
	✓	$\checkmark$			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has initiated a dialog with UE B	
		×		✓	IMS B has received a target refresh request in a dialog from IMS A	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1		\ <sup>€</sup> E		4	200 response	
2			Ð		<ul> <li>200 response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an updated access-network-charging-info parameter</li> </ul>	

## 5.4.2 Dialog at S-CSCF

					Test Purpose		
Identif	ier:	TP_IMS_5	097_01				
Summ	ary:	S-CSCF sh P-Access-N	nall insert o Network-Inf	rig-ioi para o header b	meter, remove access-network-charging-info parameter and efore sending initial INVITE or a initial request over NNI		
IUT Ro	ole:	IMS A			~	•	
Refere	ences:	TS 124 229 clause 5.4. (1 <sup>st</sup> numbe	3.2 ¶11	) [1],	Config Ref:	CF_INT_CALL CF_ROAM_AS	
		Enti	ties		Condition	1	
	UE A	IMS A	IMS B	UE B			
	$\checkmark$	$\checkmark$			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
		x			IMS A not configured for topology I	hiding	
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message		IF
1	\$	Ť			initial INVITE addressed to UE B SUBSCRIBE)	(also valid for	
2		ţ,	£		<ul> <li>✓ a P-Charging-Vector header</li> <li>✓ an icid-value parameter</li> <li>✓ an orig-ioi parameter</li> <li>→ IMS A</li> <li>× an access-network-charging</li> <li>× a term-ioi parameter</li> <li>✓ a Record-Route header</li> </ul>	initial INVITE ★ a Route header → the S-CSCF SIP URI of IMS A ✓ a P-Charging-Vector header ✓ an orig-ioi parameter → IMS A ★ an access-network-charging-info parameter ★ a term-ioi parameter ✓ a Record-Route header → the originating S-CSCF SIP URI	

					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	81
IUT Ro	ole:	IMS A				
Refere	ences:	TS 124 229 (V10.10.0) [1],			Config Ref: CF_INT_CALL	
		clause 5.4.3.2 ¶11 (item 9 1 <sup>st</sup> numbered list)				
		Enti	ities		Condition	
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	✓			UE A registered in IMS A	
			$\checkmark$	$\checkmark$	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	Ŕ	ъŶ			initial INVITE addressed to UE B	
2		Ŕ	ਜੀ		<ul> <li>initial INVITE</li> <li>✓ a P-Asserted-Identity header</li> <li>→ the SIP URI of UE A</li> <li>✓ a P-Asserted-Identity header</li> <li>→ the Tel URI of UE A</li> </ul>	

						Test Purpose	
Identif	ier:	TP_IM	IS_5097	04		· · · · ·	
Summ	ary:	S-CSC	CF uses E	ENUM/D	NS to tran	slate Tel URIs to SIP URIs in initial INVITE requests	
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124	4 229 (V <sup>-</sup>	10.10.0)	[1],	Config Ref: CF_INT_CALL	
	clause 5.4.3.2 ¶11 (item 10			¶11 (item	10		
	1 <sup>st</sup> numbered list)						
			Entities			Condition	
	UE A	IMS A	ENUM	IMS B	UE B		
			_DB				
	$\checkmark$	$\checkmark$				UE A registered in IMS A	
						UE B registered in IMS B	
			1		<ul> <li>Image: A second s</li></ul>	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		
			_D B				
Step			Directio	n		Message	IF
						initial INVITE addressed to UE B	
1	\$	Ð				✓ a Request URI	
						→ a Tel URI	
0		м	_			NAPTR Query	
2		¢	Ť			✓ the Tel URI E.164 Number	
						NAPTR Response	
3		Ŷ <del>Ŀ</del>	Å			✓ NAPTR Resource Record	
•			Y			→ the SIP URI of UE B	
4		Ŕ		÷		✓ a Request URI → a SIP URI of UE B	
4		\$		54		✓ a P-Charging-Vector header	
						* an access-network-charging-info parameter	

					Test Purpose	
Identif	ier:	TP_IMS_5	106_01			
Summ	ary:	S-CSCF sh	nall handle	subseque	nt INVITE prior to sending it over NNI	
IUT Role: IMS A						
Refere	nces:	TS 124 229 (V10.10.0) [1],			Config Ref: CF_INT_CALL	
		clause 5.4.3.2 ¶108 (5 <sup>th</sup> numbered list)				
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	~	✓			UE A registered in IMS A	
			$\checkmark$	✓	UE B registered in IMS B	
	~			$\checkmark$	UE A has initiated a dialog with UE B	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1	Ŷ	ъŶ			subsequent INVITE addressed to UE B	
2		Ŕ	ਜੀ		<ul> <li>subsequent INVITE</li> <li>✓ a Record-Route header</li> <li>→ the S-CSCF SIP URI of IMS A</li> <li>× Route header</li> <li>→ the S-CSCF SIP URI of IMS A</li> </ul>	
					<ul> <li>a P-Charging-Vector header</li> <li>an access-network-charging-info parameter</li> </ul>	

					Test Purpose	
Identif	ier:	TP_IMS_5	106_02			
Summ	ary:	S-CSCF sh	all handle	UPDATE pi	rior to sending it over NNI	
IUT Ro	ole:	IMS A		•	Ť	
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.3.2 ¶108 (5 <sup>th</sup> 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 initiated a dialog with UE B	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1	Ð	Ð			UPDATE addressed to UE B	
2		Ŕ	ਡੀ		<ul> <li>UPDATE</li> <li>✓ a Record-Route header</li> <li>✓ the S-CSCF SIP URI of IMS A</li> <li>* Route header</li> <li>→ the S-CSCF SIP URI of IMS A</li> <li>✓ a P-Charging-Vector header</li> <li>* an access-network-charging-info parameter</li> </ul>	

					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 ser	nding BYE	
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.3.2 ¶119 (item 1 in 6 <sup>th</sup> numbered list)			Config Ref:	CF_INT_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 A has initiated a dialog with U	EB	
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	9	IF
1	₽\$	Ť			BYE addressed to UE B		
2		¥)	Ð		BYE ★ Route header → the S-CSCF SIP URI of IM	SA	

					Test Purpose	
Identif	ier:	TP_IMS_5	107_02		·	
Summ	ary:	S-CSCF re	moves its c	wn SIP UR	RI from the route header before sending ACK	
IUT Ro	IUT Role: IMS A					
References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.2 ¶119 (item 1 in 6 <sup>th</sup> numbered list)			Config Ref: CF_INT_CALL	
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	<ul> <li>✓</li> </ul>	$\checkmark$			UE A registered in IMS A	
			✓	$\checkmark$	UE B registered in IMS B	
	~			~	UE A has received 200OK on initial request for dialog UE B	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1	Ð	Ð			ACK addressed to UE B	
2		Ŕ	ъŶ		ACK ★ Route header → the S-CSCF SIP URI of IMS A	

					Test Purpose		
Identif	ier:	TP_IMS_5	107_03		•		
Summ	ary:	S-CSCF re	emoves its c	wn SIP UR	I from the route header before sendir	ng CANCEL	
IUT Ro	ole:	IMS A					
		TS 124 229 (V10.10.0) [1], clause 5.4.3.2 ¶119 (item 1 in 6 <sup>th</sup> numbered list)				CF_INT_CALL	
	Entities		Condition				
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			$\checkmark$	✓	UE B registered in IMS B		
	✓			~	UE A has received 180 on initial requ B	uest for dialog from UE	
	UE A	IMS A	IMS B	UE B			
Step		Direc	ction		Message		IF
1	Ŷ	Ð			CANCEL addressed to UE B		
					CANCEL		
2		Ŕ	ਸ਼ੇ		∗Route header → the S-CSCF SIP URI of IMS A	A	

					Test Purpose	
Identif	ier:	TP_IMS_5	107_04		· · · ·	
Summ	ary:	S-CSCF re	moves its c	wn SIP UR	RI from the route header before sending REFER	
IUT Ro	IUT Role: IMS A				Ť	
Refere	nces:				Config Ref: CF_INT_CALL	
		clause 5.4.3.2 ¶119 (item 1 in 6 <sup>th</sup> numbered list)				
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			$\checkmark$	$\checkmark$	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	Ŕ	Ð			REFER addressed to UE B	
					REFER	
2		Ø	Ð		* Route header	
					the S-CSCF SIP URI of 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	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶5 (1 <sup>st</sup> numbered list)			Config Ref: CF_ROAM_CALL	
		Entiti			Condition	
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	$\checkmark$			UE A registered in IMS A	
			$\checkmark$	$\checkmark$	UE B registered in IMS B	
	UE A	IMS A	IMS B	UE B		
Step		Direct	ion		Message	IF
1		Ŕ	ъŶ		<ul> <li>INVITE addressed to UE B</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an icid-value parameter</li> </ul>	
2		¢	ŝ		INVITE ✓ Route header →   the S-CSCF SIP URI of IMS B ✓ a P-Charging-Vector header ✓ 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_05		•		
Summ	ary:	S-CSCF re	jects barre	d users on in	itial INVITE		
IUT Ro	ole:	IMS B	•				
References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶8 (item 1 in 1 <sup>st</sup> numbered list)			Config Ref:	CF_INT_CALL	
	Entities				Conditio	n	
	UE A	IMS A	IMS B	UE B			
	$\checkmark$	✓			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	е	IF
					initial INVITE addressed to UE	В	
1		\$	ъŶ		✓ a Request URI		
					a barred user in IMS B		
2		रित	Å		404 response		

					Test Purpose		
Identif	ier:	TP_IMS_5	115_01				
Summ	ary:		clude term- ing network	•	ter and restores orig-ioi in 180 responses from UE to initial re-	quests	
IUT Ro	ole:	IMS B	0				
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶91 (item 2 in 3 <sup>rd</sup> numbered list)			Config Ref: CF_INT_CALL		
		Enti	ties		Condition		
	UE A	IMS A	IMS B	UE B			
	$\checkmark$	$\checkmark$			UE A registered in IMS A		
			$\checkmark$	$\checkmark$	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	tion		Message	IF	
1			\frac{c}{c}	Ą	180 response addressed to UE A		
2		È	Ą		<ul> <li>180 response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an orig-ioi parameter</li> <li>→ operator identifier of IMS A</li> <li>✓ a term-ioi parameter</li> <li>→ operator identifier of IMS B</li> </ul>		

					Test Purpose		
Identif	ier:	TP_IMS_5	115_02				
Summ	ary:	S-CSCF in in terminat			eter and restores orig-ioi in 2xx responses from UE to initial	requests	
IUT Ro	ole:	IMS B					
References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶91 (item 2 in 3 <sup>rd</sup> numbered list)			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 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			\ <sup>€</sup> E	Å	2xx response addressed to UE A		
2		ঀ৾৸	ά		<ul> <li>2xx response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an orig-ioi parameter</li> <li>→ operator identifier of IMS A</li> <li>✓ a term-ioi parameter</li> <li>→ operator identifier of IMS B</li> </ul>		

					Test Purpose					
Identifier: TP_IMS_5115_03			115_03		i					
Summary:		S-CSCF inserts a second P-Asserted-Identity header in 1xx response indicating a registered tel URI								
		or SIP URI whichever is not present								
IUT Role:		IMS B								
Refere	ences:		9 (V10.10.C		Config Ref: CF_INT_CALL					
		clause 5.4.3.3 ¶92 (item 3 in 3 <sup>rd</sup> numbered list)								
		Enti	ties		Condition					
	UE A	IMS A	IMS B	UE B						
	$\checkmark$	✓			UE A registered in IMS A					
			$\checkmark$	$\checkmark$	UE B registered in IMS B					
				✓	UE B registered public identities containing a Tel URI and SIP URI					
	$\checkmark$			✓	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			৾৸	Ą	1xx response addressed to UE A					
2		Ŷ±.	\$P		<ul> <li>1xx response</li> <li>✓ a P-Asserted-Identity header</li> <li>→ the SIP URI of</li> <li>UE B</li> <li>✓ a P-Asserted-Identity header</li> <li>→ the Tel URI of UE B</li> </ul>					

					Test Purpose				
Identif	Identifier: TP_IMS_5115_04								
Summary:		S-CSCF inserts a second P-Asserted-Identity header in 2xx response indicating a registered tel							
		or SIP URI whichever is not present							
IUT Ro	ole:	IMS B							
Refere	nces:	TS 124 229	9 (V10.10.0	) [1],	Config Ref: CF_INT_CALL				
		clause 5.4.3.3 ¶92 (item 3 in 3 <sup>rd</sup> numbered list)							
		Entit			Condition	d tel URI			
	UE A	IMS A	IMS B	UE B					
	$\checkmark$	$\checkmark$			UE A registered in IMS A				
			$\checkmark$	$\checkmark$	UE B registered in IMS B				
				$\checkmark$	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		Direction			Message	IF			
1			৾৸	Ą	2xx response addressed to UE A				
					2xx response ✓ a P-Asserted-Identity header				
2		€£	47		→ the SIP URI of UE B				
					<ul> <li>✓ a P-Asserted-Identity header</li> <li>→ the Tel URI of UE B</li> </ul>				

					Test Purpose				
Identifier: TP_IMS_5120_01									
Summary:		S-CSCF shall Remove its URI from the Route header and insert its SIP-URI in the Record Route header on a target refresh request							
IUT Role:		IMS B							
References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶99 (item 3 and 5 in 6 <sup>th</sup> numbered list)			Config Ref: CF_ROAM_CALL				
		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 A has initiated a dialog with UE B				
	UE A	IMS A	IMS B	UE B					
Step		Direction			Message	IF			
1	Ŕ				subsequent INVITE addressed to UE B				
2		<del>ि</del>	4 <u>1</u>		INVITE   * a topmost Route header   the S-CSCF SIP URI of IMS B   a Record-Route header   the S-CSCF SIP URI				

					Test Purpose					
Identifier: TP_IMS_5120_02					-					
Summary:			S-CSCF shall Remove its URI from the Route header and insert its SIP-URI in the Record Route header on a target refresh request							
IUT Ro	ole:	IMS B								
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶99 (item 3 and 5 in 6 <sup>th</sup> numbered list)			Config Ref:	CF_ROAM_CALL				
		Entities			Condition					
	UE A	IMS A	IMS B	UE B						
	✓	✓			UE A registered in IMS A					
			$\checkmark$	$\checkmark$	UE B registered in IMS B					
	<ul> <li>✓</li> </ul>	$\checkmark$		$\checkmark$	UE A has initiated a dialog with UI	ΞB				
	UE A	IMS A	IMS B	UE B						
Step		Direc	ction		Message		IF			
1	Ŷ		зŶ		UPDATE addressed to UE B					
2		ŶĿ	ŝ		<ul> <li>UPDATE</li> <li>★ a topmost Route header</li> <li>→ the S-CSCF SIP URI of IM</li> <li>✓ a Record-Route header</li> <li>✓ the S-CSCF SIP URI</li> </ul>	SB				

					Test Purpose				
Identifier:		TP_IMS_5121_01							
Summary:		S-CSCF remove access-network-charging-info parameter from 1xx response to subsequent or target refresh requests							
IUT Ro	ole:	IMS B							
References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶123 (7 <sup>th</sup> numbered list)			Config Ref:	CF_INT_CALL			
	Entities				Condition				
	UE A	IMS A	IMS B	UE B					
	✓	$\checkmark$			UE A registered in IMS A	UE A registered in IMS A			
			<b>~</b>	✓	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	Direction				Message		IF		
1			Ŕ	Ą	1xx response addressed to UE A				
2		Ê	ŶŢ		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 refresh req		ss-networ	k-charging-info parameter from 2xx response to subsequent of	or target
IUT Ro	ole:	IMS B				
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶123 (7 <sup>th</sup> numbered list)			Config Ref: CF_INT_CALL	
		Entit	ies		Condition	
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	✓			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			\frac{1}{2}	Ą	2xx response addressed to UE A	
2		È	¢ħ		<ul> <li>2xx response</li> <li>✓ a P-Charging-Vector header</li> <li>★ an access-network-charging-info parameter</li> </ul>	

					Test Purpose		
Identif	ier:	TP_IMS_5	301_01				
Summ	ary:	S-CSCF sh and add it t			a subsequent request remove its c neader	own URI from the Route he	ader
IUT Ro	ole:	IMS A					
References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶126 (8 <sup>th</sup> numbered list)			Config Ref:	CF_ROAM_CALL	
	Entities				Conditio	n	
	UE A	IMS A	IMS B	UE B			
	$\checkmark$	✓			UE A registered in IMS A		
			$\checkmark$	$\checkmark$	UE B registered in IMS B		
	$\checkmark$			✓	UE A has initiated a dialog with UE B		
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	÷	IF
1	Ð	Ð			BYE		
2		Ę,	Ŷ		BYE ✓ Route header →   the S-CSCF SIP URI of IN ✓ a topmost Record-Route head → the S-CSCF SIP URI of IMS	ler	

						Test Purpose	
Identif			IS_5139_				<i></i>
Summ	ary:		e an exis			alling user and the S-CSCF receives a network internal indicession including registration lifetime expiration of the last public public sectors and the last public sectors are associated with the sector of the last public sectors are associated with the	
IUT Ro	ole:	IMS A					
Refere	ences:	TS 12	4 229 (V1	0.10.0) [	1],	Config Ref: CF_INT_CALL	
		clause	5.4.5.1.2	2 ¶1 (item	1 and		
		2 in 1 <sup>s</sup>	<sup>t</sup> number	ed list)			
		r	Entities	1	r	Condition	
	UE A	NWK	IMS A	IMS B	UE B		
	$\checkmark$		$\checkmark$			UE A registered in IMS A	
				✓	<ul> <li>✓</li> </ul>	UE B registered in IMS B	
	✓				✓	UE A has initiated a dialog with UE B	
<u></u>	UE A	NWK	IMS A	IMS B	UE B		
Step		[	Direction		1	Message	IF
1		Ŕ	Ť			<b>network internal indication</b> that the lifetime of the last public user identity has expired	
2			Ψŷ		£	<ul> <li>BYE</li> <li>✓ a Request URI</li> <li>→ Contact header value of UE B</li> <li>✓ a To header</li> <li>→ the To header of the 200 response to initial INVITE</li> <li>✓ a From header</li> <li>→ the From header of the initial INVITE</li> <li>✓ a Call-ID header</li> <li>→ the Call-ID header of the initial</li> <li>✓ a CSeq header</li> <li>→ the Call-ID header of the calling user incremented by one</li> <li>✓ a Route header</li> <li>→ routing information towards the called user as stored for the dialog</li> <li>✓ a Reason header</li> <li>✓ further headers, based on local policy or the requested session release reason</li> </ul>	
2	Ŷ		ŝ			<ul> <li>BYE</li> <li>✓ a Request URI</li> <li>→ Contact address of UE A</li> <li>✓ a To header</li> <li>→ the From header of the initial INVITE</li> <li>✓ a From header</li> <li>→ the To header of the 200 response to initial</li> <li>✓ a Call-ID header</li> <li>→ the Call-ID header of the initial INVITE</li> <li>✓ a CSeq header</li> <li>→ CSeq header</li> <li>→ CSeq header</li> <li>✓ a Route header</li> <li>✓ a Route header</li> <li>✓ a Reason header</li> <li>✓ further headers, based on local policy or the requested session release reason</li> </ul>	

						Test Purpose	
Identif			IS_5139_				. ('
Summ	-	releas identit	e an exis y			called user and the S-CSCF receives a network internal indicates ession including registration lifetime expiration of the last pub	
IUT Ro		IMS B					
Refere	ences:		4 229 (V <i>*</i>			Config Ref: CF_INT_CALL	
		clause 4 in 1 <sup>s</sup>	e 5.4.5.1.2 " number	2 ¶1 (iten ed list)	n 3 and		
		1	Entities			Condition	
	UE A	IMS A	IMS B	NWK	UE B		
	$\checkmark$	$\checkmark$				UE A registered in IMS A	
			$\checkmark$		$\checkmark$	UE B registered in IMS B	
	$\checkmark$				$\checkmark$	UE A has initiated a dialog with UE B	
	UE A	IMS A	IMS B	NWK	UE B		
Step			Direction		T	Message	IF
1			ণ্দ্রি	<u>ل</u>		<b>network internal indication</b> that the lifetime of the last 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 <del>Ŀ</del>		Å			→ the Call-ID header of the initial INVITE	
						✓ a CSeq header	
						<ul> <li>CSeq header of the calling user incremented by one</li> </ul>	
						✓ 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 B	
						✓ a To header	
						→ the To header of the 200 response to initial INVITE	
						✓ a From header	
						<ul> <li>→ the From header of the initial INVITE</li> <li>✓ a Call-ID header</li> </ul>	
						<ul> <li>→ the Call-ID header of the initial INVITE</li> </ul>	
2			¢		Ť	✓ a CSeg 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	

### 5.4.3 Dialog at I-CSCF

				Т	est Purpose	
Identif	ier:	TP_IMS_5	131_01			
Summ	ary:	I-CSCF sha	all remove I	P-Charging-Fu	unction-Addresses header from 180 response to initial re-	quest
IUT Ro	ole:	IMS B		<b></b>	·	•
Refere	nces:	TS 124 229	9 (V10.10.0	) [1],	Config Ref: CF_INT_CALL	
	cl		2.1 ¶62 (aft	er note 11)		
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			✓	$\checkmark$	UE B registered in IMS B	
	1			1	UE B has received an initial request for a dialog from	
	•			•	UEA	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ection	-	Message	IF
1			{E}	Ą	180 response addressed to UE A	
2		<del>ك</del>	Ŷ		180 response * a P-Charging-Function-Addresses header	

40

					Test Purpose		
Identif	ier:	TP_IMS_5	131_02		· · · ·		
Summ	ary:	I-CSCF sha	all remove F	-Charging-	Function-Addresses header from 2	200 response to initial requ	Jest
IUT Ro	ole:	IMS B					
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.3.2.1 ¶Clause 5.3.2.1 ¶62 (after note 11)			Config Ref:	CF_INT_CALL	
	Entities				Conditio	n	
	UE A	IMS A	IMS B	UE B			
	$\checkmark$	✓			UE A registered in IMS A		
			$\checkmark$	✓	UE B registered in IMS B		
	✓			✓	UE A has received 180 on initial r UE B	equest for dialog from	
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Message	Э	IF
1			\ <sup>€</sup> E	Ą	2xx response addressed to UE	4	
2		ŶĿ	\$P		2xx response * a P-Charging-Function-Addre	esses header	

				-	Test Purpose	
Identif	ier:	TP_IMS_5	132_01			
Summ	ary:	I-CSCF sh	all return ar	n appropriate	response to initial request to non-existent user	
IUT Ro	ole:	IMS B				
Refere	nces:	TS 124 22	9 (V10.10.0	) [1],	Config Ref: CF_INT_CALL	
		clause 5.3	.2.1 ¶54 (af	ter 5 <sup>th</sup>		
		numbered	list)			
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	✓	~			UE A registered in IMS A	
			×		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		<del>ث</del> ط	Ą		404 response	
2b		Ê	Ą		604 response	

				Т	est Purpose		
Identif	ier:	TP_IMS_5	132_02		•		
Summ	ary:	IMS shall r	eturn an ap	propriate resp	onse to OPTIONS request to no	on-RCS user	
IUT Ro	ole:	IMS B	•				
References:		clause 5.3 numbered		ter 5 <sup>th</sup>	Config Ref:	CF_INT_CALL	
	GSMA RCS V5.1 [6], clause 2.3.1						
		En	tities		Conditi	on	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			x	x	UE B not RCS user		
	UE A	IMS A	IMS B	UE B			
Step		Dir	ection		Messa	ge	IF
1		Ŕŷ	Ð		OPTIONS addressed to UE B ✓ a Request URI → a non-RCS user in IMS	В	
2a		ि	Å		404 response		

					Test Purpose		
Identif	ier:	TP_IMS_5	133_01				
Summ	ary:	I-CSCF sha	all return ur	successful	response to initial request to non-	registered user	
IUT Ro	ole:	IMS B					
Refere	ences:	TS 124 229 clause 5.3. numbered		) [1], fore 6 <sup>th</sup>	Config Ref:	CF_INT_CALL	
		Enti	ties		Conditio	n	
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			x	×	UE B not registered in IMS B		
			x	×	IMS B not configured with a terminating unregistered filter criterion for UE B		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Messag		IF
1		Ŕ	Ŷ		initial INVITE addressed to UE	3	
2		रित	Ą		4xx response		

## 5.4.4 Dialog at IBCF

					Test Purpose		
Identif	ier:	TP_IMS_51	35_01				
Summ	ary:	If a request	includes a	Record-Ro	oute header the IBCF shall add its	own routable SIP URI to	o the top
		of the Reco	rd-Route h	eader			
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229	(V10.10.0)	) [1],	Config Ref:	CF_INT_CALL	
		clause 5.10.4.1 ¶7 (after note 4)			_		
			Entities		Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
		$\checkmark$			IMS A configured for topology hid	ling	
	UE A	IMS A	IMS B	UE B			
Step			Direction		Message		IF
1	Ŷ	Ť			initial INVITE		
2		Ŕ	ъŶ		initial INVITE ✓ an additional topmost Record ✓ the IBCF SIP URI of IMS A		

					Test Purpose	
Identif	ier:	TP_IMS_5	137_01			
Summ	ary:	The IBCF s	shall perfor	m encryptio	n for topology hiding before an initial INVITE request is sent	
IUT Ro		IMS A	•			
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.10.4.2 ¶1 (items 7 & 8 in 1 <sup>st</sup> numbered list)			Config Ref: CF_INT_CALL	
	Entities				Condition	
	UE A	IMS A IMS B UE B		UE B		
	$\checkmark$	$\checkmark$			UE A registered in IMS A	
		$\checkmark$ $\checkmark$			UE B registered in IMS B	
		$\checkmark$	✓ IMS A configured for topology hiding			
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1	Ð	Ť			initial INVITE addressed to UE B	
2		Ŕ	Ð		<ul> <li>initial INVITE</li> <li>✓ a Via header</li> <li>→ the IBCF SIP URI of IMS A</li> <li>✓ encrypted consecutive header entries</li> <li>✓ a tokenized-by parameter</li> <li>✓ a Route header</li> <li>→ the IBCF SIP URI of IMS A</li> <li>✓ encrypted consecutive header entries</li> <li>✓ a tokenized-by parameter</li> </ul>	

					Test Purpose	
Identif	ier:	TP_IMS_5	137_02			
Summ	ary:	The IBCF s	shall perform	m encryption	n for topology hiding before 180 response is sent	
IUT Ro	ole:	IMS B	•	••		
References:		TS 124 229 clause 5.10 numbered	9 (V10.10.0 ).4.2 ¶1 (ite list)	) [1], em 8 in 1 <sup>st</sup>	Config Ref: CF_INT_CALL	
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	✓			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	
			$\checkmark$		IMS B configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1			\ <sup>€</sup> E	4	180 response addressed to UE A	
2		र्ध	Ϋ́		<ul> <li>180 response</li> <li>✓ Via header</li> <li>→ the IBCF SIP URI of IMS A</li> <li>✓ encrypted consecutive header entries</li> <li>✓ a tokenized-by parameter</li> </ul>	

					Test Purpose		
Identif	ier:	TP_IMS_5	137_03				
Summ	ary:	The IBCF s	hall perforr	n encryptior	n for topology hiding before 200 re	esponse is sent	
IUT Ro	ole:	IMS B	•	21		•	
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.10.4.2 ¶(item 8 in 1 <sup>st</sup> numbered list)			Config Ref:	CF_INT_CALL	
		Enti	ties		Conditio	on	
	UE A	IMS A	IMS B	UE B			
	✓	$\checkmark$			UE A registered in IMS A		
			$\checkmark$	✓	UE B registered in IMS B		
	✓			✓	UE A has received 180 on initial UE B	request for dialog from	
			$\checkmark$		IMS B configured for topology hi	ding	
	UE A	IMS A	IMS B	UE B		~	
Step		Dire	ction		Messag	е	IF
1			Ęţ,	Ą	200 response addressed to UE	A	
2		È	Ŷ		200 response ✓ a Via header → the IBCF SIP URI of IMS ✓ encrypted consecutive hea ✓ a tokenized-by parameter	ader entries	

					Test Purpose		
Identif	ier:	TP_IMS_5	137_04				
Summ	ary:	The IBCF s	shall perfor	m encryption	for topology hiding before an ir	itial REGISTER request	is sent
IUT Ro	ole:	IMS A	•				
References:		(1 <sup>st</sup> numbe	10.4.1 and red list)	0) [1], 5.10.4.2 ¶1	Config Ref:	CF_ROAM_REG	
			ities		Condit	ion	
	UE B	IMS A	IMS B				
		$\checkmark$		IMS A config	gured for topology hiding		
	UE B	IMS A	IMS B				
Step					Message		IF
1	¢	ъŶ		unprotecte	d REGISTER addressed to IMS	S B	
2		¢,	Ð	<ul> <li>✓ encry</li> <li>✓ a toke</li> <li>✓ a Route</li> <li>→ the IB0</li> <li>✓ encry</li> <li>✓ a toke</li> <li>✓ a Path</li> <li>→ the IE</li> <li>✓ encry</li> </ul>	eader BCF SIP URI of IMS A pted consecutive header entries enized-by parameter e header CF SIP URI of IMS A pted consecutive header entries enized-by parameter	3	

					Test Purpose		
Identif	ier:	TP_IMS_54	404_01		•		
Summ	ary:	<b>IBCF</b> shall	remove P-0	Charging-F	unction-Addresses header from init	tial INVITE request	
IUT Role: IMS A							
References: TS 12		TS 124 229	9 (V10.10.0	) [1],	Config Ref:	CF_INT_CALL	
		clause 5.10	).2.2 ¶1 (ite	m 8 in			
	1 <sup>st</sup> numbered list)						
	Entities				Conditio	n	
	UE A	IMS A	IMS B	UE B			
	$\checkmark$	$\checkmark$			UE A registered in IMS A		
			$\checkmark$	<ul> <li>✓</li> </ul>	UE B registered in IMS B		
		$\checkmark$			IMS A configured for topology hidi	ing	
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	9	IF
1	Ъ,	÷			initial INVITE addressed to UE B		
	Ŷ	2			✓ a P-Charging-Function-Addre	esses header	
2		м.			initial INVITE		
2		Ŕ	Ť		* a P-Charging-Function-Addre	sses header	

					Test Purpose	
Identif	ier:	TP_IMS_54	408_01			
Summ	ary:	The IBCF s	shall perforr	n encryptio	n for topology hiding before ACK request is sent	
IUT Ro	ole:	IMS A				
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.10.2.3 ¶1 (item 4 in 1 <sup>st</sup> numbered list )			Config Ref: CF_INT_CALL	
	Entities				Condition	
	UEA IMSA IMSB UEB					
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	$\checkmark$			$\checkmark$	UE A has received 200OK on initial request for dialog from UE B	
		$\checkmark$			IMS A configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1	₹\$	ъŶ			ACK addressed to UE B	
2		₩¢	Ð		<ul> <li>ACK</li> <li>✓ a Via header</li> <li>→ the IBCF SIP URI of IMS A</li> <li>✓ encrypted consecutive header entries</li> <li>✓ a tokenized-by parameter</li> <li>✓ a Route header</li> <li>→ the IBCF SIP URI of IMS A</li> <li>✓ encrypted consecutive header entries</li> <li>✓ a tokenized-by parameter</li> </ul>	

					Test Purpose	
Identif	ier:	TP_IMS_5	408_02		•	
Summ	ary:	The IBCF s	shall perfor	m encryptio	n for topology hiding before CANCEL request is sent	
IUT Ro	ole:	IMS A		21		
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.10.2.3 ¶1 (item 4 in 1 <sup>st</sup> numbered list)			Config Ref: CF_INT_CALL	
	Entities			Condition		
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	✓			UE A registered in IMS A	
			$\checkmark$	✓	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	Ŷ	Ð			CANCEL addressed to UE B	
2		Ŕ	ਜ਼ੀ		<ul> <li>CANCEL</li> <li>✓ a Via header</li> <li>→ the IBCF SIP URI of IMS A</li> <li>✓ encrypted consecutive header entries</li> <li>✓ a tokenized-by parameter</li> <li>✓ a Route header</li> <li>→ the IBCF SIP URI of IMS A</li> <li>✓ encrypted consecutive header entries</li> <li>✓ a tokenized-by parameter</li> </ul>	

					Test Purpose		
Identif	ier:	TP_IMS_5	408_03				
Summ	ary:	The IBCF s	shall perfori	m encryptior	n for topology hiding before BYE re	equest is sent	
IUT Ro	ole:	IMS A	•				
Refere	ences:	TS 124 22	9 (V10.10.0	) [1],	Config Ref:	CF_INT_CALL	
		clause 5.10.2.3 ¶1 (item 4 in 1 <sup>st</sup> numbered list)					
	Entities				Conditio	n	
	UE A	IMS A IMS B UE B					
	✓	✓			UE A registered in IMS A		
			$\checkmark$	$\checkmark$	UE B registered in IMS B		
	✓			$\checkmark$	UE A has initiated a dialog with L	JE B	
		$\checkmark$			IMS A configured for topology hid	ling	
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Messag	e	IF
1	Ŕ	Ð			BYE addressed to UE B		
2		Ŕ	Ð		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 perfor	m encryptio	n for topology hiding before subsec	quent INVITE request is	sent
IUT Ro	ole:	IMS A				• •	
Refere	ences:		9 (V10.10.0 0.2.3 ¶1 (ite ed list)		Config Ref:	CF_INT_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 A has initiated a dialog with U	JE B	
		$\checkmark$			IMS A configured for topology hid		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Message	9	IF
1	Ŕ	Ŷ			subsequent INVITE addressed t	to UE B	
2		άş	ਜੀ		<ul> <li>subsequent INVITE</li> <li>✓ a Via header</li> <li>→ the IBCF SIP URI of IMS A</li> <li>✓ encrypted consecutive header</li> <li>✓ a Route header</li> <li>→ the IBCF SIP URI of IMS A</li> <li>✓ encrypted consecutive header</li> <li>✓ a tokenized-by parameter</li> </ul>	nder entries	

					Test Purpose				
Identif	ier:	TP_IMS_5	414_01		•				
Summ	ary:		receives a	an initial INV	/ITE request and it shall respond	with a 100 (Trying) provisional			
IUT Ro	alo:	response IMS B							
Refere	ences:	TS 124 229	9 (V10.10.0	) [1].	Config Ref:	CF INT CALL			
	clause 5.10.3.2 ¶12 (item 1 <sup>st</sup> numbered list)								
	Entities				Conditio	on			
	UE A	IMS A	IMS B	UE B					
	$\checkmark$	$\checkmark$			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		Ø	Ť		initial INVITE addressed to UE B				
2		<del>رك</del>	Ą		100 response				

### 5.5 Messaging Procedures

## 5.5.1 Messaging at P-CSCF

					Test Purpose		
Identif	ier:	TP_IMS_5	050_01				
Summ	ary:	When the I exists with			SSAGE request from a UE for whether the second seco	hich a Service-Route heade	er list
IUT Ro	ole:	IMS A					
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.2.6.3.3 ¶(1 <sup>st</sup> numbered list)			Config Ref:	CF_ROAM_CALL	
		Ent	ities		Conditi	on	
	UE A	IMS A	IMS B	UE B			
	$\checkmark$	$\checkmark$			UE A registered in IMS A		
			$\checkmark$	$\checkmark$	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	je	IF
1		रित		Ą	MESSAGE		
2		Ę,	£		<ul> <li>MESSAGE</li> <li>✓ a Route header</li> <li>→    the P-CSCF SIP URI of IMS A</li> <li>→ the list of Service Route header URIs from registration</li> <li>≭ a P-Preferred-Identity header</li> <li>✓ P-Asserted-Identity header</li> <li>✓ an address of UE A</li> <li>✓ the P-Charging-Vector header</li> <li>✓ an icid-value parameter</li> </ul>		

### 5.5.2 Messaging at S-CSCF

					Test Purpose	
Identif	ier:	TP_IMS_5	097_05			
Summ	ary:	S-CSCF st sending MI			rameter, remove access-network-charging-info parameter b	efore
IUT Ro	ole:	IMS A				
References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.2 (1 <sup>st</sup> numbered list)			Config Ref: CF_INT_CALL	
	Entities		-	Condition		
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	$\checkmark$			UE A registered in IMS A	
			$\checkmark$	✓	UE B registered in IMS B	
		x			IMS A not configured for topology hiding	
	UE A	IMS A	IMS B	UE B		
Step		Direc	tion		Message	IF
1	Ø	Ť			MESSAGE addressed to UE B	
2		¢	ਜ਼ੀ		<ul> <li>MESSAGE</li> <li>★ a Route header</li> <li>→ the S-CSCF SIP URI of IMS A</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an icid-value parameter</li> <li>✓ an orig-ioi parameter</li> <li>→ IMS A</li> <li>★ an access-network-charging-info parameter</li> <li>★ a term-ioi parameter</li> </ul>	

					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 tel URI	
IUT Ro	ole:	IMS A			· · ·	
Refere	nces:	TS 124 229 (V10.10.0) [1],			Config Ref: CF_INT_CALL	
		clause 5.4.3.2 ¶11 (item 9 in 1 <sup>st</sup> numbered list)				
	Entities				Condition	
	UE A	IMS A	IMS B	UE B		
	<b>~</b>	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	$\checkmark$				UE A registered public identities containing a SIP URI	
	UE A	IMS A	IMS B	UE B		
Step		Direc	ction		Message	IF
1	Ŷ	Ŷ			MESSAGE addressed to UE B	
					MESSAGE	
					✓ a P-Asserted-Identity header	
2		Ŕ	÷Ŷ		→ the SIP URI of	
2		Ŷ	27		UEA	
					✓ a P-Asserted-Identity header	
					→ the Tel URI of UE A	

					Test Purpose	
Identif	ier:	TP_IMS_5	097_07			
Summ	ary:	S-CSCF in	serts a sec	ond P-Asse	erted-Identity header indicating a SIP URI	
IUT Ro	ole:	IMS A			· · · · ·	
Refere	ences:	TS 124 229 (V10.10.0) [1],			Config Ref: CF_INT_CALL	
		clause 5.4.3.2 ¶11 (item 9 in 1 <sup>st</sup> 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 registered public identities containing a Tel URI	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1	Ŕ	ъŶ			MESSAGE addressed to UE B	
2		τŷ	Ð		<ul> <li>MESSAGE</li> <li>✓ a P-Asserted-Identity header</li> <li>→ the SIP URI of UE A</li> <li>✓ a P-Asserted-Identity header</li> <li>→ the Tel URI of UE A</li> </ul>	

						Test Purpose						
Identif	Identifier:         TP_IMS_5097_08           Summary:         S-CSCF uses ENUM/DNS to translate Tel URIs to SIP URIs in MESSAGE requests											
Summ	ary:	S-CSC	CF uses E	ENUM/DM	IS to tran	slate Tel URIs to SIP URIs in MESSAGE requests						
IUT Ro	ole:	IMS A										
Refere	ences:			10.10.0) [		Config Ref: CF_INT_CALL						
		clause	5.4.3.2 <b>•</b>	¶11 (item	10 in							
		1 <sup>st</sup> nur	nbered)									
		Entities				Condition						
	UE A	IMS A	ENUM	IMS B	UE B							
	✓	✓	_DB									
	✓	✓		$\checkmark$	✓	UE A registered in IMS A						
				V	•	UE B registered in IMS B						
			$\checkmark$		$\checkmark$	ENUM_DB configured with an ENUM entry for Tel URI E.164 Number of UE B						
	UEA IMSA ENUM IMSB UEB				UE B	E.164 Number of UE B						
	UEA	INIS A			UED							
Step			Direction	n		Message	IF					
						MESSAGE addressed to UE B						
1	Ŕ	÷				✓ a Request URI						
	,	_				→ a Tel URI						
			-			NAPTR Query						
2		Ŕ	Ð			✓ the Tel URI E.164 Number						
						NAPTR Response						
3		ŵ.	4			✓ NAPTR Resource Record						
5		2	Ý			→ the SIP URI of UE B						
						MESSAGE addressed to UE B						
						✓ a Request URI						
4		Ŕ		÷		→ a SIP URI of UE B						
4		Ş		54		✓ a P-Charging-Vector header						
						* an access-network-charging-info parameter						

					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:	TS 124 229 clause 5.4. in 1 <sup>st</sup> numb	3.3 ¶5 (iten		Config Ref: CF_ROAM_CALL	
		Enti	ities		Condition	
	UE A	IMS A	IMS B	UE B		
	$\checkmark$	✓			UE A registered in IMS A	
			✓	$\checkmark$	UE B registered in IMS B	
	UE A	IMS A	IMS B	UE B		
Step		Dire	ction		Message	IF
1		Ъ.	ъŶ		MESSAGE addressed to UE B ✓ a P-Charging-Vector header ✓ an icid-value parameter	
2 🔄 🖑					<ul> <li>MESSAGE</li> <li>✓ Route header</li> <li>→   the S-CSCF SIP URI of IMS B</li> <li>✓ a P-Charging-Vector header</li> <li>✓ the same icid-value parameter</li> <li>★ ioi parameters</li> <li>✓ a Record-Route header</li> <li>✓ the S-CSCF SIP URI of IMS B</li> </ul>	

					Test Purpose		
Identif	ier:	TP_IMS_5	108_06		•		
Summ	ary:	S-CSCF re	jects barred	d users on N	IESSAGE		
IUT Ro	ole:	IMS B					
Refere	ences:	TS 124 229 clause 5.4. 1 <sup>st</sup> number	9 (V10.10.0 3.3 ¶6 (iten ed list)		Config Ref:	CF_INT_CALL	
		Ent	ities		Condition		
	UE A	IMS A	IMS B	UE B			
	$\checkmark$	$\checkmark$			UE A registered in IMS A		
			✓	$\checkmark$	UE B registered in IMS B		
			$\checkmark$	$\checkmark$	UE B barred user in IMS B		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Messag	е	IF
					MESSAGE addressed to UE B		
1		\$	Ť		✓ a Request URI		
					a barred user in IMS B		
2		रित	Ą		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 standalone			
IUT Ro	ole:	IMS B							
Refere	ences:	TS 124 229 clause 5.4. 4 <sup>th</sup> number	.3.3 ¶100 (i		Config Ref:	CF_INT_CALL			
		Entit	ties		Condition	n			
	UE A	IMS A	IMS B	UE B					
	✓	✓			UE A registered in IMS A				
			$\checkmark$	✓	UE B registered in IMS B				
				$\checkmark$	UE B has received a standalone re	equest			
	UE A	IMS A	IMS B	UE B		•			
Step		Direc	tion		Message	•	IF		
1			\_ €	Ą	1xx response addressed to UE A				
2	2   🕹				<ul> <li>1xx response</li> <li>✓ a P-Charging-Vector header</li> <li>★ an access-network-charging</li> </ul>	-info parameter			

					Test Purpose		
Identif	ier:	TP_IMS_5	117_02		•		
Summ	ary:	S-CSCF re transaction		ss-network	-charging-info parameter from 2xx	response to standalone	
IUT Ro	ole:	IMS B					
Refere	ences:	clause 5.4.3.3 ¶100 (item 2 in 4 <sup>th</sup> numbered list)			Config Ref:	CF_INT_CALL	
		Enti	ties		Conditio	n	
	UE A	IMS A	IMS B	UE B			
	$\checkmark$	✓			UE A registered in IMS A		
			$\checkmark$	✓	UE B registered in IMS B		
				✓	UE B has received a standalone r	equest	
	UE A	IMS A	IMS B	UE B			
Step		Direc	tion		Message	9	IF
1			Ŷ <u>u</u>	Ą	2xx response addressed to UE A	Ν	
2		ŶĿ	4 <sup>1</sup>		2xx response ✓ a P-Charging-Vector header ★ an access-network-charging	g-info parameter	

					Test Purpose		
Identif	ier:	TP_IMS_5	117_05				
Summ	ary:	S-CSCF in	serts a seco	ond P-Assei	rted-Identity header in 1xx response from UE for initial requ	est	
	-	indicating a	a registered	SIP URI if r	not present		
IUT Ro	ole:	IMS B					
Refere	ences:	TS 124 229	9 (V10.10.0	) [1],	Config Ref: CF_INT_CALL		
		clause 5.4.	3.3 ¶(item <sup>-</sup>	í in 4 <sup>th</sup>			
		numbered	list)				
		Ent	ities		Condition		
	UE A	IMS A	IMS B	UE B			
	✓ ✓ ✓ UE A registered in IMS A						
	✓ ✓ ✓			✓	UE B registered in IMS B		
				1	UE B registered_public_identities containing a Tel_URI		
					and a SIP_URI		
	$\checkmark$			$\checkmark$	UE B has received a standalone request from UE A		
	UE A	IMS A	IMS B	UE B			
Step		Dire	ction		Message	IF	
1			\frac{1}{2}	Ą	1xx response addressed to UE A		
					1xx response		
					✓ a P-Asserted-Identity header		
2		रित	47		→ the tel URI of UE B		
					✓ a P-Asserted-Identity header		
					→ a SIP URI of UE B		
		-		1			

					Test Purpose		
Identif	ier:	TP_IMS_5	117_06				
Summ	ary:				erted-Identity header in 2xx response f not present	from UE for initial reque	st
IUT Ro	ole:	IMS B					
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶100 (item 1 in 4 <sup>th</sup> numbered list)			Config Ref: C	F_INT_CALL	
		Entit			Condition		
	UE A	IMS A	IMS B	UE B			
	✓	<ul> <li>✓</li> </ul>			UE A registered in IMS A		
		$\checkmark$			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			€£	Ą	2xx response addressed to UE A		
2					<ul> <li>2xx response</li> <li>✓ a P-Asserted-Identity header</li> <li>→ the tel URI of UE B</li> <li>✓ a P-Asserted-Identity header</li> <li>→ the SIP URI of UE B</li> </ul>		

					Test Purpose			
Identif	ier:	TP_IMS_5	118_01					
Summ	ary:	S-CSCF in	clude term-	ioi paramete	er and restores orig-ioi in 200 responses to standalone requ	lests		
IUT Ro	ole:	IMS B		•				
Refere	ences:	TS 124 229	9 (V10.10.0	) [1],	Config Ref: CF_INT_CALL			
		clause 5.4. 5 <sup>th</sup> number	3.3 ¶105 (it ed list)	em 2 in				
		Ent	ities		Condition			
	UE A	IMS A	IMS B	UE B				
	✓	✓			UE A registered in IMS A			
			✓	$\checkmark$	UE B registered in IMS B			
	$\checkmark$			✓	UE B has received a standalone request from UE A			
	UE A	IMS A	IMS B	UE B				
Step		Dire	ction		Message	IF		
1			ीत	Ą	200 response addressed to UE A			
2		र्फे	¢ <del>,</del> µ		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:	Initial	request fo	or a dialo	g handling	by S-CSCF with matching filter c	riteria AS	
IUT Ro	ole:	IMS B						
Refere	ences:	clause	4 229 (V1 e 5.4.3.2 ¶ numbered	[11 (item:	1], s 5 and 8	Config Ref:	CF_ROAM_AS	
		1	Entities	1	-	Conditio	n	
	UE A	IMS A	IMS B	AS B	UE B			
	$\checkmark$	✓				UE A registered in IMS A		
			$\checkmark$		$\checkmark$	UE B registered in IMS B		
		$\checkmark$			$\checkmark$	UE B visiting IMS A		
			$\checkmark$	$\checkmark$		IMS B configured with filter criter	ia to contact AS B	
			$\checkmark$	$\checkmark$		AS B within the trust domain of I	MS B	
	UE A	IMS A	IMS B	AS B	UE B			
Step			Direction	า		Messag		IF
1		Ŕ	ъŶ			initial INVITE addressed to UE A	A	
2			Ŕ	ਜ਼ੀ		<ul> <li>initial INVITE</li> <li>✓ a Route header</li> <li>→ the SIP URI of AS B</li> <li>✓ a P-Charging-Function-Addresses header</li> <li>✓ a P-Charging-Vector header</li> <li>✓ a orig-ioi parameter</li> <li>✓ operator identifier of IMS A</li> <li>× a term-ioi parameter</li> <li>✓ access-network-charging-info</li> </ul>		

						Test Purpose		
Identif	fier:	TP_IM	IS_5097_	10				
Summ	nary:	MESS	AGE har	dling by	S-CSCF \	with matching filter criteria AS		
IUT Re	ole:	IMS B						
Refere	clause 5.4.3.2 ¶11 (item 5 and 8 in 1 <sup>st</sup> numbered list)					Config Ref:	CF_ROAM_AS	
			Entities			Conditio	n	
					UE B			
	$\checkmark$	$\checkmark$				UE A registered in IMS A		
			$\checkmark$		$\checkmark$	UE B registered in IMS B		
		<ul><li>✓</li></ul>			$\checkmark$	UE B visiting IMS A		
			$\checkmark$	✓		IMS B configured with filter criter	ia to contact AS B	
			$\checkmark$	✓		AS B within the trust domain of I		
	UE A	IMS A	IMS B	AS B	UE B			
Step			Direction	า		Messag	e	IF
1		¢	ЪŶ			MESSAGE addressed to UE A		
2			Ψ\$	ਜ਼ੀ		<ul> <li>MESSAGE</li> <li>✓ a Route header</li> <li>→ the SIP URI of AS B</li> <li>✓ a P-Charging-Function-Addr</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an orig-ioi parameter</li> <li>→ operator identifier of IMS</li> <li>× a term-ioi parameter</li> <li>✓ access-network-charging-ii</li> </ul>	SA	

						Test Purpose				
Identifier: TP_IMS_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			1], s 5 and 8	Config Ref:	CF_ROAM_AS			
			Entities			Condition	1			
					UE B					
	$\checkmark$ $\checkmark$					UE A registered in IMS A				
					$\checkmark$	UE B registered in IMS B				
	$\checkmark$				$\checkmark$	UE B visiting IMS A				
			<ul> <li>✓</li> </ul>	$\checkmark$		IMS B configured with filter criteria	a to contact AS B			
			<ul> <li>✓</li> </ul>	✓		AS B within the trust domain of IM	1S B			
	UE A	IMS A	IMS B	AS B	UE B					
Step			Directio	1		Message	)	IF		
1		¢	ъŶ			PUBLISH sent by UE_B				
2			τý	ਜੰ		PUBLISH  ✓ a Route header  → the SIP URI of AS B  ✓ 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_IM	S_5097_	14		•				
Summ	ary:	Initial I	request fo	or a dialo	g handling	by S-CSCF with match	ing filter criteria AS			
IUT Ro	ole:	IMS A			0 0	· · ·	<u> </u>			
References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.2 ¶11 (items 5 and 8 in 1 <sup>st</sup> numbered list)				Config Ref:	CF_IP_TV			
ĺ	Entities						Condition			
	UE A	IMS A		AS A						
	$\checkmark$ $\checkmark$					UE A registered in IMS A				
	$\checkmark$						ilter criteria to contact AS A			
	UE A	IMS A		AS A		¥				
Step		1	Directio	n	1		Message	IF		
1 ى ⊉				ਜੰ		SUBSCRIBE ✓ a Route header → the SIP URI of A ✓ a P-Charging-Func ✓ a P-Charging-Vect ✓ an orig-ioi param → operator identi × a term-ioi parame ✓ access-network-ch	ction-Addresses header or header eter ifier of IMS A eter			

					Test Purpose				
Identif	ier:	TP_IMS_5	097_15						
Summ	ary:	S-CSCF in	serts orig-id		er, remove access-network-charging-info parameter and P-Access- ling OPTIONS over NNI				
IUT Ro	ole:	IMS A							
Refere	ences:	TS 124 229 clause 5.4. (1 <sup>st</sup> numbe		)) [1],	Config Ref:	CF_INT_CALL			
			ties		Conditio	n			
	UE A	IMS A	IMS B	UE B					
	$\checkmark$ $\checkmark$				UE A registered in IMS A				
			$\checkmark$	✓	UE B registered in IMS B				
		×			IMS A not configured for topology hiding				
	UE A	IMS A	IMS B	UE B					
Step			ction	T	Message		IF		
1	Ø	Ð			initial OPTIONS addressed to UE	B			
2		ξ	Ð		initial OPTIONS ★ 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				

	Test Purpose												
Identif	ier:	TP_IN	IS_5108_	_03									
Summ	ary:	Reque	est for a ir	nitial dialo	og termina	ated at the served user							
IUT Ro	ole:	IMS B											
Refere	ences:	TS 12	4 229 (V1	10.10.0) [	1],	Config Ref: CF_INT_AS							
		clause	5.4.3.3 •	¶5 (item 4	1 in 1 <sup>st</sup>								
		numbe	ered list)										
			Entities			Condition							
	UE A	IMS A	IMS B	AS B	UE B								
	✓	<ul><li>✓</li></ul>				UE A registered in IMS A							
		$\checkmark$			$\checkmark$	UE B registered in IMS A							
			<ul><li>✓</li></ul>	✓		IMS B configured with filter criteria to contact AS B							
	UE A	IMS A	IMS B	AS B	UE B								
Step			Direction	n		Message	IF						
1		Ð	ъŶ			initial INVITE addressed to UE B							
						INVITE							
						✓ a topmost Route header							
						→ the SIP URI of AS B							
						✓ a Route header							
2			\$	Ť		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		
Identi	fier:	TP_IN	IS_5108	04				
Summ	nary:	Standa	alone req	uest; terr	ninated at	the served user		
IUT Re	ole:	IMS B						
Refere	ences:		4 229 (V´			Config Ref:	CF_INT_AS	
			e 5.4.3.3 • ered list )	¶5 (item 4	l in 1 <sup>st</sup>			
		Entities				Condit	ion	
	UE A	IMS A	IMS B	AS B	UE B			
	$\checkmark$	UE A registered in IMS A						
		$\checkmark$			$\checkmark$	UE B registered in IMS A		
			$\checkmark$	$\checkmark$		IMS B configured with filter crit	eria to contact AS B	
	UE A	IMS A	IMS B	AS B	UE B			
Step			Directio	<u>1</u>	1	Messa	ge	IF
1		Ŕ	Ð			MESSAGE addressed to UE B	1	
2			₽¢	ਜ਼ੀ		MESSAGE ✓ a topmost Route header → the SIP URI of AS B ✓ a Route header → the S-CSCF SIP URI of ✓ a P-Charging-Vector head ✓ an orig-ioi parameter → operator identifier of II × a term-ioi parameter		

						Test Purpose				
Identif	ier:	TP_IN	IS_5108_	07						
Summ	ary:	Reque	est for a in	nitial diale	og termir	nated at the served user (SUBSCRIBE)				
IUT Ro	ole:	IMS B								
Refere	ences:	TS 12	4 229 (V <i>*</i>	10.10.0)	[1],	Config Ref: CF_INT_AS				
			e 5.4.3.3 • mbered lis		n					
			Entities			Condition				
	UE A	IMS A	IMS B	AS B	UE B					
	$\checkmark$	$\checkmark$				UE A registered in IMS A				
		$\checkmark$			$\checkmark$	UE B registered in IMS A				
			$\checkmark$	$\checkmark$		IMS B configured with filter criteria to contact AS B				
	UE A	IMS A	IMS B	AS B	UE B					
Step			Direction	1	-1	Message	IF			
1		Ŕ	ъŶ			SUBSCRIBE addressed to UE B				
2	2 ६ ⇒					<ul> <li>SUBSCRIBE</li> <li>✓ a topmost Route header</li> <li>→ the SIP URI of AS B</li> <li>✓ a Route header</li> <li>→ the S-CSCF SIP URI of IMS B</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an orig-ioi parameter</li> <li>→ operator identifier of IMS A</li> <li>× a term-ioi parameter</li> </ul>				

					Test Purpose	
Identif	ier:	TP_IMS_5	108_08			
Summ	ary:	Standalone	e request; te	erminate	d at the served user	
IUT Ro	ole:	IMS B				
Refere	nces:	TS 124 229		) [1],	Config Ref: CF_ROAM_CALL	
		clause 5.4. (1 <sup>st</sup> numbe	3.3 ¶5 red list)			
		Entiti			Condition	
	UE A	IMS A	IMS B	UE B		
	✓	✓			UE A registered in IMS A	
			$\checkmark$	✓	UE B registered in IMS B	
	UE A	IMS A	IMS B	UE B		
Step		Direct	ion		Message	IF
					OPTIONS addressed to UE B	
1		Ŕ	Ð		✓ a P-Charging-Vector header	
					✓ an icid-value parameter	
					OPTIONS	
					✓ Route header	
					→II the S-CSCF SIP URI of IMS B	
2		(÷r	ۍ. لال		✓ a P-Charging-Vector header	
2		V <del>I</del>	4		✓ 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	109_01						
Summ	nary:				nse to initial terminating INVITE when there is no response lue SESSION_TERMINATED	from AS			
IUT Ro	ole:	IMS B							
Refere	ences:	TS 124 229 clause 5.4. 1 <sup>st</sup> number			Config Ref: CF_INT_CALL CF_ROAM_CALL				
		Ent	ities		Condition				
	UE A	IMS A	IMS B	UE B					
	<ul> <li>✓</li> </ul>	✓			UE A registered in IMS A				
				×	UE B not registered				
			~	~	IMS B configured with a terminating unregistered filter criterion for UE B indicating SESSION TERMINATED on INVITE				
	UE A	IMS A	IMS B	UE B					
Step			ction		Message	IF			
1		Ð	ъŶ		initial INVITE addressed to UE B				
2a		रित	Ą		408 response				
2b		<del>رك</del>	Ą		5xx response				

						Test Purpose	
Identif	ier:	TP_IM	S_5110_	01			
Summ	ary:	Forwa	rd 200 fro	om AS or	final res	ponse to an initial request for a dialog or a standalone reque	est
IUT Ro	ole:	IMS A					
Refere	References:		4 229 (V1	0.10.0) [	1],	Config Ref: CF_INT_AS	
			5.4.3.3 nbered lis	[79 (after st)	-	CF_ROAM_AS	
			Entities			Condition	
	UEA ASA IMSA IMSB UEB				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 request for dialog from UE A	
	UE A	AS A	IMS A	IMS B	UE B		
Step			Direction			Message	IF
3tep						200 response addressed to UE B	IF
-	_	$\overline{\nabla}$			-		_
2			Ŕ	Ť		200 response	

					Test Purpose				
Identif	ier:	TP_IMS_5	114_01						
Summ	ary:	S-CSCF sh	ould turn d	own initial	dialog request when terminated at	the not registered served ι	iser		
IUT Ro	ole:	IMS B							
Refere	ences:	TS 124 229 clause 5.4. 2 <sup>nd</sup> number	3.3 ¶85 (ite		Config Ref:	CF_INT_CALL CF_ROAM_CALL			
		Enti	ties		Condition				
	UE A	IMS A	IMS B	UE B					
	$\checkmark$		✓		UE A registered in IMS B				
				×	UE B not registered				
			x		IMS B not configured with filter cri	teria to contact any AS			
	UE A	IMS A	IMS B	UE B					
Step		Direc	Direction Message						
1		Ð	Ť		initial INVITE addressed to UE B				
2		<u>(</u>	Ą		4xx response				

					Test Purpose		
Identif	ier:	TP_IMS_5	114_02				
Summ	ary:	S-CSCF sh	ould turn d	own standa	lone request when terminated at the	he not registered served us	ser
IUT Ro	ole:	IMS B					
Refere	nces:	TS 124 229 clause 5.4. 2 <sup>nd</sup> number	3.3 ¶85 (ite		Config Ref:	CF_INT_CALL CF_ROAM_CALL	
		Enti	ties		Condition		
	UE A	IMS A	IMS B	UE B			
	✓	✓			UE A registered in IMS A		
				×	UE B not registered		
			x		IMS B not configured with filter c	riteria to contact any AS	
	UE A	IMS A	IMS B	UE B			
Step			ction		Messag	е	IF
1		Ŕ	Ŷ		MESSAGE addressed to UE B		
2		€£					

					Test Purpose					
Identif	ier:	TP_IMS_5	114_03		-					
Summ	ary:	S-CSCF sł	nould turn d	lown reque	est when terminated at the not registered served user					
IUT Ro	ole:	IMS B								
Refere	ences:	TS 124 22	9 (V10.10.0	) [1],	Config Ref: CF_INT_CALL					
		clause 5.4.3.3 ¶85 (item 3 in 3 <sup>rd</sup> numbered list) and			CF_ROAM_CALL					
		GSMA RCS V5.1 [6], clause								
		2.3.1								
		Enti	ties		Condition					
	UE A	IMS A	IMS B	UE B						
	✓		$\checkmark$		UE A registered in IMS B					
				x	UE B not registered					
			x		IMS B not configured with filter criteria to contact any AS					
	UE A	IMS A	IMS B	UE B						
Step		Direc	ction		Message					
1		Ŷ	ъŶ		OPTIONS addressed to UE B					
2		<del>رك</del>	¢.		480 or 408 response					

						Test Purpose	
Identif	ier:	TP_IM	S_5115_	07			
Summ	ary:		CF include		paramet	er and restores orig-ioi in 1xx responses from AS to initial re	quests
IUT Ro	ole:	IMS B					
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶89 (3 <sup>rd</sup> numbered list)				Config Ref: CF_ROAM_AS CF_INT_AS	
			Entities			Condition	
	UEA IMSA IMSB ASB UEB			AS B	UE B		
	$\checkmark$	$\checkmark$				UE A registered in IMS A	
		<ul> <li>✓</li> <li>✓</li></ul>					
	$\checkmark$			$\checkmark$		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			रित	4		1xx response addressed to UE A	
2				<ul> <li>1xx response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an orig-ioi parameter</li> <li>→ operator identifier of IMS A</li> <li>✓ a term-ioi parameter</li> <li>→ operator identifier of IMS B</li> </ul>			

						Test Purpose						
Identif	fier:	TP_IN	IS_5115_	08								
Summ	nary:		S-CSCF include term-ioi parameter and restores orig-ioi in 2xx responses from AS to initial requin terminating network									
Clause	e:		Ŭ									
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶89 (3 <sup>rd</sup> numbered list)				Config Ref:	CF_ROAM_AS CF_INT_AS					
IUT Ro	ole:	-	IMS B			Test Case:	TC_IMS_5115_08					
	Entities					Condition						
	UEA IMSA IMSB ASB UEB		UE B									
	$\checkmark$			UE A registered in IMS A								
	$\checkmark$			$\checkmark$		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						
1			ŶĿ	4		2xx response addressed to UE A	ι.					
2		रित	ŶŦ			<ul> <li>2xx response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an orig-ioi parameter</li> <li>→ operator identifier of IMS</li> <li>✓ a term-ioi parameter</li> <li>→ operator identifier of IMS</li> </ul>						

						Test Purpose	
Identif	ier:	TP_IM	S_5118_	02		·	
Summ	ary:	S-CSC reques		e term-ioi	paramet	ter and restores orig-ioi in 200 responses from AS to standa	llone
IUT Ro	ole:	IMS B					
Refere	References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.3 ¶106 (item 2 in 5 <sup>th</sup> numbered list)			Config Ref: CF_ROAM_AS CF_INT_AS	
			Entities			Condition	
	UE A	EA IMSA IMSB ASB UEB					
	$\checkmark$	$\checkmark$				UE A registered in IMS A	
		$\checkmark$ $\checkmark$				IMS B configured with filter criteria to contact AS B	
	$\checkmark$			✓		AS B has received a standalone request from UE A	
	UE A	IMS A	IMS B	AS B	UE B		
Step			Direction			Message	IF
1			\}_ €	4		200 response addressed to UE A	
2	€ ₽			<ul> <li>200 response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an orig-ioi parameter</li> <li>→ operator identifier of IMS A</li> <li>✓ a term-ioi parameter</li> <li>→ operator identifier of IMS B</li> </ul>			

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						lest Purpose	
Identif	fier:	TP_IN	IS_5302_				
Summ	nary:					ess-network-charging-info parameter in the P-Cha an AS located within the trust domain	arging-Vector
IUT Ro	ole:	IMS B					
Refere	ences:	clause 8 <sup>th</sup> nur	4 229 (V1 5.4.3.3 ¶ mbered lis	[(after ´	[1],	Config Ref: CF_ROAM_A CF_INT_AS	S
			Entities			Condition	
	UE A	IMS A	IMS B	AS B	UE B		
	$\checkmark$	$\checkmark$				UE A registered in IMS A	
	$\checkmark$				$\checkmark$	UE B registered in IMS B	
	~	✓ ✓		~	UE B has received a subsequent request in a dialog from UE A		
			$\checkmark$	✓		IMS B configured with filter criteria to contact AS	B
			$\checkmark$	$\checkmark$		AS B within the trust domain of IMS B	
	UE A	IMS A	IMS B	AS B	UE B		
Step			Direction			Message	IF
1		₽\$	Ð			2xx response addressed to UE A	
2	<b>₹</b> <del>1</del> 2			<ul> <li>2xx response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an access-network-charging-info parameter</li> </ul>			

						Test Purpose							
Identif	Identifier:         TP_IMS_5302_02           Summary:         The S-CSCF shall remove the access-network-charging-info parameter in the P-Charging-Vector												
Summ	nary:					ccess-network-charging-info paramete an AS not located within the trust dor		ctor					
IUT Ro	ole:	IMS B											
Refere	ences:	clause	4 229 (V 5.4.3.3 • nbered li	10.10.0) [ ¶(after st)	[1],		CF_ROAM_AS CF_INT_AS						
			Entities			Condition							
	UE A	IMS A	IMS B	AS B	UE B								
	<ul> <li>✓</li> </ul>	✓				UE A registered in IMS A							
		$\checkmark$				UE B registered in IMS B							
	~			~	UE B has received a subsequent req UE A	uest in a dialog from							
			$\checkmark$	✓		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		C	Direction			Message		IF					
1		Ŷ	ъŶ			2xx response addressed to UE A							
2	€ ₽			<ul> <li>2xx response</li> <li>✓ a P-Charging-Vector header</li> <li>★ an access-network-charging-in parameter</li> </ul>	fo								

			Test Pu	rpose (TO BE REVISITED)							
Identifier: TP_IMS_5206_01											
Summ		<b>REGISTER</b> reque	st if there is a	t least one AS that matches Filter Criteria							
IUT Ro	ole:	IMS B									
Refere	nces:	TS 124 229 (V10.1	10.0) [1],	Config Ref: CF_ROAM_AS							
		clause 5.4.1.2.2F	¶15 (before								
		note 3)									
		Entities		Condition							
	IMS B	AS B	UE B								
		$\checkmark$	✓	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						
1	¢± ¢ <sup>#</sup>		ŝ	<pre>protected REGISTER</pre>							
2	\$ <del>\$</del>			third party REGISTER ✓a P-Access-Network-Info header ✓a P-Visited-Network-ID header							

						Test Purpose	
Identif	ier:	TP_IN	IS_5308_	_01		· ·	
Summ	ary:	Retair	the acce	ess-netwo	ork-chargi	ng-info parameter from the P-Charging-Vector header in 180	) to AS
IUT Ro	ole:	IMS A			Ŭ		
Refere	ences:		4 229 (V 9 5.4.4.2.2	10.10.0) [ 2 ¶2	[1],	Config Ref: CF_INT_AS CF_ROAM_AS	
			Entities			Condition	
	UE A	AS A	IMS A	IMS B	UE B		
	$\checkmark$	✓				UE A registered in IMS A	
		$\checkmark$				UE B registered in IMS B	
		$\checkmark$ $\checkmark$				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			Directio	n	1	Message	IF
1	δ <u>σ</u>			<ul> <li>180 response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an access-network-charging-info parameter</li> </ul>			
2	<ul><li>€&lt;</li></ul>					<ul> <li>180 response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an access-network-charging-info parameter</li> </ul>	

						Test Purpose						
Identi	Identifier: TP_IMS_5308_02											
Summ	nary:	Retair	the acce	ess-netwo	ork-chargi	ng-info parameter from the P-Charging-Vector header in 200	) to AS					
IUT Re		IMS A			Ŭ							
Refere	References: TS 124 229 (V10.10.0) [1],			10.10.0) [	1],	Config Ref: CF_INT_AS						
		clause	5.4.4.2.2	2¶2		CF_ROAM_AS						
			Entities			Condition						
	UE A	AS A	IMS A	IMS B	UE B							
	$\checkmark$	✓				UE A registered in IMS A						
		$\checkmark$				UE B registered in IMS B						
		$\checkmark$ $\checkmark$				IMS A configured with filter criteria to contact AS A						
	✓ ✓ ✓		1	AS A has received 180 on initial request for dialog from								
		•			•	UE B						
	UE A	AS A	IMS A	IMS B	UE B							
Step			Directio	า		Message	IF					
						200 response						
1	¢,		÷			✓ a P-Charging-Vector header						
	\$		5/			✓ an access-network-charging-info						
						parameter						
						200 response						
2			.м			✓ a P-Charging-Vector header						
2		रित	¢₽			✓ an access-network-charging-info						
						parameter						

						Test Purpose						
Identif												
Summ	ary:	Retain	ing the a	ccess-ne	twork-cha	rging-info parameter from the P-C	Charging-Vector					
IUT Ro	ole:											
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.6.1.2 ¶1				Config Ref:	CF_ROAM_AS					
			Entities			Conditio	n					
	UE A											
	<ul> <li>✓</li> </ul>	✓				UE A registered in IMS A						
		$\checkmark$				UE B registered in IMS B						
	<ul> <li>✓</li> </ul>	✓				UE B has initiated a dialog with UE A						
		$\checkmark$ $\checkmark$				IMS B configured with filter criter	ia to contact AS B					
				$\checkmark$		AS B is within the trust domain o						
	UE A	IMS A	IMS B	AS B	UE B							
Step			Direction	ì		Messag	е	IF				
1		Ŕ	ъŶ			<ul> <li>subsequent INVITE</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an access-network-chargin parameter</li> </ul>						
2	¢, ⊉		INVITE ✓ a P-Charging-Vector header ✓ an access-network-chargin parameter									

						Test Purpose		
Identif	ier:	TP_IN	IS_5310_	02				
Summ	ary:	Not re	taining th	e access	-network-	charging-info parameter from the F	P-Charging-Vector	
IUT Ro	ole:	IMS B					~ ~	
Refere	References: TS 124 229 (V10.10.0) [1],				1],	Config Ref:	CF_ROAM_AS	
	clause 5.4.6.1.2 ¶1							
			Entities			Conditio	n	
	UE A	IMS A	IMS B	AS B	UE B			
	$\checkmark$	<ul><li>✓</li></ul>				UE A registered in IMS A		
			$\checkmark$		$\checkmark$	UE B registered in IMS B		
	✓	✓				AS B has initiated a dialog with UE A		
			<ul> <li>✓</li> </ul>	✓		IMS B configured with filter criteri	a to contact AS B	
				×		AS B is not within the trust domai	in of IMS B	
	UE A	IMS A	IMS B	AS B	UE B			
Step			Direction	1		Message	Э	IF
						subsequent INVITE		
1		¢,	÷			<ul> <li>P-Charging-Vector header</li> </ul>		
•		\$	54			✓ an access-network-chargin	ig-info	
						parameter		
						INVITE		
2			м.	~		✓ a P-Charging-Vector header		
2			Ŕ	Ð		×√ an access-network-charg	ing-info	
						parameter	Ŭ	

						Test Purpose				
Identif	ier:	TP_IN	IS_5310_	03						
Summ	ary:	Retain	ning in UF	DATE th	e acces	s-network-charging-info parameter from the P-Charging-Vector				
IUT Ro		IMS B					~ ~			
Refere	References: TS 124 229 (V10.10.0) [1], clause 5.4.6.1.2 ¶1				[1],	Config Ref:	CF_ROAM_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 B				
	✓	✓			$\checkmark$	UE B has initiated a dialog with UE A				
		$\checkmark$ $\checkmark$				IMS B configured with filter criteria	to contact AS B			
				✓		AS B is within the trust domain of I				
	UE A	IMS A	IMS B	AS B	UE B					
Step			Direction			Message		IF		
						subsequent UPDATE				
1		¢,	÷Ŷ			✓ a P-Charging-Vector header				
		42	5			✓ an access-network-charging	-info			
						parameter				
			UPDATE							
~			м.	~		✓ a P-Charging-Vector header				
2			Ŕ	Ŷ		✓ an access-network-charging	-info			
						parameter				

					Test Purpose		
ier:	TP_IM	IS_5310_	04				
ary:	Not re	taining in	UPDATE	the acc	cess-network-charging-info parameter	er from the P-Charging-Ve	ctor
ole:	IMS B					* *	
ences:	TS 124	4 229 (V1	0.10.0) [	[1],	Config Ref:	CF_ROAM_AS	
	clause	5.4.6.1.2	2¶1	-			
		Entities			Condition	1	
UE A	IMS A	IMS B	AS B	UE B			
✓	✓				UE A registered in IMS A		
	$\checkmark$				UE B registered in IMS B		
<ul> <li>✓</li> </ul>				$\checkmark$	0		
		<ul> <li>✓</li> </ul>	✓		IMS B configured with filter criteria	to contact AS B	
			x				
UE A	IMS A	IMS B	AS B	UE B			
	D	Direction			Message		IF
					subsequent UPDATE		
	м.	A			✓ P-Charging-Vector header		
	$\bigtriangledown$	5/			✓ an access-network-charging	-info	
		parameter					
					UPDATE		
		✓ a P-Charging-Vector header					
		\$	ъУ.			info	
					parameter		
	ary: ble: nces: ✓ ✓	ary: Not re le: IMS B nces: TS 12- clause UE A IMS A ✓ ✓ UE A IMS A	ary: Not retaining in ble: IMS B inces: TS 124 229 (V1 clause 5.4.6.1.2 Entities UE A IMS A IMS B UE A IMS A IMS B UE A IMS A IMS B Direction	ary:     Not retaining in UPDATE       ary:     Not retaining in UPDATE       ble:     IMS B       nces:     TS 124 229 (V10.10.0) [ clause 5.4.6.1.2 ¶1       UE A     IMS A     IMS B       ✓     ✓       ✓	ary:Not retaining in UPDATE the accordary:Not retaining in UPDATE the accordIMS BIMS BInces:TS 124 229 (V10.10.0) [1], clause 5.4.6.1.2 ¶1EntitiesUE AIMS AIMS BAS BUE B $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ UE AIMS AIMS BAS BUE B $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ UE AIMS AIMS BAS BUE B $\Box$ $\checkmark$ $\checkmark$ $\checkmark$ $\Box$ $\checkmark$ $\checkmark$ $\checkmark$ $\Box$ $\Box$ $\checkmark$ $\checkmark$ $\Box$	ier:       TP_IMS_5310_04         ary:       Not retaining in UPDATE the access-network-charging-info parametring in UPDATE the access-network-charging-info parametring         inces:       IMS B         TS 124 229 (V10.10.0) [1], clause 5.4.6.1.2 ¶1       Config Ref:         IMS A       IMS B       AS B       UE B         ✓       ✓       ✓       Condition         UE A       IMS A       IMS B       AS B       UE B         ✓       ✓       ✓       UE A registered in IMS A         ✓       ✓       ✓       UE B has initiated a dialog with UE         ✓       ✓       ✓       IMS B configured with filter criteria         ✓       ✓       ✓       IMS B configured with filter criteria         ✓       ✓       ✓       IMS B configured with filter criteria         ✓       ✓       ✓       ✓         ✓       ✓       ✓       IMS B configured with filter criteria         ✓       ✓       ✓       IMS B as B       UE B         ✓       ✓       ✓       IMS B as B       UE B         ✓       ✓       ✓       IMS B as B       UE B         ✓       ✓       ✓       ✓       IMS B as B       UE B	Iter:       TP_IMS_5310_04         ary:       Not retaining in UPDATE the access-network-charging-info parameter from the P-Charging-Vele         IMS B       Config Ref:       CF_ROAM_AS         IMS A       IMS B       AS B       UE B         V       V       Config Ref:       Condition         VE A       IMS A       IMS B       AS B       UE B         V       V       UE A       UE A registered in IMS A         V       V       UE B registered in IMS A         V       V       UE B registered in IMS B         V       V       UE B has initiated a dialog with UE A         IMS B       AS B       UE B         V       V       IMS B       AS B is not within the trust domain of IMS B         UE A       IMS A       IMS B       AS B       UE B         IMS A       IMS B       AS B       UE B       Configured with filter criteria to contact AS B         V       V       V       IMS B       AS B       UE B         IMS A       IMS B       AS B       UE B       Subsequent UPDATE         V       V       P-Charging-Vector header       V an access-network-charging-info parameter         V       V       P-Charging-Vector header

						Test Purpose						
Identif	dentifier: TP_IMS_5312_01											
Summ	ary:	Retain respor	•	ccess-ne	etwork-ch	narging-info parameter from the P-Charging-Vector on 200 (OI	K)					
IUT Ro	ole:	IMS B										
Refere	ences:		4 229 (V1 9 5.4.6.1.3		[1],	Config Ref: CF_ROAM_AS CF_INT_AS						
			Entities			Condition						
	UE A		IMS B	AS B	UE B							
	✓	✓		UE A registered in IMS A								
		✓ ✓				UE B registered in IMS B						
	✓	✓				UE B has initiated a dialog with UE A						
		$\checkmark$ $\checkmark$				IMS B configured with filter criteria to contact AS B						
	<ul> <li>✓</li> </ul>				$\checkmark$	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		Ŕ	Ð			<ul> <li>200 response addressed to UE B</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an access-network-charging-info parameter</li> </ul>						
2			Ŕ	Ð		200 response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter						

						Test Purpose					
Identif	Identifier: TP_IMS_5313_01										
Summ	ary:	Retain respor	•	ccess-ne	twork-ch	narging-info parameter from the P-Charging-Vector in any SIP	)				
IUT Ro	ole:	IMS B	IS B								
Refere	ences:	TS 124 229 (V10.10.0) [1], clause 5.4.6.1.3 ¶2			[1],	Config Ref: CF_INT_AS CF_ROAM_AS					
	Entities					Condition					
	-	UEA ASA IMSA IMSB UEB									
	$\checkmark$	UE A registered in IMS B									
		✓ ✓				UE B registered in IMS B					
		$\checkmark$ $\checkmark$				IMS A configured with filter criteria to contact AS A					
		$\checkmark$			$\checkmark$	AS A has initiated a dialog with UE B					
		$\checkmark$				AS A is within the trust domain of IMS A					
	UE A	AS A	IMS A	IMS B	UE B						
Step		[	Direction			Message	IF				
1			€±	47		a response ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter					
2	2 🔄 🦑			<ul> <li>The response</li> <li>✓ a P-Charging-Vector header</li> <li>✓ an access-network-charging-info parameter</li> </ul>							

						Test Purpose		
Identif	ier:	TP_IN	IS_5313_	02				
Summ	ary:	Not re respor	•	e access	-networl	c-charging-info parameter from the	P-Charging-Vector in any	SIP
Clause	e:							
			TS 124 229 (V10.10.0) [1], clause 5.4.6.1.3 ¶2			Config Ref:	CF_INT_AS	
IUT Ro	IUT Role:		IMS A			Test Case:	TC_IMS_5313_02	
		Entities				Conditio	on in the second se	
	UE A	AS A	IMS A	IMS B	UE B			
	$\checkmark$		$\checkmark$			UE A registered in IMS A		
				$\checkmark$	$\checkmark$	UE B registered in IMS B		
		<ul><li>✓</li></ul>	<ul><li>✓</li></ul>			IMS A configured with filter criteria	a to contact AS A	
		<ul> <li>✓</li> </ul>			$\checkmark$	AS A has initiated a dialog with U	EB	
		×				AS A is not within the trust domain	n of IMS A	
	UE A	AS A	IMS A	IMS B	UE B			
Step			Direction			Messag	е	IF
1			৾৸	Ą		a response ✓ a P-Charging-Vector header ✓ an access-network-charging-	info parameter	
2		Ê	Ą			the response ✓ a P-Charging-Vector header ≭ access-network-charging-in	nfo parameter	

						Test Purpose	
Identif	ier:	TP_IN	IS_5320_	01			
Summ	ary:		CF is failir		eive a SI	IP response or receive 408 (Request Timeout) response or a	5xx
IUT Ro	ole:	IMS B					
References:		TS 124 229 (V10.10.0) [1], clause 5.4.3.2 ¶91 (after note 17)				Config Ref: CF_ROAM_AS CF_INT_AS	
		Entities				Condition	
	UE A	IMS A	IMS B	AS B	UE B		
	✓	<ul> <li>✓</li> </ul>				UE A registered in IMS A	
			$\checkmark$		$\checkmark$	UE B registered in IMS B	
				$\checkmark$	✓	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			€	₽		Any response	
2a			Ŕ		Ð	408 response	
2b			Ŷ		Ť	5xx response	

### 5.7 MGCF tests for IMS-PSTN interconnection

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_0	)1			
Summ	ary:	MGCF shall send	INVITE due t	o indication of an incoming call		
Clause	Clause: TS 124 229 [1], clause 5.5.3.1			1		
Refere	nces:	RQ_24.229_5.5.3	1.1	Config Ref:	CF_PSTN	
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_01	
		Entities		Condition	า	
	IMS_A	IUT	PSTN			
	$\checkmark$		$\checkmark$	IMS A and PSTN with peer-to-peer	r arrangement	
	IMS_A	IUT	PSTN			
Step		Direction		Message	2	IF
1		<u> </u>	Ą	initial IAM		
2	ŶĿ	¢µ		INVITE ✓ a Request URI → Tel URI E.164 Number or (Sip URI E.164 Number with us ✓ a Contact header → anyvalue GRUU format ✓ a Supported header ✓ an 100rel value ✓ a P-Asserted-Identity header ✓ a P-Charging-Vector header → an icid-value parameter ✓ a SDP → codec supported curr precord		

				Test Purpose			
Identif	ier:	TP_IMS_MGCF	_02				
Summ	ary:	MGCF shall ser	d 100 response	due to indication of an incoming IN	VITE		
Clause	):	TS 124 229 [1], clause 5.5.3.1.2					
References: RQ_24.229_5.5.3.1.2		.3.1.2	Config Ref:	CF_PSTN			
IUT Role: MGCF			Test Case:	TC_IMS_MGCF_02			
		Entities		Conditio	n		
	IMS_A	IUT	PSTN				
	✓		$\checkmark$	IMS A and PSTN with peer-to-pee	r arrangement		
	IMS_A	IUT	PSTN				
Step		Direction		Message	e IF		
1	Ŷ	Ð		initial INVITE			
2	¢ <del>J</del>	Ą		100 response			

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_0	3			
Summ	ary:	MGCF shall send	183 response	codec found or not required		
Clause	e:	TS 124 229 [1], cla	ause 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		Condition	1	
	IMS_A	IUT	PSTN			
	✓		$\checkmark$	IMS A and PSTN with peer-to-peer arrangement		
	IMS_A	IUT	PSTN			
Step		Direction		Message	•	IF
1	Ŕ	ъŶ		initial INVITE		
2	ŶĿ	Ą		100 response		
3			<ul> <li>183 response</li> <li>✓ Require header</li> <li>→ 100rel value</li> <li>✓ a P-Charging-Vector header</li> <li>✓ a term-ioi parameter</li> <li>→ the operator identifier of IM</li> </ul>	1S A		

				Test Purpose			
Identif	ier:	TP_IMS_MGCF_	)5				
Summ	ary:	MGCF shall send	UPDATE requ	Jest			
Clause	):	TS 124 229 [1], cl	ause 5.5.3.2.1				
Refere	References: RQ_24.229_5.5.3.2.1		Config Ref:	CF_PSTN			
IUT Role: M		MGCF		Test Case: TC_IMS_MGCF_05			
	Entities		Condition	1			
	IMS_A	IUT	PSTN				
	$\checkmark$		$\checkmark$	IMS A and PSTN with peer-to-peer	arrangement		
	IMS_A	IUT	PSTN				
Step		Direction		Message	1	IF	
1	\$ <del>1</del>		200 response for PRACK conditions fulfilled				
2	<del>رك</del>	全		UPDATE			

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_0	6			
Summ	ary:	MGCF shall send	180 response o	due to indication of an ACM/CPG		
Clause	):	TS 129 163 [5], cla	ause 7.2.3.1.4,	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			Conditio	n	
	IMS_A	IUT	PSTN			
	✓		✓	IMS A and PSTN with peer-to-peer arrangement		
	IMS_A	IUT	PSTN			
Step		Direction		Message	•	IF
1a		ŶĿ	Ą	ACM → subscriber free		
1b		ŶĿ	Ą	CPG → ALERTING		
2	ŶĿ	Å		180 response		

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_	07			
Summ	ary:	MGCF shall send	200 response of	due to indication of ANM		
Clause	):	TS 129 163 [5], c	lause 7.2.3.1.5,	TS 124 229 [1], clause 5.5.3.2.2		
Refere	References: RQ_29.163_7.2.3.1.5		3.1.5	Config Ref:	CF_PSTN	
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	Step Direction		Messag	е	IF	
1		<u>^</u>	Ą	ANM		
2	Ŷ <u>Ŀ</u>	\$P		200 response		

					Test Purpose		
Identif	ier:	TP_	IMS_MGCF_0	8			
Summ	ary:	MG	CF shall send I	BYE response	e due to indication of release		
Clause	):	TS 129 163 [5], clause 7.2.3.1.8			, TS 124 229 [1], clause 5.5.4.1		
Refere	nces:	RQ	_29.163_7.2.3.	1.8	Config Ref:	CF_PSTN	
IUT Role:		MGCF			Test Case:	TC_IMS_MGCF_08	
		Entities			Conditio	n	
	IMS_A		IUT	PSTN			
	√			✓	IMS A and PSTN with peer-to-pee	r arrangement	
	IMS_A		IUT	PSTN			
Step			Direction		Message	<u>;</u>	IF
1			€£	Ą	REL		
2	¢Ŀ		4		BYE		

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_	09			
Summ	ary:	MGCF shall send	486 response	due to indication of release	with cause indicator 17	
Clause	ause: TS 129 163 [5], clause 7.2.3.1.8					
Refere	References: RQ_29		5.1.8	Config Ref:	CF_PSTN	
IUT Role:		MGCF		Test Case:	TC_IMS_MGCF_09	
	Entities		C	ondition		
	IMS_A	IUT	PSTN			
	✓		$\checkmark$	IMS A and PSTN with pee	r-to-peer arrangement	
	IMS_A	IUT	PSTN			
Step		Direction		N	lessage	IF
1		<u>Č</u>	Ę۶	REL		
		7	Ø	→ cause17		
2	र्भ	4		486 response		

				Test Purpose			
Identif	ier:	TP_IMS_MGCF_1	0				
Summ	ary:	MGCF shall send	REL with cause	e #17 or #34 with Diagnostic	due to 486 Busy here		
Clause	<b>e</b> :	TS 129 163 [5], cla	ause 7.2.3.2.12	2			
Refere	References: RQ_29.163_7.2.3.2.12		2.12	Config Ref:	CF_PSTN		
IUT Role:		MGCF		Test Case: TC_IMS_MGCF_10			
	Entities			Co	ndition		
	IMS_A	IUT	PSTN				
	✓		$\checkmark$	IMS A and PSTN with peer-to-peer arrangement			
	IMS_A	IUT	PSTN				
Step		Direction		Me	essage	IF	
1	Ŷ	ъŶ		486 response			
				REL			
2		Ŕ	Ð	→ 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	<b>:</b>	TS 129 163 [5], cla	ause 7.4.10.1			
Refere	References: RQ_29.163_7.4.10.1		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-peer arrangement		
	✓		✓	IMS A and PSTN call active		
	IMS_A	IUT	PSTN			
Step		Direction		Message	•	IF
1	Ъ¢	ъŶ		UPDATE or a target refresh INVIT ✓ a SDP → sendonly	E	
2		Ŕ	Ť	CPG → remote hold		

	Test Purpose							
Identif	ier:	TP_IMS_MGCF_1	2	·				
Summary: MGCF shall send CPG with a 'represent from IMS				emote retrieve' Generic notification in	ndicator on receipt of Resi	ume		
Clause	<b>e:</b>	TS 129 163 [5], cla	ause 7.4.10.1					
Refere	nces:	RQ_29.163_7.4.10	).1	Config Ref:	CF_PSTN			
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_12			
		Entities		Condition	า			
	IMS_A	IUT	PSTN					
	✓		✓	IMS A and PSTN with peer-to-peer	r arrangement			
	✓		✓	IMS A and PSTN call on hold				
	IMS_A	IUT	PSTN					
Step		Direction		Message	•	IF		
1	Ð	ъŶ		UPDATE or a target refresh INVIT ✓ a SDP → sendrecv	E			
2		Ŕ	Ð	CPG → remote retrieve				

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_1	3			
-		MGCF shall send ( from IMS	CPG with a 're	mote hold' Generic notification indic	cator on receipt of HOLD r	equest
Clause	<b>e</b> :	TS 129 163 [5], cla	ause 7.4.10.2			
Refere	ences:	RQ_29.163_7.4.10	).2	Config Ref:	CF_PSTN	
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_13	
	Entities			Condition	n	
	IMS_A	IUT	PSTN			
	✓		√	IMS A and PSTN with peer-to-pee	r arrangement	
	✓		✓	IMS A and PSTN call active		
	IMS_A	IUT	PSTN			
Step		Direction		Message	<del>)</del>	IF
1		<del>ث</del>	췋	CPG → remote hold		
2	৾৻৸	ŶI.		UPDATE or a target refresh INVIT ✓ a SDP → sendonly	E	

				Test Purpose			
Identif	ier:	TP_IMS_MGCF_1	4				
Summary:		MGCF shall send CPG with a 'remote retrieve' Generic notification indicator on receipt of Resu request from IMS					
Clause	e:	TS 129 163 [5], cla	ause 7.4.10.2				
Refere	ences:	RQ_29.163_7.4.1	0.2	Config Ref:	CF_PSTN		
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_14		
		Entities		Co	Condition		
	IMS_A	IUT	PSTN				
	✓		✓	IMS A and PSTN with pee	r-to-peer arrangement		
	✓		✓	IMS A and PSTN call on h	old		
	IMS_A	IUT	PSTN				
Step		Direction		M	lessage	IF	
1		¢Ŀ	슈	CPG → remote retrieve			
2	৾৸	¢h		UPDATE or a target refres ✓ a SDP → sendonly	h INVITE		

				Test Purpose		
Identif	ier:	TP_IMS_MGCF_1	5			
Summ	ary:	MGCF shall send	ACM/CPG due	to indication of a 180 response		
Clause	<b>:</b>	TS 129 163 [5], cla	auses 7.2.3.2.4	and 7.2.3.2.6		
Refere	nces:	RQ_29.163_7.2.3	2.4_and_6	Config Ref:	CF_PSTN	
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_15	
		Entities		Conditio	n	
	IMS_A	IUT	PSTN			
	✓		✓	IMS A and PSTN with peer-to-pee	er arrangement	
	IMS_A	IUT	PSTN			
Step		Direction		Message	3	IF
1	Ŷ	Ð		180 response		
2		Ŕ	Ê	ACM → subscriber free or sends a CPG → ALERTING		

	Test Purpose							
Identif	ier:	TP_	IMS_MGCF_1	6				
Summary: MGCF shall send ANM due to indication of a 200 response								
Clause	<b>:</b>	TS <sup>·</sup>	129 163 [5], cla	ause 7.2.3.2.8	1			
Refere	nces:	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	n		
	IMS_A		IUT	PSTN				
	✓			$\checkmark$	IMS A and PSTN with peer-to-pee	r arrangement		
	IMS_A		IUT	PSTN				
Step Direction		Message	•	IF				
1	Ŕ		Ъ́р		200 response			
2			Ð	ъŶ	ANM			

	Test Purpose							
Identif	ier:	TP_IMS_MGCF_'	17					
Summ	ary:	MGCF shall send	REL due to ind	ication of a BYE				
Clause	<b>):</b>	TS 129 163 [5], cl	ause 7.2.3.2.13	3				
Refere	ences:	RQ_29.163_7.2.3	.2.13	Config Ref:	CF_PSTN			
IUT Ro	ole:	MGCF		Test Case:	TC_IMS_MGCF_17			
		Entities		Condition	n			
	IMS_A	IUT	PSTN					
	✓		$\checkmark$	IMS A and PSTN with peer-to-pee	r arrangement			
	IMS_A IUT P		PSTN					
Step		Direction		Message	)	IF		
1	Ð	ъŶ		BYE				
2		₹\$	Ð	REL				

## 5.8 ENUM tests for Tel-URI Resolution

						Test Purpose	
Identif	fier:	TP_IN	IS_ENUN	<b>//_01</b>			
Summ	nary:	The E	NUM DB	resolves	a Tel UF	RI into a SIP URI	
IUT Ro	ole:	IMS A	IMS A				
Refere	ences:	TS124 229 (V10.10.0) [1],			1],	Config Ref: CF_INT_CALL	
			5.4.3.2 •	¶11 (item	10		
		1 <sup>st</sup> nur	nbered lis	st)			
			Entities			Condition	
	UE A	IMS A	ENUM _DB	IMS B	UE B		
	✓	<ul><li>✓</li></ul>				UE A registered in IMS A	
				$\checkmark$	<ul><li>✓</li></ul>	UE B registered in IMS B	
			1		1	ENUM_DB configured with an ENUM entry for Tel URI	
			×		v	E.164 Number of UE B	
	UE A	IMS A	ENUM DB	IMS B	UE B		
Step			Direction	1		Message	IF
Step			Direction			Message initial INVITE addressed to UE B	IF
Step 1	¢,	I 	Direction				IF
	R)		Direction			initial INVITE addressed to UE B	IF
1	<i>\$</i>	Ð				initial INVITE addressed to UE B ✓ a Request URI → a Tel URI	IF
	£\$		Direction			initial INVITE addressed to UE B ✓ a Request URI	IF
1	ų,	Ð				initial INVITE addressed to UE B ✓ a Request URI → a Tel URI NAPTR Query	IF
1	<i>ά</i> λ	Ð				initial INVITE addressed to UE B ✓ a Request URI → a Tel URI NAPTR Query ✓ the derived Tel URI E.164 Number	IF
1	<i>ά</i> λ	Ð				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	Ŕ	±₽̂ ₹Ş	Ð			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	Ŕ	Ð				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	Ŕ	±₽̂ ₹Ş	Ð			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
1	¢.	±₽̂ ₹Ş	Ð			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 backreference (\1) for the user part	IF
1	¢.	±₽̂ ₹Ş	Ð			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\_18601101v050101p0.zip which accompanies the present document. The raw text files have been converted to a symbolic table format to allow better readability.

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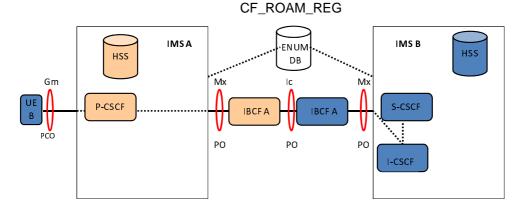
### Annex B (normative): IMS NNI Interoperability Test Configurations

IMS NNI interoperability test configuration identifiers have been composed using 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 are indicated as 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:

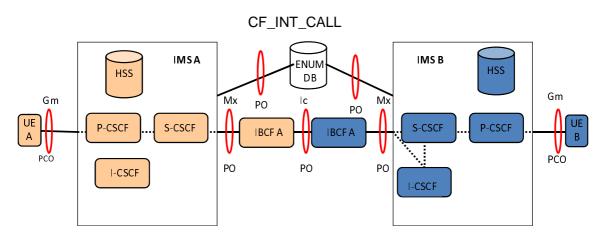
Registration requests and responses from UE\_B

Example:

REGISTER prior to IMS VoIP voice call from UE\_B

#### Figure B.1: CF\_ROAM\_REG

**ETSI** 



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:

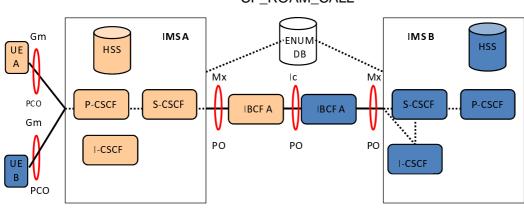
Requests and responses between UE\_A and UE\_B in call (CALL) and messaging scenarios. Unsuccessful initiall requests and responses from UE\_A (when UE\_B is nor registered)

Example:

Initial INVITE in IMS VolP voice call from UE\_A to UE\_B

### Figure B.2: CF\_INT\_CALL

#### **Roaming Call**



CF\_ROAM\_CALL

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.

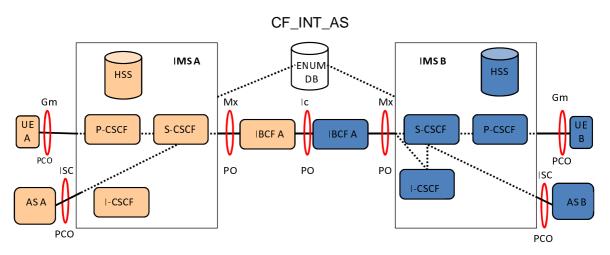
Test configuration for:

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:

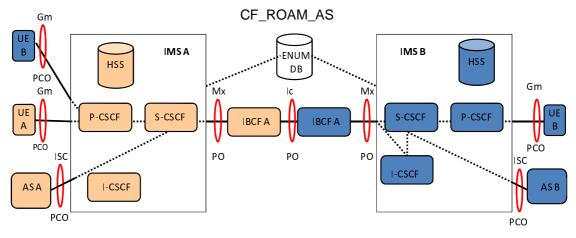
Requests and responses between ASes and UEs

#### Example:

Initial INVITE in IMS VolP 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.

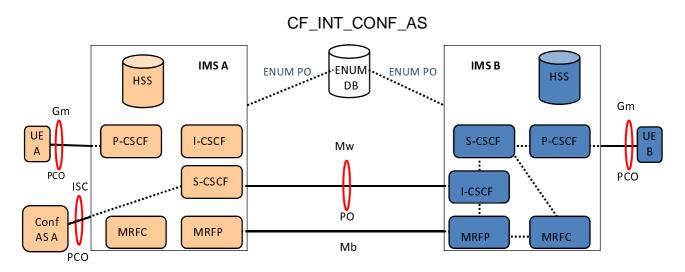
Test configuration for:

Requests and responses between AS\_B and UEs

Example:

Initial INVITE in IMS VoIP 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

Precondition:

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:

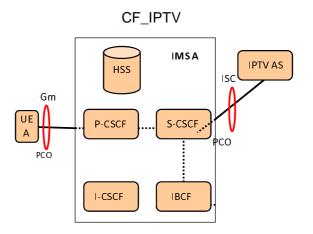
Requests and responses between UE\_A and UE\_B in an Ad-hoc Conference call (CONF\_CALL)

#### 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:

UE\_A registered in home network, IPTV\_AS involved Test configuration for:

Requests and responses between UE\_A and IPTV AS

Example:

Initial INVITE from UE\_A to initiate an IPTV Broadcast session

Figure B.7: CF\_IPTV

CF\_PSTN IMS A Legacy Network •ENUM ENUM PO HSS DB E1 Gm Mx ſ UE A P-CSCF S-CSCF ISDN MGCF V .... PCO РО PO ISC ISC , **\* \* \* \*** \* PSTN AS A I-CSCF РСО РСО

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 INVITE in IMS VolP 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				
V2.2.1	March 2009	Publication				
V2.3.1	April 2010	Publication				
V3.1.1	June 2011	Publication				
V4.1.1	October 2011	Publication				
V4.1.3	May 2012	Publication				
V5.1.1	October 2013	Publication				