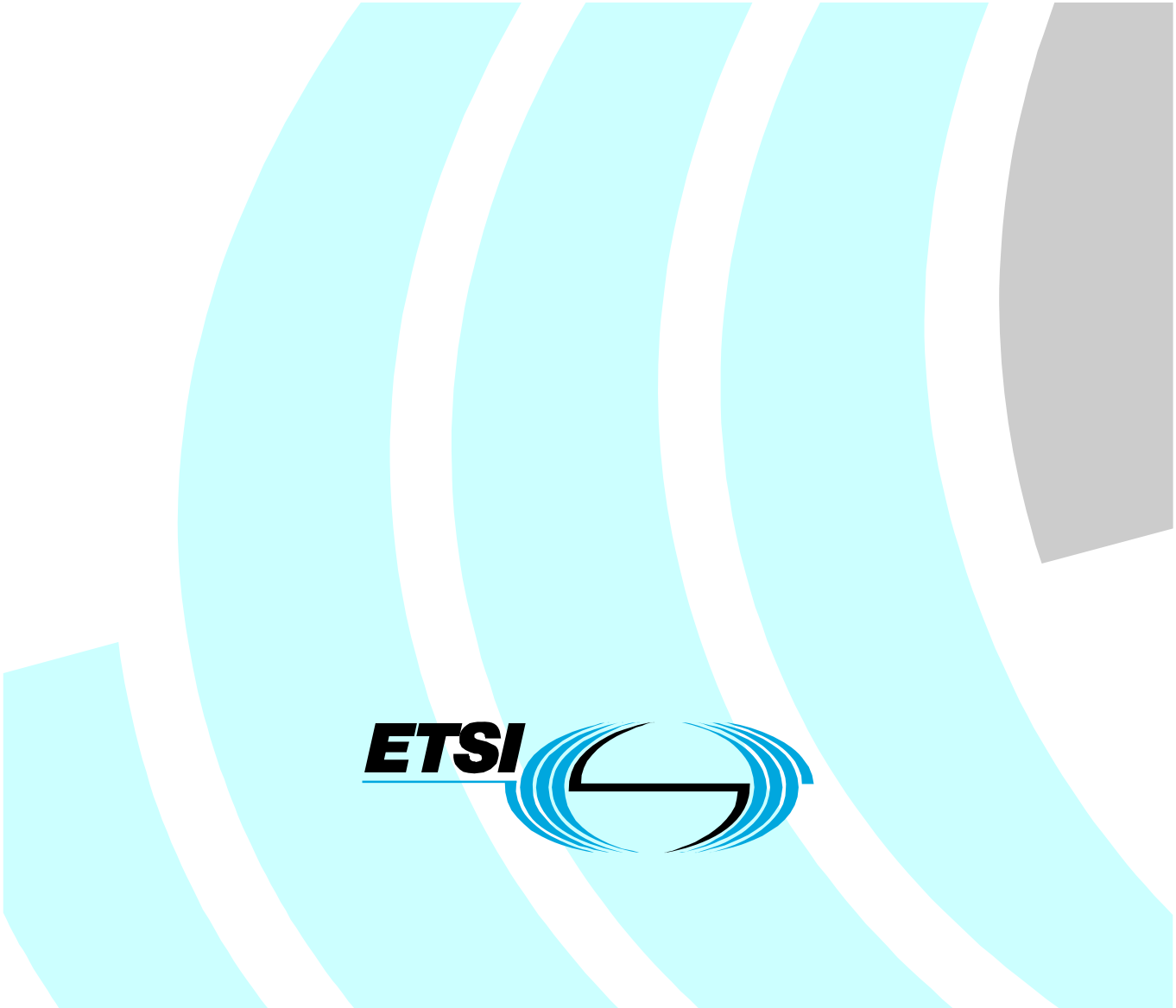
ETSI TS 186 011-1 V2.2.1 (2009-03)

Technical Specification

Technical Committee for IMS Network Testing (INT); IMS NNI Interworking Test Specifications; Part 1: Test Purposes for IMS NNI Interworking



Reference
RTS/INT-00015-1

Keywords
IMS, interworking, NNI, testing

ETSI

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

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

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

Contents

Intellectual Property Rights 4
Foreword 4
Introduction 4
1 Scope 5
2 References 5
2.1 Normative references 5
2.2 Informative references 6
3 Abbreviations 6
4 Test Suite Structure (TSS) 7
5 Test Purposes (TP) 8
5.1 The tabular symbolic TPLan presentation format 8
5.2 General Capabilities 9
5.3 Registration Procedures 9
5.3.1 Registration at P-CSCF 9
5.3.2 Registration at S-CSCF 12
5.3.3 Registration at I-CSCF 14
5.3.4 Registration at IBCF 14
5.4 Dialog Procedures 16
5.4.1 Dialog at P-CSCF 16
5.4.2 Dialog at S-CSCF 22
5.4.3 Dialog at I-CSCF 32
5.4.4 Dialog at IBCF 33
5.5 Messaging Procedures 37
5.5.1 Messaging at P-CSCF 37
5.5.2 Messaging at S-CSCF 38
5.6 Application Server Handling Procedures 43
5.6.1 Application Server Handling at S-CSCF 43
Annex A (normative): Zip file with TPLan code 54
Annex B (normative): IMS NNI Interoperability Test Configurations 55
History 58

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Foreword

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

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

Part 1: "Test Purposes for IMS NNI Interworking";

Part 2: "Test Descriptions for IMS NNI Interworking";

Part 3: "ATS & PIXIT".

Introduction

The IP Multimedia core network Subsystem (IMS) is a key component in the TISPAN 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 7 IMS specification that TISPAN Release 1 has been derived from.

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, ES 283 003 Release 7 [1] from which ETSI TISPAN IMS Release 1 has been derived. For the assessment of IMS core network requirements related to the ISC interface parts of the supplementary services HOLD [6], CDIV [7], ACR-CB [8], and OIP/OIR [9] have been used.

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 ES 283 003 [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.

NOTE: Requirements pertaining to a UE or an AS implementation or IMS core network requirements that can only be observed at the interface between UE and IMS CN are explicitly not within the scope of the present document. The latter requirements have been dealt with from a UE and conformance perspective in TS 134 229-1 [5].

2 References

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

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

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

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

2.1 Normative references

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

[1] ETSI ES 283 003 (V1.9.1): "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP) Stage 3 [3GPP TS 124 229 (Release 7), modified]".

[2] ETSI TS 102 351: "Methods for Testing and Specification (MTS); Internet Protocol Testing (IPT); IPv6 Testing: Methodology and Framework".

[3] ETSI TS 102 237-1: "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 4; Interoperability test methods and approaches; Part 1: Generic approach to interoperability testing".

[4] ETSI ES 202 553: "Methods for Testing and Specification (MTS); TPLan: A notation for expressing Test Purposes".

[5] ETSI TS 134 229-1 (V7.0.0): "Universal Mobile Telecommunications System (UMTS); Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Part 1: Protocol conformance specification (3GPP TS 34.229-1 version 7.0.0 Release 7)".

[6] ETSI TS 124 410 (V7.0.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); TISPAN; NGN Signalling Control Protocol; Communication HOLD (HOLD) PSTN/ISDN simulation services; Protocol specification (3GPP TS 24.410 version 7.0.0 Release 7)".

[7] ETSI TS 124 404 (V7.0.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); TISPAN; PSTN/ISDN simulation services: Communication Diversion (CDIV); Protocol specification (3GPP TS 24.404 version 7.0.0 Release 7)".

[8] ETSI TS 124 411 (V7.0.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); TISPAN; PSTN/ISDN simulation services: Anonymous Communication Rejection (ACR) and Communication Barring (CB); Protocol specification 3GPP TS 24.411 version 7.0.0 Release 7)".

[9] ETSI TS 124 407 (V7.0.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); TISPAN; PSTN/ISDN simulation services; Originating Identification Presentation (OIP) and Originating Identification Restriction (OIR); Protocol specification (3GPP TS 24.407 version 7.0.0 Release 7)".

2.2 Informative references

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

Not applicable.

3 Abbreviations

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

3GPP	3rd Generation Partnership Project
ACR	Anonymous Communication Rejection
AS	(IMS) Application Server
CB	Call Barring
CDIV	Call DIVersion
CF	(Test) Configuration
CN	Core Network
CSCF	Call Session Control Function
DNS	Domain Name System
HOLD	Communication HOLD
HSS	Home Subscriber Server
IBCF	Interconnection Border Control Gateway
I-CSCF	Interrogating CSCF
IMS	IP Multimedia Subsystem
IOI	Inter Operator Identifier
IP	Internet Protocol
IUT	Implementation Under Test

NGN	Next Generation Network
NNI	Network-to-Network Interface
OIP	Originating Identification Presentation
OIR	Originating Identification Restriction
PCO	Point of Control and Observation
P-CSCF	Proxy CSCF
RC	Requirements Catalogue
RQ	ReQuirement
S-CSCF	Serving CSCF
SDP	Session Description Protocol
SIP	Session Initiation Protocol
TP	Test Purpose
TPLan	Test Purpose Notation
TSS	Test Suite Structure
UE	User Equipment
URI	Uniform Record Identifier

4 Test Suite Structure (TSS)

The Test Suite Structure is based on a Requirements Catalogue which was established prior to test purpose specification. This RC extracts all requirements from ES 283 003 [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: ES 283 003 [1], clause 5.2.6.3 ¶66.

The test purposes have been divided into 5 major groups:

1) General Capabilities.

2) Registration procedures.

3) Dialog procedures.

4) Messaging procedures.

5) Supplementary services.

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

```
Group 1: IMST1 NNI IOP
Group 1.1: General Capabilities
Group 1.2: Registration procedures
Group 1.2.1: Registration at P-CSCF
Group 1.2.2: Registration at S-CSCF
Group 1.2.3: Registration at I-CSCF
Group 1.2.4: Registration at IBCF
Group 1.3: Dialog procedures
Group 1.3.1: Dialog at P-CSCF
Group 1.3.2: Dialog at S-CSCF
Group 1.3.3: Dialog at I-CSCF
Group 1.3.4: Dialog at IBCF
Group 1.4: Messaging procedures
Group 1.4.1: Messaging at P-CSCF
Group 1.4.2: Messaging at S-CSCF
Group 1.5: Supplementary service procedures
Group 1.5.1: Supplementary services at S-CSCF
```

5 Test Purposes (TP)

The test purposes have been written in the notation TPLan [8] 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_06027_1v020000.zip that is included in annex A. 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 annex A take precedence over the following tables. Configurations that are referenced by test purposes are shown in annex B.

5.1 The tabular symbolic TPLan presentation format

Each table contains header fields and a description part. The header fields identify the TP, list the related clause reference the base specification that the TP was derived from, introduce the TP with a short summary, references the related test configuration and test case in the ATS. Identifiers starting with the string "RQ_229_" indicate requirements within the internal requirement catalogue.

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 "✓" or "✗" marks to indicate all the entities affected by this condition. "✓" marks indicates a positive condition, e.g. "A is registered in B", whereas "✗"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

Entities		Condition
A	B	
✓	✓	A registered in B
	✗	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 IUT stimuli are shown with a green background whereas steps related to IUT responses are shown with a beige background. All listed steps are assumed to be carried out in increasing step number, i.e. they reflect an "and" relation. "or" relations at the level of entire messages are shown with lowercase letters following the step number identifying the different alternatives, e.g. "2a" versus "2b". Each step indicates the exchange of a message from a source entity (identified by the direction symbols "🡻" or "🡿"), e.g. entity A sends the message, to a destination entity (identified by the direction symbols "🡿" or "🡻"), e.g. entity B receives the message. The use of the "||" symbol in combination with the direction symbols, e.g. "||🡿", indicates that a particular message shall either not be sent or received by an entity, e.g. entity B did not send the message.

Additional information about valid as well as invalid message content is presented in the "Message" column. First general information about message, e.g. its type, destination, attributes, etc, are shown in bold font. Below this information message headers or parameter content that must be present in that message are listed using "✓" symbols whereas headers or parameter content that must *not* be present are listed using the "✗" symbols. The "➔" symbol indicates a valid message parameter value where as the "➔||"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.

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

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

Table 2: Example TP body section

	A	B		
Step	**Direction**		**Message**	**IF**
1	↳	↱	**some request** ✓ this header ✓ this one parameter ➔ this value ✓ this other parameter ➔|| that value ✗ that parameter ✗ that header	**Xx**
2a	↰	↲	**failure response**	**Xx**
2b	↰||	||↲	**no message**	**Xx**

5.2 General Capabilities

Test Purpose						
Identifier:	**TP_IMS_4002_01**					
Summary:	IMS CN components shall support SIP messages > 1 300 bytes.					
IUT Role:	IMS A					
References:	RQ_229_4002			**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	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**MESSAGE** addressed to UE B ✓ a Message Body greater than 1 300 bytes	
2		↳	↱		**MESSAGE** ✓ the Message Body greater than 1 300 bytes	

5.3 Registration Procedures

5.3.1 Registration at P-CSCF

Test Purpose					
Identifier:	**TP_IMS_5005_01**				
Summary:	The P-CSCF shall support the Path header.				
IUT Role:	IMS A				
References:	RQ_229_5005			**Config Ref:**	CF_ROAM_REG
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
		✓	✓	IMS B has challenged with a 401 response the REGISTER request of UE B	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1	↰		↲	**protected REGISTER** addressed to IMS B ✓ a Path header	
2	↳	↱		**REGISTER** ✓ a Path header	

Test Purpose					
Identifier:	**TP_IMS_5011_01**				
Summary:	The P-CSCF shall forward REGISTER requests received from the UE to the entry point in the home network.				
IUT Role:	IMS A				
References:	RQ_229_5011		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
	×			IMS A not configured for topology hiding	
		✓	✓	user of UE B existing in IMS B	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1	→		←	**unprotected REGISTER** ✓ a Security-Client header	
2	←	→		**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 parameter ✓ a Authorization header ✓ an integrity-protected parameter ➔ no × a Security-Verify header × a Security-Client header ✓ a P-Visited-Network-ID header ➔ the visited network at the home network	

Test Purpose					
Identifier:	**TP_IMS_5011_02**				
Summary:	The P-CSCF shall forward REGISTER requests received from the UE to the entry point in the home network.				
IUT Role:	IMS A				
References:	RQ_229_5011		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
	×			IMS A not configured for topology hiding	
		✓	✓	user of UE B existing in IMS B	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1	→		←	**protected REGISTER** ✓ a Security-Client header	
2	←	→		**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 parameter ✓ a Authorization header ✓ an integrity-protected parameter ➔ yes × a Security-Verify header × a Security-Client header ✓ a P-Visited-Network-ID header ➔ the visited network at the home network	

Test Purpose					
Identifier:	**TP_IMS_5203_01**				
Summary:	The P-CSCF have received a REGISTER request from the UE and modified a number of headers and forwarded the request to an entry point with no response.				
IUT Role:	IMS A				
References:	RQ_229_5203		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
	✓		✓	UE B having sent an initial REGISTER to IMS A	
	✓	✓		IMS A configured with multiple entry points for IMS B	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1				**no response**	
2				**REGISTER** addressed to another entry point	

Test Purpose					
Identifier:	**TP_IMS_5203_02**				
Summary:	The P-CSCF have received a REGISTER request from the UE and modified a number of headers and forwarded the request to an entry point with 3xx.				
IUT Role:	IMS A				
References:	RQ_229_5203		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
	✓		✓	UE B having sent an initial REGISTER to IMS A	
	✓	✓		IMS A configured with multiple entry points for IMS B	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1				**3xx response**	
2				**REGISTER** addressed to another entry point	

Test Purpose					
Identifier:	**TP_IMS_5203_03**				
Summary:	The P-CSCF have received a REGISTER request from the UE and modified a number of headers and forwarded the request to an entry point with 480.				
IUT Role:	IMS A				
References:	RQ_229_5203		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
	✓		✓	UE B having sent an initial REGISTER to IMS A	
	✓	✓		IMS A configured with multiple entry points for IMS B	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1				**480 response**	
2				**REGISTER** addressed to another entry point	

5.3.2 Registration at S-CSCF

Test Purpose					
Identifier:	**TP_IMS_5088_01**				
Summary:	S-CSCF shall deregister unexpired registration upon receipt of a new REGISTER with new contact information.				
IUT Role:	IMS B				
References:	RQ_229_5088		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
	✓	✓	✓	UE B registered in IMS B via IMS A	
	✓	✓		IMS A within the trust domain of IMS B	
		×	×	UE B not de-registered in IMS B	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1		⇦	⇩	**initial REGISTER** ✓ an Authorization header × an integrity-protected parameter **or** ✓ an integrity-protected parameter ➔ no	
2	⇦	⇩		**NOTIFY** ✓ a Request URI ➔ the P-CSCF SIP URI of IMS A ✓ an Event header ➔ the reg event package ✓ a Route header ➔ the original Route header from SUBSCRIBE ✓ a Message Body ✓ for each registered public identity of UE B a registration element ✓ an aor attribute ➔ registered public identity of UE B ✓ a state attribute ➔ terminated ✓ a contact subelement ✓ an event attribute ➔ deactivated **or** rejected ✓ a state attribute ➔ terminated ✓ a URI subelement ➔ the contact address of UE B	

Test Purpose					
Identifier:	**TP_IMS_5089_01**				
Summary:	S-CSCF shall return 401 (Unauthorized) upon receipt of a REGISTER from an UE not previously registered.				
IUT Role:	IMS B				
References:	RQ_229_5089		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
		✓	✓	user of UE B existing in IMS B	
		×	×	UE B not registered in IMS B	
	✓		✓	UE B visiting IMS A	
	✓	✓		IMS A within the trust domain of IMS B	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1	↳	↱		**initial REGISTER** ✓ an Authorization header × an integrity-protected parameter **or** ✓ an integrity-protected parameter ➔ no	
2	↰	↲		**401 response** ✓ an WWW-Authenticate header ✓ a realm parameter ➔ the operator identifier of IMS B ✓ a nonce parameter ✓ a RAND parameter ✓ an AUTN parameter) ✓ an algorithm parameter ➔ AKAv1-MD5 ✓ an ik parameter ✓ a ck parameter	

Test Purpose					
Identifier:	**TP_IMS_5092_01**				
Summary:	200 OK on REGISTER from UE to the S-CSCF.				
IUT Role:	IMS B				
References:	RQ_229_5092		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
		✓	✓	user of UE B existing in IMS B	
	✓		✓	UE B visiting IMS A	
		×	×	UE B not registered in IMS B	
		✓		IMS B has challenged with a 401 response the REGISTER request	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1	↳	↱		**protected REGISTER** ✓ an Authorization header ✓ an integrity-protected parameter ➔ yes	
2	↰	↲		**200 response** ✓ the same Path header as in the protected REGISTER ✓ a P-Associated-URI header ✓ all registered public identities its associated set of implicitly registered public user identities ➔ first the default public user identity no barred public user identities ✓ a Service-Route header ➔ the S-CSCF SIP URI of IMS B ✓ a Contact header ➔ all contact addresses for the default public user identity of UE B	

Test Purpose					
Identifier:	**TP_IMS_5096_01**				
Summary:	The network shall handle incoming SUBSCRIBE correctly.				
IUT Role:	IMS B				
References:	RQ_229_5096		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
		✓	✓	UE B registered in IMS B	
	✓		✓	UE B visiting IMS A	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1	↳	⇗		**SUBSCRIBE** ✓ an Event header ➔ the reg event package	
2		↳	⇗	**2xx response** ✓ an Expires header ➔ the same **or** lower expiry time than specified in the initial SUBSCRIBE	

5.3.3 Registration at I-CSCF

Interoperability Test Purpose					
Identifier:	**TP_IMS_5129_01**				
Summary:	If a request is received from a non-trusted domain, a 403 (Forbidden) response shall be returned by I-CSCF.				
IUT Role:	IMS B				
References:	RQ_229_5129		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
		✓	✓	user of UE B existing in IMS B	
	×	×		IMS A not within the trust domain of IMS B	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1	↳	⇗		**valid initial REGISTER**	
2	⇖	↰		**403 response**	

5.3.4 Registration at IBCF

Interoperability Test Purpose					
Identifier:	**TP_IMS_5134_01**				
Summary:	If a request includes a Path header the IBCF shall add the routeable SIP URI of an IBCF to the top of the Path header.				
IUT Role:	IMS A				
References:	RQ_229_5134		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
	✓			IMS A configured for topology hiding	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1	⇖		↰	**REGISTER**	
2	↳	⇗		**REGISTER** ✓ an additional topmost Path header ➔ the IBCF SIP URI of IMS A	

Interoperability Test Purpose					
Identifier:	**TP_IMS_5401_01**				
Summary:	IBCF shall, if topology hiding is required, apply the encryption for the Path header.				
IUT Role:	IMS A				
References:	RQ_229_5401		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**	**UE B**		
	✓			IMS A configured for topology hiding	
	IMS A	**IMS B**	**UE B**		
Step	**Direction**			**Message**	**IF**
1	→		→	**REGISTER** ✓ Path header	
2	→	→		**REGISTER** ✓ a Path header ✓ encrypted consecutive header entries ✓ tokenized-by parameter	

Interoperability Test Purpose					
Identifier:	**TP_IMS_5402_01**				
Summary:	IBCF shall select a new entry point and forward the original REGISTER request on no response.				
IUT Role:	IMS A				
References:	RQ_229_5402		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**			
	✓			IMS A configured for topology hiding	
	✓	✓		IMS A configured with multiple entry points in IMS B	
	✓	✓		IMS A having sent an initial REGISTER to IMS B	
	IMS A	**IMS B**			
Step	**Direction**			**Message**	**IF**
1	→‖	‖→		**no response**	
2	→	→		**original REGISTER** addressed to another entry point	

Interoperability Test Purpose					
Identifier:	**TP_IMS_5402_02**				
Summary:	IBCF shall select a new entry point and forward the original REGISTER request on 3xx response.				
IUT Role:	IMS A				
References:	RQ_229_5402		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**			
	✓			IMS A configured for topology hiding	
	✓	✓		IMS A configured with multiple entry points for IMS B	
	✓	✓		IMS A having sent an initial REGISTER to IMS B	
	IMS A	**IMS B**			
Step	**Direction**			**Message**	**IF**
1	→	→		**3xx response**	
2	→	→		**original REGISTER** addressed to another entry point	

Interoperability Test Purpose					
Identifier:	**TP_IMS_5402_03**				
Summary:	IBCF shall select a new entry point and forward the original REGISTER request on 4xx response.				
IUT Role:	IMS A				
References:	RQ_229_5402		**Config Ref:**	CF_ROAM_REG	
	Entities			**Condition**	
	IMS A	**IMS B**			
	✓			IMS A configured for topology hiding	
	✓	✓		IMS A configured with multiple entry points for IMS B	
	✓	✓		IMS A having sent an initial REGISTER to IMS B	
	IMS A	**IMS B**			
Step	**Direction**			**Message**	**IF**
1	→	→		**4xx response**	
2	→	→		**original REGISTER** addressed to another entry point	

Interoperability Test Purpose					
Identifier:	**TP_IMS_5411_01**				
Summary:	If a request is received from a non-trusted domain, a 403 (Forbidden) response shall be returned by IBCF.				
IUT Role:	IMS B				
References:	RQ_229_5411		**Config Ref:**	CF_ROAM_REG	
	Entities		**Condition**		
	IMS A	**IMS B**			
		✓	IMS B configured for topology hiding		
	×	×	IMS A not within the trust domain of IMS B		
	IMS A	**IMS B**			
Step	**Direction**		**Message**		**IF**
1	↳	↱	**valid REGISTER**		
2	↰	↲	**403 response**		

5.4 Dialog Procedures

5.4.1 Dialog at P-CSCF

Test Purpose						
Identifier:	**TP_IMS_5046_01**					
Summary:	When the P-CSCF receives an initial INVITE request for a standalone transaction from a UE for which a Service-Route header list exists.					
IUT Role:	IMS A					
References:	RQ_229_5046			**Config Ref:**	CF_ROAM_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		↰		↲	**initial INVITE**	
2		↳	↱		**INVITE** ✓ an additional Via header ✓ the P-CSCF via port number ✓ the P-CSCF-FQDN address **or** the P-CSCF-IP address of the IMS A ✓ an additional topmost Record-Route header ✓ the P-CSCF port number where it awaits subsequent requests from UE A ✓ the P-CSCF-FQDN address **or** the P-CSCF-IP address of the IMS A ✓ the list of Service Route header URIs from the registration × P-Preferred-Identity header ✓ a P-Asserted-Identity header ✓ an address of UE A ✓ a P-Charging-Vector header ✓ an icid parameter	

Test Purpose						
Identifier:	**TP_IMS_5048_01**					
Summary:	P-CSCF forwards a target refresh request from the UE.					
IUT Role:	IMS A					
References:	RQ_229_5048			**Config Ref:**	CF_ROAM_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has initiated a dialog with UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		⇦		⇦	**subsequent INVITE**	
2		⇩	⇨		**INVITE** ✓ an additional topmost Record-Route header ✓ the P-CSCF port number where it awaits subsequent requests from UE A ✓ the P-CSCF-FQDN address **or** the P-CSCF-IP address of the IMS A ✓ an additional Via header ✓ the P-CSCF via port number ✓ the P-CSCF-FQDN address **or** the P-CSCF-IP address of the IMS A	

Test Purpose						
Identifier:	**TP_IMS_5052_01**					
Summary:	The P-CSCF modifies a request, other than a target refresh request, from the UE subsequent to a successful initial request for a dialog.					
IUT Role:	IMS A					
References:	RQ_229_5052			**Config Ref:**	CF_ROAM_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has initiated a dialog with UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		⇦		⇦	**BYE**	
2		⇩	⇨		**BYE** × a Route header ✓ the P-CSCF SIP URI of IMS A ✓ the same Record-Route header as in the previous **ACK**	

Test Purpose						
Identifier:	**TP_IMS_5053_01**					
Summary:	P-CSCF receives from the UE a request for an unknown method.					
IUT Role:	IMS A					
References:	RQ_229_5053			**Config Ref:**	CF_ROAM_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	⇩	⇨			**Unknown Method** addressed to UE B	
2		⇩	⇨		**Unknown Method** ✓ 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						
Identifier:	**TP_IMS_5055_01**					
Summary:	The P-CSCF receives a 1xx response to an initial request for a dialog from the UE.					
IUT Role:	IMS A					
References:	RQ_229_5055			**Config Ref:**	CF_ROAM_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has received an initial request for a dialog from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		←		←	**180 response**	
2		→	→		**180 response** ✓ a Record-Route header ✓ the P-CSCF port number of IMS A where it expects subsequent requests × a comp parameter × a P-Preferred-Identity header ✓ a P-Asserted-Identity header ✓ the address sent in P-Called Party-ID header sent in the initial request	

Test Purpose						
Identifier:	**TP_IMS_5055_02**					
Summary:	The P-CSCF receives a 2xx response to an initial request for a dialog from the UE.					
IUT Role:	IMS A					
References:	RQ_229_5055			**Config Ref:**	CF_ROAM_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has received an initial request for a dialog from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		←		←	**200 response**	
2		→	→		**200 response** ✓ a Record-Route header ✓ the P-CSCF port number of IMS A where it expects subsequent requests × a comp parameter × a P-Preferred-Identity header ✓ a P-Asserted-Identity header ✓ the address sent in P-Called Party-ID header sent in the initial request	

Test Purpose						
Identifier:	**TP_IMS_5067_01**					
Summary:	The P-CSCF shall include the access-network-charging-info parameter in the P-Charging-Vector header in the first request originated by the UE.					
IUT Role:	IMS A					
References:	RQ_229_5067			**Config Ref:**	CF_ROAM_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		←		←	**initial INVITE**	
2		→	→		**INVITE** ✓ a P-Charging-Vector header ✓ a access-network-charging-info parameter	

Test Purpose							
Identifier:	**TP_IMS_5070_01**						
Summary:	The P-CSCF shall respond with a 100 (Trying) provisional response.						
IUT Role:	IMS A						
References:	RQ_229_5070			**Config Ref:**	CF_ROAM_CALL		
	Entities				**Condition**		
	UE A	**IMS A**	**IMS B**	**UE B**			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	UE A	**IMS A**	**IMS B**	**UE B**			
Step	**Direction**				**Message**		**IF**
1		→		←	**initial INVITE**		
2		←	→		**100 response**		

Test Purpose							
Identifier:	**TP_IMS_5072_01**						
Summary:	P-CSCF sends CANCEL in case its UE goes down during dialog initiation.						
IUT Role:	IMS A						
References:	RQ_229_5072			**Config Ref:**	CF_ROAM_CALL		
	Entities				**Condition**		
	UE A	**NWK**	**IMS A**	**IMS B**	**UE B**		
	✓		✓			UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
	✓				✓	UE B has received 180 on initial request for dialog from UE A	
	UE A	**NWK**	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1		←	→			**an indication** that UE B is no longer available	
2			→	→		**CANCEL** ✓ a Reason header ✓ a status code parameter ➔ 503 Service unavailable	

Test Purpose							
Identifier:	**TP_IMS_5073_01**						
Summary:	P-CSCF sends BYE in case its calling UE goes down in ongoing dialog.						
IUT Role:	IMS B						
References:	RQ_229_5073			**Config Ref:**	CF_INT_CALL		
	Entities					**Condition**	
	UE A	**IMS A**	**NWK**	**IMS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
	✓				✓	UE B has initiated a dialog with UE A	
	UE A	**IMS A**	**NWK**	**IMS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1			←	→		**an indication** that UE B is no longer available	
2		←		→		**BYE** ✓ Request URI ➔ Contact header value of UE A ✓ To header ➔ initial 200 OK To value from UE A ✓ From header ➔ initial INVITE From value from UE B ✓ Call-ID header ➔ initial INVITE Call Id value from UE B ✓ CSeq header ✓ an incremented Sequence Number ✓ Route header ➔ dialog specific routing information for UE A ✓ further headers based on local policy or call release reason	

Test Purpose							
Identifier:	**TP_IMS_5074_01**						
Summary:	P-CSCF sends BYE in case its called UE goes down in ongoing dialog.						
IUT Role:	IMS A						
References:	RQ_229_5074				**Config Ref:**	CF_INT_CALL	
	Entities					Condition	
	UE A	**IMS A**	**NWK**	**IMS A**	**UE B**		
	✓	✓				UE A registered in IMS A	
				✓	✓	UE B registered in IMS A	
	✓				✓	UE A has initiated a dialog with UE B	
	UE A	**IMS A**	**NWK**	**IMS A**	**UE B**		
Step	**Direction**					**Message**	**IF**
1			↳	↱		**an indication** that UE B is no longer available	
2		↰		↱		**BYE** ✓ Request URI ➔ Contact header value of UE A ✓ To header ➔ initial INVITE To value from UE A ✓ From header ➔ initial 200 OK From value from UE B ✓ Call-ID header ➔ initial INVITE Call Id value from UE A ✓ CSeq header ✓ an incremented Sequence Number ✓ Route header ➔ dialog specific routing information for UE A ✓ further headers based on local policy or call release reason	

Test Purpose							
Identifier:	**TP_IMS_5080_01**						
Summary:	The P-CSCF shall include the updated access-network-charging-info parameter from P-Charging-Vector header when sending subsequent INVITE to the S-CSCF.						
IUT Role:	IMS A						
References:	RQ_229_5080				**Config Ref:**	CF_ROAM_CALL	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**UE B**			
	✓	✓				UE A registered in IMS A	
			✓	✓		UE B registered in IMS B	
	✓			✓		UE B has initiated a dialog with UE A	
	UE A	**IMS A**	**IMS B**	**UE B**			
Step	**Direction**					**Message**	**IF**
1		↰		↱		**subsequent INVITE**	
2		↳	↱			**INVITE** ✓ a P-Charging-Vector header ✓ an updated access-network-charging-info parameter	

Test Purpose						
Identifier:	**TP_IMS_5080_02**					
Summary:	The P-CSCF shall include the updated access-network-charging-info parameter from P-Charging-Vector header when sending the subsequent UPDATE to the S-CSCF.					
IUT Role:	IMS A					
References:	RQ_229_5080			**Config Ref:**	CF_ROAM_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has initiated a dialog with UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		⇦		⇦	**subsequent UPDATE**	
2		⇨	⇨		**UPDATE** ✓ a P-Charging-Vector header ✓ an updated access-network-charging-info parameter	

Test Purpose						
Identifier:	**TP_IMS_5081_01**					
Summary:	P-CSCF 100 response to a subsequent INVITE.					
IUT Role:	IMS A					
References:	RQ_229_5081			**Config Ref:**	CF_ROAM_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has initiated a dialog with UE B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		⇦	⇦		**subsequent INVITE** addressed to UE B	
2		⇨	⇨		**100 response**	

Test Purpose						
Identifier:	**TP_IMS_5081_02**					
Summary:	P-CSCF 100 response to a to a subsequent UPDATE.					
IUT Role:	IMS A					
References:	RQ_229_5081			**Config Ref:**	CF_ROAM_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has initiated a dialog with UE B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		⇦	⇦		**subsequent UPDATE** addressed to UE B	
2		⇨	⇨		**100 response**	

Test Purpose						
Identifier:	**TP_IMS_5082_01**					
Summary:	P-CSCF 200 response to a target refresh request.					
IUT Role:	IMS A					
References:	RQ_229_5082			**Config Ref:**	CF_ROAM_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has initiated a dialog with UE B	
		✓		✓	IMS A having sent subsequent INVITE or UPDATE to UE B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1					**200 response**	
2					**200 response** ✓ a P-Charging-Vector header ✓ an updated access-network-charging-info parameter	

5.4.2 Dialog at S-CSCF

Test Purpose						
Identifier:	**TP_IMS_5097_01**					
Summary:	S-CSCF must inserts orig-ioi parameter, remove access-network-charging-info parameter and P-Access-Network-Info header before sending initial INVITE over NNI.					
IUT Role:	IMS A					
References:	RQ_229_5097			**Config Ref:**	CF_INT_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
		×			IMS A not configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1					**initial INVITE** addressed to UE B	
2					**initial INVITE** × a Route header ➔ the S-CSCF SIP URI of IMS A ✓ a P-Charging-Vector header ✓ an icid parameter ✓ a orig-ioi parameter ➔ IMS A × a term-ioi parameter ✓ a Record-Route header ➔ the originating S-CSCF SIP URI ✓ a P-Charging-Vector header × a access-network-charging-info parameter × a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5097_02**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header indicating a registered tel URI if not present for initial INVITE.					
IUT Role:	IMS A					
References:	RQ_229_5097			**Config Ref:**	CF_INT_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓				UE A registered public identities containing a Tel URI	
	✓				UE A default registered public identity is a SIP URI	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**initial INVITE** addressed to UE B × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔|| a Tel URI of UE A	
2		↳	↱		**initial INVITE** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE A ✓ a P-Asserted-Identity header ➔ a Tel URI of UE A	

Test Purpose						
Identifier:	**TP_IMS_5097_03**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header indicating a registered SIP URI if not present for initial INVITE.					
IUT Role:	IMS A					
References:	RQ_229_5097			**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 default registered public identity is a Tel URI	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**initial INVITE** addressed to UE B × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔ a Tel URI of UE A	
2		↳	↱		**initial INVITE** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE A ✓ a P-Asserted-Identity header ➔ a Tel derived SIP URI of UE A	

Test Purpose							
Identifier:	**TP_IMS_5097_04**						
Summary:	S-CSCF uses ENUM/DNS to translate Tel URIs to SIP URIs in initial INVITE requests.						
IUT Role:	IMS A						
References:	RQ_229_5097				**Config Ref:**	CF_INT_CALL	
	Entities					**Condition**	
	UE A	**IMS A**	**DNS B**	**IMS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
			✓		✓	DNS B configured with an ENUM entry for Tel URI E.164 Number of UE B	
	UE A	**IMS A**	**DNS B**	**IMS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1	→					**initial INVITE** addressed to UE B ✓ a Request URI ➔ a Tel URI	
2		→				**DNS Query** ✓ the Tel URI E.164 Number	
3		←				**DNS Response** ✓ NAPTR Resource Record ➔ the SIP URI of UE B	
4		→				**initial INVITE** ✓ a Request URI ➔ a SIP URI of UE B ✓ a P-Charging-Vector header ✗ a access-network-charging-info parameter	

Test Purpose						
Identifier:	**TP_IMS_5106_01**					
Summary:	S-CSCF must handle subsequent INVITE prior to sending it over NNI.					
IUT Role:	IMS A					
References:	RQ_229_5106			**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	**Direction**				**Message**	**IF**
1	→				**subsequent INVITE** addressed to UE B	
2		→			**subsequent INVITE** ✓ a Record-Route header ➔ the S-CSCF SIP URI of IMS A ✗ Route header ➔ the S-CSCF SIP URI of IMS A ✓ a P-Charging-Vector header ✗ a access-network-charging-info parameter ✗ a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5106_02**					
Summary:	S-CSCF must handle UPDATE prior to sending it over NNI.					
IUT Role:	IMS A					
References:	RQ_229_5106			**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	**Direction**				**Message**	**IF**
1	↳	⇗			**UPDATE** addressed to UE B	
2		↳	⇗		**UPDATE** ✓ a Record-Route header ✓ the S-CSCF SIP URI of IMS A × Route header ➔ the S-CSCF SIP URI of IMS A ✓ a P-Charging-Vector header × a access-network-charging-info parameter × a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5107_01**					
Summary:	S-CSCF remove access-network-charging-info parameter and P-Access-Network-Info header before sending BYE requests over NNI.					
IUT Role:	IMS A					
References:	RQ_229_5107			**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	**Direction**				**Message**	**IF**
1	↳	⇗			**BYE** addressed to UE B	
2		↳	⇗		**BYE** ✓ no Route header ➔ the S-CSCF SIP URI of IMS A × a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5107_02**					
Summary:	S-CSCF remove access-network-charging-info parameter and P-Access-Network-Info header before sending ACK requests over NNI.					
IUT Role:	IMS A					
References:	RQ_229_5107			**Config Ref:**	CF_INT_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has received 200OK on initial request for dialog UE B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	⇗			**ACK** addressed to UE B	
2		↳	⇗		**ACK** ✓ no Route header ➔ the S-CSCF SIP URI of IMS A × a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5107_03**					
Summary:	S-CSCF remove access-network-charging-info parameter and P-Access-Network-Info header before sending CANCEL requests over NNI.					
IUT Role:	IMS A					
References:	RQ_229_5107			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has received 180 on initial request for dialog from UE B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**CANCEL** addressed to UE B	
2		↳	↱		**CANCEL** ✓ no Route header ➔ the S-CSCF SIP URI of IMS B	

Test Purpose						
Identifier:	**TP_IMS_5108_05**					
Summary:	S-CSCF rejects barred users on initial INVITE.					
IUT Role:	IMS B					
References:	RQ_229_5108			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
			✓	✓	UE B barred user in IMS B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		↳	↱		**initial INVITE** addressed to UE B ✓ a Request URI ➔ a barred user in IMS B	
2		↰	↲		**404 response**	

Test Purpose						
Identifier:	**TP_IMS_5115_01**					
Summary:	S-CSCF include term-ioi parameter and restores orig-ioi in 180 responses from UE to initial requests in terminating network.					
IUT Role:	IMS B					
References:	RQ_229_5115			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has received an initial request for a dialog from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			↰	↲	**180 response** addressed to UE A	
2		↰	↲		**180 response** ✓ a P-Charging-Vector header ✓ a orig-ioi parameter ➔ operator identifier of IMS A ✓ a term-ioi parameter ➔ operator identifier of IMS B	

Test Purpose						
Identifier:	**TP_IMS_5115_02**					
Summary:	S-CSCF include term-ioi parameter and restores orig-ioi in 2xx responses from UE to initial requests in terminating network.					
IUT Role:	IMS B					
References:	RQ_229_5115			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has received 180 on initial request for dialog from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			⇦	⇦	**2xx response** addressed to UE A	
2		⇦	⇦		**2xx response** ✓ a P-Charging-Vector header ✓ an orig-ioi parameter ➔ operator identifier of IMS A ✓ a term-ioi parameter ➔ operator identifier of IMS B	

Test Purpose						
Identifier:	**TP_IMS_5115_03**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header in 1xx response for from UE initial request indicating a registered tel URI if not present.					
IUT Role:	IMS B					
References:	RQ_229_5115			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B registered public identities containing a Tel URI	
				✓	UE B default registered public identity is a SIP URI	
	✓			✓	UE B has received an initial request for a dialog from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			⇦	⇦	**1xx response** addressed to UE A × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔ a SIP URI of UE B	
2		⇦	⇦		**1xx response** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE B ✓ a P-Asserted-Identity header ➔ a Tel URI of UE B	

Test Purpose						
Identifier:	**TP_IMS_5115_04**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header in 2xx response from UE for initial request indicating a registered tel URI if not present.					
IUT Role:	IMS B					
References:	RQ_229_5115			**Config Ref:**	CF_INT_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B registered public identities containing a Tel URI	
				✓	UE B default registered public identity is a SIP URI	
	✓			✓	UE B has received 180 on initial request for dialog from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1					**2xx response** addressed to UE A × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔|| a Tel URI of UE B	
2					**2xx response** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE B ✓ a P-Asserted-Identity header ➔ a Tel URI of UE B	

Test Purpose						
Identifier:	**TP_IMS_5115_05**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header in 1xx response from UE for initial request indicating a registered SIP URI if not present.					
IUT Role:	IMS B					
References:	RQ_229_5115			**Config Ref:**	CF_INT_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B default registered public identity is a Tel URI	
	✓			✓	UE B has received an initial request for a dialog from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1					**1xx response** addressed to UE A × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔ a Tel URI of UE B	
2					**1xx response** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE B ✓ a P-Asserted-Identity header ➔ a Tel derived SIP URI of UE B	

Test Purpose						
Identifier:	**TP_IMS_5115_06**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header in 2xx response from UE for initial request indicating a registered SIP URI if not present.					
IUT Role:	IMS B					
References:	RQ_229_5115			**Config Ref:**	CF_INT_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B default registered public identity is a Tel URI	
	✓			✓	UE B has received an initial request for a dialog from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			⇦	⇦	**2xx response** addressed to UE A × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔ a Tel URI of UE B)	
2		⇦	⇦		**2xx response** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE B ✓ a P-Asserted-Identity header ➔ a Tel derived SIP URI of UE B	

Test Purpose						
Identifier:	**TP_IMS_5120_01**					
Summary:	S-CSCF must 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:	RQ_229_5120			**Config Ref:**	CF_ROAM_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has initiated a dialog with UE B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	⇩		⇨		**subsequent INVITE** addressed to UE B	
2		⇦	⇦		**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 must 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:	RQ_229_5120			**Config Ref:**	CF_ROAM_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has initiated a dialog with UE B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	→		→		**UPDATE** addressed to UE B	
2		←	←		**UPDATE** ✓ 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_5121_01**					
Summary:	S-CSCF remove access-network-charging-info parameter and P-Access-Network-Info header from 1xx response to subsequent or target refresh requests.					
IUT Role:	IMS B					
References:	RQ_229_5121			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B has received a subsequent request in a dialog	
				✓	UE B has received a target refresh request in a dialog	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			←	←	**1xx response** addressed to UE A	
2		←	←		**1xx response** ✓ a P-Charging-Vector header ✗ a access-network-charging-info parameter ✗ a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5121_02**					
Summary:	S-CSCF remove access-network-charging-info parameter and P-Access-Network-Info header from 2xx response to subsequent or target refresh requests.					
IUT Role:	IMS B					
References:	RQ_229_5121			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B has received a subsequent request in a dialog	
				✓	UE B has received a target refresh request in a dialog	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			←	←	**2xx response** addressed to UE A	
2		←	←		**2xx response** ✓ a P-Charging-Vector header ✗ a access-network-charging-info parameter ✗ a P-Access-Network-Info header	

Test Purpose							
Identifier:	**TP_IMS_5301_01**						
Summary:	S-CSCF shall prior to forwarding a subsequent request remove its own URI from the Route header and add it to the Record-Route header.						
IUT Role:	IMS A						
References:	RQ_229_5301			**Config Ref:**	CF_ROAM_CALL		
	Entities				Condition		
	UE A	**IMS A**	**IMS B**	**UE B**			
	✓	✓			UE A registered in IMS A		
			✓	✓	UE B registered in IMS B		
	✓			✓	UE A has initiated a dialog with UE B		
	UE A	**IMS A**	**IMS B**	**UE B**			
Step	**Direction**				**Message**		**IF**
1	↳	↱			**BYE**		
2		↳	↱		**BYE** × Route header ➔ the S-CSCF SIP URI of IMS A ✓ a topmost Record-Route header ➔ the S-CSCF SIP URI of IMS A		

Test Purpose								
Identifier:	**TP_IMS_5139_01**							
Summary:	The S-CSCF receives a network internal indication to release an existing multimedia session including registration lifetime expiration of the last public user identity.							
IUT Role:	IMS A							
References:	RQ_229_5139				**Config Ref:**	CF_INT_CALL		
	Entities					Condition		
	UE A	**NWK**	**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	**NWK**	**IMS A**	**IMS B**	**UE B**			
Step	**Direction**					**Message**		**IF**
1		↳	↱			**network internal indication** that the lifetime of the last public user identity has expired		
2			↳		↱	**BYE** ✓ a Request URI ➔ Contact header value of UE B ✓ a To header ➔ the To header of the 200 response to initial ✓ a From header ➔ the From header of the initial ✓ a Call-ID header ➔ the Call-ID header of the initial ✓ a CSeq header ➔ CSeq header of the calling user incremented by one ✓ a Route header ➔ routeing information towards the called user as stored for the dialog ✓ further headers, based on local policy or the requested session release reason		

5.4.3 Dialog at I-CSCF

Interoperability Test Purpose						
Identifier:	**TP_IMS_5131_01**					
Summary:	I-CSCF shall remove P-Charging-Function-Addresses header from 180 response.					
IUT Role:	IMS B					
References:	RQ_229_5131			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has received an initial request for a dialog from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			←	←	**180 response** addressed to UE A	
2		←	←		**180 response** × a P-Charging-Function-Addresses header	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5131_02**					
Summary:	I-CSCF shall remove P-Charging-Function-Addresses header from 2xx response.					
IUT Role:	IMS B					
References:	RQ_229_5131			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has received 180 on initial request for dialog from UE B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			←	←	**2xx response** addressed to UE A	
2		←	←		**2xx response** × a P-Charging-Function-Addresses header	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5132_01**					
Summary:	I-CSCF shall return an appropriate response to initial request to non-existent user.					
IUT Role:	IMS B					
References:	RQ_229_5132			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			×	×	UE B not registered in IMS B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		→	→		**initial INVITE** addressed to UE B ✓ a Request URI ➔ a non existing user in IMS B	
2a		←	←		**404 response**	
2b		←	←		**604 response**	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5133_01**					
Summary:	I-CSCF shall return 4XX response to initial request to non-registered user.					
IUT Role:	IMS B					
References:	RQ_229_5133			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			×	×	UE B not registered in IMS B	
			×	×	IMS B not configured with a terminating unregistered filter criterion for UE B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		↳	⇗		**initial INVITE** addressed to UE B	
2		⇖	↲		**4xx response**	

5.4.4 Dialog at IBCF

Interoperability Test Purpose						
Identifier:	**TP_IMS_5135_01**					
Summary:	If a request includes a Record-Route header the IBCF shall add its own routeable SIP URI to the top of the Record-Route header.					
IUT Role:	IMS A					
References:	RQ_229_5135			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	IMS A	**IMS B**	**UE B**			
	✓				IMS A configured for topology hiding	
	IMS A	**IMS B**	**UE B**			
Step	**Direction**				**Message**	**IF**
1	⇖		↲		**initial INVITE**	
2	↳	⇗			**initial INVITE** ✓ an additional topmost Record-Route header ✓ the IBCF SIP URI of IMS A	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5137_01**					
Summary:	The IBCF shall perform encryption for topology hiding before the request is sent.					
IUT Role:	IMS A					
References:	RQ_229_5137			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
		✓			IMS A configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	⇗			**initial INVITE** addressed to UE B	
2		↳	⇗		**initial INVITE** ✓ a Via header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Record-Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5137_02**					
Summary:	The IBCF shall perform encryption for topology hiding before 1XX response is sent.					
IUT Role:	IMS B					
References:	RQ_229_5137			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has received an initial request for a dialog from UE A	
			✓		IMS B configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			←	→	**1xx response** addressed to UE A	
2		→	←		**1xx response** ✓ Via header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ Record-Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5137_03**					
Summary:	The IBCF shall perform encryption for topology hiding before 2XX response is sent.					
IUT Role:	IMS B					
References:	RQ_229_5137			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has received 180 on initial request for dialog from UE B	
			✓		IMS B configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			←	→	**2xx response** addressed to UE A	
2		→	←		**2xx response** ✓ a Via header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Record-Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5404_01**					
Summary:	IBCF shall remove P-Charging-Vector and P-Charging-Function-Addresses header.					
IUT Role:	IMS A					
References:	RQ_229_5404			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
		✓			IMS A configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	←	→			**initial INVITE** addressed to UE B ✓ a P-Charging-Vector header ✓ a P-Charging-Function-Addresses header	
2		←	→		**initial INVITE** ✗ a P-Charging-Vector header ✗ a P-Charging-Function-Addresses header	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5408_01**					
Summary:	The IBCF shall perform encryption for topology hiding before subsequent request is sent.					
IUT Role:	IMS A					
References:	RQ_229_5408			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE A has received 200OK on initial request for dialog from UE B	
		✓			IMS A configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**ACK** addressed to UE B	
2		↳	↱		**ACK** ✓ a Via header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5408_02**					
Summary:	The IBCF shall perform encryption for topology hiding before subsequent request is sent.					
IUT Role:	IMS A					
References:	RQ_229_5408			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has received 180 on initial request for dialog from UE A	
		✓			IMS A configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**CANCEL** addressed to UE B	
2		↳	↱		**CANCEL** ✓ a Via header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Record-Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5408_03**					
Summary:	The IBCF shall perform encryption for topology hiding before subsequent request is sent.					
IUT Role:	IMS A					
References:	RQ_229_5408			**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	
		✓			IMS A configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**BYE** addressed to UE B	
2		↳	↱		**BYE** ✓ a Via header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Record-Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5408_04**					
Summary:	The IBCF shall perform encryption for topology hiding before subsequent request is sent.					
IUT Role:	IMS A					
References:	RQ_229_5408			**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	
		✓			IMS A configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**subsequent INVITE** addressed to UE B	
2		↳	↱		**subsequent INVITE** ✓ a Via header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Record-Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter ✓ a Route header ✓ encrypted consecutive header entries ✓ a tokenized-by parameter	

Interoperability Test Purpose						
Identifier:	**TP_IMS_5414_01**					
Summary:	When IBCF receives an initial INVITE request and it shall respond with a 100 (Trying) provisional response.					
IUT Role:	IMS B					
References:	RQ_229_5414			**Config Ref:**	CF_INT_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
			✓		IMS B configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	Direction				Message	IF
1		→			**initial INVITE** addressed to UE B	
2		←			**100 response**	

5.5 Messaging Procedures

5.5.1 Messaging at P-CSCF

Test Purpose						
Identifier:	**TP_IMS_5050_01**					
Summary:	When the P-CSCF receives a MESSAGE request from a UE for which a Service-Route header list exists.					
IUT Role:	IMS A					
References:	RQ_229_5050			**Config Ref:**	CF_ROAM_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	Direction				Message	IF
1		←		→	**MESSAGE**	
2		→	→		**MESSAGE** ✓ a Route header ➔ the list of Service Route header URIs from registration ✗ a P-Preferred-Identity header ✓ P-Asserted-Identity header ✓ an address of UE A ✓ the P-Charging-Vector header ✓ an icid parameter	

5.5.2 Messaging at S-CSCF

Test Purpose						
Identifier:	**TP_IMS_5097_05**					
Summary:	S-CSCF must inserts orig-ioi parameter, remove access-network-charging-info parameter and P-Access-Network-Info header before sending MESSAGE over NNI.					
IUT Role:	IMS A					
References:	RQ_229_5097			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
		×			IMS A not configured for topology hiding	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**MESSAGE** addressed to UE B	
2		↳	↱		**MESSAGE** × a Route header ➔ the S-CSCF SIP URI of IMS A ✓ a P-Charging-Vector header ✓ an icid parameter ✓ a orig-ioi parameter ➔ IMS A × a term-ioi parameter ✓ a P-Charging-Vector header × a access-network-charging-info parameter × a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5097_06**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header indicating a registered tel URI if not present for MESSAGE.					
IUT Role:	IMS A					
References:	RQ_229_5097			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓				UE A registered public identities containing a Tel URI	
	✓				UE A default registered public identity is a SIP URI	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**MESSAGE** addressed to UE B × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔|| a Tel URI of UE	
2		↳	↱		**MESSAGE** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE A ✓ a P-Asserted-Identity header ➔ a Tel URI of UE A	

Test Purpose						
Identifier:	**TP_IMS_5097_07**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header indicating a registered SIP URI if not present for MESSAGE.					
IUT Role:	IMS A					
References:	RQ_229_5097			**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 default registered public identity is a Tel URI	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1	↳	↱			**MESSAGE** addressed to UE B × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔ a Tel URI of UE A	
2		↳	↱		**MESSAGE** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE A ✓ a P-Asserted-Identity header ➔ a Tel derived SIP URI of UE A	

Test Purpose						
Identifier:	**TP_IMS_5097_08**					
Summary:	S-CSCF uses ENUM/DNS to translate Tel URIs to SIP URIs in MESSAGE requests.					
IUT Role:	IMS A					
References:	RQ_229_5097			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**DNS A**	**IMS B**	**UE B**	
	✓	✓				UE A registered in IMS A
				✓	✓	UE B registered in IMS B
			✓		✓	DNS B configured with an ENUM entry for Tel URI E.164 Number of UE B
	UE A	**IMS A**	**DNS A**	**IMS B**	**UE B**	
Step	**Direction**					**Message**	**IF**
1	↳	↱				**MESSAGE** addressed to UE B ✓ a Request URI ➔ a Tel URI	
2		↳	↱			**DNS Query** ✓ the Tel URI E.164 Number	
3		↰	↲			**DNS Response** ✓ NAPTR Resource Record ➔ the SIP URI of UE B	
4		↳		↱		**MESSAGE** addressed to UE B ✓ a Request URI ➔ a SIP URI of UE B ✓ a P-Charging-Vector header × a access-network-charging-info parameter	

Test Purpose							
Identifier:	**TP_IMS_5097_10**						
Summary:	MESSAGE handling by S-CSCF with matching filter criteria AS.						
IUT Role:	IMS B						
References:	RQ_229_5097				**Config Ref:**	CF_ROAM_AS	
	Entities					**Condition**	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
		✓			✓	UE B visiting IMS A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
			✓	✓		AS B within the trust domain of IMS B	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1		↳	⇗			**MESSAGE** addressed to UE A	
2			↳	⇗		**MESSAGE** ✓ a Route header ➔ the SIP URI of AS B ✓ a P-Charging-Function-Addresses header	

Test Purpose						
Identifier:	**TP_IMS_5108_02**					
Summary:	Standalone request; terminated at the served user.					
IUT Role:	IMS B					
References:	RQ_229_5108			**Config Ref:**	CF_ROAM_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		↳	⇗		**MESSAGE** addressed to UE B ✓ a P-Charging-Vector header ✓ an icid parameter	
2		↲	⇙		**MESSAGE** ✓ no Route header ➔ the S-CSCF SIP URI of IMS B ✓ a P-Charging-Vector header ✓ the same icid parameter ✖ ioi parameters ✓ a Record-Route header ✓ the S-CSCF SIP URI of IMS B	

Test Purpose						
Identifier:	**TP_IMS_5108_06**					
Summary:	S-CSCF rejects barred users on MESSAGE					
IUT Role:	IMS B					
References:	RQ_229_5108			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
			✓	✓	UE B barred user in IMS B	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		↳	⇗		**MESSAGE** addressed to UE B ✓ a Request URI ➔ a barred user in IMS B	
2		↲	⇙		**404 response**	

Test Purpose						
Identifier:	**TP_IMS_5117_01**					
Summary:	S-CSCF remove access-network-charging-info parameter and P-Access-Network-Info header from 1xx response to standalone transaction.					
IUT Role:	IMS B					
References:	RQ_229_5117			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B has received a standalone request	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			🡸	🡻	**1xx response** addressed to UE A	
2		🡸	🡻		**1xx response** ✓ a P-Charging-Vector header × a access-network-charging-info parameter × a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5117_02**					
Summary:	S-CSCF remove access-network-charging-info parameter and P-Access-Network-Info header from 2xx response to standalone transaction.					
IUT Role:	IMS B					
References:	RQ_229_5117			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B has received a standalone request	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			🡸	🡻	**2xx response** addressed to UE A	
2		🡸	🡻		**2xx response** ✓ a P-Charging-Vector header × a access-network-charging-info parameter × a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5117_04**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header in 2xx response from UE for initial or standalone request indicating a registered tel URI if not present.					
IUT Role:	IMS B					
References:	RQ_229_5117			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B registered public identities containing a Tel URI	
				✓	UE B default registered public identity is a SIP URI	
	✓			✓	UE B has received a standalone request from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			🡸	🡻	**2xx response** addressed to UE A × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔|| a Tel URI of UE B	
2		🡸	🡻		**2xx response** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE B ✓ a P-Asserted-Identity header ➔ a Tel URI of UE B	

Test Purpose						
Identifier:	**TP_IMS_5117_05**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header in 1xx response from UE for initial request indicating a registered SIP URI if not present.					
IUT Role:	IMS B					
References:	RQ_229_5117			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B default registered public identity is a Tel URI	
	✓			✓	UE B has received a standalone request from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			🡸	🡻	**1xx response** addressed to UE A × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔ a Tel URI of UE B	
2		🡸	🡻		**1xx response** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE B ✓ a P-Asserted-Identity header ➔ a Tel derived SIP URI of UE B	

Test Purpose						
Identifier:	**TP_IMS_5117_06**					
Summary:	S-CSCF inserts a second P-Asserted-Identity header in 2xx response from UE for initial request indicating a registered SIP URI if not present.					
IUT Role:	IMS B					
References:	RQ_229_5117			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
				✓	UE B default registered public identity is a Tel URI	
	✓			✓	UE B has received a standalone request from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			🡸	🡻	**2xx response** addressed to UE A × a P-Preferred-Identity header **or** ✓ a P-Preferred-Identity header ➔ a Tel URI of UE B	
2		🡸	🡻		**2xx response** ✓ a P-Asserted-Identity header ➔ the default registered public identity of UE B ✓ a P-Asserted-Identity header ➔ a Tel derived SIP URI of UE B	

Test Purpose						
Identifier:	**TP_IMS_5118_01**					
Summary:	S-CSCF include term-ioi parameter and restores orig-ioi in 200 responses to standalone requests.					
IUT Role:	IMS B					
References:	RQ_229_5118			**Config Ref:**	CF_INT_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
			✓	✓	UE B registered in IMS B	
	✓			✓	UE B has received a standalone request from UE A	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1			←	→	**200 response** addressed to UE A	
2		→	←		**200 response** ✓ a P-Charging-Vector header ✓ a 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							
Identifier:	**TP_IMS_5097_09**						
Summary:	Initial INVITE handling by S-CSCF with matching filter criteria AS.						
IUT Role:	IMS B						
References:	RQ_229_5097				**Config Ref:**	CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
		✓			✓	UE B visiting IMS A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
			✓	✓		AS B within the trust domain of IMS B	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1		←	→			**initial INVITE** addressed to UE A	
2			←	→		**initial INVITE** ✓ a Route header ➔ the SIP URI of AS B ✓ a P-Charging-Function-Addresses header	

Test Purpose							
Identifier:	**TP_IMS_5108_03**						
Summary:	Request for a initial dialog terminated at the served user.						
IUT Role:	IMS B						
References:	RQ_229_5108				**Config Ref:**	CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
		✓			✓	UE B registered in IMS A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
		✓			✓	UE B visiting IMS A	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	Direction					Message	IF
1		↳	↱			**initial** INVITE addressed to UE B	
2			↳	↱		**INVITE** ✓ a topmost Route header ➔ the SIP URI of AS B ✓ a Route header ➔ the S-CSCF SIP URI of IMS B	

Test Purpose							
Identifier:	**TP_IMS_5108_04**						
Summary:	Standalone request; terminated at the served user.						
IUT Role:	IMS B						
References:	RQ_229_5108				**Config Ref:**	CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
		✓			✓	UE B registered in IMS A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
		✓			✓	UE B visiting IMS A	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	Direction					Message	IF
1		↳	↱			**MESSAGE** addressed to UE B	
2			↳	↱		**MESSAGE** ✓ a topmost Route header ➔ the SIP URI of AS B ✓ a Route header ➔ the S-CSCF SIP URI of IMS B	

Test Purpose						
Identifier:	**TP_IMS_5109_01**					
Summary:	S-CSCF returns 408 or 5xx response to initial terminating INVITE when there is no response from AS and filter criterion indicates the value SESSION_TERMINATED.					
IUT Role:	IMS B					
References:	RQ_229_5109			**Config Ref:**	CF_INT_CALL	
	Entities				Condition	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
				×	UE B not registered	
			✓	✓	IMS B configured with a terminating unregistered filter criterion for UE B indicating SESSION TERMINATED on INVITE	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	Direction				Message	IF
1		↳	↱		**initial INVITE** addressed to UE B	
2a		↰	↲		**408 response**	
2b		↰	↲		**5xx response**	

Test Purpose							
Identifier:	**TP_IMS_5110_01**						
Summary:	Forward 200 from AS.						
IUT Role:	IMS A						
References:	RQ_229_5110				**Config Ref:**	CF_INT_AS	
	Entities					**Condition**	
	UE A	**AS A**	**IMS A**	**IMS B**	**UE B**		
	✓		✓			UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
		✓	✓			IMS A configured with filter criteria to contact AS A	
	✓				✓	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**
1		↳	⇨			**200 response** addressed to UE B	
2			↳	⇨		**200 response**	

Test Purpose						
Identifier:	**TP_IMS_5114_01**					
Summary:	S-CSCF should turn down initial dialog request when terminated at the not registered served user.					
IUT Role:	IMS B					
References:	RQ_229_5114			**Config Ref:**	CF_INT_AS	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓		✓		UE A registered in IMS B	
				×	UE B not registered	
			×		IMS B not configured with filter criteria to contact any AS	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		↳	⇨		**initial INVITE** addressed to UE B	
2		↰	↲		**4xx response**	

Test Purpose						
Identifier:	**TP_IMS_5114_02**					
Summary:	S-CSCF should turn down standalone request when terminated at the not registered served user.					
IUT Role:	IMS B					
References:	RQ_229_5114			**Config Ref:**	CF_INT_CALL	
	Entities				**Condition**	
	UE A	**IMS A**	**IMS B**	**UE B**		
	✓	✓			UE A registered in IMS A	
				×	UE B not registered	
			×		IMS B not configured with filter criteria to contact any AS	
	UE A	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**				**Message**	**IF**
1		↳	⇨		**MESSAGE** addressed to UE B	
2		↰	↲		**4xx response**	

Test Purpose							
Identifier:	**TP_IMS_5115_07**						
Summary:	S-CSCF include term-ioi parameter and restores orig-ioi in 1xx responses from AS to initial requests in terminating network.						
IUT Role:	IMS B						
References:	RQ_229_5115				**Config Ref:**	CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			×		×	UE B not registered in IMS B	
			✓	✓		IMS B configured with filter criteria to contact AS B	
	✓			✓		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			←	→		**1xx response** addressed to UE A	
2		←	→			**1xx response** ✓ a P-Charging-Vector header ✓ a orig-ioi parameter ➔ operator identifier of IMS A ✓ a term-ioi parameter ➔ operator identifier of IMS B	

Test Purpose							
Identifier:	**TP_IMS_5115_08**						
Summary:	S-CSCF include term-ioi parameter and restores orig-ioi in 2xx responses from AS to initial requests in terminating network.						
Clause:							
References:	RQ_229_5115				**Config Ref:**	CF_INT_CALL	
IUT Role:	IMS B				**Test Case:**	**TC_IMS_5115_08**	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			×		×	UE B not registered in IMS B	
	✓			✓		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			←	→		**2xx response** addressed to UE A	
2		←	→			**2xx response** ✓ a P-Charging-Vector header ✓ an orig-ioi parameter ➔ operator identifier of IMS A ✓ a term-ioi parameter ➔ operator identifier of IMS B	

Test Purpose							
Identifier:	**TP_IMS_5118_02**						
Summary:	S-CSCF include term-ioi parameter and restores orig-ioi in 200 responses from AS to standalone requests.						
IUT Role:	IMS B						
References:	RQ_229_5118				**Config Ref:**	CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			×		×	UE B not registered in IMS B	
			✓	✓		IMS B configured with filter criteria to contact AS B	
	✓			✓		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			←	→		**200 response** addressed to UE A	
2		←	→			**200 response** ✓ a P-Charging-Vector header ✓ a orig-ioi parameter ➔ operator identifier of IMS A ✓ a term-ioi parameter ➔ operator identifier of IMS B	

Test Purpose							
Identifier:	**TP_IMS_5302_01**						
Summary:	The S-CSCF shall retain the P-Access-Network-Info header and the access-network-charging-info parameter in the P-Charging-Vector header a 1xx or 2xx response to AS.						
IUT Role:	IMS B						
References:	RQ_229_5302				**Config Ref:**	CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
	✓				✓	UE B has received a subsequent request in a dialog from UE A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
			✓	✓		AS B within the trust domain of IMS B	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	Direction					Message	IF
1		←	→			**2xx response** addressed to UE A	
2			←	→		**2xx response** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	

Test Purpose							
Identifier:	**TP_IMS_5302_02**						
Summary:	The S-CSCF receives a 1xx or 2xx response and not AS in same trust domain then it shall remove the P-Access-Network-Info header and the access-network-charging-info parameter in the P-Charging-Vector header.						
IUT Role:	IMS B						
References:	RQ_229_5302				**Config Ref:**	CF_ROAM_AS	
	Entities					**Condition**	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
	✓				✓	UE B has received a subsequent request in a dialog from UE A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
				×		AS B not within the trust domain	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1		↳	⇗			**2xx response** addressed to UE A	
2			↳	⇗		**2xx response** ✓ a P-Charging-Vector header × an access-network-charging-info parameter × a P-Access-Network-Info header	

Test Purpose						
Identifier:	**TP_IMS_5206_01**					
Summary:	REGISTER request if there is at least on AS that matches Filter Criteria.					
IUT Role:	IMS B					
References:	RQ_229_5206			**Config Ref:**	CF_ROAM_AS	
	Entities				**Condition**	
	IMS B	**AS B**	**UE B**			
		✓	✓		UE B configured with filter criteria to contact AS B	
	✓		✓		IMS B has challenged with a 401 response the REGISTER request of UE B	
	IMS B	**AS B**	**UE B**			
Step	**Direction**				**Message**	**IF**
1	↲		⇖		**protected REGISTER** ✓ an Authorization header ✓ an integrity-protected parameter set yes	
2	↳	⇗			**REGISTER**	

Test Purpose							
Identifier:	**TP_IMS_5308_01**						
Summary:	Retain the access-network-charging-info parameter from the P-Charging-Vector header in 180 to AS.						
IUT Role:	IMS A						
References:	RQ_229_5308				**Config Ref:**	CF_INT_AS	
	Entities					**Condition**	
	UE A	**AS A**	**IMS A**	**IMS B**	**UE B**		
	✓		✓			UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
		✓	✓			IMS A configured with filter criteria to contact AS A	
		✓			✓	AS A has received an initial request for a dialog from UE B	
	UE A	**AS A**	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1	↲		⇗			**180 response** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	
2		⇖	↲			**180 response** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	

Test Purpose							
Identifier:	**TP_IMS_5308_02**						
Summary:	Retain the access-network-charging-info parameter from the P-Charging-Vector header in 200 to AS.						
IUT Role:	IMS A						
References:	RQ_229_5308			**Config Ref:**		CF_INT_AS	
	Entities					Condition	
	UE A	**AS A**	**IMS A**	**IMS B**	**UE B**		
	✓		✓			UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
		✓	✓			IMS A configured with filter criteria to contact AS A	
		✓			✓	AS A has received 180 on initial request for dialog from UE B	
	UE A	**AS A**	**IMS A**	**IMS B**	**UE B**		
Step	Direction					Message	IF
1	↳		↛			**200 response** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	
2		↚	↛			**200 response** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	

Test Purpose							
Identifier:	**TP_IMS_5310_01**						
Summary:	Retaining the P-Access-Network-Info header and the access-network-charging-info parameter from the P-Charging-Vector.						
IUT Role:	IMS B						
References:	RQ_229_5310			**Config Ref:**		CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
	✓			✓		AS B has initiated a dialog with UE A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
				✓		AS B is within the trust domain of IMS B	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	Direction					Message	IF
1		↳	↛			**subsequent INVITE** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	
2			↳	↛		**INVITE** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	

Test Purpose							
Identifier:	**TP_IMS_5310_02**						
Summary:	Not retaining the P-Access-Network-Info header and the access-network-charging-info parameter from the P-Charging-Vector.						
IUT Role:	IMS B						
References:	RQ_229_5310			**Config Ref:**		CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
	✓			✓		AS B has initiated a dialog with UE A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
				×		AS B is not within the trust domain of IMS B	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	Direction					Message	IF
1		↳	↛			**subsequent INVITE** ✓ P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	
2			↳	↛		**INVITE** ✓ a P-Charging-Vector header ✓ no access-network-charging-info parameter × a P-Access-Network-Info header	

Test Purpose							
Identifier:	**TP_IMS_5310_03**						
Summary:	Retaining in UPDATE the P-Access-Network-Info header and the access-network-charging-info parameter from the P-Charging-Vector.						
IUT Role:	IMS B						
References:	RQ_229_5310			**Config Ref:**		CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
	✓			✓		AS B has initiated a dialog with UE A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
				✓		AS B is within the trust domain of IMS B	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	Direction					Message	IF
1		↳	↛			**subsequent UPDATE** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	
2			↳	↛		**UPDATE** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	

Test Purpose							
Identifier:	**TP_IMS_5310_04**						
Summary:	Not retaining in UPDATE the P-Access-Network-Info header and the access-network-charging-info parameter from the P-Charging-Vector.						
IUT Role:	IMS B						
References:	RQ_229_5310			**Config Ref:**		CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
	✓			✓		AS B has initiated a dialog with UE A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
				×		AS B is not within the trust domain of IMS B	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	Direction					**Message**	**IF**
1		↳	↛			**subsequent UPDATE** ✓ P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	
2			↳	↛		**UPDATE** ✓ a P-Charging-Vector header ✓ no access-network-charging-info parameter × a P-Access-Network-Info header	

Test Purpose							
Identifier:	**TP_IMS_5312_01**						
Summary:	Retaining the access-network-charging-info parameter from the P-Charging-Vector on 200 (OK) response.						
IUT Role:	IMS B						
References:	RQ_229_5312			**Config Ref:**		CF_ROAM_AS	
	Entities					Condition	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
	✓				✓	UE B has initiated a dialog with UE A	
			✓	✓		IMS B configured with filter criteria to contact AS B	
	✓				✓	UE B having sent subsequent INVITE or UPDATE to UE A	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	Direction					**Message**	**IF**
1		↳	↛			**200 response** addressed to UE A ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter	
2			↳	↛		**200 response** ✓ a P-Charging-Vector header ✓ a access-network-charging-info parameter	

Test Purpose							
Identifier:	**TP_IMS_5313_01**						
Summary:	Retaining the P-Access-Network-Info header and the access-network-charging-info parameter from the P-Charging-Vector on any SIP request.						
IUT Role:	IMS B						
References:	RQ_229_5313			**Config Ref:**		CF_INT_AS	
	Entities					Condition	
	UE A	**AS A**	**IMS B**	**IMS B**	**UE B**		
	✓		✓			UE A registered in IMS B	
				✓	✓	UE B registered in IMS B	
		✓	✓			IMS B configured with filter criteria to contact AS A	
		✓			✓	AS A has initiated a dialog with UE B	
		✓				AS A is within the trust domain of IMS B	
	UE A	**AS A**	**IMS B**	**IMS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1			🡸	🡺		**a response** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	
2		🡸	🡺			**The response** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	

Test Purpose							
Identifier:	**TP_IMS_5313_02**						
Summary:	Not retaining the P-Access-Network-Info header and the access-network-charging-info parameter from the P-Charging-Vector on any SIP request.						
Clause:							
References:	RQ_229_5313			**Config Ref:**		CF_INT_AS	
IUT Role:	IMS A			**Test Case:**		**TC_IMS_5313_02**	
	Entities					Condition	
	UE A	**AS A**	**IMS A**	**IMS B**	**UE B**		
	✓		✓			UE A registered in IMS A	
				✓	✓	UE B registered in IMS B	
		✓	✓			IMS A configured with filter criteria to contact AS A	
		✓			✓	AS A has initiated a dialog with UE B	
		×				AS A is not within the trust domain of IMS A	
	UE A	**AS A**	**IMS A**	**IMS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1			🡸	🡺		**a response** ✓ a P-Charging-Vector header ✓ an access-network-charging-info parameter ✓ a P-Access-Network-Info header	
2		🡸	🡺			**the response** ✓ a P-Charging-Vector header × access-network-charging-info parameter × a P-Access-Network-Info header	

Test Purpose							
Identifier:	**TP_IMS_5320_01**						
Summary:	S-CSCF is failing to receive a SIP response or receive 408 (Request Timeout) response or a 5xx response from the AS.						
IUT Role:	IMS B						
References:	RQ_229_5320				**Config Ref:**	CF_ROAM_AS	
	Entities					**Condition**	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
	✓	✓				UE A registered in IMS A	
			✓		✓	UE B registered in IMS B	
				✓	✓	AS B has received an initial request for a dialog from UE B	
			✓	✓		AS B filter criteria default handling in IMS B set to SESSION TERMINATED	
	UE A	**IMS A**	**IMS B**	**AS B**	**UE B**		
Step	**Direction**					**Message**	**IF**
1			⇦‖	‖⇨		**no response**	
2a			⇩		⇨	**408 response**	
2b			⇩		⇨	**5xx response**	

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_18601101v020201p0.zip which accompanies the present document. The raw text files have been converted to a symbolic table format to allow better readability.

Annex B (normative): IMS NNI Interoperability Test Configurations

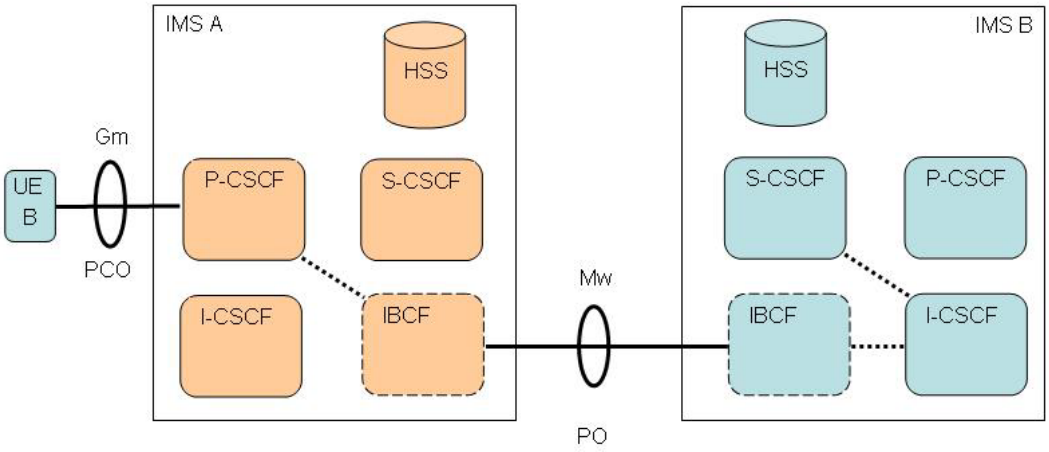
IMS NNI interoperability test configuration identifiers have been composed using on the following abbreviations:

REG:	Only one UE
CALL:	One or two UEs
AS:	One or two UEs plus Application Server for one UE
ROAM:	UE B is roaming in home network of UE A
INT:	UE A and B are in interoperating home networks

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

Roaming Registration

CF_ROAM_REG

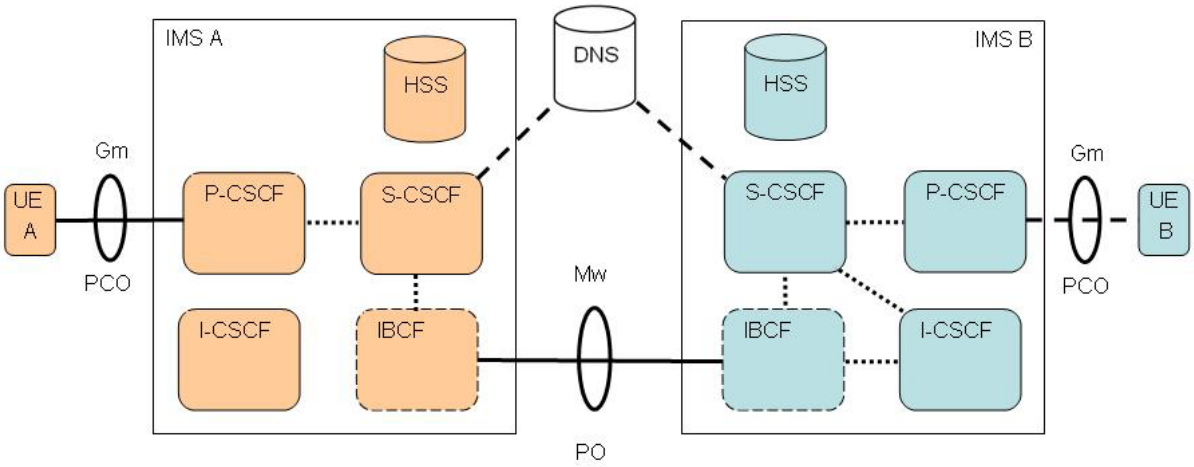


Precondition:
Different network operators performing origination and termination, UE_B roaming in Home network A (ROAM), UE_B not yet registered (REG), neither UE_A nor AS involved, IBCF may be involved
Test configuration for:
Registration requests and responses from UE_B
Example:
REGISTER prior to IMS VoIP voice call from UE_B

Figure B.1: CF_ROAM_REG

Interworking Call

CF_INT_CALL

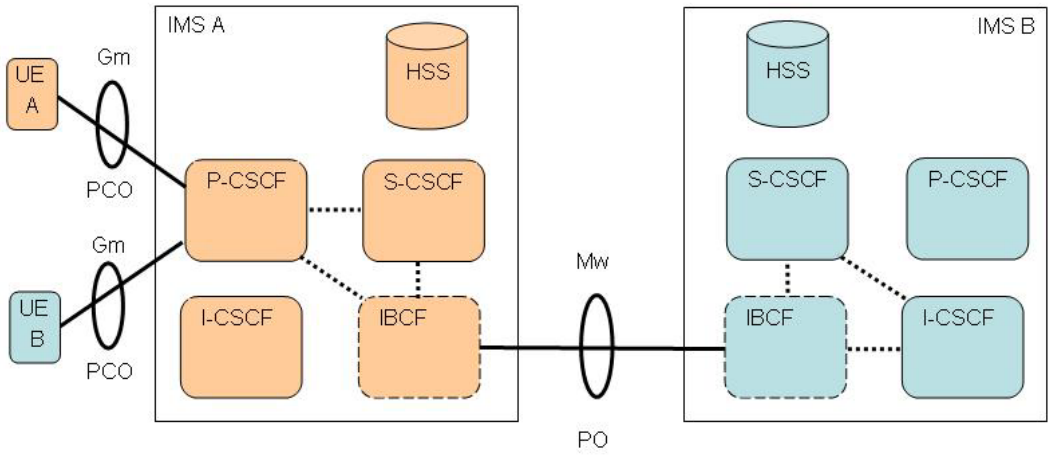


Precondition:
Different network operators performing origination and termination, both UEs or only UE A in home networks (INT), both UE's registered, no AS, a common interconnect DNS and local DNSs for each IMS may be involved, IBCF may be involved
Test configuration for:
Requests and responses between UE_A and UE_B in call (CALL) and messaging scenarios
Unsuccessful initial requests and responses from UE_A (when UE_B is not registered)
Example:
Initial INVITE in IMS VoIP voice call from UE_A to UE_B

Figure B.2: CF_INT_CALL

Roaming Call

CF_ROAM_CALL

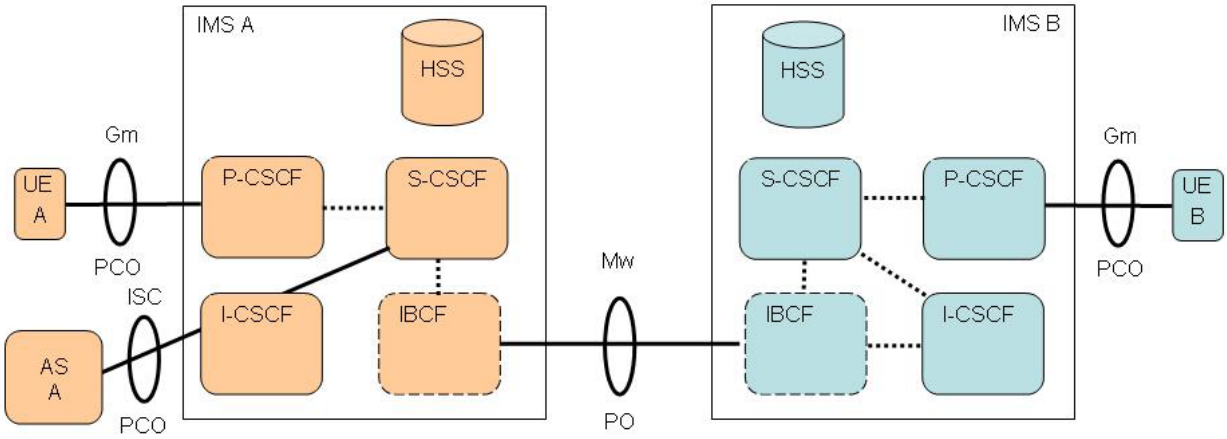


Precondition:
Different network operators performing origination and termination, UE_B roaming (ROAM) via IMS_A, UE_A in home network, both UEs are registered, no AS, IBCF may be involved
Test configuration for:
Requests and responses between UEB and UE_A in call (CALL) and messaging scenarios
Example:
Initial INVITE in IMS VoIP voice call from UE_B to UE_A

Figure B.3: CF_ROAM_CALL

Interworking Application Server

CF_INT_AS

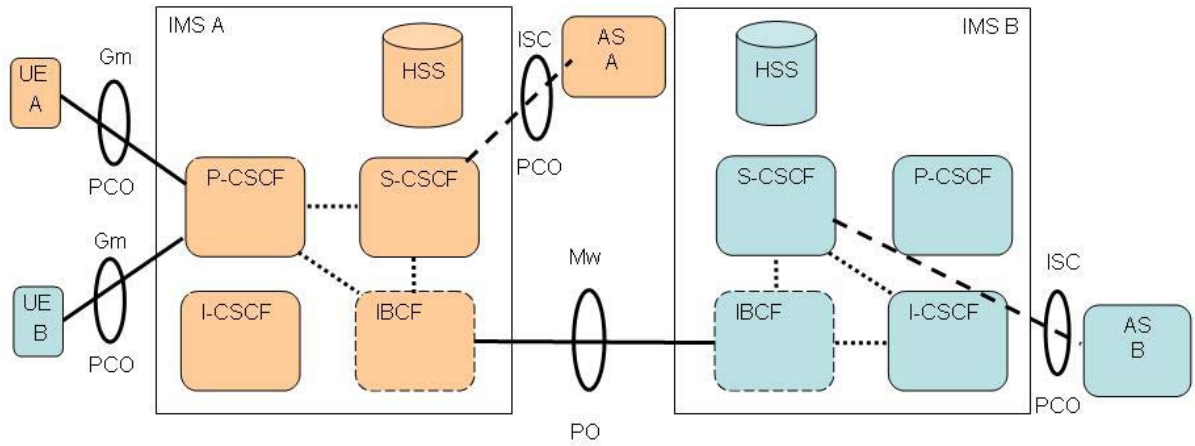


Precondition:
Different network operators performing origination and termination, UE_A and UE_B in home networks (INT), both UEs registered, only AS for UE_A (AS), IBCF may be involved
Test configuration for:
Requests and responses between AS_A and UEs
Example:
Initial INVITE in IMS VoIP voice call unconditionally forwarded to UE_B by AS_A (CFU). AS_A acts as routing AS

Figure B.4: CF_INT_AS

Roaming Application Server

CF_ROAM_AS



Precondition:
Different network operators performing origination and termination, UE_B roaming (ROAM) via IMS_A, UE_A in home network, both UEs or registered, AS for UE_A and UE B may be involved (AS), IBCF may be involved
Test configuration for:
Requests and responses between AS_B and UEs
Unsuccessful initial requests and responses from UE_A (when UE_B and AS_B are not available)
Example:
Initial INVITE 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

History

Document history		
V1.1.1	February 2009	Publication
V2.2.1	March 2009	Publication