ETSI TS 102 901 V2.1.1 (2011-11)



IMS Network Testing (INT); IMS NNI Interoperability Test Specifications; IMS NNI interoperability test descriptions for RCS

Reference RTS/INT-00051

Keywords IMS, interworking, RCS, NNI, testing

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

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Foreword

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

1 Scope

The present document specifies interoperability Test Descriptions (TDs) for Inter-IMS Network to Network Interface (II-NNI) interoperability testing for the Rich Communication Suite (RCS) related services based on RCS-e Advanced Communications Services and Client Specification [11]. The Stage 3 Session Initiation Protocol (SIP) and Session Description Protocol (SDP) standard, TS 124 229 [1] and Inter-IMS Network to Network Interface, TS 129 165 [7] *define the functionalities on which the RCS services are based. TDs have been specified on the basis of the Test Purposes (TPs) and Test Suite Structure (TSS) presented in TS 186 011-1 [2]. TP fragments presented in the present document as part of TDs are defined using the TPLan notation of ES 202 553 [5]. TDs have been written based on the test specification framework described in TS 102 351 [3] and the interoperability testing methodology defined in TS 102 237-1 [4], i.e. interoperability testing with a conformance relation.*

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 [6].

2 References

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

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

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

2.1 Normative references

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

[1]	ETSI TS 124 229 (V8.10.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 version 8.10.0 Release 8)".
[2]	ETSI TS 186 011-1 (V3.1.1): "IMS Network Testing (INT); IMS NNI InteroperabilityTest Specifications; Part 1: Test Purposes for IMS NNI Interoperability".
[3]	ETSI TS 102 351: "Methods for Testing and Specification (MTS); Internet Protocol Testing (IPT); IPv6 Testing: Methodology and Framework".
[4]	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".
[5]	ETSI ES 202 553: "Methods for Testing and Specification (MTS); TPLan: A notation for expressing Test Purposes".
[6]	ETSI TS 134 229-1 (V8.5.0): "Universal Mobile Telecommunications System (UMTS); LTE; Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Part 1: Protocol conformance specification (3GPP TS 34.229-1 version 8.5.0 Release 8)".
[7]	ETSI TS 129 165 (V8.4.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Inter-IMS Network to Network Interface (NNI) (3GPP TS 29.165 version 8.4.0 Release 8)".

- [8] RCS-e Advanced Communications: "Services and Client Specification. Version 1.1".
- [9] ETSI TS 186 011-2 (V3.1.1): "IMS Network Testing (INT); IMS NNI Interoperability Test Specifications; Part 2: Test Description for IMS NNI Interoperability".
- [10] IETF RFC 4975: "The Message Session Relay Protocol (MSRP)".
- [11] IETF RFC 4976: "Relay Extensions for the Message Sessions Relay Protocol (MSRP)".
- [12] IETF RFC 6135: "An Alternative Connection Model for the Message Session Relay Protocol (MSRP)".
- [13] IETF RFC 5547: "A Session Description Protocol (SDP) Offer/Answer Mechanism to Enable File Transfer".

2.2 Informative references

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

Not applicable.

3 Abbreviations

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

3GPP	3 rd Generation Partnership Project
AS	(IMS) Application Server
CF	(Test) ConFiguration
CFW	Call FloW
CN	Core Network
CSCF	Call Session Control Function
DNS	Domain Name System
FQDN	Full Qualified Domain Name
HSS	Home Subscriber Server
IBCF	Interconnection Border Control Gateway
II-NNI	Inter-IMS Network to Network Interface
IM	Instant Messaging
IMS	IP Multimedia Subsystem
IOI	Inter Operator Identifier
IP	Internet Protocol
ISC	IMS Service Control
MRFC	Multimedia Resource Function Controller
MRFP	Multimedia Resource Function Processor
NNI	Network-to-Network Interface
P-CSCF	Proxy CSCF
PO	Point of Observation
PS	Presence Server
RCS	Rich Communication Suite
RLS	Resource List Server
S-CSCF	Serving CSCF
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SUT	System Under Test
TD	Test Description
TP	Test Purpose
TPLan	Test Purpose Notation
TSS	Test Suite Structure
UC	Use Case
UE	User Equipment

URI	Uniform Record Identifier
XMDS	XML Document Management Server

4 IMS NNI Interoperability Test Specification

4.1 Introduction

The IMS NNI Interoperability Test Descriptions (TDs) defined in the following clauses are derived from the Test Purposes (TPs) specified in TS 186 011-1 [2]. *The TDs cover the services (instant messaging, content sharing and presence) as defined in RCS-e specification* [8].

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4.2 Test Prerequisites

The test prerequisites as described in TS 186 011-2 [9], clause 4.2, apply.

4.3 Test Infrastructure

The test infrastructure as described in TS 186 011-2 [9], clause 4.3, applies with the following additions.

4.3.1 Core IMS Nodes

4.3.2 External IMS core Nodes

4.3.2.1 HSS

Table 1 of TS 186 011-2 [9], clause 4.3.1.5.2, has to be extended by the following users for RCS services.

|--|

Private Identity	Public Identity 1 (SIP URI)	Public Identity 2 (Tel URI)	Default Public Identity	Filter criteria
userPRES_priv	userPRES	na	1	contact Presence AS
userIM_priv	userIM	na	1	contact IM AS for Instant Messaging
userFT_priv	userFT	na	1	contact IM AS for File Transfer
userSHARE_priv	userSHARE	na	1	

4.3.2.2 Specific Application Servers for RCS-e

Interworking between external Application Servers (AS) and the IMS core is under the scope of the present document. The ISC interface between the S-CSCF and the AS is used as a Point of Observation (PO) for NNI interoperability tests.

4.3.2.2.1 Presence Server

The presence server is an optional AS that acts as an intermediate for the user to provide Social Presence information to other users and other users to subscribe or get Social Presence information of a certain user, i.e. Presentity.

4.3.2.2.2 IM Server

The IM server is an AS within the IMS architecture that provides the IM service for the subscribers. It is responsible for a set of functions such as the control of the session setup, the enforcement of policies related to incoming or outgoing IM, the provision of information related to group members. Optionally the IM server may support "store and forward" feature.

4.3.2.2.3 Node Configuration

The AS should be configured to support the pre-requisites outlined in TS 186 011-2 [9], clause 4.2. The test descriptions in the present document assume that an AS supports the use of the IM/chat service and the following optional services: Social Presence, RCS-e services during a call and File transfer (see RCS-e descriptions in [8]). In the case that an AS does not support one or more of these services, only a selected subset of the test descriptions in the present document should be used for IMS core network interoperability testing, i.e. test descriptions which do not contain any pass criteria related to these supplementary services.

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4.3.2 Test Configurations

The test configurations as described in TS 186 011-2 [9] clause 4.3.4 apply. It should be mentioned that test configurations for roaming scenarios are considered as optional.

4.4 Use Cases

In addition to the Use Cases in the present clause the Use Cases as described in TS 186 011-2 [9], clause 4.4 apply. It should be mentioned that Use Cases for roaming scenarios are considered as optional.

4.4.1 Capability discovery

4.4.1.1 General description

According to the RCS-e specification [8] the capability or service discovery mechanism as the main process for retrieving the subset RCS-e services available for other contacts is based on two methods:

- Capability discovery process through OPTIONS message;
- Capability discovery via presence.

Capability discovery process through OPTIONS message Use Cases are described in clauses 4.4.1.2 and 4.4.1.3.

The use of capability discovery via presence method assumes that user additionally subscribed to an optional Social Presence service. In this case capability discovery should be performed using Social Presence service procedures. Use Cases for Social Presence services including capability discovery issues are described in clause 4.4.2.

It should be mentioned that in both capability discovery methods UE A and UE B should be registered on corresponding IMS networks A and B depending on the test scenarios (interworking and roaming).

4.4.1.2 UC_RCS_1_I: SIP message flow for Capability discovery process through OPTIONS message with CF_INT_AS

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering).

Step	Action	CF_INT_AS
1	User A selects a contact of user B in the phone address book	Step 1
2	User B is informed about user A capabilities	Step 7
3	User A is informed about user B capabilities	Step 13

The expected call flow sequence is:

Step	Direction								Message	Comment
	U s r A	UEA	I M S A	I B C F A	I B C F B	I M S B	U E B	U s e r B		
1										User A selects a contact of user B in the phone address book
2									OPTIONS	UE_A sends OPTIONS to IMS_A with Accept- contact header containing user A capabilities (RCS-e services Tags)
3				\rightarrow					OPTIONS	IMS_A forwards OPTIONS to IBCF_A
4					\rightarrow				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
5						→			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
6							\rightarrow		OPTIONS	IMS_B forwards OPTIONS to UE_B
7										User B is informed about user A capabilities
8						←			200 OK	UE_B responds with 200 OK to IMS_B with Contact header containing user B capabilities (RCS-e services Tags)
9					←				200 OK	IMS_B forwards 200 OK to IBCF_B
10				←					200 OK	IBCF_B forwards 200 OK to IBCF_A
11			←						200 OK	IBCF_A forwards 200 OK to IMS_A
12		←							200 OK	IMS_A forwards 200 OK to UE_A
13										User A is informed about user B capabilities

4.4.1.3 UC_RCS_1_R: SIP message flow for Capability discovery process through OPTIONS message with CF_ROAM_AS (OPTIONAL)

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering).

Step	Action	CF_INT_AS
1	User A selects a contact of user B in the phone address book	Step 1
2	User B is informed about user A capabilities	Step 10
3	User A is informed about user B capabilities	Step 19

The expected call flow sequence is:

Step		Direction						Message	Comment		
	U	l	J	I	Τ	Ι	I	U	U		
	S		Ξ	M	В	B	M	E	S		
	е		4	S	C	C	S	в	е		
	r A			A	F A	B	в		r B		
1		-			Ť	<u> </u>			<u> </u>		User A selects a contact of user B in the phone
_											address book
2										OPTIONS	UE_A sends OPTIONS to IMS_A with Accept-
2				>							contact header containing user A capabilities
ļ											(RCS-e services Tags)
3					\rightarrow					OPTIONS	IMS_A forwards OPTIONS to IBCF_A
4										OPTIONS	IDCF_A IOIWAIUS OPTIONS IO IDCF_D
5										OPTIONS	IBCE B forwards OPTIONS to IMS_B
5							\rightarrow				
6										OPTIONS	IMS B forwards OPTIONS to IBCF B
Ŭ						-					
7					←					OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
8										OPTIONS	IBCF_A forwards OPTIONS to IMS_A
				Ì							
9								\rightarrow		OPTIONS	IMS_A forwards OPTIONS to UE_B
											Lisen Die informanischer Aussen Aussen bildige
10											User B is informed about user A capabilities
						_				200 OK	UE B responds with 200 OK to IMS A with
11				\leftarrow	_	_					Contact header containing user B capabilities
											(RCS-e services Tags)
12					<u>ــ</u>					200 OK	IMS_A forwards 200 OK to IBCF_A
					1						
13						\rightarrow				200 OK	IBCF_A forwards 200 OK to IBCF_B
										000.01/	
14							\rightarrow			200 OK	IBCF_B forwards 200 OK to IMS_B
45										200 0K	IMS R forwards 200 OK to IRCE R
15						←	—			200 01	
16										200 OK	IBCE B forwards 200 OK to IBCE A
					←						
17										200 OK	IBCF_A forwards 200 OK to IMS_A
				<u>(</u>	-						
18			/							200 OK	IMS_A forwards 200 OK to UE_A
19	4										User A is informed about user B capabilities
	Ì										

4.4.2 Social Presence service

4.4.2.1 General description

According to RCS-e specification [11] the Social Presence service is assumed to be optional.

If the Social Presence service is implemented on the network there could be also provided the capability discovery mechanism via presence as mentioned in the clause 4.4.1. In all Social Presence service Use Cases provided below the capability discovery issues are considered.

The list of Use Cases for Social Presence service include:

- Watcher subscription to presence event notification;
- Watcher subscription to resource list.

All of the Use Cases for Social Presence service in the present document include procedures of one user authorizing another user to see its Social Presence information.

4.4.2.2 Watcher subscription to presence event notification

4.4.2.2.1 Description

UE_B is configured to receive notifications with watcher information. UE_B publishes its presence information. UE_A subscribes to presence information state changes of UE_B. This test requires the use of application server in IMS_B (Presence Server). The call flow path and node configuration for this use case corresponds to CF_INT_AS in case of interworking and CF_ROAM_AS (OPTIONAL) in case of roaming.

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering):

Step	Action	CF_INT_AS	CF_ROAM_AS (OPTIONAL)
1	User B publishes presence and capability information including	Step 1	Step 1
	capabilities		
2	User B is informed of its presence status update	Step 6	Step 12
3	User A selects a contact of user B in the phone address book	Step 7	Step 13
4	User B is informed about user A capabilities	Step 13	Step 22
5	User A is informed about user B capabilities	Step 19	Step 31
6	User A subscribes to presence and capability information from User B	Step 20	Step 32
7	SUBSCRIPTION triggers the AS to send a NOTIFY to UE_B indicating the change to the watcher information subscriber	Step 39	Step 51
8	User B receives an authorization request from User A to see its own presence and capability information	Step 44	Step 62
9	User B authorizes user A to be informed of its own presence and capability information	Step 45	Step 63
10	User A is informed of user B presence and capability information	Step 54	Step 72
11	User A sees user B presence and capability information	Step 59	Step 83

4.4.2.2.2 UC_RCS_2_I: SIP message flow for watcher subscription to presence event notification with CF_INT_AS

Step					Dir	ectio	n					Message	Comment
	U s e r A	U E A	A S A	I M S A	I B C F A		I B C F B	I M S B	A S B	U E B	U s r B		
1													User B publishes presence and capability information including capabilities
2								←				PUBLISH	UE_B sends PUBLISH with information for all commonly supported presence elements and capabilities
3									→			PUBLISH	IMS_B forwards the PUBLISH to IMS_B AS (PS)
4								←	_			200 OK	IMS_B AS responds with a 200 OK to IMS_B
5										→		200 OK	IMS_B forwards the 200 OK response to IBCF_B
6													User B is informed of its presence status update
7													User A selects a contact of user B in the phone address book

Step					Direct	ion		-	-		Message	Comment
	U	U	Α	I	I	I	I	A	U	U		
	S	E ∧	S A	S	C B	C B	S S	B	B	S		
	r	^	^	Ă	F	F	В	5		r		
	Α				Α	В				В		
8											OPTIONS	UE_A sends OPTIONS to IMS_A
												with Accept-contact header
				\rightarrow								(RCS-e services Tags and the Tag
												indicating support of discovery via
												presence)
9					→						OPTIONS	IMS_A forwards OPTIONS to IBCF_A
10						→					OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
11							\rightarrow				OPTIONS	IBCF_B forwards OPTIONS to IMS_B
12									\rightarrow		OPTIONS	IMS_B forwards OPTIONS to UE_B
13												User B is informed about user A capabilities
14											200 OK	UE_B responds with 200 OK to
												IMS_B with Contact header
							←					(RCS-e services Tags and the Tag
												indicating support of discovery via
												presence)
15						←					200 OK	IMS_B forwards 200 OK to
16					,						200 OK	IBCF_B forwards 200 OK to
												IBCF_A
17				←	-						200 OK	IBCF_A forwards 200 OK to
18		←									200 OK	IMS A forwards 200 OK to UE A
19												User A is informed about user B
20												capabilities
20												capability information from User B
21											SUBSCRIBE	UE_A sends ANONYMOUS
				\rightarrow								presence" event with expiry time of
												0 to IMS_A
22					→						SUBSCRIBE	IMS_A forwards the SUBSCRIBE to IBCF_A
23						<u>`</u>					SUBSCRIBE	IBCF_A forwards the SUBSCRIBE
						1						to IBCF_B
24							\rightarrow				SUBSCRIBE	IBCF_B forwards the SUBSCRIBE
25								→			SUBSCRIBE	IMS_B forwards the SUBSCRIBE
26							←				200 OK	INS_B AS responds with a 200 OK
27						<u> </u>					200 OK	IMS_B forwards the 200 OK
28						ſ					200 OK	IRCE B forwards the 200 OK
20					←	1						response to IBCF_A
29				←	-						200 OK	IBCF_A forwards the 200 OK response to IMS_A
30		←		_							200 OK	IMS_A forwards the 200 OK
31						←					NOTIFY	IMS_B AS sends NOTIFY to
32					<u> </u>						NOTIFY	IBCF_B forwards NOTIFY to
33				,							NOTIFY	IBCF_A IBCF_A forwards NOTIFY to
				<	1							IMS_A

Step					Directi	on						Message	Comment
	U	U	A				I	A		J	U		
	S		S A	S I	C B	B	M S	S		2	S		
	r	^		Ă	F	F	в	0		,	r		
	Α	_			Α	В					В		
34		←		-								NOTIFY	IMS_A forwards the NOTIFY to UE_A
35				*								200 OK	UE_A responds with a 200 OK to IMS_A
36					•							200 OK	IMS_A forwards the 200 OK to IBCF_A
37						>						200 OK	IBCF_A forwards the 200 OK to IBCF_B
38								\rightarrow				200 OK	IBCF_B forwards the 200 OK response to IMS_B AS
39													SUBSCRIPTION triggers the AS to send a NOTIFY to UE_B indicating the change to the watcher information subscriber
40												NOTIFY	IMS_B AS sends NOTIFY to
							←						IMS_B to indicate UE_B the change to the watcher information subscriber
41									\rightarrow			NOTIFY	IMS_B forwards the NOTIFY to
42							←					200 OK	UE_B responds with a 200 OK to
43								\rightarrow				200 OK	IMS_B forwards the 200 OK response to IMS_B AS
44													User B receives an authorization
													request from User A to see its own presence and capability information
45													User B authorizes user A to be informed of its own presence and capability information
46						←		_				NOTIFY	IMS_B AS sends NOTIFY to IBCF_B
47					←							NOTIFY	IBCF_B sends NOTIFY to IBCF_A
48				¢	_							NOTIFY	IBCF_A forwards NOTIFY to IMS_A
49		~										NOTIFY	IMS_A forwards the NOTIFY to UE_A
50)								200 OK	UE_A responds with a 200 OK to IMS_A
51					*							200 OK	IMS_A forwards the 200 OK response to IBCF_A
52						>						200 OK	IBCF_A forwards the 200 OK response to IBCF_B
53								\rightarrow				200 OK	IBCF_B forwards the 200 OK response to IMS_B AS
54													User A is informed of user B presence and capability information
55							€	_			Г	NOTIFY	IMS_B AS sends NOTIFY to IMS_B to indicate UE_B that
56												NOTIFY	subscription has been authorized IMS_B forwards the NOTIFY to
57												200 OK	UE_B UE_B responds with a 200 OK to
													IMS_B
58								→				200 OK	IMS_B forwards the 200 OK response to IMS_B AS
59													User A sees user B presence and capability information

4.4.2.2.3 UC_RCS_2_R: SIP message flow for watcher subscription to presence event notification with CF_ROAM_AS (OPTIONAL)

Step				[Directio	on					Message	Comment
	U	U	Α	1	I	-	Ι	Α	U	U		
	S	E	S	M	B	B	M	S	E	S		
	e r	A	A	Δ	F	F	B	Б	Б	r		
	A			~	A	B	-			B		
1												User B publishes presence and
2												LIE B sends PLIBLISH with
2				<u> </u>							I OBLIGIT	information for all commonly
												supported presence elements
3				\rightarrow							PUBLISH	IMS_A forwards the PUBLISH to
4											PUBLISH	IBCF_A forwards the PUBLISH to IBCF_B
5						,					PUBLISH	IBCF_B forwards the PUBLISH to IMS_B
6)			PUBLISH	IMS_B forwards the PUBLISH to IMS_B AS (PS)
7							<u> </u>	_			200 OK	IMS_B AS responds with a 200 OK
8						,					200 OK	IMS_B forwards the 200 OK
												response to IBCF_B
9					‹						200 OK	IBCF_B forwards the 200 OK response to IBCF A
10				~							200 OK	IBCF_A forwards the 200 OK
11											200 OK	IMS A forwards the 200 OK
									\rightarrow		200 01	response to UF_B
12												User B is informed of its presence
13												User A selects a contact of user B
												in the phone address book
14											OPTIONS	UE_A sends OPTIONS to IMS_A with Accept-contact header
												containing user A capabilities
												(RCS-e services Tags and the Tag
												indicating support of discovery via
15											OPTIONS	IMS_A forwards OPTIONS to
16											OPTIONS	IBCF_A forwards OPTIONS to
17											OPTIONS	IBCF_B forwards OPTIONS to
18											OPTIONS	IMS_B IMS_B forwards OPTIONS to
10												IBCF_B
19											OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
20											OPTIONS	IBCF_A forwards OPTIONS to IMS_A
21											OPTIONS	IMS_A forwards OPTIONS to
22												User B is informed about user A
23											200 OK	UE_B responds with 200 OK to
												IMS_A with Contact header
												Containing user B capabilities
												indicating support via presence)
24											200 OK	IMS_A forwards 200 OK to
												IBCF_A

Step						Directio	on						Message	Comment
	U		U	A	I		I		Α	U		U		
	S		E ^	S	M S	В	B	M S	S			S		
	r		A	~	Δ	F	F	B	Б	P		e r		
	Å				~	A	B	-				B		
25		•									•		200 OK	IBCF_A forwards 200 OK to IBCF_B
26													200 OK	IBCF_B forwards 200 OK to IMS_B
27													200 OK	IMS_B forwards 200 OK to IBCF_B
28													200 OK	IBCF_B forwards 200 OK to IBCF_A
29													200 OK	IBCF_A forwards 200 OK to IMS_A
30													200 OK	IMS_A forwards 200 OK to UE_A
31														User A is informed about user B capabilities
32														User A subscribes to presence and capability information from User B
33													SUBSCRIBE	UE_A sends ANONYMOUS SUBSCRIBE for "User B
														presence" event with expiry time of 0 to IMS_A
34						•							SUBSCRIBE	IMS_A forwards the SUBSCRIBE to IBCF_A
35						;							SUBSCRIBE	IBCF_A forwards the SUBSCRIBE to IBCF_B
36								>					SUBSCRIBE	IBCF_B forwards the SUBSCRIBE
37									→				SUBSCRIBE	IMS_B forwards the SUBSCRIBE
38								←					200 OK	IMS_B AS responds with a 200 OK
39							←	4					200 OK	IMS_B forwards the 200 OK
40						←							200 OK	IBCF_B forwards the 200 OK
41					←								200 OK	IBCF_A forwards the 200 OK
42			<i>(</i>										200 OK	IMS_A forwards the 200 OK
43							~						NOTIFY	IMS_B AS sends NOTIFY to
44													NOTIFY	IBCF_B IBCF_B forwards NOTIFY to
45					<u> </u>								NOTIFY	IBCF_A IBCF_A forwards NOTIFY to
46													NOTIEV	IMS_A
40			<											UE_A
47					*								200 OK	UE_A responds with a 200 OK to IMS_A
48													200 OK	IMS_A forwards the 200 OK to IBCF_A
49						$ \longrightarrow$							200 OK	IBCF_A forwards the 200 OK to IBCF_B
50									→				200 OK	IBCF_B forwards the 200 OK response to IMS_B AS
51														SUBSCRIPTION triggers the AS to send a NOTIEY to UE, B indicating
														the change to the watcher
52													NOTIFY	IMS_B AS sends NOTIFY to
								¢	4					IMS_B to indicate UE_B the change to the watcher information
														subscriber

Step					Direc	tion							Message	Comment
	U	U	Α	1	Ι	l	I		4	U	ι	J		
	S	E	S	M	B	B	M		5	E	S	5		
	e r	A	A	S ∧	C F	F	B			D	e	;		
	Å				Ă	B					Ē	3		
53						←							NOTIFY	IMS_B forwards the NOTIFY to IBCF_B
54					←								NOTIFY	IBCF_B forwards the NOTIFY to IBCF_A
55				←	_								NOTIFY	IBCF_A forwards the NOTIFY to IMS_A
56										→			NOTIFY	IMS_A forwards the NOTIFY to UE_B
57				<u>(</u>						_			200 OK	UE_B responds with a 200 OK to IMS_A
58					\rightarrow								200 OK	IMS_A forwards the 200 OK response to IBCF_A
59						\rightarrow							200 OK	IBCF_A forwards the 200 OK response to IBCF_B
60							\rightarrow							IBCF_B forwards the 200 OK response to IMS_B
61								\rightarrow					200 OK	IMS_B forwards the 200 OK response to IMS_B AS
62														User B receives an authorization
														request from User A to see its own
														presence and capability
63														User B authorizes user A to be
00														informed of its own presence and capability information
64						/							NOTIFY	IMS_B AS sends NOTIFY to
														IBCF_B
65					←								NOTIFY	IBCF_B sends NOTIFY to IBCF_A
66				←	_								NOTIFY	IBCF_A forwards NOTIFY to IMS_A
67		←		_									NOTIFY	IMS_A forwards the NOTIFY to UE_A
68				→									200 OK	UE_A responds with a 200 OK to IMS_A
69					\rightarrow								200 OK	IMS_A forwards the 200 OK response to IBCF_A
70						\rightarrow							200 OK	IBCF_A forwards the 200 OK response to IBCF_B
71								\rightarrow					200 OK	IBCF_B forwards the 200 OK response to IMS_B AS
72														User A is informed of user B
														presence and capability
73													NOTIEY	IMS BAS sends NOTIEV to
13							←							IMS B to indicate LIF B that
							ì							subscription has been authorized
74						←							NOTIFY	IMS_B forwards the NOTIFY to
75					←								NOTIFY	IBCF_B forwards the NOTIFY to
76				←	_								NOTIFY	IBCF_A forwards the NOTIFY to
77										→			NOTIFY	IMS_A forwards the NOTIFY to
78				←	_					_			200 OK	UE_B responds with a 200 OK to
79					\rightarrow								200 OK	IMS_A forwards the 200 OK
80						\rightarrow							200 OK	IBCF_A forwards the 200 OK
	•	•	1	1	1	1	1	1		1	1		1	

Step						Direc	tion					Message	Comment
	U		U	Α	I	I	I	I	Α	U	U		
	S		E	S	м	В	В	M	S	E	S		
	e		Α	Α	S	C	C	S	в	в	е		
	r A				A		F	в			r B		
01		1					Б					200.0K	IRCE B forwards the 200 OK
01								\rightarrow				200 OK	response to IMS_B
82									_			200 OK	IMS_B forwards the 200 OK
									-				response to IMS_B AS
83													User A sees user B presence and
													capability information

4.4.2.3 Watcher subscription to resource list

4.4.2.3.1 Description

UE_B is configured to receive notifications with watcher information. UE_B publishes its presence information. User B has authorized User A to see its presence information. User A is authorized to use resource lists which are considered to be XDMS lists of contacts provisioned in the user client and AS. UE_A subscribes to presence information state changes of a list of users containing UE_B. This test requires the use of application server in IMS_B, having the role of Presence Server (PS), and the use of application server in IMS_A, having the role of Resource List Server (RLS). The call flow path and node configuration for this use case corresponds to CF_INT_AS in case of interworking and CF_ROAM_AS (OPTIONAL) in case of roaming.

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering):

Step	Action	CF_INT_AS	CF_ROAM_AS (OPTIONAL)
1	User B publishes presence and capability information	Step 1	Step 1
2	User B is informed of its presence status update	Step 6	Step 12
3	User A subscribes to resource list previously stored in the	Step 7	Step 13
	User A client as XDMS list of contacts		
4	RLS performs authorization checks to ensure that User A	Step 10	Step 16
	is authorized to use resource lists		
5	RLS resolves watcher resource's address and subscribes	Step 17	Step 23
	for presence event notification for all the presentities		
	represented by the resource list SIP URI		
6	PS performs authorization checks on the originator to	Step 23	Step 29
	ensure it is allowed to watch the presentity		
7	RLS notifies with presence and capability information for	Step 37	Step 43
	all the presentities represented by the resource list SIP		
	URI		
8	User A sees user B presence and capability information	Step 42	Step 48

4.4.2.3.2 UC_RCS_3_I: SIP message flow for watcher subscription to resource list with CF_INT_AS

Step					0	Directio	on							Message	Comment
	l	U	U	Α	1	I	-	I	Α		U	U			
	:	s	E	S	M	B	B	M	S		E	S			
		е	A	A	S	C	C	S	В		в	е			
		r A			A			в				r P			
1	f	<u>~ </u>				<u> </u>									User B publishes presence and
•															capability information
2													ľ	PUBLISH	UF B sends PUBLISH with
-														OBLIGH	information for all commonly
								<u> </u>			1				supported presence and capability
															elements
3													Γ	PUBLISH	IMS_B forwards the PUBLISH to
									7						IMS_B AS (PS)
4								/						200 OK	IMS_B AS responds with a 200 OK
								Ì							to IMS_B
5										>				200 OK	IMS_B forwards the 200 OK
-										,		_			response to UE_B
6															User B is informed of its presence
													ŀ		status update
7															User A subscribes to resource list
															previously stored in the User A
0													-		
0														SUBSCRIDE	SUBSCRIBE for "presence" event
															with expiry time of 0 to IMS A
				'											indicating support to "eventlist" to a
															resource list SIP URI
9													Ī	SUBSCRIBE	IMS A forwards the SUBSCRIBE
-				<u> </u>											to IMS A AS (RLS)
10															RLS performs authorization checks
															to ensure that User A is authorized
															to use resource lists
11				$ \longrightarrow $										200 OK	IMS_A AS responds with a 200 OK
															to IMS_A
12			.											200 OK	IMS_A forwards the 200 OK
40													-		
13				\rightarrow										NUTIFY	IMS_A AS SENDS NOTIFY TO
1.4													F		INS_A forwards the NOTIEV to
14			<												
15													-	200 OK	LIE A responds with a 200 OK to
10				\rightarrow									ľ	200 010	IMS A
16													Ī	200 OK	IMS A forwards the 200 OK
				<	1								ľ		response to IMS_A AS
17															RLS resolves watcher resource's
															address and subscribes for
															presence event notification for all
															the presentities represented by the
															resource list SIP URI
18				.										SUBSCRIBE	IMS_A AS (RLS) sends
				\rightarrow											SUBSCRIBE for "presence" event
10													┝		IVINS_A
19					\mapsto									SUBSCRIBE	to IPCE A
20													┝		IBCE A forwards the SLIBSCRIPE
20						\mapsto								CODOURIDE	to IBCF B
21													┝	SUBSCRIBE	IBCE B forwards the SUBSCRIBE
~'							\mapsto	1						CODOCIDE	to IMS_B
22													t	SUBSCRIBE	IMS B forwards the SUBSCRIBE
									7						to IMS_B AS (PS)

Step						Directi	on					Message	Comment
	U		U	Α	Ι	I	I	I	Α	U	υ		
	S		E	S	M	В	В	М	S	E	S		
	е		Α	A	S	C	C	S	в	в	е		
	r A				A		F B	в			r B		
23		_				Ϋ́ Ι							PS performs authorization checks
20													on the originator to ensure it is
													allowed to watch the presentity
24								,				200 OK	IMS_B AS (PS) responds with a
													200 OK to IMS_B
25							(_				200 OK	IMS_B forwards the 200 OK
							ľ						response to IBCF_B
26						←	-					200 OK	IBCF_B forwards the 200 OK
27												200.01	response to IBCF_A
21					←	-						200 OK	IBCF_A IOIWards the 200 OK
28												200 OK	IMS A forwards the 200 OK
20				<								200 010	response to IMS A AS (RLS)
29												NOTIFY	IMS BAS sends a NOTIFY to
							←		-				IBCF_B with the presence and
													capability information of UE_B
30						(NOTIFY	IBCF_B forwards the NOTIFY to
						Ĩ.							IBCF_A
31					←	_							IBCF_A forwards the NOTIFY to
22													IMS_A
32				←								NOTIFY	IMS_A forwards the NUTIFY to
33												200 0K	IMS_A AS (RES)
55												200 01	to IMS_A
34	ł						1	Ì				200 OK	IMS A forwards the 200 OK
-						>							response to IBCF_A
35												200 OK	IBCF_A forwards the 200 OK
													response to IBCF_B
36									•			200 OK	IBCF_B forwards the 200 OK
									·		_		response to IMS_B AS
37													RLS notifies with presence and
													capability information for all the
													resource list SIP LIRI
38												NOTIFY	IMS A AS sends NOTIFY to
									1				IMS_A
39			/						1			NOTIFY	IMS_A forwards the NOTIFY to
													UE_A
40				ļ,								200 OK	UE_A responds with a 200 OK to
									1				IMS_A
41				←	-				1			200 OK	IMS_A forwards the 200 OK
42													Lear A saas user P presence and
42													capability information

4.4.2.3.3 UC_RCS_3_R: SIP message flow for watcher subscription to resource list with CF_ROAM_AS (OPTIONAL)

U U A I	d bility to H to H to
s E S M B B M S E s r A F F F B B B B P 1 A B B B B B B B B B B 2 A B B B B B B B B B B B B 2 A B	d bility to H to H to
e A A S C C S B B e e 1 A A B	d bility to H to H to
A A B B 1 A B B 2 B B Capability information 2 B B Capability information 3 B B Capability information 3 B B Capability information 3 B Capability information Capability information 3 Capability information for all commonly supported presence and capa elements Capability information 3 Capability information Capability information Capability information 4 Capability information Capability information Capability information 3 Capability information Capability information Capability information 3 Capability information Capability information Capability information 3 Capability information Capability information Capability information 4 Capability information Capability information Capability information 5 Capability information Capability information Capability information 6 Capability informatin Capability	d bility to H to H to
1 User B publishes presence ar capability information 2 PUBLISH UE_B sends PUBLISH with information for all commonly supported presence and capa elements 3 PUBLISH IMS_A forwards the PUBLISH IBCF_A 4 PUBLISH IBCF_A forwards the PUBLISH IBCF_B 5 PUBLISH IBCF_B forwards the PUBLISH IMS_B forwards the PUBLISH IMS_B AS (PS) 7 200 OK IMS_B forwards the 200 OK response to IBCF_B	d bility to H to H to
2 PUBLISH UE_B sends PUBLISH with information for all commonly supported presence and capa elements 3 PUBLISH IMS_A forwards the PUBLISH IBCF_A 4 PUBLISH IBCF_A forwards the PUBLISH IBCF_B 5 PUBLISH IBCF_B forwards the PUBLISH IBCF_B 6 IMS_B AS (PS) PUBLISH 7 200 OK IMS_B AS responds with a 20 to IMS_B 8 200 OK IMS_B forwards the 200 OK response to IBCF_B	bility to H to H to
3 information for all commonly supported presence and capa elements 3 PUBLISH IMS_A forwards the PUBLISH IBCF_A 4 PUBLISH IBCF_A forwards the PUBLISH IBCF_B 5 PUBLISH IBCF_B forwards the PUBLISH IBCF_B 6 PUBLISH IBCF_B forwards the PUBLISH IMS_B AS (PS) 7 200 OK IMS_B AS responds with a 20 to IMS_B 8 200 OK IMS_B forwards the 200 OK response to IBCF_B	bility to H to H to
3 3 3 4 4 4 5 6 6 7 8 200 OK 8 200 OK 1MS_B forwards the 200 OK response to IBCF_B	bility to H to H to
3	to H to H to
3 PUBLISH IMS_A forwards the PUBLISH IBCF_A 4 PUBLISH IBCF_A forwards the PUBLISH IBCF_B 5 PUBLISH IBCF_B forwards the PUBLISH IBCF_B forwards the PUBLISH IMS_B forwards the PUBLISH IMS_B AS (PS) 7 200 OK IMS_B forwards the 200 OK response to IBCF_B	to - to - to
4 PUBLISH IBCF_A forwards the PUBLIS 5 IBCF_B IBCF_B forwards the PUBLIS 6 PUBLISH IBCF_B forwards the PUBLIS 7 IMS_B AS (PS) 200 OK 8 200 OK IMS_B forwards the 200 OK response to IBCF_B	H to H to
5 0	H to
6 PUBLISH IMS_B forwards the PUBLISH 7 IMS_B AS (PS) 8 200 OK IMS_B 8 200 OK IMS_B forwards the 200 OK 100 OK IMS_B 100 OK 100 OK IMS_B 100 OK 100 OK IMS_B 100 OK	
7 200 OK IMS_B AS responds with a 20 to IMS_B 8 200 OK IMS_B forwards the 200 OK response to IBCF_B	to
8 Image: Second state of the second	0 OK
8 200 OK IMS_B forwards the 200 OK response to IBCF_B	
9 200 OK IBCF_B forwards the 200 OK	
10 response to IBCF_A	
response to IMS_A	
11 200 OK IMS_A forwards the 200 OK response to UE_B	
12 User B is informed of its prese	nce
13 Status update	list
previously stored in the User	
client as XDMS list of contacts	;
14 SUBSCRIBE UE_A sends ANONYMOUS	
SUBSCRIBE for "presence" e	vent
indicating support to "eventlis"	" to a
resource list SIP URI	10 a
15 SUBSCRIBE IMS_A forwards the SUBSCR	IBE
to IMS_A AS (RLS)	
16 RLS performs authorization cl	iecks
	Izeu
17 200 OK IMS_A AS responds with a 20	0 OK
18 200 OK IMS_A 200 OK IMS A forwards the 200 OK	
response to UE_A	
19 NOTIFY IMS_A AS sends NOTIFY to	
20 IMS_A	0
	-
21 200 OK UE_A responds with a 200 OK	(to
22 200 OK IMS_A forwards the 200 OK	
response to IMS_A AS	o.′o
23 RLS resolves watcher resource address and subscribes for	es
presence event notification for	all
the presentities represented b	

Step	Direction												Message	Comment
	l	U	U	A	I	I B	I B	I	A	U	ļ	J		
		s e		5 A	S	Б С	Б С	S	э В	B		5		
		r	~	~	Ă	F	F	B	-	_		r		
		Α	_	_		Α	В				E	3		
24													SUBSCRIBE	IMS_A AS (RLS) sends
					*									SUBSCRIBE for "presence" event
25														IO IIVIS_A
20						•							SUBSCRIBE	to IBCE A
26													SUBSCRIBE	IBCF A forwards the SUBSCRIBE
							*							to IBCF_B
27								>					SUBSCRIBE	IBCF_B forwards the SUBSCRIBE
								1					0112002127	to IMS_B
28									→				SUBSCRIBE	IMS_B forwards the SUBSCRIBE
20														INIS_BAS (PS)
23														on the originator to ensure it is
														allowed to watch the presentity
30								/					200 OK	IMS_B AS (PS) responds with a
														200 OK to IMS_B
31							←						200 OK	IMS_B forwards the 200 OK
00														response to IBCF_B
32						←							200 OK	IBCF_B forwards the 200 OK
33													200 OK	IBCE A forwards the 200 OK
00					←	-							200 010	response to IMS A
34													200 OK	IMS_A forwards the 200 OK
														response to IMS_A AS (RLS)
35													NOTIFY	IMS_B AS sends a NOTIFY to
							←		_					IBCF_B with the presence and
26														capability information of UE_B
36						←	-						NOTIFY	IBCF_B forwards the NUTIFY to
37														IBCF A forwards the NOTIFY to
0.					←	1								IMS_A
38				/									NOTIFY	IMS_A forwards the NOTIFY to
														IMS_A AS (RLS)
39					>								200 OK	IMS_A AS responds with a 200 OK
40								·					200 0K	to IMS_A
40						•							200 OK	response to IBCE A
41						.							200 OK	IBCF A forwards the 200 OK
							*							response to IBCF_B
42													200 OK	IBCF_B forwards the 200 OK
										1				response to IMS_B AS
43														RLS notifies with presence and
														capability information for all the
														resource list SIP URI
44													NOTIFY	IMS_A AS sends NOTIFY to
					1			1						IMS_A
45			(NOTIFY	IMS_A forwards the NOTIFY to
			Ì					1						UE_A
46								1					200 OK	UE_A responds with a 200 OK to
17								1					200 04	INS A forwards the 200 OK
47				←				1					200 01	response to IMS_A AS
48														User A sees user B presence and
														capability information

4.4.3 IM/chat service

4.4.3.1 General description

IM/chat service session assumes the possibility for users to receive the following types of services:

- 1-to-1 chat (including support of notifications and file transfer within 1-to-1 chat);
- 1-to-many chat.

For all Use Cases it is assumed that UEs registered on the corresponding IMS networks and they have already performed capability discovery procedures. In particular, users subscribed to IM/chat service.

4.4.3.2 1-to-1 chat standard procedure

Following there are the expected common call flow sequences for the standard procedures of 1-to-1 chat service between RCS-e users.

4.4.3.2.1 UC_RCS_4_I: SIP message flow for 1-to-1 chat standard procedure with CF_INT_AS

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering):

Step	Action	CF_INT_AS
1	User A selects User B in the phone address book and sends him	Step 1
	an initial message	
2	User B is informed of incoming message	Step 20
3	User A is informed that initial message was delivered to user B	Step 39
4	User B reads the initial message from user A and opens the 1-to-1	Step 49
	chat	
5	Users perform chatting	Step 68
6A	User A closes the 1-to-1 chat	Step 69A
6B	User B closes the 1-to-1 chat	Step 69B
7A	User A is informed that 1-to-1 chat with user B is closed	Step 88A
7B	User B is informed that 1-to-1 chat with user A is closed	Step 88B

Step					Direc	tion					Message	Comment
	U ser A	UEA	A \$/ − M A	I M S A	I B C F A	I B C F B	I M S B	A S/ I M B	U E B	U s r B		
1		→										User A selects User B in the phone address book and sends him an initial message
2				→							INVITE	UE_A sends INVITE to IMS_A with user A initial message in the Subject header, CPIM/IMND headers and the first SDP offer indicating all specific data for MSRP connection set up
3		←		_							100 Trying	IMS_A responds with a 100 Trying provisional response
4			←								INVITE	IMS_A forwards INVITE to AS/IM_A
5				→							100 Trying	AS/IM_A responds with a 100 Trying provisional response
6				\rightarrow							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
7			←								100 Trying	IMS_A responds with a 100 Trying provisional response

Step					Direc	tion					Message	Comment
	U	U	Α	Ι	Ι	Ι	Ι	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	er	A	M	5	C F	C F	ъ в	I M	в	e r		
	Ă		A	~	Ă	В	5	В		B		
8					→						INVITE	IMS_A forwards INVITE to IBCF_A
9				/							100 Trying	IBCF_A responds with a 100 Trying
												provisional response
10						→					INVITE	IBCF_A forwards INVITE to IBCF_B
11					←	-					100 Trying	IBCF_B responds with a 100 Trying
12							\rightarrow				INVITE	IBCF B forwards INVITE to IMS B
13											100 Trying	IMS B responds with a 100 Trying
						<u> </u>					, ,	provisional response
14								\rightarrow			INVITE	IMS_B forwards INVITE to AS/IM_B
15							←				100 Trying	AS/IM_B responds with a 100
16												AS/IM B returns possibly modified
10							\leftarrow					INVITE to IMS B
17											100 Trying	IMS_B responds with a 100 Trying
												provisional response
18									\rightarrow		INVITE	IMS_B forwards INVITE to UE_B
19							←				100 Trying	UE_B optionally responds with a
20												User B is informed of incoming
20										\rightarrow		message
21											180 Ringing	UE_B responds to initial INVITE
							←					with 180 Ringing to indicate that
												Invitation to a 1-to-1 chat session
22											180 Ringing	IMS B forwards 180 Ringing
								\rightarrow				response to AS/IM_B
23							←				180 Ringing	AS/IM_B returns, possibly modified,
24							ľ				190 Dinging	180 Ringing response to IMS_B
24						←					180 Kinging	response to IBCF_B
25					,						180 Ringing	IBCF_B forwards 180 Ringing
												response to IBCF_A
26				←							180 Ringing	IBCF_A forwards 180 Ringing
27											180 Pinging	response to IMS_A
21			←								100 Kinging	response to AS/IM_A
28				\ \							180 Ringing	AS/IM_A returns, possibly modified,
												180 Ringing response to IMS_A
29		←									180 Ringing	IMS_A forwards 180 Ringing
30											MESSAGE	UE B sends MESSAGE to IMS_B
00							←				MEOO/ OE	with delivery notification of initial
												message from user A
31								→			MESSAGE	IMS_B forwards MESSAGE to
22											MESSACE	AS/IM_B AS/IM_B returns_possibly modified
32							←				MESSAGE	MESSAGE to IMS_B
33						/					MESSAGE	IMS_B forwards MESSAGE to
												IBCF_B
34					k	_					MESSAGE	IBCF_B forwards MESSAGE to
35											MESSAGE	IBCE A forwards MESSAGE to
00				←								IMS_A
36			(MESSAGE	IMS_A forwards MESSAGE to
											100000	AS/IM_A
37				\rightarrow							MESSAGE	AS/IM_A returns, possibly modified,
38											MESSAGE	IMS A forwards MESSAGE to
		←										UE_A
	·	•	•	•	•	•		•		•		

Step						Directio	on		Message	Comment			
	U	υ		Α	I	I	I	I	Α	U	υ		
	S	E		5/	М	В	В	М	S/	E	S		
	е	Α			S	c	c	S	I	В	е		
	r			M	A	F	F	в	M		r B		
39	A		Í	A			<u>в</u>		В		В		User A is informed that initial
													message was delivered to user B
40												200 OK	UE_A responds MESSAGE with 200 OK response
41				(200 OK	IMS_A forwards 200 OK response
42			-									200 OK	AS/IM_A returns, possibly modified,
43					;							200 OK	IMS_A forwards 200 OK response
44												200 OK	IBCF_A IBCF A forwards 200 OK response
													to IBCF_B
45								*				200 OK	IBCF_B forwards 200 OK response to IMS_B
46									>			200 OK	IMS_B forwards 200 OK response to AS/IM_B
47								←	-			200 OK	AS/IM_B returns, possibly modified,
48										→		200 OK	IMS_B forwards 200 OK response
49													User B reads the initial message
										←	-		from user A and opens the 1-to-1
												000.01/	chat
50												200 OK	UE_B responds INVITE with 200
													that the session has been accepted
													and inform A-side with specific data
													for MSRP connection set up
51												200 OK	IMS_B forwards 200 OK response
52								<u> </u>				200 OK	AS/IM_B returns, possibly modified,
53												200 OK	200 OK response to IMS_B
00							←	-				200 010	to IBCF_B
54						←						200 OK	IBCF_B forwards 200 OK response to IBCF_A
55					←──	-						200 OK	IBCF_A forwards 200 OK response to IMS_A
56				(200 OK	IMS_A forwards 200 OK response
57					•							200 OK	AS/IM_A returns, possibly modified,
58		←			4							200 OK	IMS_A forwards 200 OK response
59												ACK	to UE_A UE_A acknowledges the receipt of
60			Ī										200 OK for INVITE
60				(ACK	IMS_A forwards ACK to AS/IM_A
וס			ŀ		*								ACK to IMS_A
62					;							ACK	IMS_A forwards ACK to IBCF_A
63	1					\mapsto	>					ACK	IBCF_A forwards ACK to IBCF_B
64								>				ACK	IBCF_B forwards ACK to IMS_B
65)			ACK	IMS_B forwards ACK to AS/IM_B
66								€	-			ACK	AS/IM_B returns, possibly modified,
67									_	\rightarrow		ACK	IMS_B forwards ACK to UE_B
68	/												Users perform chatting (see clause
													5.3.1 Chat 1 to 1 via MSRP)
69A	_	\rightarrow											User A closes the 1-to-1 chat

Step					Directi	on					Message	Comment
	U	U	Α	I	I	I	I	Α	U	U		
	S	E	S/	М	В	В	М	S/	E	S		
	е	Α		S	c	C	S	I	В	е		
	r		M	Α	F	F	в	M		r		
704								P			BYE	LIF A releases the 1-to-1 chat
10/1				→							DIE	session with BYE
71A			←	_							BYE	IMS_A forwards BYE to AS/IM_A
72A				<u>`</u>							BYE	AS/IM_A returns, possibly modified,
				1								BYE to IMS_A
73A											BYE	IMS_A forwards BYE to IBCF_A
74A)					BYE	IBCF_A forwards BYE to IBCF_B
75A							*				BYE	IBCF_B forwards BYE to IMS_B
76A								>			BIE	IMS_B forwards BYE to AS/IM_B
77A							←				BYE	AS/IM_B returns, possibly modified,
70.4							-				DVE	BYE to IMS_B
70A							,		_			INS_BIOIWAIDS BIE TO UE_B
79A											200 OK	UE_B serius 200 OK 101 BTE
60A								>			200 OK	to AS/IM B
81A							,				200 OK	AS/IM_B returns, possibly modified,
							(200 OK response to IMS_B
82A						<u> </u>					200 OK	IMS_B forwards 200 OK response
004												to IBCF_B
83A					←						200 OK	IBCF_B forwards 200 OK response
84A											200 OK	IBCF A forwards 200 OK response
												to IMS_A
85A			<u> </u>	_							200 OK	IMS_A forwards 200 OK response
004			ľ									to AS/IM_A
86A				→							200 OK	AS/IM_A returns, possibly modified,
87A											200 OK	IMS A forwards 200 OK response
		<u> </u>										to UE_A
88A												User A is informed that 1-to-1 chat
000	1											with user B is closed
69B									E		DVE	User B close the 1-to-1 chat
70B							←				BIE	UE_B releases the 1-to-1 chat
71B								`			BYE	IMS B forwards BYE to AS/IM B
72B							,				BYE	AS/IM_B returns, possibly modified,
							(BYE to IMS_B
73B						←					BYE	IMS_B forwards BYE to IBCF_B
74B					←						BYE	IBCF_B forwards BYE to IBCF_A
75B				←	-						BYE	IBCF_A forwards BYE to IMS_A
76B			← →	-							BYE	IMS_A forwards BYE to AS/IM_A
77B				→							BYE	AS/IM_A returns, possibly modified,
78P		<u> </u>									BYE	IMS A forwards BVE to LIE A
70B				-		1					200 OK	LIF A sends 200 OK for RVF
80B				1							200 OK	IMS A forwards 200 OK response
			K	-1								to AS/IM_A
81B				_							200 OK	AS/IM_A returns, possibly modified,
				1							000.011	200 OK response to IMS_A
82B					*						200 OK	IMS_A forwards 200 OK response
83B											200 OK	IBCE A forwards 200 OK response
000						≯					200 01	to IBCF B
84B											200 OK	IBCF_B forwards 200 OK response
												to IMS_B
85B						1)			200 OK	IMS_B forwards 200 OK response
	I	I	I	I	1	1	I	I	I	I		to AS/IM_B

Step					Dir	ection	l						Message	Comment
	U	U	Α	Ι	I	I		I	Α	U	ι	J		
	S	E	S/	M	B	B		M	S/	E	S	5		
	е	A		S	C	C		S	1	в	e	9		
	r		M	Α	- F			в	M		r	ŗ		
	A		Α		A	В			в		E	3		
86B								/					200 OK	AS/IM_B returns, possibly modified,
														200 OK response to IMS_B
87B										``			200 OK	IMS_B forwards 200 OK response
										-				to UE_B
88B														User B is informed that that 1-to-1
											7			chat with user A is closed

4.4.3.2.2 UC_RCS_4_R: SIP message flow for 1-to-1 chat standard procedure with CF_ROAM_AS (OPTIONAL)

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering):

Step	Action	CF_ROAM_AS
1	User B selects User A in the phone address book and sends him an initial message	Step 1
2	User A is informed of incoming message	Step 26
3	User B is informed that initial message was delivered to user A	Step 51
4	User A reads the initial message from user B and opens the 1-to-1	Step 64
	chat	
5	Users perform chatting	Step 89
6A	User B closes the 1-to-1 chat	Step 90A
6B	User A closes the 1-to-1 chat	Step 90B
7A	User B is informed that that 1-to-1 chat with user A is closed	Step 115A
7B	User A is informed that that 1-to-1 chat with user B is closed	Step 115B

Step					Direc	tion					Message	Comment
	U	U	A	I			I	A	U	U		
	S	E	S/	M	В	В	M	S/	E	S		
	r	A	M	 	F	F	B	M	Б	r		
	Å		A	^	Ā	B	5	B		B		
1									←			User B selects User A in the phone address book and sends him an initial message
2				€							INVITE	UE_B sends INVITE to IMS_A with user B initial message in the Subject header, CPIM/IMND headers and the first SDP offer indicating all specific data for MSRP connection set up
3									\rightarrow		100 Trying	IMS_A responds with a 100 Trying provisional response
4					\rightarrow						INVITE	IMS_A forwards INVITE to IBCF_A
5				←							100 Trying	IBCF_A responds with a 100 Trying provisional response
6						\rightarrow					INVITE	IBCF_A forwards INVITE to IBCF_B
7					←						100 Trying	IBCF_B responds with a 100 Trying provisional response
8							\rightarrow				INVITE	IBCF_B forwards INVITE to IMS_B
9						←					100 Trying	IMS_B responds with a 100 Trying provisional response
10								\rightarrow			INVITE	IMS_B forwards INVITE to AS/IM_B
11							←				100 Trying	AS/IM_B responds with a 100 Trying provisional response
12							←				INVITE	AS/IM_B returns, possibly modified, INVITE to IMS_B

Step					Directi	on					Message	Comment
	U	U	A	1			1	A	U	U		
	S	E ^	S/	M S	B	B	M	S/	E	S		
	r	^	м	A	F	F	В	M		r		
	Α		Α		Α	В		В		В		
13								\rightarrow			100 Trying	IMS_B responds with a 100 Trying
1.4						,		-				provisional response
14												INS_BIOIWAIDS INVITE to IBCF_B
15							\rightarrow				100 Hying	provisional response
16					←	-					INVITE	IBCF_B forwards INVITE to IBCF_A
17											100 Trying	IBCF_A responds with a 100 Trying
10												provisional response
18				¢								IBCF_A forwards INVITE to IMS_A
19					>						TOO TTYING	provisional response
20			←	_							INVITE	IMS_A forwards INVITE to AS/IM_A
21				-							100 Trying	AS/IM_A responds with a 100 Trying
				1								provisional response
22				→							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
23			←	_							100 Trying	IMS_A responds with a 100 Trying provisional response
24		←		_							INVITE	IMS_A forwards INVITE to UE_A
25				→							100 Trying	UE_A optionally responds with a 100
26				-								I rying provisional response
20	←	-										message
27											180 Ringing	UE_A responds to initial INVITE with
				*								180 Ringing to indicate that invitation
												to a 1-to-1 chat session has reached
28			,								180 Ringing	IMS_A forwards 180 Ringing
												response to AS/IM_A
29				→							180 Ringing	AS/IM_A returns, possibly modified,
30											180 Ringing	IMS A forwards 180 Ringing
00					*						reeranging	response to IBCF_A
31						>					180 Ringing	IBCF_A forwards 180 Ringing
32											180 Ringing	IBCF_B forwards 180 Ringing
							1					response to IMS_B
33								\rightarrow			180 Ringing	IMS_B forwards 180 Ringing
34							,				180 Ringing	AS/IM_B returns, possibly modified,
												180 Ringing response to IMS_B
35						←					180 Ringing	IMS_B forwards 180 Ringing
36											180 Ringing	IBCF_B forwards 180 Ringing
												response to IBCF_A
37				←	-						180 Ringing	IBCF_A forwards 180 Ringing
38											180 Ringing	IMS A forwards 180 Ringing
									\rightarrow			response to UE_B
39				→							MESSAGE	UE_A sends MESSAGE to IMS_A
				-								message from user B
40			<u> </u>								MESSAGE	IMS_A forwards MESSAGE to
11											MESSAGE	AS/IM_A
41				→		1					WESSAGE	MESSAGE to IMS_A
42					*						MESSAGE	IMS_A forwards MESSAGE to
43						*					MESSAGE	IBCF_A forwards MESSAGE to
			I	1		-1						IBCF_B

Step				[Directio	on					Message	Comment
	U	U	A	I		I B	I	A	U	U		
	s e		5/	S	Б С	C	S	5/ I	B	s e		
	r		M	Ă	F	F	В	M	_	r		
	Α		Α		Α	В		В		В		
44							*				MESSAGE	IBCF_B forwards MESSAGE to IMS_B
45								>			MESSAGE	IMS_B forwards MESSAGE to AS/IM_B
46							←				MESSAGE	AS/IM_B returns, possibly modified, MESSAGE to IMS_B
47						←	_				MESSAGE	IMS_B forwards MESSAGE to
48					←	-					MESSAGE	IBCF_B forwards MESSAGE to
49				←							MESSAGE	IBCF_A forwards MESSAGE to
50									→		MESSAGE	IMS_A forwards MESSAGE to UE_B
51										_		User B is informed that initial
= 0												message was delivered to user A
52				←							200 OK	UE_B responds MESSAGE with 200
53				$ \longrightarrow $							200 OK	IMS_A forwards 200 OK response to IBCF_A
54											200 OK	IBCF_A forwards 200 OK response to IBCF_B
55											200 OK	IBCF_B forwards 200 OK response to IMS_B
56								>			200 OK	IMS_B forwards 200 OK response to AS/IM_B
57							←				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
58						←	_				200 OK	IMS_B forwards 200 OK response to
59					<						200 OK	IBCF_B forwards 200 OK response
60				(200 OK	IBCF_A forwards 200 OK response
61			←	_							200 OK	IMS_A forwards 200 OK response to
62											200 OK	AS/IM_A returns, possibly modified,
63		←		_							200 OK	IMS_A forwards ACK to UE_A
64		→										User A reads the initial message from user B and opens the 1-to-1
65											200 OK	UE A responds INV/ITE with 200 OK
00			_	*							200 011	response with SDP to indicate that the session has been accepted and inform B-side with specific data for
												MSRP connection set up
66			←								200 OK	IMS_A forwards 200 OK response to AS/IM_A
67				*							200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
68				$ \longrightarrow$							200 OK	IMS_A forwards 200 OK response to IBCF_A
69					;						200 OK	IBCF_A forwards 200 OK response to IBCF_B
70							*				200 OK	IBCF_B forwards 200 OK response to IMS_B
71								>			200 OK	IMS_B forwards 200 OK response to AS/IM_B

30

Step				[Directio	on					Message	Comment
	U	U	Α	I	1	I	Ι	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	e	A	I M	5		C E	5	I M	в	e		
	Å		A	~	A	В	Б	B		B		
72							←				200 OK	AS/IM_B returns, possibly modified,
73						,					200 OK	IMS_B forwards 200 OK response to
74											200 OK	IBCF_B
7.4					←						200 01	to IBCF_A
75				¢							200 OK	IBCF_A forwards 200 OK response to IMS_A
76							_		\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
77				~			_				ACK	UE_B acknowledges the receipt of 200 OK for INVITE
78				\longrightarrow							ACK	IMS_A forwards ACK to IBCF_A
79					\rightarrow						ACK	IBCF_A forwards ACK to IBCF_B
80							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
81								\rightarrow			ACK	IMS B forwards ACK to AS/IM B
82							←				АСК	AS/IM_B returns, possibly modified,
83						(ACK	IMS_B forwards ACK to IBCE_B
84					,	Ì					ACK	IBCE B forwards ACK to IBCE A
85				(<u> </u>						ACK	IBCE A forwards ACK to IMS A
86			/								ACK	IMS A forwards ACK to AS/IM A
87				*							ACK	AS/IM_A returns, possibly modified,
88		(АСК	ACK to IMS_A IMS A forwards ACK to UE A
80		``										Lears perform shotting (and sloups
89	←									→		5.3.1 Chat 1 to 1 via MSRP)
90A									←	_		User B closes the 1-to-1 chat
91A				¢							BYE	UE_B releases the 1-to-1 chat session with BYE
92A				\longrightarrow							BYE	IMS_A forwards BYE to IBCF_A
93A					└── →						BYE	IBCF_A forwards BYE to IBCF_B
94A							\rightarrow				BYE	IBCF_B forwards BYE to IMS_B
95A								\rightarrow			BYE	IMS B forwards BYE to AS/IM B
96A							←				BYE	AS/IM_B returns, possibly modified,
974						,					BVE	IMS B forwards BVE to IBCE B
000					,	Ì					BVE	INC_ B forwards BVE to IBCE A
30A											BVE	IBCE A forwards BYE to IMS A
99A												IBCF_A IOI Walds BTE to INIS_A
100A												INS_A IOWAIOS BYE IO AS/IW_A
101A)							BIE	BYE to IMS A
102A		←		_							BYE	IMS_A forwards BYE to UE_A
103A				*							200 OK	UE_A sends 200 OK for BYE
104A											200 OK	IMS_A forwards 200 OK response to
105A			;	*							200 OK	AS/IM_A returns, possibly modified,
106A				$ \longrightarrow$							200 OK	IMS_A forwards 200 OK response to
107A					│ →						200 OK	IBCF_A IBCF_A forwards 200 OK response
108A							→				200 OK	IBCF_B forwards 200 OK response
109A								→			200 OK	INS_B forwards 200 OK response to
	1		I	1	I	1	I			I	L	AG/IIVI_D

Step	Direction							Message	Comment			
	U	U	Α	1	I	1	I	Α	U	U		
	S	E	S/	М	В	B	М	S/	E	S		
	е	Α	I	S	C	C	S	I	в	e		
	Δ		Δ	~		B	В	B		B		
110A							k				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
111A						←	_				200 OK	IMS_B forwards 200 OK response to IBCF_B
112A					(200 OK	IBCF_B forwards 200 OK response to IBCF_A
113A				←	-						200 OK	IBCF_A forwards 200 OK response to IMS_A
114A								_	\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
115A										→		User B is informed that that 1-to-1 chat with user A is closed
90B)										User A closes the 1-to-1 chat
91B			;								BYE	UE_A releases the 1-to-1 chat session with BYE
92B											BYE	IMS_A forwards BYE to AS/IM_A
93B			;								BYE	AS/IM_A returns, possibly modified, BYE to IMS_A
94B				$ \longrightarrow $							BYE	IMS_A forwards BYE to IBCF_A
95B					—;						BYE	IBCF_A forwards BYE to IBCF_B
96B							\rightarrow				BYE	IBCF_B forwards BYE to IMS_B
97B								→			BYE	IMS_B forwards BYE to AS/IM_B
98B							←	_			BYE	AS/IM_B returns, possibly modified,
99B						(_				BYE	IMS B forwards BYE to IBCF B
100B					<u> </u>	,					BYE	IBCF B forwards BYE to IBCF A
101B					ľ						BYE	IBCF A forwards BYE to IMS A
102B							_		\rightarrow		BYE	IMS A forwards BYE to UE B
103B				<u> </u>			_		_		200 OK	UE B sends 200 OK for BYE
104B											200 OK	IMS_A forwards 200 OK response to
105B											200 OK	IBCF_A forwards 200 OK response
106B							→				200 OK	IBCF_B forwards 200 OK response to IMS_B
107B								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
108B							←				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
109B						←	_				200 OK	IMS_B forwards 200 OK response to IBCF_B
110B					←						200 OK	IBCF_B forwards 200 OK response to IBCF_A
111B				<	-						200 OK	IBCF_A forwards 200 OK response to IMS_A
112B			←	-							200 OK	IMS_A forwards 200 OK response to AS/IM_A
113B			 ;								200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS A
114B		←		-							200 OK	IMS_A forwards 200 OK response to UE_A
115B	←	-										User A is informed that that 1-to-1 chat with user B is closed

4.4.3.3 File transfer within 1-to-1 chat

Following there are the expected common call flow sequences for IM/chat service when the incoming one-to-one IM session requests is not answered by the RCS client.

4.4.3.3.1 UC_RCS_5_I: SIP message flow for file transfer within 1-to-1 chat with CF_INT_AS

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering):

Step	Action	CF_INT_AS
1	User A selects User B in the phone address book and sends	UC_RCS_4_I Step 1
	him an initial message	
2	User B is informed of incoming message	UC_RCS_4_I Step 20
3	User A is informed that initial message was delivered to user B	UC_RCS_4_I Step 39
4	User B reads the initial message from user A and opens the 1-	UC_RCS_4_I Step 49
	to-1 chat	
5	Users perform chatting	UC_RCS_4_I Step 68
6	User A initiates a file transfer to user B	Step 2
7	User B is informed of incoming file and accepts the transfer	Step 21
8	User A is informed that file transfer has been accepted by user	Step 31
	В	
9	File transfer starts	Step 41
10	File transfer completed (size checked)	Step 42
11	User B is informed that file transfer completed	Step 52
12	User A is informed that file transfer completed	Step 62
13	Users continue chatting	Step 63
14A	User A closes the 1-to-1 chat	UC_RCS_4_I Step 69A
14B	User B closes the 1-to-1 chat	UC_RCS_4_I Step 69B
15A	User A is informed that 1-to-1 chat with user B is closed	UC_RCS_4_I Step 88A
15B	User B is informed that 1-to-1 chat with user A is closed	UC_RCS_4_I Step 88B

Step	Direction										Message	Comment
	U s e r	U E A	A S/ I M	I M S A	I B C F	I B C F	I M S B	A S/ I M	U E B	U s e r		
4	<u> </u>		<u> </u>			В		В		В		
2		→										User A initiates a file transfer to user B
3				→							INVITE	UE_A sends INVITE to IMS_A to establish a new session with the SDP offer indicating all specific data for a new MSRP connection set up
4		←									100 Trying	IMS_A responds with a 100 Trying provisional response
5			←								INVITE	IMS_A forwards INVITE to AS/IM_A
6				→							100 Trying	AS/IM_A responds with a 100 Trying provisional response
7				→							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
8			←								100 Trying	IMS_A responds with a 100 Trying provisional response
9					\rightarrow						INVITE	IMS_A forwards INVITE to IBCF_A
10				←							100 Trying	IBCF_A responds with a 100 Trying provisional response
11						\rightarrow					INVITE	IBCF_A forwards INVITE to IBCF_B
12					←						100 Trying	IBCF_B responds with a 100 Trying provisional response
13							\rightarrow				INVITE	IBCF_B forwards INVITE to IMS_B

Step					Direction							Message	Comment	
_	U	U		Α	I	I	I	I	A	1	U	U		
	S	Е		S/	М	в	в	Μ	S	5/	Е	s		
	е	Α		L	S	С	С	S	1		В	е		
	r			М	Α	F	F	В	N	1		r		
	Α			Α		Α	В		E	3		В		
14							←	_					100 Trying	IMS_B responds with a 100 Trying
15														IMS D forwards INV/ITE to AS/IM D
15									-					INS_B forwards INVITE to AS/IM_B
16								←					100 Trying	AS/IM_B responds with a 100
47														I rying provisional response
17								←					INVITE	INVITE to IMS B
18													100 Trying	IMS B responds with a 100 Trying
10									\rightarrow				roo rrying	provisional response
19											*		INVITE	IMS_B forwards INVITE to UF_B
20										•			100 Trying	LIE B optionally responds with a
20								←					roo riying	100 Trying provisional response
21														User B is informed of incoming file
												→		and accepts the transfer
22													200 OK	UE_B responds INVITE with 200
														OK response with SDP to indicate
								\leftarrow						that the session has been accepted
														and inform A-side with specific data
														for a new MSRP connection set up
23									\rightarrow				200 OK	IMS_B forwards 200 OK response
														to AS/IM_B
24								←					200 OK	AS/IM_B returns, possibly modified,
05														200 OK response to IMS_B
25							←	_					200 OK	IMS_B forwards 200 OK response
26													200 0K	ID IDUF_D
20						←							200 OK	to IBCE A
27													200 OK	IBCE A forwards 200 OK response
21					←								200 010	to IMS A
28				,									200 OK	IMS A forwards 200 OK response
				(1									to AS/IM_A
29				,									200 OK	AS/IM_A returns, possibly modified,
					1									200 OK response to IMS_A
30		4											200 OK	IMS_A forwards 200 OK response
		,							_			_		to UE_A
31	←	_												User A is informed that file transfer
														has been accepted by user B
32		_		\longrightarrow									ACK	UE_A acknowledges the receipt of
00													1.01/	
33				(ACK	IMS_A forwards ACK to AS/IM_A
34			ļ	\longrightarrow			1						ACK	AS/IM_A returns, possibly modified,
25					.		1						ACK	AUK TO IMS_A
35						1							ACK	
36							*						ACK	IBCF_A forwards ACK to IBCF_B
37							<u> </u>	→					ACK	IBCF_B forwards ACK to IMS_B
38							1		\rightarrow				ACK	IMS_B forwards ACK to AS/IM_B
39							1	←					ACK	AS/IM_B returns, possibly modified,
														ACK to IMS_B
40											*		ACK	IMS_B forwards ACK to UE_B
41	←	_										\rightarrow		File transfer starts (see clause 5.3.3
42														File transfer completed (size
														checked)
43													BYE	UE_A releases the file transfer
				. ,			1							session with BYE
44				(BYE	IMS_A forwards BYE to AS/IM_A
45							1						BYE	AS/IM_A returns, possibly modified,
							1							BYE to IMS_A
46		1				*							BYE	IMS_A forwards BYE to IBCF_A
47		1					≯						BYE	IBCF_A forwards BYE to IBCF_B

Step	Direction										Message	Comment		
	U	J	U	Α	I		I	I	I	Α	U	U		
	S	5	E	S/	N	Λ	В	В	М	S/	E	S		
	e	•	Α	1	S	5	c	c	S		В	е		
	r			M	A	•		F	в	M		r		
40	P			<u>A</u>			A	в		В	<u> </u>	В	DVE	IPCE B forwards BVE to IMS B
40									_					IBCF_BIOIWAIUS BTE to IWIS_B
49										_			DIE	
50									←				BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
51											\rightarrow		BYE	IMS_B forwards BYE to UE_B
52											-	\rightarrow		User B is informed that file transfer completed
53									←				200 OK	UE_B sends 200 OK for BYE
54										\rightarrow			200 OK	IMS_B forwards 200 OK response to AS/IM B
55									←				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
56								←					200 OK	IMS_B forwards 200 OK response to IBCF_B
57							←	_					200 OK	IBCF_B forwards 200 OK response to IBCF_A
58					÷								200 OK	IBCF_A forwards 200 OK response to IMS_A
59				←									200 OK	IMS_A forwards 200 OK response to AS/IM_A
60					\rightarrow								200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
61			←										200 OK	IMS_A forwards 200 OK response to UE_A
62	÷													User A is informed that file transfer completed
63	ŧ	_		_		_					_	\rightarrow		Users continue chatting
64														Continue UC RCS 4 I (69A-88B)

4.4.3.3.2 UC_RCS_5_R: SIP message flow for file transfer within 1-to-1 chat with CF_ROAM_AS (OPTIONAL)

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering):

Step	Action	CF_INT_AS
1	User B selects User A in the phone address book and sends him an initial message	UC_RCS_4_R Step 1
2	User A is informed of incoming message	UC_RCS_4_R Step 26
3	User B is informed that initial message was delivered to user A	UC_RCS_4_R Step 51
4	User A reads the initial message from user B and opens the 1-to-1 chat	UC_RCS_4_R Step 64
5	Users perform chatting	UC_RCS_4_R Step 89
6	User B initiates a file transfer to user A	Step 2
7	User A is informed of incoming file and accepts the transfer	Step 27
8	User B is informed that file transfer has been accepted by user B	Step 40
9	File transfer starts	Step 53
10	File transfer completed (size checked)	Step 54
11	User A is informed that file transfer completed	Step 67
12	User B is informed that file transfer completed	Step 80
13	Users continue chatting	Step 81
14A	User B closes the 1-to-1 chat	UC_RCS_4_R Step 90A
14B	User A closes the 1-to-1 chat	UC_RCS_4_R Step 90B
15A	User B is informed that that 1-to-1 chat with user A is closed	UC_RCS_4_R Step 115A
15B	User A is informed that that 1-to-1 chat with user B is closed	UC_RCS_4_R Step 115B

The expected call flow sequence is:

Step				Direction						Message	Comment		
	ι	J	U	Α	I	I	I	Ι	Α	U	U		
	5	5	E	S/	M	B	B	M	S/	E	S		
	•	9	A		5	C E		5	I	в	e		
	4	Δ			A		г В	Б	B		B		
1	Ť	<u> </u>							Ē				Follow UC RCS 4 R (1-89)
2	Ì								1				User B initiates a file transfer to user
													A
3												INVITE	UE_B sends INVITE to IMS_A to
					(establish a new session with the
													SDP offer indicating all specific data
4												100 Trying	IMS A responds with a 100 Trying
•										\rightarrow		loo riying	provisional response
5					\rightarrow							INVITE	IMS_A forwards INVITE to IBCF_A
6												100 Trying	IBCF_A responds with a 100 Trying
													provisional response
7						\rightarrow						INVITE	IBCF_A forwards INVITE to IBCF_B
8						(100 Trying	IBCF_B responds with a 100 Trying
9													IBCE B forwards INVITE to IMS B
10												100 Trying	IMS B responds with a 100 Trying
10							<					roo rrying	provisional response
11									•			INVITE	IMS_B forwards INVITE to AS/IM_B
12												100 Trying	AS/IM_B responds with a 100 Trying
								\mathbf{i}					provisional response
13								←──				INVITE	AS/IM_B returns, possibly modified, INVITE to IMS_B
14									*			100 Trying	IMS_B responds with a 100 Trying provisional response
15							~					INVITE	IMS_B forwards INVITE to IBCF_B
16							;					100 Trying	IBCF_B responds with a 100 Trying
17						,							IRCE B forwards INIVITE to IRCE A
17													IBCF_B totwards invite a 100 Trying
10						\rightarrow						Too Trying	provisional response
19					<u> </u>	-						INVITE	IBCF A forwards INVITE to IMS A
20												100 Trying	IMS_A responds with a 100 Trying
													provisional response
21				←	-							INVITE	IMS_A forwards INVITE to AS/IM_A
22					*							100 Trying	AS/IM_A responds with a 100 Trying
													provisional response
23					*								INVITE to IMS_A
24				←	_							100 Trying	IMS_A responds with a 100 Trying provisional response
25			(_	-							INVITE	IMS_A forwards INVITE to UE_A
26					*							100 Trying	UE_A optionally responds with a 100
27	ŧ												User A is informed of incoming file
28												200 OK	UF A responds INV/ITE with 200 OK
20													response with SDP to indicate that
				+	*								the session has been accepted and
													inform B-side with specific data for a
													new MSRP connection set up
29				←	_							200 OK	IMS_A forwards 200 OK response to
30												200 04	AS/INLA
30					*							200 UK	200 OK response to IMS_A
31												200 OK	IMS_A forwards 200 OK response to
					1 1								IBCF_A

36
Step					Directi	on					Message	Comment
	U	U	Α	I	I	Ι	Ι	Α	U	U		
	S	E	S/	M	В	В	M	S/	E	S		
	е	Α	I	S	C	C	S	I	В	е		
	r ∆			A		г В	в	IVI R		r R		
32	Î				$\hat{\Box}$	*				Ť	200 OK	IBCF_A forwards 200 OK response
33							→				200 OK	IBCF_B forwards 200 OK response
34								_			200 OK	IMS_B forwards 200 OK response to
35											200 OK	AS/IM_B AS/IM_B returns, possibly modified,
36											200 OK	200 OK response to IMS_B IMS B forwards 200 OK response to
37						<					200 OK	IBCF_B
01					(to IBCF_A
38				←	_						200 OK	to IMS_A
39									\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
40									-	→		User B is informed that file transfer has been accepted by user B
41				←	-			_	_		ACK	UE_B acknowledges the receipt of 200 OK for INVITE
42					>						ACK	IMS_A forwards ACK to IBCF_A
43						>					ACK	IBCF_A forwards ACK to IBCF_B
44							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
45								→			ACK	IMS_B forwards ACK to AS/IM_B
46							←	_			ACK	AS/IM_B returns, possibly modified,
47						/					ACK	IMS B forwards ACK to IBCE B
47					,							IBCE B forwards ACK to IBCE A
40											ACK	IDCF_D IOIWAIUS ACK IO IDCF_A
49											ACK	IBCF_A IOIWAIUS ACK IO IWIS_A
50			< <u> </u>								ACK	IMS_A forwards ACK to AS/IM_A
51				\rightarrow							ACK	ACK to IMS_A
52		←									ACK	IMS_A forwards ACK to UE_A
53	←	_							_	→		File transfer starts (see clause 5.3.3)
54												File transfer completed (size
55				<i>(</i>							BYE	UE_B releases the file transfer
50											DVE	session with BYE
00					>						BIE	
57						>					BYE	IBCF_A forwards BYE to IBCF_B
58							\rightarrow				BYE	IBCF_B forwards BYE to IMS_B
59								→			BYE	IMS_B forwards BYE to AS/IM_B
60							←	_			BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
61						←	_				BYE	IMS_B forwards BYE to IBCF_B
62		1			←	-			1		BYE	IBCF_B forwards BYE to IBCF_A
63				←	4						BYE	IBCF_A forwards BYE to IMS A
64			k								BYE	IMS A forwards BYE to AS/IM A
65				→							BYE	AS/IM_A returns, possibly modified,
66		<u> </u>									BYE	IMS A forwards BYF to LIF A
67												User A is informed that file transfer
60											200 04	LIE A conde 200 OK for DVE
69			_								200 OK 200 OK	IMS_A forwards 200 OK response to
70											200 OK	AS/IM_A
10				\rightarrow								200 OK response to IMS_A

Step					Direc	ction					Message	Comment
	U	U	Α	I	I	I	I	Α	U	U		
	S	Е	S/	М	В	В	М	S/	E	S		
	е	Α	1	S	С	С	S	I	В	е		
	r		M	Α	F	F	В	м		r		
	A		A		Α	В		В		В		
71					\rightarrow						200 OK	IMS_A forwards 200 OK response to
												IBCF_A
72						→					200 OK	IBCF_A forwards 200 OK response
						-						to IBCF_B
73							\rightarrow				200 OK	IBCF_B forwards 200 OK response
							-					to IMS_B
74								\rightarrow			200 OK	IMS_B forwards 200 OK response to
												AS/IM_B
75							←				200 OK	AS/IM_B returns, possibly modified,
							-					200 OK response to IMS_B
76						←					200 OK	IMS_B forwards 200 OK response to
						`						IBCF_B
77					<u> </u>						200 OK	IBCF_B forwards 200 OK response
					Ì							to IBCF_A
78				<u> </u>							200 OK	IBCF_A forwards 200 OK response
				Ì								to IMS_A
79									\rightarrow		200 OK	IMS_A forwards 200 OK response to
		_							1			UE_B
80										_		User B is informed that file transfer
												completed
81	₩				_					\rightarrow		Users continue chatting
82												Continue UC_RCS_4_R (90A-115B)

4.4.3.4 1-to-many chat

4.4.3.4.1 UC_RCS_6_I: SIP message flow for 1-to-many chat with CF_INT_AS

Following there are the expected common call flow sequences for normal procedure of 1-to-many chat. It is assumed that in 1-to-many chat there should be additional user C, but for the clarity in the call flow sequences only two users presented since the message flow for UE_C is the same as for the other users.

- NOTE 1: In this Use Case AS/IM_A server assumes to be a Controlling IM server for 1-to-many Chat sessions and UE_A should have configured IM CONFERENCE FACTORY URI.
- NOTE 2: According to RCS-e specification [11] delivery and display notifications in 1-to-many Chat are not required and therefore not presented in this Use Case CFW.

Step	Action	CF_INT_AS
1	User A initiates a 1-to-many Chat with User B and User C by sending initial message	Step 1
2	User A is informed that the 1-to-many Chat is established	Step 8
3	User B is informed of incoming invitation from User A to join the 1-to-many Chat	Step 25
4	User B reads the initial message and accepts the 1-to-many Chat invitation	Step 26
5	User A is notified with list of 1-to-many Chat participants	Step 47
6	User B is notified with list of 1-to-many Chat participants	Step 71
7	Users perform messaging in the 1-to-many Chat	Step 79
8A	User B leaves the 1-to-many Chat	Step 80A
8B	User A leaves the 1-to-many Chat	Step 80B
9A	User B is informed that he has left the 1-to-many Chat	Step 95A
9B	User A is informed that he has left the 1-to-many Chat	Step 85B
10A	User A is notified that all other users have left the 1-to-many Chat	Step 98A
10B	User B is notified that all other users have left the 1-to-many Chat	Step 93B

Step	Action	CF_INT_AS
11A	User A leaves the 1-to-many Chat	Step 101A
11B	User B leaves the 1-to-many Chat	Step 101B
12A	User A is informed that the 1-to-many Chat has ended	Step 106A
12B	User B is informed that the 1-to-many Chat has ended	Step 116B

Step					Directi	on					Message	Comment
	U	U	Α	1	-	I	1	Α	U	U		
	S	E	S/	М	В	В	М	S/	Е	S		
	е	Α	I	S	С	С	S	I	В	е		
	r		М	Α	F	F	в	М		r		
	<u> </u>		A		<u>A</u>	В		В		В		
1		→										User A initiates a 1-to-many Chat
		í										with User B and User C by
												sending initial message
2											INVITE	UE_A sends INVITE to IMS_A
												with Request-URI set to IM
				→								CONFERENCE FACTORY URI,
												MIME resource-list body including
												Invited IM Users and the first SDP
												for MSBR connection act up
2											100 Truing	INSRP connection set up
3											TOO Trying	Trying provisional response
4			/									INS A forwards INIVITE to
4												A = 100 wards invite to
5				`							100 Trying	AS/IM_A
5											100 Hying	Trying provisional response
6											200 OK	AS/IM_A responds INVITE with
												200 OK response with IM session
												Identity allocated for the current
												1-to-many Chat to indicate that
												the session has been accepted
												and SDP to inform A-side with
												specific data for MSRP
												connection set up
7		←		_							200 OK	IMS_A forwards 200 OK
-							_					response to AS/IM_A
8		-										User A is informed that the 1-to-
											1.01/	many Chat is established
9				→							ACK	UE_A acknowledges the receipt
10											ACK	OF 200 OK TOF INVITE
10											ACK	INS_A IOI WAI'US ACK IO AS/IIVI_A
11											INVITE	AS/IM_A sends INVITE to UE_B
												with IM session identity (allocated
				7								for the current 1-to-many Chat)
												and IM address of the Inviting IM
												UE (UE_A)
12			←	_							100 Trying	IMS_A responds with a 100
												Trying provisional response
13					>						INVITE	IMS_A forwards INVITE to
4.4											100 Ta in a	IBCF_A
14											100 Trying	Trying provisional response
15						•					INVITE	IBCE A forwards INVITE to
												IBCF_B
16					←	-		1			100 Trying	IBCF_B responds with a 100
												I rying provisional response
17							*					IBCF_B forwards INVITE to
10								1			100 Trying	INS_B responds with a 100
10							1				100 Hying	Trying provisional response
10						1						INS B forwards INVITE to
19						1		1				AS/IM B
	1	1	1	1	1	1	1	1	1	1	1	

Step					Directi	on					Message	Comment
	U	U	A	I			1	A	U	U		
	S P	E ∆	S/	M S	C B	C B	M S	5/	E	S		
	r	~	Ň	Ă	F	F	В	M		r		
	Α		Α		Α	В		В		В		
20							←				100 Trying	AS/IM_B responds with a 100 Trying provisional response
21							←				INVITE	AS/IM_B returns, possibly modified, INVITE to IMS_B
22								\rightarrow			100 Trying	IMS_B responds with a 100 Trying provisional response
23									→		INVITE	IMS_B forwards INVITE to UE_B
24							←				100 Trying	UE_B optionally responds with a 100 Trying provisional response
25									-	→		User B is informed of incoming invitation from User A to join the
26										-		User B reads the initial message and accepts the 1-to-many Chat invitation
27							<i>←</i>				200 OK	UE_B responds INVITE with 200 OK response with SDP to indicate that the session has been accepted and inform AS/IM_A with specific data for MSRP connection set up
28								→			200 OK	IMS(A connection set up IMS_B forwards 200 OK
29							←	_			200 OK	AS/IM_B returns, possibly modified, 200 OK response to
30						←	_				200 OK	IMS_B forwards 200 OK
31					←						200 OK	IBCF_B forwards 200 OK
32				<							200 OK	IBCF_A forwards 200 OK response to IMS_A
33			←	_							200 OK	IMS_A forwards 200 OK response to AS/IM_A
34				→							ACK	AS/IM_A acknowledges the receipt of 200 OK for INVITE
35					*						ACK	IMS_A forwards ACK to IBCF_A
36						>					ACK	IBCF_A forwards ACK to IBCF_B
37							→				ACK	IBCF_B forwards ACK to IMS_B
38								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
39						1	←				ACK	AS/IM_B returns, possibly modified, ACK to IMS_B
40									\rightarrow		ACK	IMS_B forwards ACK to UE_B
41				→							SUBSCRIBE	UE_A subscribes to the conference event package
42			←								SUBSCRIBE	IMS_A forwards SUBCRIBE to AS/IM_A
43				→							200 OK	AS/IM_A sends 200 OK for SUBSCRIBE
44		←		_							200 OK	IMS_A forwards 200 OK
45				→							NOTIFY	AS/IM_A sends NOTIFY to UE_A with list of 1-to-many Chat participants

Step					Dir	ection					Message	Comment
	U	U	Α	I	1	I	I	A	U	U		
	S	E ∧	S/	N S	B	В	M S	S/	B	S		
	r	~	м	Ă	F	F	В	м		r		
	Α		Α		Α	В		В		В		
46		←									NOTIFY	IMS_A forwards the NOTIFY to UE_A
47	—											User A is notified with list of 1-to- many Chat participants
48		-		\rightarrow							200 OK	UE_A responds with 200 OK to
49			←								200 OK	IMS_A forwards the 200 OK
50							←				SUBSCRIBE	UE_B subscribes to the
51								→			SUBSCRIBE	IMS_B forwards SUBSCRIBE to
52							←				SUBSCRIBE	AS/IM_B AS/IM_B returns, possibly
53						-					SUBSCRIBE	modified, SUBSCRIBE to IMS_B IMS_B forwards SUBSCRIBE to
						ľ						IBCF_B
54					←						SUBSCRIBE	IBCF_B forwards SUBSCRIBE to IBCF_A
55				←							SUBSCRIBE	IBCF_A forwards SUBSCRIBE to IMS_A
56			←								SUBSCRIBE	IMS_A forwards SUBSCRIBE to AS/IM_A
57				\rightarrow							200 OK	AS/IM_A sends 200 OK for SUBSCRIBE
58					\rightarrow						200 OK	IMS_A forwards 200 OK
59						\rightarrow					200 OK	IBCF_A forwards 200 OK
60							→				200 OK	IBCF_B forwards 200 OK
61								\rightarrow			200 OK	IMS_B forwards 200 OK
62							←				200 OK	AS/IM_B returns, possibly
												IMS_B
63											200 OK	response to UE B
64				→							NOTIFY	AS/IM_A sends NOTIFY to UE_B
												participants
65					\rightarrow						NOTIFY	IMS_A forwards BYE to IBCF_A
66						\rightarrow					NOTIFY	IBCF_A forwards BYE to IBCF_B
67							\rightarrow				NOTIFY	IBCF_B forwards BYE to IMS_B
68								\rightarrow			NOTIFY	IMS_B forwards BYE to AS/IM_B
69							←				NOTIFY	AS/IM_B returns, possibly modified_BYE to IMS_B
70									\rightarrow		NOTIFY	IMS_B forwards BYE to UE_B
71										→		User B is notified with list of 1-to- many Chat participants
72							←				200 OK	UE_B sends 200 OK for NOTIFY
73								\rightarrow			200 OK	IMS_B forwards 200 OK response to AS/IM_B

Step					Directi	on					Message	Comment
	U	U	A	1	1	Ι	I	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	e	A	M	5	E	E	Э В	M	в	e		
	Δ		Δ	^	Δ	B	В	B		B		
74	<u> </u>				Ê					Ī	200 OK	AS/IM B returns, possibly
							←	-				modified, 200 OK response to
												IMS_B
75						←					200 OK	IMS_B forwards 200 OK
												response to IBCF_B
76					←	-					200 OK	IBCF_B forwards 200 OK
												response to IBCF_A
77				←	-						200 OK	IBCF_A forwards 200 OK
												response to IMS_A
78			←								200 OK	IMS_A forwards 200 OK
70												response to AS/IM_A
79			,									Users perform messaging in the
										-		1-to-many Chat (see clause
												- Interworking)
80A												User B leaves the 1-to-many
00/1												Chat
81A							<i>(</i>	_			BYE	UE B sends BYE to IMS B to
												leave the 1-to-many Chat
82A								→			BYE	IMS_B forwards BYE to AS/IM_B
83A							←	_			BYE	AS/IM_B returns, possibly
												modified, BYE to IMS_B
84A						←	_				BYE	IMS_B forwards BYE to IBCF_B
85A					←						BYE	IBCF_B forwards BYE to IBCF_A
96 4				,							DVE	IDCE A forwards DVE to IMC A
00A											DIE	IBCF_A IOIWAIDS BYE IO IWIS_A
874			,								BYE	IMS A forwards BYE to AS/IM A
0///											DIE	
88A											200 OK	AS/IM A sends 200 OK for BYE
89A				;							200 OK	IMS_A forwards 200 OK
												response to IBCF_A
90A						>					200 OK	IBCF_A forwards 200 OK
												response to IBCF_B
91A							→				200 OK	IBCF_B forwards 200 OK
004											000.01/	response to IMS_B
92A								→			200 OK	IMS_B forwards 200 OK
024											200.01	response to AS/IM_B
93A							← →	-			200 OK	AS/IM_B returns, possibly
												IMS B
94A											200 OK	IMS_B forwards 200 OK
~ <i>"</i> `									1			response to UE_B
95A				İ						\rightarrow		User B is informed that he has
												left the 1-to-many Chat
96A			、								NOTIFY	AS/IM_A sends NOTIFY to IMS
				1								_A to inform UE_A that User B
												has left the 1-to-many Chat
97A		←		1							NOTIFY	IMS_A forwards the NOTIFY to
001												
98A	←											User A is notified that all other
												Chat
907			、								200 04	LIE A responds with 200 OK to
33A				1							200 01	IMS A
100A			(1							200 OK	IMS_A forwards the 200 OK
			`									response to AS/IM_A

Step					Directio	n					Message	Comment
	U	U	Α	I	1	-	I	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	e	A	M	5	E		5 B	M	в	e		
	Å		A	^	Å	B	5	B		B		
101A	Ē	*										User A leaves the 1-to-many Chat
102A				•							BYE	UE_A sends BYE to IMS_A to leave the 1-to-many Chat
103A			<i>(</i>								BYE	IMS_A forwards BYE to AS/IM_A
104A											200 OK	AS/IM_A sends 200 OK for BYE
105A		←		-							200 OK	IMS_A forwards 200 OK response to UE_A
106A	K											User A is informed that the 1-to- many Chat has ended
80B		¥										User A leaves the 1-to-many Chat
81B		-	;	×							BYE	UE_A sends BYE to IMS_A to
82B			<u> </u>								BYE	IMS_A forwards BYE to AS/IM_A
83B			;								200 OK	AS/IM_A sends 200 OK for BYE
84B		←									200 OK	IMS_A forwards 200 OK
85B	K											User A is informed that he has
86B			 ;	×							NOTIFY	AS/IM_A sends NOTIFY to
												A has left the 1-to-many Chat
87B				—							NOTIFY	IMS_A forwards BYE to IBCF_A
88B					\rightarrow						NOTIFY	IBCF_A forwards BYE to IBCF_B
89B						$ \rightarrow$					NOTIFY	IBCF_B forwards BYE to IMS_B
90B							$ \rightarrow$				NOTIFY	IMS_B forwards BYE to AS/IM_B
91B							~				NOTIFY	AS/IM_B returns, possibly
92B									→		NOTIFY	IMS_B forwards BYE to UE_B
93B										→		User B is notified that all other users have left the 1-to-many
												Chat
94B							~		_		200 OK	UE_B sends 200 OK for NOTIFY
95B							\rightarrow				200 OK	IMS_B forwards 200 OK
96B							<i>(</i>				200 OK	AS/IM_B returns, possibly
070											200 01	IMS_B
978						κ					200 OK	response to IBCF_B
98B					K						200 OK	IBCF_B forwards 200 OK response to IBCF_A
99B				(•						200 OK	IBCF_A forwards 200 OK response to IMS_A
100B			←								200 OK	IMS_A forwards 200 OK response to AS/IM_A
101B									(_		User B leaves the 1-to-many Chat
102B							<		-		BYE	UE_B sends BYE to IMS_B to leave the 1-to-many Chat

Step					[Directi	ion						Message	Comment
	U s r	U E A	A S/ I M	I M S A		I B C F	I B C F	I M S B	A S/ I M	,	U E B	U s r		
103B	A		A			A	в		<u> </u>			в	BYE	IMS_B forwards BYE to AS/IM_B
104B								←					BYE	AS/IM_B returns, possibly
105B							←						BYE	IMS_B forwards BYE to IBCF_B
106B						←	_						BYE	IBCF_B forwards BYE to IBCF_A
107B				÷									BYE	IBCF_A forwards BYE to IMS_A
108B			←										BYE	IMS_A forwards BYE to AS/IM_A
109B				\rightarrow									200 OK	AS/IM_A sends 200 OK for BYE
110B				-	\rightarrow								200 OK	IMS_A forwards 200 OK response to IBCF_A
111B							>						200 OK	IBCF_A forwards 200 OK response to IBCF_B
112B								\rightarrow					200 OK	IBCF_B forwards 200 OK response to IMS B
113B									\rightarrow				200 OK	IMS_B forwards 200 OK
114B								←					200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS B
115B													200 OK	IMS_B forwards 200 OK response to UE_B
116B	ĺ		ĺ								-	→		User B is informed that the 1-to- many Chat has ended

4.4.3.4.2 UC_RCS_6_R: SIP message flow 1-to-many chat with CF_ROAM_AS (OPTIONAL)

NOTE 2: According to RCS-e specification [11] delivery and display notifications in 1-to-many Chat are not required and therefore not presented in this Use Case CFW.

Step	Action	CF_ROAM_AS
1	User B initiates a 1-to-many Chat with User A and User C by sending initial message	Step 1
2	User B is informed that the 1-to-many Chat is established	Step 17
3	User A is informed of incoming invitation from User B to join the 1-to-many Chat	Step 37
4	User A reads the initial message and accepts the 1-to-many Chat invitation	Step 38
5	User B is notified with list of 1-to-many Chat participants	Step 68
6	User A is notified with list of 1-to-many Chat participants	Step 95
7	Users perform messaging in the 1-to-many Chat	Step 103
8A	User A leaves the 1-to-many Chat	Step 104A
8B	User B leaves the 1-to-many Chat	Step 104B
9A	User A is informed that he has left the 1-to-many Chat	Step 119A
9B	User B is informed that he has left the 1-to-many Chat	Step 115B
10A	User B is notified that all other users have left the 1-to-many Chat	Step 125A
10B	User A is notified that all other users have left the 1-to-many Chat	Step 123B
11A	User B leaves the 1-to-many Chat	Step 131A
11B	User A leaves the 1-to-many Chat	Step 131B
12A	User B is informed that the 1-to-many Chat has ended	Step 142A

NOTE 1: In this Use Case AS/IM_B server assumes to be a Controlling IM server for 1-to-many Chat sessions and UE_B should have configured IM CONFERENCE FACTORY URI.

Step	Action	CF_ROAM_AS
12B	User A is informed that the 1-to-many Chat has ended	Step 146B

Step					Direct	ion					Message	Comment
	U	U	A	I	1	Ι	I	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	e r	A	M	5	С F	F	Э В	M	в	e r		
	Å		A	^	Ă	в	Б	В		B		
1	T.							Ē				User B initiates a 1-to-many Chat
												with User A and User C by sending
												initial message
2											INVITE	UE_B sends INVITE to IMS_A with
				←		_						MIME resource-list body including
												invited IM Users and the first SDP
												offer indicating all specific data for
											100 T :	MSRP connection set up
3									→		100 Trying	IMS_A responds with a 100 Trying
4					_						INVITE	IMS A forwards INVITE to IBCE A
					1							
5				←							100 Trying	IBCF_A responds with a 100 Trying
												provisional response
6						→					INVITE	IBCF_A forwards INVITE to
7					/						100 Trying	IBCF_B IBCF_B responds with a 100 Trying
'											roo rrying	provisional response
8							\rightarrow				INVITE	IBCF_B forwards INVITE to IMS_B
											100 Ta in a	
9						(100 Trying	INS_B responds with a 100 Trying
10								→			INVITE	IMS B forwards INVITE to
10								1				AS/IM_B
11							←	_			100 Trying	AS/IM_B responds with a 100
												Trying provisional response
12											200 OK	AS/IM_B responds INVITE with
												Identity allocated for the current 1-
							←					to-many Chat to indicate that the
												session has been accepted and
												SDP to inform A-side with specific
10						,					200.0K	data for MSRP connection set up
13						-					200 OK	to IBCE B
14					~	_					200 OK	IBCF_B forwards 200 OK response
												to IBCF_A
15				←							200 OK	IBCF_A forwards 200 OK response
16											200 04	to IMS_A
10											200 01	to UE_B
17									_	—		User B is informed that the 1-to-
												many Chat is established
18				←							ACK	UE_B acknowledges the receipt of
19											АСК	IMS A forwards ACK to IBCE A
15					1							
20						→					ACK	IBCF_A forwards ACK to IBCF_B
21							→				ACK	IBCF_B forwards ACK to IMS_B
22								→			АСК	IMS B forwards ACK to AS/IM B

Step					Directi	ion					Message	Comment
	U	U	A	I			I	A	U	U		
	s e	E A	5/ 	S	В С	В С	S	5/ 	B	e s		
	r		М	Α	F	F	В	м		r		
23	A		A		A	В		В		В		AS/IM B sends INVITE to LIF A
20							,					with IM session identity (allocated
												for the current 1-to-many Chat) and
												(UE B)
24								\rightarrow			100 Trying	IMS_B responds with a 100 Trying
25												provisional response
25											INVITE	IMS_B forwards INVITE to IBCF_B
26							\rightarrow				100 Trying	IBCF_B responds with a 100 Trying
27					,							provisional response
21												IBCF_B IOWAIDS INVITE to
28						→					100 Trying	IBCF_A responds with a 100 Trying
20												provisional response
29												IBCF_A IOIWAIDS INVITE to IIVIS_A
30					→						100 Trying	IMS_A responds with a 100 Trying
21			,									provisional response
31												A lot wards in vite to AS/IM_A
32				→							100 Trying	AS/IM_A responds with a 100
33												AS/IM A returns possibly
00												modified, INVITE to IMS_A
34			←	-							100 Trying	IMS_A responds with a 100 Trying
35		←										IMS A forwards INVITE to UE A
36				→							100 Trying	UE_A optionally responds with a
37												User A is informed of incoming
												invitation from User B to join the 1-
38												to-many Chat
50		¥										and accepts the 1-to-many Chat
												invitation
39											200 OK	UE_A responds INVITE with 200
				\rightarrow								that the session has been accepted
												and inform AS/IM_A with specific
40			(200 OK	IMS A forwards 200 OK response
			Ì									to AS/IM_A
41				→							200 OK	AS/IM_A returns, possibly
												IMS A
42					→						200 OK	IMS_A forwards 200 OK response
42											200.0K	to IBCF_A
43						1					200 UK	to IBCF_B
44							\rightarrow				200 OK	IBCF_B forwards 200 OK response
45								``			200 04	to IMS_B
40												to AS/IM_B
46							←				ACK	AS/IM_B acknowledges the receipt
47						<u> </u>					АСК	IMS B forwards ACK to IBCF B
						ľ						

Step					Directio	on					Message	Comment
	U	U	Α	I		I	I	Α	U	U		
	S	E A	S/	M S	B	B	M S	S/	B	S		
	r		м	Ă	F	F	в	M		r		
- 10	Α		Α	_	A	В		В		В		
48					<						ACK	IBCF_B forwards ACK to IBCF_A
49				←	•						ACK	IBCF_A forwards ACK to IMS_A
50			←								ACK	IMS_A forwards ACK to AS/IM_A
51			\rightarrow								ACK	AS/IM_A returns, possibly modified, ACK to IMS_A
52		<									ACK	IMS_A forwards ACK to UE_A
53				~							SUBSCRIBE	UE_B subscribes to the conference event package
54											SUBSCRIBE	IMS_A forwards SUBSCRIBE to
55											SUBSCRIBE	IBCF_A forwards SUBSCRIBE to
56											SUBSCRIBE	IBCF_B forwards SUBSCRIBE to
57								*			SUBSCRIBE	IMS_B forwards SUBSCRIBE to AS/IM_B
58							←	_			200 OK	AS/IM_B sends 200 OK for SUBSCRIBE
59						←					200 OK	IMS_B forwards 200 OK response to IBCF_B
60					←	-					200 OK	IBCF_B forwards 200 OK response to IBCF_A
61				←	•						200 OK	IBCF_A forwards 200 OK response to IMS_A
62									\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
63							¢	-			NOTIFY	AS/IM_B sends NOTIFY to UE_B with list of 1-to-many Chat
64						←	1				NOTIFY	IMS_B forwards NOTIFY to
65					←	-					NOTIFY	IBCF_B forwards NOTIFY to
66				←	•						NOTIFY	IBCF_A forwards NOTIFY to IMS_A
67									\rightarrow		NOTIFY	IMS_A forwards NOTIFY to UE_B
68										→		User B is notified with list of 1-to- many Chat participants
69				(200 OK	UE_B responds with 200 OK to IMS_A
70				;							200 OK	IMS_A forwards 200 OK response to IBCF_A
71					;						200 OK	IBCF_A forwards 200 OK response to IBCF_B
72						 ;	•				200 OK	IBCF_B forwards 200 OK response to IMS_B
73								*			200 OK	IMS_B forwards 200 OK response to AS/IM_B
74			$ \rightarrow$								SUBSCRIBE	UE_A subscribes to the conference event package
75			←								SUBSCRIBE	IMS_A forwards SUBSCRIBE to AS/IM_A
76			\mapsto								SUBSCRIBE	AS/IM_A returns, possibly modified, SUBSCRIBE to IMS_A
77				;							SUBSCRIBE	IMS_A forwards SUBSCRIBE to IBCF_A

Step					Directio	on					Me	ssage	Comment
	U	U	Α	I	I	-	-	Α	U	U			
	S	E	S/	M	B	B	M	S/	E	S			
	e	A	M	5		E	Э В	M	в	e			
	Å		Δ	^	A	B	Б	B		B			
78					$ \rightarrow $						SUBS	SCRIBE	IBCF_A forwards SUBSCRIBE to
79							`				SUBS	CRIBE	IBCF_B forwards SUBSCRIBE to
80								*			SUBS	SCRIBE	IMS_B forwards SUBSCRIBE to AS/IM_B
81							←	-			200 C	Ж	AS/IM_B sends 200 OK for SUBSCRIBE
82						←	1				200 C	Ж	IMS_B forwards 200 OK response to IBCF_B
83											200 C	Ж	IBCF_B forwards 200 OK response to IBCF_A
84				←							200 C	Ж	IBCF_A forwards 200 OK response to IMS_A
85			<	-							200 C	Ж	IMS_A forwards 200 OK response to AS/IM_A
86			$ \rightarrow$								200 C	Ж	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
87		<u> </u>		-							200 C	Ж	IMS_A forwards 200 OK response to UE_A
88							←	-			NOTII	FY	AS/IM_B sends NOTIFY to UE_A with list of 1-to-many Chat
89						←	-				NOTI	FY	IMS_B forwards BYE to IBCF_B
90					←	-					NOTII	FY	IBCF_B forwards BYE to IBCF_A
91				<							NOTI	FY	IBCF_A forwards BYE to IMS_A
92			~	-							NOTII	FY	IMS_A forwards BYE to AS/IM_A
93			\rightarrow								NOTII	FY	AS/IM_A returns, possibly modified, BYE to IMS_A
94		←									NOTII	FY	IMS_A forwards BYE to UE_A
95	~												User A is notified with list of 1-to- many Chat participants
96			\rightarrow								200 C	ЭК	UE_A sends 200 OK for NOTIFY
97			~	-							200 C	Ж	IMS_A forwards 200 OK response
98			 ,								200 C	Ж	AS/IM_A AS/IM_A returns, possibly
													IMS_A
99				, ,							200 C		to IBCF_A
100											200 C	Ж	IBCF_A forwards 200 OK response to IBCF_B
101							*				200 C	DK	IBCF_B forwards 200 OK response to IMS_B
102								*			200 C)K	IMS_B forwards 200 OK response to AS/IM_B
103	(*		→			Users perform messaging in the 1- to-many Chat (see clause 5.3.2.2 Chat 1 to many via MSRP - Roaming)
104A		*											User A leaves the 1-to-many Chat
105A			,								BYE		UE_A sends BYE to IMS_A to leave the 1-to-many Chat

Step					Directio	on		-	Message	Comment		
	U	U	Α	I	I	I	Ι	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	е	Α		S	C E	C F	S	I	в	e		
	r A			A		Г В	D	IVI R		R		
106A	Î		\leftarrow	1							BYE	IMS_A forwards BYE to AS/IM_A
107A											BYE	AS/IM_A returns, possibly modified, BYE to IMS_A
108A				}							BYE	IMS_A forwards BYE to IBCF_A
109A					;						BYE	IBCF_A forwards BYE to IBCF_B
110A							>				BYE	IBCF_B forwards BYE to IMS_B
111A								→			BYE	IMS_B forwards BYE to AS/IM_B
112A							←				200 OK	AS/IM_B sends 200 OK for BYE
113A						←	-				200 OK	IMS_B forwards 200 OK response to IBCF_B
114A					←	•					200 OK	IBCF_B forwards 200 OK response to IBCF_A
115A				←							200 OK	IBCF_A forwards 200 OK response to IMS_A
116A			<								200 OK	IMS_A forwards 200 OK response to AS/IM_A
117A											200 OK	AS/IM_A returns, possibly modified, 200 OK response to
118A		←		-							200 OK	IMS_A forwards 200 OK response
119A		-										User A is informed that he has left the 1-to-many Chat
120A							←	_			NOTIFY	AS/IM_B sends NOTIFY to IMS _B to inform UE_B that User A has left the 1-to-many Chat
121A						←	_				NOTIFY	IMS_B forwards NOTIFY to IBCF_B
122A					←						NOTIFY	IBCF_B forwards NOTIFY to IBCF_A
123A				←							NOTIFY	IBCF_A forwards NOTIFY to IMS_A
124A									\rightarrow		NOTIFY	IMS_A forwards NOTIFY to UE_B
125A										→		User B is notified that all other users have left the 1-to-many Chat
126A				<							200 OK	UE_B responds with 200 OK to IMS_A
127A											200 OK	IMS_A forwards 200 OK response to IBCF_A
128A											200 OK	IBCF_A forwards 200 OK response to IBCF_B
129A							>				200 OK	IBCF_B forwards 200 OK response to IMS_B
130A								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
131A									←			User B leaves the 1-to-many Chat
132A				<							BYE	UE_B sends BYE to IMS_A to leave the 1-to-many Chat
133A				 ;							BYE	IMS_A forwards BYE to IBCF_A
134A					 ;						BYE	IBCF_A forwards BYE to IBCF_B

Step					[Directio	on		Message	Comment			
	ι	J	U	Α	1	I	-	Ι	Α	U	U		
	5	5	E	S/	M	B	B	M	S/	E	S		
	ا	e r	A	M	S ∆	F	F	э В	м	D	e r		
	ļ	À		A		A	B	5	В		B		
135A							\vdash	•				BYE	IBCF_B forwards BYE to IMS_B
136A									×			BYE	IMS_B forwards BYE to AS/IM_B
137A								(200 OK	AS/IM_B sends 200 OK for BYE
138A							←					200 OK	IMS_B forwards 200 OK response to IBCF_B
139A						<						200 OK	IBCF_B forwards 200 OK response to IBCF_A
140A					←							200 OK	IBCF_A forwards 200 OK response to IMS_A
141A										→		200 OK	IMS_A forwards 200 OK response to UE_B
142A											→		User B is informed that the 1-to- many Chat has ended
104B										~	-		User B leaves the 1-to-many Chat
105B					<							BYE	UE_B sends BYE to IMS_A to leave the 1-to-many Chat
106B					\rightarrow							BYE	IMS_A forwards BYE to IBCF_A
107B						\rightarrow						BYE	IBCF_A forwards BYE to IBCF_B
108B							;	•				BYE	IBCF_B forwards BYE to IMS_B
109B									×			BYE	IMS_B forwards BYE to AS/IM_B
110B								<u> </u>				200 OK	AS/IM_B sends 200 OK for BYE
111B							(200 OK	IMS_B forwards 200 OK response to IBCF_B
112B						←						200 OK	IBCF_B forwards 200 OK response to IBCF_A
113B					←							200 OK	IBCF_A forwards 200 OK response to IMS_A
114B										\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
115B											→		User B is informed that he has left the 1-to-many Chat
116B								¢				NOTIFY	AS/IM_B sends NOTIFY to IMS_B to inform UE_A that User B has left the 1-to-many Chat
117B							←					NOTIFY	IMS_B forwards NOTIFY to
118B						←						NOTIFY	IBCF_B IBCF_B forwards NOTIFY to
119B					<							NOTIFY	IBCF_A IBCF_A forwards NOTIFY to
120B				←								NOTIFY	IMS_A forwards NOTIFY to
121B				├ →								NOTIFY	AS/IM_A AS/IM_A returns, possibly
122B			←									BYE	IMS_A forwards NOTIFY to UE_A
123B	ŧ	,											User A is informed that User B has left the 1-to-many Chat
124B				 								200 OK	UE_A sends 200 OK for NOTIFY
125B				←								200 OK	IMS_A forwards 200 OK response to AS/IM_A

Step						Directio	on					Message	Comment
	U		U	Α	I	I		1	Α	U	U		
	S		E	S/	M	B	B	M	S/	E	S		
	е		A		S	C	C	S	1	в	е		
	r ∆				A		R	в	NI R		r B		
126B				;								200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
127B												200 OK	IMS_A forwards 200 OK response to IBCF_A
128B												200 OK	IBCF_A forwards 200 OK response to IBCF_B
129B								*				200 OK	IBCF_B forwards 200 OK response to IMS_B
130B									*			200 OK	IMS_B forwards 200 OK response to AS/IM_B
131B	F	\rightarrow											User A leaves the 1-to-many Chat
132B				;								BYE	UE_A sends BYE to IMS_A to leave the 1-to-many Chat
133B				←	-							BYE	IMS_A forwards BYE to AS/IM_A
134B				;								BYE	AS/IM_A returns, possibly modified, BYE to IMS_A
135B												BYE	IMS_A forwards BYE to IBCF_A
136B												BYE	IBCF_A forwards BYE to IBCF_B
137B								•				BYE	IBCF_B forwards BYE to IMS_B
138B									*			BYE	IMS_B forwards BYE to AS/IM_B
139B								←	_			200 OK	AS/IM_B sends 200 OK for BYE
140B							←	-				200 OK	IMS_B forwards 200 OK response to IBCF_B
141B						←	-					200 OK	IBCF_B forwards 200 OK response to IBCF_A
142B						-						200 OK	IBCF_A forwards 200 OK response to IMS_A
143B				←								200 OK	IMS_A forwards 200 OK response to AS/IM_A
144B				;								200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
145B			←									200 OK	IMS_A forwards 200 OK response to UE_A
146B	+												User A is informed that the 1-to- many Chat has ended

4.4.3.5 Switching to 1-to-many chat

Following there are the expected common call flow sequences for switching from 1-to-1 chat to 1-to-many chat. It is assumed that in 1-to-many chat there should be additional user C, but for the clarity in the call flow sequences only two users presented since the message flow for UE_C is the same as for the other users.

4.4.3.5.1 UC_RCS_7_I: SIP message flow for switching to 1-to-many chat with CF_INT_AS

NOTE 1: In this Use Case AS/IM_A server assumes to be a Controlling IM server for 1-to-many Chat sessions and UE_A should have configured IM CONFERENCE FACTORY URI.

NOTE 2: According to RCS-e specification [11] delivery and display notifications in 1-to-many Chat are not required and therefore not presented in this Use Case CFW.

Step	Action	CF_INT_AS
1	User A selects User B in the phone address book and sends him an initial message	UC_RCS_4_I Step 1
2	User B is informed of incoming message	UC_RCS_4_I Step 20
3	User A is informed that initial message was delivered to user B	UC_RCS_4_I Step 39
4	User B reads the initial message from user A and opens the 1-to-1 chat	UC_RCS_4_I Step 49
5	Users perform 1-to-1 chatting	UC_RCS_4_I Step 68
6	User A initiates a 1-to-many Chat with User B and User C by sending initial	Step 2
	message	
7	User A is informed that the 1-to-many Chat is established	Step 9
8	User B is informed of incoming invitation from User A to join the 1-to-many Chat	Step 26
9	User B reads the initial message and accepts the 1-to-many Chat invitation	Step 27
10	User A is notified with list of 1-to-many Chat participants	Step 66
11	User B is notified with list of 1-to-many Chat participants	Step 90
12	Users perform messaging in the 1-to-many Chat	Step 98
13A	User B leaves the 1-to-many Chat	UC_RCS_6_I Step 80A
13B	User A leaves the 1-to-many Chat	UC_RCS_6_I Step 80B
14A	User B is informed that he has left the 1-to-many Chat	UC_RCS_6_I Step 95A
14B	User A is informed that he has left the 1-to-many Chat	UC_RCS_6_I Step 85B
15A	User A is notified that all other users have left the 1-to-many Chat	UC_RCS_6_I Step 98A
15B	User B is notified that all other users have left the 1-to-many Chat	UC_RCS_6_I Step 93B
16A	User A leaves the 1-to-many Chat	UC_RCS_6_I Step 101A
16B	User B leaves the 1-to-many Chat	UC_RCS_6_I Step 101B
17A	User A is informed that the 1-to-many Chat has ended	UC_RCS_6_I Step 106A
17B	User B is informed that the 1-to-many Chat has ended	UC_RCS_6_I Step 116B

Step					Dire	ction					Message	Comment
	Us	U	A S/	I M	I B	I B	I M	A S/	UE	Us		
	e	Ā	I	S	Ē	Ē	S	I.	В	e		
	r		М	Α	F	F	в	м		r		
	Α		Α		Α	В		В		В		
1												Follow UC_RCS_4_I (1-68)
2	-	→										User A initiates a 1-to-many Chat with User B and User C by sending initial message
3											INVITE	UE_A sends INVITE to IMS_A with Request-URI set to IM CONFERENCE FACTORY URI, MIME resource-list body including invited IM Users, the first SDP offer indicating all specific data for MSRP connection set up and the identity of User B with Session- Replaces header
4		÷									100 Trying	IMS_A responds with a 100 Trying provisional response
5			<u>(</u>								INVITE	IMS_A forwards INVITE to AS/IM_A
6				\rightarrow							100 Trying	AS/IM_A responds with a 100 Trying provisional response
7				→							200 OK	AS/IM_A responds INVITE with 200 OK response with IM session Identity allocated for the current 1- to-many Chat to indicate that the session has been accepted and SDP to inform A-side with specific data for MSRP connection set up

Step					Directi	on					Message	Comment
	U	U	A	I		I	I	A	U	U		
	S	E ∆	5/	M S	C B	C B	M S	5/	B	S A		
	r	^	Ň	A	F	F	B	M	В	r		
	A		Α		A	B	_	В		В		
8		<u> </u>		_							200 OK	IMS_A forwards 200 OK response to AS/IM_A
9		-										User A is informed that the 1-to- many Chat is established
10		-	-	→							ACK	UE_A acknowledges the receipt of 200 OK for INVITE
11			←								ACK	IMS_A forwards ACK to AS/IM_A
12				→							INVITE	AS/IM_A sends INVITE to UE_B with IM session identity (allocated for the current 1-to-many Chat), IM address of the Inviting IM UE (UE_A) and Session-Replaces header with the original 1-to-1 session identity
13			<u>(</u>	-							100 Trying	IMS_A responds with a 100 Trying provisional response
14					→						INVITE	IMS_A forwards INVITE to IBCF_A
15				←	_						100 Trying	IBCF_A responds with a 100 Trying
16						>					INVITE	IBCF_A forwards INVITE to
17					←	-					100 Trying	IBCF_B responds with a 100 Trying
18							>				INVITE	IBCF_B forwards INVITE to IMS_B
19						←	_				100 Trying	IMS_B responds with a 100 Trying
20								→			INVITE	IMS_B forwards INVITE to AS/IM_B
21							<				100 Trying	AS/IM_B responds with a 100
22							(INVITE	AS/IM_B returns, possibly modified_INIVITE to IMS_B
23								→			100 Trying	IMS_B responds with a 100 Trying
24									→		INVITE	IMS B forwards INVITE to UE B
25											100 Trying	UE_B optionally responds with a
26									-	→		User B is informed of incoming invitation from User A to join the 1- to-many Chat
27									←	=		User B reads the initial message and accepts the 1-to-many Chat invitation
28							<	-			200 OK	UE_B responds INVITE with 200 OK response with SDP to indicate that the session has been accepted and inform AS/IM_A with specific data for MSRP connection set up
29								→			200 OK	IMS_B forwards 200 OK response to AS/IM B
30							←	-			200 OK	AS/IM_B returns, possibly modified, 200 OK response to
31						←					200 OK	IMS_B forwards 200 OK response
32					←	-					200 OK	IBCF_B forwards 200 OK response to IBCF_A

Step					Directi	on					Message	Comment
	U	U	Α	I	1	I	Ι	Α	U	U		
	S	Е	S/	М	в	В	м	S/	E	S		
	е	Α	I	S	С	С	S	I	В	е		
	r		М	Α	F	F	в	М		r		
	Α		A		Α	В		В		В		
33				←	_						200 OK	IBCF_A forwards 200 OK response to IMS_A
34			←								200 OK	IMS_A forwards 200 OK response to AS/IM_A
35				→							ACK	AS/IM_A acknowledges the receipt
36					<u> </u>						ACK	IMS A forwards ACK to IBCE A
27					1						ACK	INC_A forwards ACK to IBCE_A
37						7					ACK	IBCF_A IOIWAIDS ACK IO IBCF_B
38							>				ACK	IBCF_B forwards ACK to IMS_B
39								→			ACK	IMS_B forwards ACK to AS/IM_B
40							←	_			ACK	AS/IM_B returns, possibly modified, ACK to IMS B
41									\rightarrow		ACK	IMS_B forwards ACK to UE_B
42							/				BYE	UE_B releases the 1-to-1 IM
							Ì					session with BYE
43								\rightarrow			BYE	IMS_B forwards BYE to AS/IM_B
44							←	_			BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
45						<u> </u>					BYE	IMS B forwards BYE to IBCF B
46					(BYE	IBCE B forwards BYE to IBCE A
47				/	Ì							IBCE A forwarda BVE to IMS A
47												
48			<								BYE	IMS_A forwards BYE to AS/IM_A
49				\rightarrow							BYE	AS/IM_A returns, possibly modified, BYE to IMS_A
50		<u> </u>									BYE	IMS A forwards BYE to UE A
51		<u>`</u>									200 OK	LIF A sends 200 OK for BYE
52				1							200 OK	IMS A forwards 200 OK response
52			←								200 01	to AS/IM_A
53											200 OK	AS/IM_A returns, possibly
				\rightarrow								modified, 200 OK response to
												IMS_A
54					→						200 OK	IMS_A forwards 200 OK response to IBCF_A
55						>					200 OK	IBCF_A forwards 200 OK response to IBCF_B
56											200 OK	IBCF_B forwards 200 OK response
57								→			200 OK	IMS_B forwards 200 OK response
58											200 OK	to AS/IM_B AS/IM_B returns_possibly
00							<u> </u>				200 010	modified 200 OK response to
							`					IMS B
59					1						200 OK	IMS_B forwards 200 OK response
												to UE_B
60				\rightarrow							SUBSCRIBE	UE_A subscribes to the conference event package
61			←	_							SUBSCRIBE	IMS_A forwards SUBCRIBE to
62				\rightarrow							200 OK	AS/IM_A sends 200 OK for SUBSCRIBE
63		←	_	_							200 OK	IMS_A forwards 200 OK response
64											NOTIFY	AS/IM_A sends NOTIFY to UE_A
				→								with list of 1-to-many Chat participants
65		←		_							NOTIFY	IMS_A forwards the NOTIFY to UE_A
66	(—											User A is notified with list of 1-to- many Chat participants

Step					Directio	on					Message	Comment
	U	U	Α	I	I	I	I	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	e	А	M	5	E		5	M	в	e		
	Δ			~	Δ	г В	D	B		B		
67				\rightarrow	Ê						200 OK	UE_A responds with 200 OK to
68			←	_							200 OK	IMS_A forwards the 200 OK
69							<u> </u>				SUBSCRIBE	UE_B subscribes to the conference
70								→			SUBSCRIBE	IMS_B forwards SUBSCRIBE to
71							<u> </u>				SUBSCRIBE	AS/IM_B AS/IM_B returns, possibly
72							[SUBSCRIBE	modified, SUBSCRIBE to IMS_B IMS_B forwards SUBSCRIBE to
73											SUBSCRIBE	IBCF_B IBCF_B forwards SUBSCRIBE to
74					<							IBCF_A
74				<i>(</i>	-						SUBSCRIBE	IBCF_A forwards SUBSCRIBE to IMS_A
75			←	-							SUBSCRIBE	IMS_A forwards SUBSCRIBE to AS/IM_A
76				\rightarrow							200 OK	AS/IM_A sends 200 OK for SUBSCRIBE
77					*						200 OK	IMS_A forwards 200 OK response to IBCF A
78					;	>					200 OK	IBCF_A forwards 200 OK response to IBCF_B
79						;	*				200 OK	IBCF_B forwards 200 OK response
80								→			200 OK	IMS_B forwards 200 OK response
81							<u> </u>				200 OK	AS/IM_B returns, possibly modified, 200 OK response to
82									—		200 OK	IMS_B IMS_B forwards 200 OK response
83				→							NOTIFY	AS/IM_A sends NOTIFY to UE_B with list of 1-to-many Chat
84					*						NOTIFY	IMS A forwards BYE to IBCF A
85						*					NOTIFY	IBCF A forwards BYE to IBCF B
86						,	•				NOTIFY	IBCF B forwards BYE to IMS B
87							ĺ	<u>`</u>			NOTIFY	IMS B forwards BYE to AS/IM B
88							~	Ĺ			NOTIFY	AS/IM_B returns, possibly
89											NOTIFY	IMS_B forwards BYE to UF_B
90										→		User B is notified with list of 1-to-
01							<u> </u>				200 0K	ITE B sends 200 OK for NOTIEV
02											200 0K	IMS B forwards 200 OK IO NOTIFY
32								→				to AS/IM_B
93							<u> </u>	_			200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
94						←	_				200 OK	IMS_B forwards 200 OK response to IBCF_B
95					←	-					200 OK	IBCF_B forwards 200 OK response to IBCF_A
96				←	-						200 OK	IBCF_A forwards 200 OK response to IMS_A
97			←	_							200 OK	IMS_A forwards 200 OK response to AS/IM_A
	I.	1	I.	1	1	1	1	I I	I	I.	L	

Step					Direc	tion					Message	Comment
	υ	U	Α					A	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	r e	A	M	<u>з</u>	F	F	B	м	P	r e		
	Å		A	~	Â	B		B		B		
98												Users perform messaging in the 1-
	←		*					_		\rightarrow		Chat 1 to many via MSRP -
												Interworking)
99												Continue UC_RCS_6_I (80A-116B)

4.4.3.5.2 UC_RCS_7_R: SIP message flow for switching to 1-to-many chat with CF_ROAM_AS (OPTIONAL)

- NOTE 1: In this Use Case AS/IM_B server assumes to be a Controlling IM server for 1-to-many Chat sessions and UE_B should have configured IM CONFERENCE FACTORY URI.
- NOTE 2: According to RCS-e specification [11] delivery and display notifications in 1-to-many Chat are not required and therefore not presented in this Use Case CFW.

Step	Action CF_ROAM_AS										
1	User B selects User A in the phone address book and sends	UC_RCS_4_R Step 1									
	him an initial message										
2	User A is informed of incoming message	UC_RCS_4_R Step 26									
3	User B is informed that initial message was delivered to user	UC_RCS_4_R Step 51									
	Α										
4	User A reads the initial message from user B and opens the	UC_RCS_4_R Step 64									
	1-to-1 chat										
5	Users perform 1-to-1 chatting	UC_RCS_4_R Step 89									
6	User B initiates a 1-to-many Chat with User A and User C by	Step 2									
	sending initial message										
7	User B is informed that the 1-to-many Chat is established	Step 18									
8	User A is informed of incoming invitation from User B to join	Step 38									
	the 1-to-many Chat										
9	User A reads the initial message and accepts the 1-to-many	Step 39									
	Chat invitation										
10	User B is notified with list of 1-to-many Chat participants	Step 93									
11	User A is notified with list of 1-to-many Chat participants	Step 120									
12	Users perform messaging in the 1-to-many Chat	Step 128									
13A	User A leaves the 1-to-many Chat	UC_RCS_6_R Step 104A									
13B	User B leaves the 1-to-many Chat	UC_RCS_6_R Step 104B									
14A	User A is informed that he has left the 1-to-many Chat	UC_RCS_6_R Step 119A									
14B	User B is informed that he has left the 1-to-many Chat	UC_RCS_6_R Step 115B									
15A	User B is notified that all other users have left the 1-to-many	UC_RCS_6_R Step 125A									
	Chat										
15B	User A is notified that all other users have left the 1-to-many	UC_RCS_6_R Step 123B									
	Chat										
16A	User B leaves the 1-to-many Chat	UC_RCS_6_R Step 131A									
16B	User A leaves the 1-to-many Chat	UC_RCS_6_R Step 131B									
17A	User B is informed that the 1-to-many Chat has ended	UC_RCS_6_R Step 142A									
17B	User A is informed that the 1-to-many Chat has ended	UC_RCS_6_R Step 146B									

Step					Directio	on					Message	Comment
	U	U	Α	Ι	I	I	I	Α	U	U		
	S	Е	S/	М	В	В	М	S/	E	S		
	е	Α	I	S	c	c	S	I	В	е		
	r		M	Α	F	F	в	M		r		
1	A		<u>A</u>		<u>A</u>	в		в		В		Follow LIC PCS 4 P (1.80)
2												User B initiates a 1-to-many Chat
2									←	_		with User A and User C by sending
												initial message
3											INVITE	UE_B sends INVITE to IMS_A with
												Request-URI set to IM
												CONFERENCE FACTORY URI,
												MIME resource-list body including
				<								Invited IM Users, the first SDP offer
												MSRP connection set up and the
												identity of User A with Session-
												Replaces header
4									\ \		100 Trying	IMS_A responds with a 100 Trying
												provisional response
5)						INVITE	IMS_A forwards INVITE to IBCF_A
6				.	_						100 Trying	IBCF_A responds with a 100 Trying
7												provisional response
'												IBCF_A IOIWAIDS INVITE IO
8											100 Trying	IBCE B responds with a 100 Trying
Ũ					←						loo liying	provisional response
9						;	•				INVITE	IBCF_B forwards INVITE to IMS_B
10						/					100 Trying	IMS_B responds with a 100 Trying
												provisional response
11								→			INVITE	IMS_B forwards INVITE to
12											100 Trying	AS/IM_B AS/IM_B responds with a 100
12							←	_			100 Hying	Trying provisional response
13											200 OK	AS/IM_B responds INVITE with
												200 OK response with IM session
												Identity allocated for the current 1-
							•					to-many Chat to indicate that the
												SDP to inform A-side with specific
												data for MSRP connection set up
14						/					200 OK	IMS_B forwards 200 OK response
												to IBCF_B
15					<u> </u>						200 OK	IBCF_B forwards 200 OK response
10					ľ						200.01	
16				←	-						200 OK	to IMS A
17											200 OK	IMS A forwards 200 OK response
									\rightarrow			to UE_B
18												User B is informed that the 1-to-
												many Chat is established
19				~				_			ACK	UE_B acknowledges the receipt of
20											ACK	200 UK 10F INVITE
20					1	J						IIVIS_A IUI WAIUS AUN IU IDUF_A
21						<u> </u>						IBCE B forwards ACK to IMC D
22						'						IMS B forwards ACK to AS/IM P
23								7				AS/IM B sends INIVITE to LIE A
24												with IM session identity (allocated
												for the current 1-to-many Chat). IM
							←	_				address of the Inviting IM UE
												(UE_B) and Session-Replaces
												header with the original 1-to-1
		l	I		1							session identity

Step					Direc	tion					Message	Comment
	U	U	Α	I		Ι		Α	U	U		
	S	E ∧	S/	M S	C B	В	M S	S/	E B	S		
	r	^	M	Ă	F	F	В	м		r		
	Α		Α		Α	В		В		В		
25								\rightarrow			100 Trying	IMS_B responds with a 100 Trying provisional response
26						←					INVITE	IMS_B forwards INVITE to IBCF_B
27							\rightarrow				100 Trying	IBCF_B responds with a 100 Trying provisional response
28					←						INVITE	IBCF_B forwards INVITE to IBCF_A
29						\rightarrow					100 Trying	IBCF_A responds with a 100 Trying provisional response
30				←							INVITE	IBCF_A forwards INVITE to IMS_A
31					→						100 Trying	IMS_A responds with a 100 Trying provisional response
32			←								INVITE	IMS_A forwards INVITE to
33				→							100 Trying	AS/IM_A responds with a 100
34											INVITE	AS/IM A returns, possibly
35				7							100 Trying	modified, INVITE to IMS_A
00			←									provisional response
36		<									INVITE 100 Truin r	IMS_A forwards INVITE to UE_A
37				→							100 Trying	100 Trying provisional response
38	←	-										User A is informed of incoming invitation from user B to join the 1-
20												to-many Chat
39		*										and accepts the 1-to-many Chat
												invitation
40											200 OK	UE_A responds INVITE with 200
				→								OK response with SDP to indicate
				1								and inform AS/IM_A with specific
												data for MSRP connection set up
41			←	_							200 OK	IMS_A forwards 200 OK response to AS/IM_A
42											200 OK	AS/IM_A returns, possibly
				\rightarrow								modified, 200 OK response to
43					→						200 OK	IMS_A forwards 200 OK response
44											200 OK	to IBCF_A
44						→						to IBCF_B
45							\rightarrow				200 OK	IBCF_B forwards 200 OK response to IMS_B
46								\rightarrow			200 OK	IMS_B forwards 200 OK response to AS/IM_B
47							←				ACK	AS/IM_B acknowledges the receipt of 200 OK for INVITE
48						←					ACK	IMS_B forwards ACK to IBCF_B
49					←	_					ACK	IBCF_B forwards ACK to IBCF_A
50				←							ACK	IBCF_A forwards ACK to IMS_A
51			←	-							ACK	IMS_A forwards ACK to AS/IM_A
52				→							ACK	AS/IM_A returns, possibly modified, ACK to IMS_A
53		←		-							ACK	IMS_A forwards ACK to UE_A
54				→							BYE	UE_A releases the 1-to-1 IM session with BYF
55		1	←	_							BYE	IMS_A forwards BYE to AS/IM_A
			•			•		-		•		

Step					Direct	ion					Message	Comment
	U	U	Α	I	1	1	I	Α	U	U		
	s	Е	S/	М	в	В	М	S/	E	s		
	е	Α	I	S	С	С	S	1	в	е		
	r		М	Α	F	F	В	м		r		
	Α		Α		Α	В		В		В		
56											BYE	AS/IM_A returns, possibly
				1								modified, BYE to IMS_A
57					→						BYE	IMS_A forwards BYE to IBCF_A
58)					BYE	IBCF_A forwards BYE to IBCF_B
59							\rightarrow				BYE	IBCF_B forwards BYE to IMS_B
60								\rightarrow			BYE	IMS B forwards BYE to AS/IM B
61											BYE	AS/IM B returns, possibly
												modified, BYE to IMS_B
62						←					BYE	IMS_B forwards BYE to IBCF_B
63					(BYE	IBCF B forwards BYE to IBCF A
64				<u> </u>							BYE	IBCF A forwards BYE to IMS A
65				-					\rightarrow		BYE	IMS A forwards BYE to UE B
66				(200 OK	UE B sends 200 OK for BYE
67				Ì							200 OK	IMS A forwards 200 OK response
07					→						200 01	to IBCF A
68											200 OK	IBCF A forwards 200 OK response
						>						to IBCF B
69											200 OK	IBCF_B forwards 200 OK response
							~					to IMS_B
70											200 OK	IMS_B forwards 200 OK response
								1				to AS/IM_B
71											200 OK	AS/IM_B returns, possibly
							<					modified, 200 OK response to
70											200.0K	INS_B
12						←					200 OK	to IBCE B
73											200 OK	IBCE B forwards 200 OK response
10					←						200 010	to IBCF A
74											200 OK	IBCF A forwards 200 OK response
				<								to IMS_A
75			/								200 OK	IMS_A forwards 200 OK response
												to AS/IM_A
76											200 OK	AS/IM_A returns, possibly
				\rightarrow								modified, 200 OK response to
77											200.01	IMS_A
"		←									200 OK	to LE A
78											SUBSCRIBE	IJE B subscribes to the conference
10				←							OODOONIDE	event package
79											SUBSCRIBE	IMS A forwards SUBSCRIBE to
					7							IBCF_A
80						_					SUBSCRIBE	IBCF_A forwards SUBSCRIBE to
												IBCF_B
81							\rightarrow				SUBSCRIBE	IBCF_B forwards SUBSCRIBE to
												IMS_B
82								\rightarrow			SUBSCRIBE	IMS_B torwards SUBSCRIBE to
0.2											200 01	AS/IM_B condo 200 OK for
83							←				200 OK	AS/INI_D SENAS 200 OK TOP
84											200 OK	IMS B forwards 200 OK response
						←	\neg					to IBCF B
85											200 OK	IBCF B forwards 200 OK response
					(to IBCF_A
86											200 OK	IBCF_A forwards 200 OK response
												to IMS_A
87											200 OK	IMS_A forwards 200 OK response
									1			to UE_B
88											NOTIFY	AS/IM_B sends NOTIFY to UE_B
							\leftarrow					with list of 1-to-many Chat
	I				I				1			participants

Step					Directi	on					Message	Comment
	U	U	Α	I	I	I	I	Α	U	U		
	S	E	S/	M	В	B	M	S/	E	S		
	e	A	M	5	E	E	5	I M	в	e		
	Å		Δ	~	Δ	B	В	B		B		
89						<u> </u>	-			Ī	NOTIFY	IMS_B forwards NOTIFY to
90					<u>(</u>	-					NOTIFY	IBCF_B forwards NOTIFY to IBCF_A
91				~	_						NOTIFY	IBCF_A forwards NOTIFY to
92									\rightarrow		NOTIFY	IMS_A forwards NOTIFY to UE_B
93										→		User B is notified with list of 1-to- many Chat participants
94				←					_		200 OK	UE_B responds with 200 OK to
95					*						200 OK	IMS_A forwards 200 OK response
96						*					200 OK	IBCF_A forwards 200 OK response
97							*				200 OK	IBCF_B forwards 200 OK response
98								*			200 OK	IMS_B forwards 200 OK response
99				→							SUBSCRIBE	UE_A subscribes to the conference
100			←								SUBSCRIBE	IMS_A forwards SUBSCRIBE to
101				→							SUBSCRIBE	AS/IM_A AS/IM_A returns, possibly
102					*						SUBSCRIBE	IMS_A forwards SUBSCRIBE to
103						*					SUBSCRIBE	IBCF_A IBCF_A forwards SUBSCRIBE to
104											SUBSCRIBE	IBCF_B IBCF_B forwards SUBSCRIBE to
105											SUBSCRIBE	IMS_B IMS_B forwards SUBSCRIBE to
106							,				200 OK	AS/IM_B AS/IM_B sends 200 OK for
107											200 OK	SUBSCRIBE IMS_B forwards 200 OK response
108											200 OK	to IBCF_B IBCF_B forwards 200 OK response
109					¢	1					200 OK	to IBCF_A IBCF_A forwards 200 OK response
110				< <u> </u>							200 OK	to IMS_A
110			←									to AS/IM_A
111				*							200 OK	modified, 200 OK response to
112		←		-							200 OK	IMS_A forwards 200 OK response to UE_A
113							<u> </u>				NOTIFY	AS/IM_B sends NOTIFY to UE_A with list of 1-to-many Chat
114											NOTIEY	participants
114				1								INVIS_D IVIWAIUS DIE TO IBUF_B
116				<u> </u>							NOTIFY	IBCE A forwards BYE to IMS Δ
117			(NOTIEV	IMS A forwards BVE to AS/IM A
118				→							NOTIFY	AS/IM_A returns, possibly
119		<u> </u>									NOTIFY	IMS A forwards BYF to UF A
120												User A is notified with list of 1-to-
												many Chat participants

Step					Direc	tion					Message	Comment
	U	U	Α	I	Ι	I	I	Α	U	U		
	S	E	S/	М	В	В	М	S/	E	S		
	е	Α	I	S	С	С	S	I	В	е		
	r		M	Α	F	F	В	м		r		
1.5.1	<u>A</u>		<u>A</u>		A	В		В		В		
121				\rightarrow							200 OK	UE_A sends 200 OK for NOTIFY
122			/								200 OK	IMS_A forwards 200 OK response
			Ì									to AS/IM_A
123											200 OK	AS/IM_A returns, possibly
				\rightarrow								modified, 200 OK response to
												IMS_A
124											200 OK	IMS_A forwards 200 OK response
					1							to IBCF_A
125											200 OK	IBCF_A forwards 200 OK response
						1						to IBCF_B
126											200 OK	IBCF_B forwards 200 OK response
							1					to IMS_B
127											200 OK	IMS_B forwards 200 OK response
								1				to AS/IM_B
128												Users perform messaging in the 1-
	<u> </u>											to-many Chat (see clause 5.3.2.2
	Ì							Î.		1_		Chat 1 to many via MSRP -
												Roaming)
129												Continue UC_RCS_6_R (104A-
												146B)

4.4.4 RCS-e services during a call

RCS-e services during a call include two main types of Content sharing:

- Video sharing;
- Pictures sharing.

The main difference between these types of Content sharing is in the media session protocol. In case of Video sharing users establish RTP media session and for the Pictures sharing purposes MSRP connection is used. Since the call flow sequences for Pictures and Video sharing are similar in the Use Cases below there is only a common procedure of Content sharing described.

In the case of sharing a file (picture) during a call follow Use Cases provided in the File transfer service clause 4.4.5.

For Use Cases of Content sharing during a call it is assumed that UEs registered on the corresponding IMS networks and they have already performed capability discovery procedures. In particular, users subscribed to RCS-e services during a call such as video and pictures sharing.

4.4.4.1 Content sharing

4.4.4.1.1 UC_RCS_8_I: SIP message flow for Content sharing with CF_INT_CALL

Step	Action	CF_INT_CALL
1A	User A establishes voice call with user B	Step 1A
1B	User B establishes voice call with user A	Step 1B
2	User A requests to share content with user B	Step 2
3	User B is requested to accept to share content	Step 13
4	User B accepts to share content with user A	Step 19
5	User A is informed that request has been answered	Step 25
6	Content sharing starts	Step 31
7A	User A ends content sharing	Step 32A
8A	User B is informed that content sharing has terminated	Step 38A

Step	Action	CF_INT_CALL
9A	User A is informed that content sharing has terminated	Step 44A
10A	User A initiates voice call termination	Step 55A
7B	User B ends content sharing	Step 32B
8B	User A is informed that content sharing has terminated	Step 38B
9B	User B is informed that content sharing has terminated	Step 44B
10B	User B initiates voice call termination	Step 55B

The expected call flow sequence is:

Step				Direc	tion				Message	Comment
	U	U	-	I	I	-	U	U		
	S	Е	М	В	В	М	Е	S		
	е	Α	S	С	С	S	В	е		
	r		Α	F	F	В		r		
	A			A	В			В		
1A	↓ (-			→		User A establishes a voice call to user B
1B				·	-			\rightarrow		User B establishes a voice call to user A
2		→								User A requests to share content with user B
3			\rightarrow		ļ	ļ			INVITE	UE_A sends INVITE to share content with user B
4		←							100 Trying	IMS_A responds with a 100 Trying provisional
_										
5			;	'					INVITE	IMS_A forwards INVITE to IBCF_A
6			←	-					100 Trying	IBCF_A responds with a 100 Trying provisional
7										response
/					7					IBCF_A IOIWAIUS INVITE IO IBCF_B
8				←	-				100 Trying	response
9						\rightarrow	ĺ		INVITE	IBCF_B forwards INVITE to IMS_B
10					/		Ì		100 Trying	IMS_B responds with a 100 Trying provisional
										response
11							\rightarrow		INVITE	IMS_B forwards INVITE to UE_B
12						4			100 Trying	UE_B responds with a 100 Trying provisional
						ſ				response
13								\rightarrow		User B is requested to accept to share content
14						←			180 Ringing	UE_B responds to initial INVITE with 180 Ringing to indicate that it has started alerting
15					\leftarrow				180 Ringing	IMS_B forwards 180 Ringing response to IBCF_B
16				←	-				180 Ringing	IBCF_B forwards 180 Ringing response to IBCF_A
17			←	•					180 Ringing	IBCF_A forwards 180 Ringing response to IMS_A
18		←	_						180 Ringing	IMS_A forwards the 180 Ringing response to UE_A
19							←			User B accepts to share content
20						,			200 OK	UE_B responds INVITE with 200 OK to indicate
										that the request has been accepted
21					←				200 OK	IMS_B forwards 200 OK response to IBCF_B
22				←	-				200 OK	IBCF_B forwards 200 OK response to IBCF_A
23			←	•					200 OK	IBCF_A forwards 200 OK response to IMS_A
24		←	_						200 OK	IMS_A forwards 200 OK response to UE_A
25	4									User A is informed that request has been
										answered
26		-	→						ACK	UE_A acknowledges the receipt of 200 OK for INVITE
27			;						ACK	IMS_A forwards ACK to IBCF_A
28					→ l				ACK	IBCF_A forwards ACK to IBCF_B
29						>			ACK	BCF_B forwards ACK to IMS_B
30							\rightarrow		ACK	IMS_B forwards ACK to UE_B
31					-			→		Content sharing starts (see clause 5.3.3 Image
224										Uala via MORP)
3ZA		7								User A ends content sharing

Step				D	irectio	on				Message	Comment
	U	U				1	I	U	U	j	
	s	E	M	1 E	3 E	B	М	E	s		
	е	A	S				S	В	е		
	r		A			F	в		r P		
334				1						BVE	LIE A releases the call with BVE
34A			1							BYE	IMS A forwards BYE to IBCE A
354										BYE	IBCE A forwards BYE to IBCE B
36A										BYE	IBCE B forwards BYE to IMS B
37A							,	*		BYE	IMS_B forwards BYE to UE_B
38A										0.12	User B is informed that content sharing has
00/1									7		ended
39A							(-		200 OK	UE_B sends 200 OK for BYE
40A						←	•			200 OK	IMS_B forwards 200 OK response to IBCF_B
41A					\leftarrow					200 OK	IBCF_B forwards 200 OK response to IBCF_A
42A			÷	<u>,</u>						200 OK	IBCF_A forwards 200 OK response to IMS_A
43A		ŧ	<u>,</u>							200 OK	IMS_A forwards the 200 OK response to UE_A
44A											User A is informed that content sharing has
										0.000	ended
45A							,			OPTIONS	UE_B sends OP HONS to IMS_B to verify
							Ì				
46A						<u> </u>				OPTIONS	IMS B forwards OPTIONS to IBCF B
47A					\leftarrow					OPTIONS	IBCF B forwards OPTIONS to IBCF A
48A			÷	<u>, </u>	-					OPTIONS	IBCF A forwards OPTIONS to IMS A
49A		ŧ	<u>.</u>							OPTIONS	IMS_A forwards OPTIONS to UE_A
50A										200 OK	UE_A responds 200 OK to IMS_A with updated
		Γ	,								capabilities
51A			-	\longrightarrow						200 OK	IMS_A forwards 200 OK to IBCF_A
52A					\longrightarrow					200 OK	IBCF_A forwards 200 OK to IBCF_B
53A						\rightarrow				200 OK	IBCF_B forwards 200 OK to IMS_B
54A								*		200 OK	IMS_B forwards 200 OK to UE_B
55A	+								→		Voice call termination initiated by user A
32B								K			User B ends content sharing
33B							←	1		BYE	UE_B releases the call with BYE
34B						<	1			BYE	IMS_B forwards BYE to IBCF_B
35B					\leftarrow	,				BYE	IBCF_B forwards BYE to IBCF_A
36B			, (t			ł				BYE	IBCF_A forwards BYE to IMS_A
378		•						-		BIE	INS_A forwards BYE to UE_A
388	⊬	_									loser A is informed that content sharing has
39B		-	\rightarrow				1	1		200 OK	UE A sends 200 OK for BYE
40B			-	\longrightarrow				Ì		200 OK	IMS A forwards 200 OK response to IBCF A
41B					\longrightarrow					200 OK	IBCF A forwards 200 OK response to IBCF B
42B						\rightarrow		Ì		200 OK	IBCF B forwards 200 OK response to IMS B
43B								*		200 OK	IMS_B forwards the 200 OK response to UE_B
44B											User B is informed that content sharing has
									7		ended
45										OPTIONS	UE_A sends OPTIONS to IMS_A to verify
		F	\rightarrow								availability of video sharing capability of the
46				`				1			IMS A forwards OPTIONS to IRCE A
47			[IBCE A forwards OPTIONS to IBCE B
48						、					IBCE B forwards OPTIONS to IMS B
49							<u> </u>			OPTIONS	IMS_B forwards OPTIONS to LIF_B
50								Ί		200 OK	LIF B responds with 200 OK to IMS B with
							K	1			updated capabilities
51						(-			200 OK	IMS_B forwards 200 OK to IBCF_B
52					\leftarrow					200 OK	IBCF_B forwards 200 OK to IBCF_A
53			é	<u>.</u>				1		200 OK	IBCF_A forwards 200 OK to IMS_A
54		ŧ	<u>. </u>					1		200 OK	IMS_A forwards 200 OK to UE_A

Step				Dire	ction				Message	Comment
	U	U	Ι	-	Ι	Ι	U	U		
	S	Е	М	В	В	М	Е	s		
	е	Α	S	С	С	S	в	е		
	r		Α	F	F	В		r		
	Α			Α	В			В		
55B										Voice call termination initiated by user B

4.4.4.1.2 UC_RCS_8_R: SIP message flow for Content sharing with CF_ROAM_CALL (OPTIONAL)

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering).

Step	Action	CF_ROAM_CALL
1A	User A establishes voice call with user B	Step 1A
1B	User B establishes voice call with user A	Step 1B
2	User A requests to share content with user B	Step 2
3	User B is requested to accept to share content	Step 19
4	User B accepts to share content with user A	Step 28
5	User A is informed that request has been answered	Step 37
6	Content sharing starts	Step 46
7A	User A ends content sharing	Step 47A
8A	User B is informed that content sharing has terminated	Step 56A
9A	User A is informed that content sharing has terminated	Step 65A
10A	User A initiates voice call termination	Step 82A
7B	User B ends content sharing	Step 47B
8B	User A is informed that content sharing has terminated	Step 56B
9B	User B is informed that content sharing has terminated	Step 65B
10B	User B initiates voice call termination	Step 82B

The expected call flow sequence is:

Step	Direction								Message	Comment
	U s e	U E A	I M S	I B C	I B C	I M S	U E B	U s e		
	r A		Α	F	F B	В		r B		
1A	←							→		User A sets up a voice call to user B
1B	Ţ				_			→		User B sets up a voice call to user A
2		\rightarrow								User A requests to share content with user B
3			\rightarrow						INVITE	UE_A sends INVITE to share content with user B
4		←							100 Trying	IMS_A responds with a 100 Trying provisional response
5				\rightarrow					INVITE	IMS_A forwards INVITE to IBCF_A
6			←	-					100 Trying	IBCF_A responds with a 100 Trying provisional response
7					\rightarrow				INVITE	IBCF_A forwards INVITE to IBCF_B
8				←	-				100 Trying	IBCF_B responds with a 100 Trying provisional response
9						\rightarrow			INVITE	IBCF_B forwards INVITE to IMS_B
10					←	_			100 Trying	IMS_B responds with a 100 Trying provisional response
11					←				INVITE	IMS_B forwards INVITE to IBCF_B
12						→			100 Trying	IBCF_B responds with a 100 Trying provisional response
13				\leftarrow	-				INVITE	IBCF_B forwards INVITE to IBCF_A
14					100 Trying IBCF_A responds with a 100 Trying provi response					
15			\leftarrow	-					INVITE	IBCF_A forwards INVITE to IMS_A

Step	Direction			Message	Comment					
	U	U	Ι	I	I	I	U	U		
	S	E	M	B	B	M	E	S		
	e r	A	5	F		B	в	e r		
	Å		^	Å	B			B		
16				→					100 Trying	IMS_A responds with a 100 Trying provisional
17				_ _			\rightarrow		INVITE	IMS A forwards INVITE to UE B
18			,						100 Trying	UE_B responds with a 100 Trying provisional
										response
19							_	→		User B is requested to accept to share content
20			←	_	-				180 Ringing	UE_B responds to initial INVITE with 180
21									180 Ringing	IMS A forwards 180 Ringing response to
				→					roo ranging	IBCF_A
22				_	\rightarrow				180 Ringing	IBCF_A forwards 180 Ringing response to
23									180 Ringing	IBCF_B forwards 180 Ringing response to
										IMS_B
24					←				180 Ringing	IMS_B forwards the 180 Ringing response to
25									190 Pinging	IBCF_B IBCE_B forwards 180 Dinging response to
25				←						IBCF_B forwards 180 Kinging response to
26			←	-					180 Ringing	IBCF_A forwards 180 Ringing response to
27		←							180 Ringing	IMS_A forwards 180 Ringing response to UE_A
28							←	_		User B accepts to share content
29									200 OK	UE_B responds INVITE with 200 OK to indicate
			l`							that the request has been accepted
30				→					200 OK	IMS_A forwards 200 OK response to IBCF_A
31					\rightarrow				200 OK	IBCF_A forwards 200 OK response to IBCF_B
32									200 OK	IBCF_B IOI wards 200 OK response to IBCF_B
34				4	`				200 OK	IBCE B forwards 200 OK response to IBCE A
35			←	_ `					200 OK	IBCE A forwards 200 OK response to IMS A
36		←	_`							IMS A forwards 200 OK response to UE A
27										User A is informed that request has been
37										answered
38			\rightarrow						ACK	UE_A acknowledges the receipt of 200 OK for INVITE
39				\rightarrow					ACK	IMS_A forwards ACK to IBCF_A
40					\rightarrow				ACK	IBCF_A forwards ACK to IBCF_B
41					-	\rightarrow			ACK	IBCF_B forwards ACK to IMS_B
42					←				ACK	IMS_B forwards ACK to IBCF_B
43				←	_				ACK	IBCF_B forwards ACK to IBCF_A
44			<i>←</i>	-					ACK	IBCF_A forwards ACK to IMS_A
45							→		ACK	IMS_A forwards ACK to UE_B
46		-	_	- -				→		data via MSRP)
47A	←	-	_				_	→		User A ends content sharing
48A			\rightarrow						BYE	UE_A releases the call with BYE
49A				\rightarrow					BYE	IMS_A forwards BYE to IBCF_A
50A					\rightarrow				BYE	IBCF_A forwards BYE to IBCF_B
51A						\rightarrow			BYE	IBCF_B TOTWARDS BYE TO IMS_B
52A				Z						
53A			۷	_					BYE	IBCE A forwards BYE to IMS A
54A				_ _					BYE	IMS A forwards BYE to LIF B
56A							1	→		User B is informed that content sharing has
53, (200.01	ended
5/A			(_ -					200 OK	UE_D SETIUS 200 OK TOF BYE
58A				→					200 OK	INIS_A forwards 200 OK response to IBCF_A

Step	Direction				Message	Comment					
	U	l	J	I	I	Ι	Ι	U	U	Ū	
	S	E		М	В	В	Μ	Ε	S		
	е	4	4	S	C	C	S	В	е		
	r A			A			в		r B		
504	Ĥ	-								200 OK	IBCE A forwards 200 OK response to IBCE B
60A							_			200 OK	IBCE B forwards 200 OK response to IMS B
61A						,	_			200 OK	INS B forwards the 200 OK response to IBCE B
624					,					200 OK	IBCE B forwards 200 OK response to IBCE A
634					`					200 OK	IBCE A forwards 200 OK response to IMS A
644			/							200 OK	IMS A forwards the 200 OK response to LIE A
654			`							200 01	Content sharing terminates
66A										OPTIONS	UE B sends OPTIONS to IMS A to verify
				←				_			availability of video sharing capability of the
674											IMS A forwards OPTIONS to IBCE A
684											IBCE A forwards OPTIONS to IBCE B
694							``				IBCE B forwards OPTIONS to IMS B
704						,	_				INS B forwards OPTIONS to IBCE B
70A					,						IBCE B forwards OPTIONS to IBCE A
724					`						IBCE A forwards OPTIONS to IMS A
724			,								
73A 74A			`								LIE A responds 200 OK to IMS A with undated
140)						200 01	capabilities
75A				\rightarrow						200 OK	IMS_A forwards 200 OK to IBCF_A
76A					\longrightarrow					200 OK	IBCF_A forwards 200 OK to IBCF_B
77A							→			200 OK	IBCF_B forwards 200 OK to IMS_B
78A						←				200 OK	IMS B forwards 200 OK to IBCF B
79A					<u> </u>					200 OK	IBCF B forwards 200 OK to IBCF A
80A				<u> </u>	-					200 OK	IBCF A forwards 200 OK to IMS A
81A								→		200 OK	IMS A forwards 200 OK to UE B
82A											User A terminates voice call
47B											User B ends content sharing
48B				←						BYE	UE_B releases the call with BYE
49B				\rightarrow						BYE	IMS_A forwards BYE to IBCF_A
50B					\longrightarrow					BYE	IBCF_A forwards BYE to IBCF_B
51B							\rightarrow			BYE	IBCF_B forwards BYE to IMS_B
52B						←				BYE	IMS_B forwards BYE to IBCF_B
53B					←					BYE	IBCF_B forwards BYE to IBCF_A
54B				\leftarrow						BYE	IBCF_A forwards BYE to IMS_A
55B			←	-						BYE	IMS_A forwards BYE to UE_A
56B	- ⊢										User A is informed that content sharing has ended
57B				*						200 OK	UE_A sends 200 OK for BYE
58B				\longrightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A
59B					\longrightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B
60B							→			200 OK	IBCF_B forwards 200 OK response to IMS_B
61B						←				200 OK	IMS B forwards 200 OK response to IBCF B
62B					←					200 OK	IBCF_B forwards 200 OK response to IBCF_A
63B				←						200 OK	IBCF A forwards 200 OK response to IMS A
64B								→		200 OK	IMS A forwards the 200 OK response to UE B
65B	- ←								→		Content sharing terminates
66B										OPTIONS	UE A sends OPTIONS to IMS A to verify
			· · ·	*							availability of video sharing capability of the
67B										OPTIONS	IMS A forwards OPTIONS to IBCE A
68B										OPTIONS	IBCE A forwards OPTIONS to IBCE B
69B					′		_			OPTIONS	IBCE B forwards OPTIONS to IMS B
70B										OPTIONS	IMS_B forwards OPTIONS to IBCE_B
71R					<u> </u>						IBCE B forwards OPTIONS to IBCE A
טוי				1		1	I	I			

Step	p Direction								Message	Comment
	U	U	Ι	I	Ι	Ι	U	U		
	S	E	M	В	В	M	E	S		
	е	Α	S	C	C	S	в	е		
	r A		A		F	в		r		
72B			└ (OPTIONS	IBCF A forwards OPTIONS to IMS A
73B				_ _	_ _		\rightarrow		OPTIONS	IMS_A forwards OPTIONS to UE_B
74B			<i>_</i>	_ -					200 OK	UE_B responds with 200 OK to IMS_A with
			`							updated capabilities
75B				\rightarrow					200 OK	IMS_A forwards 200 OK to IBCF_A
76B					\rightarrow				200 OK	IBCF_A forwards 200 OK to IBCF_B
77B						\rightarrow			200 OK	IBCF_B forwards 200 OK to IMS_B
78B					←				200 OK	IMS_B forwards 200 OK to IBCF_B
79B				\leftarrow	_				200 OK	IBCF_B forwards 200 OK to IBCF_A
80B			←	_					200 OK	IBCF_A forwards 200 OK to IMS_A
81B		←							200 OK	IMS_A forwards 200 OK to UE_A
82B	\leftarrow			_ _	_ _		_	\rightarrow		User B terminates voice call

4.4.5 File transfer service

Following there are the expected common call flow sequences for a standalone File transfer service.

For all Use Cases it is assumed that UEs registered on the corresponding IMS networks and they have already performed capability discovery procedures. In particular, users subscribed to standalone File transfer service.

NOTE: According to RCS-e specification [11] File Transfer is a standalone service. In the mean time sharing picture during a call from the 'Media gallery' of the user terminal or file transfer during 1-to-1 chat ultimately equals to File transfer service procedures from a call flow sequences point of view.

4.4.5.1 UC_RCS_9_I: SIP message flow for File transfer with CF_INT_AS

The test sequence typically associated with this use case is as follows (CFW step numbers refer the call flow step numbering):

Step	Action	CF_INT_AS
1	User A initiates a file transfer to user B	Step 1
2	User B is informed of incoming file and accepts the transfer	Step 20
3	User A is informed that file transfer has been accepted by user B	Step 30
4	File transfer starts	Step 40
5	File transfer completed (size checked)	Step 41
6	User B is informed that file transfer completed	Step 51
7	User A is informed that file transfer completed	Step 61

Step					Direc	tion	Message	Comment				
	U s e r A	U E A	A S/ I M A	I M S A	I B C F A	I B C F B	I M S B	A S/ I M B	U E B	U s r B		
1		→										User A initiates a file transfer to user B
2				→							INVITE	UE_A sends INVITE to IMS_A to establish a session with the SDP offer indicating all specific data for a MSRP connection set up
3		←									100 Trying	IMS_A responds with a 100 Trying provisional response
4			←								INVITE	IMS_A forwards INVITE to AS/IM_A

The expected call flow sequence is:

Step					Dire	ction							Message	Comment
	U	U	Α	Ι	Ι	Ι	Ι		Α	U	U	J		
	S	E	S/	M	B	B	M		S/	E	S	5		
	e	A	I M	\$	C E	C E	S B		I M	в	e	•		
	Å		A	~	A	В	Б		B		B	3		
5				→								-	100 Trying	AS/IM_A responds with a 100
6													INVITE	AS/IM A returns possibly modified
Ű				→										INVITE to IMS_A
7			←	_									100 Trying	IMS_A responds with a 100 Trying
8					→								INVITE	IMS A forwards INVITE to IBCF A
9				/									100 Trying	IBCF_A responds with a 100 Trying
														provisional response
10						\rightarrow							INVITE	IBCF_A forwards INVITE to IBCF_B
11					←								100 Trying	IBCF_B responds with a 100 Trying
12													INVITE	IBCF B forwards INVITE to IMS B
13													100 Trying	IMS_B responds with a 100 Trying
														provisional response
14								\rightarrow	*				INVITE	IMS_B forwards INVITE to AS/IM_B
15							←						100 Trying	AS/IM_B responds with a 100
16							,						INVITE	AS/IM_B returns, possibly modified,
														INVITE to IMS_B
17								\rightarrow	*				100 Trying	IMS_B responds with a 100 Trying
18										\rightarrow			INVITE	IMS B forwards INVITE to UE B
19							,						100 Trying	UE B optionally responds with a
														100 Trying provisional response
20											\rightarrow			User B is informed of incoming file
21													200 OK	LIE B responds INIVITE with 200
21													200 010	OK response with SDP to indicate
							←			_				that the session has been accepted
														and inform A-side with specific data
00														for a MSRP connection set up
22								\rightarrow					200 OK	to AS/IM_B
23							←		_				200 OK	AS/IM_B returns, possibly modified,
24													200 OK	IMS_B forwards 200 OK response
														to IBCF_B
25					←								200 OK	IBCF_B forwards 200 OK response to IBCF_A
26				←									200 OK	IBCF_A forwards 200 OK response
27													200 OK	to IMS_A
21			←											to AS/IM_A
28				\rightarrow									200 OK	AS/IM_A returns, possibly modified,
29		<u> </u>											200 OK	IMS_A forwards 200 OK response
														to UE_A
30	←													User A is informed that file transfer has been accepted by user B
31				→									ACK	UE_A acknowledges the receipt of
32			<u> </u>										АСК	IMS A forwards ACK to AS/IM A
33													ACK	AS/IM_A returns, possibly modified.
														ACK to IMS_A
34					\rightarrow								ACK	IMS_A forwards ACK to IBCF_A
35						\rightarrow							ACK	IBCF_A forwards ACK to IBCF_B
36							\rightarrow						ACK	IBCF_B forwards ACK to IMS_B
37								\rightarrow	8				ACK	IMS_B forwards ACK to AS/IM_B

Step					1	Directio	on					Message	Comment
	l	U	U	Α	Ι	I	I	I	Α	U	U		
	:	S	E	S/	M	B	B	M	S/	E	S		
		e	A		S		C E	S		в	e		
		Δ		A	A	A	В	D	B		B		
38	Ī							k			Ī	ACK	AS/IM_B returns, possibly modified, ACK to IMS_B
39										×		ACK	IMS_B forwards ACK to UE_B
40	ŧ	(-	→		File transfer starts (see clause 5.3.3 Image data via MSRP)
41													File transfer completed (size checked)
42				;								BYE	UE_A releases the file transfer session with BYE
43				←	-							BYE	IMS_A forwards BYE to AS/IM_A
44					•							BYE	AS/IM_A returns, possibly modified, BYE to IMS_A
45					 >							BYE	IMS_A forwards BYE to IBCF_A
46						\rightarrow						BYE	IBCF_A forwards BYE to IBCF_B
47							—;	>				BYE	IBCF_B forwards BYE to IMS_B
48									*			BYE	IMS_B forwards BYE to AS/IM_B
49								<	-			BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
50										×		BYE	IMS_B forwards BYE to UE_B
51	Ì									╞	→		User B is informed that file transfer completed
52								←		-		200 OK	UE_B sends 200 OK for BYE
53									*			200 OK	IMS_B forwards 200 OK response to AS/IM_B
54								←	-			200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
55							←	-				200 OK	IMS_B forwards 200 OK response to IBCF_B
56						←	-					200 OK	IBCF_B forwards 200 OK response to IBCF_A
57					←							200 OK	IBCF_A forwards 200 OK response to IMS_A
58				←								200 OK	IMS_A forwards 200 OK response to AS/IM_A
59				;								200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
60			←									200 OK	IMS_A forwards 200 OK response to UE_A
61	•	(User A is informed that file transfer completed

4.4.5.2 UC_RCS_9_R: SIP message flow for File transfer with CF_ROAM_AS (OPTIONAL)

Step	Action	CF_ROAM_AS
1	User B initiates a file transfer to user A	Step 1
2	User A is informed of incoming file and accepts the transfer	Step 26
3	User B is informed that file transfer has been accepted by user A	Step 39
4	File transfer starts	Step 52
5	File transfer completed (size checked)	Step 53
6	User A is informed that file transfer completed	Step 66
7	User B is informed that file transfer completed	Step 79

The expected call flow sequence is:

Step					Directio	on					Message	Comment
	U	U	Α	I	I	Ι	Ι	Α	U	U		
	s	E	S/	M	В	В	M	S/	E	s		
	е	Α	I	S	C	C	S	I	в	е		
	Å		A	A	A	B	D	B		B		
1									←			User B initiates a file transfer to user A
2											INVITE	UE_B sends INVITE to IMS_A to
				(establish a new session with the
				Ì								SDP offer indicating all specific data
2											100 Trying	for a new MSRP connection set up
5									\rightarrow		Too Trying	provisional response
4					•						INVITE	IMS_A forwards INVITE to IBCF_A
5				/							100 Trying	IBCF_A responds with a 100 Trying
												provisional response
6						>					INVITE	IBCF_A forwards INVITE to IBCF_B
7					←	-					100 Trying	IBCF_B responds with a 100 Trying
8												IBCE B forwards INV/ITE to IMS B
0 0							1					IBCF_BIOIWAIDS INVITE to INIS_B
9						←					100 Hying	provisional response
10								→			INVITE	IMS_B forwards INVITE to AS/IM_B
11							/				100 Trying	AS/IM_B responds with a 100 Trying
												provisional response
12							<u> </u>	_			INVITE	AS/IM_B returns, possibly modified,
12											100 Trying	INVITE to IMS_B
15								→			Too Trying	provisional response
14						<u> </u>	_				INVITE	IMS_B forwards INVITE to IBCF_B
15											100 Trying	IBCF_B responds with a 100 Trying
							1					provisional response
16					←	-					INVITE	IBCF_B forwards INVITE to IBCF_A
17						•					100 Trying	IBCF_A responds with a 100 Trying
18				/								IBCE A forwards INV/ITE to IMS A
10												IMS A responds with a 100 Trying
15											100 Hying	provisional response
20			←	_							INVITE	IMS_A forwards INVITE to AS/IM_A
21				_							100 Trying	AS/IM_A responds with a 100 Trying
				1								provisional response
22				→							INVITE	AS/IM_A returns, possibly modified,
23											100 Trying	INVITE to IMS_A
20			←								roo rrying	provisional response
24		←									INVITE	IMS_A forwards INVITE to UE_A
25				→							100 Trying	UE_A optionally responds with a 100
- 00												Trying provisional response
26	←	_										User A is informed of incoming file
27											200 OK	UE A responds INVITE with 200 OK
											200 011	response with SDP to indicate that
				\rightarrow								the session has been accepted and
												inform B-side with specific data for a
20											200 04	INS A forwards 200 OK response to
20			←	_							200 OK	A lorwards 200 OK response to
29											200 OK	AS/IM_A returns, possibly modified.
_				7								200 OK response to IMS_A
30											200 OK	IMS_A forwards 200 OK response to
24											200.01	IBCF_A
31					<u> </u>	×					200 OK	to IBCF_B
	I	I	I	1	1	1	1	1	I	1	L	ם_ וסכו טו

Step					Directi	on					Message	Comment
	U	U	Α	I	I	Ι	Ι	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	r	A	м	3 A	F	F	B	м	Б	r		
	Ā		A	~	A	В	_	В		B		
32							→				200 OK	IBCF_B forwards 200 OK response to IMS_B
33								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
34							←	_			200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
35						←					200 OK	IMS_B forwards 200 OK response to
36					<u> </u>						200 OK	IBCF_B forwards 200 OK response
37				←	-						200 OK	IBCF_A forwards 200 OK response
38									→		200 OK	IMS_A forwards 200 OK response to
39										\rightarrow		User B is informed that file transfer
40				~			_				ACK	UE_B acknowledges the receipt of
41					>						ACK	IMS_A forwards ACK to IBCF_A
42						>					ACK	IBCF_A forwards ACK to IBCF_B
43							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
44								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
45							←	_			ACK	AS/IM_B returns, possibly modified, ACK to IMS_B
46						←					ACK	IMS_B forwards ACK to IBCF_B
47					←	_					ACK	IBCF_B forwards ACK to IBCF_A
48				←	-						ACK	IBCF_A forwards ACK to IMS_A
49			←								ACK	IMS_A forwards ACK to AS/IM_A
50				•							ACK	AS/IM_A returns, possibly modified, ACK to IMS_A
51		←		-							ACK	IMS_A forwards ACK to UE_A
52	←									\rightarrow		File transfer starts (see clause 5.3.3 Image data via MSRP)
53												File transfer completed (size checked)
54				¢							BYE	UE_B releases the file transfer session with BYE
55					*						BYE	IMS_A forwards BYE to IBCF_A
56)					BYE	IBCF_A forwards BYE to IBCF_B
57							\rightarrow				BYE	IBCF_B forwards BYE to IMS_B
58								\rightarrow			BYE	IMS_B forwards BYE to AS/IM_B
59							←	_			BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
60						←					BYE	IMS_B forwards BYE to IBCF_B
61					←	-					BYE	IBCF_B forwards BYE to IBCF_A
62				←	-			1			BYE	IBCF_A forwards BYE to IMS_A
63			←	-				1			BYE	IMS_A forwards BYE to AS/IM_A
64				*							BYE	AS/IM_A returns, possibly modified, BYE to IMS_A
65		←		-							BYE	IMS_A forwards BYE to UE_A
66												User A is informed that file transfer completed
67		_		*							200 OK	UE A sends 200 OK for BYE
68			¢								200 OK	IMS_A forwards 200 OK response to
69				÷							200 OK	AS/IM_A AS/IM_A returns, possibly modified,
				1				1				200 OK response to IMS_A

Step	Direction								Message	Comment		
	U	U	Α	Ι	Ι		I	Α	U	U		
	S	E	S/	М	В	В	M	S/	E	S		
	е	Α	I	S	C	C	S		в	е		
	r A			A		F	в			r B		
70	Î				\rightarrow						200 OK	IMS_A forwards 200 OK response to
71						\rightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B
72							\rightarrow				200 OK	IBCF_B forwards 200 OK response to IMS_B
73								\rightarrow			200 OK	IMS_B forwards 200 OK response to AS/IM_B
74							←				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
75						←					200 OK	IMS_B forwards 200 OK response to IBCF_B
76					←	_					200 OK	IBCF_B forwards 200 OK response to IBCF_A
77				←	_						200 OK	IBCF_A forwards 200 OK response to IMS_A
78									\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
79										\rightarrow		User B is informed that file transfer completed

4.5 Test Descriptions

This clause introduces interoperability test descriptions (TDs) which realize one or more IMS NNI test purposes of TS 186 011-1 [2].

Each TD is defined on the basis of one of the generic use cases forms presented in the previous clause and in TS 186 011-2 [9], clause 4.4. Each test sequence step in a TD includes also a reference to a specific call flow step of the generic use case. Call flow steps which are associated with the test body are repeated after each TD and include any modifications necessary to adapt the generic use case. In the adapted call flow steps that are associated with user interactions are shown shaded and steps which have pass criteria are associated with are shown in bold.

Note that the expected test sequence may only show the Call Flow that affects the test.

In the tabulations which follow, all references are to TS 124 229 [1].

4.5.1 Capability discovery

4.5.1.1 Capability discover through OPTIONS - User B is Registered - interworking

Interoperability Test Description									
Identifier:	TD_IMS_CAP_0001								
Summary:	IMS network supports capability discovery and OPTIONS messages exchange between two users in their home network can be performed. User B must be Registered.								
Configuration:	CF_INT_AS								
SUT	IMS_B								
References	Test Purpose	Specification Reference							
	TP_IMS_5097_13	TS 124 229 [1], clause 5.4.3.2 ¶1							
	TP_IMS_5108_07	TS 124 229 [1], clause 5.4.3.3 ¶1							
	TP_IMS_5115_08	TS 124 229 [1], clause 5.4.3.3 ¶65							
Use Case ref.:	UC_RCS_1_I								
		Interoperability Test Description							
----------------	--	--	--	--	--	--	--	--	
Pre-test	HSS of IMS_A and of IMS B is configured according to table 1								
conditions:	 UE_A 	and UE_B have IP bearers established to their respective IMS networks as							
	per T	S 186 011-2 [9], clause 4.2.1							
	• UE_A	is registered in IMS_A optionally using userPRES according to table 1							
	• UE E	B is registered in IMS B optionally using userPRES according to table 1							
	• UF A	is optionally configured to receive notifications with watcher information							
	• IMS	A is configured to contact AS A							
		B is configured to contact ΛS_B							
		b is configured to contact AS_b							
	• AS_D	A is within the trust demain of IMO. D							
	• IMS_	A is within the trust domain of IVIS_B							
	• IMS_/	A not configured for topology hiding							
T (0	0								
Test Sequence:	Step								
	1	User A selects a contact of user B in the phone address book							
	2	User B is informed about user A capabilities							
	3	User A is informed about user B capabilities							
Conformance	Check								
Criteria:	1	TP_IMS_5097_13 in CFW step 6 (PUBLISH):							
		ensure that {							
		when {IMS_B receives a PUBLISH from IMS_A }							
		then { IMS_B sends the PUBLISH to AS_B							
		containing a Route_header							
		indicating the SIP_URI of AS_B and							
		containing a P-Charging-Function-Addresses_header and							
		containing a P-Charging-Vector_header							
		containing an orig-ioi parameter indicating IMS_A and							
		not containing a term-ioi parameter and							
		containing access-network-charging-info }							
		}							
	2	TP IMS 5108 07 in CFW step 18 (SUBSCRIBE):							
		ensure that {							
		when { IMS A receives a SUBSCRIBE addressed to UE B }							
		then { IMS_B sends the SUBSCRIBE to AS_B							
		containing a topmost Route header							
		indicating the SIP URI of AS B							
		containing a Route header							
		indicating the S-CSCF_SIP URI of IMS_B							
		containing a P-Charging-Vector header							
		containing an orig-ioi parameter indicating IMS A and							
		not containing a term-ioi parameter}							
		}							
]							
	3	TP IMS 5115 08 in CFW step 19 (200 OK):							
		ensure that {							
		when { AS B sends a 200 response to UF A }							
		then { IMS_B receives the 200 response							
		containing a P-Charging-Vector header							
		containing a r-onarging-vector_neader							
		containing a ong-toi_parameter indicating INIO_A and							
		<i>I</i>							

Step		Direction							Message	Comment
	U s r A	U E A	I M S A	I B C F A	I B C F B	I M S B	U E B	U s r B		
1										User A selects a contact of user B in the phone address book
2									OPTIONS	UE_A sends OPTIONS to IMS_A with Accept- contact header containing user A capabilities (RCS-e services Tags)
3				\rightarrow					OPTIONS	IMS_A forwards OPTIONS to IBCF_A
4					\rightarrow				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B

Step	Direction								Message	Comment
	U s r ∆	U E A	I M S A	I B C F	I B C F B	I M S B	U E B	U s e r B		
5				Î	- <u>-</u>				OPTIONS	IBCF_B forwards OPTIONS to IMS_B
6							\rightarrow		OPTIONS	IMS_B forwards OPTIONS to UE_B
7										User B is informed about user A capabilities
8						(200 OK	UE_B responds with 200 OK to IMS_B with Contact header containing user B capabilities (RCS-e services Tags)
9					←	_			200 OK	IMS_B forwards 200 OK to IBCF_B
10				←					200 OK	IBCF_B forwards 200 OK to IBCF_A
11			\leftarrow						200 OK	IBCF_A forwards 200 OK to IMS_A
12		←							200 OK	IMS_A forwards 200 OK to UE_A
13										User A is informed about user B capabilities

4.5.1.2 Capability discover through OPTIONS – User B is Registered – roaming

		Interoperability Test Desc	ription					
Identifier:	TD_IMS_0	CAP_0002						
Summary:	INIS network supports capability discovery and OPTIONS messages exchange between one user in its home network and another in visited network can be performed. User B must be Registered.							
Configuration:	CF_ROAM_AS (OPTIONAL)							
SUT	IMS_B							
References	Test Purp	ose	Specification Reference					
	TP_IMS_5	5097_13	TS 124 229 [1], clause 5.4.3.2 ¶1					
	TP_IMS_5	5108_07	TS 124 229 [1], clause 5.4.3.3 ¶1					
	TP_IMS_5	5115_08	TS 124 229 [1], clause 5.4.3.3 ¶65					
Use Case ref.:	UC_RCS_	_1_R						
Pre-test conditions:	 HSS of IMS_A and of IMS B is configured according to table 1 UE_A and UE_B have IP bearers established to their respective IMS networks as per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally using userPRES according to table 1 UE_B is registered in IMS_B via IMS A optionally using userPRES according to table 1 UE_A is optionally configured to receive notifications with watcher information IMS_A is configured to contact AS_A IMS_B is optionally configured for reactive authorization IMS_A is within the trust domain of IMS_B IMS_A not configured for topology hiding 							
rest ocquence.	1	User A selects a contact of user I	B in the phone address book					
	2	User B is informed about user A	capabilities					
	3	User A is informed about user B	capabilities					
Conformance	Check							
Criteria:	1	TP_IMS_5097_13 in CFW step 6 ensure that { when {IMS_B receives a PUBLIS containing a Route_head indicating the SIP_URI containing a P-Charging- containing an orig-ioi p not containing a term-id containing a ccess-netw }	(PUBLISH): SH from IMS_A } SH to AS_B fer of AS_B and Function-Addresses_header and Vector_header arameter indicating IMS_A and bi parameter and vork-charging-info }					

Interoperability Test Description							
2	TP_IMS_5108_07 in CFW step 18 (SUBSCRIBE):						
	ensure that {						
	when { IMS_A receives a SUBSCRIBE addressed to UE_B }						
	then { IMS_B sends the SUBSCRIBE to AS_B						
	containing a topmost Route header						
	indicating the SIP URI of AS_B						
	containing a Route header						
	indicating the S-CSCF_SIP URI of IMS_B						
	containing a P-Charging-Vector_header						
	containing an orig-ioi parameter indicating IMS_A and						
	not containing a term-ioi parameter}						
	}						
	}						
3	TP_IMS_5115_08 in CFW step 19 (200 OK):						
	ensure that {						
	when { AS_B sends a 200 response to UE_A }						
	then { IMS_B receives the 200 response						
	containing a P-Charging-Vector_header						
	containing a orig-ioi_parameter indicating IMS_A and						
	containing a term-ioi_parameter indicating IMS_B }						
	}						

Step	Direction								Message	Comment
	U	U	I	Ι	Ι	I	U	U		
	S	E	M	B	B	M	E	S		
	e	Α	S	C	C	S	в	e		
	r A		A		Г В	D		r B		
1				L-						User A selects a contact of user B in the phone
										address book
									OPTIONS	UE_A sends OPTIONS to IMS_A with Accept-
2			\rightarrow							contact header containing user A capabilities
										(RCS-e services Tags)
3				\rightarrow					OPTIONS	IMS_A forwards OPTIONS to IBCF_A
4					\rightarrow				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
5						\rightarrow			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
6					←	_			OPTIONS	IMS_B forwards OPTIONS to IBCF_B
7				\leftarrow					OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
8			←	-					OPTIONS	IBCF_A forwards OPTIONS to IMS_A
9				-	— —	_	\rightarrow		OPTIONS	IMS_A forwards OPTIONS to UE_B
10										User B is informed about user A capabilities
				-	-				200 OK	UE_B responds with 200 OK to IMS_A with
11			←	-						Contact header containing user B capabilities
										(RCS-e services Tags)
12				\rightarrow					200 OK	IMS_A forwards 200 OK to IBCF_A
13				_	\rightarrow				200 OK	IBCF_A forwards 200 OK to IBCF_B
14						\rightarrow			200 OK	IBCF_B forwards 200 OK to IMS_B
15					←				200 OK	IMS_B forwards 200 OK to IBCF_B
16				\leftarrow					200 OK	IBCF_B forwards 200 OK to IBCF_A
17			←						200 OK	IBCF_A forwards 200 OK to IMS_A
18		←	_						200 OK	IMS_A forwards 200 OK to UE_A
19										User A is informed about user B capabilities

		Interoperability Test	Description
Identifier:	TD_IMS_C	CAP_0003	
Summary:	IMS netwo	ork supports capability discover	very and OPTIONS messages exchange
	between ty	wo users in their home netw	ork can be performed. User B must be not
	Registered	1.	
Configuration:	CF_INT_A	S	
SUT	IMS_B		
References	Test Purp	ose	Specification Reference
	TP_IMS_5	097_13	TS 124 229 [1], clause 5.4.3.2 ¶1
	TP_IMS_5	108_07	TS 124 229 [1], clause 5.4.3.3 ¶1
	TP_IMS_5	115_08	TS 124 229 [1], clause 5.4.3.3 ¶65
Use Case ref.:	UC_RCS_	1_I	
Pre-test	 HSS d 	of IMS_A and of IMS B is co	nfigured according to table 1
conditions:	 UE_A 	and UE_B have IP bearers	established to their respective IMS networks as
	per TS	S 186 011-2 [9], clause 4.2.1	·
	• UE_A	is registered in IMS_A optic	nally using userPRES according to table 1
	 UE_B 	is not registered in IMS_B	
	 UE_A 	is optionally configured to r	eceive notifications with watcher information
	• IMS /	A is configured to contact AS	A
	IMS E	B is configured to contact AS	_ 5 B
	• AS B	is optionally configured for	_ eactive authorization
	• IMS /	A is within the trust domain of	fIMS B
	 IMS 	A not configured for topology	hiding
			······································
Test Sequence:	Step		
	1	User A selects a contact of	user B in the phone address book
	2	User A is informed that use	B is offline (not registered)
	_		
Conformance	Check		
Criteria:	1	TP_IMS_5097_13 in CEW :	step 6 (PUBLISH):
	_		
		when {IMS B receives a F	PUBLISH from IMS A }
		then { IMS B sends the P	JBLISH to AS B
		containing a Route	header
		indicating the SIF	_URI of AS_B and
		containing a P-Chai	ging-Function-Addresses_header and
		containing a P-Chai	ging-Vector_header
		containing an orig	i-ioi parameter indicating IMS_A and
		not containing a t	erm-ioi parameter and
		containing access	-network-charging-info }
		}	
	2	TP_IMS_5108_07 in CFW	step 18 (SUBSCRIBE):
		ensure that {	
		when { IMS_A receives a S	UBSCRIBE addressed to UE_B }
		then { IMS_B sends the S	JBSCRIBE to AS_B
		containing a topmos	t Route neader
		Indicating the SIP	URI OFAS_B
		indicating the S C	
		indicating the S-C	SCF_SIF URI ULIMS_B
			ying-vector_neader
		not containing an one	-ioi parameter indicating inis_A and
		1 not containing a t	
		J l	
	3	7 TP IMS 5115 08 in CEV/	step 19 (200 OK):
		ensure that {	
		when { AS B sends a 200 l	esponse to UE A }
		then { IMS_B receives the	200 response
		containing a P-Cha	aina-Vector header
		containing a r orig-i	pi parameter indicating IMS_A and
		containing a erry	ioi parameter indicating IMS B }
		}	()

Step	Direction								Message	Comment
	U s r A	U E A	I M S A	I B C F A	I B C F B	I M S B	U E B	U s e r B		
1										User A selects a contact of user B in the phone address book
2									OPTIONS	UE_A sends OPTIONS to IMS_A with Accept- contact header containing user A capabilities (RCS-e services Tags)
3				\rightarrow					OPTIONS	IMS_A forwards OPTIONS to IBCF_A
4					\rightarrow				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
5						\rightarrow			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
6					←	_			480 Not Registered/ 408 Request Timeout	IMS_B responds OPTIONS with 480 Not Registered/408 Request Timeout to IBCF_B
7				←	_				480 Not Registered/ 408 Request Timeout	IBCF_B forwards 480 Not Registered/408 Request Timeout response to IBCF_A
8			←	_					480 Not Registered/ 408 Request Timeout	IBCF_A forwards 480 Not Registered/408 Request Timeout response to IMS_A
9		←							480 Not Registered/ 408 Request Timeout	IMS_A forwards 480 Not Registered/408 Request Timeout response to UE_A
10										User A is informed that user B is offline (not registered)

4.5.1.4 Capability discover through OPTIONS – User B is not provisioned for RCS-e - interworking

Interoperability Test Description										
Identifier:	TD_IMS_CAP_0004	TD_IMS_CAP_0004								
Summary:	IMS network supports capability	IMS network supports capability discovery and OPTIONS messages exchange								
	provisioned for RCS-e service	between two users in their home network can be performed. User B must be not								
Configuration:	CF_INT_AS									
SUT	IMS_B									
References	Test Purpose	Specification Reference								
	TP_IMS_5097_13	TS 124 229 [1], clause 5.4.3.2 ¶1								
	TP_IMS_5108_07	TS 124 229 [1], clause 5.4.3.3 ¶1								
	TP_IMS_5115_08	TS 124 229 [1], clause 5.4.3.3 ¶65								
Use Case ref.:	UC_RCS_1_I									
Pre-test	HSS of IMS_A and of IMS	B is configured according to table 1								
conditions:	UE_A and UE_B have IP	bearers established to their respective IMS networks as								
	per TS 186 011-2 [9], clau	se 4.2.1								
	 UE_A is registered in IMS 	_A optionally using userPRES according to table 1								
	 UE_B is registered in IMS 	_B without RCS-e capabilities								
	 UE_A is optionally configu 	red to receive notifications with watcher information								
	 IMS_A is configured to configured to configured. 	ntact AS_A								
	 IMS_B is configured to configured. 	ntact AS_B								
	 AS_B is optionally configure 	red for reactive authorization								
	 IMS_A is within the trust d 	omain of IMS_B								
	IMS_A not configured for f	opology hiding								

Interoperability Test Description								
Test Sequence:	Step							
	1	User A selects a contact of user B in the phone address book						
	2	User A is informed that user B is not provisioned for RCS-e						
Conformance	Check							
Criteria:	1	TP_IMS_5097_13 in CFW step 6 (PUBLISH):						
		ensure that {						
		when {IMS_B receives a PUBLISH from IMS_A }						
		then { IMS_B sends the PUBLISH to AS_B						
		containing a Route_header						
		indicating the SIP_URI of AS_B and						
		containing a P-Charging-Function-Addresses_header and						
		containing a P-Charging-Vector_header						
		containing an orig-ioi parameter indicating IMS_A and						
		not containing a term-ioi parameter and						
		containing access-network-charging-info }						
		}						
	2	TP_IMS_5108_07 in CFW step 18 (SUBSCRIBE):						
		ensure that {						
		when { IMS_A receives a SUBSCRIBE addressed to UE_B }						
		then { IMS_B sends the SUBSCRIBE to AS_B						
		containing a topmost Route neader						
		indicating the SIP URI of AS_B						
		containing a Route header						
		Indicating the S-CSCF_SIP URI of IMS_B						
		containing a P-Charging-Vector_header						
		containing an orig-iol parameter indicating IMS_A and						
		not containing a term-ioi parameter}						
		} TD_IMS_5115_08 in CDM atom 10 (200 OK);						
	3	1P_1105_5115_00 III CFW Step 19 (200 OK).						
		when (AS, B) sounds a 200 response to $IE[A]$						
		then { IMS_B receives the 200 response						
		containing a P-Charging Vector header						
		containing a r "Olidigility" vector_lieduel						
		containing a ong-loi_parameter indicating INO_A and						
1		J						

Step				Dire	ction				Message	Comment
	U	U	I	I	I	I	U	U		
	S		IVI S	В	В	IVI S		S		
	e	A	5			э В	D	e		
	A		A	Ā	В	Б		B		
1										User A selects a contact of user B in the phone address book
2									OPTIONS	UE_A sends OPTIONS to IMS_A with Accept- contact header containing user A capabilities (RCS-e services Tags)
3				\rightarrow					OPTIONS	IMS_A forwards OPTIONS to IBCF_A
4					\rightarrow				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
5						\rightarrow			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
6					<i>(</i>				404 Not	IMS_B responds OPTIONS with 404 Not Found
					l l				Found	to IBCF_B
7				<u> </u>	_				404 Not	IBCF_B forwards 404 Not Found response to
				ì					Found	IBCF_A
8			4						404 Not	IBCF_A forwards 404 Not Found response to
			ì						Found	IMS_A
9		4							404 Not	IMS_A forwards 404 Not Found response to
		¹							Found	UE_A
10										User A is informed that user B is not provisioned for RCS-e

4.5.2 Social Presence

4.5.2.1 Watcher subscription for presence event notification in visited network

		Interoperability Test Description				
Identifier:	TD_IMS_F	PRES_0001				
Summary:	IMS netwo	rk supports properly presence service when a watcher subscribes to				
-	presence	nformation for a presentity that it's located in a different network.				
Configuration:	CF_ROAM	1_AS (OPTIONAL)				
SUT	IMS_B					
References	Test Purp	ose Specification Reference				
	TP_IMS_5	097_13 TS 124 229 [1], clause 5.4.3.2 ¶1				
	TP_IMS_5	108_07 TS 124 229 [1], clause 5.4.3.3 ¶1				
	TP_IMS_5	115_08 TS 124 229 [1], clause 5.4.3.3 ¶65				
Use Case ref.:	UC_RCS_	2_R				
	_					
Pre-test	 HSS (of IMS_A and of IMS B is configured according to table 1				
conditions:	 UE_A 	and UE_B have IP bearers established to their respective IMS networks as				
	per T	S 186 011-2 [9], clause 4.2.1				
	 UE_A 	is registered in IMS_A optionally using userPRES according to table 1				
	 UE_B 	is registered in IMS_B via IMS_A optionally using userPRES according to				
	table	1				
	• UE_A	is optionally configured to receive notifications with watcher information				
	• UE_A	is authorized to see presence information of UE_B				
	• IMS_/	A is configured to contact AS_A				
	• IMS_I	B is configured to contact AS_B				
	 AS_B 	is optionally configured for reactive authorization				
	• IMS_/	A is within the trust domain of IMS_B				
	• IMS_/	A not configured for topology hiding				
Test Comusines	Cham					
Test Sequence:	Step	Lizer D nublishes presence and conshility information				
	1	User B publishes presence and capability information				
	2	User A sologie a contact of user B in the phone address book				
	3	User B is informed about user A capabilities				
	5	User A is informed about user B capabilities				
	6	User A subscribes to presence and canability information from User B				
	7	SUBSCRIPTION triggers the AS to send a NOTIFY to UF. B indicating the				
	'	change to the watcher information subscriber				
	8	User B receives an authorization request from User A to see its own				
		presence and capability information				
	9	User B authorizes user A to be informed of its own presence and capability				
		information				
	10	User A is informed of user B presence and capability information				
	11	User A sees user B presence and capability information				
	_					
Conformance	Check					
Criteria:	1	TP_IMS_5097_13 in CFW step 6 (PUBLISH):				
		ensure that {				
		when {IMS_B receives a PUBLISH from IMS_A }				
		then { IMS_B sends the PUBLISH to AS_B				
		containing a Route_neader				
		Indicating the SIP_URI of AS_B and				
		containing a P-Onarging-Function-Addresses_neader and				
		containing a r-onarging-vector_lieduer				
		not containing a term-ioi parameter and				
		containing access-network-charging-info }				
		}				

	Interoperability Test Description
2	TP_IMS_5108_07 in CFW step 18 (SUBSCRIBE):
	ensure that {
	when { IMS_A receives a SUBSCRIBE addressed to UE_B }
	then { IMS_B sends the SUBSCRIBE to AS_B
	containing a topmost Route header
	indicating the SIP URI of AS_B
	containing a Route header
	indicating the S-CSCF_SIP URI of IMS_B
	containing a P-Charging-Vector_header
	containing an orig-ioi parameter indicating IMS_A and
	not containing a term-ioi parameter}
	}
	}
3	TP_IMS_5115_08 in CFW step 19 (200 OK):
	ensure that {
	when { AS_B sends a 200 response to UE_A }
	then { IMS_B receives the 200 response
	containing a P-Charging-Vector_header
	containing a orig-ioi_parameter indicating IMS_A and
	containing a term-ioi_parameter indicating IMS_B }
	}

Step					I	Direct	ion					Message	Comment
	U s r A	U E A	A S A	I M S A		I B C F A	I B C F B	I M S B	A S B	U E B	U s r B		
1													User B publishes presence and capability information
2				←								PUBLISH	UE_B sends PUBLISH with information for all commonly supported presence elements
3												PUBLISH	IMS_A forwards the PUBLISH to IBCF_A
4							→					PUBLISH	IBCF_A forwards the PUBLISH to IBCF_B
5								\rightarrow				PUBLISH	IBCF_B forwards the PUBLISH to IMS_B
6									\rightarrow			PUBLISH	IMS_B forwards the PUBLISH to IMS_B AS (PS)
7								←				200 OK	IMS_B AS responds with a 200 OK to IMS_B
8							←					200 OK	IMS_B forwards the 200 OK response to IBCF_B
9						←	_					200 OK	IBCF_B forwards the 200 OK response to IBCF_A
10				←								200 OK	IBCF_A forwards the 200 OK response to IMS_A
11										\rightarrow		200 OK	IMS_A forwards the 200 OK response to UE_B
12													User B is informed of its presence status update
13													User A selects a contact of user B in the phone address book
14												OPTIONS	UE_A sends OPTIONS to IMS_A with Accept-contact header containing user A capabilities (RCS-e services Tags and the Tag indicating support of discovery via presence)
15												OPTIONS	IMS_A forwards OPTIONS to IBCF_A
16												OPTIONS	IBCF_A forwards OPTIONS to IBCF_B

Step					Direc	tion						Message	Comment
	U s r A	ЪПС	A S A	I M S A	I B C F ⊲	I B C F B	I M S B	A S B	U E B	l l s f	J S S S		
17											-	OPTIONS	IBCF_B forwards OPTIONS to IMS_B
18												OPTIONS	IMS_B forwards OPTIONS to IBCF_B
19												OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
20												OPTIONS	IBCF_A forwards OPTIONS to IMS_A
21												OPTIONS	IMS_A forwards OPTIONS to UE_B
22												222.01	User B is informed about user A capabilities
23												200 OK	UE_B responds with 200 OK to IMS_A with Contact header containing user B capabilities (RCS-e services Tags and the Tag indicating support via presence)
24												200 OK	IMS_A forwards 200 OK to IBCF_A
25												200 OK	IBCF_A forwards 200 OK to IBCF_B
26												200 OK	IBCF_B forwards 200 OK to IMS_B
27												200 OK	IMS_B forwards 200 OK to IBCF_B
28												200 OK	IBCF_B forwards 200 OK to IBCF_A
29												200 OK	IBCF_A forwards 200 OK to IMS_A
30												200 OK	User A is informed about user B capabilities
32													capability information from User B
33				→								SUBSCRIBE	UE_A sends ANONYMOUS SUBSCRIBE for "User B presence" event with expiry time of 0 to IMS_A
34					→							SUBSCRIBE	IMS_A forwards the SUBSCRIBE to IBCF_A
35						→						SUBSCRIBE	IBCF_A forwards the SUBSCRIBE to IBCF_B
36							\rightarrow					SUBSCRIBE	IBCF_B forwards the SUBSCRIBE to IMS_B
37								\rightarrow				SUBSCRIBE	IMS_B forwards the SUBSCRIBE to IMS_B AS (PS)
38							←					200 OK	IMS_B AS responds with a 200 OK to IMS_B
39						←						200 OK	IMS_B forwards the 200 OK response to IBCF_B
40					←							200 OK	IBCF_B forwards the 200 OK response to IBCF_A
41				←								200 OK	IBCF_A forwards the 200 OK response to IMS_A
42		←		-								200 OK	IMS_A forwards the 200 OK response to UE_A
43						←						NOTIFY	IMS_B AS sends NOTIFY to IBCF_B
44					←							NOTIFY	IBCF_B forwards NOTIFY to IBCF_A

Step				[Directio	on					Message	Comment
	U s r A	U E A	A S A	I M S A	I B C F A	I B C F B	I M S B	A S B	U E B	U s e r B		
45				<							NOTIFY	IBCF_A forwards NOTIFY to IMS_A
46		←									NOTIFY	IMS_A forwards the NOTIFY to UE_A
47				*							200 OK	UE_A responds with a 200 OK to IMS_A
48				\rightarrow							200 OK	IMS_A forwards the 200 OK to IBCF_A
49					;	>					200 OK	IBCF_A forwards the 200 OK to IBCF_B
50								→			200 OK	IBCF_B forwards the 200 OK response to IMS_B AS
51												SUBSCRIPTION triggers the AS to send a NOTIFY to UE_B indicating the change to the watcher information subscriber
52							←	_			NOTIFY	IMS_B AS sends NOTIFY to IMS_B to indicate UE_B the change to the watcher information subscriber
53						<u> </u>					NOTIFY	IMS_B forwards the NOTIFY to IBCF_B
54					←	_					NOTIFY	IBCF_B forwards the NOTIFY to IBCF_A
55				←							NOTIFY	IBCF_A forwards the NOTIFY to IMS_A
56									\rightarrow		NOTIFY	IMS_A forwards the NOTIFY to UE_B
57				←							200 OK	UE_B responds with a 200 OK to IMS_A
58				—							200 OK	IMS_A forwards the 200 OK response to IBCF_A
59					;	>					200 OK	IBCF_A forwards the 200 OK response to IBCF_B
60							>					IBCF_B forwards the 200 OK response to IMS_B
61								→			200 OK	IMS_B forwards the 200 OK response to IMS_B AS
62												User B receives an authorization request from User A to see its own presence and capability information
63												User B authorizes user A to be informed of its own presence and capability information
64						←					NOTIFY	IMS_B AS sends NOTIFY to IBCF_B
65 66					←	_					NOTIFY	IBCF_B sends NOTIFY to IBCF_A
67				<							NOTIEY	IMS_A
68		K									200 OK	UE_A UE_A
60				*							200 OK	IMS_A IMS_A forwards the 200 OK
70				\rightarrow							200 0K	response to IBCF_A
70						*					200 OK	response to IBCF_B
/1								→			200 OK	response to IMS_B AS

Step					Directi	on					Message	Comment
	U s e r A	U E A	A S A	I M S A	I B C F A	I B C F B	I M S B	A S B	υшв	U s r B		
72												User A is informed of user B presence and capability information
73							←	_			NOTIFY	IMS_B AS sends NOTIFY to IMS_B to indicate UE_B that subscription has been authorized
74						←	-				NOTIFY	IMS_B forwards the NOTIFY to IBCF_B
75					←						NOTIFY	IBCF_B forwards the NOTIFY to IBCF_A
76				←	_						NOTIFY	IBCF_A forwards the NOTIFY to IMS_A
77									\rightarrow		NOTIFY	IMS_A forwards the NOTIFY to UE_B
78				←							200 OK	UE_B responds with a 200 OK to IMS_A
79					→						200 OK	IMS_A forwards the 200 OK response to IBCF_A
80						¥					200 OK	IBCF_A forwards the 200 OK response to IBCF_B
81							•				200 OK	IBCF_B forwards the 200 OK response to IMS_B
82								→			200 OK	IMS_B forwards the 200 OK response to IMS_B AS
83												User A sees user B presence and capability information

4.5.2.2 Watcher subscription to presence event notification in home network

	Interoperability Test Desc	ription										
Identifier:	TD_IMS_PRES_0002											
Summary:	IMS network supports properly presence service when a watcher subscribes to											
	presence information for a presentity that it's located in a home network.											
Configuration:	CF_INT_AS											
SUT	IMS_A											
References	Test Purpose	Specification Reference										
	TP_IMS_5108_07	TS 124 229 [1], clause 5.4.3.3 ¶1										
	TP_IMS_5115_08	TS 124 229 [1], clause 5.4.3.3 ¶65										
Use Case ref.:	UC_RCS_2_I											
Pre-test conditions:	 HSS of IMS_A and of IMS B is configure UE_A and UE_B have IP bearers estable per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally UE_B is registered in IMS_B optionally UE_A is optionally configured to receive UE_A is authorized to see presence info IMS_A is configured to contact AS_A IMS_B is configured to contact AS_B AS_B is optionally configured for reactive IMS_A is within the trust domain of IMS IMS_A not configured for topology hidin 	ed according to table 1 lished to their respective IMS networks as using userPRES according to table 1 using userPRES according to table 1 a notifications with watcher information ormation of UE_B we authorization _B										

		Interoperability Test Description
Test Sequence:	Step	
	1	User B publishes presence and capability information including capabilities
	2	User B is informed of its presence status update
	3	User A selects a contact of user B in the phone address book
	4	User B is informed about user A capabilities
	5	User A is informed about user B capabilities
	6	User A subscribes to presence and capability information from User B
	7	SUBSCRIPTION triggers the AS to send a NOTIFY to UE_B indicating the
		change to the watcher information subscriber
	8	User B receives an authorization request from User A to see its own
		presence and capability information
	9	User B authorizes user A to be informed of its own presence and capability
		information
	10	User A is informed of user B presence and capability information
	11	User A sees user B presence and capability information
Conformance	Check	
Criteria:		
	1	TP_IMS_5108_07 in CFW step 12 (SUBSCRIBE):
		ensure that {
		when { IMS_A receives a SUBSCRIBE addressed to UE_B }
		then { IMS_B sends the SUBSCRIBE to AS_B
		containing a topmost Route header
		indicating the SIP URI of AS_B
		containing a Route header
		indicating the S-CSCF_SIP URI of IMS_B
		containing a P-Charging-Vector header
		containing an orig-ioi parameter indicating IMS A and
		not containing a term-ioi parameter}
		}
		}
	2	TP IMS 5115 08 in CFW step 13 (200 OK):
		ensure that {
		when { AS B sends a 200 response to UE A }
		then { IMS B receives the 200 response
		containing a P-Charging-Vector header
		containing a orig-ioi parameter indicating IMS A and
		containing a term-ioi parameter indicating IMS B }
		}

Step						Direc	tion					Message	Comment
	U s e r A	L E A	J	A S A	I M S A	I B C F A	– всғв	I M S B	A S B	UEB	U s e r B		
1													User B publishes presence and capability information including capabilities
2								←				PUBLISH	UE_B sends PUBLISH with information for all commonly supported presence elements and capabilities
3									\rightarrow			PUBLISH	IMS_B forwards the PUBLISH to IMS_B AS (PS)
4								←				200 OK	IMS_B AS responds with a 200 OK to IMS_B
5										\rightarrow		200 OK	IMS_B forwards the 200 OK response to IBCF_B
6													User B is informed of its presence status update
7													User A selects a contact of user B in the phone address book

Step			-	-	Direc	tion	-	-	_		Message	Comment
	U	U	A	I M	I B	l B	I	A		U		
	e	Ā	A	S	Ċ	C	S	B	B	e		
	r			Α	F	F	В			r		
8	A					в				B	OPTIONS	UE A sends OPTIONS to IMS A
Ŭ												with Accept-contact header
				\rightarrow								containing user A capabilities
												indicating support of discovery via
												presence)
9					\rightarrow						OPTIONS	IMS_A forwards OPTIONS to IBCF_A
10						→					OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
11							\rightarrow				OPTIONS	IBCF_B forwards OPTIONS to IMS_B
12									\rightarrow		OPTIONS	IMS_B forwards OPTIONS to UE_B
13												User B is informed about user A capabilities
14											200 OK	UE_B responds with 200 OK to
												containing user B capabilities
												(RCS-e services Tags and the Tag
												indicating support of discovery via
15						←					200 OK	IMS_B forwards 200 OK to
16					←						200 OK	IBCF_B forwards 200 OK to
17				←							200 OK	IBCF_A forwards 200 OK to
18		←									200 OK	IMS_A forwards 200 OK to UE_A
19												User A is informed about user B
20												User A subscribes to presence and
21												capability information from User B
21											SUBSCRIBE	SUBSCRIBE for "User B
				→								presence" event with expiry time of
22					\rightarrow						SUBSCRIBE	IMS_A forwards the SUBSCRIBE
23						_					SUBSCRIBE	IBCF_A forwards the SUBSCRIBE
0.4						1						to IBCF_B
24							\rightarrow				SUBSCRIBE	to IMS_B
25								\rightarrow			SUBSCRIBE	IMS_B forwards the SUBSCRIBE to IMS_B AS (PS)
26							←				200 OK	IMS_B AS responds with a 200 OK to IMS_B
27						←					200 OK	IMS_B forwards the 200 OK response to IBCF_B
28					←	_					200 OK	IBCF_B forwards the 200 OK
29				←							200 OK	IBCF_A forwards the 200 OK
30		←									200 OK	IMS_A forwards the 200 OK
31						←					NOTIFY	IMS_B AS sends NOTIFY to
32					←	_					NOTIFY	IBCF_B forwards NOTIFY to
33				←							NOTIFY	IBCF_A forwards NOTIFY to
		1	I									IIVIO_A

Step					Direct	ion					Message	Comment
	U	Ū	A	I	I		1	A	U	U		
	S	E	S A	M	B	В	M	S	E	S		
	r	~	~	Δ	F	F	B	Б	В	r		
	Å			~	A	B	_			B		
34		.		_							NOTIFY	IMS_A forwards the NOTIFY to UE_A
35				→							200 OK	UE_A responds with a 200 OK to IMS_A
36					\rightarrow						200 OK	IMS_A forwards the 200 OK to IBCF_A
37						→					200 OK	IBCF_A forwards the 200 OK to IBCF_B
38								\rightarrow			200 OK	IBCF_B forwards the 200 OK response to IMS_B AS
39												SUBSCRIPTION triggers the AS to
												send a NOTIFY to UE_B indicating
												the change to the watcher
10												Information subscriber
40											NOTIFY	IMS_B AS sends NUTIFY to
							←	_				change to the watcher information
												subscriber
41											NOTIFY	IMS B forwards the NOTIEY to
									\rightarrow			UE_B
42							←				200 OK	UE_B responds with a 200 OK to
43								、 、			200 OK	IMS_B forwards the 200 OK
												response to IMS_B AS
44												User B receives an authorization
												request from User A to see its own
												presence and capability
45			e e									Information
45												informed of its own presence and
												capability information
46						←	_	_			NOTIFY	IMS_B AS sends NOTIFY to
47					←						NOTIFY	IBCF_B sends NOTIFY to IBCF_A
48					ľ						NOTIFY	IBCF A forwards NOTIFY to
				—							_	IMS_Ā
49		←		_							NOTIFY	IMS_A forwards the NOTIFY to
50											200 OK	UE A responds with a 200 OK to
				7								IMS_A
51					→						200 OK	IMS_A forwards the 200 OK
50												response to IBCF_A
52						\rightarrow					200 OK	IBCF_A forwards the 200 OK
53											200 OK	IBCE B forwards the 200 OK
55								\rightarrow				response to IMS_BAS
54												User A is informed of user B
												presence and capability
												information
55											NOTIFY	IMS_B AS sends NOTIFY to
							←					IMS_B to indicate UE_B that
												subscription has been authorized
56									\rightarrow		NOTIFY	IMS_B forwards the NOTIFY to
F7												UE_B
57							←				200 OK	UE_B responds with a 200 OK to
58											200 04	INS B forwards the 200 OK
50								\rightarrow			200 00	response to IMS_BAS
59												User A sees user B presence and
												capability information

4.5.2.3 Unsuccessful watcher subscription to presence event notification in home network

		Interoperability Tes	t Description	
Identifier:	TD_IMS_	PRES_0003		
Summary:	IMS netwo	ork supports properly prese	nce service when a watcher subscribes to	
	presence	information for a presentity	that it's located in a different network and does	
	not autho	rize the watcher to be inforr	ned of his presence information.	
Configuration:	CF_INT_/	AS		
SUT	IMS_B			
References	Test Purp	pose	Specification Reference	
	TP_IMS_	5108_07	TS 124 229 [1], clause 5.4.3.3 ¶1	
Use Case ref.:	UC_RCS	_2_I		
Pre-test	 HSS 	of IMS A and of IMS B is c	onfigured according to table 1	
conditions:	• UE A	A and UE B have IP bearer	s established to their respective IMS networks a	as
	per T	S 186 011-2 [9], clause 4.2	.1	
	• UE A	A is registered in IMS A opt	ionally using userPRES according to table 1	
	• UE F	B is registered in IMS B opt	ionally using userPRES according to table 1	
	• UF A	A is optionally configured to	receive notifications with watcher information	
	 User 	A is not authorized to see r	resence information of User B	
		A is configured to contact A		
		B is configured to contact A	©_7	
		b is configured to configured for	roactive authorization	
		A is within the trust domain		
		A is within the trust domain	UTINS_B	
	● IIVI3_		jy hiding	
Test Sequence:	Sten			
Test Sequence:	Step	Liser B publishes presenc	a and canability information including canabilitie	20
Test Sequence:	Step 1 2	User B publishes presence	e and capability information including capabilitie	es
Test Sequence:	Step 1 2 3	User B publishes presence User B is informed of its p	e and capability information including capabilitie resence status update f user B in the phone address book	es
Test Sequence:	Step 1 2 3	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about u	e and capability information including capabilitie resence status update f user B in the phone address book	es
Test Sequence:	Step 1 2 3 4	User B publishes presence User B is informed of its p User A selects a contact o User B is informed about u	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities	es
Test Sequence:	Step 1 2 3 4 5 6	User B publishes presence User B is informed of its p User A selects a contact o User B is informed about o User A is informed about o	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities	es
Test Sequence:	Step 1 2 3 4 5 6 7	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to pres	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B	es
Test Sequence:	Step 1 2 3 4 5 6 7	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of o	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information	9S
Test Sequence:	Step 1 2 3 4 5 6 7	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about to User A is informed about to User A subscribes to pres User A is not informed of the	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information	9S
Test Sequence: Conformance	Step 1 2 3 4 5 6 7 Check	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about to User A is informed about to User A subscribes to pres User A is not informed of to	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information	2S
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about to User A is informed about to User A subscribes to pres User A is not informed of to	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information	
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about to User A is informed about to User A subscribes to pres User A is not informed of to TP_IMS_5108_07 in CFW	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information	2S
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to pres User A is not informed of of TP_IMS_5108_07 in CFW ensure that {	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information	2S
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of of TP_IMS_5108_07 in CFW ensure that { when { IMS_A receives a then { IMS_B sends the	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information	2S
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of of TP_IMS_5108_07 in CFW ensure that { when { IMS_A receives a then { IMS_B sends the s containing a topmot	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information f step 6 (SUBSCRIBE): SUBSCRIBE addressed to UE_B } SUBSCRIBE to AS_B pet Poute beader.	25
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of of TP_IMS_5108_07 in CFW ensure that { when { IMS_A receives a then { IMS_B sends the s containing a topmo indicating the SU	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information ' step 6 (SUBSCRIBE): SUBSCRIBE addressed to UE_B } SUBSCRIBE to AS_B post Route header P URL of AS_B	25
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of of TP_IMS_5108_07 in CFW ensure that { when { IMS_A receives a then { IMS_B sends the S containing a topmo indicating the SI containing a Bout	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information ' step 6 (SUBSCRIBE): SUBSCRIBE addressed to UE_B } SUBSCRIBE to AS_B post Route header P URI of AS_B a beader	
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of of TP_IMS_5108_07 in CFW ensure that { when { IMS_A receives a then { IMS_B sends the S containing a topmo indicating the SI containing a Route indicating the SI	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information f step 6 (SUBSCRIBE): SUBSCRIBE addressed to UE_B } SUBSCRIBE to AS_B post Route header P URI of AS_B a header CSCE_SIP URL of IMS_B	25
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of of TP_IMS_5108_07 in CFW ensure that { when { IMS_A receives a then { IMS_B sends the S containing a copmo indicating the SI containing a Route indicating the SI containing a P_Ch	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information ' step 6 (SUBSCRIBE): SUBSCRIBE addressed to UE_B } SUBSCRIBE to AS_B post Route header P URI of AS_B a header CSCF_SIP URI of IMS_B aroing-Vector header	25
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of of TP_IMS_5108_07 in CFW ensure that { when { IMS_A receives a then { IMS_B sends the S containing a topmo indicating the SI containing a P-Cha containing a n of	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information ' step 6 (SUBSCRIBE): SUBSCRIBE addressed to UE_B } SUBSCRIBE to AS_B post Route header P URI of AS_B a header CSCF_SIP URI of IMS_B arging-Vector_header ig-ioi parameter indicating IMS_A and	25
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of of TP_IMS_5108_07 in CFW ensure that { when { IMS_A receives a then { IMS_B sends the s containing a topmo indicating the SII containing a Route indicating the S- containing a p-Cha containing a nor not containing a nor	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information ' step 6 (SUBSCRIBE): SUBSCRIBE addressed to UE_B } SUBSCRIBE to AS_B post Route header P URI of AS_B a header CSCF_SIP URI of IMS_B arging-Vector_header ig-ioi parameter indicating IMS_A and term-ioi parameter}	25
Test Sequence: Conformance Criteria:	Step 1 2 3 4 5 6 7 Check 1	User B publishes presence User B is informed of its p User A selects a contact of User B is informed about of User A is informed about of User A subscribes to press User A is not informed of of TP_IMS_5108_07 in CFW ensure that { when { IMS_A receives a then { IMS_B sends the s containing a topmo indicating the SII containing a Route indicating the S- containing a P-Cha containing a n or not containing a 3	e and capability information including capabilitie resence status update f user B in the phone address book user A capabilities user B capabilities ence and capability information from User B user B presence information ' step 6 (SUBSCRIBE): SUBSCRIBE addressed to UE_B } SUBSCRIBE to AS_B ost Route header P URI of AS_B a header CSCF_SIP URI of IMS_B arging-Vector_header ig-ioi parameter indicating IMS_A and term-ioi parameter}	25

Step				I	Directio	on					Message	Comment
	U	U	Α	I	I	Ι	Ι	Α	U	U		
	S	E	S	M	B	B	M	S	E	S		
	е	A	Α	S	c	c	S	В	В	е		
	r A			A		F R	в			r B		
1					<u>î</u> l							User B publishes presence and
												capability information including
												capabilities
2											PUBLISH	UE_B sends PUBLISH with
							,					information for all commonly
												supported presence elements and
												capabilities
3								→			PUBLISH	IMS_B forwards the PUBLISH to
											000.01/	IMS_BAS (PS)
4							←				200 OK	IMS_B AS responds with a 200 OK
Б											200 0K	INS B forwards the 200 OK
5									\rightarrow		200 OK	response to IBCE_B
6												User B is informed of its presence
Ŭ												status update
7						Ì						User A selects a contact of user B
												in the phone address book
8											OPTIONS	UE_A sends OPTIONS to IMS_A
												with Accept-contact header
			<u> </u>	*								containing user A capabilities
												(RCS-e services Tags and the Tag
												Indicating support of discovery via
0												IMS A forwards OPTIONS to
9				 >							OF HONS	IBCE A
10											OPTIONS	IBCE A forwards OPTIONS to
					\rightarrow							IBCF B
11											OPTIONS	IBCF_B forwards OPTIONS to
							1					IMS_B
12									\rightarrow		OPTIONS	IMS_B forwards OPTIONS to
									1	_		UE_B
13												User B is informed about user A
1.4											200.0K	Capabilities
14											200 OK	IMS B with Contact header
												containing user B canabilities
							<					(RCS-e services Tags and the Tag
												indicating support of discovery via
												presence)
15						(200 OK	IMS_B forwards 200 OK to
												IBCF_B
16					k	_					200 OK	IBCF_B forwards 200 OK to
17											200.0K	IBCF_A
17				←	-						200 OK	
18		<u> </u>									200 OK	IMS A forwards 200 OK to LIF A
19		`									200 011	User A is informed about user B
10												capabilities
20												User A subscribes to presence and
												capability information from User B
21											SUBSCRIBE	UE_A sends ANONYMOUS
			<u> </u>	*								SUBSCRIBE for "User B
												presence" event with expiry time of
22												U LU IIVIO_A
22				\mapsto							JUDJUKIDE	to IBCF A
23											SUBSCRIBE	IBCF A forwards the SUBSCRIBF
					\rightarrow							to IBCF_B
24											SUBSCRIBE	IBCF_B forwards the SUBSCRIBE
							1					to IMS_B

Step					Direc	tion					Message	Comment
	U s e r A	U E A	A S A	I M S A	– всғ	I B C F B	I M S B	A S B	UEB	U s r B		
25								\rightarrow			SUBSCRIBE	IMS_B forwards the SUBSCRIBE to IMS_B AS (PS)
26							←				2xx or 4xx response	IMS_B AS responds with a 2xx or 4xx response to IMS_B
27						←					2xx or 4xx response	IMS_B forwards the 2xx or 4xx response to IBCF_B
28					←						2xx or 4xx response	IBCF_B forwards the 2xx or 4xx response to IBCF_A
29				←							2xx or 4xx response	IBCF_A forwards the 2xx or 4xx response to IMS_A
30		←									2xx or 4xx response	IMS_A forwards the 2xx or 4xx response to UE_A
31												User A is not informed of user B presence information

Step	Direction											Message	Comment		
		U s e r A	U E A	A S A	I M S A	I B C F A	I B C F B		I M S B	A S B	U E B	U s e r B			
1															User B publishes presence and capability information including capabilities
2								1	<				F	PUBLISH	UE_B sends PUBLISH with information for all commonly supported presence elements and capabilities
3										→			F	PUBLISH	IMS_B forwards the PUBLISH to IMS_B AS (PS)
4									←	_			4	200 OK	IMS_B AS responds with a 200 OK to IMS_B
5											→		2	200 OK	IMS_B forwards the 200 OK response to IBCF_B
6															User B is informed of its presence status update
7															User A selects a contact of user B in the phone address book
8					→								(OPTIONS	UE_A sends OPTIONS to IMS_A with Accept-contact header containing user A capabilities (RCS-e services Tags and the Tag indicating support of discovery via presence)
9						→							(OPTIONS	IMS_A forwards OPTIONS to IBCF_A
10							\rightarrow						(OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
11							_	\longrightarrow					(OPTIONS	IBCF_B forwards OPTIONS to IMS_B
12											\rightarrow		(OPTIONS	IMS_B forwards OPTIONS to UE_B
13															User B is informed about user A capabilities
14									~				4	200 OK	UE_B responds with 200 OK to IMS_B with Contact header containing user B capabilities (RCS-e services Tags and the Tag indicating support of discovery via presence)

Step						Directi	on					Message	Comment
	U	U		Α	1	1	I		Α	U	U	-	
	s	Е		S	М	В	в	м	S	Е	s		
	е	Α		Α	S	С	С	S	В	В	е		
	r				Α	F	F	В			r		
	A					Α	В				В		
15							←					200 OK	IMS_B forwards 200 OK to
16						(-					200 OK	IBCF_B forwards 200 OK to IBCF_A
17					←							200 OK	IBCF_A forwards 200 OK to IMS_A
18		←			-							200 OK	IMS_A forwards 200 OK to UE_A
19													User A is informed about user B capabilities
20													User A subscribes to presence and capability information from User B
21		_			*							SUBSCRIBE	UE_A sends ANONYMOUS SUBSCRIBE for "User B presence" event with expiry time of 0 to IMS_A
22						→						SUBSCRIBE	IMS_A forwards the SUBSCRIBE to IBCF_A
23							>					SUBSCRIBE	IBCF_A forwards the SUBSCRIBE to IBCF_B
24								>				SUBSCRIBE	IBCF_B forwards the SUBSCRIBE to IMS_B
25									→			SUBSCRIBE	IMS_B forwards the SUBSCRIBE to IMS_B AS (PS)
26								←	_			2xx or 4xx response	IMS_B AS responds with a 2xx or 4xx response to IMS_B
27			ĺ		Î							2xx or 4xx	IMS_B forwards the 2xx or 4xx
												response	response to IBCF_B
28						(2xx or 4xx	IBCF_B forwards the 2xx or 4xx
						Ĩ.						response	response to IBCF_A
29		1			<u> </u>							2xx or 4xx	IBCF_A forwards the 2xx or 4xx
		1			ſ`							response	response to IMS_A
30		←			4							2xx or 4xx	IMS_A forwards the 2xx or 4xx
		r.										response	response to UE_A
31													User A is not informed of user B presence information

4.5.2.4 Watcher subscription to resource list in visited network

	Interoperability Test Desci	ription									
Identifier:	TD_IMS_PRES_0004										
Summary:	IMS network supports properly presence service when a watcher subscribes to a										
	resource list containing one or more presentities located in different networks.										
Configuration:	CF_ROAM_AS (OPTIONAL)										
SUT	IMS_B										
References	Test Purpose	Specification Reference									
	TP_IMS_5097_13	TS 124 229 [1], clause 5.4.3.2 ¶1									
	TP_IMS_5108_07	TS 124 229 [1], clause 5.4.3.3 ¶1									
	TP_IMS_5313_01	TS 124 229 [1], clause 5.4.6.1.3 ¶2									
Use Case ref.:	UC_RCS_3_R										
Pre-test	HSS of IMS_A and of IMS B is configure	ed according to table 1									
conditions:	• UE_A and UE_B have IP bearers estab	lished to their respective IMS networks as									
	per 1S 186 011-2 [9], clause 4.2.1										
	 UE_A is registered in IMS_A optionally 	using userPRES according to table 1									
	 UE_B is registered in IMS_B via IMS_A 	optionally using userPRES according to									
	table 1										
	 UE_A is optionally configured to receive 	e notifications with watcher information									
	 IMS_A is configured to contact AS_A 										
	 IMS_B is configured to contact AS_B 										

Interoperability Test Description										
	 AS_B 	is optionally configured for reactive authorization								
	 IMS 	A is within the trust domain of IMS_B								
	 IMS 	A not configured for topology hiding								
	 UE_A 	is authorized to use the resource list userPRES_list								
Test Sequence:	Step									
	1	User B publishes presence and capability information								
	2	User B is informed of its presence status update								
	3	User A subscribes to resource list previously stored in the User A client as XDMS list of contacts								
	4	RLS performs authorization checks to ensure that User A is authorized to use resource lists								
	5	RLS resolves watcher resource's address and subscribes for presence event notification for all the presentities represented by the resource list S URI								
	6	PS performs authorization checks on the originator to ensure it is allowed to watch the presentity								
	7	RLS notifies with presence and capability information for all the presentities represented by the resource list SIP URI								
	8	User A sees user B presence and capability information								
Conformance	Check									
Criteria:	1	TP_IMS_5097_13 in CFW step 6 (PUBLISH):								
		ensure that {								
		then (IMS_B sends the PUBLISH to AS_B								
		containing a Route header								
		indicating the SIP LIRI of AS B and								
		containing a P-Charging-Function-Addresses header and								
		containing a P-Charging-Vector header								
		containing an orig-ioi parameter indicating IMS A and								
		not containing at term-ioi parameter and								
		containing access-network-charging-info}								
		}								
	2	TP IMS 5108 07 in CFW step 28 (SUBSCRIBE):								
	_	ensure that {								
		when { IMS A receives a SUBSCRIBE addressed to UE B }								
		then { IMS B sends the SUBSCRIBE to AS B								
		containing a topmost Route header								
		indicating the SIP URI of AS_B								
		containing a Route header								
		indicating the S-CSCF_SIP URI of IMS_B								
		containing a P-Charging-Vector_header								
		containing an orig-ioi parameter indicating IMS_A and								
		not containing a term-ioi parameter}								
		}								
		}								
	3	TP_IMS_5313_01 in CFW step 34 (200 OK)								
		ensure that {								
		when { IMS_A receives a response from IMS_B								
		containing a P-Charging-Vector_header								
		Including an access-network-charging-info_parameter								
		then (IMS A sends the response to AS A								
		undin { Invio_A Schus und response in AS_A containing a D-Charging Voctor boader								
		including an access-network-charging-info parameter								
		}}								

Step		Direction									Message	Comment
	U	U	A		I	I	1	A	U	U		
	S	E ∆	S A	M S	C B	C B	M S	S B	E B	S		
	r	^		Ă	F	F	B		D	r		
	Α				Α	В				В		
1												User B publishes presence and capability information
2											PUBLISH	UE_B sends PUBLISH with information for all commonly
				K								supported presence and capability elements
3											PUBLISH	IMS_A forwards the PUBLISH to
4					\rightarrow						PUBLISH	IBCF_A forwards the PUBLISH to IBCF_B
5						\rightarrow					PUBLISH	IBCF_B forwards the PUBLISH to
6											PUBLISH	IMS_B forwards the PUBLISH to
7							¢				200 OK	IMS_B AS responds with a 200 OK
8						~	-				200 OK	IMS_B forwards the 200 OK
9					.						200 OK	IBCF_B forwards the 200 OK
10				.							200 OK	IBCF_A forwards the 200 OK
11									_		200 OK	response to IMS_A IMS_A forwards the 200 OK
12												response to UE_B User B is informed of its presence
13												status update User A subscribes to resource list
10												previously stored in the User A client as XDMS list of contacts
14			;								SUBSCRIBE	UE_A sends ANONYMOUS SUBSCRIBE for "presence" event with expiry time of 0 to IMS_A
15												resource list SIP URI
15											SUBSCRIBE	to IMS_A AS (RLS)
16												to ensure that User A is authorized to use resource lists
17			;								200 OK	IMS_A AS responds with a 200 OK to IMS_A
18		~		-							200 OK	IMS_A forwards the 200 OK response to UE_A
19			;								NOTIFY	IMS_A AS sends NOTIFY to
20	ľ	~		-							NOTIFY	IMS_A forwards the NOTIFY to
21			;								200 OK	UE_A responds with a 200 OK to
22			←								200 OK	IMS_A forwards the 200 OK
23												RLS resolves watcher resource's
												address and subscribes for presence event notification for all the presentities represented by the
0.4												resource list SIP URI
24			├ ──>								SUBSCRIBE	INS_A AS (RLS) sends SUBSCRIBE for "presence" event to IMS_A
25				 >							SUBSCRIBE	IMS_A forwards the SUBSCRIBE to IBCF_A

Step	Direction										Message	Comment		
	U	J	U	Α	I	I	I	Ι	Α	l	J	U		
	S	;	E	S	M	B	B	M	S		E	S		
	e		A	A	5		C E	3 P	в		3	e		
	Δ				A		г В	Р				B		
26	Ť	•										Ť	SUBSCRIBE	IBCF A forwards the SUBSCRIBE
20							>						COBCOLLEE	to IBCF B
27													SUBSCRIBE	IBCF_B forwards the SUBSCRIBE
								7						to IMS_B
28									→				SUBSCRIBE	IMS_B forwards the SUBSCRIBE
29														PS performs authorization checks
														on the originator to ensure it is
														allowed to watch the presentity
30								(200 OK	IMS_B AS (PS) responds with a
														200 OK to IMS_B
31							←	-					200 OK	IMS_B forwards the 200 OK
32													200 OK	IBCF B forwards the 200 OK
						<u> </u>								response to IBCF_A
33					,								200 OK	IBCF_A forwards the 200 OK
					\mathbf{r}									response to IMS_A
34				←	-								200 OK	IMS_A forwards the 200 OK
25				-										response to IMS_A AS (RLS)
35							,						NOTIFY	INS_BAS sends a NOTIFY to
														capability information of LIF B
36													NOTIFY	IBCE B forwards the NOTIEY to
00						←								IBCF A
37					,									IBCF_A forwards the NOTIFY to
														IMS_A
38				(NOTIFY	IMS_A forwards the NOTIFY to
				,	ļ									IMS_A AS (RLS)
39				;	*								200 OK	IMS_A AS responds with a 200 OK
40										r			200 0K	to IMS_A
40						>							200 OK	response to IBCE A
41													200 OK	IBCE A forwards the 200 OK
							>						200 011	response to IBCF_B
42										``			200 OK	IBCF_B forwards the 200 OK
														response to IMS_B AS
43														RLS notifies with presence and
														capability information for all the
														presentities represented by the
11													NOTIEY	IMS A AS sends NOTIEV to
					*									IMS_A AS sends No TH T to
45			(NOTIFY	IMS_A forwards the NOTIFY to
			Ì											UE_A
46					*								200 OK	UE_A responds with a 200 OK to
47													200 OK	INS_A forwards the 200 OK
41				←	1								200 01	response to IMS_A AS
48														User A sees user B presence and
														capability information

4.5.2.5 Watcher subscription to resource list in home network

Interoperability Test Description									
Identifier:	TD_IMS_PRES_0005								
Summary:	IMS network supports properly presence service when a watcher subscribes to a resource list containing one or more presentities located in different networks.								
Configuration:	CF_INT_AS								
SUT	IMS_A								

Interoperability Test Description												
References	Test Purp	oose j	Specification Reference									
	TP IMS	5108 07	TS 124 229 [1], clause 5,4,3,3 ¶1									
	TP IMS	5313_01	TS 124 229 [1] clause 5 4 6 1 3 ¶2									
Use Case ref ·		3										
ooo ouoo rom	00_100											
Pre-test	• HSS	of IMS A and of IMS B is configure	ad according to table 1									
conditions:		and LIF B have IP hearers estab	lished to their respective IMS networks as									
contantiono.	• 0E_7		issied to their respective two hetworks as									
	per i	5 100 011-2 [9], clause 4.2.1	using upprDRES opporting to table 1									
		R is registered in INS_A optionally	using user RES according to table 1									
		b is registered in two_b optionally	using user RES according to table 1									
	• UE_F	A is optionally configured to receive	nouncations with watcher information									
	• IIVI5_	IMS_A is configured to contact AS_A										
	• IIVI5_	B is configured to contact AS_B										
	• AS_E	is optionally configured for reactive										
	• IMS_	A is within the trust domain of IMS	_В									
	• IMS_	A not configured for topology hidin	g									
	• UE_A	A is authorized to use the resource	list userPRES_list									
T. 10	01											
Test Sequence:	Step											
	1	User B publishes presence and c	apability information									
	2	User B is informed of its presence	e status update									
	3	User A subscribes to resource list previously stored in the User A client as										
		XDMS list of contacts										
	4	curre lists beriorms authorization checks to ensure that User A is authorized to										
		use resource lists										
	5	RLS resolves watcher resource's	address and subscribes for presence									
		event notification for all the prese	ntities represented by the resource list SIP									
		URI DO serie serie suth scienting should										
	6	PS performs authorization checks	s on the originator to ensure it is allowed to									
	7	RIS potifies with presence and c	anability information for all the presentities									
	'	represented by the resource list S	SIP URI									
	8	User A sees user B presence and	capability information									
Conformance	Check											
Criteria:												
	1	TP_IMS_5108_07 in CFW step 2	2 (SUBSCRIBE):									
		ensure that {										
		when { IMS_A receives a SUBSC	RIBE addressed to UE_B }									
		then { IMS_B sends the SUBSC	RIBE to AS_B									
		containing a topmost Rou	te header									
		indicating the SIP URI o	f AS_B									
		containing a Route heade	r									
		indicating the S-CSCF_	SIP URI of IMS_B									
		containing a P-Charging-	/ector_header									
		containing an orig-ioi pa	arameter indicating IMS_A and									
		not containing a term-ic	i parameter}									
		}										
	2	IP_INIS_5313_01 III CFVV Step 2	6 (200 OK)									
		when $\int IMS A$ receives a respon	ase from IMS_B									
		containing a P-Charging-	/ector_header									
		including an access-net	work-charging-info_parameter									
		}										
		then { IMS_A sends the response	se to AS_A									
		containing a P-Charging-	/ector_header									
		including an access-net	work-charging-info_parameter									
		}										

Step	Direction										Message	Comment	
	ι	J	U	A					A	U	U		
	e	5		5 A	S	C C	Б С	S	ъ В	B	s e		
	r	r	·		Ă	F	F	B	-	-	r		
		<u>م</u>				Α	В				В		
1													User B publishes presence and capability information
2												PUBLISH	UE_B sends PUBLISH with
										_			information for all commonly
													supported presence and capability
3												PUBLISH	IMS B forwards the PUBLISH to
Ũ													IMS_B AS (PS)
4								<u> </u>	-			200 OK	IMS_B AS responds with a 200 OK
5												200 OK	IMS_B forwards the 200 OK
										1			response to UE_B
6													User B is informed of its presence
7													User A subscribes to resource list
													previously stored in the User A
													client as XDMS list of contacts
8												SUBSCRIBE	UE_A sends ANONYMOUS
													with expiry time of 0 to IMS A
													indicating support to "eventlist" to a
													resource list SIP URI
9				←								SUBSCRIBE	IMS_A forwards the SUBSCRIBE to IMS_A AS (RLS)
10													RLS performs authorization checks
													to ensure that User A is authorized
11												200 OK	to use resource lists
				\rightarrow								200 01	to IMS_A
12			,									200 OK	IMS_A forwards the 200 OK
			Ì										response to UE_A
13				\rightarrow								NOTIFY	IMS_A AS sends NOTIFY to IMS_A
14			<u> </u>									NOTIFY	IMS_A forwards the NOTIFY to
4.5			`										UE_A
15				\rightarrow								200 OK	IMS_A
16				←								200 OK	IMS_A forwards the 200 OK
17													response to IMS_A AS
													address and subscribes for
													presence event notification for all
													the presentities represented by the
10													resource list SIP URI
10				\longrightarrow								SUBSCRIBE	SUBSCRIBE for "presence" event
													to IMS_A
19					\rightarrow							SUBSCRIBE	IMS_A forwards the SUBSCRIBE
20													to IBCF_A
20						\mapsto				1		SOBOCIDE	to IBCF_B
21							├ →					SUBSCRIBE	IBCF_B forwards the SUBSCRIBE
22												SUBSCRIBE	IMS_B forwards the SUBSCRIBE
								, , , , , , , , , , , , , , , , , , ,	1				to IMS_B AS (PS)
23													PS performs authorization checks
													allowed to watch the presentity
24								/				200 OK	IMS_B AS (PS) responds with a
									1	1			200 OK to IMS_B

Step					Dire	ection					Message	Comment
	U s r A	U E A	A S A	I M S A	I B C F A	I B C F B	I M S B	A S B	U E B	U ser B		
25						←					200 OK	IMS_B forwards the 200 OK response to IBCF_B
26					←						200 OK	IBCF_B forwards the 200 OK
27				←							200 OK	IBCF_A forwards the 200 OK response to IMS_A
28			←								200 OK	IMS_A forwards the 200 OK response to IMS_A AS (RLS)
29						←					NOTIFY	IMS_B AS sends a NOTIFY to IBCF_B with the presence and capability information of UE_B
30					←						NOTIFY	IBCF_B forwards the NOTIFY to
31				←								IBCF_A forwards the NOTIFY to
32			←								NOTIFY	IMS_A forwards the NOTIFY to IMS_A AS (RLS)
33				→							200 OK	IMS_A AS responds with a 200 OK to IMS_A
34					<i>—</i>						200 OK	IMS_A forwards the 200 OK response to IBCF_A
35						\rightarrow					200 OK	IBCF_A forwards the 200 OK response to IBCF_B
36								→			200 OK	IBCF_B forwards the 200 OK response to IMS_B AS
37												RLS notifies with presence and capability information for all the presentities represented by the resource list SIP URI
38				\rightarrow							NOTIFY	IMS_A AS sends NOTIFY to IMS_A
39		←									NOTIFY	IMS_A forwards the NOTIFY to UE_A
40				\rightarrow							200 OK	UE_A responds with a 200 OK to IMS_A
41			←								200 OK	IMS_A forwards the 200 OK response to IMS_A AS
42												User A sees user B presence and capability information

4.5.3 IM/Chat service

4.5.3.1 1-to-1 chat standard procedure

4.5.3.1.1 1-to-1 chat standard procedure - interworking

	Interoperability Test Description										
Identifier:	TD_IMS_CHAT_0001										
Summary:	IMS network supports 1-to-1 IM/Chat service and messages exchange between two users in their home network can be performed.										
Configuration:	CF_INT_AS										
SUT	IMS_A and IMS_B										
References	Test Purpose	Specification Reference									
	TP_IMS_5097_01 TS 124 229 [1], clause 5.4.3.2 ¶11										
	(1 st numbered list)										

		Interoperability Test Desc	ription
	TP_IMS_5	5108_03	TS 124 229 [1], clause 5.4.3.3 ¶5
			(item 4 in 1 st numbered list)
	TP IMS 5	5115_08	TS 124 229 [1], clause 5.4.3.3 ¶89
			(4 th numbered list)
Lise Case ref ·		A 1	
	00_100_	I	
Pre-test	• HSS	of IMS. A and of IMS B is configu	red according to table 1
conditions.		and UE B have IP hearers estal	blished to their respective IMS networks as
			bished to their respective hits hetworks as
		is registered in IMS A optionally	using userPRES according to table 1
		is registered in IMS_A optionally	using user DES according to table 1
		is optionally configured to receiv	a patifications with watcher information
		is outborized to app process int	
		A is configured to contact AS	
		A is configured to contact AS_A	
		B is conliguied to contact AS_B	
	• AS_B	is optionally configured for reaction	
		A is within the trust domain of live	o_B adamahilita dia ang mananan
	• UE_A	and UE_B have already perform	ed capability discovery process
	● IMS_	A not configured for topology hidi	ng
Test Sequence:	Step		
	1	User A selects User B in the pho	ne address book and sends him an initial
		message	
	2	User B is informed of incoming n	nessage
	3	User A is informed that initial me	ssage was delivered to user B
	4	User B reads the initial message	from user A and opens the 1-to-1 chat
	5	Users perform chatting	
	6A	User A closes the 1-to-1 chat	
	6B	User B closes the 1-to-1 chat	
	7A	User A is informed that 1-to-1 ch	at with user B is closed
	7B	User B is informed that 1-to-1 ch	at with user A is closed
Conformanco			
Comormance	Check		
Criteria:	Check		
Criteria:	Check 1	TP_IMS_5097_01 in CFW step	IO (INVITE):
Criteria:	Check 1	TP_IMS_5097_01 in CFW step 7 ensure that {	10 (INVITE):
Criteria:	Check 1	TP_IMS_5097_01 in CFW step 7 ensure that { when { UEA sends an initial IN then { UAB B measives the initial	10 (INVITE): /ITE to UE_B }
Criteria:	Check 1	TP_IMS_5097_01 in CFW step 7 ensure that { when { UE_A sends an initial IN then { IMS_B receives the initia mat containing a Bouta k	IO (INVITE): /ITE to UE_B } / INVITE
Criteria:	Check 1	TP_IMS_5097_01 in CFW step 7 ensure that { when { UE_A sends an initial IN then { IMS_B receives the initia not containing a Route_h	IO (INVITE): /ITE to UE_B } I INVITE leader SID LIDL of IMS A
Criteria:	Check 1	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial IN then { IMS_B receives the initia not containing a Route_f indicating the S-CSCF_ containing a R Charring	IO (INVITE): /ITE to UE_B } I INVITE leader _SIP_URI of IMS_A Voctor, booder
Criteria:	Check 1	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial IN then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing a pick your	IO (INVITE): //TE to UE_B } / INVITE eader _SIP_URI of IMS_A Vector_header
Criteria:	Check 1	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial IN then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing a nicid-value containing a orig-ioi po	I0 (INVITE): //TE to UE_B } / INVITE eeader _SIP_URI of IMS_A Vector_header e_parameter and warmeter indicating IMS_A and
Criteria:	Check 1	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial IN then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing a nicid-value containing a orig-ioi_pa not containing a orig-ioi_pa	I0 (INVITE): //TE to UE_B } I INVITE leader _SIP_URI of IMS_A Vector_header e_parameter and brameter indicating IMS_A and brameter indicating IMS_A and
Criteria:	Check 1	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a termin	I0 (INVITE): //TE to UE_B } I INVITE reader _SIP_URI of IMS_A Vector_header e_parameter and parameter indicating IMS_A and ss-network-charging-info_parameter and pi_parameter) and
Criteria:	Check 1	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a term-ic containing a Record-Rou	I0 (INVITE): //TE to UE_B } I INVITE reader _SIP_URI of IMS_A Vector_header e_parameter and parameter indicating IMS_A and ss-network-charging-info_parameter and pi_parameter) and te_header
Criteria:	Check 1	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a nacces not containing a term-ic containing a Record-Rou indicating the originatin	I0 (INVITE): //TE to UE_B } I INVITE eader _SIP_URI of IMS_A Vector_header e_parameter and irrameter indicating IMS_A and ss-network-charging-info_parameter and bi_parameter) and te_header q S-CSCE_SIP_URL}
Criteria:	Check 1	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a naccea not containing a term-ic containing a Record-Rou indicating the originatin	I0 (INVITE): //TE to UE_B } I INVITE eader _SIP_URI of IMS_A Vector_header e_parameter and irrameter indicating IMS_A and ss-network-charging-info_parameter and bi_parameter) and te_header g S-CSCF_SIP_URI }
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_f indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a nacce. not containing a term-id containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step (I0 (INVITE): //TE to UE_B } / INVITE eader _SIP_URI of IMS_A Vector_header e_parameter and irrameter indicating IMS_A and ss-network-charging-info_parameter and oi_parameter) and te_header g S-CSCF_SIP_URI } I4 (INVITE)
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ' ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_f indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a nacce. not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step '	I0 (INVITE): //TE to UE_B } / INVITE eader _SIP_URI of IMS_A Vector_header e_parameter and irrameter indicating IMS_A and ss-network-charging-info_parameter and bi_parameter) and te_header g S-CSCF_SIP_URI } I4 (INVITE)
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a acce. not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ensure that { when {IMS_B receives an initia	I0 (INVITE): //TE to UE_B } / INVITE eader _SIP_URI of IMS_A Vector_header e_parameter and irameter indicating IMS_A and ss-network-charging-info_parameter and bi_parameter) and te_header g S-CSCF_SIP_URI } INVITE from IMS_A addressed to UE_B
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing an icid-value containing a orig-ioi_pa not containing a orig-ioi_pa not containing a a crea- not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ensure that { when {IMS_B receives an initia then {IMS_B sends the INVITE	IO (INVITE): //TE to UE_B } / INVITE reader _SIP_URI of IMS_A Vector_header a_parameter and rrameter indicating IMS_A and ss-network-charging-info_parameter and bi_parameter) and te_header g S-CSCF_SIP_URI } I INVITE from IMS_A addressed_to UE_B} to AS_B
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ' ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a acce. not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ' ensure that { when {IMS_B receives an initia then {IMS_B sends the INVITE containing a topmost Rou	I0 (INVITE): //TE to UE_B } / INVITE eader _SIP_URI of IMS_A Vector_header e_parameter and trameter indicating IMS_A and ss-network-charging-info_parameter and bi_parameter) and te_header g S-CSCF_SIP_URI } INVITE from IMS_A addressed_to UE_B} to AS_B te_header
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ' ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing an icid-value containing a orig-ioi_pa not containing a orig-ioi_pa not containing a a crea- not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ' ensure that { when {IMS_B receives an initia then {IMS_B sends the INVITE containing a topmost Rou indicating the SIP_URI	IO (INVITE): //TE to UE_B } / INVITE reader _SIP_URI of IMS_A Vector_header a_parameter and rrameter indicating IMS_A and rrameter indicating IMS_A and rrameter indicating IMS_A and rrameter indicating IMS_A and rrameter and trameter indicating IMS_A and ss-network-charging-info_parameter and bi_parameter) and te_header g S-CSCF_SIP_URI } I INVITE from IMS_A addressed_to UE_B} to AS_B ite_header of AS_B and
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ' ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing an icid-value containing a orig-ioi_pa not containing a orig-ioi_pa not containing a cere- not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ' ensure that { when {IMS_B receives an initia then {IMS_B sends the INVITE containing a topmost Rou indicating the SIP_URI containing a Route_head	IO (INVITE): //TE to UE_B } / INVITE reader _SIP_URI of IMS_A Vector_header a_parameter and rrameter indicating IMS_A and rrameter indicating IMS_A and rrameter indicating IMS_A and rrameter indicating IMS_A and rrameter and trameter indicating IMS_A and rrameter and trameter indicating IMS_A and ss-network-charging-info_parameter and inparameter) and te_header g S-CSCF_SIP_URI } I INVITE from IMS_A addressed_to UE_B} to AS_B ute_header of AS_B and ler
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ' ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a orig-ioi_pa not containing a a crea- not containing a a crea- not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ' ensure that { when {IMS_B receives an initia then {IMS_B sends the INVITE containing a topmost Rou indicating the SIP_URI containing a Route_head indicating the S-CSCF_	IO (INVITE): //TE to UE_B } / INVITE reader _SIP_URI of IMS_A Vector_header _parameter and rameter indicating IMS_A and ss-network-charging-info_parameter and oi_parameter) and te_header g S-CSCF_SIP_URI } I INVITE from IMS_A addressed_to UE_B} to AS_B ute_header of AS_B and ler _SIP_URI of IMS_B and
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ' ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a orig-ioi_pa not containing a a crea- not containing a a crea- not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ' ensure that { when {IMS_B receives an initia then {IMS_B sends the INVITE containing a topmost Rou indicating the SIP_URI containing a Route_head indicating the S-CSCF_ containing a P-Charging-	IO (INVITE): //TE to UE_B } / INVITE reader _SIP_URI of IMS_A Vector_header a_parameter and rrameter indicating IMS_A and ss-network-charging-info_parameter and parameter indicating IMS_A and rrameter indicating IMS_A and te_header of AS_B ite_header of AS_B and ler _SIP_URI of IMS_B and Vector_header
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial IN then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing a orig-ioi_pa not containing a orig-ioi_pa not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ensure that { when {IMS_B receives an initia then {IMS_B sends the INVITE containing a topmost Rou indicating the SIP_URI containing a Route_heac indicating the S-CSCF_ containing a P-Charging- including a orig-ioi_par	IO (INVITE): //TE to UE_B } / INVITE reader _SIP_URI of IMS_A Vector_header a_parameter and rrameter indicating IMS_A and ss-network-charging-info_parameter and oi_parameter) and te_header g S-CSCF_SIP_URI } I INVITE from IMS_A addressed_to UE_B} to AS_B Ite_header of AS_B and ler _SIP_URI of IMS_B and Vector_header ameter
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ensure that { when { UE_A sends an initial IN then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing a ricid-value containing a orig-ioi_pa not containing a orig-ioi_pa not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ~ ensure that { when {IMS_B receives an initia then {IMS_B sends the INVITE containing a topmost Rou indicating the SIP_URI containing a Route_heac indicating the S-CSCF_ containing a P-Charging- including a orig-ioi_par including a orig-ioi_par including a orig-ioi_par	IO (INVITE): //TE to UE_B } / INVITE reader _SIP_URI of IMS_A Vector_header a_parameter and trameter indicating IMS_A and ss-network-charging-info_parameter and oi_parameter) and te_header g S-CSCF_SIP_URI } INVITE from IMS_A addressed_to UE_B} to AS_B Ite_header of AS_B and ler _SIP_URI of IMS_B and Vector_header ameter lentifier of IMS_A and
Criteria:	Check 1 2	TP_IMS_5097_01 in CFW step ' ensure that { when { UE_A sends an initial INV then { IMS_B receives the initia not containing a Route_h indicating the S-CSCF_ containing a P-Charging- (containing an icid-value containing a orig-ioi_pa not containing a orig-ioi_pa not containing a cee not containing a term-ic containing a Record-Rou indicating the originatin } TP_IMS_5108_03 in CFW step ' ensure that { when {IMS_B receives an initia then {IMS_B sends the INVITE containing a topmost Rou indicating the SIP_URI containing a Route_heac indicating the S-CSCF_ containing a P-Charging- including a orig-ioi_par including a term-ioi not including a term-ioi	IO (INVITE): //TE to UE_B } / INVITE reader _SIP_URI of IMS_A Vector_header a_parameter and rrameter indicating IMS_A and rrameter indicating IMS_A and ss-network-charging-info_parameter and oi_parameter) and te_header g S-CSCF_SIP_URI } I INVITE from IMS_A addressed_to UE_B} to AS_B Ite_header of AS_B and ler _SIP_URI of IMS_B and Vector_header ameter lentifier of IMS_A and _parameter }

Interoperability Test Description										
3	TP_IMS_5115_08 in CFW step 35 (200 OK)									
	ensure that {									
	when { IMS_B receives 200_response from AS_B addressed to UE_A }									
	then { IMS_B sends the 200_response to IMS_A									
	containing a P-Charging-Vector_header									
	including a orig-ioi_parameter									
	indicating operator_identifier of IMS_A and									
	including a term-ioi_parameter									
	indicating operator_identifier of IMS_B }									
	}									

Step						Dire	ection	n						Message	Comment
	U		U	Α	Ι	I	I	I	I	Α		U	U		
	S		E	S/	М	В	E	3	М	S/	'	E	S		
	е	-	A		S	C			S	I		в	е		
	r				A				в	IVI D			r D		
1	A			A				>							Liser A selects Liser B in the phone
1		\rightarrow													address book and sends him an
		Í													initial message
2														INVITE	UE A sends INVITE to IMS A with
															user A initial message in the Subject
					<u> </u>										header, CPIM/IMND headers and
					1										the first SDP offer indicating all
															specific data for MSRP connection
2														100 Truing	set up
3			(_									100 Trying	INS_A responds with a 100 Trying
4				/											IMS A forwards INV/ITE to AS/IM A
5															AS/IM A responds with a 100
5					\rightarrow									100 Hying	Trying provisional response
6														INVITE	AS/IM A returns, possibly modified.
					→										INVITE to IMS_A
7				,										100 Trying	IMS_A responds with a 100 Trying
				Ì											provisional response
8						\rightarrow								INVITE	IMS_A forwards INVITE to IBCF_A
9					←									100 Trying	IBCF_A responds with a 100 Trying
10															provisional response
10							\rightarrow								IBCF_A forwards INVITE to IBCF_B
11						←								100 Trying	IBCF_B responds with a 100 Trying
12															IRCE R forwards INV/ITE to IMS_R
12								,							IMS_B responds with a 100 Trying
15							÷	<u>,</u>	-					Too Trying	provisional response
14										→				INVITE	IMS B forwards INVITE to AS/IM B
15										1				100 Trying	AS/IM B responds with a 100
10									<					loo liying	Trying provisional response
16									,					INVITE	AS/IM_B returns, possibly modified,
															INVITE to IMS_B
17										→				100 Trying	IMS_B responds with a 100 Trying
										1					provisional response
18											\rightarrow			INVITE	IMS_B forwards INVITE to UE_B
19									<u> </u>	_				100 Trying	UE_B optionally responds with a
20															100 Trying provisional response
20												_	→		message
21														180 Ringing	UF B responds to initial INV/ITF
21														100 Kinging	with 180 Ringing to indicate that
									\leftarrow						invitation to a 1-to-1 chat session
															has reached the invited user
22										_				180 Ringing	IMS_B forwards 180 Ringing
										1					response to AS/IM_B
23									←	4				180 Ringing	AS/IM_B returns, possibly modified,
				1					1	1		1		1	TIXU RINGING RESPONSE to IMS B

Step						Directi	on					Message	Comment
	ι	J	U	Α	I	I	I	I	Α	U	U		
	S	5	E	S/	M	B	B	M	S/	E	S		
	e		A	M	5	E	E	5	I M	в	e		
	۱ ۵			Δ	~	Δ	B	В	B		B		
24	Í	•										180 Ringing	IMS_B forwards 180 Ringing
25												180 Ringing	IBCF B forwards 180 Ringing
						<						gg	response to IBCF_A
26					←	_						180 Ringing	IBCF_A forwards 180 Ringing
27				<u> </u>	_							180 Ringing	IMS_A forwards 180 Ringing
28					*							180 Ringing	AS/IM_A returns, possibly modified,
29			<i>(</i>									180 Ringing	IMS_A forwards 180 Ringing
00			`									MEGGAGE	response to UE_A
30								←				MESSAGE	WE_B sends MESSAGE to IMS_B with delivery notification of initial
31									*			MESSAGE	IMS_B forwards MESSAGE to
22									-				AS/IM_B
32								←	-			MESSAGE	MESSAGE to IMS_B
33							<u> </u>					MESSAGE	IMS_B forwards MESSAGE to
							Ì					145004.05	
34						←	_					MESSAGE	IBCF_B forwards MESSAGE to IBCF_A
35					←							MESSAGE	IBCF_A forwards MESSAGE to IMS_A
36				(MESSAGE	IMS_A forwards MESSAGE to AS/IM_A
37												MESSAGE	AS/IM_A returns, possibly modified, MESSAGE to IMS_A
38			←		_							MESSAGE	IMS_A forwards MESSAGE to
39													User A is informed that initial
													message was delivered to user B
40					÷							200 OK	UE_A responds MESSAGE with
41												200 OK	IMS A forwards 200 OK response
				←								200 011	to AS/IM_A
42					>							200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
43						→						200 OK	IMS_A forwards 200 OK response
44												200 OK	IBCF_A forwards 200 OK response
							>					200 011	to IBCF_B
45								*				200 OK	IBCF_B forwards 200 OK response
46									*			200 OK	IMS_B forwards 200 OK response
47												200 OK	Ito AS/IM_B AS/IM_B returns, possibly modified.
10												200 04	200 OK response to IMS_B
48										\rightarrow		200 OK	to UE_B
49										4			User B reads the initial message
													chat
50												200 OK	UE_B responds INVITE with 200
							1						OK response with SDP to indicate
								·	1				Inat the session has been accepted
													for MSRP connection set up
51									<u> </u>			200 OK	IMS_B forwards 200 OK response
									1				to AS/IM_B

Step						Directio	on					Message	Comment
	l	U	U	Α	1	Ι	1	1	Α	U	U	Ŭ	
	:	s	E	S/	М	В	В	Μ	S/	E	S		
		е	A		S	C	C	S	I	В	е		
		r A			A		F B	в	IVI R		r B		
52	Í	~		<u> </u>		<u> </u>		1.				200 OK	AS/IM B returns possibly modified
02								←	_			200 011	200 OK response to IMS B
53							,					200 OK	IMS_B forwards 200 OK response
													to IBCF_B
54						(200 OK	IBCF_B forwards 200 OK response
						`							to IBCF_A
55					←	_						200 OK	IBCF_A forwards 200 OK response
56												200 OK	IMS A forwards 200 OK response
00				←								200 01	to AS/IM A
57												200 OK	AS/IM_A returns, possibly modified,
					2								200 OK response to IMS_A
58			(200 OK	IMS_A forwards 200 OK response
			`									1.01/	to UE_A
59					•							ACK	UE_A acknowledges the receipt of
60				,								ACK	200 OK for INVITE
61												ACK	A roturns, possibly modified
01				—	>							ACK	ACK to IMS A
62					;	*						ACK	IMS A forwards ACK to IBCF A
63					-	;						ACK	IBCF A forwards ACK to IBCF B
64								*				ACK	IBCF B forwards ACK to IMS B
65									\rightarrow			ACK	IMS B forwards ACK to AS/IM B
66												ACK	AS/IM B returns, possibly modified.
								< <u> </u>				_	ACK to IMS_B
67										\rightarrow		ACK	IMS_B forwards ACK to UE_B
68		(_		Users perform chatting (see clause
		`									1	-	5.3.1 Chat 1 to 1 via MSRP)
69A		;	>										User A closes the 1-to-1 chat
70A				\mapsto	•							BYE	UE_A releases the 1-to-1 chat
71 \				,								RVE	IMS A forwards BVE to AS/IM A
71A												BVE	AS/IM A returns possibly modified
128				—								DIC	BYE to IMS A
73A						*						BYE	IMS A forwards BYE to IBCF A
74A						$ \rightarrow$	•					BYE	IBCF A forwards BYE to IBCF B
75A								>				BYE	IBCF_B forwards BYE to IMS_B
76A									<u> </u>			BYE	IMS_B forwards BYE to AS/IM_B
77									1			DVE	AS/IM Proturns, possibly modified
<i>11</i> A								←	_			DIE	BYE to IMS_B
78A												BYE	IMS B forwards BYE to UE B
79A								(_			200 OK	UE B sends 200 OK for BYE
80A								Ì				200 OK	IMS B forwards 200 OK response
									→				to AS/IM_B
81A								,				200 OK	AS/IM_B returns, possibly modified,
													200 OK response to IMS_B
82A							.	_				200 OK	IMS_B forwards 200 OK response
024												200.0K	to IBCF_B
03A						←						200 OK	to IBCE A
84A												200 OK	IBCE A forwards 200 OK response
0.73					←								to IMS_A
85A								1				200 OK	IMS_A forwards 200 OK response
								1					to AS/IM_A
86A				<u> </u>	•			1				200 OK	AS/IM_A returns, possibly modified,
074				'								200 01	200 OK response to IMS_A
074			←		1							200 UK	to UF A
	- 1		1	1	1	1	1	1	1	1	1	L	1

Step						Direc	tion					Message	Comment
	U		U	Α	Ι	I	I	I	Α	U	U		
	S		E	S/	М	В	В	М	S/	E	S		
	e		Α	I	S	C	C	S		В	e		
	r A				A		R	Б	B		B		
88A	Ê.	_				<u> </u>							User A is informed that 1-to-1 chat
	F												with user B is closed
69B										←	_		User B close the 1-to-1 chat
70B								/				BYE	UE_B releases the 1-to-1 chat
													session with BYE
71B									\rightarrow			BYE	IMS_B forwards BYE to AS/IM_B
72B								←				BYE	AS/IM_B returns, possibly modified,
700												DVE	BYE to IMS_B
73B							< <u> </u>					BYE	IMS_B forwards BYE to IBCF_B
74B						(BYE	IBCF_B forwards BYE to IBCF_A
75B					<u> </u>							BYE	IBCF_A forwards BYE to IMS_A
76B				←								BYE	IMS_A forwards BYE to AS/IM_A
77B					→							BYE	AS/IM_A returns, possibly modified,
78B			,									BVE	IMS A forwards BVE to LIE A
70D			`		``							200 OK	LIE A sends 200 OK for BVE
90B												200 OK	IMS A forwards 200 OK rosponso
006				←								200 OK	to AS/IM A
81B												200 OK	AS/IM A returns, possibly modified.
													200 OK response to IMS_A
82B						``						200 OK	IMS_A forwards 200 OK response
													to IBCF_A
83B							→					200 OK	IBCF_A forwards 200 OK response
0.45							-						to IBCF_B
84B								\rightarrow				200 OK	IBCF_B forwards 200 OK response
85B												200 OK	IMS B forwards 200 OK response
000									\rightarrow			200 01	to AS/IM B
86B												200 OK	AS/IM B returns, possibly modified.
								<					200 OK response to IMS_B
87B										<u> </u>		200 OK	IMS_B forwards 200 OK response
										1			to UE_B
88B													User B is informed that that 1-to-1
											1		Ichat with user A is closed

4.5.3.1.2 1-to-1 chat standard procedure - roaming (optional)

	Interoperability Test Descr	ription									
Identifier:	TD_IMS_CHAT_0002										
Summary:	IMS network supports 1-to-1 IM/Chat service and messages exchange between two										
-	users, one user in its home network and one user roaming can be performed.										
Configuration:	CF_ROAM_AS (OPTIONAL)										
SUT	IMS_A and IMS_B										
References	Test Purpose	Specification Reference									
	TP_IMS_5046_01	TS 124 229 [1], clause 5.2.6.3.3 ¶1									
	(1 st numbered list)										
	TP_IMS_5067_01 TS 124 229 [1], clause 5.2.7.2 ¶5										
	TP_IMS_5097_09	TS 124 229 [1], clause 5.4.3.2 ¶11									
		(items 5 and 8 in 1 st numbered list)									
Use Case ref.:	UC_RCS_4_R										
Pre-test conditions:	 HSS of IMS_A and of IMS B is configured according to table 1 UE_A and UE_B have IP bearers established to their respective IMS networks as per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally using userPRES according to table 1 UE_B is registered in IMS_B via IMS_A optionally using userPRES according to table 1 										

		Interoperability Test Description									
UE_A is optionally configured to receive notifications with watcher information											
	 UE_A is authorized to see presence information of UE_B 										
	• IMS	A is configured to contact AS A									
		B is configured to contact AS_B									
		is optionally configured for reactive outborization									
	• AS_D	A is within the tweet demain of IMO. D									
	• INS_/	A is within the trust domain of INIS_B									
	 UE_A and UE_B have already performed capability discovery process 										
 IMS_A not configured for topology hiding 											
Test Sequence:	Step										
	1	User B selects User A in the phone address book and sends him an initial									
		message									
	2	User A is informed of incoming message									
	3	User B is informed that initial message was delivered to user A									
	4	User A reads the initial message from user B and opens the 1-to-1 chat									
	5	Users perform chatting									
	64	User B closes the 1-to-1 chat									
	6R	User A closes the 1 to 1 chat									
	74	User A closes the 1-to-1 chat User B is informed that that 1 to 1 shot with user A is closed									
	7A	User A is informed that that 4 to 4 chat with user A is closed									
	7B	User A is informed that that 1-to-1 chat with user B is closed									
0 (
Conformance	Спеск										
	Smormance Check										
Criteria:											
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE)									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that {									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B }									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number where it awaits subsequent requests' from UE_A and									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number where it awaits subsequent requests' from UE_A and (the P-CSCF-FQDN_address or									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number where it awaits subsequent requests' from UE_A and (the P-CSCF-IP_address)) of IMS_A and (the P-CSCF-IP_address or the P-CSCF-IP_address or the P-CSCF-IP_address or the P-CSCF-IP_address or the P-CSCF-IP_address)) of IMS_A and									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number where it awaits subsequent requests' from UE_A and (the P-CSCF-IP_address)) of IMS_A and not containing P-Preferred-Identity header and									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number where it awaits subsequent requests' from UE_A and (the P-CSCF-IP_address)) of IMS_A and not containing P-Preferred-Identity_header and containing A P-Asserted-Identity_header									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number where it awaits subsequent requests' from UE_A and (the P-CSCF-IP_address)) of IMS_A and not containing P-Preferred-Identity_header and containing a P-Asserted-Identity_header									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number where it awaits subsequent requests' from UE_A and (the P-CSCF-IP_address)) of IMS_A and not containing P-Preferred-Identity_header and containing a Address of UE_B and containing a Address of UE_B and containing a P-Charging-Vector header									
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number 'where it awaits subsequent requests' from UE_A and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and not containing P-Preferred-Identity_header and containing an address of UE_B and containing an P-Charging-Vector_header containing an icid-value_parameter }									

	Interoperability Test Description
2	TP_IMS_5067_01 in CFW step 6 (INVITE)
	ensure that {
	when { IMS_A receives an initial INVITE from UE_B }
	then { IMS_A sends the INVITE to IMS_B
	containing a P-Charging-Vector_header
	}
	}
3	TP_IMS_5097_09 in CFW step 10 (INVITE)
	ensure that {
	when { IMS_B receives an initial INVITE from IMS_A addressed to UE_A }
	then { IMS_B sends the initial INVITE to AS_B
	containing a Route_header
	indicating the SIP_URI of AS_B and
	containing a P-Charging-Function-Addresses_header and
	containing a P-Charging-Vector_header
	(including a orig-ioi_parameter
	indicating operator_identifier of IMS_A and
	not including a term-ioi_parameter and
	including access-network-charging-info) }
	}

Step					Direc	tion					Message	Comment
	C	U	Α	Ι	-	Ι	I	Α	U	U		
	S	E	S/	М	В	В	М	S/	E	S		
	е	Α	I	S	C	C	S	I	В	е		
	r A		M	Α	F	F	В	M		r B		
1	<u> </u>											User B selects User A in the phone
									←	_		address book and sends him an
												initial message
2											INVITE	UE_B sends INVITE to IMS_A with
												user B initial message in the Subject
				←								header, CPIM/IMND headers and the
												first SDP offer indicating all specific
												data for MSRP connection set up
3									\rightarrow		100 Trying	IMS_A responds with a 100 Trying
												provisional response
4					\rightarrow							IMS_A forwards INVITE to IBCF_A
5				←							100 Trying	IBCF_A responds with a 100 Trying
												provisional response
6						→						IBCF_A forwards INVITE to IBCF_B
/					←						100 Trying	IBCF_B responds with a 100 Trying
0												IPCE B forwarda INIVITE to IMS B
0							~					IBCF_BIOIWAIDS INVITE ID IMS_B
9						←					100 Trying	provisional response
10								\rightarrow			INVITE	IMS_B forwards INVITE to AS/IM_B
11							,				100 Trying	AS/IM_B responds with a 100 Trying
												provisional response
12							(INVITE	AS/IM_B returns, possibly modified,
												INVITE to IMS_B
13								\rightarrow			100 Trying	IMS_B responds with a 100 Trying provisional response
14						←					INVITE	IMS_B forwards INVITE to IBCF_B
15							``				100 Trying	IBCF_B responds with a 100 Trying
							1					provisional response
16					←						INVITE	IBCF_B forwards INVITE to IBCF_A
17						_					100 Trying	IBCF_A responds with a 100 Trying
						1						provisional response
18				←							INVITE	IBCF_A forwards INVITE to IMS_A
19					\rightarrow						100 Trying	IMS_A responds with a 100 Trying
					1							provisional response
20			←								INVITE	IMS_A forwards INVITE to AS/IM_A

Step					Direc	tion					Message	Comment
	U	U	Α		I	I	I	Α	U	U		
	S	Е	S/	М	В	В	М	S/	Е	S		
	е	Α	I	S	С	С	S	I	В	е		
	r		М	Α	F	F	В	Μ		r		
	Α		Α		Α	В		В		В		
21				→							100 Trying	AS/IM_A responds with a 100 Trying provisional response
22				→							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
23			←								100 Trying	IMS_A responds with a 100 Trying
24		←		_							INVITE	IMS_A forwards INVITE to UE_A
25											100 Trying	UE A optionally responds with a 100
				~							, ,	Trying provisional response
26	←	-										User A is informed of incoming
27											180 Ringing	LIF A responds to initial INVITE with
21				→								180 Ringing to indicate that invitation to a 1-to-1 chat session has reached the invited user
28			←	_							180 Ringing	IMS_A forwards 180 Ringing
29				→							180 Ringing	AS/IM_A returns, possibly modified,
30											180 Ringing	INS_A forwards 180 Ringing
31											180 Ringing	response to IBCF_A
01						→					100 Hunging	response to IBCF_B
32							\rightarrow				180 Ringing	IBCF_B forwards 180 Ringing
33								\rightarrow			180 Ringing	IMS_B forwards 180 Ringing
34							~				180 Ringing	AS/IM_B returns, possibly modified,
35											180 Ringing	IMS B forwards 180 Ringing
											<u> </u>	response to IBCF_B
36					←	_					180 Ringing	IBCF_B forwards 180 Ringing response to IBCF_A
37				←							180 Ringing	IBCF_A forwards 180 Ringing response to IMS A
38						_			\rightarrow		180 Ringing	IMS_A forwards 180 Ringing
39											MESSAGE	UE_A sends MESSAGE to IMS_A
				→								with delivery notification of initial
40			←								MESSAGE	IMS_A forwards MESSAGE to
41			Ĺ								MESSAGE	AS/IM_A AS/IM_A returns, possibly modified,
42				1							MESSAGE	MESSAGE to IMS_A
					→							
43						→					MESSAGE	IBCF_A torwards MESSAGE to IBCF_B
44							\rightarrow				MESSAGE	IBCF_B forwards MESSAGE to
45								\rightarrow			MESSAGE	IMS_B forwards MESSAGE to AS/IM_B
46							←	_			MESSAGE	AS/IM_B returns, possibly modified,
47						←					MESSAGE	IMS_B forwards MESSAGE to
48					←	_					MESSAGE	IBCF_B forwards MESSAGE to
49											MESSAGE	IBCF_A forwards MESSAGE to
				<	Τ							IMS_A

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Step					Directio	on					Message	Comment
	U	U	Α	I	1	Ι	I	Α	U	U		
	S	E ^	S/	M	B	B	M	S/	E	S		
	e	A	M	5	F	F	З В	M	в	e r		
	Å		A	^	A	B	Б	B		B		
50									\rightarrow		MESSAGE	IMS_A forwards MESSAGE to UE_B
51										→		User B is informed that initial
52				~					_		200 OK	UE_B responds MESSAGE with 200
53											200 OK	IMS_A forwards 200 OK response to
54					;	*					200 OK	IBCF_A IBCF_A forwards 200 OK response
55							*				200 OK	IBCF_B forwards 200 OK response
56							- 				200 OK	to IMS_B IMS_B forwards 200 OK response to
57											200 OK	AS/IM_B AS/IM B returns, possibly modified,
58											200 OK	200 OK response to IMS_B
50						<	_					IBCF_B
59					←						200 OK	to IBCF_A
60				←	-						200 OK	IBCF_A forwards 200 OK response to IMS_A
61			(-							200 OK	IMS_A forwards 200 OK response to AS/IM_A
62				*							200 OK	AS/IM_A returns, possibly modified, ACK to IMS_A
63		←		_							200 OK	IMS_A forwards ACK to UE_A
64		→										User A reads the initial message from user B and opens the 1-to-1 chat
65											200 OK	UE_A responds INVITE with 200 OK response with SDP to indicate that the session has been accepted and inform B-side with specific data for MSRP connection set up
66			←	_							200 OK	IMS_A forwards 200 OK response to
67				*							200 OK	AS/IM_A returns, possibly modified,
68				;							200 OK	IMS_A forwards 200 OK response to IBCF_A
69						>					200 OK	IBCF_A forwards 200 OK response to IBCF_B
70											200 OK	IBCF_B forwards 200 OK response
71								*			200 OK	IMS_B forwards 200 OK response to
72							←	4			200 OK	AS/IM_B returns, possibly modified,
73						<u> </u>					200 OK	IMS_B forwards 200 OK response to IBCF_B
74					←	-					200 OK	IBCF_B forwards 200 OK response
75				(-						200 OK	IBCF_A forwards 200 OK response
76									\rightarrow		200 OK	IMS_A forwards 200 OK response to
77				←							АСК	UE_B acknowledges the receipt of
78				\mapsto							ACK	IMS_A forwards ACK to IBCF_A

1	06	
	~~	

Step				[Directio	on					Message	Comment
	U	U	Α	1	1	1	I	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	е	Α	I	S	C	C	S		в	е		
	r A			A		r B	в	R		r R		
79			$\hat{\Gamma}$		$\widehat{\Box}$						АСК	IBCE A forwards ACK to IBCE B
80					-	$ \longrightarrow $					ACK	IBCF B forwards ACK to IMS B
81											ACK	IMS B forwards ACK to AS/IM B
82											ACK	AS/IM B returns possibly modified
02							←					ACK to IMS_B
83						<					ACK	IMS_B forwards ACK to IBCF_B
84					←						ACK	IBCF_B forwards ACK to IBCF_A
85				←							ACK	IBCF_A forwards ACK to IMS_A
86			←								ACK	IMS_A forwards ACK to AS/IM_A
87											ACK	AS/IM_A returns, possibly modified,
												ACK to IMS_A
88		←		•							ACK	IMS_A forwards ACK to UE_A
89	/									_		Users perform chatting (see clause
							-			1		5.3.1 Chat 1 to 1 via MSRP)
90A									←	-		User B closes the 1-to-1 chat
91A				~					_		BYE	UE_B releases the 1-to-1 chat
024											BVE	Session with BYE
92A											BVE	INC_A forwards BYE to IBCE B
93A 97A						L .					BVE	IBCE B forwards BYE to IMS B
954											BYE	IMS B forwards BYE to AS/IM B
96A											BYE	AS/IM B returns possibly modified
00/1							←					BYE to IMS B
97A						←					BYE	IMS_B forwards BYE to IBCF_B
98A					←	-					BYE	IBCF_B forwards BYE to IBCF_A
99A				<							BYE	IBCF_A forwards BYE to IMS_A
100A			←	-							BYE	IMS_A forwards BYE to AS/IM_A
101A											BYE	AS/IM_A returns, possibly modified,
1001												BYE to IMS_A
102A		<									BYE	IMS_A forwards BYE to UE_A
103A											200 OK	UE_A sends 200 OK for BYE
104A			←	-							200 OK	IMS_A forwards 200 OK response to
105A											200 OK	AS/IM_A AS/IM_A returns_possibly modified
100/1			\rightarrow								200 011	200 OK response to IMS_A
106A											200 OK	IMS_A forwards 200 OK response to
												IBCF_A
107A					\longrightarrow						200 OK	IBCF_A forwards 200 OK response
1094											200 OK	IO IBCF_B
1004						\rightarrow					200 01	to IMS_B
109A											200 OK	IMS_B forwards 200 OK response to
												AS/IM_B
110A							<u> </u>				200 OK	AS/IM_B returns, possibly modified,
1110							-					200 OK response to IMS_B
111A						←					200 OK	INS_B forwards 200 OK response to
112A											200 OK	IBCE B forwards 200 OK response
					<				1			to IBCF_A
113A											200 OK	IBCF_A forwards 200 OK response
									1			to IMS_A
114A									>		200 OK	IMS_A forwards 200 OK response to
115.4												UE_B
TISA									-	→		chat with user A is closed
90B		*										User A closes the 1-to-1 chat
91B											BYE	UE_A releases the 1-to-1 chat
			\rightarrow	1								session with BYE

Step						Directi	on					Message	Comment
	U		U	Α	I		Ι	Ι	Α	U	U		
	S		E	S/	М	В	В	М	S/	E	S		
	е		Α		S	c	c	S	I	В	е		
	r A			M	A	F	F	в	M		r B		
92B	Ê			~	-					1		BYE	IMS A forwards BYE to AS/IM A
93B												BYE	AS/IM A returns, possibly modified.
001					*								BYE to IMS_A
94B						>						BYE	IMS_A forwards BYE to IBCF_A
95B							>					BYE	IBCF_A forwards BYE to IBCF_B
96B								→				BYE	IBCF_B forwards BYE to IMS_B
97B									\rightarrow			BYE	IMS_B forwards BYE to AS/IM_B
98B								←				BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
99B							←	_				BYE	IMS_B forwards BYE to IBCF_B
100B						←	-					BYE	IBCF_B forwards BYE to IBCF_A
101B					←	-						BYE	IBCF_A forwards BYE to IMS_A
102B									_	\rightarrow		BYE	IMS_A forwards BYE to UE_B
103B					←							200 OK	UE_B sends 200 OK for BYE
104B						>						200 OK	IMS_A forwards 200 OK response to IBCF_A
105B							*					200 OK	IBCF_A forwards 200 OK response
106B								→				200 OK	IBCF_B forwards 200 OK response
107B									→			200 OK	IMS_B forwards 200 OK response to
4000													AS/IM_B
108B								←				200 OK	200 OK response to IMS_B
109B							←					200 OK	IMS_B forwards 200 OK response to IBCF B
110B						~	-					200 OK	IBCF_B forwards 200 OK response
111B					,							200 OK	IBCF_A forwards 200 OK response
					`								to IMS_A
112B				←	-							200 OK	IMS_A forwards 200 OK response to AS/IM_A
113B					*							200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
114B			←		-							200 OK	IMS_A forwards 200 OK response to UE_A
115B	←	_											User A is informed that that 1-to-1 chat with user B is closed

4.5.3.2 Several messages prior to establishment of 1-to-1 chat

4.5.3.2.1 Several messages prior to establishment of 1-to-1 chat - interworking

	Interoperabilit	y Test Description
Identifier:	TD_IMS_CHAT_0003	
Summary:	IMS network supports 1-to-1 IM users in their home network car messages from User A before a	//Chat service and messages exchange between two n be performed. User B must wait until receiving several accepting the chat invitation
Configuration:	CF_INT_AS	
SUT	IMS_A and IMS_B	
References	Test Purpose	Specification Reference
	TP_IMS_5097_01	TS 124 229 [1], clause 5.4.3.2 ¶11
		(1 st numbered list)
	TP_IMS_5108_03	TS 124 229 [1], clause 5.4.3.3 ¶5
		(item 4 in 1 st numbered list)

		Interoperability Test Description											
	TP_IMS_	5115_08 TS 124 229 [1], clause 5.4.3.3 ¶89											
		(4 th numbered list)											
Use Case ref.:	UC_RCS	4_!											
Pre-test conditions:	 HSS UE_A per T UE_E UE_A UE_A IMS_ IMS_ IMS_ UE_A UE_A IMS_ UE_A IMS_ 	of IMS_A and of IMS B is configured according to table 1 A and UE_B have IP bearers established to their respective IMS networks as S 186 011-2 [9], clause 4.2.1 A is registered in IMS_A optionally using userPRES according to table 1 B is registered in IMS_B optionally using userPRES according to table 1 A is optionally configured to receive notifications with watcher information A is authorized to see presence information of UE_B A is configured to contact AS_A B is configured to contact AS_B B is optionally configured for reactive authorization A is within the trust domain of IMS_B A and UE_B have already performed capability discovery process A not configured for topology hiding											
Test Sequence:	Step 1 2 3	User A selects User B in the phone address book and sends him an initial message User B is informed of incoming message User A is informed that initial message was delivered to user B											
	4	User A sends to User B a second message											
	5	User B is informed of incoming two messages											
	6	User A is informed that second message was delivered to user B											
	7	User B reads the incoming messages from user A and opens the 1-to-1 chat											
	8	Users perform chatting											
	9A	User A closes the 1-to-1 chat											
	9B	User B closes the 1-to-1 chat											
	10A	User A is informed that 1-to-1 chat with user B is closed											
	10A 10B	User A is informed that 1-to-1 chat with user B is closed User B is informed that 1-to-1 chat with user A is closed											
Conformance Criteria:	10A 10B Check	User A is informed that 1-to-1 chat with user B is closed User B is informed that 1-to-1 chat with user A is closed											
Conformance Criteria:	10A 10B Check 1	User A is informed that 1-to-1 chat with user B is closed User B is informed that 1-to-1 chat with user A is closed TP_IMS_5097_01 in CFW step 10 (INVITE): ensure that { when { UE_A sends an initial INVITE to UE_B } then { IMS_B receives the initial INVITE not containing a Route_header indicating the S-CSCF_SIP_URI of IMS_A containing a P-Charging-Vector_header (containing a nicid-value_parameter and containing a orig-ioi_parameter indicating IMS_A and not containing a a ccess-network-charging-info_parameter and not containing a term-ioi_parameter) and containing a Record-Route_header indicating the originating S-CSCF_SIP_URI } } TP_IIMS_5108_03 in CFW step 14 (INVITE) ensure that { when {IMS_B receives an initial INVITE from IMS_A addressed_to UE_B} then {IMS_B sends the INVITE to AS_B containing a Route_header indicating the SIP_URI of AS_B and containing a Route_header indicating the S-CSCF_SIP_URI of IMS_B and containing a Route_header indicating the S-CSCF_SIP_URI of IMS_B and containing a Route_header indicating the S-CSCF_SIP_URI of IMS_B and containing a P-Charging-Vector_header indicating the S-CSCF_SIP_URI of IMS_B and containing a rig-ioi_parameter indicating operator_identifier of IMS_A and											
Interoperability Test Description													
--	--	--	--	--	--	--	--	--	--	--	--	--	--
3 TP_IMS_5115_08 in CFW step 35 (200 OK)													
ensure that {													
	when { IMS_B receives 200_response from AS_B addressed to UE_A }												
then { IMS_B sends the 200_response to IMS_A													
	containing a P-Charging-Vector_header												
	including a orig-ioi_parameter												
	indicating operator_identifier of IMS_A and												
	including a term-ioi_parameter												
	indicating operator_identifier of IMS_B }												
	}												

Step	Direction										Message	Comment		
	U		U	Α	I	I	I	I	Α	U	U			
	S		E	S/	м	в	В	м	S/	E	S			
	е		Α	1	S	č	c	S	I	В	е			
	r			M	Α	F	F	в	м		r			
1	<u> </u>			<u> </u>			в		в		В	_		
1												-		Follow UC_RCS_4_I (1-46)
2		\rightarrow												message
3														LIE A sends second INVITE to
Ŭ														IMS A with user A second message
														in the Subject header, CPIM/IMND
					7									headers and the first SDP offer
														indicating all specific data for MSRP
														connection set up
4			(100 Trying	IMS_A responds with a 100 Trying
			`									-		provisional response
5				←									INVITE	IMS_A forwards INVITE to AS/IM_A
6					>								100 Trying	AS/IM_A responds with a 100 Trying provisional response
7					*								INVITE	AS/IM_A returns, possibly modified,
8												Ē	100 Trying	IMS A responds with a 100 Trying
Ũ				<										provisional response
9						→						Ī	INVITE	IMS_A forwards INVITE to IBCF_A
10												Ī	100 Trying	IBCF_A responds with a 100 Trying
														provisional response
11							∢						INVITE	IBCF_A forwards INVITE to IBCF_B
12						←	_						100 Trying	IBCF_B responds with a 100 Trying provisional response
13								*				Ī	INVITE	IBCF B forwards INVITE to IMS B
14												Ī	100 Trvina	IMS B responds with a 100 Trying
							¢						,	provisional response
15									>			Ī	INVITE	IMS_B forwards INVITE to AS/IM_B
16								/				Ī	100 Trying	AS/IM_B responds with a 100
														Trying provisional response
17								(INVITE	AS/IM_B returns, possibly modified,
								ì				_		INVITE to IMS_B
18									>				100 Trying	IMS_B responds with a 100 Trying
10												-		provisional response
19										\rightarrow		-		IMS_B forwards INVITE to UE_B
20								←	_				100 Trying	UE_B optionally responds with a
24														100 Trying provisional response
21											\rightarrow			
22													180 Ringing	LIF B responds to additional
													. so i kinging	INVITE with 180 Ringing to indicate
								\leftarrow						that invitation to an enhanced
														messaging session has reached the
														invited user
23												Ī	180 Ringing	IMS_B forwards 180 Ringing
									1					response to AS/IM_B

1	1	0		

v U U X I I I I A U U S 24 X K C C C S I B B B B B F B B F B	Step	Direction										Message	Comment
s E A J K B B M SY E B 24 J A A F F B M B F B F B F B F B F B F B F B F B F B F B F B B F B B F B B F B B F B B F B B F B B F B F B F B F B F B F B F B B F B B F B B F B B F B <td></td> <td>U</td> <td>U</td> <td>Α</td> <td>I</td> <td>I</td> <td>I</td> <td>Ι</td> <td>Α</td> <td>U</td> <td>U</td> <td></td> <td></td>		U	U	Α	I	I	I	Ι	Α	U	U		
Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 24 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 25 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 26 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 27 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 28 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 30 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 31 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 33 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 33 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method. 34 Image: Provide and the second method is a second method. Image: Provide and the second method is a second method is a second method. 36 Image: Provide and the second method is a second meth		S	E	S/	M	B	B	M	S/	E	S		
A A A B B 24 A A B B B 25 B B B B B 26 B B B B B 26 B B B B B B 27 B <td></td> <td>e</td> <td>A</td> <td>I M</td> <td>5</td> <td></td> <td>E</td> <td>5</td> <td>I M</td> <td>в</td> <td>e</td> <td></td> <td></td>		e	A	I M	5		E	5	I M	в	e		
24 180 Ringing AS/ML B returns, possibly modified. 25 180 Ringing response to INS_B. 180 Ringing response to INS_B. 26 180 Ringing response to INS_B. 180 Ringing response to INS_B. 27 180 Ringing response to INS_B. 180 Ringing response to INS_B. 28 180 Ringing response to INS_A. 180 Ringing response to INS_A. 29 180 Ringing response to INS_A. 180 Ringing response to INS_A. 30 180 Ringing response to INS_A. 180 Ringing response to INS_A. 31 180 Ringing response to INS_A. 180 Ringing response to INS_A. 32 180 Ringing response to INS_A. 180 Ringing response to INS_A. 33 180 Ringing response to INS_A. 180 Ringing response to INS_A. 34 180 Ringing response to INS_A. 180 Ringing response to INS_A. 35 180 Ringing response to INS_A. 180 Ringing response to INS_A. 36 180 Ringing response to INS_B. 180 Ringing response to INS_A. 37 180 Ringing response to INS_A. 180 Ringing response to INS_B. 38 185 SAGE to INS_B. 180 Ringing response to INS_B. 44 180 Ringing response to INS_B. 180 Ringing response to INS_B. </td <td></td> <td>Δ</td> <td></td> <td>Δ</td> <td>A</td> <td></td> <td>B</td> <td>Р</td> <td>B</td> <td></td> <td>B</td> <td></td> <td></td>		Δ		Δ	A		B	Р	B		B		
25 180 Ringing IMS Forwards 180 Ringing Insponse to IASL 26 180 Ringing IMS Forwards 180 Ringing Insponse to IASL 27 180 Ringing IMS Forwards 180 Ringing Insponse to IASL 28 180 Ringing IMS Forwards 180 Ringing Insponse to IASL 29 180 Ringing IMS Forwards 180 Ringing Insponse to IASL 30 180 Ringing IMS Forwards 180 Ringing Insponse to IASL 31 180 Ringing IMS Forwards 180 Ringing Insponse to IASL 32 180 Ringing IMS Forwards 180 Ringing Insponse to IASL 33 180 Ringing IMS Forwards MESSAGE to IMS_B 34 180 Ringing IMS Forwards MESSAGE to IMS_S 35 180 Ringing IMS Forwards MESSAGE to IMS_B 36 37 MESSAGE IMS_A returns, possibly modified, MESSAGE to IMS_A 37 7 MESSAGE IMS_A returns, possibly modified, MESSAGE to IMS_A 40 MESSAGE IMS_A returns, possibly modified, MESSAGE to IMS_A 41 200 OK IMS_A returns, possibly modified, MESSAGE to IMS_A 42 200 OK IMS_A returns, possibly modified, MESSAGE to IMS_B 44 200 OK IMS_A returns, possibly modified, 200 OK response to ASIM A 44	24							←				180 Ringing	AS/IM_B returns, possibly modified,
 100 Nigging inseptione to list(7). B viniting inseptione to list(7). B viniting inseptione to list(7). A forwards 160 Ringing inseptione to list(7). A forwards list(7). A	25											180 Pinging	INS B forwards 180 Pinging
26 180 Ringing IISCF B forwards 180 Ringing 27 160 Ringing IISCF A forwards 180 Ringing 28 180 Ringing IISCF A forwards 180 Ringing 29 180 Ringing response to IMS A 30 180 Ringing response to IMS A 31 180 Ringing response to IMS A 32 180 Ringing response to IMS A 33 180 Ringing response to IMS A 34 180 Ringing response to IMS A 35 180 Ringing response to IMS A 36 180 Ringing response to IMS A 37 180 Ringing response to IMS A 38 180 Ringing response to IMS A 39 180 Ringing response to IMS A 41 180 Ringing response to IMS A 38 180 Ringing response to IMS A 39 180 Ringing response to IMS A 41 180 Ringing response to IMS A 42 180 Ringing response to IMS A 43 180 Ringing response to IMS A 44 180 Ringing Response Risto Response 44	25						←	-				100 Kinging	response to IBCF_B
27 130 response to ISCF_A Torwards 180 Ringing response to IMS_A 130 130 130 Ringing Response to IMS_A 30 31 130 Ringing Response to IMS_A 31 130 Ringing Response to IMS_A 32 130 Ringing Ring MA_returns, possibly modified, 180 Ringing response to IMS_A 331 130 Ringing Ring MA_returns, possibly modified, 180 Ringing response to IMS_A 332 131 333 MESSAGE 341 MESSAGE IDE A forwards HESSAGE to IMS_B 352 MESSAGE IDE A forwards MESSAGE to IMS_B 363 MESSAGE IDE A forwards MESSAGE to IMS_B 364 MESSAGE IDECF A forwards MESSAGE to IMS_B 37 MESSAGE IDECF A forwards MESSAGE to IMS_B 38 MESSAGE IDECF A forwards MESSAGE to IMS_B 39 MESSAGE IDECF A forwards MESSAGE to IMS_B 40 MESSAGE IDECF A forwards MESSAGE to IMS_A 41 MESSAGE IDECF A forwards MESSAGE to IMS_B 42 MESSAGE IDECF A forwards MESSAGE to IMS_A 43 MESSAGE IDECF A forwards MESSAGE to IMS_A 44 MESSAGE IDECF A forwards MESSAGE to IMS_A 44 MESSAGE IDECF A forwards MESSAGE to IMS_A 44<	26											180 Ringing	IBCF B forwards 180 Ringing
27 28 180 Ringing BCF A forwards 180 Ringing response to IMS A 28 29 180 Ringing BCF A forwards 180 Ringing response to ASIM A 30 180 Ringing MS A forwards 180 Ringing response to MS A 31 180 Ringing Point Response to IMS A 32 180 Ringing response to IMS A 33 180 Ringing MS A forwards 180 Ringing response to IMS A 34 180 Ringing MS A forwards 180 Ringing response to IMS A 33 180 Ringing MS A forwards 180 Ringing response to IMS A 34 180 Ringing MS A forwards 180 Ringing response to IMS A 35 180 Ringing MS A forwards 180 Ringing response to IMS A 36 MESSAGE IMS B 37 MESSAGE IMS B 38 MESSAGE IO MS B 39 MESSAGE IO MS A 40 MESSAGE IO MS A 41 MESSAGE IO MS A 42 MESSAGE IO MS A 43 200 OK 44 MESSAGE IO MS A 45 200 OK 46 MESSAGE IO MS A 47 MESSAGE IO MS A 48 200 OK 49 200 OK 50 MES Forwards												0.0	response to IBCF_A
28 180 Ringing MS_A forwards '120 Ringing 29 30 180 Ringing ASIM, A returns, possibly modified, 180 Ringing response to ASIM, A 30 180 Ringing ASIM, A returns, possibly modified, 180 Ringing response to MS_A forwards MESSAGE to MS_B 31 180 Ringing Ring MS_A forwards MESSAGE to MS_B 33 33 MESSAGE 180 Ringing Ring MS_A forwards MESSAGE to MS_B 34 MESSAGE to MS_B MESSAGE to MS_B 35 MESSAGE to IMS_B MESSAGE to IMS_B 36 MESSAGE to IMS_B MESSAGE to IMS_B 37 MESSAGE to IMS_A MESSAGE to IMS_B 38 MESSAGE to IMS_A MESSAGE to IMS_A 39 MESSAGE to IMS_A MESSAGE to IMS_A 40 MESSAGE to IMS_A MESSAGE to IMS_A 41 MESSAGE to IMS_A MESSAGE to IMS_A 42 MESSAGE to IMS_A MESSAGE to IMS_A 43 MESSAGE to IMS_A MESSAGE to IMS_A 44 MESSAGE to IMS_A MESSAGE to IMS_A 44 MESSAGE to IMS_A MESSAGE to IMS_A 45 MESSAGE to IMS_A MESSAGE	27				←	_						180 Ringing	IBCF_A forwards 180 Ringing
29 30 180 Ringing ASIM A returns, possibly modified, 180 Ringing 31 180 Ringing MESAGE UE a sends MESAGE to IMS A features, possibly modified, 180 Ringing 32 33 33 MESSAGE UE a sends MESSAGE to IMS A features, possibly modified, 180 Ringing 33 34 MESSAGE IMS a features, possibly modified, 180 Ringing ASIM A features, possibly modified, 180 Ringing 34 35 MESSAGE IMS a features, possibly modified, 180 Ringing ASIM B marks MESSAGE to IMS B modified, 180 Ringing 36 MESSAGE IMS B forwards MESSAGE to IMS B modified, 180 Ringing MESSAGE I082 Ringing 37 36 MESSAGE INS A features, possibly modified, 180 Ringing MESSAGE I0 MS A features, possibly modified, 180 Ringing 38 MESSAGE IMS A features, possibly modified, 180 Ringing MESSAGE I0 MS A features, possibly modified, 200 OK response 39 MESSAGE INS A features, possibly modified, 200 OK response to MS A forwards 200 OK response MESSAGE I0 MS A features, possibly modified, 200 OK response 41 MESSAGE INS A features, possibly modified, 200 OK response to MS A forwards 200 OK response MESSAGE I0 MS A features, possibly modified, 200 OK response 42 MESSAGE INS A features, possibly modified, 200 OK response to MS A forwards 200 OK response ME	28											180 Rinaina	IMS A forwards 180 Ringing
 180 Ringing ASIM A returns, possibly modified, message was delivered to user B 38 37 36 37 38 39 40 41 42 41 42 44 44 44 44 44 45 46 47 47 47 48 49 50 50 50 50 50 51 51<td></td><td></td><td></td><td><</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.0</td><td>response to AS/IM_A</td>				<								0.0	response to AS/IM_A
30 100 Ringing response to IWS A 31 100 Ringing IMS_A forwards 180 Ringing response to UE A 32 MESSAGE UE B sends MESSAGE to IMS_B 33 MESSAGE MAS_B 34 MESSAGE INFO MAS_B 35 MESSAGE INFO MAS_B 36 MESSAGE INFO MAS_B 37 MESSAGE INFO MAS_B 38 MESSAGE INFO MAS_B 39 MESSAGE INFO MAS_B 40 MESSAGE INFO MAS_B 41 MESSAGE INFO MAS_B 38 MESSAGE INFO MAS_B 39 MESSAGE INFO MAS_B 40 MESSAGE INFO MAS_B 41 MESSAGE INFO MAS_B 42 MESSAGE INFO MAS_B 43 MESSAGE INFO MAS_B 44 MESSAGE INFO MAS_B 44 MESSAGE INFO MAS_B 43 MESSAGE INFO MAS_B 44 MESSAGE INFO MAS_B 45 MESSAGE INFO MAS_A 46 MESSAGE INFO MAS_A 47 MESSAGE INFO MAS_A 48 MESSAGE INFO MAS_A 49 MESSAGE INFO MAS_A 200 OK	29											180 Ringing	AS/IM_A returns, possibly modified,
30 180 Rnging IBO Rnging					1								180 Ringing response to IMS_A
31 MESSAGE UE B sends MESSAGE to IMS_B with delivery notification of second message from user A 32 33 MESSAGE IME B orwards MESSAGE to IMS_B with delivery notification of second message from user A 33 34 MESSAGE IME SAGE IME SAGE IME SAGE to IMS_B 34 MESSAGE IME SAGE IME SAGE IME SAGE IME SAGE IME SAGE 36 MESSAGE IME SAGE IME SAGE <t< td=""><td>30</td><td></td><td>←</td><td></td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td>180 Ringing</td><td>IMS_A forwards 180 Ringing</td></t<>	30		←		_							180 Ringing	IMS_A forwards 180 Ringing
 all and a second message from user A all and and a second message from user A all and and a second message from user A all and and a second message from user A all and and a second message from user A all and and a second message from user A all and and a second message from user A all and and a second message from user A all and and a second message from user A all and and a second message from user A all and and a second message from user A all and and a second message from user A and and a second message from user A and opens to UE B and and a second message from user A and opens the first or and opens the first or and a second message from user A and opens the first or and opens the first or and a second message from user A and opens the first or and a second message from user A and opens the first or and a second message from user A and opens th	31											MESSAGE	UE B sends MESSAGE to IMS B
32 32 33 34 34 34 35 36 36 MESSAGE 37 MESSAGE 38 MESSAGE 39 MESSAGE 40 MESSAGE 41 MESSAGE 42 MESSAGE 43 MESSAGE 44 MESSAGE 44 MESSAGE 47 MES 48 MES 49 MES 50 MES 51 MES	0.							←					with delivery notification of second
32 33 33 34 34 35 35 36 36 MESSAGE 37 MESSAGE 38 MESSAGE 37 MESSAGE 38 MESSAGE 37 MESSAGE 38 MESSAGE 39 MESSAGE 40 MESSAGE 41 MESSAGE 42 MESSAGE 43 MESSAGE 44 MESSAGE 44 MESSAGE 44 MESSAGE 44 MESSAGE 44 MESSAGE 45 MESSAGE 46 MESSAGE 47 MESSAGE 48 MESSAGE 49 MESSAGE 50 MESSAGE 51 MESSAGE 51 MESSAGE 52 MESSAGE													message from user A
33 34 34 34 35 36 36 36 37 38 38 39 40 48 41 42 42 43 43 44 44 44 45 46 47 48 48 49 50 50 51 51 52 51	32								→			MESSAGE	IMS_B forwards MESSAGE to AS/IM_B
34 34 34 35 35 36 36 MESSAGE 37 MESSAGE 38 MESSAGE 39 MESSAGE 40 ASIM_A 41 MESSAGE 41 MESSAGE 42 MESSAGE 43 MESSAGE 44 MESSAGE 45 MESSAGE 46 MESSAGE 47 MESSAGE 48 MESF 49 MESSAGE 50 MESSAGE 50 MESF 51 MESF 52 MESF	33							,				MESSAGE	AS/IM_B returns, possibly modified,
34 MESSAGE IMS_B forwards MESSAGE to IBCF_B 36 MESSAGE IBCF_A forwards MESSAGE to IBCF_A 37 MESSAGE IBCF_A forwards MESSAGE to IBCF_A 38 MESSAGE IMS_A forwards MESSAGE to IBCF_A 39 MESSAGE IMS_A forwards MESSAGE to MESSAGE to IMS_A 40 MESSAGE IMS_A forwards MESSAGE to UE_A 41 MESSAGE IMS_A forwards MESSAGE to UE_A 42 MESSAGE IMS_A forwards MESSAGE to UE_A 43 A MESSAGE IMS_A forwards MESSAGE with 200 OK 44 AS/IM_A AS/IM_A returns, possibly modified, 200 OK response to IMS_A 44 AS/IM_A AS/IM_A forwards 200 OK response to AS/IM_A 44 AS/IM_A AS/IM_A returns, possibly modified, 200 OK 44 AS/IM_B 200 OK 45 AS/IM_B 200 OK 46 MS_B forwards 200 OK response to AS/IM_B 200 OK IBCF_A forwards 200 OK response to UBCF_B 48 AS/IM_B IBCF_B forwards 200 OK response to AS/IM_B 200 OK IMS_B forwards 200 OK response to AS/IM_B 50 MES IBCF_B forwards 200 OK response to AS/IM_B 200 OK IMS_B forwards 200 OK response to AS/IM_													MESSAGE to IMS_B
35 36 36 37 37 38 38 44 40 44 41 44 42 43 43 44 44 44 45 46 46 47 47 48 48 49 50 50 50 50 51 50 52 50	34						←	_				MESSAGE	IMS_B forwards MESSAGE to
36 36 IBCF_A 37 MESSAGE IBCF_A 38 MESSAGE IBCF_A 38 MESSAGE IMS_A 39 MESSAGE IMS_A 40 MESSAGE IMS_A 41 MESSAGE IMS_A 42 MESSAGE IMS_A 43 MESSAGE IMS_A 44 MESSAGE IMS_A 44 MESSAGE IMS_A 44 MESSAGE IMS_A 44 MESSAGE IMS_A 45 MESSAGE IMS_A 46 MESSAGE IMS_A 47 MESSAGE IMS_A 48 MESSAGE IMS_A 49 MESSAGE IMS_B 50 MESSAGE IMS_A 51 MESSAGE IMS_A 51 MESSAGE IMS_B 52 MESSAGE IMS_B	35					,						MESSAGE	IBCF_B forwards MESSAGE to
36 37 37 38 38 39 40 40 41 41 42 41 43 44 44 44 44 44 45 45 46 46 47 48 48 48 49 48 46 48 47 48 48 48 49 48 50 50 51 50 52 50													IBCF_A
37 IMS_A Im	36				<u> </u>	_						MESSAGE	IBCF_A forwards MESSAGE to
37 38 38 39 39 40 40 User A is informed that second message was delivered to user B 41 200 OK 42 200 OK 43 200 OK 44 200 OK 45 00 OK 46 200 OK 47 00 OK 48 00 OK 49 00 OK 50 00 OK 50 00 OK 50 00 OK 50 00 OK 51 00 OK 52 00 OK	27											MESSACE	IMS_A
38 AS/IM_A returns, possibly modified, MESSAGE to IMS_A 39 MESSAGE Io IMS_A 40 UE_A 41 UE_A 42 UE_A 43 UE_A 43 UE_A 43 UE_A 44 UE_A 45 UE_A 46 UE_A 47 UE_A 48 UE_A 49 UE_A 50 UE_A 50 UE_A 51 UE_A 52 UE_A	57			(_							IVIE33AGE	AS/IM_A
33 MESSAGE MMS_A forwards MESSAGE to UE_A 40 User A is informed that second message was delivered to user B 41 200 OK UE_A response 42 200 OK UE_A response to IMS_A 43 200 OK IMS_A forwards 200 OK response to AS/IM_A 44 200 OK IMS_A forwards 200 OK response to IBCF_B 46 MESSAGE IMS_A forwards 200 OK response to IBCF_B 47 MESSAGE IMS_A forwards 200 OK response to IBCF_B 48 MESSAGE IBCF_B forwards 200 OK response to IBCF_B 49 MESSAGE IMS_B forwards 200 OK response to UE_B 50 MESSAGE IMS_B forwards 200 OK response to UE_B 50 MESSAGE IMS_B forwards 200 OK response to UE_B 51 MESSAGE IMS_B forwards 200 OK response to IMS_B forwards 200 OK response 51 MESSAGE IMS_B forwards 200 OK response 52 IMS_B forwards 200 OK response 53 IMS_B forwards 200 OK response 54 IMS_B forwards 200 OK response 55 IMS_B forwards 200 OK response 50 IMS_B forwards 200 OK response 50 IMS_B fo	38				×							MESSAGE	AS/IM_A returns, possibly modified, MESSAGE to IMS_A
40 UE_A 41 User A is informed that second message was delivered to user B 41 200 OK 42 200 OK 43 200 OK 44 200 OK 44 200 OK 44 200 OK 45 200 OK 46 MB_A forwards 200 OK response to IMS_A 47 200 OK 48 A 49 A 50 A 51 A 52 A	39		/									MESSAGE	IMS_A forwards MESSAGE to
40 User A is informed that second message was delivered to user B 41 200 OK UE_A responds MESSAGE with 200 OK response 42 200 OK UE_A forwards 200 OK response 43 200 OK IMS_A forwards 200 OK response 44 200 OK IBCF_A 45 200 OK IBCF_A 46 200 OK IBCF_A 47 200 OK IBCF_B forwards 200 OK response to IBCF_A 200 OK IBCF_B forwards 200 OK response to IBCF_B 200 OK IBCF_B forwards 200 OK response to IBCF_B 200 OK IBCF_B forwards 200 OK response to IBCF_B 200 OK IBCF_B forwards 200 OK response to IBCF_B 200 OK IBCF_B forwards 200 OK response to IBCF_B 200 OK IBS_B forwards 200 OK response to IBS_B 200 OK IMS_B forwards 200 OK response to IBS_B 200 OK IMS_B forwards 200 OK response to IUS_B 200 OK IBS_B forwards 200 OK response to UE_B 50 0 User B reads the incoming messages from user A and opens the 1-to-1 chat 51 0 0 0 0 51 0 0 0 0 0								_			_		UE_A
41 42 43 43 44 43 44 45 46 47 48 48 49 50 50 50 51 52	40	←	_										User A is informed that second
41 200 OK DE_A Response 42 200 OK IMS_A forwards 200 OK response 43 43 200 OK IMS_A forwards 200 OK response 44 44 200 OK IMS_A forwards 200 OK response 45 200 OK IBCF_A 46 200 OK IBCF_B 46 200 OK IBCF_B forwards 200 OK response 47 200 OK IBCF_B forwards 200 OK response 48 200 OK IBCF_B forwards 200 OK response 48 200 OK IMS_B forwards 200 OK response 50 00 OK IMS_B forwards 200 OK response 50 00 OK IMS_B forwards 200 OK response 51 00 OK IMS_B forwards 200 OK response 51 00 OK IMS_B forwards 200 OK response 51 00 OK IMS_B forwards 200 OK response 52 00 OK IMS_B forwards 200 OK response	4.1											200.0K	message was delivered to user B
42 43 43 44 44 45 46 47 48 49 50 50 51 52	41				>							200 0K	200 OK response
43 44 44 44 44 200 OK 45 200 OK 46 200 OK 47 200 OK 48 200 OK 49 200 OK 50 200 OK 51 603 52 603 52 603 603 IMS_B forwards 603 DECLINE	42											200 OK	IMS_A forwards 200 OK response
43 43 44 44 44 45 45 46 46 46 47 48 48 48 49 48 50 50 51 51 52 52													to AS/IM_A
44 200 OK response to IMS_A 45 200 OK 46 200 OK 47 200 OK 48 200 OK 48 200 OK 49 200 OK 50 0 51 0 52 0	43				*							200 OK	AS/IM_A returns, possibly modified,
44 45 1010 S_A10Wards 200 OK response to IBCF_A 46 200 OK IBCF_A forwards 200 OK response to IBCF_B 47 200 OK IBCF_B forwards 200 OK response to IBCF_B 48 200 OK IBCF_B forwards 200 OK response to AS/IM_B 49 200 OK IMS_B forwards 200 OK response to AS/IM_B 50 200 OK IMS_B forwards 200 OK response to UE_B 50 User B reads the incoming messages from user A and opens the 1-to-1 chat 51 603 DECLINE UE_B responds INVITE 603 DECLINE 52 003 IMS_B forwards 603 DECLINE	4.4											200 0K	200 OK response to IMS_A
45 46 46 46 47 47 48 48 49 49 50 50 51 51 52 52	44					*						200 OK	to IBCF A
46 47 47 48 49 50 50 51 52	45											200 OK	IBCF A forwards 200 OK response
46 200 OK IBCF_B forwards 200 OK response to IMS_B 47 200 OK IMS_B forwards 200 OK response to AS/IM_B 48 200 OK IMS_B forwards 200 OK response to AS/IM_B 49 200 OK AS/IM_B returns, possibly modified, 200 OK response to IMS_B 50 200 OK IMS_B forwards 200 OK response to IMS_B 51 51 603 UE_B responds INVITE 603 52 50 003 IMS_B forwards 603 DECLINE							*						to IBCF_B
47 48 48 49 49 200 OK IMS_B forwards 200 OK response to AS/IM_B 200 OK AS/IM_B returns, possibly modified, 200 OK response to IMS_B 200 OK IMS_B forwards 200 OK response to IMS_B 200 OK IMS_B forwards 200 OK response to IMS_B 200 OK IMS_B forwards 200 OK response to UE_B 50 50 51 51 52 52	46							→				200 OK	IBCF_B forwards 200 OK response to IMS_B
48 49 49 200 OK AS/IM_B returns, possibly modified, 200 OK response to IMS_B 50 200 OK IMS_B forwards 200 OK response to UE_B 50 User B reads the incoming messages from user A and opens the 1-to-1 chat 51 603 UE_B responds INVITE 603 52 DECLINE DECLINE to indicate that the initial session has been declined	47								→			200 OK	IMS_B forwards 200 OK response
49 49 50 50 51 51 52 52	48											200 0K	IU AD/IIVI_B AS/IM B returns possibly modified
49 200 OK IMS_B forwards 200 OK response to UE_B 50 50 User B reads the incoming messages from user A and opens the 1-to-1 chat 51 603 UE_B responds INVITE 603 52 52 IMS_B forwards 603 DECLINE	40							←				200 01	200 OK response to IMS_B
50 1 <th1< th=""> 1 1 1 1<td>49</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>\rightarrow</td><td></td><td>200 OK</td><td>IMS_B forwards 200 OK response</td></th1<>	49									\rightarrow		200 OK	IMS_B forwards 200 OK response
51 603 UE_B responds INVITE 603 52 603 IMS_B forwards 603 DECLINE	50												User B reads the incoming
51 603 UE_B responds INVITE 603 52 52 603 IMS_B forwards 603 DECLINE	00									←			messages from user A and opens
51 603 UE_B responds INVITE 603 52 DECLINE DECLINE to indicate that the initial session has been declined 52 603 IMS_B forwards 603 DECLINE 603 IMS_B forwards 603 DECLINE DECLINE response to AS/IM_B													the 1-to-1 chat
52 DECLINE DECLINE to indicate that the initial session has been declined 603 IMS_B forwards 603 DECLINE DECLINE response to AS/IM_B	51						1					603	UE_B responds INVITE 603
52 603 IMS_B forwards 603 DECLINE DECLINE response to AS/IM_B								←				DECLINE	DECLINE to indicate that the initial
DECLINE response to AS/IM_B	52											603	IMS B forwards 603 DFCI INF
									→			DECLINE	response to AS/IM_B

Step					Direc	tion					Message	Comment
	U	U	Α	Ι	I	I	I	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	e	Α		S	C	C	S	I	в	e		
	r A			А		Г В	Р	IVI R		R		
53	<u> </u>				<u> </u>		1		1		603	AS/IM B returns possibly modified
00							←				DECLINE	603 DECLINE response to IMS_B
54											603	IMS B forwards 603 DECLINE
						<					DECLINE	response to IBCF_B
55					/						603	IBCF_B forwards 603 DECLINE
											DECLINE	response to IBCF_A
56				<u> </u>							603	IBCF_A forwards 603 DECLINE
											DECLINE	response to IMS_A
57			←								603 DECLINE	IMS_A forwards 603 DECLINE
50											DECLINE	response to AS/IM_A
90				\rightarrow								AS/IM_A returns, possibly modified,
59											603	IMS A forwards 603 DECLINE
00		(—									DECLINE	response to UE_A
60											ACK	UE A acknowledges the receipt of
				\rightarrow								603 DECLINE for INVITE
61			←								ACK	IMS_A forwards ACK to AS/IM_A
62											ACK	AS/IM_A returns, possibly modified,
												ACK to IMS_A
63					\rightarrow						ACK	IMS_A forwards ACK to IBCF_A
64						\rightarrow					ACK	IBCF_A forwards ACK to IBCF_B
65							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
66								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
67							,				ACK	AS/IM_B returns, possibly modified,
												ACK to IMS_B
68									\rightarrow		ACK	IMS_B forwards ACK to UE_B
69											200 OK	UE_B responds second INVITE with
												200 OK response with SDP to
							←					indicate that the session has been
												accepted and inform A-side with
												specific data for MSRP connection
70											200 OK	IMS B forwards 200 OK response
10								\rightarrow			200 01	to AS/IM B
71											200 OK	AS/IM B returns, possibly modified.
							(200 OK response to IMS_B
72						,					200 OK	IMS_B forwards 200 OK response
												to IBCF_B
73					<u> </u>						200 OK	IBCF_B forwards 200 OK response
					Ì							to IBCF_A
74				←							200 OK	IBCF_A forwards 200 OK response
75											200.01	to IMS_A
75			←								200 OK	INS_A forwards 200 OK response
76											200 OK	AS/IM A returns possibly modified
10				\rightarrow							200 01	200 OK response to IMS_A
77											200 OK	IMS A forwards 200 OK response
		K									-	to UE_A
78											ACK	UE_A acknowledges the receipt of
												200 OK for the second INVITE
79			←	\neg							ACK	IMS_A forwards ACK to AS/IM_A
80		1		\rightarrow							ACK	AS/IM_A returns, possibly modified,
		1		1								ACK to IMS_A
81		1			\rightarrow						ACK	IMS_A forwards ACK to IBCF_A
82						\rightarrow					ACK	IBCF_A forwards ACK to IBCF_B
83							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
84								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
I			•	I	•			•	•	•	ι	·

Step					Direc	ction	Message	Comment				
	U	U	Α	I	I	I	I	Α	U	U		
	S	Е	S/	М	В	В	М	S/	E	S		
	е	Α	1	S	С	С	S	I	В	е		
	r		м	Α	F	F	В	М		r		
	Α		Α		Α	В		В		В		
85							←				ACK	AS/IM_B returns, possibly modified,
86									\rightarrow		ACK	IMS_B forwards ACK to UE_B
87										_		Users perform chatting (see clause
												5.3.1 Chat 1 to 1 via MSRP)
88												Continue UC_RCS_4_I (69A-88B)

4.5.3.2.2 Several messages prior to establishment of 1-to-1 chat - roaming (optional)

Interoperability Test Description												
Identifier:	TD_IMS_	CHAT_0004										
Summary:	IMS netwo users, one must wait invitation	ork supports 1-to-1 IM/Chat servic e user in its home network and or until receiving several messages	ce and messages exchange between two le user roaming can be performed. User B from User A before accepting the chat									
Configuration:	CE ROAI	M AS (OPTIONAL)										
SUT	IMS A ar											
References	Test Purr	oose	Specification Reference									
	TP_IMS_5046_01 (1 st numbered list)											
	TP_IMS_	5067_01	TS 124 229 [1], clause 5.2.7.2 ¶5									
	TP_IMS_	5097_09	TS 124 229 [1], clause 5.4.3.2 ¶11									
			(items 5 and 8 in 1 st numbered list)									
Use Case ref.:	e Case ref.: UC_RCS_4_R											
Pre-test conditions:	 HSS UE_A per T UE_F UE_A UE_A UE_A IMS_ IMS_ IMS_ UE_A UE_A IMS_ UE_A IMS_ UE_A 	of IMS_A and of IMS B is configure A and UE_B have IP bearers esta S 186 011-2 [9], clause 4.2.1 A is registered in IMS_A optionally B is registered in IMS_B via IMS_, 1 A is optionally configured to receive A is authorized to see presence in A is configured to contact AS_A B is configured to contact AS_B B is configured to contact AS_B B is optionally configured for react A is within the trust domain of IMS A and UE_B have already perform A not configured for topology hidi	red according to table 1 blished to their respective IMS networks as v using userPRES according to table 1 A optionally using userPRES according to ve notifications with watcher information formation of UE_B ive authorization S_B ned capability discovery process ng									
Test Sequence:	Step 1 User B selects User A in the phone address book and sends him an initial message 2 User A is informed of incoming message 3 User B is informed that initial message was delivered to user A 4 User B sends to User A a second message 5 User A is informed of incoming two messages 6 User B is informed that second message was delivered to user A 7 User A reads the incoming messages from user B and opens the 1-to-1 ch 8 Users perform chatting 9A User B closes the 1-to-1 chat 9B User B is informed that 1-to-1 chat with user A is closed											
10B User A is informed that 1-to-1 chat with user B is closed												

		Interoperability Test Description
Conformance Criteria:	Check	
	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number 'where it awaits subsequent requests' from UE_A and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and not containing P-Preferred-Identity_header and containing an address of UE_B and containing an address of UE_B and containing an icid-value_parameter }
	2 3	TP_IMS_5067_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a P-Charging-Vector_header } } TP_IMS_5097_09 in CFW step 10 (INVITE) ensure that { when { IMS_B receives an initial INVITE from IMS_A addressed to UE_A } then { IMS_B sends the initial INVITE to AS_B containing a Route_header indicating the SIP_URI of AS_B and containing a P-Charging-Function-Addresses_header and containing a P-Charging-Vector_header (including a orig-ioi_parameter indicating operator_identifier of IMS_A and not including a term-ioi_parameter and including a ccess-network-charging-info) }

Step	Direction												Comment
	U s r A		U E A	A S/ I M A	I M S A	l B C F A	I B C F B	I M S B	A S/ I M B	U E B	U s e r B		
1													Follow UC_RCS_4_R (1-63)
2										←	-		User B sends to User A a second message
3												INVITE	UE_B sends second INVITE to IMS_A with user A second message in the Subject header, CPIM/IMND
													headers and the first SDP offer indicating all specific data for MSRP connection set up
4										\rightarrow		100 Trying	IMS_A responds with a 100 Trying
5						\rightarrow						INVITE	IMS_A forwards INVITE to IBCF_A

1	1	4

Step	Direction											Message	Comment
	U		U	Α	1		Ι	1	Α	U	U		
	S		E	S/	M	B	B	M	S/	E	S		
	e r		A	м	S ∆	F	F	З В	м	D	e r		
	Å			A	~	A	B	_	в		B		
6					<							100 Trying	IBCF_A responds with a 100 Trying provisional response
7						>						INVITE	IBCF_A forwards INVITE to IBCF_B
8						/						100 Trying	IBCF_B responds with a 100 Trying
													provisional response
9							\rightarrow	>					IBCF_B forwards INVITE to IMS_B
10							←	-				100 Trying	IMS_B responds with a 100 Trying
11								$ \longrightarrow$				INVITE	IMS B forwards INVITE to AS/IM B
12												100 Trying	AS/IM B responds with a 100 Trying
								¢				, , , , , , , , , , , , , , , , , , , ,	provisional response
13								←──				INVITE	AS/IM_B returns, possibly modified, INVITE to IMS_B
14								—				100 Trying	IMS_B responds with a 100 Trying
15							←	4				INVITE	IMS_B forwards INVITE to IBCF_B
16							 ;	>				100 Trying	IBCF_B responds with a 100 Trying
17						<u> </u>						INVITE	IBCF B forwards INVITE to IBCF A
18						ľ,						100 Trying	IBCF_A responds with a 100 Trying
						;						, ,	provisional response
19					←							INVITE	IBCF_A forwards INVITE to IMS_A
20												100 Trying	IMS_A responds with a 100 Trying provisional response
21				←								INVITE	IMS_A forwards INVITE to AS/IM_A
22					→							100 Trying	AS/IM_A responds with a 100 Trying provisional response
23					→							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
24				←	_							100 Trying	IMS_A responds with a 100 Trying
25			←		_							INVITE	IMS_A forwards INVITE to UE_A
26					→							100 Trying	UE_A optionally responds with a 100 Trying provisional response
27	4												User A is informed of incoming two
	Ì												messages
28					<u>`</u>							180 Ringing	UE_A responds second INVITE with 180 Ringing to indicate that invitation
					1								to an enhanced messaging session
20													has reached the invited user
29				←	_							180 Kinging	response to AS/IM_A
30												180 Ringing	AS/IM_A returns, possibly modified,
31												180 Ringing	180 Ringing response to IMS_A
					;								response to IBCF_A
32						— >						180 Ringing	IBCF_A forwards 180 Ringing response to IBCF_B
33							—	`				180 Ringing	IBCF_B forwards 180 Ringing
34								├ →				180 Ringing	IMS_B forwards 180 Ringing
35								←	-			180 Ringing	AS/IM_B returns, possibly modified, 180 Ringing response to IMS_B
36							←					180 Ringing	IMS_B forwards 180 Ringing
37												180 Ringing	IBCE B forwards 180 Ringing
57						K	1						response to IBCF_A
38					←	1						180 Ringing	IBCF_A forwards 180 Ringing response to IMS_A

Step	Direction									Message	Comment			
	U		U	Α	I	I	I	I		Α	U	U		
	S		E	S/	М	В	В	Μ		S/	E	S		
	е		Α	I	S	С	C	S		I	В	е		
	r			M	A	F	F	В		M		r		
20	A			A		A	в			в	<u> </u>	В		IMC A ferryarda 400 Dinging
39											\rightarrow		180 Ringing	IMS_A forwards 180 Ringing
40													MESSAGE	UE A sends MESSAGE to IMS A
					>									with delivery notification of initial
														message from user B
41				,									MESSAGE	IMS_A forwards MESSAGE to
														AS/IM_A
42					>								MESSAGE	AS/IM_A returns, possibly modified,
					-									MESSAGE to IMS_A
43						→							MESSAGE	IMS_A forwards MESSAGE to
4.4														
44							→						MESSAGE	
45													MESSAGE	IBCE B forwards MESSAGE to
40								\rightarrow					MESSAGE	IMS B
46													MESSAGE	IMS_B forwards MESSAGE to
									\rightarrow					AS/IM B
47								,					MESSAGE	AS/IM_B returns, possibly modified,
														MESSAGE to IMS_B
48							_						MESSAGE	IMS_B forwards MESSAGE to
							Ì							IBCF_B
49						~	_						MESSAGE	IBCF_B forwards MESSAGE to
50														
50					←	_							MESSAGE	IBCF_A forwards MESSAGE to
51													MESSAGE	IMS_A IMS_A forwards MESSAGE to LIE_B
51							-				\rightarrow		MESSAGE	
52												、 、		User B is informed that second
														message was delivered to user A
53					<u> </u>	_							200 OK	UE_B responds MESSAGE with 200
					`									OK response
54						→							200 OK	IMS_A forwards 200 OK response to
55													200 0K	IBCF_A
55							→						200 OK	IBCF_A IOIWAIDS 200 OK TESPONSE
56													200 OK	IBCE B forwards 200 OK response
00								\rightarrow					200 010	to IMS_B
57									、				200 OK	IMS_B forwards 200 OK response to
														AS/IM_B
58								<u> </u>					200 OK	AS/IM_B returns, possibly modified,
														200 OK response to IMS_B
59							←						200 OK	IMS_B forwards 200 OK response to
60													200 01	IBUF_B
60						←	-						200 OK	IBCF_B TORWARDS 200 OK response
61													200 0K	IBCE A forwards 200 OK response
					←	-								to IMS A
62													200 OK	IMS A forwards 200 OK response to
				K										AS/IM_A
63													200 OK	AS/IM_A returns, possibly modified,
					1									ACK to IMS_A
64			<u> </u>										200 OK	IMS_A forwards ACK to UE_A
65														Lloor A roodo the incoming
65														User A reads the incoming
														the 1-to-1 chat
66													603	UF A responds initial INV/ITF with
				1									DECLINE	603 DECLINE response with SDP to
				1	7									indicate that the session has been
														declined

Step					Direc	ction					Message	Comment
	U	U	Α	I	I	Ι	I	Α	U	U		
	S	E ^	S/	M	B	B	M	S/	E	S		
	r	A	M	A	F	F	B	M	В	r		
	Â		A	~	Ā	B	_	B		B		
67			4								603	IMS_A forwards 603 DECLINE
											DECLINE	response to AS/IM_A
68				\rightarrow							603 DECLINE	AS/IM_A returns, possibly modified,
60											DECLINE 603	IMS A forwards 603 DECLINE
03					\rightarrow						DECLINE	response to IBCF_A
70											603	IBCF_A forwards 603 DECLINE
						_					DECLINE	response to IBCF_B
71							\rightarrow				603	IBCF_B forwards 603 DECLINE
70											DECLINE	response to IMS_B
12								\rightarrow				response to AS/IM_B
73											603	AS/IM_B returns, possibly modified,
											DECLINE	603 DECLINE response to IMS_B
74						←					603	IMS_B forwards 603 DECLINE
75											DECLINE	response to IBCF_B
75					←							IBCF_B forwards 603 DECLINE
76											603	IBCF A forwards 603 DECLINE
				<u> </u>							DECLINE	response to IMS_A
77									\rightarrow		603	IMS_A forwards 603 DECLINE
70											DECLINE	response to UE_B
10				←							ACK	603 DECLINE for the initial INVITE
79					\rightarrow						ACK	IMS A forwards ACK to IBCF A
80						\rightarrow					ACK	IBCF_A forwards ACK to IBCF_B
81							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
82								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
83							<i>(</i>				ACK	AS/IM_B returns, possibly modified, ACK to IMS_B
84						←					ACK	IMS_B forwards ACK to IBCF_B
85					←						ACK	IBCF_B forwards ACK to IBCF_A
86				←							ACK	IBCF_A forwards ACK to IMS_A
87			←								ACK	IMS_A forwards ACK to AS/IM_A
88				→							ACK	AS/IM_A returns, possibly modified, ACK to IMS_A
89		←									ACK	IMS_A forwards ACK to UE_A
90											200 OK	UE_A responds second INVITE with 200 OK response with SDP to indicate that the session has been
				\rightarrow								accepted and inform B-side with
												specific data for MSRP connection
01												set up
91			←								200 OK	A forwards 200 OK response to
92											200 OK	AS/IM_A returns, possibly modified,
												200 OK response to IMS_A
93					\rightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A
94						\rightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B
95							\rightarrow				200 OK	IBCF_B forwards 200 OK response to IMS_B
96								\rightarrow			200 OK	IMS_B forwards 200 OK response to
97							←				200 OK	AS/IM_B returns, possibly modified,
98											200 OK	IMS_B forwards 200 OK response to
						(IBCF_B

Step						Direc	tion					Message	Comment
	U	U		A	I	l D		I	A	U	U		
	5			5/ I	S	C C	C C	S IVI	5/	B	S D		
	r			м I	Ă	F	F	В	M		r		
	Å			A		Ā	В	_	В		B		
99						←						200 OK	IBCF_B forwards 200 OK response to IBCF_A
100					←							200 OK	IBCF_A forwards 200 OK response to IMS_A
101										\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
102					←							ACK	UE_B acknowledges the receipt of 200 OK for INVITE
103						\rightarrow						ACK	IMS_A forwards ACK to IBCF_A
104							\rightarrow					ACK	IBCF_A forwards ACK to IBCF_B
105								\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
106									\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
107								←				ACK	AS/IM_B returns, possibly modified, ACK to IMS_B
108							←					ACK	IMS_B forwards ACK to IBCF_B
109						←						ACK	IBCF_B forwards ACK to IBCF_A
110					←							ACK	IBCF_A forwards ACK to IMS_A
111				(_							ACK	IMS_A forwards ACK to AS/IM_A
112			-		→							ACK	AS/IM_A returns, possibly modified, ACK to IMS_A
113		←										ACK	IMS_A forwards ACK to UE_A
114	←	_									→		Users perform chatting (see clause 5.3.1 Chat 1 to 1 via MSRP)
115													Continue UC_RCS_4_R (90A-115B)

4.5.3.3 Switching to 1-to-many chat

4.5.3.3.1 Switching to 1-to-many chat - interworking

	Interoperability Test Desci	ription										
Identifier:	TD_IMS_CHAT_0007											
Summary:	IMS network supports 1-to-many IM/Chat service and messages exchange between two users in their home network can be performed. User A switching 1-to-1 chat to 1-to-many chat by inviting User C											
Configuration:	CF_INT_AS											
SUT	IMS_A and IMS_B	-										
References	Test Purpose	Specification Reference										
	TP_IMS_5107_03 TS 124 229 [1], clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)											
Use Case ref.:	UC_RCS_7_I											
Pre-test conditions:	 UC_RCS_7_I HSS of IMS_A and of IMS B is configured according to table 1 UE_A, UE_C and UE_B have IP bearers established to their respective IMS networks as per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally using userPRES according to table 1 UE_B and UE_C are registered in IMS_B optionally using userPRES according to table 1 UE_A is optionally configured to receive notifications with watcher information UE_A is configured to contact AS_A IMS_B is configured to contact AS_B AS_B is optionally configured for reactive authorization IMS_A is within the trust domain of IMS_B UE_A, UE_C and UE_B have already performed capability discovery process 											

	Interoperability Test Description
Step	
1	User A selects User B in the phone address book and sends him an initial
	message
2	User B is informed of incoming message
3	User A is informed that initial message was delivered to user B
4	User B reads the initial message from user A and opens the 1-to-1 chat
5	Users perform 1-to-1 chatting
6	User A initiates a 1-to-many Chat with User B and User C by sending initial
	message
7	User A is informed that the 1-to-many Chat is established
8	User B is informed of incoming invitation from User A to join the 1-to-many
	Chat

	6	User A initiates a 1-to-many Chat with User B and User C by sending initial
		message
	7	User A is informed that the 1-to-many Chat is established
	8	User B is informed of incoming invitation from User A to join the 1-to-many
		Chat
	9	User B reads the initial message and accepts the 1-to-many Chat invitation
	10	User A is notified with list of 1-to-many Chat participants
	11	User B is notified with list of 1-to-many Chat participants
	12	Users perform messaging in the 1-to-many Chat
	13A	User B leaves the 1-to-many Chat
	13B	User A leaves the 1-to-many Chat
	14A	User B is informed that he has left the 1-to-many Chat
	14B	User A is informed that he has left the 1-to-many Chat
	15A	User A is notified that all other users have left the 1-to-many Chat
	15B	User B is notified that all other users have left the 1-to-many Chat
	16A	User A leaves the 1-to-many Chat
	16B	User B leaves the 1-to-many Chat
	17A	User A is informed that the 1-to-many Chat has ended
	17B	User B is informed that the 1-to-many Chat has ended
Conformance	Check	
Ginteria.	1	TR IMS 5107 02 in CEW stop 41 (CANCEL):
	•	$[11 _ 100 _ 5101 _ 05111 C1 W Step +1 (CANCEL).$
		when { UF_A sends CANCEL to UF_B }
		then { IMS_B receives the CANCEL
		not containing Route header
		indicating the S-CSCE_SIP_LIRL of IMS_A
		/ }

Test Sequence:

Comment

Step					Dire	ction					Message
	U	U	A	1			I	A	U	U	
	S e	E A	5/	M S	С В	С В	M S	5/	B	S e	
	r		M	Ă	F	F	В	M	_	r	
4	A		A		A	В		В		В	
2											
_	-	→									
2											
3											
											
4		←									100 Trying
5											
<u> </u>			←								
6				\rightarrow							100 Trying
7											200 OK
				→							
8		,									200 OK
					_				_		
9	←	-									
10				_							ACK
11			,	1							ACK
12											INVITE
				_							
				1							
13											100 Trving
			<u> </u>								,
14					\rightarrow						INVITE 100 Truing
15				←							Too Trying
16						→					INVITE
17											100 Trving
					<						
18							\rightarrow				INVITE
19						←					TOU Trying
20								\rightarrow			INVITE
21											100 Trying
							←				
22							←				INVITE
23											100 Trying
								_			, , , , , , , , , , , , , , , , , , ,
24									\rightarrow		INVITE

	Follow UC RCS 4 I (1-68)
	User A initiates a 1-to-many Chat
	with User B and User C by sending
	initial message
INVITE	UE_A sends INVITE to IMS_A with
	MIME resource-list body including
	invited IM Users, the first SDP offer
	indicating all specific data for
	MSRP connection set up and the
	identity of User B with Session-
100 T :	Replaces header
100 Trying	IMS_A responds with a 100 Trying
	provisional response
	AS/IM A
100 Trving	AS/IM_A responds with a 100
5 5	Trying provisional response
200 OK	AS/IM_A responds INVITE with
	200 OK response with IM session
	Identity allocated for the current 1-
	to-many Chat to indicate that the
	Session has been accepted and
	data for MSRP connection set up
200 OK	IMS A forwards 200 OK response
	to AS/IM_A
	User A is informed that the 1-to-
	many Chat is established
ACK	UE_A acknowledges the receipt of
	200 OK for INVITE
	INIS_A IORWARDS ACK TO AS/IMI_A
	NOTIVIA SERIAS INVITE TO UE_B
	for the current 1-to-many Chat) IM
	address of the Inviting IM UE
	(UE_A) and Session-Replaces
	header with the original 1-to-1
	session identity
100 Trying	IMS_A responds with a 100 Trying
	provisional response
	INIS_A IDIWAIDS INVITE TO IBUE_A
100 Trying	
INVITE	IBCE A forwards INVITE to
	IBCF B
100 Trying	IBCF_B responds with a 100 Trving
, ,	provisional response
INVITE	IBCF_B forwards INVITE to IMS_B
100 Trying	IMS_B responds with a 100 Trying
	provisional response
INVITE	IMS_B forwards INVITE to
100 Truina	AS/INLB
100 Trying	Trying provisional response
INVITE	AS/IM B returns, possibly
	modified, INVITE to IMS B
100 Trying	IMS_B responds with a 100 Trying
, ,	provisional response
INVITE	IMS_B forwards INVITE to UE_B

120	1	20	
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Step					Direct	ion					Message	Comment
	U	U	Α	Ι	Ι	Ι	I	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	e	А	I	S	C E	C	S	M	в	e		
	Δ			A	Δ	г В	Р	B		r B		
25							└ <u>← </u>		_	Ī	100 Trying	UE_B optionally responds with a
26												User B is informed of incoming
									_	\rightarrow		invitation from User A to join the 1-
												to-many Chat
27												User B reads the initial message
												and accepts the 1-to-many Chat invitation
28											200 OK	UE_B responds INVITE with 200
							/					OK response with SDP to indicate
												and inform AS/IM A with specific
												data for MSRP connection set up
29											200 OK	IMS_B forwards 200 OK response
								7				to AS/IM_B
30											200 OK	AS/IM_B returns, possibly
							←					modified, 200 OK response to
04											000.01/	IMS_B
31						←					200 OK	INS_B forwards 200 OK response
32											200 OK	IBCE B forwards 200 OK response
					<							to IBCF_A
33				/							200 OK	IBCF_A forwards 200 OK response
												to IMS_A
34			←								200 OK	IMS_A forwards 200 OK response
25											ACK	to AS/IM_A
35				\rightarrow							ACK	of 200 OK for INVITE
36					→						ACK	IMS A forwards ACK to IBCF A
37						\rightarrow					ACK	IBCF_A forwards ACK to IBCF_B
38							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
39								→			ACK	IMS_B forwards ACK to AS/IM_B
40							/				ACK	AS/IM_B returns, possibly
												modified, ACK to IMS_B
41								-	\rightarrow		ACK	IMS_B forwards ACK to UE_B
42							<u> </u>	_			BYE	UE_B releases the 1-to-1 IM
40											DVE	Session with BYE
43								7				INS_BIOIWAIUS BIE IO AS/INI_B
44							←	-			DIC	modified BYE to IMS B
45						←					BYE	IMS B forwards BYE to IBCF B
46					←	_					BYE	IBCF B forwards BYE to IBCF A
47				<u> </u>	_						BYE	IBCF A forwards BYE to IMS A
48			~								BYE	IMS_A forwards BYE to AS/IM_A
49											BYE	AS/IM_A returns, possibly
												modified, BYE to IMS_A
50		←		-							BYE	IMS_A forwards BYE to UE_A
51				\rightarrow							200 OK	UE_A sends 200 OK for BYE
52			←	_							200 OK	IMS_A forwards 200 OK response to AS/IM_A
53											200 OK	AS/IM_A returns, possibly
				\rightarrow								modified, 200 OK response to
											200 01/	IMS_A
54					→						200 OK	INING_A TORWARDS 200 OK response
55											200 OK	IBCF_A forwards 200 OK response
						7						to IBCF_B
56							\rightarrow				200 OK	IBCF_B forwards 200 OK response
	I	1	I	I	I	I	I	I	I			IN INI2_R

Step					Directi	on					Message	Comment
	U	U	A	I	I	I	I	A	Ū	U		
	S	E ∆	5/	M S	C B	C B	M S	5/	E R	S P		
	r	~	M	Ă	F	F	В	M	5	r		
	Α		Α		Α	В		В		В		
57								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
58							/				200 OK	AS/IM_B returns, possibly
												IMS_B
59									→		200 OK	IMS_B forwards 200 OK response to UE_B
60				→							SUBSCRIBE	UE_A subscribes to the conference event package
61			←	_							SUBSCRIBE	IMS_A forwards SUBCRIBE to AS/IM A
62				→							200 OK	AS/IM_A sends 200 OK for
63		<u> </u>		_							200 OK	IMS_A forwards 200 OK response
64												to UE_A
04				→								with list of 1-to-many Chat participants
65		←		_							NOTIFY	IMS_A forwards the NOTIFY to
66	←											User A is notified with list of 1-to-
67		_	-	→							200 OK	UE_A responds with 200 OK to
68			~								200 OK	IMS_A forwards the 200 OK
69							(SUBSCRIBE	UE_B subscribes to the conference
70							Ì					event package
70								\rightarrow			SUBSCRIBE	AS/IM_B
71							←	_			SUBSCRIBE	AS/IM_B returns, possibly modified, SUBSCRIBE to IMS_B
72						←	_				SUBSCRIBE	IMS_B forwards SUBSCRIBE to
73					<u> </u>						SUBSCRIBE	IBCF_B forwards SUBSCRIBE to
74				←	_						SUBSCRIBE	IBCF_A forwards SUBSCRIBE to
75											SUBSCRIBE	IMS_A forwards SUBSCRIBE to
76				→							200 OK	AS/IM_A AS/IM_A sends 200 OK for
77											200 OK	SUBSCRIBE
70					*							to IBCF_A
78						>					200 OK	to IBCF_B
79							→				200 OK	IBCF_B forwards 200 OK response to IMS_B
80								→			200 OK	IMS_B forwards 200 OK response to AS/IM B
81											200 OK	AS/IM_B returns, possibly
												IMS_B
82									→		200 OK	to UE_B
83				→							NOTIFY	AS/IM_A sends NOTIFY to UE_B with list of 1-to-many Chat
												participants
84					*						NOTIFY	IMS_A forwards BYE to IBCF_A
85						*						IBCF_A forwards BYE to IBCF_B
ØØ	I	I	I		1		7	I	I			

Step						Direc	ction					Message	Comment
	U s r A	L E A	J	A S/ I M A	I M S A	I B C F A	I B C F B	I M S B	A S/ I M B	U E B	U s r B		
87												NOTIFY	IMS_B forwards BYE to AS/IM_B
88								←				NOTIFY	AS/IM_B returns, possibly modified, BYE to IMS_B
89										\rightarrow		NOTIFY	IMS_B forwards BYE to UE_B
90										_	→		User B is notified with list of 1-to- many Chat participants
91								←				200 OK	UE_B sends 200 OK for NOTIFY
92									→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
93								←				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
94							←					200 OK	IMS_B forwards 200 OK response to IBCF_B
95						←						200 OK	IBCF_B forwards 200 OK response to IBCF_A
96					←	_						200 OK	IBCF_A forwards 200 OK response to IMS_A
97				←	-							200 OK	IMS_A forwards 200 OK response to AS/IM_A
98	¢			<							→		Users perform messaging in the 1- to-many Chat (see clause 5.3.2.1 Chat 1 to many via MSRP - Interworking)
99													Continue OC_RCS_0_1 (80A-116B)

4.5.3.3.2 Switching to 1-to-many chat - roaming (optional)

	Interoperability Test Desci	ription										
Identifier:	TD_IMS_CHAT_0008											
Summary:	IMS network supports 1-to-many IM/Chat service and messages exchange between two users, one user in its home network and one user roaming can be performed. User B switching 1-to-1 chat to 1-to-many chat by inviting User C											
Configuration:	CF_ROAM_AS (OPTIONAL)											
SUT	IMS_A and IMS_B											
References	Test Purpose Specification Reference											
	TP_IMS_5107_03 TS 124 229 [1], clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)											
Use Case ref.:	UC_RCS_7_R											
Pre-test conditions:	 HSS of IMS_A and of IMS B is configure UE_A, UE_C and UE_B have IP bearer networks as per TS 186 011-2 [9], claus UE_A is registered in IMS_A optionally UE_B and UE_C are registered in IMS_according to table 1 UE_A is optionally configured to received UE_A is authorized to see presence infe IMS_A is configured to contact AS_A IMS_B is configured to contact AS_B AS_B is optionally configured for reactive IMS_A is within the trust domain of IMS UE_A, UE_C and UE_B have already p IMS_A not configured for topology hidir 	ed according to table 1 rs established to their respective IMS se 4.2.1 using userPRES according to table 1 _B via IMS_A optionally using userPRES e notifications with watcher information ormation of UE_B and UE_C we authorization _B performed capability discovery process ng										

		Interoperability Test Description						
	-							
Test Sequence:	Step							
	1	User B selects User A in the phone address book and sends him an initial						
		message						
	2	User A is informed of incoming message						
	3	User B is informed that initial message was delivered to user A						
	4	User A reads the initial message from user B and opens the 1-to-1 chat						
	5	Users perform 1-to-1 chatting						
	6	User B initiates a 1-to-many Chat with User A and User C by sending initial						
		message						
	7	User B is informed that the 1-to-many Chat is established						
	8	User A is informed of incoming invitation from User B to join the 1-to-many Chat						
	9	User A reads the initial message and accepts the 1-to-many Chat invitation						
	10	User B is notified with list of 1-to-many Chat participants						
	11	User A is notified with list of 1-to-many Chat participants						
	12	Users perform messaging in the 1-to-many Chat						
	13A	User A leaves the 1-to-many Chat						
	13B	User B leaves the 1-to-many Chat						
	14A	User A is informed that he has left the 1-to-many Chat						
	14B	User B is informed that he has left the 1-to-many Chat						
	15A	User B is notified that all other users have left the 1-to-many Chat						
	15B	User A is notified that all other users have left the 1-to-many Chat						
	16A	User B leaves the 1-to-many Chat						
	16B	User A leaves the 1-to-many Chat						
	17A	User B is informed that the 1-to-many Chat has ended						
	17B	User A is informed that the 1-to-many Chat has ended						
Conformance Criteria:	Check							
	1	TP_IMS_5107_03 in CFW step 56 (CANCEL):						
		ensure that {						
		when { UE_A sends CANCEL to UE_B }						
		then { IMS_B receives the CANCEL						
		not containing Route_header						
		indicating the S-CSCF_SIP_URI of IMS_A						
		}						

Step					Direc	tion					Message	Comment
	U s r A	U E A	A S/ I M A	I M S A	I B C F A	I B C F B	I M S B	A S/ I M B	UEB	U s r B		
1												Follow UC_RCS_4_R (1-89)
2									←	-		User B initiates a 1-to-many Chat with User A and User C by sending initial message
3				€							INVITE	UE_B sends INVITE to IMS_A with Request-URI set to IM CONFERENCE FACTORY URI, MIME resource-list body including invited IM Users, the first SDP offer indicating all specific data for MSRP connection set up and the identity of User A with Session- Replaces header
4									\rightarrow		100 Trying	IMS_A responds with a 100 Trying provisional response
5					\rightarrow						INVITE	IMS_A forwards INVITE to IBCF_A
6				←							100 Trying	IBCF_A responds with a 100 Trying provisional response
7						\rightarrow					INVITE	IBCF_A forwards INVITE to IBCF_B

Step]	Directio	on					Message	Comment
	U		U	Α	Ι	I	Ι	Ι	Α	U	U		
	S		E	S/	M	B	B	M	S/	E	S		
	e		A	M	5	E	E	5 В	I M	в	e		
	Å			A	^	A	в	5	В		B		
8						←						100 Trying	IBCF_B responds with a 100 Trying provisional response
9								→				INVITE	IBCF_B forwards INVITE to IMS_B
10							<u> </u>	_				100 Trying	IMS_B responds with a 100 Trying
11									→			INVITE	IMS_B forwards INVITE to
12								←				100 Trying	AS/IM_B responds with a 100
13												200 OK	AS/IM B responds INVITE with
													200 OK response with IM session
													Identity allocated for the current 1-
								\leftarrow					to-many Chat to indicate that the
													session has been accepted and
													SDP to inform A-side with specific
1.4												200 0K	IMS R forwards 200 OK reaponed
14							←	-				200 OK	to IBCF B
15						_						200 OK	IBCE B forwards 200 OK response
						<							to IBCF_A
16					←							200 OK	IBCF_A forwards 200 OK response to IMS_A
17										\rightarrow		200 OK	IMS_A forwards 200 OK response
10													to UE_B
10											\rightarrow		many Chat is established
19					<		_	-		_		ACK	UE_B acknowledges the receipt of 200 OK for INVITE
20					\longrightarrow							ACK	IMS A forwards ACK to IBCF A
21					-		*					ACK	IBCF A forwards ACK to IBCF B
22								→				ACK	IBCE B forwards ACK to IMS B
23												ACK	IMS B forwards ACK to AS/IM B
24									,				AS/IM B sends INVITE to LIE A
27													with IM session identity (allocated
													for the current 1-to-many Chat), IM
								←					address of the Inviting IM UE
													(UE_B) and Session-Replaces
													header with the original 1-to-1
													session identity
25									\rightarrow			100 Trying	IMS_B responds with a 100 Trying
26							,						IMS_B forwards INV/ITE to IBCE_B
20													INS_BIOLWAIDS INVITE TO IBCF_B
21								→				Too Trying	provisional response
28						←						INVITE	IBCF_B forwards INVITE to
29						;	*					100 Trying	IBCF_A responds with a 100 Trying
30					(IBCE A forwards INVITE to IMS A
31					` .							100 Trying	IMS A responds with a 100 Trying
					$ \longrightarrow $	1							provisional response
32				←									AS/IM_A
33				\mapsto								100 Trying	AS/IM_A responds with a 100 Trying provisional response
34				$ \longrightarrow$								INVITE	AS/IM_A returns, possibly
35												100 Trying	IMS A responds with a 100 Trying
				K									provisional response
36			←	+								INVITE	IMS_A forwards INVITE to UE_A

Step	Direction											Comment
	U	U	Α	I	I	I	I	Α	U	U		
	S	E	S/	М	B	B	М	S/	E	S		
	e	Α	I	S	C	C	S	I	в	e		
	Δ		Δ	A	Δ	г В	В	B		B		
37				*						Ť	100 Trying	UE_A optionally responds with a
38												User A is informed of incoming
50	←											invitation from user B to join the 1-
												to-many Chat
39												User A reads the initial message
		*										and accepts the 1-to-many Chat invitation
40											200 OK	UE_A responds INVITE with 200
												OK response with SDP to indicate
				*								that the session has been accepted
												data for MSRP connection set up
41											200 OK	IMS A forwards 200 OK response
			←								200 010	to AS/IM A
42											200 OK	AS/IM_A returns, possibly
)								modified, 200 OK response to
												IMS_A
43					*						200 OK	IMS_A forwards 200 OK response
11											200 0K	to IBCF_A
44						•					200 OK	to IBCE B
45											200 OK	IBCE B forwards 200 OK response
							→					to IMS_B
46								<u>`</u>			200 OK	IMS_B forwards 200 OK response
								1				to AS/IM_B
47							←	-			ACK	AS/IM_B acknowledges the receipt of 200 OK for INVITE
48						←	_				ACK	IMS_B forwards ACK to IBCF_B
49					←	-					ACK	IBCF_B forwards ACK to IBCF_A
50				←	-						ACK	IBCF_A forwards ACK to IMS_A
51			←	_							ACK	IMS_A forwards ACK to AS/IM_A
52											ACK	AS/IM_A returns, possibly
				1								modified, ACK to IMS_A
53		←									ACK	IMS_A forwards ACK to UE_A
54				*							BYE	UE_A releases the 1-to-1 IM
55			,								BVE	Session with BYE
55											BIL	AS/IM A returns, possibly
50)							DIE	modified BYE to IMS A
57					*						BYE	IMS A forwards BYE to IBCF A
58						*					BYE	IBCF A forwards BYE to IBCF B
59							\rightarrow				BYE	IBCF B forwards BYE to IMS B
60								→			BYE	IMS B forwards BYE to AS/IM B
61		1				1					BYE	AS/IM_B returns, possibly
												modified, BYE to IMS_B
62		1				←					BYE	IMS_B forwards BYE to IBCF_B
63					←	-					BYE	IBCF_B forwards BYE to IBCF_A
64		1		←	-	1					BYE	IBCF_A forwards BYE to IMS_A
65						+			\rightarrow		BYE	IMS_A forwards BYE to UE_B
66		1		←		+	+	_	—		200 OK	UE_B sends 200 OK for BYE
67					*						200 OK	IMS_A forwards 200 OK response
68		1				1					200 OK	IBCE A forwards 200 OK response
						*						to IBCF_B
69							→				200 OK	IBCF_B forwards 200 OK response to IMS_B
70								→			200 OK	IMS_B forwards 200 OK response
1		1	1	1	1	1	1	1	1			to AS/IM_B

Step				[Directio	on	Message	Comment				
	U	U	Α	I	I	I	I	Α	U	U		
	s	E	S/	М	В	В	М	S/	Е	S		
	е	Α	I	S	c	C	S	I	В	е		
	r		M	Α	F	F	в	М		r		
74	A		A		A	в		в		В	200.01	AC/IM D returns pessibly
/ 1							,				200 OK	AS/IM_B returns, possibly
							`					IMS B
72											200 OK	IMS_B forwards 200 OK response
12						←	1				200 010	to IBCE_B
73											200 OK	IBCE B forwards 200 OK response
					<							to IBCF A
74				,							200 OK	IBCF A forwards 200 OK response
												to IMS_A
75			/								200 OK	IMS_A forwards 200 OK response
												to AS/IM_A
76											200 OK	AS/IM_A returns, possibly
				*								modified, 200 OK response to
												IMS_A
77		←		_							200 OK	IMS_A forwards 200 OK response
												to UE_A
78				<u> </u>							SUBSCRIBE	UE_B subscribes to the conference
70												event package
79				\rightarrow							SUBSCRIBE	IMS_A forwards SUBSCRIBE to
90												IBCF_A
80					\rightarrow						SUBSCRIDE	IBCF_A IOIWAIUS SUBSCRIBE IO
81												IBCE B forwards SLIBSCRIBE to
01						\rightarrow					SOBSCIUDE	IMS B
82											SUBSCRIBE	IMS_B forwards SUBSCRIBE to
02							;	*			CODUCIADE	AS/IM B
83											200 OK	AS/IM B sends 200 OK for
							(SUBSCRIBE
84						,					200 OK	IMS_B forwards 200 OK response
												to IBCF_B
85					<u> </u>						200 OK	IBCF_B forwards 200 OK response
												to IBCF_A
86				<u> </u>							200 OK	IBCF_A forwards 200 OK response
07												to IMS_A
87									\rightarrow		200 OK	IMS_A forwards 200 OK response
00											NOTIEV	IUUE_D AS/IM B condo NOTIEV to LIE B
00							(AS/IM_B Serius NOTIF F to UE_B
							Ì					narticipants
89											NOTIFY	IMS B forwards NOTIFY to
						<	1					IBCF B
90					/			1			NOTIFY	IBCF_B forwards NOTIFY to
]						IBCF_A
91				(1			NOTIFY	IBCF_A forwards NOTIFY to
				\sim				1				IMS_A
92									\rightarrow		NOTIFY	IMS_A forwards NOTIFY to UE_B
93										_		User B is notified with list of 1-to-
												many Chat participants
94				k							200 OK	UE_B responds with 200 OK to
				1				1				IMS_A
95				\mapsto							200 OK	IMS_A forwards 200 OK response
											200.0K	ID IBUF_A
90					\mapsto			1			200 OK	IDUF_A IOIWARDS 200 UK response
07								1			200 04	ID IDUF_D
31						\mapsto					200 01	to IMS B
98											200 OK	IMS B forwards 200 OK response
30							\vdash	*			200 01	to AS/IM B
99								1			SUBSCRIBE	UE A subscribes to the conference
				*				1				event package

Step	Direction											Comment
	U	U	Α	I	I	I	I	Α	U	U		
	S	E	S/	M	В	B	M	S/	E	S		
	е	Α	I	S	C	C	S	I	в	e		
	r A			A		г В	P	IVI R		R		
100			<u> </u>	$\left \right $							SUBSCRIBE	IMS_A forwards SUBSCRIBE to AS/IM_A
101				*							SUBSCRIBE	AS/IM_A returns, possibly modified, SUBSCRIBE to IMS_A
102				;	>						SUBSCRIBE	IMS_A forwards SUBSCRIBE to IBCF_A
103					;						SUBSCRIBE	IBCF_A forwards SUBSCRIBE to IBCF_B
104						\mapsto					SUBSCRIBE	IBCF_B forwards SUBSCRIBE to IMS_B
105								*			SUBSCRIBE	IMS_B forwards SUBSCRIBE to AS/IM_B
106							←	-			200 OK	AS/IM_B sends 200 OK for SUBSCRIBE
107						←					200 OK	IMS_B forwards 200 OK response to IBCF_B
108					←	-					200 OK	IBCF_B forwards 200 OK response to IBCF_A
109				(200 OK	IBCF_A forwards 200 OK response to IMS_A
110			←	-							200 OK	IMS_A forwards 200 OK response to AS/IM_A
111				*							200 OK	AS/IM_A returns, possibly modified, 200 OK response to
112											200 OK	IMS_A IMS_A forwards 200 OK response
112		←									200 010	to UE_A
113							←──				NOTIFY	AS/IM_B sends NOTIFY to UE_A with list of 1-to-many Chat
114												IMS B forwards BVE to IBCE B
114												INS_BIOIWAIUS BIE TO IBCF_B
116				/								IBCE A forwards BYE to IMS A
110			,									IBCF_A IOI Wallus BTE to IIVIS_A
117												INS_A forwards BYE to AS/IM_A
118				*							NOTIFY	AS/IM_A returns, possibly
119		(NOTIEY	IMS A forwards BYE to LIF A
120	€	_										User A is notified with list of 1-to-
121		_		*							200 OK	UE A sends 200 OK for NOTIEY
122			·]							200 OK 200 OK	IMS_A forwards 200 OK response
100			`									to AS/IM_A
123				*							200 OK	modified, 200 OK response to
124				;	•						200 OK	IMS_A forwards 200 OK response
125					— ,						200 OK	IBCF_A forwards 200 OK response
126						;					200 OK	IBCF_B forwards 200 OK response
127							<u> </u>	*			200 OK	IMS_B forwards 200 OK response
128												Users perform messaging in the 1-
	←							*		\rightarrow		to-many Chat (see clause 5.3.2.2
												Roaming)
129												Continue UC_RCS_6_R (104A- 146B)

4.5.3.4 File transfer within 1-to-1 chat

4.5.3.4.1 File transfer within 1-to-1 chat - interworking

		Interoperability Test Descr	iption								
Identifier:	TD_IMS_	CHAT_0009									
Summary:	IMS netwo	ork supports 1-to-1 IM/Chat service	e and messages exchange between two								
	users in th	neir home network can be performe	ed. User A starts file transfer with User B								
Configuration											
Configuration:		40 40									
SUI References	Toot Purr		Enacification Beforence								
References			Specification Reference								
		5107_03	(item 1 in 8 th numbered list)								
Lico Coco rof :		E I									
Use Case lel		_5_1									
Pre-test	<u>а нес</u>	of IMS A and of IMS B is configure	ad according to table 1								
conditions:	IF A and IF B have IP hearers established to their respective IMS petworks as										
	per TS 186 011-2 [0] clause 4 2 1										
	• UF A	is registered in IMS A optionally	using userPRES according to table 1								
	• UF F	is registered in IMS_B optionally	using userPRES according to table 1								
	• UE A	is optionally configured to receive	notifications with watcher information								
	• UE A	is authorized to see presence info	ormation of UE B								
	• IMS	A is configured to contact AS A									
	• IMS	B is configured to contact AS B									
	• AS E	is optionally configured for reactiv	e authorization								
	 IMS_ 	A is within the trust domain of IMS	В								
	• UE_A	and UE_B have already performe	ed capability discovery process								
	• IMS	A not configured for topology hidin	g								
Test Sequence:	Step										
	1	User A selects User B in the phor	ne address book and sends him an initial								
		message									
	2	User B is informed of incoming m	essage								
	3	User A Is informed that initial mes	sage was delivered to user B								
	5	Users perform chatting	nom user A and opens the 1-to-1 chat								
	6	Liser A initiates a file transfer to u	ser B								
	7	User B is informed of incoming fil	e and accents the transfer								
	8	User A is informed that file transfe	er has been accepted by user B								
	9	File transfer starts									
	10	File transfer completed (size chec	ked)								
	11	User B is informed that file transfe	er completed								
	12	User A is informed that file transfe	er completed								
	13	Users continue chatting									
	14A	User A closes the 1-to-1 chat									
	14B	User B closes the 1-to-1 chat									
	15A	User A is informed that 1-to-1 cha	at with user B is closed								
	15B	User B is informed that 1-to-1 cha	at with user A is closed								
Conformence	Chack										
Conformance	Спеск										
Criteria.	1	TD IMS 5107 02 in CEW stop 4									
	1	ensure that /	I (CANCEL).								
		when { UF A sends CANCEL to	IF B3								
		then { IMS_B receives the CAN	CEL								
		not containing Route h	eader								
		indicating the S-CSCF	SIP_URI of IMS_A								
		}									
		}									

Step	Direction											Message	Comment
	U	U	Α		1	I	-	Ι	Α	U	U		
	S	E	S/		М	В	В	м	S/	Е	S		
	е	Α	I		S	С	С	S	I	В	е		
	r		M		A	F	F	в	М		r		
			A			<u>A</u>	В		В		В		
1													Follow UC_RCS_4_I (1-68)
2	_	→											User A initiates a file transfer to user
0													B
3												INVITE	UE_A sends INVITE to IMS_A to
				\rightarrow									SDD offer indicating all apositio data
													for a new MSRP connection set up
1												100 Trying	IMS A responds with a 100 Trying
-		←										roo rrying	provisional response
5			←									INVITE	IMS A forwards INVITE to AS/IM A
6			-									100 Trying	AS/IM A responds with a 100
Ũ				\rightarrow									Trying provisional response
7												INVITE	AS/IM_A returns, possibly modified,
				,									INVITE to IMS_A
8			/									100 Trying	IMS_A responds with a 100 Trying
													provisional response
9					\rightarrow							INVITE	IMS_A forwards INVITE to IBCF_A
10					<i>(</i>							100 Trying	IBCF_A responds with a 100 Trying
													provisional response
11						\mapsto	>					INVITE	IBCF_A forwards INVITE to IBCF_B
12						<u> </u>						100 Trying	IBCF_B responds with a 100 Trying
						Ì							provisional response
13								→				INVITE	IBCF_B forwards INVITE to IMS_B
14							(_				100 Trying	IMS_B responds with a 100 Trying
													provisional response
15									→			INVITE	IMS_B forwards INVITE to AS/IM_B
16								~	_			100 Trying	AS/IM_B responds with a 100
47													I rying provisional response
17								←	_			INVITE	AS/IM_B returns, possibly modified,
10												100 Trying	INVITE 10 INIS_D
10									→			Too Trying	provisional response
19												INVITE	IMS B forwards INVITE to UE B
20										1		100 Trying	LIF B optionally responds with a
20								←				roo riying	100 Trying provisional response
21													User B is informed of incoming file
											→		and accepts the transfer
22												200 OK	UE_B responds INVITE with 200
													OK response with SDP to indicate
								←		_			that the session has been accepted
													and inform A-side with specific data
												000.01/	for a new MSRP connection set up
23									→			200 OK	INS_B forwards 200 OK response
24												200 04	IU AS/IIVI_B
24								←	-			200 UK	200 OK response to IMS R
25												200 OK	IMS B forwards 200 OK response
20							←						to IBCF B
26												200 OK	IBCF B forwards 200 OK response
						K							to IBCF_A
27												200 OK	IBCF_A forwards 200 OK response
]							to IMS_A
28			_									200 OK	IMS_A forwards 200 OK response
												ļ	to AS/IM_A
29												200 OK	AS/IM_A returns, possibly modified,
													200 OK response to IMS_A
30		←										200 OK	IMS_A forwards 200 OK response
24													IOUE_A
31	←	_											bas been accented by user P
													Indo been accepted by user b

Step			0		Direc	tion			-		Message	Comment
	U	U	Α	I	I	I	I	A	U	U		
	S	E	S/	M	В	В	M	S/	E	S		
	e r	A	M	5			B	M	В	e		
	Ā			~		В	В	B		B		
32				→							ACK	UE_A acknowledges the receipt of 200 OK for INVITE
33			<u> </u>								ACK	IMS A forwards ACK to AS/IM A
34											ACK	AS/IM A returns, possibly modified.
-				→							-	ACK to IMS_A
35					\rightarrow						ACK	IMS_A forwards ACK to IBCF_A
36						\rightarrow					ACK	IBCF_A forwards ACK to IBCF_B
37							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
38								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
39							←				ACK	AS/IM_B returns, possibly modified, ACK to IMS_B
40									\rightarrow		ACK	IMS_B forwards ACK to UE_B
41	←	-	-							—		File transfer starts (see clause 5.3.3 Image data via MSRP)
42												File transfer completed (size checked) and users can continue with 1 to 1 chat (see clause 5.3.1 Chat 1 to 1 via MSRP)
43				→							BYE	UE_A releases the file transfer session with BYE
14			<u> </u>								BYE	IMS A forwards BYE to AS/IM A
5			-	→							BYE	AS/IM_A returns, possibly modified.
16											BYE	IMS A forwards BYE to IBCF A
17						\rightarrow					BYE	IBCF A forwards BYE to IBCF B
18							\rightarrow				BYE	IBCF B forwards BYE to IMS B
19											BYE	IMS B forwards BYE to AS/IM B
50							←				BYE	AS/IM_B returns, possibly modified
51									\rightarrow		BYE	IMS B forwards BYE to UE B
52										→		User B is informed that file transfer completed
53							←		_		200 OK	UE_B sends 200 OK for BYE
54								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
55							←				200 OK	AS/IM_B returns, possibly modified 200 OK response to IMS_B
56											200 OK	IMS_B forwards 200 OK response to IBCE_B
57					←						200 OK	IBCF_B forwards 200 OK response
58				←							200 OK	IBCF_A forwards 200 OK response
59			←								200 OK	IMS_A forwards 200 OK response
60				→							200 OK	AS/IM_A returns, possibly modified
61		←									200 OK	IMS_A forwards 200 OK response
62	←											User A is informed that file transfer
3	2											Users continue chatting
50												
4												Continue UC RCS 4 I (69A-88B)

4.5.3.4.2 File	e transfer within 1-to-1	chat - roaming (optional)	
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		Interoperability Test Descr	iption
Identifier:	TD_IMS_0	CHAT_0010	•
Summary:	IMS netwo	ork supports 1-to-1 IM/Chat service	and messages exchange between two
	users, one	e user in its home network and one	user roaming can be performed. User B
	starts file	transfer with User A	•
Configuration:	CF_ROAM	M_AS (OPTIONAL)	
SUT	IMS_A an	d IMS_B	
References	Test Purp	ose	Specification Reference
	TP_IMS_5	5107_03	TS 124 229 [1], clause 5.4.3.2 ¶119
			(item 1 in 8 th numbered list)
Use Case ref.:	UC_RCS_	_5_R	
Pre-test	 HSS 	of IMS_A and of IMS B is configure	ed according to table 1
conditions:	 UE_A 	and UE_B have IP bearers establ	lished to their respective IMS networks as
	per T	S 186 011-2 [9], clause 4.2.1	
	 UE_A 	λ is registered in IMS_A optionally ι	using userPRES according to table 1
	• UE_E	is registered in IMS_B via IMS_A	optionally using userPRES according to
		1 	
		A is optionally configured to receive	notifications with watcher information
	• UE_A	A is authorized to see presence into	ormation of UE_B
	• IIVIS_	A is configured to contact AS_A	
	• IIVIS_	B is configured to contact AS_B	
	• AS_E	is optionally configured for reactiv	e authorization
	• IMS_	A is within the trust domain of IMS	_B
	• UE_A	A and UE_B have already performe	d capability discovery process
	• IMS_	A not configured for topology hiding	9
Test Sequence:	Ston		
rest ocquence.	1	Liser B selects Liser A in the phon	e address book and sends him an initial
	•	message	
	2	User A is informed of incoming me	essage
	3	User B is informed that initial mes	sage was delivered to user A
	4	User A reads the initial message f	from user B and opens the 1-to-1 chat
	5	Users perform chatting	
	6	User B initiates a file transfer to us	ser A
	7	User A is informed of incoming file	e and accepts the transfer
	8	User B is informed that file transfe	er has been accepted by user B
	9	File transfer starts	
	10	File transfer completed (size chec	ked)
	11	User A is informed that file transfe	er completed
	12	User B is informed that file transfe	er completed
	13	Users continue chatting	
	14A	User B closes the 1-to-1 chat	
	14B	User A closes the 1-to-1 chat	
	15A	User B is informed that that 1-to-1	chat with user A is closed
	15B	User A is informed that that 1-to-1	chat with user B is closed
0 (
Conformance	Спеск		
Criteria.	1	TR IMS 5107 02 in CEW stop 56	
	•	ensure that {	(CANCEL).
		when { IF A sends CANCEL to	
		then { IMS_B receives the CANC	CEI
		not containing Route h	eader
		indicating the S-CSCF	SIP URI of IMS A
		}	

Step				[Directio	on					Message	Comment
	U	U	Α	I	1	I	I	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	e	A		S	C E	C	S	I	в	e		
	Δ			A	Δ	г В	P	R		R		
1			Ω L		<u>^</u> _							Follow UC RCS 4 R (1-89)
2											-	User B initiates a file transfer to user
_												A
3											INVITE	UE_B sends INVITE to IMS_A to
				<i>i</i>								establish a new session with the
												SDP offer indicating all specific data
												for a new MSRP connection set up
4									\rightarrow		100 Trying	IMS_A responds with a 100 Trying
5				,								IMS A forwards INIVITE to IBCE A
5												INIS_A IOI Wards INVITE to IBCF_A
0				←							Too Trying	provisional response
7												IBCE A forwards INV/ITE to IBCE B
8											100 Trying	IBCE B responds with a 100 Trying
U					←						100 Hying	provisional response
9						$ \rightarrow$					INVITE	IBCF B forwards INVITE to IMS B
10											100 Trvina	IMS B responds with a 100 Trying
						¢					, , , , ,	provisional response
11)			INVITE	IMS_B forwards INVITE to AS/IM_B
12							/				100 Trying	AS/IM_B responds with a 100 Trying
							Ì					provisional response
13							<u> </u>				INVITE	AS/IM_B returns, possibly modified,
											100 T :	INVITE to IMS_B
14)			100 Trying	IMS_B responds with a 100 Trying
15						<i>,</i>						IMS B forwards INVITE to IBCE B
16												IBCE B responds with a 100 Trying
10						\rightarrow					100 Hying	provisional response
17					~						INVITE	IBCF B forwards INVITE to IBCF A
18											100 Trying	IBCF A responds with a 100 Trying
											, ,	provisional response
19				←							INVITE	IBCF_A forwards INVITE to IMS_A
20											100 Trying	IMS_A responds with a 100 Trying
												provisional response
21			←	-							INVITE	IMS_A forwards INVITE to AS/IM_A
22			<u> </u>	*							100 Trying	AS/IM_A responds with a 100 Trying
22												provisional response
23			├)								AS/IM_A returns, possibly modified,
24											100 Trying	IMS A responds with a 100 Trying
27			←	-							roo rrying	provisional response
25		←									INVITE	IMS A forwards INVITE to UE A
26			.								100 Trving	UE A optionally responds with a 100
_				>							, , , , ,	Trying provisional response
27	4											User A is informed of incoming file
												and accepts the transfer
28											200 OK	UE_A responds INVITE with 200 OK
			.									response with SDP to indicate that
				1								inform B-side with specific data for a
												new MSRP connection set up
29											200 OK	IMS_A forwards 200 OK response to
			<									AS/IM_A
30											200 OK	AS/IM_A returns, possibly modified,
				1								200 OK response to IMS_A
31				$ \longrightarrow$							200 OK	IMS_A forwards 200 OK response to
											200 01/	
32					├ ──>						200 OK	IBCF_A forwards 200 OK response
1 1	1	1	1	1	I	1	1		1	1	1	

Step		Direction										Message	Comment
	U		U	Α	I	I	I	I	Α	U	U		
	S		E	S/	M	B	B	M	S/	E	S		
	е		A		S	C	C	S	1	в	е		
	r ∆			Δ	A		F B	в	M B		r B		
33												200 OK	IBCF_B forwards 200 OK response to IMS_B
34									→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
35								←				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS B
36							←					200 OK	IMS_B forwards 200 OK response to IBCF_B
37						←	-					200 OK	IBCF_B forwards 200 OK response to IBCF_A
38					(-						200 OK	IBCF_A forwards 200 OK response to IMS_A
39										\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
40										_	→		User B is informed that file transfer has been accepted by user B
41					←							ACK	UE_B acknowledges the receipt of 200 OK for INVITE
42					\rightarrow							ACK	IMS_A forwards ACK to IBCF_A
43						\rightarrow						ACK	IBCF_A forwards ACK to IBCF_B
44							<u> </u>					ACK	IBCF_B forwards ACK to IMS_B
45									→			ACK	IMS_B forwards ACK to AS/IM_B
46								<u> </u>	_			ACK	AS/IM_B returns, possibly modified, ACK to IMS_B
47							~					ACK	IMS B forwards ACK to IBCF B
48						<u> </u>	ľ					ACK	IBCE B forwards ACK to IBCE A
49					(ľ						ACK	IBCE A forwards ACK to IMS A
50				,	<u> </u>							ACK	IMS A forwards ACK to AS/IM A
51				\longrightarrow								ACK	AS/IM_A returns, possibly modified,
52			(-								АСК	ACK to IMS_A IMS_A forwards ACK to UE_A
53	←										→		File transfer starts (see clause 5.3.3 Image data via MSRP)
54													File transfer completed (size checked) and users can continue with 1 to 1 chat (see clause 5.3.1 Chat 1 to 1 via MSRP)
55					←							BYE	UE_B releases the file transfer session with BYE
56					\rightarrow	•						BYE	IMS_A forwards BYE to IBCF_A
57						\rightarrow						BYE	IBCF_A forwards BYE to IBCF_B
58												BYE	IBCF_B forwards BYE to IMS_B
59									>			BYE	IMS_B forwards BYE to AS/IM_B
60								←				BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
61							~	_				BYE	IMS B forwards BYE to IBCF B
62						~	ľ					BYE	IBCF B forwards BYE to IBCF A
63					<u> </u>	ľ						BYE	IBCF A forwards BYF to IMS A
64				(1							BYE	IMS A forwards BYF to AS/IM A
65				<u>`</u> ,								BYE	AS/IM_A returns, possibly modified,
22												BVE	BYE to IMS_A
67			<u> </u>										User A is informed that file transfer
66												200.01/	completed
68		ľ		\rightarrow								200 OK	UE_A senas 200 OK for BYE
69				k								200 OK	IMS_A forwards 200 OK response to
	1					I	I	1	1				AS/IM_A

Step						Direc	tion	Message	Comment				
	U	U	Α		I	Ι		I	Α	U	U		
	S	Е	S/	F	М	В	В	М	S/	E	S		
	е	Α	I		S	С	С	S	I	В	е		
	r		м		A	F	F	В	м		r		
	A		A			Α	В		В		В		
70				\rightarrow								200 OK	AS/IM_A returns, possibly modified,
				-									200 OK response to IMS_A
71				F		*						200 OK	IMS_A forwards 200 OK response to
													IBCF_A
72							\rightarrow					200 OK	IBCF_A forwards 200 OK response
							-						to IBCF_B
73								\rightarrow				200 OK	IBCF_B forwards 200 OK response
								-					to IMS_B
74									\rightarrow			200 OK	IMS_B forwards 200 OK response to
													AS/IM_B
75								4				200 OK	AS/IM_B returns, possibly modified,
								Ì					200 OK response to IMS_B
76							/					200 OK	IMS_B forwards 200 OK response to
							N						IBCF_B
77						/						200 OK	IBCF_B forwards 200 OK response
													to IBCF_A
78					,							200 OK	IBCF_A forwards 200 OK response
				ſ									to IMS_A
79										、 、		200 OK	IMS_A forwards 200 OK response to
				Γ						~			UE_B
80													User B is informed that file transfer
													completed
81	₩			_							\rightarrow		Users continue chatting
82													Continue UC RCS 4 R (90A-115B)

4.5.3.5 File transfer rejection within 1-to-1 chat

4.5.3.5.1 File transfer rejection within 1-to-1 chat - interworking

	Interoperability Test Desc	ription										
Identifier:	TD_IMS_CHAT_0011											
Summary:	IMS network supports 1-to-1 IM/Chat service and messages exchange between two users in their home network can be performed. User A starts file transfer with User B, but User B rejects invitation											
Configuration:	CF_INT_AS											
SUT	IMS_A and IMS_B											
References	Test Purpose	Specification Reference										
	TP_IMS_5107_03	TS 124 229 [1], clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)										
Use Case ref.:	UC_RCS_5_I											
Pre-test conditions:	 HSS of IMS_A and of IMS B is configured UE_A and UE_B have IP bearers estal per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally UE_B is registered in IMS_B optionally UE_A is optionally configured to receiv UE_A is authorized to see presence into IMS_B is configured to contact AS_A IMS_B is configured to contact AS_B AS_B is optionally configured for reactive IMS_A is within the trust domain of IMS UE_A and UE_B have already perform IMS_A not configured for topology hidi 	red according to table 1 plished to their respective IMS networks as using userPRES according to table 1 using userPRES according to table 1 e notifications with watcher information formation of UE_B ve authorization S_B ued capability discovery process ng										

		Interoperability Test Description
Test Sequence:	Step	
	1	User A selects User B in the phone address book and sends him an initial
		message
	2	User B is informed of incoming message
	3	User A is informed that initial message was delivered to user B
	4	User B reads the initial message from user A and opens the 1-to-1 chat
	5	Users perform chatting
	6	User A initiates a file transfer to user B
	7	User B is informed of incoming file and rejects the transfer
	8	User A is informed that file transfer has been rejected by user B
	9	Users continue chatting
	10A	User A closes the 1-to-1 chat
	10B	User B closes the 1-to-1 chat
	11A	User A is informed that 1-to-1 chat with user B is closed
	11B	User B is informed that 1-to-1 chat with user A is closed
Conformance Criteria:	Check	
	1	TP_IMS_5107_03 in CFW step 41 (CANCEL):
		ensure that {
		when { UE_A sends CANCEL to UE_B }
		then { IMS_B receives the CANCEL
		not containing Route_header
		indicating the S-CSCF_SIP_URI of IMS_A
		}

Step					Direc	tion					Message	Comment
	U	U	A	I	I	l	1	Α	U	U		
	S	E	S/	M	В	В	M	S/	E	S		
	е	Α		S	C F	C	S		в	e		
	Δ			A		Б	Б	B		B		
1												Follow UC_RCS_4_I (1-68)
2		→										User A initiates a file transfer to user B
3				→							INVITE	UE_A sends INVITE to IMS_A to establish a new session with the SDP offer indicating all specific data for a new MSRP connection set up
4		←									100 Trying	IMS_A responds with a 100 Trying provisional response
5			←								INVITE	IMS_A forwards INVITE to AS/IM_A
6				\rightarrow							100 Trying	AS/IM_A responds with a 100 Trying provisional response
7				\rightarrow							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
8			←								100 Trying	IMS_A responds with a 100 Trying provisional response
9					\rightarrow						INVITE	IMS_A forwards INVITE to IBCF_A
10				←							100 Trying	IBCF_A responds with a 100 Trying provisional response
11						\rightarrow					INVITE	IBCF_A forwards INVITE to IBCF_B
12					←	_					100 Trying	IBCF_B responds with a 100 Trying provisional response
13							\rightarrow				INVITE	IBCF_B forwards INVITE to IMS_B
14						←					100 Trying	IMS_B responds with a 100 Trying provisional response
15								\rightarrow			INVITE	IMS_B forwards INVITE to AS/IM_B
16							←				100 Trying	AS/IM_B responds with a 100 Trying provisional response
17							←				INVITE	AS/IM_B returns, possibly modified, INVITE to IMS_B

Step					Directio	on						Message	Comment
	U	U	Α	I	I	I	I	Α		U	U		
	S	E	S/	М	В	В	Μ	S/	'	E	S		
	е	A	I	S	c	C	S	I		В	е		
	r		M	Α	F	F	В	M			r		
10	<u>A</u>		A		<u>A</u>	в		В			в	400 Ta is a	IMO Deserved with a 400 Traine
18								→				100 Trying	IMS_B responds with a 100 Trying
10									、				provisional response
19													INS_B forwards INVITE to UE_B
20							←					100 Trying	UE_B optionally responds with a
0.4													100 Trying provisional response
21											→		User B is informed of incoming file
22												602 Dealine	LIE B responde INIVITE with 602
22							_					603 Decline	Decline response to indicate that
							`						the session has been rejected
23												603 Decline	IMS B forwards 603 Decline
20								→				005 Decime	response to AS/IM_B
24												603 Decline	AS/IM B returns possibly modified
27							←					000 Decime	603 Decline response to IMS_B
25												603 Decline	IMS B forwards 603 Decline
						<	-						response to IBCF B
26												603 Decline	IBCF B forwards 603 Decline
_					<								response to IBCF_A
27												603 Decline	IBCF_A forwards 603 Decline
													response to IMS_A
28			,									603 Decline	IMS_A forwards 603 Decline
													response to AS/IM_A
29												603 Decline	AS/IM_A returns, possibly modified,
				1									603 Decline response to IMS_A
30		(603 Decline	IMS_A forwards 603 Decline
		 `											response to UE_A
31	←												User A is informed that file transfer
	`												has been rejected by user B
32				*								ACK	UE_A acknowledges the receipt of
				-									603 Decline response for INVITE
33			←									ACK	IMS_A forwards ACK to AS/IM_A
34				*								ACK	AS/IM_A returns, possibly modified,
													ACK to IMS_A
35)							ACK	IMS_A forwards ACK to IBCF_A
36					\mapsto	>						ACK	IBCF_A forwards ACK to IBCF_B
37						\mapsto						ACK	IBCF_B forwards ACK to IMS_B
38								→				ACK	IMS_B forwards ACK to AS/IM_B
39												ACK	AS/IM_B returns, possibly modified.
													ACK to IMS_B
40								+	\rightarrow			ACK	IMS_B forwards ACK to UE_B
41													Users continue chatting (see clause
											7		5.3.1 Chat 1 to 1 via MSRP)
42													Continue UC_RCS_4_I (69A-88B)

4.5.3.5.2

File transfer rejection within 1-to-1 chat - roaming (optional)

	Interoperability Test Description									
Identifier:	TD_IMS_CHAT_0012									
Summary:	IMS network supports 1-to-1 IM/Chat service and messages exchange between two users, one user in its home network and one user roaming can be performed. User B starts file transfer with User A, but User A rejects invitation									
Configuration:	CF_ROAM_AS (OPTIONAL)									
SUT	IMS_A and IMS_B									
References	Test Purpose	Specification Reference								
	TP_IMS_5107_03	TS 124 229 [1], clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)								
Use Case ref.:	UC_RCS_5_R									

		Interoperability Test Description								
Pre-test conditions:	 HSS of IMS_A and of IMS B is configured according to table 1 UE_A and UE_B have IP bearers established to their respective IMS network per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally using userPRES according to table 1 UE_B is registered in IMS_B via IMS_A optionally using userPRES according table 1 UE_A is optionally configured to receive notifications with watcher information UE_A is authorized to see presence information of UE_B IMS_A is configured to contact AS_A IMS_B is configured to contact AS_B AS_B is optionally configured for reactive authorization IMS_A is within the trust domain of IMS_B UE_A and UE_B have already performed capability discovery process IMS_A not configured for topology hiding 									
	/									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10A 10B 11A 11B	User B selects User A in the phone address book and sends him an initial message User A is informed of incoming message User B is informed that initial message was delivered to user A User A reads the initial message from user B and opens the 1-to-1 chat Users perform chatting User B initiates a file transfer to user A User A is informed of incoming file and rejects the transfer User B is informed that file transfer has been rejected by user B Users continue chatting User B closes the 1-to-1 chat User A closes the 1-to-1 chat User B is informed that that 1-to-1 chat with user A is closed User A is informed that that 1-to-1 chat with user B is closed								
Conformance Criteria:	Check 1	TP_IMS_5107_03 in CFW step 56 (CANCEL): ensure that { when { UE_A sends CANCEL to UE_B } then { IMS_B receives the CANCEL not containing Route_header indicating the S-CSCF_SIP_URI of IMS_A }								

Step	Direction												Comment
	U s r A		U E A	A S/ I M A	I M N A	I B C F A	I B C F B	I M S B	A S/ I M B	U E B	U s r B		
1													Follow UC_RCS_4_R (1-89)
2										←	-		User B initiates a file transfer to user A
3					€					_		INVITE	UE_B sends INVITE to IMS_A to establish a new session with the SDP offer indicating all specific data for a new MSRP connection set up
4										\rightarrow		100 Trying	IMS_A responds with a 100 Trying provisional response
5						\rightarrow						INVITE	IMS_A forwards INVITE to IBCF_A
6					←							100 Trying	IBCF_A responds with a 100 Trying provisional response
7							\rightarrow					INVITE	IBCF_A forwards INVITE to IBCF_B
8						←						100 Trying	IBCF_B responds with a 100 Trying provisional response

Step					Directio	on					Message	Comment
	U	U	Α	1	-	Ι	Ι	Α	C	U		
	S	E	 S/	M	B	B	M	S/	E	S		
	e r	A	M	5	F	F	З В	M	в	e r		
	Å		A		A	в		B		B		
9						\mapsto	•				INVITE	IBCF_B forwards INVITE to IMS_B
10						,					100 Trying	IMS_B responds with a 100 Trying
												provisional response
11							\mapsto				INVITE	IMS_B forwards INVITE to AS/IM_B
12							~				100 Trying	AS/IM_B responds with a 100 Trying
10												provisional response
15							←	•				NVITE to IMS_B
14											100 Trying	IMS B responds with a 100 Trying
							\rightarrow				, ,	provisional response
15						←	1				INVITE	IMS_B forwards INVITE to IBCF_B
16											100 Trying	IBCF_B responds with a 100 Trying
												provisional response
17					<	1						IBCF_B forwards INVITE to IBCF_A
18					\rightarrow						100 Trying	IBCF_A responds with a 100 Trying
19				(IBCE A forwards INVITE to IMS A
20				Ì							100 Trying	IMS A responds with a 100 Trying
20				\rightarrow							roo rrying	provisional response
21			←	4							INVITE	IMS_A forwards INVITE to AS/IM_A
22											100 Trying	AS/IM_A responds with a 100 Trying
			/									provisional response
23			\longrightarrow								INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
24			<i>(</i>	-							100 Trying	IMS_A responds with a 100 Trying
25		/										IMS A forwards INIVITE to LIE A
26		Ì									100 Trying	LIE A optionally responds with a 100
20			\rightarrow	1							roo rrying	Trying provisional response
27	<u> </u>											User A is informed of incoming file
	Ì											and rejects the transfer
28			,								603 Decline	UE_A responds INVITE with 603
												session has been rejected
29											603 Decline	IMS A forwards 603 Decline
			(1								response to AS/IM_A
30											603 Decline	AS/IM_A returns, possibly modified,
			,	-								603 Decline response to IMS_A
31				$ \rightarrow$							603 Decline	IMS_A forwards 603 Decline
32											603 Decline	IBCE A forwards 603 Decline
02					\rightarrow						ooo Deenne	response to IBCF B
33											603 Decline	IBCF_B forwards 603 Decline
												response to IMS_B
34							\mapsto				603 Decline	IMS_B forwards 603 Decline
35							<i>(</i>				603 Decline	AS/IM_B returns, possibly modified,
									1		000 5 "	603 Decline response to IMS_B
36						←	-		1		603 Decline	INS_B forwards 603 Decline
37											603 Decline	IBCE B forwards 603 Decline
5,					←	1						response to IBCF A
38									1		603 Decline	IBCF_A forwards 603 Decline
												response to IMS_A
39								-	*		603 Decline	IMS_A forwards 603 Decline
40												response to UE_B
										→		has been rejected by user B
41				←					-		ACK	UE_B acknowledges the receipt of
	I			l .	I	1	1	I	1		L	

Step					Direc	tion	Message	Comment				
	U	U	Α		I	I	I	Α	U	U		
	S	E	S/	Μ	В	В	М	S/	E	S		
	е	Α	I	S	С	С	S	I	В	е		
	r		М	Α	F	F	В	М		r		
	A		A		A	В		В		В		
42					\rightarrow						ACK	IMS_A forwards ACK to IBCF_A
43						\rightarrow					ACK	IBCF_A forwards ACK to IBCF_B
44							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
45								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
46							←				ACK	AS/IM_B returns, possibly modified, ACK to IMS_B
47						←					ACK	IMS_B forwards ACK to IBCF_B
48					←						ACK	IBCF_B forwards ACK to IBCF_A
49				←							ACK	IBCF_A forwards ACK to IMS_A
50			←								ACK	IMS_A forwards ACK to AS/IM_A
51				\rightarrow							ACK	AS/IM_A returns, possibly modified, ACK to IMS_A
52		←		_							ACK	IMS_A forwards ACK to UE_A
53	~											Users continue chatting (see clause
	l î									1		5.3.1 Chat 1 to 1 via MSRP)
54												Continue UC RCS 4 R (90A-115B)

4.5.3.6 1-to-many chat

4.5.3.6.1 1-to-many chat - interworking

Interoperability Test Description													
Identifier:	TD_IMS_C	CHAT_0013											
Summary:	IMS netwo two users users B ar	rk supports 1-to-many IM/Chat se in their home network can be perfo nd C	rvice and messages exchange between ormed. User A starts 1-to-many chat with										
Configuration:													
SUT	IMS_A and IMS_B												
References	Test Purp	ose	Specification Reference										
	TP_IMS_5	107_03	TS 124 229 [1], clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)										
Use Case ref.:	UC_RCS_	<u>6_</u> I											
Pre-test conditions:	 HSS (UE_A netwo UE_B table UE_A UE_A UE_A UE_A IMS_F AS_B IMS_A UE_A UE_A IMS_A 	of IMS_A and of IMS B is configured , UE_C and UE_B have IP bearer rks as per TS 186 011-2 [9], claus is registered in IMS_A optionally and UE_C are registered in IMS_ 1 is optionally configured to receive is authorized to see presence info A is configured to contact AS_A B is configured to contact AS_B is optionally configured for reactive A is within the trust domain of IMS, , UE_C and UE_B have already p A not configured for topology hidin	ed according to table 1 s established to their respective IMS se 4.2.1 using userPRES according to table 1 B optionally using userPRES according to e notifications with watcher information ormation of UE_B and UE_C ve authorization _B erformed capability discovery process g										
Test Sequence:	Step												
	1 User A initiates a 1-to-many Chat with User B and User C by sending initial message 2 User A is informed that the 1-to-many Chat is established 3 User B is informed of incoming invitation from User A to join the 1-to-many Chat Chat Chat												
	4	User B reads the initial message	and accepts the 1-to-many Chat invitation										

		Interoperability Test Description
	5	User A is notified with list of 1-to-many Chat participants
	6	User B is notified with list of 1-to-many Chat participants
	7	Users perform messaging in the 1-to-many Chat
	8A	User B leaves the 1-to-many Chat
	8B	User A leaves the 1-to-many Chat
	9A	User B is informed that he has left the 1-to-many Chat
	9B	User A is informed that he has left the 1-to-many Chat
	10A	User A is notified that all other users have left the 1-to-many Chat
	10B	User B is notified that all other users have left the 1-to-many Chat
	11A	User A leaves the 1-to-many Chat
	11B	User B leaves the 1-to-many Chat
	12A	User A is informed that the 1-to-many Chat has ended
	12B	User B is informed that the 1-to-many Chat has ended
Conformance Criteria:	Check	
	1	TP_IMS_5107_03 in CFW step 41 (CANCEL):
		ensure that {
		when { UE_A sends CANCEL to UE_B }
		then { IMS_B receives the CANCEL
		not containing Route_header
		indicating the S-CSCF_SIP_URI of IMS_A
		}

Step					Dire	ction					Message	Comment
	U	U	A	I	I B	I	I	A	U	U		
	5		3/	S IVI		C	S IVI	3/	B	5		
	r	^	M	Δ	F	F	B	M	5	r		
	Å		A	~	Ā	B		B		B		
1												User A initiates a 1-to-many Chat
		\rightarrow										with User B and User C by
												sending initial message
2											INVITE	UE_A sends INVITE to IMS_A
												with Request-URI set to IM
												CONFERENCE FACTORY URI,
				\rightarrow								MIME resource-list body including
												invited IM Users and the first SDP
												offer indicating all specific data
												for MSRP connection set up
3		/									100 Trying	IMS_A responds with a 100
												Trying provisional response
4			/								INVITE	IMS_A forwards INVITE to
												AS/IM_A
5											100 Trying	AS/IM_A responds with a 100
				_								Trying provisional response
6											200 OK	AS/IM_A responds INVITE with
												200 OK response with IM session
												Identity allocated for the current
												1-to-many Chat to indicate that
												the session has been accepted
1												and SDP to inform A-side with
												specific data for MSRP
												connection set up
7											200 OK	IMS A forwards 200 OK
		<hr/>										response to AS/IM_A
8												User A is informed that the 1-to-
												many Chat is established
9											ACK	UE_A acknowledges the receipt
				~								of 200 OK for INVITE

Step	Direction											Message	Comment
	U	U	Α	I	I	I.	I	Α	U	U			
	S	Е	S/	м	В	В	М	S/	E	S			
	е	Α	I	S	С	С	S		В	е			
	r		М	Α	F	F	В	М		r			
	Α		A		Α	В		В		B			
10			←								/	ACK	IMS_A forwards ACK to AS/IM_A
11											I	INVITE	AS/IM_A sends INVITE to UE_B
													with IM session identity (allocated
				1									for the current 1-to-many Chat)
													and IM address of the Inviting IM
40												100 T :	
12			<								ſ	100 Trying	IMS_A responds with a 100
10											-		I rying provisional response
13					7								
14				/							-	100 Truina	IBCF_A
14												Too Trying	Trying provisional response
15						`					-		IPCE A forwards INI/ITE to
15											'		
16					/						-	100 Trying	IBCE B responds with a 100
10												roo rrying	Trying provisional response
17							→				Ī	INVITE	IBCE B forwards INVITE to
							1						IMS B
18						←					-	100 Trying	IMS B responds with a 100
						-						, ,	Trying provisional response
19								\rightarrow			I	INVITE	IMS_B forwards INVITE to
													AS/IM_B
20							←				-	100 Trying	AS/IM_B responds with a 100
													Trying provisional response
21							←				I	INVITE	AS/IM_B returns, possibly
													modified, INVITE to IMS_B
22								\rightarrow			ſ	100 Trying	IMS_B responds with a 100
											-		I rying provisional response
23												INVITE	INS_B forwards INVITE to UE_B
24							,				-		LIE B optionally responds with a
24												Too Trying	100 Trying provisional response
25													User B is informed of incoming
20										\rightarrow			invitation from User A to join the
													1-to-many Chat
26													User B reads the initial message
									• • • • • • • • • • • • • • • • • • •				and accepts the 1-to-many Chat
													invitation
27											2	200 OK	UE_B responds INVITE with 200
													OK response with SDP to
							←						indicate that the session has
													been accepted and inform
													AS/IM_A with specific data for
29											-	200 0K	IMSRF connection set up
20								~			4	200 OK	response to AS/IM_B
20											-	200 0K	AS/IM B returns possibly
23							←				ŕ	200 010	modified 200 OK response to
													IMS B
30						<u> </u>					5	200 OK	IMS B forwards 200 OK
						ľ					ľ		response to IBCF_B
31					←	_					4	200 OK	IBCF_B forwards 200 OK
													response to IBCF_A
32				←	_						2	200 OK	IBCF_A forwards 200 OK
											L		response to IMS_A
33			←	—							2	200 OK	IMS_A forwards 200 OK
											Ļ		response to AS/IM_A
34				\rightarrow							ŀ	ACK	AS/IM_A acknowledges the
05											H		receipt of 200 OK for INVITE
35					~						1	AUK	IIVIS_A TORWARDS AUK to IBUF_A

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Step					Directi	on						Message	Comment
	U	U	Α	Ι	I	I	Ι	Α		U	U		
	S	E	S/	M	B	B	M	S	/	E	S		
	e	А	M	5	C F	F	ъ В	M		в	e r		
	Ă		A		Ă	в	D	B			B		
36						*						ACK	IBCF_A forwards ACK to IBCF_B
37							→					ACK	IBCF_B forwards ACK to IMS_B
38								\rightarrow				ACK	IMS_B forwards ACK to AS/IM_B
39							(ACK	AS/IM_B returns, possibly modified, ACK to IMS_B
40									\longrightarrow			ACK	IMS_B forwards ACK to UE_B
41				→								SUBSCRIBE	UE_A subscribes to the conference event package
42			←	_								SUBSCRIBE	IMS_A forwards SUBCRIBE to AS/IM_A
43				→								200 OK	AS/IM_A sends 200 OK for SUBSCRIBE
44		←		_								200 OK	IMS_A forwards 200 OK response to UE_A
45				→								NOTIFY	AS/IM_A sends NOTIFY to UE_A
													participants
46		←		-								NOTIFY	IMS_A forwards the NOTIFY to
47	←												User A is notified with list of 1-to- many Chat participants
48)								200 OK	UE_A responds with 200 OK to
49			←	_								200 OK	IMS_A forwards the 200 OK
50							←					SUBSCRIBE	UE_B subscribes to the
51								\rightarrow				SUBSCRIBE	IMS_B forwards SUBSCRIBE to
52							←					SUBSCRIBE	AS/IM_B returns, possibly modified, SUBSCRIBE to IMS_B
53						<u> </u>						SUBSCRIBE	IMS_B forwards SUBSCRIBE to IBCF_B
54					<	-						SUBSCRIBE	IBCF_B forwards SUBSCRIBE to IBCF_A
55				←								SUBSCRIBE	IBCF_A forwards SUBSCRIBE to IMS_A
56			←	_								SUBSCRIBE	IMS_A forwards SUBSCRIBE to AS/IM_A
57				→								200 OK	AS/IM_A sends 200 OK for
58					→							200 OK	IMS_A forwards 200 OK
59						*						200 OK	IBCF_A forwards 200 OK
60						 	→					200 OK	IBCF_B forwards 200 OK
61								\rightarrow				200 OK	IMS_B forwards 200 OK
62												200 OK	AS/IM_B returns, possibly
													modified, 200 OK response to IMS_B
63								+	\longrightarrow			200 OK	IMS_B forwards 200 OK response to UE_B
64				→								NOTIFY	AS/IM_A sends NOTIFY to UE_B
													participants

1	43	
1	43	

Step	Direction											Message	Comment
	ι	J	U	Α	I	I	I	I	Α	U	U		
	S	5	E	S/	M	B	B	M	S/	E	S		
	e		A	M	5	E	E	2	I M	в	e		
	4	4		A	^	Å	в		B		B		
65	Í	•			\vdash							NOTIFY	IMS_A forwards BYE to IBCF_A
66						;						NOTIFY	IBCF_A forwards BYE to IBCF_B
67								*				NOTIFY	IBCF_B forwards BYE to IMS_B
68									→			NOTIFY	IMS_B forwards BYE to AS/IM_B
69								←				NOTIFY	AS/IM_B returns, possibly modified, BYE to IMS_B
70										→		NOTIFY	IMS_B forwards BYE to UE_B
71											→		User B is notified with list of 1-to- many Chat participants
72								←				200 OK	UE_B sends 200 OK for NOTIFY
73									→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
74								←	_			200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
75							(-				200 OK	IMS_B forwards 200 OK
76						←						200 OK	IBCF_B forwards 200 OK
77					←							200 OK	IBCF_A forwards 200 OK
78				←	-							200 OK	IMS_A forwards 200 OK
79													Users perform messaging in the
													5.3.2.1 Chat 1 to many via MSRP
80A											-		User B leaves the 1-to-many Chat
81A								←	F	_		BYE	UE_B sends BYE to IMS_B to leave the 1-to-many Chat
82A									→			BYE	IMS_B forwards BYE to AS/IM_B
83A								←				BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
84A							←					BYE	IMS_B forwards BYE to IBCF_B
85A						←						BYE	IBCF_B forwards BYE to IBCF_A
86A					(BYE	IBCF_A forwards BYE to IMS_A
87A				←								BYE	IMS_A forwards BYE to AS/IM_A
88A				;								200 OK	AS/IM_A sends 200 OK for BYE
89A					 ;							200 OK	IMS_A forwards 200 OK
90A												200 OK	IBCF_A forwards 200 OK
91A								*				200 OK	IBCF_B forwards 200 OK
92A									→			200 OK	IMS_B forwards 200 OK response to AS/IM_B

Step	Direction										Message	Comment	
	U		U	Α	I	I	I	I	Α	U	U		
	S	;	E	S/	M	B	B	M	S/	E	S		
	е	•	Α		S	C	C	S		в	е		
	r A				A			в	IVI D		r D		
030		<u> </u>				~ _			Ь			200 OK	AS/IM B returns possibly
90A								<				200 01	modified 200 OK response to
													IMS B
94A										→		200 OK	IMS B forwards 200 OK
													response to UE_B
95A										-	\rightarrow		User B is informed that he has
													left the 1-to-many Chat
96A												NOTIFY	AS/IM_A sends NOTIFY to IMS
													_A to inform UE_A that User B
074													has left the 1-to-many Chat
97A			¢		1							NOTIFY	
080													User A is potified that all other
307	÷	_											users have left the 1-to-many
													Chat
99A				\rightarrow								200 OK	UE_A responds with 200 OK to
													IMS_A
100A				←	1							200 OK	IMS_A forwards the 200 OK
													response to AS/IM_A
101A		\longrightarrow											User A leaves the 1-to-many
1004												DVE	Chat
102A												BIE	UE_A sends BYE to IMS_A to
1034				<i>,</i>								BVE	IMS Δ forwards BYE to Δ S/IM Δ
1057													
104A				$ \longrightarrow $								200 OK	AS/IM A sends 200 OK for BYE
													_
105A			←		•							200 OK	IMS_A forwards 200 OK
										_			response to UE_A
106A	F												User A is informed that the 1-to-
000					-		-						many Chat has ended
80B		\rightarrow											Chat
81B												BYE	UE A sends BYE to IMS A to
0.0													leave the 1-to-many Chat
82B				←	-							BYE	IMS_A forwards BYE to AS/IM_A
83B				\rightarrow								200 OK	AS/IM_A sends 200 OK for BYE
84B			<		1							200 OK	IMS_A forwards 200 OK
85B	/												Liser A is informed that he has
000													left the 1-to-many Chat
86B												NOTIFY	AS/IM A sends NOTIFY to
				$ \rightarrow $	1								IMS_A to inform UE_B that User
													A has left the 1-to-many Chat
87B					\rightarrow							NOTIFY	IMS_A forwards BYE to IBCF_A
000													
88B						\rightarrow						NOTIFY	IBCF_A forwards BYE to IBCF_B
80B												NOTIEV	IBCE B forwards BVE to IMS B
030													
90B												NOTIFY	IMS B forwards BYE to AS/IM B
91B								(1			NOTIFY	AS/IM_B returns, possibly
													modified, BYE to IMS_B
92B									<u> </u>	→		NOTIFY	IMS_B forwards BYE to UE_B
020													Lloor D is potified that all other
93B										-	\rightarrow		Users have left the 1-to many
													Chat
Step						Directio	on					Message	Comment
------	---	---	---	----	----------	-----------------	-----	--------------	----------	----------	---------------	---------	--
	ι	J	U	A		I	I	I	A	ň	U		
	S	5		5/	S I	B	C B	S	5/	E	S		
	r		^	м	Ă	F	F	в	м	0	r		
	A	4		Α		Α	в		в		в		
94B								(200 OK	UE_B sends 200 OK for NOTIFY
95B									→			200 OK	IMS_B forwards 200 OK
96B								<u> </u>				200 OK	AS/IM_B returns, possibly modified, 200 OK response to
97B							←					200 OK	IMS_B forwards 200 OK
98B						<						200 OK	IBCF_B forwards 200 OK
99B					←	-						200 OK	IBCF_A forwards 200 OK
100B				←	-							200 OK	IMS_A forwards 200 OK response to AS/IM_A
101B											=		User B leaves the 1-to-many Chat
102B								←				BYE	UE_B sends BYE to IMS_B to leave the 1-to-many Chat
103B									→			BYE	IMS_B forwards BYE to AS/IM_B
104B								~	_			BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
105B							←	-				BYE	IMS_B forwards BYE to IBCF_B
106B						~	-					BYE	IBCF_B forwards BYE to IBCF_A
107B					←	-						BYE	IBCF_A forwards BYE to IMS_A
108B				←								BYE	IMS_A forwards BYE to AS/IM_A
109B					*							200 OK	AS/IM_A sends 200 OK for BYE
110B						*						200 OK	IMS_A forwards 200 OK response to IBCF_A
111B						—						200 OK	IBCF_A forwards 200 OK response to IBCF_B
112B								*				200 OK	IBCF_B forwards 200 OK response to IMS_B
113B									→			200 OK	IMS_B forwards 200 OK response to AS/IM B
114B								←				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
115B										→		200 OK	IMS_B forwards 200 OK
116B											\rightarrow		User B is informed that the 1-to- many Chat has ended

4.5.3.6.2 1-to-many chat - roaming (optional)

	Interoperability Test Description										
Identifier:	TD_IMS_CHAT_0014										
Summary: IMS network supports 1-to-many IM/Chat service and messages exchange bet two users, one user in its home network and one user roaming can be performe B starts 1-to-many chat with user A and C											
Configuration:	CF_ROAM_AS (OPTIONAL)										
SUT	IMS_A and IMS_B										

		Interoperability Test Descr	iption									
References	Test Purp	oose	Specification Reference									
	TP IMS 5	5107 03	TS 124 229 [1], clause 5.4.3.2 ¶119									
		_	(item 1 in 8 th numbered list)									
Use Case ref.:	UC RCS	6 R	К									
Pre-test	 HSS 	of IMS A and of IMS B is configure	ed according to table 1									
conditions:	UE A	UE C and UE B have IP bearer	s established to their respective IMS									
	netwo	orks as per TS 186 011-2 [9]. claus	se 4.2.1									
	• UE A	is registered in IMS A optionally	using userPRES according to table 1									
	• UE E	and UE C are registered in IMS	B via IMS A optionally using userPRES									
	accor	ding to table 1										
	• UE A	is optionally configured to receive notifications with watcher information										
	• UE A	is authorized to see presence info	ormation of UE B and UE C									
	 IMS 	A is configured to contact AS A										
	 IMS 	B is configured to contact AS B										
	AS E	is optionally configured for reactive	ve authorization									
	• IMS	A is within the trust domain of IMS	B									
	• UE A	UE C and UE B have already p	erformed capability discovery process									
	• IMS	A not configured for topology hidin	a									
		the comgared for topology man	9									
Test Sequence:	Step											
root ooquonoor	1	User B initiates a 1-to-many Chat	with User A and User C by sending initial									
	·	message										
	2	User B is informed that the 1-to-m	nany Chat is established									
	3	User A is informed of incoming in	vitation from User B to join the 1-to-many									
	_	Chat	······································									
	4	User A reads the initial message	and accepts the 1-to-many Chat invitation									
	5	User B is notified with list of 1-to-	many Chat participants									
	6	User A is notified with list of 1-to-	many Chat participants									
	7	Users perform messaging in the 1	I-to-many Chat									
	8A	User A leaves the 1-to-many Cha	t									
	8B	User B leaves the 1-to-many Cha	t									
	9A	User A is informed that he has lef	t the 1-to-many Chat									
	9B	User B is informed that he has lef	t the 1-to-many Chat									
	10A	User B is notified that all other us	ers have left the 1-to-many Chat									
	10B	User A is notified that all other us	ers have left the 1-to-many Chat									
	11A	User B leaves the 1-to-many Cha	t									
	11B	User A leaves the 1-to-many Cha	t									
	12A	User B is informed that the 1-to-m	nany Chat has ended									
	12B	User A is informed that the 1-to-m	nany Chat has ended									
Conformance	Check											
Criteria:												
	1	TP_IMS_5107_03 in CFW step 5	6 (CANCEL):									
		ensure that {										
		when { UE_A sends CANCEL to	0 UE_B }									
		then { IMS_B receives the CAN	CEL									
		not containing Route_h	eader									
		indicating the S-CSCF_	SIP_URI of IMS_A									
		}										
		}										

Step			-		Direc	Message	Comment					
	U	U	Α	I	I I	I	I	Α	U	U		
	S	E	S/	M	В	В	М	S/	E	S		
	е	Α	I	S	c	c	S		В	е		
	r		M	Α	F	F	В	M		r		
	A	_	A		<u> </u>	В		В		В		
1												User B initiates a 1-to-many Chat
												with User A and User C by sending
0												Initial message
2											INVITE	UE_B sends INVITE to INIS_A with
				(MIME resource-list body including
												invited IM Users and the first SDP
												offer indicating all specific data for
												MSRP connection set up
3											100 Trvina	IMS A responds with a 100 Trying
									→		, , , ,	provisional response
4					→						INVITE	IMS_A forwards INVITE to IBCF_A
5											100 Trving	IBCF A responds with a 100 Trying
-				<	-							provisional response
6											INVITE	IBCF_A forwards INVITE to
						~						IBCF_B
7					/						100 Trying	IBCF_B responds with a 100 Trying
					\mathbf{i}							provisional response
8							\rightarrow				INVITE	IBCF_B forwards INVITE to IMS_B
9						/					100 Trying	IMS_B responds with a 100 Trying
												provisional response
10											INVITE	IMS_B forwards INVITE to
								1				AS/IM_B
11							←				100 Trying	AS/IM_B responds with a 100
10												I rying provisional response
12											200 OK	AS/IM_B responds INVITE with
												200 OK response with IN session
							(to-many Chat to indicate that the
												session has been accented and
												SDP to inform A-side with specific
												data for MSRP connection set up
13											200 OK	IMS B forwards 200 OK response
						-						to IBCF_B
14											200 OK	IBCF_B forwards 200 OK response
												to IBCF_A
15				/							200 OK	IBCF_A forwards 200 OK response
												to IMS_A
16									\rightarrow		200 OK	IMS_A forwards 200 OK response
												to UE_B
17									_	\rightarrow		User B is informed that the 1-to-
40											1.01/	many Chat is established
18				←							ACK	UE_B acknowledges the receipt of
10											ACK	
19					7						ACK	
20						-					ACK	IBCF_A TORWARDS ACK TO IBCF_B
21							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
22								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
23						1					INVITE	AS/IM_B sends INVITE to UE_A
						1						with IM session identity (allocated
							←					for the current 1-to-many Chat) and
												IM address of the Inviting IM UE
											100 -	
24								\rightarrow			100 Trying	IMS_B responds with a 100 Trying
05												provisional response
25						K						IIVIS_B TORWARDS INVITE TO IBCF_B
26							\rightarrow				100 Trying	IBCF_B responds with a 100 Trying
					1	1						provisional response

Step					Direc	tion					Message	Comment
	U	U	Α	I	Ι		Ι	Α	U	U		
	S	E	S/	М	В	В	М	S/	E	S		
	е	Α	1	S	C	ç	S	1	В	е		
	r			A		F	в	N		r B		
27					A			<u>Р</u>			INVITE	IBCF_B forwards INVITE to
					Ì							IBCF_A
28						\rightarrow					100 Trying	IBCF_A responds with a 100 Trying provisional response
29				←	_						INVITE	IBCF_A forwards INVITE to IMS_A
30					→						100 Trying	IMS_A responds with a 100 Trying
31			←	_							INVITE	IMS_A forwards INVITE to
32				_							100 Trying	AS/IM_A responds with a 100
				1							·····	Trying provisional response
33				→							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
34			←	_							100 Trying	IMS_A responds with a 100 Trying
35		<u> </u>									INVITE	IMS A forwards INVITE to UE A
36				→							100 Trying	UE_A optionally responds with a
07			_	-								100 Trying provisional response
31												invitation from User B to join the 1-
												to-many Chat
38												User A reads the initial message
		7										and accepts the 1-to-many Chat
39											200 OK	UE A responds INVITE with 200
												OK response with SDP to indicate
				\rightarrow								that the session has been accepted
												and inform AS/IM_A with specific
40											200 OK	IMS A forwards 200 OK response
40			←								200 010	to AS/IM_A
41											200 OK	AS/IM_A returns, possibly
				→								modified, 200 OK response to
42											200 OK	IMS_A IMS_A forwards 200 OK response
					~							to IBCF_A
43						\rightarrow					200 OK	IBCF_A forwards 200 OK response
44											200 OK	ID IBCF_B IBCF_B forwards 200 OK response
							\rightarrow				200 011	to IMS_B
45								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
46							/				ACK	AS/IM_B acknowledges the receipt
47											ACK	of 200 OK for INVITE
47					,	(ACK	INS_B IOWARDS ACK to IBCF_B
40											ACK	IBCF_B IOIWalds ACK to IBCF_A
49 50			/								ACK	IBCF_A IOI wards ACK to AS/IM A
51											ACK	AS/IM A returns possibly
				→								modified, ACK to IMS_A
52		←		_							ACK	IMS_A forwards ACK to UE_A
53				←	_						SUBSCRIBE	UE_B subscribes to the conference
54												event package
54					\rightarrow						SUDSURIDE	IBCF_A
55						→					SUBSCRIBE	IBCF_A forwards SUBSCRIBE to
56							—				SUBSCRIBE	IBCF_B forwards SUBSCRIBE to
							1					IMS_B

Step					Directio	on	Message	Comment				
	U	U	Α	Ι	I	I	Ι	Α	U	U		
	S	E	S/	M	B	B	M	S/	E	S		
	e r	A	M	5	F	F	Э В	M	в	e r		
	Å		A		A	B	5	В		B		
57								→			SUBSCRIBE	IMS_B forwards SUBSCRIBE to AS/IM_B
58							←	-			200 OK	AS/IM_B sends 200 OK for SUBSCRIBE
59						←	-				200 OK	IMS_B forwards 200 OK response to IBCF_B
60					←						200 OK	IBCF_B forwards 200 OK response to IBCF_A
61				‹	-						200 OK	IBCF_A forwards 200 OK response to IMS_A
62									\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
63							←	_			NOTIFY	AS/IM_B sends NOTIFY to UE_B with list of 1-to-many Chat
64						~	_				NOTIFY	IMS_B forwards NOTIFY to
65					~						NOTIFY	IBCF_B forwards NOTIFY to
66				(-						NOTIFY	IBCF_A forwards NOTIFY to IMS_A
67								_	\rightarrow		NOTIFY	IMS_A forwards NOTIFY to UE_B
68									_	\rightarrow		User B is notified with list of 1-to- many Chat participants
69				‹							200 OK	UE_B responds with 200 OK to
70				;							200 OK	IMS_A forwards 200 OK response to IBCF_A
71					;						200 OK	IBCF_A forwards 200 OK response to IBCF_B
72							*				200 OK	IBCF_B forwards 200 OK response to IMS_B
73								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
74				×							SUBSCRIBE	UE_A subscribes to the conference event package
75			←	-							SUBSCRIBE	IMS_A forwards SUBSCRIBE to AS/IM_A
76				*							SUBSCRIBE	AS/IM_A returns, possibly modified, SUBSCRIBE to IMS_A
77				— ;							SUBSCRIBE	IMS_A forwards SUBSCRIBE to
78					;						SUBSCRIBE	IBCF_A forwards SUBSCRIBE to
79											SUBSCRIBE	IBCF_B forwards SUBSCRIBE to
80								→			SUBSCRIBE	IMS_B forwards SUBSCRIBE to
81							<u> </u>	_			200 OK	AS/IM_B sends 200 OK for SUBSCRIBE
82						←	-				200 OK	IMS_B forwards 200 OK response to IBCF_B
83					¢	-					200 OK	IBCF_B forwards 200 OK response
84				←	-						200 OK	IBCF_A forwards 200 OK response to IMS_A
85			←	-							200 OK	IMS_A forwards 200 OK response to AS/IM_A
86				*							200 OK	AS/IM_A returns, possibly modified, 200 OK response to
				1	1	1	1	1				IMS_A

1	50	

Step					Directio	Message	Comment					
	U	U	Α	1	1	I	I	Α	U	U		
	S	E	S/	M	В	В	М	S/	Е	S		
	е	Α	I I	S	С	С	S	I.	В	е		
	r		М	Α	F	F	В	Μ		r		
	Α		Α		Α	В		В		В		
87		←		-							200 OK	IMS_A forwards 200 OK response to UE_A
88							<i></i>				NOTIFY	AS/IM_B sends NOTIFY to UE_A with list of 1-to-many Chat
												participants
89						←	_				NOTIFY	IMS_B forwards BYE to IBCF_B
90					(NOTIFY	IBCE B forwards BYE to IBCE A
Q1				/	Ì.						NOTIEY	IBCE A forwards BVE to IMS A
02			/									IMS A forwards BVE to AS/IM A
92												INS_A IOIWAIUS BYE IO AS/INI_A
93											NOTIFY	AS/IM_A returns, possibly modified, BYE to IMS_A
94		←									NOTIFY	IMS_A forwards BYE to UE_A
95	←											User A is notified with list of 1-to- many Chat participants
96			,								200 OK	UE A sends 200 OK for NOTIEY
07											200 OK	IMS A forwards 200 OK response
97			<								200 OK	to AS/IM_A
98											200 OK	AS/IM_A returns, possibly
												modified, 200 OK response to
												IMS_A
99				;							200 OK	IMS_A forwards 200 OK response
100											200 0K	ID IDUF_A
100					├ →	•					200 OK	IBCF_A IOIWAIUS 200 OK response
101											200 0K	ID IDUF_D
101						— >					200 OK	to IMS_B
102)			200 OK	IMS_B forwards 200 OK response
103												Users perform messaging in the 1-
105												to-many Chat (see clause 5.3.2.2
	←							*—	_	\rightarrow		Chat 1 to many via MSRP -
												Roaming)
104A												User A leaves the 1-to-many Chat
1054											BVE	LIE A sends BVE to IMS A to
105A											DIE	leave the 1-to-many Chat
1064			/								BVE	IMS Λ forwards BVE to Λ S/IM Λ
1007												A C/IM A returne peecibly
107A											DIE	modified, BYE to IMS A
108A				—							BYE	IMS A forwards BYE to IBCF A
109A					,						BYE	BCF A forwards BYE to IBCF B
1104						L					BYE	IBCE B forwards BYE to IMS B
1111											BVE	IMS B forwards BVE to AS/IM B
111A								1				$\frac{11110}{10} = 101 \text{ watus DTE } 10 \text{ AS/IIVI}_B$
112A							<				200 OK	AS/IM_B sends 200 OK for BYE
113A						←	_				200 OK	IMS_B forwards 200 OK response
114A					,						200 OK	IBCF_B forwards 200 OK response
					`							to IBCF_A
115A				←							200 OK	IBCF_A forwards 200 OK response
116A			(200 OK	IMS_A forwards 200 OK response
1174											200 0K	to AS/IM_A
			L,								200 01	modified 200 OK response to
1184											200 04	IMS A forwards 200 OK rosponse
TIOA		←		1								to UE_A
119A	k											User A is informed that he has left
												the 1-to-many Chat

Step					Directio	on	Message	Comment				
	U	U	Α	I	1	I	I	Α	U	U		
	S	E	S/	М	В	В	М	S/	E	S		
	е	Α	I	S	С	С	S	I	В	е		
	r		M	Α	F	F	в	М		r		
1001	<u>A</u>		A		Α	В		В		В		
120A											NOTIFY	AS/IM_B sends NOTIFY to IMS _B
							<u> </u>					to inform UE_B that User A has left
1011												the 1-to-many Chat
121A						←	-				NOTIFY	IMS_B forwards NOTIFY to
1001												IBCF_B
122A					←	-					NOTIFY	IBCF_B forwards NOTIFY to
4004												
123A				←							NOTIFY	
1244											NOTIEV	INS_A IMS_A forwards NOTIEV to LIE_B
124A									_			INS_A IOFWARDS NOTIFY to UE_B
125A									_	\rightarrow		User B is notified that all other
1004												USers have left the 1-to-many Chat
126A				←							200 OK	UE_B responds with 200 OK to
1274											200 0K	INIS_A IMS_A forwards 200 OK rosponso
127A					*						200 OK	to IBCE A
1284											200 0K	IBCE A forwards 200 OK response
120A					\rightarrow						200 OK	to IBCF_B
129A											200 OK	IBCE B forwards 200 OK response
120/1						\rightarrow	*				200 010	to IMS_B
130A											200 OK	IMS_B forwards 200 OK response
								`				to AS/IM B
131A							1		K			User B leaves the 1-to-many Chat
132A											BYE	UE B sends BYE to IMS A to
				<								leave the 1-to-many Chat
133A					*						BYE	IMS A forwards BYE to IBCF A
134A					,						BYE	IBCE A forwards BYE to IBCE B
1354											BYE	IBCE B forwards BYE to IMS B
1364						'		`			BVE	IMS B forwards BVE to AS/IM B
1074								7				AS/IM B condo 200 OK for BVE
137A											200 OK	AS/IM_B sends 200 OK IOI BTE
138A						←	-				200 OK	IMS_B forwards 200 OK response
1204											200 0K	ID IDCF_D
139A					←	-					200 OK	
1404											200 0K	IBCE A forwards 200 OK response
1407				←							200 01	to IMS A
141A											200 OK	IMS A forwards 200 OK response
									\rightarrow			to UE B
142A												User B is informed that the 1-to-
										\rightarrow		many Chat has ended
104B	Í					1	1		₩	_		User B leaves the 1-to-many Chat
105B											BYE	UE B sends BYE to IMS A to
				<	Ì	l						leave the 1-to-many Chat
106B					*						BYE	IMS_A forwards BYE to IBCF_A
107B					$ \longrightarrow $						BYE	IBCF A forwards BYE to IBCF B
108B											BYE	IBCE B forwards BYE to IMS B
100B						'		`			BVE	IMS B forwards BYE to AS/IM B
109D							/					AS/IM B condo 200 OK for BVE
IIUD												NO/IIVI_D SETIUS 200 OK 101 DTE
111B						←	-				200 OK	INS_B forwards 200 OK response
110D											200 0K	ID IDUF_D
112B					←	1					200 UK	to IBCE A
112P											200 04	IBCE A forwards 200 OK rosponse
1130				(to IMS A
114B											200 OK	IMS A forwards 200 OK response
						l			\rightarrow			to UE B
115B												User B is informed that he has left
												the 1-to-many Chat

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Step	Direction											Message	Comment
	U	U		Α	-	-	I	I	Α	U	U		
	S	E		S/	M	B	В	M	S/	E	S		
	е	Α			S	C	C	S	I	в	е		
	r A				A		r B	в	R		r B		
116B			Ť	~		$\hat{\Gamma}$						NOTIFY	AS/IM_B sends NOTIEY to IMS_B
1100									_				to inform UE A that User B has left
								-					the 1-to-many Chat
117B							,					NOTIFY	IMS_B forwards NOTIFY to
													IBCF_B
118B						(NOTIFY	IBCF_B forwards NOTIFY to
						ľ							IBCF_A
119B					←	4						NOTIFY	IBCF_A forwards NOTIFY to
120B												NOTIEV	INS_A IMS_A forwards NOTIEX to
1200			•	←	-							NOTIFI	$\Delta S/IM \Delta$
121B												NOTIFY	AS/IM A returns possibly
			ľ	;	*								modified, NOTIFY to IMS A
122B		←			-							BYE	IMS_A forwards NOTIFY to UE_A
123B									1				User A is informed that User B has
													left the 1-to-many Chat
124B		-			*							200 OK	UE_A sends 200 OK for NOTIFY
125B				(200 OK	IMS_A forwards 200 OK response
1000				`									to AS/IM_A
126B												200 OK	AS/IM_A returns, possibly
				,									
127B												200 OK	INS_A IMS_A forwards 200 OK response
1210												200 010	to IBCF A
128B												200 OK	IBCF_A forwards 200 OK response
						'	1						to IBCF_B
129B								•				200 OK	IBCF_B forwards 200 OK response
1000								-				000.01/	to IMS_B
130B									•			200 OK	INS_B forwards 200 OK response
131B		_											User A leaves the 1-to-many Chat
132B												BYE	UE A sends BYE to IMS A to
.020					>							0.2	leave the 1-to-many Chat
133B				←	-							BYE	IMS_A forwards BYE to AS/IM_A
134B												BYE	AS/IM_A returns, possibly
			Ī	,	7								modified, BYE to IMS_A
135B												BYE	IMS_A forwards BYE to IBCF_A
136B							*					BYE	IBCF_A forwards BYE to IBCF_B
137B								>				BYE	IBCF_B forwards BYE to IMS_B
138B									*			BYE	IMS_B forwards BYE to AS/IM_B
139B								←	-			200 OK	AS/IM_B sends 200 OK for BYE
140B							(200 OK	IMS_B forwards 200 OK response
							Ì						to IBCF_B
141B						←	-					200 OK	IBCF_B forwards 200 OK response
140D												200 OK	TO IBCF_A
1420					←	-						200 OK	to IMS A
143B												200 OK	IMS A forwards 200 OK response
			ľ	(to AS/IM_A
144B								1	1			200 OK	AS/IM_A returns, possibly
			ł		*								modified, 200 OK response to
4.455								1	1				IMS_A
145B	1	←			4			1	1			200 OK	INS_A forwards 200 OK response
146B													User A is informed that the 1-to-
1400	←												many Chat has ended

4.5.3.7 Adding participants to an already established 1-to-many chat session

4.5.3.7.1 Adding participants to an already established 1-to-many chat session - interworking

interoperability les	st Descript	ion										
Identifier:	TD IMS C	CHAT_0015										
Summary:	IMS netwo	ork supports 1-to-many IM/Chat se	rvice and messages exchange between									
•	IMS network supports 1-to-many IM/Chat service and messages exchange between two users in their network can be performed. User A invites User D to an already established 1-to-many Chat											
	established 1-to-many Chat											
Configuration:	CF_INT_A	NS										
SUT	IMS_A and IMS_B Test Purpose Specification Reference											
References	Test Purpose Specification Reference TP_IMS_5107_03 TS_124_220 [1]_clause 5.4.3.2 [110]											
	TP_IMS_5	5107_03	TS 124 229 [1], clause 5.4.3.2 ¶119									
			(item 1 in 8 th numbered list)									
Use Case ref.:	UC_RCS_	_6_I										
_												
Pre-test	 HSS o 	of IMS_A and of IMS B is configure	ed according to table 1									
conditions:	 UE_A, 	UE_C, UE_D and UE_B have IP	bearers established to their respective IMS									
	n	etworks as per IS 186 011-2 [9],	clause 4.2.1									
	• UE_A	is registered in IMS_A optionally u	using userPRES according to table 1									
	• UE_B,	UE_D and UE_C are registered i	n IMS_B optionally using userPRES									
	a luc a	ccording to table 1										
	• UE_A	is optionally configured to receive	notifications with watcher information									
	• UE_A	is authorized to see presence info	rmation of UE_B, UE_D and UE_C									
	 INS_A INC_B 	A is configured to contact AS_A										
		is configured to contact AS_B										
	• AS_D	is within the trust demain of IMS										
			_D									
	• UE_A,		eady performed capability discovery									
		pot configured for topology hiding										
	• 100_7	the compared for topology main										
Test Sequence:	Step											
Test Sequence:	Step 1	User A initiates a 1-to-many Chat	with User B and User C by sending initial									
Test Sequence:	Step 1	User A initiates a 1-to-many Chat message	with User B and User C by sending initial									
Test Sequence:	Step 1 2	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n	with User B and User C by sending initial nany Chat is established									
Test Sequence:	Step 1 2 3	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in	with User B and User C by sending initial nany Chat is established vitation from User A to join the 1-to-many									
Test Sequence:	Step 1 2 3	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat	with User B and User C by sending initial nany Chat is established vitation from User A to join the 1-to-many									
Test Sequence:	Step 1 2 3 4	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message	with User B and User C by sending initial nany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation									
Test Sequence:	Step 1 2 3 4 5	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to-	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants									
Test Sequence:	Step 1 2 3 4 5 6	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to-	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants many Chat participants									
Test Sequence:	Step 1 2 3 4 5 6 7	User A initiates a 1-to-many Chat message User A is informed that the 1-to-m User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants many Chat participants 1-to-many Chat									
Test Sequence:	Step 1 2 3 4 5 6 7 8	User A initiates a 1-to-many Chat message User A is informed that the 1-to-m User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat -many Chat									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat many Chat vitation from User A to join the 1-to-many									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 40	User A initiates a 1-to-many Chat message User A is informed that the 1-to-m User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat -many Chat vitation from User A to join the 1-to-many estimation									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 44	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch	with User B and User C by sending initial nany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat -many Chat -many Chat vitation from User A to join the 1-to-many nat invitation									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 42	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User A is notified with list of 1-to-	with User B and User C by sending initial nany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat vitation from User A to join the 1-to-many nat invitation many Chat participants									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 42	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D is notified with list of 1-to- User D is notified with list of 1-to- User D is notified with list of 1-to-	with User B and User C by sending initial nany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat nany Chat participants 1-to-many Chat vitation from User A to join the 1-to-many nat invitation many Chat participants many Chat participants many Chat participants									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User A is notified with list of 1-to- User D is notified with list of 1-to- User D is notified with list of 1-to- Users perform messaging in the User D logues the 1 to many Ch	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat vitation from User A to join the 1-to-many hat invitation many Chat participants many Chat participants 1-to-many Chat many Chat participants 1-to-many Chat									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	User A initiates a 1-to-many Chat message User A is informed that the 1-to-m User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D is notified with list of 1-to-	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat ormany Chat vitation from User A to join the 1-to-many hat invitation many Chat participants many Chat participants many Chat participants 1-to-many Chat tt the 1-to-many Chat									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	User A initiates a 1-to-many Chat message User A is informed that the 1-to-m User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User A is notified with list of 1-to- User D is informed that he has le	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat witation from User A to join the 1-to-many hat invitation many Chat participants many Chat participants 1-to-many Chat it invitation many Chat participants 1-to-many Chat it ft the 1-to-many Chat									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 174	User A initiates a 1-to-many Chat message User A is informed that the 1-to-m User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- Users perform messaging in the User A is notified with list of 1-to- User D is notified with list of 1-to- Users perform messaging in the User D leaves the 1-to-many Cha User D is informed that he has le User A is notified that User D has User A is notified that User D has	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat witation from User A to join the 1-to-many hat invitation many Chat participants many Chat participants many Chat participants 1-to-many Chat t the 1-to-many Chat t the 1-to-many Chat t f the 1-to-many Chat t f the 1-to-many Chat t t									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17A 17B	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- Users perform messaging in the User A is notified with list of 1-to- User D is notified with list of 1-to- Users perform messaging in the User D leaves the 1-to-many Cha User D leaves the 1-to-many Cha User D is informed that he has le User A is notified that User D has User B leaves the 1-to-many Cha	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat vitation from User A to join the 1-to-many hat invitation many Chat participants many Chat participants 1-to-many Chat t the 1-to-many Chat t the 1-to-many Chat left the 1-to-many Chat t									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17A 17B 18A	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- User B is notified with list of 1-to- User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D is notified with list of 1-to- User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D is informed that he has le User A is notified that User D has User B leaves the 1-to-many Cha User A leaves the 1-to-many Cha User B is informed that he has le	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat participants 1-to-many Chat vitation from User A to join the 1-to-many hat invitation many Chat participants 1-to-many Chat tit ft the 1-to-many Chat i left the 1-to-many Chat t t t t the 1-to-many Chat									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17A 17B 18A 18B	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- User B is notified with list of 1-to- User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D is notified with list of 1-to- User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D leaves the 1-to-many Cha User D leaves the 1-to-many Cha User D is informed that he has le User A leaves the 1-to-many Cha User B is informed that he has le User A is informed that he has le	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat participants 1-to-many Chat vitation from User A to join the 1-to-many hat invitation many Chat participants 1-to-many Chat t invitation many Chat participants 1-to-many Chat t the 1-to-many Chat									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17A 17B 18A 19A	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- User B is notified with list of 1-to- User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D is notified with list of 1-to- User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D is notified with list of 1-to- User D is notified with list of 1-to- User D leaves the 1-to-many Cha User D leaves the 1-to-many Cha User D is informed that he has le User A is notified that User D has User B leaves the 1-to-many Cha User B is informed that he has le User A is notified that leave the User A is notified that he has le User A is informed that he has le User A is notified that all other use	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat participants 1-to-many Chat vitation from User A to join the 1-to-many hat invitation many Chat participants 1-to-many Chat tit fit the 1-to-many Chat tit fit the 1-to-many Chat tit fit the 1-to-many Chat tit fit the 1-to-many Chat tit fit the 1-to-many Chat ers have left the 1-to-many Chat									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17A 17B 18A 19A 19B	User A initiates a 1-to-many Chat message User A is informed that the 1-to-m User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- User B is notified with list of 1-to- User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D is notified with list of 1-to- User D accepts the 1-to-many Ch User D leaves the 1-to-many Ch User B leaves the 1-to-many Ch User B leaves the 1-to-many Ch User B leaves the 1-to-many Ch User A leaves the 1-to-many Ch User A leaves the 1-to-many Ch User A is notified that leas le User A is notified that all other us User B is informed that he has le User A is notified that all other us	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat participants 1-to-many Chat vitation from User A to join the 1-to-many hat invitation many Chat participants 1-to-many Chat ti the 1-to-many Chat ti the 1-to-many Chat ti the 1-to-many Chat ti the 1-to-many Chat it the 1-to-many Chat ers have left the 1-to-many Chat ers have left the 1-to-many Chat									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17A 17B 18A 19B 20A	User A initiates a 1-to-many Chat message User A is informed that the 1-to-m User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- User B is notified with list of 1-to- User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- User D leaves the 1-to-many Cha User D leaves the 1-to-many Cha User D is informed that he has le User A is notified that User D has User B leaves the 1-to-many Cha User B is informed that he has le User A is notified that all other us User B is notified that all other us User B is notified that all other us User B is notified that all other us User A leaves the 1-to-many Cha	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat participants 1-to-many Chat vitation from User A to join the 1-to-many hat invitation many Chat participants 1-to-many Chat tit ft the 1-to-many Chat tt ft the 1-to-many Chat tt ft the 1-to-many Chat tt ft the 1-to-many Chat tt ft the 1-to-many Chat ers have left the 1-to-many Chat ers have left the 1-to-many Chat tt									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17A 17B 18A 19B 20A 20B	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- User S perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- Users perform messaging in the User D accepts the 1-to-many Ch User D is notified with list of 1-to- Users perform messaging in the User D leaves the 1-to-many Cha User D leaves the 1-to-many Cha User D leaves the 1-to-many Cha User B leaves the 1-to-many Cha User A is notified that User D has User B leaves the 1-to-many Cha User A is informed that he has le User A is informed that he has le User A is notified that all other us User B is notified that all other us User B is notified that all other us User B leaves the 1-to-many Cha	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat participants 1-to-many Chat vitation from User A to join the 1-to-many hat invitation many Chat participants many Chat participants 1-to-many Chat 1-to-many Chat 1-to-many Chat 1-to-many Chat 1-to-many Chat t ft the 1-to-many Chat t t t the 1-to-many Chat it ft the 1-to-many Chat ers have left the 1-to-many Chat ers have left the 1-to-many Chat t t t t									
Test Sequence:	Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17A 17B 18A 18B 19A 20A 20B 20A	User A initiates a 1-to-many Chat message User A is informed that the 1-to-n User B is informed of incoming in Chat User B reads the initial message User A is notified with list of 1-to- User B is notified with list of 1-to- Users perform messaging in the User A invites User D to join 1-to User D is informed of incoming in Chat User D accepts the 1-to-many Ch User D is notified with list of 1-to- Users perform messaging in the User D accepts the 1-to-many Ch User D is notified with list of 1-to- Users perform messaging in the User D leaves the 1-to-many Cha User D leaves the 1-to-many Cha User D is informed that he has le User A is notified that User D has User B leaves the 1-to-many Cha User B is informed that he has le User A is notified that all other us User A is notified that all other us User B is notified that all other us User B leaves the 1-to-many Cha User B is notified that all other us User A leaves the 1-to-many Cha User B leaves the 1-to-many Cha User B is notified that all other us User A leaves the 1-to-many Cha User B leaves the 1-to-many Cha	with User B and User C by sending initial hany Chat is established vitation from User A to join the 1-to-many and accepts the 1-to-many Chat invitation many Chat participants 1-to-many Chat many Chat participants 1-to-many Chat vitation from User A to join the 1-to-many tat invitation many Chat participants 1-to-many Chat at invitation many Chat participants 1-to-many Chat tt ft the 1-to-many Chat tt t the 1-to-many Chat tt t the 1-to-many Chat tt t the 1-to-many Chat ers have left the 1-to-many Chat ers have left the 1-to-many Chat tt t t t t t t t t t t t									

Interoperability 1	Fest Descrip	otion
Conformance	Check	
Criteria:	1	TP_IMS_5107_03 in CFW step 41 (CANCEL): ensure that { when { UE_A sends CANCEL to UE_B } then { IMS_B receives the CANCEL not containing Route_header indicating the S-CSCF_SIP_URI of IMS_A }

Step					Direc	tion					Message	Comment
	U	U	Α	I	I	I		Α	U	U	Ŭ	
	S	Е	S/	М	В	В	М	S/	Е	S		
	е	Α	1	S	С	С	S	1	D	е		
	r		М	Α	F	F	В	М		r		
	Α		Α		Α	В		В		D		
1												Follow UC_RCS_6_I (1-79)
2		_										User A invites User D to join 1-to-
		1										many Chat
3											REFER	UE_A sends REFER message
												to IMS_A, with IM session
												identity (allocated for the
				\rightarrow								current 1-to-many chat), Refer-
												To header value equals to
												UE_D URI and Refer-Sub
-											DEEED	neader value set to "faise"
4			←								REFER	IMS_A forwards REFER to
_											200.01	AS/IM_A
5				\rightarrow							200 OK	AS/IM_A responds with 200 OK
6											200 0K	IMS_A forwards the 200 OK
0		←									200 01	response to LIF Δ
7												AS/IM A sends INVITE to LIF D
'												with IM session identity (allocated
				\rightarrow								for the current 1-to-many Chat)
				-								and IM address of the Inviting IM
												UE (UE_A)
8											100 Trying	IMS_A responds with a 100
												Trying provisional response
9					``						INVITE	IMS_A forwards INVITE to
					1							IBCF_A
10				4							100 Trying	IBCF_A responds with a 100
				Ì								Trying provisional response
11						\rightarrow					INVITE	IBCF_A forwards INVITE to
						-						IBCF_B
12					←						100 Trying	IBCF_B responds with a 100
10												I rying provisional response
13							\rightarrow				INVITE	IBCF_B forwards INVITE to
											400 Ta is a	INS_B
14						←					100 Trying	IMS_B responds with a 100
15												INS B forwarda INV/ITE to
15								\rightarrow				
16												AS/IM_B responds with a 100
10							←				100 Hying	Trying provisional response
17												AS/IM B returns possibly
.,							←					modified INVITE to IMS B
18											100 Trying	IMS B responds with a 100
								\rightarrow				Trying provisional response
19									\rightarrow		INVITE	IMS B forwards INVITE to UF D
20											100 Trying	UF D optionally responds with a
							K					100 Trying provisional response

1	55	
1	55	

Step					Directio	on					Message	Comment
	U	U	Α	I	I	I	I	Α	U	U		
	S	E	S/	М	В	В	М	S/	E	S		
	е	Α		S	č	c	S		D	е		
	r		M	Α			в	M		r		
21					A							Liser D is informed of incoming
21										→		invitation from User A to join the
										1		1-to-many Chat
22												User D accepts the 1-to-many
									K			Chat invitation
23											200 OK	UE_D responds INVITE with 200
												OK response with SDP to
							(indicate that the session has
							`					been accepted and inform
												AS/IM_A with specific data for
24												MSRP connection set up
24								÷			200 OK	INS_B forwards 200 OK
25											200 0K	AS/IM B returns possibly
23							(_			200 01	modified 200 OK response to
							Ì					IMS B
26											200 OK	IMS B forwards 200 OK
_						¢						response to IBCF_B
27					/						200 OK	IBCF_B forwards 200 OK
												response to IBCF_A
28				(200 OK	IBCF_A forwards 200 OK
				`								response to IMS_A
29			←	4							200 OK	IMS_A forwards 200 OK
20											ACK	response to AS/IM_A
30				*							ACK	AS/IM_A acknowledges the
31											ACK	IMS A forwards ACK to IBCE A
32											ACK	IBCE A forwards ACK to IBCE B
22												IBCE B forwards ACK to IMS B
24											ACK	INC P forwards ACK to AS/IM P
34								7			ACK	AC/IM D returns possibly
35							←	-			ACK	AS/IM_B returns, possibly
36									<u>`</u>		ACK	IMS B forwards ACK to UE D
37									1			AS/IM A sends NOTIEV to LIE A
57												with list of 1-to-many Chat
												participants
38											NOTIFY	IMS A forwards the NOTIFY to
		<u> </u>										UE_A
39												User A is notified with list of 1-to-
												many Chat participants
40											200 OK	UE_A responds with 200 OK to
			· · ·									IMS_A
41			←	4							200 OK	IMS_A forwards the 200 OK
40												response to AS/IM_A
42							←		-		SUBSCRIBE	
13												IMS B forwards SUBSCRIBE to
43								>			SOBSCIUDE	AS/IM B
44											SUBSCRIBE	AS/IM B returns, possibly
							K					modified, SUBSCRIBE to IMS B
45											SUBSCRIBE	IMS_B forwards SUBSCRIBE to
							1					IBCF_B
46					(1					SUBSCRIBE	IBCF_B forwards SUBSCRIBE to
					`							IBCF_A
47				к——	-						SUBSCRIBE	IBCF_A forwards SUBSCRIBE to
				ľ								
48			←	4							SUBSCRIBE	INS_A forwards SUBSCRIBE to
40											200 04	AS/INI_A AS/IM A sands 200 OK for
49				*							200 01	SUBSCRIBE
	1	1	1	1	1	1	1	1	1	1	L	

Step					[Directio	n					Message	Comment
	U	U	A	4	I	Ι	I	I	Α	U	U		
	S	Е	S	5/	м	В	В	Μ	S/	Е	S		
	е	Α			S	С	С	S	I	D	е		
	r		N	Λ	Α	F	F	В	М		r		
	A			A		A	В		В		D		
50					\rightarrow							200 OK	IMS_A forwards 200 OK
54												000.01/	response to IBCF_A
51						\rightarrow	•					200 OK	IBCF_A forwards 200 OK
52												200 0K	IBCE B forwards 200 OK
52							\rightarrow					200 01	response to IMS_B
53												200 OK	IMS B forwards 200 OK
									→				response to AS/IM B
54												200 OK	AS/IM_B returns, possibly
								←	_				modified, 200 OK response to
													IMS_B
55									_			200 OK	IMS_B forwards 200 OK
													response to UE_D
56												NOTIFY	AS/IM_A sends NOTIFY to UE_D
													with list of 1-to-many Chat
57												NOTIEV	
57					,								INIS_A IOI WAILOS BYE LO IBCF_A
58						\rightarrow							IBCF_A forwards BYE to IBCF_B
59							\rightarrow					NOTIFY	IBCF_B forwards BYE to IMS_B
60									→			NOTIFY	IMS_B forwards BYE to AS/IM_B
61								<u> </u>	_			NOTIFY	AS/IM_B returns, possibly
													modified, BYE to IMS_B
62	_									→ 		NOTIFY	IMS_B forwards BYE to UE_D
63										_	\rightarrow		User D is notified with list of 1-to-
64								,				200.01/	many Chat participants
64								(200 OK	UE_D sends 200 OK for NOTIFY
65									\rightarrow			200 OK	IMS_B forwards 200 OK
66												200 0K	AS/IM B returns possibly
00								(_			200 01	modified 200 OK response to
								`					IMS B
67												200 OK	IMS B forwards 200 OK
							¢						response to IBCF_B
68						/						200 OK	IBCF_B forwards 200 OK
													response to IBCF_A
69					(200 OK	IBCF_A forwards 200 OK
													response to IMS_A
70			÷									200 OK	IMS_A forwards 200 OK
74									_	_			response to AS/IM_A
71													1-to-many Chat (see clause
	←		-*						-	_	\rightarrow		5.3.2.3 Chat 1 to many via MSRP
													to additional user - Interworking)
72		·	ľ.										User D leaves the 1-to-many
										—			Chat
73								,				BYE	UE_D sends BYE to IMS_B to
													leave the 1-to-many Chat
74									→			BYE	IMS_B forwards BYE to AS/IM_B
75								(BYE	AS/IM_B returns, possibly
								$\left[\right]$					modified, BYE to IMS_B
76							←					BYE	IMS_B forwards BYE to IBCF_B
77						←						BYE	IBCF_B forwards BYE to IBCF_A
78					←							BYE	IBCF_A forwards BYE to IMS_A
79			÷									BYE	IMS_A forwards BYE to AS/IM_A
80			F									200 OK	AS/IM_A sends 200 OK for BYE
81												200 OK	IMS_A forwards 200 OK
					\rightarrow								response to IBCF_A
82						`	l					200 OK	IBCF_A forwards 200 OK
		1											response to IBCF_B

Step						Dire	ction	Message	Comment				
	U	l	J	Α	I	1	1	I	Α	U	U		
	S	E	E	S/	Μ	В	B	M	S/	E	S		
	е		4	I I	S	C	C	S		D	е		
	r A				А			в			r		
83	$\widehat{}$											200 OK	IBCF_B forwards 200 OK response to IMS_B
84									→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
85								←				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
86										\rightarrow		200 OK	IMS_B forwards 200 OK response to UE_B
87											→		User D is informed that he has left the 1-to-many Chat
88					→							NOTIFY	AS/IM_A sends NOTIFY to IMS _A to inform UE_A that User B has left the 1-to-many Chat
89		ŧ			_							NOTIFY	IMS_A forwards the NOTIFY to UE_A
90	←	_											User A is notified that User D has left the 1-to-many Chat
91		╞			→							200 OK	UE_A responds with 200 OK to IMS_A
92				←								200 OK	IMS_A forwards the 200 OK response to AS/IM_A
93													Continue UC_RCS_6_I (80A- 116B)

4.5.3.7.2 Adding participants to an already established 1-to-many chat session - roaming (optional)

	Interoperability Tes	st Description										
Identifier:	TD_IMS_CHAT_0016											
Summary:	IMS network supports 1-to-many IM/Chat service and messages exchange between two users, one user in its home network and one user roaming can be performed. User A invites User D to an already established 1-to-many Chat											
Configuration:	CF_ROAM_AS (OPTIONAL)											
SUT	IMS_A and IMS_B											
References	Test Purpose	Specification Reference										
	TP_IMS_5107_03	TS 124 229 [1], clause 5.4.3.2 ¶119 (item 1 in 8 th numbered list)										
Use Case ref.:	UC_RCS_6_R											
Pre-test conditions:	 HSS of IMS_A and of IMS B is of UE_A, UE_C, UE_D and UE_B IMS networks as per TS 186 01 UE_A and UE_D are registered table 1 UE_B and UE_C are registered according to table 1 UE_A is optionally configured to UE_A is authorized to see prese IMS_A is configured to contact A IMS_B is configured to contact A IMS_B is optionally configured for IMS_A is within the trust domain UE_A, UE_C, UE_D and UE_B process IMS_A not configured for topology 	configured according to table 1 have IP bearers established to their respective 1-2 [9], clause 4.2.1 in IMS_A optionally using userPRES according to in IMS_B via IMS_A optionally using userPRES o receive notifications with watcher information ence information of UE_B and UE_C AS_A AS_B or reactive authorization in of IMS_B have already performed capability discovery										

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		Interoperability Test Description							
Test Sequence:	Step								
	1	User B initiates a 1-to-many Chat with User A and User C by sending initial							
		message							
	2	User B is informed that the 1-to-many Chat is established							
	3	User A is informed of incoming invitation from User B to join the 1-to-many							
		Chat							
	4	User A reads the initial message and accepts the 1-to-many Chat invitation							
	5	User B is notified with list of 1-to-many Chat participants							
	6	User A is notified with list of 1-to-many Chat participants							
	7	Users perform messaging in the 1-to-many Chat							
	8	User B invites User D to join 1-to-many Chat							
	9	User D is informed of incoming invitation from User B to join the 1-to-many							
		Chat							
	10	User D reads the initial message and accepts the 1-to-many Chat invitation							
	11	User B is notified with list of 1-to-many Chat participants							
	12	User D is notified with list of 1-to-many Chat participants							
	13	Users perform messaging in the 1-to-many Chat							
	14	User D leaves the 1-to-many Chat							
	15	User D is informed that he has left the 1-to-many Chat							
	16	User B is notified that user D has left the 1-to-many Chat							
	17A	User A leaves the 1-to-many Chat							
	17B	User B leaves the 1-to-many Chat							
	18A	User A is informed that he has left the 1-to-many Chat							
	18B	User B is informed that he has left the 1-to-many Chat							
	19A	User B is notified that all other users have left the 1-to-many Chat							
	19B	User A is notified that all other users have left the 1-to-many Chat							
	20A	User B leaves the 1-to-many Chat							
	20B	User A leaves the 1-to-many Chat							
	21A	User B is informed that the 1-to-many Chat has ended							
	21B	User A is informed that the 1-to-many Chat has ended							
Conformance	Check								
Criteria:	1	TP_IMS_5107_03 in CFW step 56 (CANCEL):							
		ensure that {							
		when { UE_A sends CANCEL to UE_B }							
		then { IMS_B receives the CANCEL							
		not containing Route_header							
		indicating the S-CSCF_SIP_URI of IMS_A							
		}							
		}							

Step					Direc	tion	Message	Comment				
	U s r D	U E D	A S/ I M	I M S A	I B C F A	I B C F B	I M S B	A S/ I M B	U E B	U s r B		
1												Follow UC_6_R (1-
2									←			User B invites User D to join 1-to- many Chat
3				←							REFER	UE_B sends REFER message to IMS_A, with IM session identity (allocated for the current 1-to-many chat), Refer-To header value equals to UE_D URI and Refer-Sub header value set to "false"
4					→						INVITE	IMS_A forwards INVITE to IBCF_A
5						\rightarrow					INVITE	IBCF_A forwards INVITE to IBCF_B
6							\rightarrow				INVITE	IBCF_B forwards INVITE to IMS_B
7								\rightarrow			INVITE	IMS_B forwards INVITE to AS/IM_B

Step					Directio	on					Message	Comment
	U s e r D	U E D	A S/ I M	I M S A	I B C F A	I B C F B	I M S B	AS/IMB	U E B	Døerp		
8							K				200 OK	AS/IM_B responds with 200 OK to IMS_B
9						(-				200 OK	IMS_B forwards 200 OK response to IBCF_B
10					←						200 OK	IBCF_B forwards 200 OK response to IBCF_A
11				~							200 OK	IBCF_A forwards 200 OK response to IMS_A
12									\rightarrow		200 OK	IMS_A forwards 200 OK response to UE_B
13							←	-			INVITE	AS/IM_B sends INVITE to UE_D with IM session identity (allocated for the current 1-to-many Chat) and IM address of the Inviting IM UE (UE_D)
14								*			100 Trying	IMS_B responds with a 100 Trying provisional response
15						←	-				INVITE	IMS_B forwards INVITE to IBCF_B
16							*				100 Trying	IBCF_B responds with a 100 Trying provisional response
17					←	-					INVITE	IBCF_B forwards INVITE to IBCF_A
18					$ \rightarrow$						100 Trying	IBCF_A responds with a 100 Trying provisional response
19				~							INVITE	IBCF_A forwards INVITE to IMS_A
20				—							100 Trying	IMS_A responds with a 100 Trying provisional response
21			←	-							INVITE	IMS_A forwards INVITE to AS/IM_A
22			;								100 Trying	AS/IM_A responds with a 100 Trying provisional response
23			 ;								INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
24			←	-							100 Trying	IMS_A responds with a 100 Trying provisional response
25		(-							INVITE	IMS_A forwards INVITE to UE_D
26			;								100 Trying	UE_D optionally responds with a 100 Trying provisional response
27												User D is informed of incoming invitation from User B to join the 1- to-many Chat
28	$ \longrightarrow$											User D reads the initial message and accepts the 1-to-many Chat invitation
29			;								200 OK	UE_D responds INVITE with 200 OK response with SDP to indicate that the session has been accepted and inform AS/IM_A with specific data for MSRP connection set up
30			←	-							200 OK	IMS_A forwards 200 OK response to AS/IM_A
31			 ;								200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
32				 ;							200 OK	IMS_A forwards 200 OK response to IBCF_A

1	60	

Step					Directio	on					Message	Comment
	U	U	Α	I	I	I	I	Α	U	U		
	S	E	S/	М	В	В	M	S/	E	S		
	е	D		S	C	C	S	I	в	е		
	r			A		r B	в	R		r B		
33					$\stackrel{\frown}{\vdash}$	*					200 OK	IBCF_A forwards 200 OK response
34							*				200 OK	IBCF_B forwards 200 OK response to IMS_B
35								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
36							←				ACK	AS/IM_B acknowledges the receipt of 200 OK for INVITE
37						←	-				ACK	IMS_B forwards ACK to IBCF_B
38					←						ACK	IBCF_B forwards ACK to IBCF_A
39				←							ACK	IBCF_A forwards ACK to IMS_A
40			(ACK	IMS_A forwards ACK to AS/IM_A
41				→							ACK	AS/IM_A returns, possibly modified, ACK to IMS_A
42		(_							ACK	IMS_A forwards ACK to UE_D
43							←				NOTIFY	AS/IM_B sends NOTIFY to UE_B with list of 1-to-many Chat participants
44						←					NOTIFY	IMS_B forwards NOTIFY to IBCF_B
45					(NOTIFY	IBCF_B forwards NOTIFY to IBCF_A
46				<							NOTIFY	IBCF_A forwards NOTIFY to IMS_A
47									\rightarrow		NOTIFY	IMS_A forwards NOTIFY to UE_B
48									F			User B is notified with list of 1-to- many Chat participants
49				<							200 OK	UE_B responds with 200 OK to IMS_A
50					•						200 OK	IMS_A forwards 200 OK response to IBCF_A
51						*					200 OK	IBCF_A forwards 200 OK response to IBCF_B
52							*				200 OK	IBCF_B forwards 200 OK response to IMS_B
53								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
54)							SUBSCRIBE	UE_D subscribes to the conference event package
55			←	-							SUBSCRIBE	IMS_A forwards SUBSCRIBE to AS/IM_A
56				→							SUBSCRIBE	AS/IM_A returns, possibly modified, SUBSCRIBE to IMS_A
57					•						SUBSCRIBE	IMS_A forwards SUBSCRIBE to IBCF_A
58					;	*					SUBSCRIBE	IBCF_A forwards SUBSCRIBE to IBCF_B
59							*				SUBSCRIBE	IBCF_B forwards SUBSCRIBE to IMS_B
60								→			SUBSCRIBE	IMS_B forwards SUBSCRIBE to AS/IM_B

Step					Directio	on					Message	Comment
	U	U	A	1	I	1	I	A	U	U		
	S	E	S/	M S	B	B	M S	S/	E	S		
	r		м	A	F	F	B	M	Б	r		
	D		A	~	A	B	_	В		в		
61							<				200 OK	AS/IM_B sends 200 OK for SUBSCRIBE
62						←	-				200 OK	IMS_B forwards 200 OK response to IBCF_B
63					(200 OK	IBCF_B forwards 200 OK response to IBCF_A
64				~	-						200 OK	IBCF_A forwards 200 OK response to IMS_A
65			←								200 OK	IMS_A forwards 200 OK response to AS/IM_A
66											200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
67											200 OK	IMS_A forwards 200 OK response to UE_D
68							←				NOTIFY	AS/IM_B sends NOTIFY to UE_D with list of 1-to-many Chat
69						←	_				NOTIFY	IMS_B forwards BYE to IBCF_B
70					←						NOTIFY	IBCF_B forwards BYE to IBCF_A
71				←							NOTIFY	IBCF_A forwards BYE to IMS_A
72			←								NOTIFY	IMS_A forwards BYE to AS/IM_A
73											NOTIFY	AS/IM_A returns, possibly modified, BYE to IMS_A
74		~									NOTIFY	IMS_A forwards BYE to UE_D
75												User D is notified with list of 1-to- many Chat participants
76			;								200 OK	UE_D sends 200 OK for NOTIFY
77			←								200 OK	IMS_A forwards 200 OK response to AS/IM_A
78											200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
79					*						200 OK	IMS_A forwards 200 OK response to IBCF_A
80					 ;						200 OK	IBCF_A forwards 200 OK response to IBCF_B
81							→				200 OK	IBCF_B forwards 200 OK response to IMS_B
82								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
83	<							*		→		Users perform messaging in the 1- to-many Chat (see clause 5.3.2.4 Chat 1 to many via MSRP to additional user - Roaming)
84		*										User D leaves the 1-to-many Chat
85			;	*							BYE	UE_D sends BYE to IMS_A to leave the 1-to-many Chat
86			€	1							BYE	IMS_A forwards BYE to AS/IM_A

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Step					Direc	tion					Message	Comment
	U	U	Α	Ι	Ι	I	Ι	Α	U	U		
	S	E	S/	M	B	В	M	S/	E	S		
	e	U	M	5	C E	C E	Э В	M	В	e		
	D		A	^	Δ	B	Ъ	B		B		
87				→ →						Ī	BYE	AS/IM_A returns, possibly
												modified, BYE to IMS_A
88					→						BYE	IMS_A forwards BYE to IBCF_A
89						→					BYE	IBCF_A forwards BYE to IBCF_B
90							→				BYE	IBCF_B forwards BYE to IMS_B
91								→			BYE	IMS_B forwards BYE to AS/IM_B
92							←				200 OK	AS/IM_B sends 200 OK for BYE
93						<	_				200 OK	IMS_B forwards 200 OK response to IBCF_B
94					←						200 OK	IBCF_B forwards 200 OK response to IBCF_A
95				←	_						200 OK	IBCF_A forwards 200 OK response to IMS_A
96			←	_							200 OK	IMS_A forwards 200 OK response to AS/IM_A
97				→							200 OK	AS/IM_A returns, possibly modified, 200 OK response to
98		←		_							200 OK	IMS_A IMS_A forwards 200 OK response to UF_D
99	~											User D is informed that he has left the 1-to-many Chat
100							←	_			NOTIFY	AS/IM_B sends NOTIFY to IMS _B to inform UE_B that User D has left the 1-to-many Chat
101						←					NOTIFY	IMS_B forwards NOTIFY to IBCF_B
102					←	_					NOTIFY	IBCF_B forwards NOTIFY to IBCF_A
103				<	_						NOTIFY	IBCF_A forwards NOTIFY to IMS_A
104									\rightarrow		NOTIFY	IMS_A forwards NOTIFY to UE_B
105										→		User B is notified that user D has left the 1-to-many Chat
106				<							200 OK	UE_B responds with 200 OK to IMS_A
107					→						200 OK	IMS_A forwards 200 OK response to IBCF_A
108						→					200 OK	IBCF_A forwards 200 OK response to IBCF_B
109							→				200 OK	IBCF_B forwards 200 OK response to IMS_B
110								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
111												Continue UC_RCS_6_R (104A- 146B)

4.5.4 RCS-e services during a call

4.5.4.1 Video sharing

4.5.4.1.1 Video sharing- interworking

		Interoperability Test Des	cription												
Identifier:	TD_IMS_	SHARE_0001													
Summary:	IMS netw	ork supports Video sharing servio	ce and messages exchange between two												
	users in their networks can be performed. User A starts video sharing with User B during a voice call														
	during a v	voice call													
Configuration:	CF_INT_	AS													
SUT	IMS_A and IMS_B Test Purpose Specification Reference														
References	Test Purpose Specification Reference TP_IMS_5097_01 TS 124 229 [1], clause 5.4.3.2 ¶11														
	TP_IMS_5097_01 TS 124 229 [1], clause 5.4.3.2 ¶11 (1st numbered list) (1st numbered list)														
	(1 st numbered list) TP_IMS_5108_03 TS 124 229 [1], clause 5.4.3.3 ¶5 (item 4 in 1 st numbered list) TP_IMS_5115_08 TS 124 229 [1], clause 5.4.3.3 ¶89 (4 th numbered list) UC_RCS_8_I														
Use Case ref.:															
Pre-test	 HSS 	of IMS_A and of IMS B is configu	ured according to table 1												
conditions:	• UE_/	A and UE_B have IP bearers esta	ablished to their respective IMS networks as												
	per 7	ГS 186 011-2 [9], clause 4.2.1													
	 UE_/ 	A is registered in IMS_A optionall	y using userPRES according to table 1												
	 UE_A is registered in IMS_A optionally using userPRES according to table 1 UE_B is registered in IMS_B optionally using userPRES according to table 1 UE_A is optionally configured to receive notifications with watcher information 														
	 UE_/ 	A is authorized to see presence in	nformation of UE_B												
	 IMS_ 	_A is configured to contact AS_A													
	 IMS_ 	_B is configured to contact AS_B													
	 AS_I 	B is optionally configured for reac	tive authorization												
	 IMS_ 	_A is within the trust domain of IM	S_B												
	 UE_/ 	A and UE_B have already perforr	ned capability discovery process												
	 IMS 	_A not configured for topology hid	ing												
Test Sequence:	Step														
	1A	User A establishes voice call wi	th user B												
	1B	User B establishes voice call wi	th user A												
	2	User A requests to share video	with user B												
	3	User B is requested to accept to	o share video												
	4	User B accepts to share video v	vith user A												
	5	User A is informed that request	has been answered												
	6	Video sharing starts													
	7A	User A ends video sharing													
	8A	User B is informed that video sh	haring has terminated												
	9A	User A is informed that video sh	haring has terminated												
	10A	User A initiates voice call termin	nation												
	7B	User B ends video sharing													
	8B	User A is informed that video sh	haring has terminated												
	9B	User B is informed that video sh	haring has terminated												
	10B	User B initiates voice call termin	nation												

		Interoperability Test Description
Conformance	Check	
Criteria:		
	1	TP_IMS_5097_01 in CFW step 15 (INVITE):
		ensure that {
		when { UE_A sends an initial INVITE to UE_B }
		then { IMS_B receives the initial INVITE
		not containing a Route_header
		indicating the S-CSCF_SIP_URI of IMS_A
		containing a P-Charging-Vector_header
		(containing an icid-value_parameter and
		containing a orig-ioi_parameter indicating IMS_A and
		not containing an access-network-charging-info_parameter and
		not containing a term-ioi_parameter) and
		containing a Record-Route_header
		indicating the originating S-CSCF_SIP_URI }
		}
	2	TP_IMS_5108_03 in CFW step 19 (INVITE)
		ensure that {
		when { IMS_B receives an initial INVITE from IMS_A addressed_to UE_B }
		then { IMS_B sends the initial INVITE to AS_B
		containing a topmost Route_header
		indicating the SIP_URI of AS_B and
		containing a Route_header
		indicating the S-CSCF_SIP_URI of IMS_B and
		containing a P-Charging-Vector_header
		including a orig-ioi_parameter
		indicating operator_identifier of IMS_A and
		not including a term-ioi_parameter }
		}
	3	TP_IMS_5115_08 in CFW step 31 (200 OK)
		ensure that {
		when { IMS_B receives 200_response from AS_B addressed_to UE_A }
		then { IMS_B sends the 200_response to IMS_A
		containing a P-Charging-Vector_header
		including a orig-ioi_parameter
		indicating operator_identifier of IMS_A and
		including a term-ioi_parameter
		indicating operator_identifier of IMS_BIUT_ }
		}

Step				Dire	ction				Message	Comment
	U	U	Ι	1	Ι	Ι	U	U		
	S	E	Μ	В	В	М	E	S		
	е	Α	S	C	C	S	в	е		
	r A		Α	F A	B	в		r B		
1A	\leftarrow	_						\rightarrow		User A establishes a voice call to user B
1B								→		User B establishes a voice call to user A
2		\rightarrow								User A requests to share video with user B
3			\rightarrow						INVITE	UE_A sends INVITE to share video with user B
4		/							100 Trying	IMS_A responds with a 100 Trying provisional
		ì								response
5				\rightarrow					INVITE	IMS_A forwards INVITE to IBCF_A
6			←						100 Trying	IBCF_A responds with a 100 Trying provisional
										response
7					\rightarrow				INVITE	IBCF_A forwards INVITE to IBCF_B
8				←					100 Trying	IBCF_B responds with a 100 Trying provisional response
9						\rightarrow			INVITE	IBCF_B forwards INVITE to IMS_B
10					←				100 Trying	IMS_B responds with a 100 Trying provisional response
11] +						\rightarrow		INVITE	IMS_B forwards INVITE to UE_B
12						←			100 Trying	UE_B responds with a 100 Trying provisional response

U U U I I I I U U U U I I I U U U I I I U	Step				D	irecti	on				Message	Comment
s F K C F F B B S 13 14 14 14 14 14 14 14 14 14 14 180 Ringing UE B responds to initial INVITE with 180 Ringing to indicate that it has started alerting. 180 Ringing BCF B forwards 180 Ringing response to 180 Ringing BCF B forwards 180 Ringing response to 180 Ringing BCF A forwards 180 Ringing response to BCF A 200 OK 19 14 14 14 14 14 14 19 14 14 14 14 14 140 Ringing BCF A forwards 180 Ringing response to BCF A 200 OK 140 Ringing R		U	U	I	I			I	U	U		
Image: Section of the section of th		S	E	M	E	3	B	M	E	S		
A A B User B is requested to accept to share video 14 User B is requested to accept to share video Ringing in the stated elerting 15 User B is requested to accept to share video Ringing in the stated elerting 16 Image: S and stated elerting Ringing in the stated elerting 17 Image: S and stated elerting Ringing in the stated elerting 18 Image: S and stated elerting Ringing in the stated elerting 19 Image: S and stated elerting Ringing in the stated elerting 20 Image: S and stated elerting Ringing in the stated elerting 21 Image: S and stated elerting Ringing in the state elerting 22 Image: S and state elerting Ringing in the state elerting 23 Image: S and state elerting Ringing in the state elerting 24 Image: S and state element elerting Ringing in the request has been accepted 25 Image: S and state element		e r	A	⊃			С F	B	в	e r		
13 User B is requested to accept to share video 14 140 Ringing UE. B responds to initial INVITE with 180 Ringing to indicate that thas started alering. 15 180 Ringing IMS B torwards 180 Ringing response to IBCF A 16 180 Ringing IBCF. B forwards 180 Ringing response to IBCF A 180 Ringing IBCF. B forwards 180 Ringing response to UE A 180 Ringing IBCF A forwards 180 Ringing response to UE A 180 Ringing IBCF. B forwards 180 Ringing response to IBCF A 180 Ringing IBCF A forwards 180 Ringing response to IBCF A 20 UE A User B accepts to share video 21 200 OK UE B responds INVITE with 200 K to indicate that the request has been accepted 21 200 OK IBCF B forwards 200 OK response to IBCF A 22 200 OK IBCF A forwards 200 OK response to IBCF A 22 200 OK IBCF A forwards 200 OK response to IBCF A 220 OK IBCF A forwards 200 OK response to IBCF A 230 OK IBCF A forwards ACK to IBCF B 24 200 OK IBCF A forwards ACK to IBCF A 26 IBCF A forwards ACK to IBCF A 27 ACK IBCF B forwards ACK to IBCF A 28 IBCF B forwards ACK to IBCF A 30 IBCF A forwards ACK to IBCF A		Å			A		B			B		
14 140 Ringing UE B responds to initial INVITE with 100 Ringing response to initial INVITE with 10a Standard alerting. 15 160 Ringing MS_B forwards 100 Ringing response to initial INVITE with 200 Ringing response to initial Response Response to initial Response	13									→		User B is requested to accept to share video
15 Image of the second sec	14							/			180 Ringing	UE_B responds to initial INVITE with 180
15 180 Ringing IMS_B forwards 180 Ringing response to BCF_B 17 180 Ringing IBCF_B forwards 180 Ringing response to BCF_A 181 180 Ringing IBCF_A forwards 180 Ringing response to BCF_A 182 180 Ringing IBCF_A forwards 180 Ringing response to BCF_A 183 180 Ringing IBCF_A forwards 180 Ringing response to BCF_A 193 194 195 20 195 195 21 200 CK 195 Romards 200 CK response to IBCF_A 220 200 CK 180 Forwards 200 CK response to IBCF_A 220 200 CK 180 F. B forwards 200 CK response to IBCF_A 220 CK 180 F. A forwards 200 CK response to IBCF_A 220 CK 180 F. A forwards 200 CK response to IBCF_A 220 CK 180 F. A forwards 200 CK response to IBCF_A 230 CK 180 F. A forwards 200 CK response to IBCF_A 24 200 CK 180 F. A forwards 200 CK response to IBCF_B 231 24 25 26 24 26 26 26 331 26 27 28 333 29 20 20 344 20 20 20												Ringing to indicate that it has started alerting
16 180 Ringing IBCF B forwards 180 Ringing response to IBCF A 17 180 Ringing IBCF A forwards 180 Ringing response to IBCF A 180 Ringing IBCF A forwards 180 Ringing response to IBCF A 19 180 Ringing IBCF A forwards 180 Ringing response to IBCF A 20 User B accepts to share video 21 200 OK IBCF A forwards 200 OK to indicate that the request has been accepted 21 200 OK IBCF A forwards 200 OK response to IBCF A 220 00 K IBCF A forwards 200 OK response to IBCF A 230 00 K IBCF A forwards 200 OK response to IBCF A 200 OK IBCF A forwards 200 OK response to IBCF A 200 OK IBCF A forwards ACK to IBCF A 21 00 K IBCF B forwards 200 OK response to IBCF A 200 OK IBCF A forwards ACK to IBCF B 200 OK IBCF A forwards ACK to IBCF B 21 00 K IBCF B forwards ACK to IBCF B 22 00 K IBCF B forwards ACK to IBCF B 230 00 K IBCF B forwards ACK to IBCF B 340 00 K IBCF B forwards ACK to IBCF B 354 00 K IBCF B forwards 200 OK	15						←				180 Ringing	IMS_B forwards 180 Ringing response to IBCF_B
17 180 Ringing 180-F.A forwards 180 Ringing response to IMS_A 180 Ringing IBCF_A forwards 180 Ringing response to IMS_A 19 180 Ringing IMS_A forwards the 180 Ringing response to UE_A 20 180 Ringing IMS_A forwards the 180 Ringing response to UE_A 21 180 Ringing IMS_A forwards 200 OK to indicate that the request has been accepted 22 200 OK IBCF_B forwards 200 OK response to IBCF A 230 OK IBCF_A forwards 200 OK response to IBCF A 240 OK IBCF_A forwards 200 OK response to IBCF A 200 OK IBCF_B forwards 200 OK response to IBCF A 200 OK IBCF_B forwards 200 OK response to IBCF A 200 OK IBCF_B forwards 200 OK response to IBCF A 200 OK IBCF_B forwards 200 OK response to IBCF A 200 OK IBCF_B forwards 200 OK response to IBCF A 21 ACK IBCF_A forwards RCK to IBCF B 22 ACK IBCF_A forwards RCK to IBCF B 230 ACK IBCF_B forwards 200 KK to UE_B 340 IBCF_B forwards 200 KK to UE_B 351 IBCF_B forwards 200 K response to IBCF_A 353 IBCF_B forwards 200 OK response to IBCF_A	16					(-				180 Ringing	IBCF_B forwards 180 Ringing response to
18 180 Ringing MS_A forwards the 180 Ringing response to UE_A 19 User B accepts to share video 20 User B accepts to share video 21 200 OK UE_B responds INVITE with 200 OK to indicate that the request has been accepted 22 200 OK IBCF_B forwards 200 OK response to IBCF_B 200 OK IBCF_A forwards 200 OK response to IBCF_A 200 OK IBCF_A forwards 200 OK response to IBCF_A 200 OK IBCF_B forwards 200 OK response to IBCF_A 200 OK IBCF_A forwards 200 OK response to IBCF_A 200 OK IBCF_A forwards 200 OK response to IBCF_A 200 OK IBCF_A forwards ACK to IBCF_A 200 OK IBCF_A forwards ACK to IBCF_A 28 ACK IBCF_A forwards ACK to IBCF_B 29 ACK IBCF_A forwards ACK to IBCF_B 30 ACK IBCF_B forwards ACK to IBCF_B 31 ACK IBCF_B forwards ACK to UE_B 31 BYE IBCF_B forwards BYE to IBCF_A 33A BYE IBCF_B forwards 200 OK response to IBCF_B 34A Commark ack to UE_B sends 200 OK response to IBCF_B 35A OVideo sharing starts	17			÷							180 Ringing	IBCF_A forwards 180 Ringing response to
19 20 User B accepts to share video 20 20 CK UE_B responds INVITE with 200 CK to indicate that the request has been accepted 21 20 CK IMS_E forwards 200 CK response to IBCF_B 220 CK IMS_F forwards 200 CK response to IBCF_A 23 CM CM IMS_A forwards 200 CK response to IBCF_A 24 CM CMS_A forwards 200 CK response to IBCF_A 25 CM CMS_A forwards 200 CK response to IBCF_A 26 CM IBCF_A forwards ACK to IBCF_A 28 CM CMS_A forwards ACK to IBCF_B 29 CM CMS_A forwards ACK to IBCF_B 30 CM IBCF_A forwards ACK to IBCF_B 31 CM CMS_A forwards ACK to IBCF_B 32A CM CMS_A forwards ACK to IBCF_B 33A CM CMS_A forwards ACK to IBCF_B 33A CM CMS_A forwards ACK to IBCF_B 33A CM CMS_A forwards BYE to IBCF_B 34A CM CMS_A forwards BYE to IBCF_B 35A CMS_A forwards BYE to IBCF_B 35A CMS_A forwards BYE to IBCF_B	18		÷								180 Ringing	IMS_A forwards the 180 Ringing response to UF A
20 20 0K UE B responds INUTRe with 200 OK to indicate that the request has been accepted 21 23 200 OK IBCF_B forwards 200 OK response to IBCF_B 23 24 200 OK IBCF_A forwards 200 OK response to IBCF_A 25 200 OK IBCF_A forwards 200 OK response to IBCF_A 26 200 OK IBCF_A forwards 200 OK response to IBCF_A 27 28 200 OK IBCF_A forwards 200 OK response to IBCF_A 29 29 20 ACK IBCF_A forwards ACK to IBCF_A 20 ACK IBCF_B forwards ACK to IBCF_B 200 OK 31 200 OK IBCF_B forwards ACK to IBCF_B 200 OK 32A 200 OK IBCF_B forwards ACK to IBCF_A 200 OK 33A 33A 33A 33A 33A 33A 33A 33A <	19								←	_		User B accepts to share video
11 1	20										200 OK	UE_B responds INVITE with 200 OK to indicate
21 200 KK IMS_B forwards 200 OK response to IBCF_B 23 24 200 KK IBCF_A forwards 200 OK response to IBCF_A 24 200 OK IBCF_A forwards 200 OK response to IMS_A 25 200 OK IMS_A forwards 200 OK response to IMS_A 26 200 OK IMS_A forwards 200 OK response to IMS_A 27 28 200 OK IMS_A forwards 200 OK response to IMS_A 28 29 200 OK IMS_A forwards ACK to IBCF_B 200 OK IMS_A forwards ACK to IBCF_B ACK 30 ACK IBCF_B forwards ACK to IBCF_B 31 Video sharing Stats 32A Video sharing Stats 33A Video sharing astats Stats												that the request has been accepted
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	55A	4					_		-	→		Voice call termination initiated by user A
32B U User B ends video sharing	32B	ì							←	-		User B ends video sharing

Step				0)irect	ion				Message	Comment
	U	U		I	I	1	Ι	U	U		
	S	E			В	B	M	E	S		
	e	A					5	в	e		
	Å		4		A	B	Ь		B		
33B							\leftarrow			BYE	UE_B releases the call with BYE
34B						←	-			BYE	IMS_B forwards BYE to IBCF_B
35B					←	-				BYE	IBCF_B forwards BYE to IBCF_A
36B				←						BYE	IBCF_A forwards BYE to IMS_A
37B		÷		•			1			BYE	IMS_A forwards BYE to UE_A
38B	←	_									User A is informed that video sharing has ended
39B		-	\rightarrow							200 OK	UE_A sends 200 OK for BYE
40B				\rightarrow	,		ĺ			200 OK	IMS_A forwards 200 OK response to IBCF_A
41B						→	ĺ			200 OK	IBCF_A forwards 200 OK response to IBCF_B
42B							*			200 OK	IBCF_B forwards 200 OK response to IMS_B
43B								\rightarrow		200 OK	IMS_B forwards the 200 OK response to UE_B
44B								_	\rightarrow		User B is informed that video sharing has ended
45B										OPTIONS	UE_A sends OPTIONS to IMS_A to verify
			;								availability of video sharing capability of the
46B				\rightarrow	,					OPTIONS	IMS_A forwards OPTIONS to IBCF_A
47B						→				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
48B							*			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
49B								\rightarrow		OPTIONS	IMS_B forwards OPTIONS to UE_B
50B							←	_		200 OK	UE_B responds with 200 OK to IMS_B with updated capabilities
51B						<u> </u>	-			200 OK	IMS_B forwards 200 OK to IBCF_B
52B					<u> </u>	_				200 OK	IBCF_B forwards 200 OK to IBCF_A
53B				←	.					200 OK	IBCF_A forwards 200 OK to IMS_A
54B		÷								200 OK	IMS_A forwards 200 OK to UE_A
55B											Voice call termination initiated by user B

4.5.4.1.2 Video sharing- roaming (optional)

	Interoperability Test Description												
Identifier:	TD_IMS_SHARE_0002												
Summary:	IMS network supports Video sharing service and messages exchange between two users, one user in its home network and one user roaming can be performed. User A starts video sharing with User B during a voice call												
Configuration:	CF_ROAM_AS (OPTIONAL)												
SUT	IMS_A and IMS_B												
References	Test Purpose	Specification Reference											
	TP_IMS_5046_01	TS 124 229 [1], clause 5.2.6.3.3 ¶1 (1 st numbered list)											
	TP_IMS_5110_01	P_IMS_5110_01 TS 124 229 [1], clause 5.4.3.3 ¶79 (after 6 th dashed list)											
Use Case ref.:	UC_RCS_8_R												
Pre-test conditions:	 HSS of IMS_A and of IMS B is con UE_A and UE_B have IP bearers e per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A option UE_B is registered in IMS_B via IN table 1 UE_A is optionally configured to refue UE_A is authorized to see presence IMS_A is configured to contact AS_ IMS_B is configured to contact AS_ AS B is optionally configured for refuerance 	figured according to table 1 stablished to their respective IMS networks as ally using userPRES according to table 1 IS_A optionally using userPRES according to ceive notifications with watcher information e information of UE_B A B active authorization											

		Interoperability Test Description
	 IMS_ 	A is within the trust domain of IMS_B
	• UE_A	and UE_B have already performed capability discovery process
	 IMS 	A not configured for topology hiding
Test Sequence:	Step	
	1A	User A establishes voice call with user B
	1B	User B establishes voice call with user A
	2	User A requests to share video with user B
	3	User B is requested to accept to share video
	4	User B accepts to share video with user A
	5	User A is informed that request has been answered
	6	Video sharing starts
	7A	User A ends video sharing
	8A	User B is informed that video sharing has terminated
	9A	User A is informed that video sharing has terminated
	10A	User A initiates voice call termination
	7B	User B ends video sharing
	8B	User A is informed that video sharing has terminated
	9B	User B is informed that video sharing has terminated
	10B	User B initiates voice call termination
Conformance	Check	
Criteria:		
	1	TP_IMS_5046_01 in CFW step 6 (INVITE)
		ensure that {
		when { IMS_A receives an initial INVITE from UE_B }
		then { IMS_A sends the INVITE to IMS_B
		containing a Route_header
		not indicating the P-CSCF_SIP_URI of IMS_A and
		containing a Route_header
		Indicating the "list of Service Route header URIs
		from the registration" and
		containing an additional via_neader
		(the P CSCF_Via_poit_number and (the P CSCF_Via_poit_number and
		(INE F-CSCF-FQDN_dduless of the P-CSCF-IP address)) of IMS A and
		containing an additional topmost Record-Route, header
		indicating (the P-CSCE port number
		where it awaits subsequent requests' from UE A and
		(the P-CSCF-FQDN address or
		the P-CSCF-IP address)) of IMS A and
		not containing P-Preferred-Identity header and
		containing a P-Asserted-Identity header
		containing an address of UE_B and
		containing a P-Charging-Vector_header
		containing an icid-value_parameter }
		}
	2	TP_IMS_5110_01 in CFW step 43 (200 OK)
		ensure that {
		when { IMS_A receives a 200_response from AS_A addressed_to UE_B }
		then { IMS_A sends the 200_response to IMS_B }
1	1	13

Step				Dire	ction				Message	Comment
	U	U	I	Ι	I	I	U	U		
	S	Е	Μ	в	В	М	E	s		
	е	Α	S	С	С	S	В	е		
	r		Α	F	F	В		r		
	Α			Α	В			В		
1A	←	_	_	-		_	_	→		User A sets up a voice call to user B
1B	L L			_ _			_	\uparrow		User B sets up a voice call to user A
2		\rightarrow								User A requests to share video with user B
3			\rightarrow						INVITE	UE_A sends INVITE to share video with user B

1	68	
	00	

Step			[Directi	on				Message	Comment
	U	U	-	1	I	Ι	C	U		
	S	Е	М	В	В	М	Е	S		
	е	Α	S	C	C	S	В	е		
	r		A	F	F	в		r		
	A			<u>A</u>	в		-	В		
4		←							100 Trying	IMS_A responds with a 100 Trying provisional
F										IMS A forwarda INIVITE to IDCE A
5			\rightarrow							INS_A forwards INVITE to IBCF_A
6			←						100 Trying	IBCF_A responds with a 100 Trying provisional
7										
/				\rightarrow						
8				\leftarrow					100 Trying	IBCF_B responds with a 100 Trying provisional
9						`				IBCE B forwards INI//ITE to IMS B
- -						1				IDCI_DIOWalds INVITE to INIS_D
10					←	_			Too Trying	
11					<u> </u>					IMS_B forwards INV/ITE to IBCE_B
12					Ì					IBCE B responds with a 100 Trying provisional
12						→			100 Hying	response
13				<u> </u>					INVITE	IBCE B forwards INVITE to IBCE A
14				Ì					100 Trying	IBCE A responds with a 100 Trying provisional
• •				\rightarrow					loo nying	response
15			←						INVITE	IBCF A forwards INVITE to IMS A
16									100 Trying	IMS A responds with a 100 Trying provisional
			\rightarrow						loo liying	response
17							\rightarrow		INVITE	IMS_A forwards INVITE to UE_B
18			,						100 Trying	UE B responds with a 100 Trying provisional
			<u> </u>						, ,	response
19							_	→		User B is requested to accept to share video
20			/						180 Ringing	UE_B responds to initial INVITE with 180
										Ringing to indicate that it has started alerting
21									180 Ringing	IMS_A forwards 180 Ringing response to
			,							IBCF_A
22				\longrightarrow					180 Ringing	IBCF_A forwards 180 Ringing response to
									100 D: .	
23)			180 Ringing	IBCF_B forwards 180 Ringing response to
24									190 Pinging	INS_D IMS_B forwards the 180 Binging response to
24					←					ING_B IO Wards the 160 Kinging response to
25									180 Ringing	IBCE B forwards 180 Ringing response to
20				\leftarrow					roortinging	IBCF A
26									180 Ringing	IBCF A forwards 180 Ringing response to
_			<u> </u>						5 5 5	IMS_A
27		←							180 Ringing	IMS_A forwards 180 Ringing response to UE_A
28							←	_		User B accepts to share video
29			,						200 OK	UE_B responds INVITE with 200 OK to indicate
			<u>(</u>							that the request has been accepted
30			$ \longrightarrow$		1				200 OK	IMS_A forwards 200 OK response to IBCF_A
31				$ \longrightarrow$					200 OK	IBCF_A forwards 200 OK response to IBCF_B
32					<u> </u>	→			200 OK	IBCF_B forwards 200 OK response to IMS_B
33					←	-			200 OK	IMS_B forwards 200 OK response to IBCF B
34				<u> </u>					200 OK	IBCF B forwards 200 OK response to IBCF A
35			<u> </u>	`	1				200 OK	IBCE A forwards 200 OK response to IMS A
36		<u> </u>	`		1					IMS A forwards 200 OK response to LIF A
00										User A is informed that request has been
37	 ← 									answered
6.5									ACK	UE A acknowledges the receipt of 200 OK for
38			\rightarrow							INVITE
39			$ \longrightarrow$			Ì	Ì		ACK	IMS_A forwards ACK to IBCF_A
40				\rightarrow	Ì	Ì			ACK	IBCF_A forwards ACK to IBCF_B
41					<u> </u>	→			ACK	IBCF B forwards ACK to IMS B
42					<u> </u>	_			ACK	IMS B forwards ACK to IBCF B
12				4	ſ				ACK	IBCE B forwards ACK to IBCE A
+5			1		1		1			

Step		Direction								Message	Comment
	U	l	J			I	I	U	U		
	S	E	Ξ Ι	ME	3	В	Μ	E	S		
	е	-	1	s c		С	S	В	е		
	r			A		F	В		r		
44	A			/ / //	•	в			В	ACK	IBCE A forwards ACK to IMS A
45				<u>`</u>				\rightarrow		ACK	IMS A forwards ACK to UF B
46								-	→		Video sharing starts
474	4								Ĵ		User A ends video sharing
477	Ň								í	BYE	LIF A releases the call with BYF
404										BVE	IMS A forwards BVE to IBCE A
49A										BVE	IBCE A forwards BVE to IBCE B
50A							``			BVE	IBCE B forwards BYE to IMS B
514						,				BVE	IDCI_BIOIWAIDS BIE to INCS_B
52A					,						ING_BIOWalds BTE to IBCF_B
53A				,	<u> </u>						IBCF_B IOI walds BTE to IBCF_A
54A				<u> </u>							IBCF_A IOI WAI US BTE IO I WIS_A
55A								7			INS_A IOI WAI US BYE TO UE_B
56A				/					-	200.01	USER B is informed that video sharing has ended
57A				<u> </u>						200 OK	UE_B sends 200 OK for BYE
58A				\rightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A
59A					\longrightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B
60A							\rightarrow			200 OK	IBCF_B forwards 200 OK response to IMS_B
61A						←				200 OK	IMS_B forwards the 200 OK response to IBCF_B
62A					\leftarrow					200 OK	IBCF_B forwards 200 OK response to IBCF_A
63A				\leftarrow						200 OK	IBCF_A forwards 200 OK response to IMS_A
64A			←							200 OK	IMS_A forwards the 200 OK response to UE_A
65A											Video sharing terminates
66A										OPTIONS	UE_B sends OPTIONS to IMS_A to verify
				\leftarrow							availability of video sharing capability of the
										0.000	UE_A
67A				\rightarrow						OPTIONS	IMS_A forwards OPTIONS to IBCF_A
68A					\rightarrow					OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
69A							\rightarrow			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
70A						←	_			OPTIONS	IMS_B forwards OPTIONS to IBCF_B
71A					\leftarrow					OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
72A				\leftarrow						OPTIONS	IBCF_A forwards OPTIONS to IMS_A
73A			←							OPTIONS	IMS_A forwards OPTIONS to UE_A
74A										200 OK	UE_A responds 200 OK to IMS_A with updated
			-								capabilities
75A				\rightarrow						200 OK	IMS_A forwards 200 OK to IBCF_A
76A					\longrightarrow					200 OK	IBCF_A forwards 200 OK to IBCF_B
77A							\rightarrow			200 OK	IBCF_B forwards 200 OK to IMS_B
78A						←	_			200 OK	IMS_B forwards 200 OK to IBCF_B
79A					\leftarrow					200 OK	IBCF_B forwards 200 OK to IBCF_A
80A				\leftarrow						200 OK	IBCF_A forwards 200 OK to IMS_A
81A							_	\rightarrow		200 OK	IMS_A forwards 200 OK to UE_B
82A						1					User A terminates voice call
47B						Í	Í				User B ends video sharing
48B				\leftarrow		<u> </u>				BYE	UE_B releases the call with BYE
49B				\rightarrow					1	BYE	IMS_A forwards BYE to IBCF_A
50B					\longrightarrow	1				BYE	IBCF_A forwards BYE to IBCF_B
51B						<u> </u>	\rightarrow			BYE	IBCF_B forwards BYE to IMS_B
52B						←			1	BYE	IMS_B forwards BYE to IBCF_B
53B					\leftarrow	1				BYE	IBCF B forwards BYE to IBCF A
54R				\leftarrow		1				BYE	IBCF A forwards BYE to IMS A
55B			(ľ		1				BYE	IMS A forwards BYF to UF A
56B	4		`							212	User A is informed that video sharing has ended
57P			,							200 0K	LIE A sends 200 OK for BVE
500			-	<u> </u>					1	200 01	IMS A forwards 200 OK to papages to IDOE A
200					I	1					μ

Step				Dire	ction				Message	Comment
	U	U	Ι	Ι	I	I	U	U		
	S	E	M	В	В	M	E	S		
	e	A	S	C	C	S	в	e		
	A		A	A	В	D		B		
59B					\rightarrow			<u> </u>	200 OK	IBCF_A forwards 200 OK response to IBCF_B
60B						\rightarrow			200 OK	IBCF_B forwards 200 OK response to IMS_B
61B					←				200 OK	IMS_B forwards 200 OK response to IBCF_B
62B				←	_				200 OK	IBCF_B forwards 200 OK response to IBCF_A
63B			\leftarrow	_					200 OK	IBCF_A forwards 200 OK response to IMS_A
64B							\rightarrow		200 OK	IMS_A forwards the 200 OK response to UE_B
65B	⊬						_	→		Video sharing terminates
66B									OPTIONS	UE_A sends OPTIONS to IMS_A to verify
			\rightarrow							availability of video sharing capability of the UE_B
67B				\rightarrow					OPTIONS	IMS_A forwards OPTIONS to IBCF_A
68B					\rightarrow				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
69B						\rightarrow			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
70B					←				OPTIONS	IMS_B forwards OPTIONS to IBCF_B
71B				←	-				OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
72B			\leftarrow	-					OPTIONS	IBCF_A forwards OPTIONS to IMS_A
73B							\rightarrow		OPTIONS	IMS_A forwards OPTIONS to UE_B
74B			4						200 OK	UE_B responds with 200 OK to IMS_A with
			Ì							updated capabilities
75B				\rightarrow					200 OK	IMS_A forwards 200 OK to IBCF_A
76B					\rightarrow				200 OK	IBCF_A forwards 200 OK to IBCF_B
77B						\rightarrow			200 OK	IBCF_B forwards 200 OK to IMS_B
78B					←				200 OK	IMS_B forwards 200 OK to IBCF_B
79B				\leftarrow	-				200 OK	IBCF_B forwards 200 OK to IBCF_A
80B			\leftarrow	-					200 OK	IBCF_A forwards 200 OK to IMS_A
81B		<							200 OK	IMS_A forwards 200 OK to UE_A
82B	- +					_	_	\rightarrow		User B terminates voice call

4.5.4.2 Video sharing rejection

4.5.4.2.1 Video sharing rejection - interworking

	Interoperability Te	est Description									
Identifier:	TD_IMS_SHARE_0003										
Summary:	IMS network supports Video sharing service and messages exchange between two										
	users in their networks can be performed. User A starts video sharing with User B										
	during a voice call, but user B reject	cts the invitation									
Configuration:	CF_INT_AS										
SUT	IMS_A and IMS_B										
References	Test Purpose	Specification Reference									
	TP_IMS_5108_03	TS 124 229 [1], clause 5.4.3.3 ¶5									
		(item 4 in 1 st numbered list)									
Use Case ref.:	UC_RCS_8_I										
Pre-test	 HSS of IMS_A and of IMS B is 	s configured according to table 1									
conditions:	 UE_A and UE_B have IP bear 	ers established to their respective IMS networks as									
	per TS 186 011-2 [9], clause 4	.2.1									
	 UE_A is registered in IMS_A c 	ptionally using userPRES according to table 1									
	 UE_B is registered in IMS_B c 	ptionally using userPRES according to table 1									
	UE_A is optionally configured	to receive notifications with watcher information									
	UE_A is authorized to see pre-	sence information of UE_B									
	 IMS_A is configured to contact 	t AS_A									
	 IMS_B is configured to contact 	t AS_B									
	AS_B is optionally configured	for reactive authorization									

		Interoperability Test Description
	 IMS_ 	A is within the trust domain of IMS_B
	 UE_A 	A and UE_B have already performed capability discovery process
	 IMS_ 	A not configured for topology hiding
Test Sequence:	Step	
	1	User A invites user B to 1-to-1 chat session
	2	User B automatically accepts 1-to-1 chat invitation
	3	Verify that Users perform chatting
	4	User A initiates an Ad-hoc IM conference with user B
	5	Verify that User A is informed that the Ad Hoc IM Conference is established
	6	Verify that User B is informed of incoming invitation from User A to join the Ad-hoc IM Conference
	7	User B joins the Ad-hoc IM Conference (automatically)
	8	Verify that User A is notified that User B has joined the Ad-hoc IM Conference
	9	Verify that User A informed that 1-to-1 chat session with user B has ended
	10	Verify that User B informed that 1-to-1 chat session with user A has ended
	11	Verify that Users perform IM/chat service in the Ad-hoc IM Conference
	12	User B leaves the Ad-hoc IM Conference
	13	Verify that User B is informed that the Ad-hoc IM Conference has ended
	14	Verify that User A is notified that user B has left the Ad-hoc IM Conference
	15	User A leaves the Ad-hoc IM Conference
	16	Verify that User A is informed that the Ad-hoc IM Conference has ended
Conformance Criteria:	Check	
	1	TP_IMS_5108_03 in CFW step 58 (INVITE)
		ensure that {
		when { IMS_B receives an initial INVITE from IMS_A addressed_to UE_B }
		then { IMS_B sends the initial INVITE to AS_B
		containing a topmost Route_header
		Indicating the SIP_URI of AS_B and
		indicating the SCSCE SID LIDL of IMS P and
		containing a P-Charging-Vector header
		including a orig-ioi parameter
		indicating operator identifier of IMS A and
		not including a term-ioi parameter }
		}

Step				Dire	ction				Message	Comment
	U	U	Ι	Ι	Ι	I	U	U		
	S	Е	Μ	В	в	Μ	Е	s		
	е	Α	S	С	С	S	в	е		
	r		Α	F	F	В		r		
	A	_		A	в			В		
1A	\leftarrow							→		User A establishes a voice call to user B
1B	←	_			-			\rightarrow		User B establishes a voice call to user A
2		\rightarrow								User A requests to share video with user B
3			\rightarrow						INVITE	UE_A sends INVITE to share video with user B
4		/							100 Trying	IMS_A responds with a 100 Trying provisional
		Ì								response
5				\rightarrow					INVITE	IMS_A forwards INVITE to IBCF_A
6			_	_					100 Trying	IBCF_A responds with a 100 Trying provisional
			ì							response
7					\rightarrow				INVITE	IBCF_A forwards INVITE to IBCF_B
8				<i>_</i>	_				100 Trying	IBCF_B responds with a 100 Trying provisional
				`						response
9						\rightarrow			INVITE	IBCF_B forwards INVITE to IMS_B
10							ĺ		100 Trying	IMS_B responds with a 100 Trying provisional
										response
11							\rightarrow		INVITE	IMS_B forwards INVITE to UE_B

Step			D	oirection	on			Message	Comment
	U	U	Ι	I		U	U		
	S	E	M		BN		S		
	e r	A					e		
	Å			A	B 1		B		
12					•			100 Trying	UE_B responds with a 100 Trying provisional
13							\rightarrow		User B is requested to accept to share video
14								180 Ringing	UE_B responds to initial INVITE with 180
									Ringing to indicate that it has started alerting
15					←			180 Ringing	IMS_B forwards 180 Ringing response to IBCF_B
16				\leftarrow				180 Ringing	IBCF_B forwards 180 Ringing response to IBCF_A
17			←					180 Ringing	IBCF_A forwards 180 Ringing response to
18		←	-					180 Ringing	IMS_A forwards the 180 Ringing response to
19						←	_		User B accepts to share video
20						•		200 OK	UE B responds INVITE with 200 OK to indicate
					E F				that the request has been accepted
21					←			200 OK	IMS_B forwards 200 OK response to IBCF_B
22				\leftarrow				200 OK	IBCF_B forwards 200 OK response to IBCF_A
23			\leftarrow					200 OK	IBCF_A forwards 200 OK response to IMS_A
24		(-					200 OK	IMS_A forwards 200 OK response to UE_A
25	←	_							User A is informed that request has been
26								ACK	answered
20)					ACK	INVITE
27			\longrightarrow					ACK	IMS_A forwards ACK to IBCF_A
28				\longrightarrow				ACK	IBCF_A forwards ACK to IBCF_B
29					\longrightarrow			ACK	IBCF_B forwards ACK to IMS_B
30					-	\longrightarrow		ACK	IMS_B forwards ACK to UE_B
31	-				\vdash		\rightarrow		Video sharing starts
32A		\rightarrow							User A ends video sharing
33A			*					BYE	UE_A releases the call with BYE
34A			\longrightarrow					BYE	IMS_A forwards BYE to IBCF_A
35A				\rightarrow				BYE	IBCF_A forwards BYE to IBCF_B
36A					\rightarrow			BYE	IBCF_B forwards BYE to IMS_B
37A						\rightarrow		BYE	IMS_B forwards BYE to UE_B
38A						_	\rightarrow		User B is informed that video sharing has ended
39A					, f			200 OK	UE_B sends 200 OK for BYE
40A				,				200 OK	INS_B forwards 200 OK response to IBCF_B
41A			,	(200 OK	IBCF_B IOIWards 200 OK response to IBCF_A
42A		,	<u> </u>					200 OK	IBCF_A forwards the 200 OK response to LIE_A
43A								200 OK	Liser A is informed that video sharing has ended
44A 45A								OPTIONS	UF B sends OPTIONS to IMS B to verify
					ŧ				availability of video sharing capability of the \Box
46A					<u> </u>			OPTIONS	IMS B forwards OPTIONS to IBCF B
47A				<u> </u>				OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
48A			\leftarrow	ľ				OPTIONS	IBCF_A forwards OPTIONS to IMS_A
49A		~						OPTIONS	IMS_A forwards OPTIONS to UE_A
50A)					200 OK	UE_A responds 200 OK to IMS_A with updated
51A			$ \longrightarrow $					200 OK	IMS A forwards 200 OK to IBCF A
52A				\longrightarrow				200 OK	IBCF A forwards 200 OK to IBCF B
53A					\longrightarrow			200 OK	IBCF_B forwards 200 OK to IMS_B
54A						>		200 OK	IMS_B forwards 200 OK to UE_B
55A	←				\vdash		\rightarrow		Voice call termination initiated by user A

Step			D	irect	ion				Message	Comment
	U	U	I	I	I	I	U	U		
	S	E	M	3	B	Μ	E	S		
	e	A	S	5	C	S	в	e		
	A			Ā	В	Р		B		
32B				Ī	Ī		←			User B ends video sharing
33B						←	_		BYE	UE_B releases the call with BYE
34B					←	-			BYE	IMS_B forwards BYE to IBCF_B
35B				←	•				BYE	IBCF_B forwards BYE to IBCF_A
36B			\leftarrow						BYE	IBCF_A forwards BYE to IMS_A
37B		÷							BYE	IMS_A forwards BYE to UE_A
38B	⊬	_								User A is informed that video sharing has ended
39B		-	 *						200 OK	UE_A sends 200 OK for BYE
40B			\longrightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A
41B									200 OK	IBCF_A forwards 200 OK response to IBCF_B
42B						*			200 OK	IBCF_B forwards 200 OK response to IMS_B
43B							\rightarrow		200 OK	IMS_B forwards the 200 OK response to UE_B
44B								→		User B is informed that video sharing has ended
45B									OPTIONS	UE_A sends OPTIONS to IMS_A to verify
		-	 *							availability of video sharing capability of the
400										UE_B
468			\rightarrow						OPTIONS	IMS_A forwards OPTIONS to IBCF_A
47B					P				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
48B						*			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
49B							\rightarrow		OPTIONS	IMS_B forwards OPTIONS to UE_B
50B						←	_		200 OK	UE_B responds with 200 OK to IMS_B with
540									000.01/	updated capabilities
51B									200 OK	INIS_B TORWARDS 200 OK TO IBUF_B
52B				(•				200 OK	IBCF_B forwards 200 OK to IBCF_A
53B			\leftarrow						200 OK	IBCF_A forwards 200 OK to IMS_A
54B		÷							200 OK	IMS_A forwards 200 OK to UE_A
55B										Voice call termination initiated by user B

4.5.4.2.2 Video sharing rejection - roaming (optional)

	Interoperability Test	Description							
Identifier:	TD_IMS_SHARE_0004								
Summary:	IMS network supports Video sharing service and messages exchange between two								
	users, one user in its nome network and one user roaming can be performed. User A								
	Istans video sharing with User B during a voice call, but user B rejects the invitation								
Configuration:	CF_ROAM_AS (OPTIONAL)								
SUT	IMS_A and IMS_B								
References	Test Purpose	Specification Reference							
	TP_IMS_5070_01	TS 124 229 [1], clause 5.2.7.3 ¶3							
Use Case ref.:	UC_RCS_8_R								
Pre-test	HSS of IMS_A and of IMS B is co	onfigured according to table 1							
conditions:	 UE_A and UE_B have IP bearers per TS 186 011-2 [9], clause 4.2. 	established to their respective IMS networks as							
	 UE A is registered in IMS A opti 	onally using userPRES according to table 1							
	UE_B is registered in IMS_B via table 1	MS_A optionally using userPRES according to							
	UE_A is optionally configured to a	eceive notifications with watcher information							
	UE_A is authorized to see preser	nce information of UE_B							
	 IMS_A is configured to contact A 	S_A							
	 IMS_B is configured to contact A 	S_B							
	• AS_B is optionally configured for	reactive authorization							
	IMS_A is within the trust domain	of IMS_B							
	UE_A and UE_B have already pe	erformed capability discovery process							
	IMS_A not configured for topology	/ hiding							

		Interoperability Test Description
Test Sequence:	Step	
	1	User B invites user A to 1-to-1 chat session
	2	User A automatically accepts 1-to-1 chat invitation
	3	Verify that Users perform chatting
	4	User B initiates an Ad-hoc IM conference with user A
	5	Verify that User B is informed that the Ad Hoc IM Conference is established
	6	Verify that User A is informed of incoming invitation from User B to join the
		Ad-hoc IM Conference
	7	User A joins the Ad-hoc IM Conference (automatically)
	8	Verify that User B is notified that User A has joined the Ad-hoc IM
		Conference
	9	Verify that User B informed that 1-to-1 chat session with user A has ended
	10	Verify that User A informed that 1-to-1 chat session with user B has ended
	11	Verify that Users perform IM/chat service in the Ad-hoc IM Conference
	12	User A leaves the Ad-hoc IM Conference
	13	Verify that User A is informed that the Ad-hoc IM Conference has ended
	14	Verify that User B is notified that user A has left the Ad-hoc IM Conference
	15	User B leaves the Ad-hoc IM Conference
	16	Verify that User B is informed that the Ad-hoc IM Conference has ended
Conformance	Check	
Criteria:		
	1	TP_IMS_5070_01 in CFW step 79 (100 Trying)
		ensure that {
		when { IMS_A receives an initial INVITE from IMS_B }
		then { IMS_A sends a 100_response to IMS_B
		}
		}

Step				Dire	ction				Message	Comment
	U	U	1	I	1	I	U	U		
	S	E A	M	В	В	M	E	S		
	r	~	Δ	F	F	B	В	r		
	Å		~	A	B	_		B		
1A	L L							→		User A sets up a voice call to user B
1B	←							→		User B sets up a voice call to user A
2		→								User A requests to share video with user B
3			\rightarrow						INVITE	UE_A sends INVITE to share video with user B
4		←							100 Trying	IMS_A responds with a 100 Trying provisional response
5				\rightarrow					INVITE	IMS_A forwards INVITE to IBCF_A
6			←	_					100 Trying	IBCF_A responds with a 100 Trying provisional response
7					\rightarrow				INVITE	IBCF_A forwards INVITE to IBCF_B
8				←					100 Trying	IBCF_B responds with a 100 Trying provisional response
9						\rightarrow			INVITE	IBCF_B forwards INVITE to IMS_B
10					←	_			100 Trying	IMS_B responds with a 100 Trying provisional response
11					€—				INVITE	IMS_B forwards INVITE to IBCF_B
12									100 Trying	IBCF_B responds with a 100 Trying provisional response
13				←					INVITE	IBCF_B forwards INVITE to IBCF_A

Step				Dir	ectio	n				Message	Comment
	U	U	I	I			I	U	U		
	S	E	M	B	B		N	E	S		
	e r	A	5 ∆	F			2	в	e r		
	Å		~	Å	B	3 1			B		
14				F	\rightarrow					100 Trying	IBCF_A responds with a 100 Trying provisional response
15			←	_						INVITE	IBCF_A forwards INVITE to IMS_A
16				\rightarrow						100 Trying	IMS_A responds with a 100 Trying provisional response
17				_						INVITE	IMS_A forwards INVITE to UE_B
18			(100 Trying	UE_B responds with a 100 Trying provisional response
19									→		User B is requested to accept to share video
20			←							180 Ringing	UE_B responds to initial INVITE with 180 Ringing to indicate that it has started alerting
21				\rightarrow						180 Ringing	IMS_A forwards 180 Ringing response to
22				╞	\longrightarrow					180 Ringing	IBCF_A forwards 180 Ringing response to IBCF_B
23					-	\longrightarrow				180 Ringing	IBCF_B forwards 180 Ringing response to IMS_B
24					•	(180 Ringing	IMS_B forwards the 180 Ringing response to IBCF_B
25				÷						180 Ringing	IBCF_B forwards 180 Ringing response to IBCF_A
26			←	_						180 Ringing	IBCF_A forwards 180 Ringing response to IMS_A
27		←								180 Ringing	IMS_A forwards 180 Ringing response to UE_A
28								(-		User B accepts to share video
29			←							200 OK	UE_B responds INVITE with 200 OK to indicate that the request has been accepted
30				\rightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A
31				-	\longrightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B
32					-					200 OK	IBCF_B forwards 200 OK response to IMS_B
33						(200 OK	IMS_B forwards 200 OK response to IBCF_B
34				÷						200 OK	IBCF_B forwards 200 OK response to IBCF_A
35			←	_						200 OK	IBCF_A forwards 200 OK response to IMS_A
36		←									IMS_A forwards 200 OK response to UE_A
37	←	_									User A is informed that request has been answered
38										ACK	UE_A acknowledges the receipt of 200 OK for INVITE
39				\rightarrow		ĺ				ACK	IMS_A forwards ACK to IBCF_A
40				┢	\longrightarrow					ACK	IBCF_A forwards ACK to IBCF_B
41						\longrightarrow				ACK	IBCF_B forwards ACK to IMS_B
42					•	<u> </u>				ACK	IMS_B forwards ACK to IBCF_B
43				÷						ACK	IBCF_B forwards ACK to IBCF_A

Step	Direction								Message	Comment
	U	U	-	I	Ι	I	U	U		
	S	Е	Μ	В	В	м	Е	S		
	е	Α	S	č	C	S	В	е		
	r		Α	F		в		r P		
44			\leftarrow						ACK	IBCF_A forwards ACK to IMS_A
45							\rightarrow		АСК	IMS_A forwards ACK to UE_B
46			_	_				→		Video sharing starts
47A	←	_	_	_				→		User A ends video sharing
48A			→						BYE	UE_A releases the call with BYE
49A				\rightarrow					BYE	IMS_A forwards BYE to IBCF_A
50A				_	\rightarrow				BYE	IBCF_A forwards BYE to IBCF_B
51A						\rightarrow			BYE	IBCF_B forwards BYE to IMS_B
52A					←				BYE	IMS_B forwards BYE to IBCF_B
53A				←					BYE	IBCF_B forwards BYE to IBCF_A
54A			←	_					BYE	IBCF_A forwards BYE to IMS_A
55A				_			\rightarrow		BYE	IMS_A forwards BYE to UE_B
56A								→		User B is informed that video sharing has ended
57A			←				_		200 OK	UE_B sends 200 OK for BYE
58A				\rightarrow					200 OK	IMS_A forwards 200 OK response to IBCF_A
59A					\rightarrow				200 OK	IBCF_A forwards 200 OK response to IBCF_B
60A						\rightarrow			200 OK	IBCF_B forwards 200 OK response to IMS_B
61A					←				200 OK	IMS_B forwards the 200 OK response to IBCF_B
62A				÷					200 OK	IBCF_B forwards 200 OK response to IBCF_A
63A			<u>(</u>						200 OK	IBCF_A forwards 200 OK response to IMS_A
64A		-							200 OK	IMS_A forwards the 200 OK response to UE_A
65A									ODTIONO	Video sharing terminates
66A			<i>←</i>						OPTIONS	availability of video sharing capability of the UE_A
67A				\rightarrow					OPTIONS	IMS_A forwards OPTIONS to IBCF_A
68A					\rightarrow				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
69A						\rightarrow			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
70A					←				OPTIONS	IMS_B forwards OPTIONS to IBCF_B
71A				←					OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
72A			←	-					OPTIONS	IBCF_A forwards OPTIONS to IMS_A
73A		←	\neg						OPTIONS	IMS_A forwards OPTIONS to UE_A

Step					Direc	tion	-			Message	Comment
	ا ع	J 1 S 1	U E	I M	I B	I B	I M	U E	U s		
	e	e i	A	S A	C F	C F	S B	В	e r		
74A	4	4		*	<u>A</u>	<u>В</u>			B	200 OK	UE_A responds 200 OK to IMS_A with updated
75A					→					200 OK	capabilities IMS_A forwards 200 OK to IBCF_A
76A						→				200 OK	IBCF_A forwards 200 OK to IBCF_B
77A							—			200 OK	IBCF_B forwards 200 OK to IMS_B
78A						←				200 OK	IMS_B forwards 200 OK to IBCF_B
79A					←	_				200 OK	IBCF_B forwards 200 OK to IBCF_A
80A				←	_					200 OK	IBCF_A forwards 200 OK to IMS_A
81A					_			→		200 OK	IMS_A forwards 200 OK to UE_B
82A											User A terminates voice call
47B											User B ends video sharing
48B				<i>(</i>		_		_		BYE	UE_B releases the call with BYE
49B					÷					BYE	IMS_A forwards BYE to IBCF_A
50B						\rightarrow				BYE	IBCF A forwards BYE to IBCF B
51B										BYE	IBCF B forwards BYE to IMS B
52B						<i></i>				BYE	IMS B forwards BYE to IBCE B
52B					<u> </u>	_				BYE	IBCE B forwards BYE to IBCE A
54B				<i>(</i>	_					BYE	IBCE A forwards BYE to IMS A
550			,							RVE	IMS A forwards BVE to LIE A
500		,									lives_A is informed that video sharing has and d
56B		(200.01	
57B				*						200 OK	
58B					→					200 OK	IMS_A forwards 200 OK response to IBCF_A
59B						→				200 OK	IBCF_A forwards 200 OK response to IBCF_B
60B							\rightarrow			200 OK	IBCF_B forwards 200 OK response to IMS_B
61B						←				200 OK	IMS_B forwards 200 OK response to IBCF_B
62B					←	_				200 OK	IBCF_B forwards 200 OK response to IBCF_A
63B	1			←	-					200 OK	IBCF_A forwards 200 OK response to IMS_A
64B					-	_		\rightarrow		200 OK	IMS_A forwards the 200 OK response to UE_B
65B		<							→		Video sharing terminates
66B				*						OPTIONS	UE_A sends OPTIONS to IMS_A to verify availability of video sharing capability of the
67B					→					OPTIONS	IMS_A forwards OPTIONS to IBCF_A

Step				D	Direc	tion				Message	Comment
	U s e r A	U E A	N S A	Л Е 5 (А	I B C F A	I B C F B	I M S B	U E B	U s e r B		
68B					Ē	⇒				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
69B							→			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
70B						←				OPTIONS	IMS_B forwards OPTIONS to IBCF_B
71B					←	_				OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
72B				←	•					OPTIONS	IBCF_A forwards OPTIONS to IMS_A
73B								\rightarrow		OPTIONS	IMS_A forwards OPTIONS to UE_B
74B				<u> </u>	-	_				200 OK	UE_B responds with 200 OK to IMS_A with updated capabilities
75B				\longrightarrow	•					200 OK	IMS_A forwards 200 OK to IBCF_A
76B						\rightarrow				200 OK	IBCF_A forwards 200 OK to IBCF_B
77B										200 OK	IBCF_B forwards 200 OK to IMS_B
78B						←				200 OK	IMS_B forwards 200 OK to IBCF_B
79B					←					200 OK	IBCF_B forwards 200 OK to IBCF_A
80B				<u> </u>	-					200 OK	IBCF_A forwards 200 OK to IMS_A
81B		÷								200 OK	IMS_A forwards 200 OK to UE_A
82B	←										User B terminates voice call

4.5.4.3 Pictures sharing

4.5.4.3.1 Pictures sharing- interworking

	Interoperability Test Desc	cription								
Identifier:	TD_IMS_SHARE_0005									
Summary:	IMS network supports Picture sharing service and messages exchange between two users in their networks can be performed. User A starts video sharing with User B during a voice call									
Configuration:	CF_INT_AS									
SUT	IMS_A and IMS_B									
References	Test Purpose	Specification Reference								
	TP_IMS_5115_02	TS 124 229 [1], clause 5.4.3.3 ¶91								
		(item 2 in 4 th numbered list)								
	TP_IMS_5115_04	TS 124 229 [1], clause 5.4.3.3 ¶92								
		(item 2 in 4 th numbered list)								
Use Case ref.:	UC_RCS_8_I									
Pre-test	 HSS of IMS_A and of IMS B is configu 	red according to table 1								
conditions:	 UE_A and UE_B have IP bearers esta per TS 186 011-2 [9], clause 4.2.1 	blished to their respective IMS networks as								
	 UE_A is registered in IMS_A optionally 	/ using userPRES according to table 1								
	 UE_B is registered in IMS_B optionally 	using userPRES according to table 1								
	UE_A is optionally configured to receiv	e notifications with watcher information								
	 UE_A is authorized to see presence in 	formation of UE_B								
	• IMS_A is configured to contact AS_A									

		Interoperability Test Description
	 IMS_ 	B is configured to contact AS_B
	 AS_E 	is optionally configured for reactive authorization
	IMS	A is within the trust domain of IMS B
	• UE A	and UE B have already performed capability discovery process
	• IMS	A not configured for topology hiding
Test Sequence:	Step	
	1A	User A establishes a voice call to user B
	1B	User B establishes a voice call to user A
	2	User A requests to share picture with user B
	3	User B is requested to accept to share picture
	4	User B accepts to share picture
	5	User A is informed that request has been answered
	6	Picture sharing starts
	7	Picture transfer completed (size checked)
	8	User B is informed that picture transfer has finished
	9	User A is informed that picture transfer has finished
	10A	Voice call termination initiated by user A
	10B	Voice call termination initiated by user B
Conformance Criteria:	Check	
	1	TP_IMS_5115_02 in CFW step 72 (2xx):
		ensure that {
		when { UE_B sends a 2xx_response to UE_A }
		then { IMS_A receives the 2xx_response from IMS_B
		containing a P-Charging-Vector_header
		containing an orig-ioi_parameter
		indicating operator_identifier of IMS_A and
		containing a term-ioi_parameter
		indicating operator_identifier of IMS_B
		}
	2	TP_IMS_5115_04 in CFW step 72 (2xx):
		ensure that {
		when { UE_B sends a 2xx_response to UE_A
		} then / IMS_A receives the 2xx_response from IMS_B
		containing a P-Asserted-Identity header
		indicating the SIP LIRL of LIF R and
		containing a P-Asserted-Identity header
		indicating the Tel URI of UE B
		J

Step				Dire	ction				Message	Comment
	U s r A	U E A	I M S A	I B C F A	I B C F B	I M S B	U E B	U s e r B		
1A	←		-	_				>		User A establishes a voice call to user B
1B				_				→		User B establishes a voice call to user A
2		\rightarrow								User A requests to share picture with user B
3			\rightarrow						INVITE	UE_A sends INVITE to share picture with user B
4		(100 Trying	IMS_A responds with a 100 Trying provisional response
5				\rightarrow					INVITE	IMS_A forwards INVITE to IBCF_A
6			←	—					100 Trying	IBCF_A responds with a 100 Trying provisional response
7					\rightarrow				INVITE	IBCF_A forwards INVITE to IBCF_B

1	80	

Step		Direction								Message	Comment
	U s e r	E A		I M S A	I B C F	I B C F	I M S B	U E B	U s e r		
8	A			. 	▲ 	В -			B	100 Trying	IBCF_B responds with a 100 Trying provisional
9							→			INVITE	IBCF_B forwards INVITE to IMS_B
10										100 Trying	IMS_B responds with a 100 Trying provisional
11								→		INVITE	IMS_B forwards INVITE to UE_B
12							←	_		100 Trying	UE_B responds with a 100 Trying provisional response
13								-	→		User B is requested to accept to share picture
14							←	-		180 Ringing	UE_B responds to initial INVITE with 180 Ringing to indicate that it has started alerting
15						←				180 Ringing	IMS_B forwards 180 Ringing response to IBCF_B
16					(180 Ringing	IBCF_B forwards 180 Ringing response to IBCF_A
17				<u> </u>	-					180 Ringing	IBCF_A forwards 180 Ringing response to IMS_A
18			<							180 Ringing	IMS_A forwards the 180 Ringing response to UE_A
19								←			User B accepts to share picture
20							←	-		200 OK	UE_B responds INVITE with 200 OK to indicate that the request has been accepted
21						←				200 OK	IMS_B forwards 200 OK response to IBCF_B
22					←					200 OK	IBCF_B forwards 200 OK response to IBCF_A
23				←	-					200 OK	IBCF_A forwards 200 OK response to IMS_A
24			(200 OK	IMS_A forwards 200 OK response to UE_A
25	•										User A is informed that request has been answered
26				*						ACK	UE_A acknowledges the receipt of 200 OK for
27					>					ACK	IMS_A forwards ACK to IBCF_A
28						÷				ACK	IBCF_A forwards ACK to IBCF_B
29							→			ACK	IBCF_B forwards ACK to IMS_B
30								→		ACK	IMS_B forwards ACK to UE_B
31						-			→		Picture sharing starts (see clause 5.3.3Image data via MSRP)
32											Picture transfer completed (size checked)
33				•						BYE	UE_A releases the call with BYE
34					`					BYE	IMS_A forwards BYE to IBCF_A
35						÷				BYE	IBCF_A forwards BYE to IBCF_B
36							\rightarrow			BYE	IBCF_B forwards BYE to IMS_B
37								\rightarrow		BYE	IMS_B forwards BYE to UE_B
Step	Direction								Message	Comment	
------	------------------	-------------	------------------	-----------------------	-----------------------	------------------	-------------	-----------------------	---------	--	
	U s r A	U E A	I M S A	I B C F A	I B C F B	I M S B	U E B	U s e r B			
38								→		User B is informed that picture transfer has finished	
39						(200 OK	UE_B sends 200 OK for BYE	
40					←	_			200 OK	IMS_B forwards 200 OK response to IBCF_B	
41				←					200 OK	IBCF_B forwards 200 OK response to IBCF_A	
42			←	_					200 OK	IBCF_A forwards 200 OK response to IMS_A	
43		←							200 OK	IMS_A forwards the 200 OK response to UE_A	
44										User A is informed that picture transfer has finished	
45A	←							→		Voice call termination initiated by user A	
45B								→		Voice call termination initiated by user B	

4.5.4.3.2 Pictures sharing- roaming (optional)

		Interoperability Test Descr	iption								
Identifier:	TD_IMS_S	SHARE_0006	•								
Summary:	IMS netwo	ork supports Picture sharing service	e and messages exchange between two								
-	users, one	user in its home network and one	user roaming can be performed. User A								
	starts vide	o sharing with User B during a voi	ce call								
Configuration:	CF_ROAN	I_AS (OPTIONAL)									
SUT	IMS_A and	d IMS_B									
References	Test Purp	ose	Specification Reference								
	TP_IMS_5	5107_04	TS 124 229 [1], clause 5.4.3.2 ¶119 (item								
			1 in 8 th numbered list)								
Use Case ref.:	UC_RCS_	_8_R									
Pre-test	 HSS d 	of IMS_A and of IMS B is configure	ed according to table 1								
conditions:	 UE_A 	and UE_B have IP bearers estab	lished to their respective IMS networks as								
	per T	S 186 011-2 [9], clause 4.2.1	- -								
	 UE_A 	is registered in IMS_A optionally	using userPRES according to table 1								
	 UE_B 	is registered in IMS_B via IMS_A	optionally using userPRES according to								
	table 1										
	UE_A is optionally configured to receive notifications with watcher information										
	 UE_A 	is authorized to see presence info	prmation of UE_B								
	IMS /	A is configured to contact AS A									
	• IMS I	B is configured to contact AS B									
	• AS B	is optionally configured for reactiv	e authorization								
	• IMS /	A is within the trust domain of IMS	В								
	• UE A	and UE B have already performe	- ed capability discovery process								
	• IMS	A not configured for topology hidin	a								
		<u> </u>	5								
Test Sequence:	Step										
-	1A	User A sets up a voice call to use	r B								
	1B	User B sets up a voice call to use	r A								
	2	User A requests to share picture	with user B								
	3	User B is requested to accept to s	share picture								
	4	User B accepts to share picture	·								
	5	User A is informed that request ha	as been answered								
	6	Picture sharing starts									
	7	Picture transfer completed (size c	hecked)								

		Interoperability Test Description
	8	User B is informed that picture transfer has finished
	9	User A is informed that picture transfer has finished
	10A	User A terminates voice call
	10B	User B terminates voice call
Conformance Criteria:	Check	
	1	TP_IMS_5107_04 in CFW in step 68 (REFER): ensure that { when { IUT receives a REFER from UE_B addressed_to UE_A } then { IUT sends the REFER to IMS_A not containing a Route_header indicating the S-CSCF_SIP_URI of IMS_B } }

Step				Di	recti	on				Message	Comment		
	U	U	I	1		L	I	U	U				
	S	Е	м	В		В	М	Е	S				
	е	Α	S	С		С	S	В	е				
	r		Α	F		F	В		r				
4.4	A	-			<u> </u>	в			R				
1A	\leftarrow			— I					-		User A sets up a voice call to user B		
1B	\leftarrow			- 1	_				→		User B sets up a voice call to user A		
2		\rightarrow									User A requests to share picture with user B		
3		-	\rightarrow							INVITE	UE_A sends INVITE to share picture with user B		
4		4								100 Trying	IMS_A responds with a 100 Trying provisional		
		ì									response		
5				\rightarrow						INVITE	IMS_A forwards INVITE to IBCF_A		
6			4							100 Trying	IBCF_A responds with a 100 Trying provisional		
			ì								response		
7				ŀ	\rightarrow					INVITE	IBCF_A forwards INVITE to IBCF_B		
8					<u> </u>					100 Trying	IBCF_B responds with a 100 Trying provisional		
					`						response		
9							\rightarrow			INVITE	IBCF_B forwards INVITE to IMS_B		
10						←				100 Trying	IMS_B responds with a 100 Trying provisional		
						Ì					response		
11						<				INVITE	IMS_B forwards INVITE to IBCF_B		
12							→			100 Trying	IBCF_B responds with a 100 Trying provisional		
10													
13				ľ	(INVITE	IBCF_B forwards INVITE to IBCF_A		
14					\longrightarrow					100 Trying	IBCF_A responds with a 100 Trying provisional		
45			,										
15			(IBCF_A forwards INVITE to IMS_A		
16				\rightarrow						100 Trying	INS_A responds with a 100 Trying provisional		
17											INS A forwarda INIVITE to LIE P		
17											INS_A IOI wards INVITE IO DE_B		
10			←	— ·						Too Trying	DE_B responds with a 100 Trying provisional		
19									-		User B is requested to accent to share nicture		
20									1	180 Ringing	LIE B responds to initial INVITE with 180		
20			\leftarrow	— ·		<u> </u>					Ringing to indicate that it has started alerting		
21										180 Ringing	IMS A forwards 180 Ringing response to		
				\rightarrow						ree ranging	IBCF A		
22					、					180 Ringing	IBCF_A forwards 180 Ringing response to		
				ľ	\rightarrow					0.0	IBCF_B		
23							``			180 Ringing	IBCF_B forwards 180 Ringing response to		
							1				IMS_B		
24						←				180 Ringing	IMS_B forwards the 180 Ringing response to		
L						Ì					IBCF_B		
25					←					180 Ringing	IBCF_B forwards 180 Ringing response to		
20											IBCE_A ferwarda 190 Dissing reasons to		
26			←							180 Kinging	IBCF_A forwards 180 Ringing response to		
L						1							

Step			D) irecti	on				Message	Comment
	U	U	I	I	I	I	U	U		
	S	E		B	B	M	E	S		
	e r	A			F	Э В	в	e r		
	Å			Ā	B	5		B		
27		(-						180 Ringing	IMS_A forwards 180 Ringing response to UE_A
28							←	_		User B accepts to share picture
29									200 OK	UE_B responds INVITE with 200 OK to indicate
			`							that the request has been accepted
30			\rightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A
31				\rightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B
32						>			200 OK	IBCF_B forwards 200 OK response to IMS_B
33				,	< <u> </u>				200 OK	IMS_B forwards 200 OK response to IBCF_B
34			,	<u>(</u>					200 OK	IBCF_B forwards 200 OK response to IBCF_A
35		,	È						200 OK	IBCF_A forwards 200 OK response to IMS_A
36										INS_A forwards 200 OK response to UE_A
37	←	-								answered
									ACK	UF A acknowledges the receipt of 200 OK for
38			*							INVITE
39			\longrightarrow						ACK	IMS_A forwards ACK to IBCF_A
40				\longrightarrow					ACK	IBCF_A forwards ACK to IBCF_B
41)			ACK	IBCF_B forwards ACK to IMS_B
42					(-			ACK	IMS_B forwards ACK to IBCF_B
43				\leftarrow					ACK	IBCF_B forwards ACK to IBCF_A
44	ļ		←						ACK	IBCF_A forwards ACK to IMS_A
45							\rightarrow		ACK	IMS_A forwards ACK to UE_B
46								→		Picture sharing starts (see clause 5.3.3Image
47										data via MSRP)
47			*						BYE	UF A releases the call with BYE
49			\longrightarrow						BYE	IMS A forwards BYE to IBCF A
50				\longrightarrow					BYE	IBCF A forwards BYE to IBCF B
51)			BYE	IBCF B forwards BYE to IMS B
52					(BYE	IMS_B forwards BYE to IBCF_B
53				\leftarrow					BYE	IBCF_B forwards BYE to IBCF_A
54			←						BYE	IBCF_A forwards BYE to IMS_A
55							→		BYE	IMS_A forwards BYE to UE_B
56								_		User B is informed that picture transfer has
50								1		finished
57			\leftarrow						200 OK	UE_B sends 200 OK for BYE
58			$ \rightarrow$						200 OK	IMS_A forwards 200 OK response to IBCF_A
59				$ \longrightarrow$					200 OK	IBCF_A torwards 200 OK response to IBCF_B
60						>			200 OK	IBCF_B forwards 200 OK response to IMS_B
61					(200 OK	INS_B forwards the 200 OK response to IBCF_B
62				(200 OK	IBCF_B forwards 200 OK response to IBCF_A
63		,	(200 OK	IBCF_A forwards 200 OK response to IMS_A
64		(200 OK	IIVIS_A forwards the 200 OK response to UE_A
65	←	-								finished
66A	←				<u> </u>	-		→		User A terminates voice call
66B	←				<u> </u>	-		→		User B terminates voice call

T.U.T.T.I I	locales sharing rejection interwor	i i i g

		Interoperability T	est Descriptio	n								
Identifier:	TD_IMS_S	SHARE_0007	•									
Summary:	IMS netwo	ork supports Picture shar heir networks can be perf	ing service and ormed. User A	d messages exchange between two starts video sharing with User B								
	during a v	oice call, but User B reje	cts the invitation	on								
Configuration:	CF_INT_A	AS										
SUT	IMS_A an	d IMS_B										
References	Test Purp	oose	Spe	cification Reference								
	TP_IMS_5	5110_01	TS	124 229 [1], clause 5.4.3.3 ¶79								
			(afte	er 6 th dashed list)								
Use Case ref.:	UC_RCS	8		,								
Pre-test conditions:	 HSS UE_A 	of IMS_A and of IMS B is and UE_B have IP bear	s configured ac rers establishe	ccording to table 1 d to their respective IMS networks as								
	per TS 186 011-2 [9], clause 4.2.1											
	• UE_A	A is registered in IMS_A c	ptionally using	userPRES according to table 1								
	• UE_E	S IS registered in INS_B	ptionally using	USERPRES according to table 1								
	• UE_A	A is optionally configured	to receive noti	fications with watcher information								
	• UE_A	A is authorized to see pre	sence informa	tion of UE_B								
	• IMS_	A is configured to contac	t AS_A									
	• IMS_	AS_B is optionally configured for reactive authorization										
	• AS_E											
	• IMS_	A is within the trust doma	ain of IMS_B									
	• UE_A	and UE_B have already	performed ca	pability discovery process								
	• IMS_	A not configured for topo	logy hiding									
Test Sequence:	Step			-								
	1A	User A establishes a vo	ice call to user	В								
	1B	User B establishes a vo	ice call to user	A								
	2	User A requests to shar	e picture with	user B								
	3	User B is requested to a	accept to share	picture								
	4	User B rejects to share	picture									
	5	User A is informed that	request has be	en rejected								
	6A	Voice call termination in	itiated by user	A								
	6B	Voice call termination in	itiated by user	В								
Conformance Criteria:	Check											
	1	TP_IMS_5110_01 in CF	W step 85 (20	0 OK)								
		ensure that {										
		when { IMS_A receive then { IMS_A sends th	s a 200_respo e 200_respons	nse from AS_A addressed_to UE_B } se to IMS_B }								
		}										

Step				Dire	ction				Message	Comment
	U	U	Ι	Ι	Ι	I	U	U		
	S	Е	Μ	В	в	М	E	S		
	е	Α	S	С	С	S	в	е		
	r		Α	F	F	В		r		
	Α			Α	В			В		
1A	\downarrow		_					↑		User A establishes a voice call to user B
1B	←	_	_	-			_	→		User B establishes a voice call to user A
2		\rightarrow								User A requests to share picture with user B
3			\rightarrow						INVITE	UE_A sends INVITE to share picture with user B
4	ĺ	/							100 Trying	IMS_A responds with a 100 Trying provisional
										response
5				\rightarrow					INVITE	IMS_A forwards INVITE to IBCF_A
6			←	-					100 Trying	IBCF_A responds with a 100 Trying provisional response

Step		Direction						Message	Comment			
	U	U	Ι	Ι	I		U	U				
	S	E	M	B	B	M	E	S				
	e r	А	5	E			в	e				
	Ă		~	A	B			B				
7					\rightarrow			<u> </u>	INVITE	IBCF_A forwards INVITE to IBCF_B		
8				,		ĺ			100 Trying	IBCF_B responds with a 100 Trying provisional		
										response		
9					ŀ	\rightarrow			INVITE	IBCF_B forwards INVITE to IMS_B		
10					÷				100 Trying	IMS_B responds with a 100 Trying provisional		
4.4										response		
11										INS_B forwards INVITE to UE_B		
12						←			100 Trying	DE_B responds with a 100 Trying provisional		
13								→		User B is requested to accept to share picture		
14								ĺ	180 Ringing	UE B responds to initial INVITE with 180		
						K-			gg	Ringing to indicate that it has started alerting		
15					4				180 Ringing	IMS_B forwards 180 Ringing response to		
						•				IBCF_B		
16				←					180 Ringing	IBCF_B forwards 180 Ringing response to		
17						,			190 Pinging	IBCF_A		
17			←	-					100 Kinging	IMS A		
18									180 Ringing	IMS A forwards the 180 Ringing response to		
		<hr/>							0.0	UE_A		
19							₩	_		User B rejects to share picture		
20						4			603 Decline	UE_B responds INVITE with 603 Decline to		
						Ň				indicate that the request has been rejected		
21					÷	<u>,</u>			603 Decline	IMS_B forwards 603 Decline response to		
22									603 Decline	IBCF_B forwards 603 Decline response to		
22				÷					005 Decline	IBCF A		
23			,						603 Decline	IBCF_A forwards 603 Decline response to		
										IMS_A		
24		←	_						603 Decline	IMS_A forwards 603 Decline response to UE_A		
25	←									User A is informed that request has been		
20	-									rejected		
26			\rightarrow						ACK	UE_A acknowledges the receipt of 603 Decline		
27				→					АСК	IMS A forwards ACK to IBCF A		
28				´ _	\				ACK	IBCF A forwards ACK to IBCF B		
29					Í				ACK	IBCE B forwards ACK to IMS B		
30						Ĺ	\rightarrow	1	ACK	IMS B forwards ACK to UE B		
31A	←			_ -			-	\rightarrow		Voice call termination initiated by user A		
31B				_ -				→		Voice call termination initiated by user B		

4.5.4.4.2 Pictures sharing rejection- roaming (optional)

	Interoperability Test Desc	cription
Identifier:	TD_IMS_SHARE_0008	
Summary:	IMS network supports Picture sharing serv users, one user in its home network and or starts video sharing with User B during a v	vice and messages exchange between two ne user roaming can be performed. User A voice call, but User B rejects the invitation
Configuration:	CF_ROAM_AS (OPTIONAL)	
SUT	IMS_A and IMS_B	
References	Test Purpose	Specification Reference
	TP_IMS_5097_09	TS 124 229 [1], clause 5.4.3.2 ¶11
		(items 5 and 8 in 1 st numbered list)
Use Case ref.:	UC_RCS_8_R	
Pre-test	HSS of IMS_A and of IMS B is configu	ured according to table 1

		Interoperability Test Description
conditions:	 UE_A a per TS UE_A is UE_A is UE_A is UE_A is UE_A is UE_A is IMS_A i IMS_B is IMS_A i UE_A a 	nd UE_B have IP bearers established to their respective IMS networks as 186 011-2 [9], clause 4.2.1 registered in IMS_A optionally using userPRES according to table 1 registered in IMS_B via IMS_A optionally using userPRES according to optionally configured to receive notifications with watcher information authorized to see presence information of UE_B s configured to contact AS_A s configured to contact AS_B optionally configured for reactive authorization s within the trust domain of IMS_B nd UE_B have already performed capability discovery process not configured for topology hiding
Test Sequence:	Step 1A 1B 2 3 4 5 6A 6B	User A sets up a voice call to user B User B sets up a voice call to user A User A requests to share picture with user B User B is requested to accept to share picture User B rejects to share picture User A is informed that request has been rejected User A terminates voice call User B terminates voice call
Conformance Criteria:	Check 1	TP_IMS_5097_09 in CFW step 105 (INVITE) ensure that { when { IUT receives an INVITE from IMS_A from UE_B } then { IUT receives an INVITE to AS_B containing a Route_header indicating the SIP_URI of AS_B and containing a P-Charging-Function-Addresses_header and containing a P-Charging-Vector_header including an orig-ioi_parameter including an orig-ioi_parameter indicating the operator_identifier of IMS_A and not including a term-ioi_parameter and including access-network-charging-info }

Step				Direc	tion				Message	Comment
	U	U	I	I	I	I	U	U		
	S	Е	М	В	В	М	E	S		
	е	Α	S	С	С	S	В	е		
	r		Α	F	F	В		r		
	A			A	В			B		
1A	←		-	_				\rightarrow		User A sets up a voice call to user B
1B	←						_	\rightarrow		User B sets up a voice call to user A
2										User A requests to share picture with
		1								user B
3									INVITE	UE_A sends INVITE to share picture
			1							with user B
4		(100 Trying	IMS_A responds with a 100 Trying
										provisional response
5				\rightarrow					INVITE	IMS_A forwards INVITE to IBCF_A
6			/						100 Trying	IBCF_A responds with a 100 Trying
			Ì							provisional response
7					\rightarrow				INVITE	IBCF_A forwards INVITE to IBCF_B
8				/					100 Trying	IBCF_B responds with a 100 Trying
										provisional response
9						\rightarrow			INVITE	IBCF_B forwards INVITE to IMS_B
10									100 Trying	IMS_B responds with a 100 Trying
										provisional response
11					←				INVITE	IMS_B forwards INVITE to IBCF_B

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Step				D	Direction					Message	Comment
	U	U	I				1	U	U		
	S	E ∆	M S			C I	M S	B	S P		
	r	~	Ă	F	= i	F	B	_	r		
	Α			4	A I	В			В		
12						— >				100 Trying	IBCF_B responds with a 100 Trying
13					←					INVITE	IBCF B forwards INVITE to IBCF A
14										100 Trying	IBCF_A responds with a 100 Trying
											provisional response
15			\leftarrow								IBCF_A forwards INVITE to IMS_A
16				\rightarrow						100 Trying	IMS_A responds with a 100 Trying
17							,			INVITE	IMS_A forwards INVITE to UE_B
18			<u>(</u>							100 Trying	UE_B responds with a 100 Trying
10			,								provisional response
19								-	→		picture
20			←							180 Ringing	UE_B responds to initial INVITE with 180 Ringing to indicate that it has
21										190 Dinging	started alerting
21				\rightarrow							to IBCF_A
22					\longrightarrow					180 Ringing	IBCF_A forwards 180 Ringing response to IBCF_B
23										180 Ringing	IBCF_B forwards 180 Ringing response to IMS_B
24						¢				180 Ringing	IMS_B forwards the 180 Ringing
25					←──					180 Ringing	IBCF_B forwards 180 Ringing response
26			←							180 Ringing	IBCF_A forwards 180 Ringing response to IMS_A
27		←								180 Ringing	IMS_A forwards 180 Ringing response to UE_A
28								←			User B rejects to share picture
29			-							603 Decline	UE_B responds INVITE with 603
			Ì								been rejected
30				\rightarrow						603 Decline	IMS_A forwards 603 Decline response to IBCF_A
31					\longrightarrow					603 Decline	IBCF_A forwards 603 Decline response to IBCF_B
32										603 Decline	IBCF_B forwards 603 Decline response
33						<u> </u>				603 Decline	IMS_B forwards 603 Decline response
						ì				602 Dealine	to IBCF_B
34					←					603 Decline	to IBCF_A
35			←							603 Decline	IBCF_A forwards 603 Decline response to IMS_A
36		←								603 Decline	IMS_A forwards 603 Decline response to UE_A
37	←										User A is informed that request has been rejected
38			\rightarrow							ACK	UE_A acknowledges the receipt of 603 Decline response for INVITE
39				\rightarrow			Ì			ACK	IMS_A forwards ACK to IBCF_A
40					\longrightarrow					ACK	IBCF_A forwards ACK to IBCF_B
41						\mapsto	•			ACK	IBCF_B forwards ACK to IMS_B
42						←	1			ACK	IMS_B forwards ACK to IBCF_B
43					<u> </u>					ACK	IBCF_B forwards ACK to IBCF_A
44			\leftarrow	_	ļ	ļ				ACK	IBCF_A forwards ACK to IMS_A
45							\rightarrow	1		ACK	INS_A forwards ACK to UE_B

Step				Direc	tion			Message	Comment	
	U	U	I			I	U	U		
	S	E	NI O	В	В	IVI	E	S		
	е	A	S	C	C	S	в	е		
	r		Α	F	F	В		r		
	Α			Α	В			В		
46A	←	_			$-\vdash$	_	_	\uparrow		User A terminates voice call
46B	\downarrow							\rightarrow		User B terminates voice call

4.5.4.5 Stop sharing pictures

4.5.4.5.1 Stop sharing pictures - interworking

		Interoperability Test Descr	iption							
Identifier:	TD_IMS_S	SHARE_0009								
Summary:	IMS netwo	ork supports Picture sharing service	e and messages exchange between two							
	users in th	eir networks can be performed. Us	ser A starts video sharing with User B							
	during a v	oice call, but users decided to stop	sharing picture							
Configuration:										
SUI	MS_A and MS_B									
References	Test Purp	Est Purpose Specification Reference								
	TP_IMS_5110_01 TS 124 229 [1], clause 5.4.3.3 ¶									
		<u></u>	(after 6 ^{ul} dashed list)							
Use Case ref.:	UC_RCS_	_8_I								
Pre-test	• HSS (of IMS_A and of IMS B is configure	ed according to table 1							
conditions:	• UE_A	and UE_B have IP bearers establ	ished to their respective IMS networks as							
		5 186 011-2 [9], clause 4.2.1	using upprDDEC apporting to table 1							
		t is registered in IMS_A optionally t	using userPRES according to table 1							
		s is registered in INS_B optionally t	using userPRES according to table 1							
	• UE_A	is optionally configured to receive	notifications with watcher information							
	• UE_A	A is authorized to see presence into	ormation of UE_B							
	• IMS_/	A is configured to contact AS_A								
		B is configured to contact AS_B								
	• AS_B	is optionally configured for reactiv	e authorization							
	• IMS_/	A is within the trust domain of IMS_	_B							
	• UE_A	and UE_B have already performe	d capability discovery process							
	• IMS_/	A not configured for topology hiding								
Test Comusines	Cton									
Test Sequence:	Step		week D							
	1A 1D	User A establishes a voice call to								
	18	User B establishes a voice call to	user A							
	2	User A requests to share picture v								
	3	User B is requested to accept to s	inare picture							
	4	User B accepts to share picture	- h							
	5	Diser A is informed that request ha	as been answered							
	6	Picture sharing starts								
	7A	User A terminates picture sharing								
	8A	User B is informed that picture sha	aring has terminated							
	9A 10A	Voice cell termination initiated by								
		Lisor R termination initiated by	usei A							
		User A is informed that picture shalling	aring has terminated							
		User R is informed that picture shi	anny has terminated							
	3D 10D	Voice cell termination initiated by	anny nas tenninateu							
1	IUB	voice call termination initiated by								

Interoperability Test Description									
Conformance Criteria:	Check								
	1	TP_IMS_5110_01 in CFW step 85 (200 OK) ensure that { when { IMS_A receives a 200_response from AS_A addressed_to UE_B } then { IMS_A sends the 200_response to IMS_B } }							

Step			D	irecti	on				Message	Comment
	U	U	I	I	I	I	U	U		
	S	E		3	B	M	E	S		
	e /	Α			F	Э В	в	e r		
	Å		$^{-1}$	4	в	5		B		
1A	\leftarrow				<u> </u>			→		User A establishes a voice call to user B
1B	←						_	→		User B establishes a voice call to user A
2						Ì				User A requests to share picture with user B
3			*			1			INVITE	UE_A sends INVITE to share picture with user B
4		,							100 Trying	IMS_A responds with a 100 Trying provisional
										response
5			\longrightarrow						INVITE	IMS_A forwards INVITE to IBCF_A
6			\leftarrow						100 Trying	IBCF_A responds with a 100 Trying provisional
			•							
/				\rightarrow						IBCF_A forwards INVITE to IBCF_B
8				\leftarrow					100 Trying	IBCF_B responds with a 100 Trying provisional response
9									INVITE	IBCE B forwards INVITE to IMS B
10					. '	1			100 Trying	IMS B responds with a 100 Trying provisional
10					←				loo liying	response
11						Ì	\rightarrow		INVITE	IMS_B forwards INVITE to UE_B
12						,			100 Trying	UE_B responds with a 100 Trying provisional
						<u> </u>				response
13								→		User B is requested to accept to share picture
14						←	_		180 Ringing	UE_B responds to initial INVITE with 180
15									190 Dinging	Ringing to indicate that it has started alerting
15					←				160 Kinging	INS_BIOLWARDS TOO RINGING TESPONSE TO
16				,		Ì			180 Ringing	IBCF_B forwards 180 Ringing response to
				<u> </u>					0.0	IBCF_A
17			<u> </u>						180 Ringing	IBCF_A forwards 180 Ringing response to
10									100 D: .	IMS_A
18		(180 Ringing	IMS_A forwards the 180 Ringing response to
19							4			User B accents to share picture
20							Ì		200 OK	UE B responds INVITE with 200 OK to indicate
20						(200 011	that the request has been accepted
21					←				200 OK	IMS_B forwards 200 OK response to IBCF_B
22				\leftarrow					200 OK	IBCF_B forwards 200 OK response to IBCF_A
23			\leftarrow						200 OK	IBCF_A forwards 200 OK response to IMS_A
24		(-						200 OK	IMS_A forwards 200 OK response to UE_A
25	4									User A is informed that request has been
										answered
26		<u> </u>	*						ACK	UE_A acknowledges the receipt of 200 OK for
27									ACK	INVITE IMS A forwards ACK to IBCE A
28									ACK	IBCE A forwards ACK to IBCE B
20					、				ACK	IBCE B forwards ACK to IMS B
20						<u> </u>	_		ACK	IMS B forwards ACK to LIF B
31							1	-		Picture sharing starts
324								1		User A terminates picture sharing
334									BYE	LIF A releases the call with RVF
007		1	1	1	1	1				

Step			0	Directio	on				Message	Comment
	C	U	I	I	I	1	U	U		
	S	Е	М	BI	В	М	Е	S		
	е	Α	S			S	в	е		
	r		Α			в		r P		
344	A	L							BVE	IMS A forwards BVE to IBCE A
354									BVE	IBCE A forwards BYE to IBCE B
35A										IBCF_A IOI wards BTE to IBCF_B
36A									BIE	IBCF_B forwards BYE to IMS_B
37A							7		BIE	IMS_B forwards BYE to UE_B
38A								→		User B is informed that picture sharing has
204						,			200 OK	LIE B condo 200 OK for BVE
39A					,	`			200 OK	UE_D Serius 200 OK IOI BTE
40A				,	¢.				200 OK	IMS_B forwards 200 OK response to IBCF_B
41A				\leftarrow					200 OK	IBCF_B forwards 200 OK response to IBCF_A
42A			<u> </u>						200 OK	IBCF_A forwards 200 OK response to IMS_A
43A		←	_	_					200 OK	IMS_A forwards the 200 OK response to UE_A
44A										User A is informed that picture sharing has
45.4									ODTIONO	terminated
45A						,			OPTIONS	UE_B sends OPTIONS to IMS_B to verify
						``				
464					<i>,</i>				OPTIONS	IMS_B forwards OPTIONS to IBCE_B
10/1					Ì					IBCE B forwards OPTIONS to IBCE A
101			/							IBCE A forwards OPTIONS to IMS A
40A		,								
49A										INS_A IOI WAI'US OP HONS to UE_A
50A			→						200 OK	UE_A responds 200 OK to IMS_A with updated
514									200 OK	IMS A forwards 200 OK to IBCE A
524									200 OK	IBCE A forwards 200 OK to IBCE B
524									200 OK	IBCE B forwards 200 OK to IMS B
53A					· · ·				200 OK	INS_P forwards 200 OK to US_B
54A	,		_				7		200 OK	Vaice cell termination initiated by year A
20A							,	7		Voice call termination initiated by user A
32D						,			DVE	User B terminates picture sharing
33B						-			BYE	UE_B releases the call with BYE
34B					(BYE	IMS_B forwards BYE to IBCF_B
35B				\leftarrow					BYE	IBCF_B forwards BYE to IBCF_A
36B			<u> </u>						BYE	IBCF_A forwards BYE to IMS_A
37B			_	_					BYE	IMS_A forwards BYE to UE_A
38B		_								User A is informed that picture sharing has
000									000.01/	terminated
39B			┦.						200 OK	UE_A sends 200 OK for BYE
40B			\rightarrow						200 OK	IIVIS_A TORWARDS 200 OK response to IBCF_A
41B				$ \rightarrow$					200 OK	IBCF_A forwards 200 OK response to IBCF_B
42B						*			200 OK	IBCF_B forwards 200 OK response to IMS_B
43B							→		200 OK	IMS_B forwards the 200 OK response to UE_B
44B							_	→		User B is informed that picture sharing has
455										
45B									OPTIONS	UE_A sends OPTIONS to IMS_A to verify
			7							availability of picture sharing capability of the
16P									OPTIONS	
40D				、						
4/0				$ \longrightarrow $	L,	J				
400						1				
49B							7			IIVIS_B IORWARDS OF HONS TO UE_B
50B						←	_		200 OK	UE_B responds with 200 OK to IMS_B with
51D					<u> </u>				200 04	IMS B forwards 200 OK to IBCE B
									200 OK	IIVIO_D IUI WAI US 200 OK IU IDUF_B
52B				()					200 OK	IDUF_D IOFWARDS 200 OK TO IBUF_A
53B			(200 OK	IBUF_A TOTWARDS 200 OK TO IMIS_A
54B		(200 OK	IMS_A forwards 200 OK to UE_A
55B										Voice call termination initiated by user B

Stop sharing pictures - roaming (optional)

Interoperability Test Description												
Identifier:	TD_IMS_S	SHARE_0010										
Summary:	IMS netwo users, one starts vide picture	S network supports Picture sharing service and messages exchange between two ers, one user in its home network and one user roaming can be performed. User A arts video sharing with User B during a voice call, but users decided to stop sharing cture										
Configuration												
Configuration:	UF_RUAN											
Boforoncos	Tost Purp											
IVELELELICE2	TD IMS 6	S 5007 00 TS 124 220 [1] clause 5.4.3.2 ¶11										
		0097_09	(items 5 and 8 in 1^{st} numbered list)									
Use Case ref ·	LIC RCS	8 R										
	00_100_											
Pre-test		of IMS A and of IMS B is configure	ad according to table 1									
conditions:	 UE_A Der T⁶ 	and UE_B have IP bearers estab	lished to their respective IMS networks as									
		is registered in IMS A optionally	using userPRES according to table 1									
	• UF B	s registered in IMS_R via IMS_A	optionally using userPRES according to									
	table	1										
	• UE A	is optionally configured to receive	notifications with watcher information									
	 UE_A 	is authorized to see presence info	ormation of UE_B									
	 IMS_/ 	A is configured to contact AS_A	_									
	 IMS_I 	B is configured to contact AS_B										
	 AS_B 	is optionally configured for reactiv	e authorization									
	 IMS_/ 	A is within the trust domain of IMS	_B									
	 UE_A 	and UE_B have already performe	ed capability discovery process									
	 IMS_A 	A not configured for topology hiding	g									
Test Sequence:	Step											
	1A	User A sets up a voice call to use	r B									
	1B	User B sets up a voice call to use	r A									
	2	User A requests to share picture	with user B									
	3	User B is requested to accept to s	share picture									
	4	User B accepts to share picture										
	5	User A is informed that request ha	as been answered									
	6	Picture sharing starts										
	7A	User A terminates picture sharing										
	0A	User B is informed that picture sh	aring has terminated									
	9Α 10Δ	User A terminates voice call										
	7B	User B terminates nicture sharing										
	8B	User A is informed that nicture sh	aring has terminated									
	9B	User B is informed that picture sh	aring has terminated									
	10B	User B terminates voice call										

		Interoperability Test Description
Conformance Criteria:	Check	
	1	TP_IMS_5097_09 in CFW step 105 (INVITE) ensure that { when { IUT receives an INVITE from IMS_A from UE_B } then {IUT sends the INVITE to AS_B containing a Route_header indicating the SIP_URI of AS_B and containing a P-Charging-Function-Addresses_header and containing a P-Charging-Vector_header including an orig-ioi_parameter indicating the operator_identifier of IMS_A and not including a term-ioi_parameter and including a ccess-network-charging-info } }

Step	[Direction		Message	Comment
	U U I		υU		
	S E M	B B M C C S	E S		
	r A	F F B	r r		
	A	A B	В		
1A			\rightarrow		User A sets up a voice call to user B
1B	<hr/>		\rightarrow		User B sets up a voice call to user A
2					User A requests to share picture with user B
3				INVITE	UE_A sends INVITE to share picture with user B
4	← −			100 Trying	IMS_A responds with a 100 Trying provisional response
5	\longrightarrow			INVITE	IMS_A forwards INVITE to IBCF_A
6				100 Trying	IBCF_A responds with a 100 Trying provisional response
7		\longrightarrow		INVITE	IBCF_A forwards INVITE to IBCF_B
8		←		100 Trying	IBCF_B responds with a 100 Trying provisional response
9		│ →		INVITE	IBCF_B forwards INVITE to IMS_B
10		← −		100 Trying	IMS_B responds with a 100 Trying provisional response
11		(INVITE	IMS_B forwards INVITE to IBCF_B
12				100 Trying	IBCF_B responds with a 100 Trying provisional response
13		←		INVITE	IBCF_B forwards INVITE to IBCF_A
14		$ \longrightarrow $		100 Trying	IBCF_A responds with a 100 Trying provisional response
15	←			INVITE	IBCF_A forwards INVITE to IMS_A
16	$ \qquad \qquad \rightarrow$			100 Trying	IMS_A responds with a 100 Trying provisional response
17			→	INVITE	IMS_A forwards INVITE to UE_B
18	← −			100 Trying	UE_B responds with a 100 Trying provisional response
19			\mapsto		User B is requested to accept to share picture
20	← −			180 Ringing	UE_B responds to initial INVITE with 180 Ringing to indicate that it has started alerting
21	$ \rightarrow$			180 Ringing	IMS_A forwards 180 Ringing response to IBCF_A

Step				[Direct	tion				Message	Comment
	l	J 6	U E	I M	I B	I B	I M	UEB	U s		
			A	A	F A	F B	B	Б	r B		
22		-			_	}				180 Ringing	IBCF_A forwards 180 Ringing response to IBCF_B
23							→			180 Ringing	IBCF_B forwards 180 Ringing response to IMS_B
24						←				180 Ringing	IMS_B forwards the 180 Ringing response to IBCF_B
25					←	-				180 Ringing	IBCF_B forwards 180 Ringing response to IBCF_A
26				<u> </u>						180 Ringing	IBCF_A forwards 180 Ringing response to IMS_A
27			←	-						180 Ringing	IMS_A forwards 180 Ringing response to UE_A
28								←			User B accepts to share picture
29				<u> </u>		-				200 OK	UE_B responds INVITE with 200 OK to indicate that the request has been accepted
30				\longrightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A
31						÷				200 OK	IBCF_A forwards 200 OK response to IBCF_B
32							→			200 OK	IBCF_B forwards 200 OK response to IMS_B
33						←				200 OK	IMS_B forwards 200 OK response to IBCF_B
34					←	-				200 OK	IBCF_B forwards 200 OK response to IBCF_A
35				<u> </u>						200 OK	IBCF_A forwards 200 OK response to IMS_A
36			(_							IMS_A forwards 200 OK response to UE_A
37		<	-								User A is informed that request has been answered
38				*						ACK	UE_A acknowledges the receipt of 200 OK for INVITE
39				\rightarrow						ACK	IMS_A forwards ACK to IBCF_A
40						÷				ACK	IBCF_A forwards ACK to IBCF_B
41							\rightarrow			ACK	IBCF_B forwards ACK to IMS_B
42						←				ACK	IMS_B forwards ACK to IBCF_B
43					←	-				ACK	IBCF_B forwards ACK to IBCF_A
44				<i>←</i>						ACK	IBCF_A forwards ACK to IMS_A
45					-	-		\rightarrow		ACK	IMS_A forwards ACK to UE_B
46						╞			→		Picture sharing starts
47A		(-					→		User A terminates picture sharing
48A				*						BYE	UE_A releases the call with BYE
49A				\rightarrow						BYE	IMS_A forwards BYE to IBCF_A
50A						÷				BYE	IBCF_A forwards BYE to IBCF_B
51A						\vdash	\rightarrow			BYE	IBCF_B forwards BYE to IMS_B
52A						←				BYE	IMS_B forwards BYE to IBCF_B
53A					←	-				BYE	IBCF_B forwards BYE to IBCF_A

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-----	--

Step		Direction			Message	Comment					
	L s	J 5	J	I M	I B	I B	I M	U E	U s		
	e	• /	4	S A	C F	C F	S B	В	e r		
	A	•			A	B			B	DVE	
54A				←						BIE	
55A								\rightarrow		BYE	IMS_A forwards BYE to UE_B
56A									→		User B is informed that picture sharing has terminated
57A				←						200 OK	UE_B sends 200 OK for BYE
58A				\longrightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A
59A					$ \longrightarrow$					200 OK	IBCF_A forwards 200 OK response to IBCF_B
60A							\rightarrow			200 OK	IBCF_B forwards 200 OK response to IMS_B
61A						←	_			200 OK	IMS_B forwards the 200 OK response to IBCF_B
62A					←					200 OK	IBCF_B forwards 200 OK response to IBCF_A
63A				<u> </u>						200 OK	IBCF_A forwards 200 OK response to IMS_A
64A			(—	-						200 OK	IMS_A forwards the 200 OK response to UE_A
65A											User A is informed that picture sharing has terminated
66A				←						OPTIONS	UE_B sends OPTIONS to IMS_A to verify availability of picture sharing capability of the
67A				\longrightarrow						OPTIONS	IMS_A forwards OPTIONS to IBCF_A
68A					$ \longrightarrow$					OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
69A							\rightarrow			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
70A										OPTIONS	IMS_B forwards OPTIONS to IBCF_B
71A					←					OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
72A				\leftarrow						OPTIONS	IBCF_A forwards OPTIONS to IMS_A
73A			←							OPTIONS	IMS_A forwards OPTIONS to UE_A
74A)						200 OK	UE_A responds 200 OK to IMS_A with updated capabilities
75A				\rightarrow						200 OK	IMS_A forwards 200 OK to IBCF_A
76A					$ \longrightarrow$					200 OK	IBCF_A forwards 200 OK to IBCF_B
77A							\rightarrow			200 OK	IBCF_B forwards 200 OK to IMS_B
78A						\leftarrow				200 OK	IMS_B forwards 200 OK to IBCF_B
79A					←					200 OK	IBCF_B forwards 200 OK to IBCF_A
80A				<u> </u>						200 OK	IBCF_A forwards 200 OK to IMS_A
81A				 		<u> </u>		\rightarrow		200 OK	IMS_A forwards 200 OK to UE_B
82A											User A terminates voice call
47B	1										User B terminates picture sharing
48B				<u> </u>		-	_	_		BYE	UE_B releases the call with BYE

Step		Direction			Message	Comment						
	l	J [;]	J	I M	l B	E	 3	I M	U E	Us		
	e		4	S	Ċ			S	В	e		
	4			A	Ā	E	3	Б		B		
49B)						BYE	IMS_A forwards BYE to IBCF_A
50B					_	\rightarrow					BYE	IBCF_A forwards BYE to IBCF_B
51B								→			BYE	IBCF_B forwards BYE to IMS_B
52B							< ─				BYE	IMS_B forwards BYE to IBCF_B
53B					\leftarrow						BYE	IBCF_B forwards BYE to IBCF_A
54B				←	-						BYE	IBCF_A forwards BYE to IMS_A
55B			←	-							BYE	IMS_A forwards BYE to UE_A
56B		(User A is informed that picture sharing has terminated
57B)							200 OK	UE_A sends 200 OK for BYE
58B					÷						200 OK	IMS_A forwards 200 OK response to IBCF_A
59B						\rightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B
60B								→			200 OK	IBCF_B forwards 200 OK response to IMS_B
61B							(200 OK	IMS_B forwards 200 OK response to IBCF_B
62B					\leftarrow						200 OK	IBCF_B forwards 200 OK response to IBCF_A
63B				←	-						200 OK	IBCF_A forwards 200 OK response to IMS_A
64B					-				\rightarrow		200 OK	IMS_A forwards the 200 OK response to UE_B
65B												User B is informed that picture sharing has terminated
66B				*							OPTIONS	UE_A sends OPTIONS to IMS_A to verify availability of picture sharing capability of the
67B					÷						OPTIONS	IMS_A forwards OPTIONS to IBCF_A
68B						\rightarrow					OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
69B								→			OPTIONS	IBCF_B forwards OPTIONS to IMS_B
70B							←				OPTIONS	IMS_B forwards OPTIONS to IBCF_B
71B					\leftarrow						OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
72B				←	-						OPTIONS	IBCF_A forwards OPTIONS to IMS_A
73B					-				→		OPTIONS	IMS_A forwards OPTIONS to UE_B
74B				←	-						200 OK	UE_B responds with 200 OK to IMS_A with updated capabilities
75B					÷						200 OK	IMS_A forwards 200 OK to IBCF_A
76B					-	\rightarrow					200 OK	IBCF_A forwards 200 OK to IBCF_B
77B								→			200 OK	IBCF_B forwards 200 OK to IMS_B
78B							<				200 OK	IMS_B forwards 200 OK to IBCF_B
79B					\leftarrow	_					200 OK	IBCF_B forwards 200 OK to IBCF_A

Step		Direction							Message	Comment
	υ	U	I	I	I	I	U	U		
	s	Е	Μ	В	в	М	Е	s		
	е	Α	S	С	С	S	В	е		
	r		Α	F	F	В		r		
	Α			Α	В			В		
80B			←	_					200 OK	IBCF_A forwards 200 OK to IMS_A
81B		←							200 OK	IMS_A forwards 200 OK to UE_A
82B	-							→		User B terminates voice call

4.5.5 File transfer service

4.5.5.1 Instant file transfer

4.5.5.1.1 Instant file transfer - interworking

		Interoperability Te	t Description										
Identifier:	TD_IMS_F	FILE_0001											
Summary:	IMS netwo	ork supports instant File tr	nsfer service and message	es exchange between									
	two users	two users in their home network can be performed. User A starts file transfer											
	-												
Configuration:	CF_INT_AS												
SUT	IMS_A and IMS_B												
References	Test Purpose Specification Reference												
	TP_IMS_5	6097_01	TS 124 229 [1], cl	ause 5.4.3.2 ¶11									
			(1 st numbered list										
	TP_IMS_5	5108_03	TS 124 229 [1], cl	ause 5.4.3.3 ¶5									
			(item 4 in 1 st num	bered list)									
	TP_IMS_5	5115_08	TS 124 229 [1], cl	ause 5.4.3.3 ¶89									
			(4 th numbered list)									
Use Case ref.:	UC_RCS_	9_I											
Pre-test conditions:	 HSS of IMS_A and of IMS B is configured according to table 1 UE_A and UE_B have IP bearers established to their respective IMS networks a per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally using userPRES according to table 1 UE_B is registered in IMS_B optionally using userPRES according to table 1 UE_A is optionally configured to receive notifications with watcher information UE_A is configured to contact AS_A IMS_B is configured to contact AS_B AS_B is optionally configured for reactive authorization IMS_A is within the trust domain of IMS_B UE_A and UE_B have already performed capability discovery process 												
Test Sequence:	Sten												
i eet eequoneet	1	User A initiates a file trar	sfer to user B										
	2	User B is informed of inc	ming file and accepts the t	transfer									
	3	User A is informed that fi	e transfer has been accent	red by user B									
	4	File transfer starts											
	5	File transfer completed (ize checked)										
	6	User B is informed that f	e transfer completed										
	7	User A is informed that f	e transfer completed										

		Interoperability Test Description
Conformance	Chook	
Criteria:	Check	
ernona.	1	TP IMS 5097 01 in CFW step 10 (INVITE):
		ensure that {
		when { UE_A sends an initial INVITE to UE_B }
		then { IMS_B receives the initial INVITE
		not containing a Route_header
		indicating the S-CSCF_SIP_URI of IMS_A
		containing a P-Charging-Vector_header
		(containing an icid-value_parameter and
		containing a orig-ioi_parameter indicating IMS_A and
		not containing an access-network-charging-info_parameter and
		not containing a term-ioi_parameter) and
		containing a Record-Route_header
		indicating the originating S-CSCF_SIP_URI }
		}
	2	TP_IMS_5108_03 in CFW step 14 (INVITE)
		ensure that {
		when {IMS_B receives an initial INVITE from IMS_A addressed_to UE_B}
		then {IMS_B sends the INVITE to AS_B
		containing a topmost Route_header
		indicating the SIP_URI of AS_B and
		containing a Route_header
		indicating the S-CSCF_SIP_URI of IMS_B and
		containing a P-Charging-Vector_header
		including a orig-ioi_parameter
		indicating operator_identifier of IMS_A and
		not including a term-iol_parameter }
	2	
	3	IP_INIS_STIS_UO IN CEW STEP 35 (200 UK)
		$\{$ when $\{$ $MS \in \mathbb{R}$ receives 200, respense from $AS \in \mathbb{R}$ addressed to $UE = A$ $\}$
	1	then $\int IMS_B$ sends the 200 response to IMS_A
	1	containing a P-Charging-Vector header
		including a prig-ini parameter
	1	indicating operator identifier of IMS A and
	1	including a term-ioi parameter
	1	indicating operator identifier of IMS B }
	1	}
	1	

Step					Direc	tion	Message	Comment				
	U s r A	UEA	A (S) M A	I M S A	I B C F A	I B C F B	I M S B	A S/ I M B	U E B	U s e r B		
1		→										User A initiates a file transfer to user B
2				→							INVITE	UE_A sends INVITE to IMS_A to establish a session with the SDP offer indicating all specific data for a MSRP connection set up
3		←		_							100 Trying	IMS_A responds with a 100 Trying provisional response
4			←								INVITE	IMS_A forwards INVITE to AS/IM_A
5				→							100 Trying	AS/IM_A responds with a 100 Trying provisional response
6				→							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
7			←	_							100 Trying	IMS_A responds with a 100 Trying provisional response
8					\rightarrow						INVITE	IMS_A forwards INVITE to IBCF_A
9				←							100 Trying	IBCF_A responds with a 100 Trying provisional response

Step					[Directio	on					Message	Comment
	ι	J	U	Α				I	Α	U	U		
	5	5	E	S/	S I	B	B	M S	S/	E B	S		
	1	r	^	м.	A	F	F	B	м.	Ъ	r		
	ł	4		Α		Α	В		В		В		
10						\rightarrow						INVITE	IBCF_A forwards INVITE to IBCF_B
11						←						100 Trying	IBCF_B responds with a 100 Trying
12													provisional response
12													IMS B responds with a 100 Trying
10							←					roo rrying	provisional response
14									*			INVITE	IMS_B forwards INVITE to AS/IM_B
15								(100 Trying	AS/IM_B responds with a 100
10													Trying provisional response
16								←				INVITE	AS/IM_B returns, possibly modified,
17												100 Trying	IMS_B responds with a 100 Trying
								· · · ·					provisional response
18										∢		INVITE	IMS_B forwards INVITE to UE_B
19								←		_		100 Trying	UE_B optionally responds with a
20													User B is informed of incoming file
20											\rightarrow		and accepts the transfer
21												200 OK	UE_B responds INVITE with 200
													OK response with SDP to indicate
													and inform A-side with specific data
													for a MSRP connection set up
22												200 OK	IMS_B forwards 200 OK response
00									,				to AS/IM_B
23								←	-			200 OK	200 OK response to IMS_B
24							,					200 OK	IMS_B forwards 200 OK response
													to IBCF_B
25						←						200 OK	IBCF_B forwards 200 OK response
26					,							200 OK	IBCF A forwards 200 OK response
					< <u> </u>								to IMS_A
27				←								200 OK	IMS_A forwards 200 OK response
28												200 OK	AS/IM_A AS/IM_A returns_possibly modified
				\rightarrow									200 OK response to IMS_A
29			.									200 OK	IMS_A forwards 200 OK response
20			-										to UE_A
30	×												has been accepted by user B
31				L ,								ACK	UE_A acknowledges the receipt of
													200 OK for INVITE
32				<								ACK	IMS_A forwards ACK to AS/IM_A
33				\rightarrow								ACK	ACK to IMS_A
34					\rightarrow							ACK	IMS_A forwards ACK to IBCF_A
35						\rightarrow						ACK	IBCF_A forwards ACK to IBCF_B
36							\mapsto					ACK	IBCF_B forwards ACK to IMS_B
37									*			ACK	IMS_B forwards ACK to AS/IM_B
38								(-			ACK	AS/IM_B returns, possibly modified,
39									ļ,	*		ACK	IMS B forwards ACK to UF B
40											_		File transfer starts (see clause 5.3.3
	ŧ	•									7		Image data via MSRP)
41													File transfer completed (size
42												BYE	LIF A releases the file transfer
, <u>, ,</u>				\mapsto									session with BYE

Step					Dire	ection					Message	Comment
	U	U	Α	I	I	I	I	Α	U	U		
	S	E	S/	Μ	B	B	M	S/	E	S		
	е	A		S	C	C	S		в	е		
	r A			А			в			r B		
43			$\overline{\langle}$	_	- î		1		1		BYE	IMS A forwards BYE to AS/IM A
44			`								BYE	AS/IM A returns possibly modified
				→							012	BYE to IMS_A
45					\rightarrow						BYE	IMS_A forwards BYE to IBCF_A
46						\rightarrow					BYE	IBCF_A forwards BYE to IBCF_B
47							\rightarrow				BYE	IBCF_B forwards BYE to IMS_B
48								\rightarrow			BYE	IMS_B forwards BYE to AS/IM_B
49							←				BYE	AS/IM_B returns, possibly modified, BYE to IMS_B
50									\rightarrow		BYE	IMS_B forwards BYE to UE_B
51										→		User B is informed that file transfer completed
52							←				200 OK	UE_B sends 200 OK for BYE
53								→			200 OK	IMS_B forwards 200 OK response to AS/IM_B
54							←				200 OK	AS/IM_B returns, possibly modified, 200 OK response to IMS_B
55						←					200 OK	IMS_B forwards 200 OK response to IBCF_B
56					←						200 OK	IBCF_B forwards 200 OK response to IBCF_A
57				←							200 OK	IBCF_A forwards 200 OK response to IMS_A
58			←	_							200 OK	IMS_A forwards 200 OK response to AS/IM_A
59				\rightarrow							200 OK	AS/IM_A returns, possibly modified, 200 OK response to IMS_A
60		←									200 OK	IMS_A forwards 200 OK response to UE_A
61	←	_										User A is informed that file transfer completed

4.5.5.1.2 Instant file transfer - roaming (optional)

	Interoperability Test	Description								
Identifier:	TD_IMS_FILE_0002									
Summary:	IMS network supports instant File transfer service and messages exchange between two users, one user in its home network and one user roaming can be performed. User									
	B starts lie transier									
Configuration:	CF_ROAM_AS (OPTIONAL)									
SUT	IMS_A and IMS_B									
References	Test Purpose	Specification Reference								
	TP_IMS_5046_01	TS 124 229 [1], clause 5.2.6.3.3 ¶1								
		(1 st numbered list)								
	TP_IMS_5067_01	TS 124 229 [1], clause 5.2.7.2 ¶5								
	TP_IMS_5097_09	TS 124 229 [1], clause 5.4.3.2 ¶11								
		(items 5 and 8 in 1 st numbered list)								
Use Case ref.:	UC_RCS_9_R									
Pre-test conditions:	 HSS of IMS_A and of IMS B is configured according to table 1 UE_A and UE_B have IP bearers established to their respective IMS networks as per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally using userPRES according to table 1 UE_B is registered in IMS_B via IMS_A optionally using userPRES according to table 1 UE_A is optionally configured to receive notifications with watcher information UE A is authorized to see presence information of UE_B 									

		Interoperability Test Description
	 IMS_ 	A is configured to contact AS_A
	 IMS_ 	B is configured to contact AS_B
	 AS_B 	is optionally configured for reactive authorization
	 IMS 	A is within the trust domain of IMS_B
	 UE_A 	and UE_B have already performed capability discovery process
	 IMS_ 	A not configured for topology hiding
Test Sequence:	Step	
	1	User B initiates a file transfer to user A
	2	User A is informed of incoming file and accepts the transfer
	3	User B is informed that file transfer has been accepted by user A
	4	File transfer starts
	5	File transfer completed (size checked)
	6	User A is informed that file transfer completed
	/	User B is informed that file transfer completed
Conformance	Cheek	
Conformance Criteria:	Спеск	
	1	TP_IMS_5046_01 in CFW step 6 (INVITE)
		ensure that {
		when { INS_A receives an Initial INVITE to IMS_B
		then { IMS_A series the INVITE to IMS_B
		not indicating the P_CSCE_SIP_LIPL of IMS_A and
		containing a Route header
		indicating the "list of Service Route header LIRIs
		from the registration" and
		containing an additional Via header
		containing (the P-CSCF via port number and
		(the P-CSCF-FQDN_address or
		the P-CSCF-IP_address)) of IMS_A and
		containing an additional topmost Record-Route_header
		indicating (the P-CSCF_port_number
		'where it awaits subsequent requests' from UE_A and
		(the P-CSCF-FQDN_address or
		the P-CSCF-IP_address)) of IMS_A and
		not containing P-Preferred-Identity_header and
		containing a P-Asserted-identity_neader
		containing an address of UE_B and
		containing a P-Charging-vector_header
		containing an icid-value_parameter }
	2	/ TP_IMS_5067_01 in CEW step 6 (INVITE)
	-	ensure that {
		when { IMS_A receives an initial INVITE from UE_B }
		then { IMS A sends the INVITE to IMS B
		containing a P-Charging-Vector_header
		}
		}
	3	TP_IMS_5097_09 in CFW step 10 (INVITE)
		ensure that {
		when { IMS_B receives an initial INVITE from IMS_A addressed to UE_A }
		then { IMS_B sends the initial INVITE to AS_B
		containing a Route_neader
		Indicating the SIF_UKI of AS_B and
		containing a F-Onarging-Function-Addresses_fielduer and
		(including a right parameter
		indicating operator identifier of IMS_A and
		not including a term-ioi parameter and
		including access-network-charging-info) }
		}

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Step					Direc	ction		-			Message	Comment
	U	Ŭ	A	I	I		I	A	U	U		
	S	E ∧	5/	S IN	В	B	S IN	5/	B	S		
	r	~	м	Ă	F	F	В	Ň		r		
	Α		Α		Α	в		в		в		
1									←			User B initiates a file transfer to user A
2											INVITE	UE_B sends INVITE to IMS_A to
				<u> </u>	_							establish a new session with the
												SDP offer indicating all specific data
3											100 Trying	IMS A responds with a 100 Trying
Ŭ									\rightarrow		roo riying	provisional response
4					\rightarrow						INVITE	IMS_A forwards INVITE to IBCF_A
5				<u> </u>							100 Trying	IBCF_A responds with a 100 Trying
												provisional response
6						\rightarrow					INVITE 100 Truing	IBCF_A forwards INVITE to IBCF_B
1					←						100 Trying	provisional response
8							\rightarrow				INVITE	IBCF_B forwards INVITE to IMS_B
9						/					100 Trying	IMS_B responds with a 100 Trying
												provisional response
10								\rightarrow			INVITE	IMS_B forwards INVITE to AS/IM_B
11							←				100 Trying	AS/IM_B responds with a 100 Trying
12							←				INVITE	AS/IM_B returns, possibly modified,
13								\rightarrow			100 Trying	IMVITE to IMS_B IMS_B responds with a 100 Trying
14						←					INVITE	IMS B forwards INVITE to IBCF B
15						ľ					100 Trving	IBCF B responds with a 100 Trving
							→				, , ,	provisional response
16					←						INVITE	IBCF_B forwards INVITE to IBCF_A
17						\rightarrow					100 Trying	IBCF_A responds with a 100 Trying provisional response
18				←	_						INVITE	IBCF_A forwards INVITE to IMS_A
19					\rightarrow						100 Trying	IMS_A responds with a 100 Trying
20												provisional response
20												INIS_A forwards INVITE to AS/INI_A
21				\rightarrow								provisional response
22				\rightarrow							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
23			←								100 Trying	IMS_A responds with a 100 Trying provisional response
24		←									INVITE	IMS_A forwards INVITE to UE_A
25											100 Trying	UE_A optionally responds with a 100
				1								Trying provisional response
26	←	-										User A is informed of incoming file
27											200 OK	UE A responds INVITE with 200 OK
												response with SDP to indicate that
				\rightarrow								the session has been accepted and
												Inform B-side with specific data for a
28			<u> </u>								200 OK	IMS_A forwards 200 OK response to
20			Ì									AS/IM_A
29				\rightarrow							200 OK	200 OK response to IMS_A
30					\rightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A
31						\rightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B
32							\rightarrow				200 OK	IBCF_B forwards 200 OK response to IMS_B

Step		Direction									Message	Comment	
	ι	J	U	Α	1	I	I	-	Α	U	U		
	5	S	E	S/	М	В	В	Μ	S/	E	S		
	e	e	Α		S	c	C	S	I	В	е		
		r		M	Α			в	M		r P		
33	ŕ	•					D					200 OK	IMS B forwards 200 OK response to
55									\rightarrow			200 01	AS/IM B
34												200 OK	AS/IM_B returns, possibly modified.
0.								<				200 011	200 OK response to IMS B
35							,					200 OK	IMS_B forwards 200 OK response to
													IBCF_B
36						<u> </u>						200 OK	IBCF_B forwards 200 OK response
07						-						000.01/	to IBCF_A
37					←	-						200 OK	IBCF_A forwards 200 OK response
38												200 OK	IMS A forwards 200 OK response to
00										\rightarrow		200 010	UE B
39	Ì					1							User B is informed that file transfer
													has been accepted by user B
40					(ACK	UE_B acknowledges the receipt of
					Ì.								200 OK for INVITE
41					\rightarrow							ACK	IMS_A forwards ACK to IBCF_A
42							>					ACK	IBCF_A forwards ACK to IBCF_B
43								→				ACK	IBCF_B forwards ACK to IMS_B
44									\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
45								←				ACK	AS/IM_B returns, possibly modified,
40								-					ACK to IMS_B
46							<					ACK	IMS_B forwards ACK to IBCF_B
47						←						ACK	IBCF_B forwards ACK to IBCF_A
48					←	1						ACK	IBCF_A forwards ACK to IMS_A
49				<								ACK	IMS_A forwards ACK to AS/IM_A
50				;								ACK	AS/IM_A returns, possibly modified,
51													IMS A forwarda ACK to LIE A
51												ACK	File transfer starts (ass clause 5.2.2
52	ŧ	<u>.</u>							_		\rightarrow		Image data via MSRP)
53	Ì												File transfer completed (size
													checked)
54					<u> </u>							BYE	UE_B releases the file transfer
					ľ.								session with BYE
55					`	1.						BYE	IMS_A forwards BYE to IBCF_A
56						;	•					BYE	IBCF_A forwards BYE to IBCF_B
57								→				BYE	IBCF_B forwards BYE to IMS_B
58									\rightarrow			BYE	IMS_B forwards BYE to AS/IM_B
59								←				BAF	AS/IM_B returns, possibly modified,
60							,					BVE	IMS B forwards BVE to IBCE B
61												BVE	IRCE B forwards BVE to IBCE A
62				1		<u> </u>							IBCE A forwards BVE to IMS A
62				,									IBCF_A IOI WAI US BTE TO IWIS_A
03													A C/IM A returne peecible medified
0 4				\mapsto								DIE	AS/IIVI_A returns, possibly modified, BYE to IMS Δ
65			<u> </u>		1							BYE	IMS A forwards BYF to LIF A
66			ľ.										User A is informed that file transfer
00													completed
67					×							200 OK	UE_A sends 200 OK for BYE
68												200 OK	IMS_A forwards 200 OK response to
					1								AS/IM_A
69												200 OK	AS/IM_A returns, possibly modified,
												000.01	200 OK response to IMS_A
70				1	\mapsto							200 OK	IMS_A torwards 200 OK response to
					1								IBCF_A

Step						Direc	Message	Comment					
	U s e r	U E A		A S/ I M	I M S A	I B C F	I B C F	I M S B	A S/ I M	U E B	U s e r		
74	Α		<u> </u>	Α		Α	В		В		В	000 01	
71							\rightarrow					200 OK	IBCF_A forwards 200 OK response
72												200 OK	IBCE B forwards 200 OK response
12								\rightarrow				200 011	to IMS_B
73									``			200 OK	IMS_B forwards 200 OK response to
													AS/IM_B
74								<u> </u>				200 OK	AS/IM_B returns, possibly modified,
													200 OK response to IMS_B
75							<u> </u>					200 OK	IMS_B forwards 200 OK response to
													IBCF_B
76						/						200 OK	IBCF_B forwards 200 OK response
													to IBCF_A
77					/							200 OK	IBCF_A forwards 200 OK response
													to IMS_A
78										``		200 OK	IMS_A forwards 200 OK response to
													UE_B
79													User B is informed that file transfer
											1		completed

4.5.5.2 Instant file transfer rejection

4.5.5.2.1 Instant file transfer rejection - interworking

	Interoperability Test Desc	ription											
Identifier:	TD_IMS_FILE_0003												
Summary:	IMS network supports instant File transfer s	service and messages exchange between											
	two users in their home networks can be performed. User A starts file transfer, but												
	User B rejects the invitation												
Configuration:	CF_INT_AS												
SUT	IMS_A and IMS_B												
References	Test Purpose Specification Reference												
	TP_IMS_5097_01 TS 124 229 [1], clause 5.4.3.2 ¶11												
		(item 9 in 1 st numbered list)											
	TP_IMS_5108_03 TS 124 229 [1], clause 5.4.3.3 ¶5												
	(item 4 in 1 st numbered list)												
	TP_IMS_5115_08 TS 124 229 [1], clause 5.4.3.3 ¶89												
	(4 th numbered list)												
Use Case ref.:	UC_RCS_9_I												
Pre-test	HSS of IMS_A and of IMS B is configured according to table 1												
conditions:	 UE_A and UE_B have IP bearers estal 	blished to their respective IMS networks as											
	per 15 186 011-2 [9], clause 4.2.1												
	 UE_A is registered in IMS_A optionally UE_D is registered in IMS_B optionally 	Using userPRES according to table 1											
	 UE_B is registered in INS_B optionally 	using userPRES according to table 1											
	 UE_A is optionally configured to receiv UE_A is optionally configured to receiv 												
	 UE_A is authorized to see presence in IMC_A is configured to contact A C_A 												
	 INIS_A is configured to contact AS_A INIS_D is configured to contact AS_D 												
	 INIS_B is configured to confider AS_B AS_B is optionally configured for react. 	ive authorization											
	 AS_B is optionally configured for reacting IMS_A is within the trust domain of IMS 												
	 INS_A is within the trust domain of init. LIE A and LIE B have already perform 	D_D											
	 UL_A and UL_D have already period IMS_A not configured for topology bidi 	ng											
		····y											
Test Sequence:	Step												
root ocquerios.	1 User A initiates a file transfer to	user B											
	2 User B is informed of incoming f	ile and rejects the transfer											
	3 User A is informed that file trans	fer has been rejected by user B											

		Interoperability Test Description
Conformance Criteria:	Check	
ontena.	1	TP_IMS_5097_01 in CFW step 10 (INVITE): ensure that { when { UE_A sends an initial INVITE to UE_B } then { IMS_B receives the initial INVITE not containing a Route_header indicating the S-CSCF_SIP_URI of IMS_A containing a P-Charging-Vector_header (containing an icid-value_parameter and containing a orig-ioi_parameter indicating IMS_A and not containing an access-network-charging-info_parameter and not containing a term-ioi_parameter) and containing a Record-Route_header indicating the originating S-CSCE_SIP_URL}
	2	<pre>indicating the originating 0-000F _0F _0FF } TP_IMS_5108_03 in CFW step 14 (INVITE) ensure that { when {IMS_B receives an initial INVITE from IMS_A addressed_to UE_B} then {IMS_B sends the INVITE to AS_B containing a topmost Route_header indicating the SIP_URI of AS_B and containing a Route_header indicating the S-CSCF_SIP_URI of IMS_B and containing a P-Charging-Vector_header including a orig-ioi_parameter including a orig-ioi_parameter indicating operator_identifier of IMS_A and not including a term-ioi_parameter } }</pre>
	3	TP_IMS_5115_08 in CFW step 25 (200 OK) ensure that { when { IMS_B receives 200_response from AS_B addressed to UE_A } then { IMS_B sends the 200_response to IMS_A containing a P-Charging-Vector_header including a orig-ioi_parameter indicating operator_identifier of IMS_A and including a term-ioi_parameter indicating operator_identifier of IMS_B } }

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Step					Direction	on					Message	Comment
	U	U	Α	1	I	I	I	Α	U	U		
	S	E	S/	М	В	В	М	S/	Е	S		
	е	Α	1	S	С	С	S	I	в	е		
	r		Μ	Α	F	F	в	Μ		r		
	Α		Α		Α	В		В		В		
1		<u> </u>										User A initiates a file transfer to user
		1										В
2											INVITE	UE_A sends INVITE to IMS_A to
												establish a session with the SDP
				1								offer indicating all specific data for a
												MSRP connection set up
3		,									100 Trying	IMS_A responds with a 100 Trying
		•									, ,	provisional response
4			(-							INVITE	IMS A forwards INVITE to AS/IM A
5			•								100 Trying	AS/IM A responds with a 100
5				>							roo rrying	Trying provisional response
6												A S/IM A returns, passibly modified
0				*								
7											100 Ta is a	INVITE TO IMS_A
1			←	-							100 Trying	INS_A responds with a 100 Trying
												provisional response
8					>						INVITE	IMS_A forwards INVITE to IBCF_A
9											100 Trying	IBCF_A responds with a 100 Trying
												provisional response
10						>					INVITE	IBCF_A forwards INVITE to IBCF_B
11											100 Trying	IBCE B responds with a 100 Trying
					<						loo liying	provisional response
12							<u> </u>					IBCE B forwards INIVITE to IMS B
12												IDCI_DIOIWAICS INVITE IO INIS_D
13						←					100 Trying	INS_B responds with a 100 Trying
												provisional response
14								\rightarrow			INVITE	IMS_B forwards INVITE to AS/IM_B
15							/				100 Trying	AS/IM_B responds with a 100
												Trying provisional response
16											INVITE	AS/IM_B returns, possibly modified,
												INVITE to IMS_B
17											100 Trving	IMS B responds with a 100 Trying
								\rightarrow				provisional response
18									\rightarrow		INVITE	IMS_B forwards INVITE to UE_B
10									1			LIE B optionally responds with a
19							← →				Too Trying	0E_B optionally responds with a
20												100 Trying provisional response
20									_	\rightarrow		User B is informed of incoming file
- 0.1												and rejects the transfer
21											603 Decline	UE_B responds INVITE with 603
							<u> </u>					Decline to indicate that the session
												has been rejected
22								→			603 Decline	IMS_B forwards 603 Decline
								1				response to AS/IM_B
23							<u> </u>				603 Decline	AS/IM_B returns, possibly modified,
												603 Decline response to IMS_B
24											603 Decline	IMS_B forwards 603 Decline
												response to IBCF_B
25											603 Decline	IBCF_B forwards 603 Decline
												response to IBCF A
26	1										603 Decline	IBCF A forwards 603 Decline
				F	1							response to IMS_A
27											603 Decline	IMS A forwards 603 Decline
21			←	1								response to AS/IM_A
28											603 Decline	AS/IM A returns nossibly modified
20				*							JUS Decline	602 Decline response to MS A
20											602 Dealine	IMS A ferwarda 602 Dealine
29		← →		4							ous Decline	IIVIS_A IOIWAIOS 603 DECIINE
0.0												response to UE_A
30	K −−−	_										User A is informed that file transfer
												has been rejected by user B
31				*							ACK	UE_A acknowledges the receipt of
												603 Decline response for INVITE
32			←	-							ACK	IMS_A forwards ACK to AS/IM_A

Step					Direc	ction					Message	Comment
	U	U	Α	I	I	I		Α	U	U		
	S	E	S/	М	В	В	М	S/	Е	S		
	е	Α	I	S	С	С	S	1	В	е		
	r		М	Α	F	F	В	М		r		
	<u>A</u>		Α		Α	В		В		В		
33											ACK	AS/IM_A returns, possibly modified,
				1								ACK to IMS_A
34					\rightarrow						ACK	IMS_A forwards ACK to IBCF_A
35						\rightarrow					ACK	IBCF_A forwards ACK to IBCF_B
36							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
37								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
38							(ACK	AS/IM_B returns, possibly modified,
							N					ACK to IMS_B
39								_	\rightarrow		ACK	IMS_B forwards ACK to UE_B

4.5.5.2.2 Instant file transfer rejection - roaming (optional)

	Interoperability Test Descr	ription										
Identifier:	TD_IMS_FILE_0004											
Summary:	IMS network supports instant File transfer se	ervice and messages exchange between										
	two users, one user in its home network and one user roaming can be performed. User											
	B starts file transfer, but User A rejects the invitation											
Configuration:	CF_ROAM_AS (OPTIONAL)											
SUT	IMS_A and IMS_B											
References	Test Purpose Specification Reference											
	TP_IMS_5046_01	TS 124 229 [1], clause 5.2.6.3.3 ¶1										
	(1 st numbered list)											
	TP_IMS_5067_01 TS 124 229 [1], clause 5.2.7.2 ¶5											
	TP_IMS_5097_09 TS 124 229 [1], clause 5.4.3.2 ¶11											
	(items 5 and 8 in 1 st numbered list)											
Use Case ref.:	UC_RCS_9_R											
Pre-test conditions:	 HSS of IMS_A and of IMS B is configure UE_A and UE_B have IP bearers estab per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally UE_B is registered in IMS_B via IMS_A table 1 UE_A is optionally configured to receive UE_A is authorized to see presence info IMS_A is configured to contact AS_A IMS_B is configured to contact AS_B AS_B is optionally configured for reactive IMS_A is within the trust domain of IMS IMS_A is and UE_B have observed. 	ed according to table 1 lished to their respective IMS networks as using userPRES according to table 1 optionally using userPRES according to e notifications with watcher information prmation of UE_B										
	 IMS A not configured for topology hidir 											
Test Sequence:	Step											
	1 User B initiates a file transfer to u	ser A										
	2 User A is informed of incoming fil	e and rejects the transfer										
	3 User B is informed that file transfe	er has been rejected by user B										

		Interoperability Test Description
Conformance Criteria:	Check	
Criteria:	1	TP_IMS_5046_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a Route_header not indicating the P-CSCF_SIP_URI of IMS_A and containing a Route_header indicating the "list of Service Route header URIs from the registration" and containing an additional Via_header containing (the P-CSCF_Via_port_number and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and containing an additional topmost Record-Route_header indicating (the P-CSCF_port_number 'where it awaits subsequent requests' from UE_A and (the P-CSCF-FQDN_address or the P-CSCF-IP_address)) of IMS_A and not containing P-Preferred-Identity_header and containing an address of UE_B and containing an address of UE_B and containing an icid-value_parameter }
	2 3	TP_IMS_5067_01 in CFW step 6 (INVITE) ensure that { when { IMS_A receives an initial INVITE from UE_B } then { IMS_A sends the INVITE to IMS_B containing a P-Charging-Vector_header } } TP_IMS_5097_09 in CFW step 10 (INVITE) ensure that { when { IMS_B receives an initial INVITE from IMS_A addressed to UE_A } then { IMS_B sends the initial INVITE to AS_B containing a Route_header indicating the SIP_URI of AS_B and containing a P-Charging-Function-Addresses_header and containing a P-Charging-Vector_header (including a orig-ioi_parameter indicating operator_identifier of IMS_A and not including a term-ioi_parameter and including a ccess-network-charging-info) }

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2	0	8	

Step	Direction									Message	Comment	
	U	U	A	1		1	1	A	U	U		
	S	E	S/	M S	B	B	M C	S/	E	S		
	r	A	м	Δ	F	F	B	м	D	r		
	Å		A	~	A	B	5	В		В		
1												User B initiates a file transfer to user A
2											INVITE	UE_B sends INVITE to IMS_A to
				←				_				establish a new session with the
												for a new MSRP connection set up
3											100 Trying	IMS A responds with a 100 Trying
											, ,	provisional response
4											INVITE	IMS_A forwards INVITE to IBCF_A
5											100 Trying	IBCF_A responds with a 100 Trying
6				-								provisional response
6 7						*						IBCF_A forwards INVITE to IBCF_B
'					←	-					TOO TTYING	provisional response
8							>				INVITE	IBCF B forwards INVITE to IMS B
9						,	-				100 Trying	IMS_B responds with a 100 Trying
												provisional response
10								→			INVITE	IMS_B forwards INVITE to AS/IM_B
11							←	_			100 Trying	AS/IM_B responds with a 100 Trying
12												provisional response
12							←	-				INVITE to IMS B
13								→			100 Trying	IMS_B responds with a 100 Trying
14						<u> </u>					INVITE	IMS B forwards INVITE to IBCF B
15						-					100 Trying	IBCF_B responds with a 100 Trying
							1					provisional response
16					←	-						IBCF_B forwards INVITE to IBCF_A
17						>					100 Trying	IBCF_A responds with a 100 Trying provisional response
18				←							INVITE	IBCF_A forwards INVITE to IMS_A
19				;							100 Trying	IMS_A responds with a 100 Trying
20			<u> </u>								INVITE	IMS A forwards INVITE to AS/IM A
21			Ì								100 Trving	AS/IM A responds with a 100 Trying
				~							, , ,	provisional response
22				→							INVITE	AS/IM_A returns, possibly modified, INVITE to IMS_A
23			←	_							100 Trying	IMS_A responds with a 100 Trying provisional response
24		←	_	_							INVITE	IMS_A forwards INVITE to UE_A
25				<u>`</u>							100 Trying	UE_A optionally responds with a 100
				1								Trying provisional response
26	<											User A is informed of incoming file and rejects the transfer
27									1		603 Decline	UE_A responds INVITE with 603
				7								Decline to indicate that the session
28											603 Decline	IMS A forwards 603 Decline
			←								200 200010	response to AS/IM_A
29				→							603 Decline	AS/IM_A returns, possibly modified,
30											603 Decline	IMS A forwards 603 Decline
				;	1							response to IBCF_A
31						*					603 Decline	IBCF_A forwards 603 Decline
22									1		602 Dealine	response to IBCF_B
32							∢				ous Decline	response to IMS B
33								_			603 Decline	IMS_B forwards 603 Decline
								1				response to AS/IM_B

Step					Dire	ction	Message	Comment				
	U	U	Α	I	I	I	I	Α	U	U		
	S	E	S/	м	В	В	М	S/	E	S		
	е	Α	I	S	C	C	S	I	В	е		
	r		M	Α	F	F	В	M		r		
	<u>A</u>		A		A	В	<u> </u>	В		В		
34							←				603 Decline	AS/IM_B returns, possibly modified,
25											CO2 Dealine	603 Decline response to IMS_B
35						←					603 Decline	INS_B forwards 603 Decline
36											603 Decline	IBCE B forwards 603 Decline
50					←						005 Decime	response to IBCE_A
37											603 Decline	IBCE A forwards 603 Decline
0.				←								response to IMS_A
38											603 Decline	IMS_A forwards 603 Decline
									_			response to UE_B
39												User B is informed that file transfer
										1		has been rejected by user B
40				<u> </u>							ACK	UE_B acknowledges the receipt of
				Ĩ.								603 Decline response for INVITE
41					\rightarrow						ACK	IMS_A forwards ACK to IBCF_A
42						\rightarrow					ACK	IBCF_A forwards ACK to IBCF_B
43							\rightarrow				ACK	IBCF_B forwards ACK to IMS_B
44								\rightarrow			ACK	IMS_B forwards ACK to AS/IM_B
45							/				ACK	AS/IM_B returns, possibly modified,
												ACK to IMS_B
46						←					ACK	IMS_B forwards ACK to IBCF_B
47					←						ACK	IBCF_B forwards ACK to IBCF_A
48				←							ACK	IBCF_A forwards ACK to IMS_A
49			←								ACK	IMS_A forwards ACK to AS/IM_A
50											ACK	AS/IM_A returns, possibly modified,
				\rightarrow								ACK to IMS_A
51		←									ACK	IMS_A forwards ACK to UE_A

4.5.5.3 Stop file transfer

4.5.5.3.1 Stop file transfer - interworking

Interoperability Test Description												
Identifier:	TD_IMS_FILE_0005											
Summary:	IMS network supports instant File transfer service and messages exchange between two users in their home networks can be performed. User A starts file transfer, but User B terminates it in the middle of the process											
Configuration:	CF_INT_AS											
SUT	IMS_A and IMS_B											
References	Test Purpose	Specification Reference										
	TP_IMS_5097_01	TS 124 229 [1], clause 5.4.3.2 ¶11 (item 9 in 1 st numbered list)										
	TP_IMS_5108_03 TS 124 229 [1], clause 5.4.3.3 ¶5 (item 4 in 1 st numbered list)											
	TP_IMS_5115_08 TS 124 229 [1], clause 5.4.3.3 ¶89 (4 th numbered list)											
Use Case ref.:	UC_RCS_9_I											
Pre-test conditions:	 HSS of IMS_A and of IMS B is configured according to table 1 UE_A and UE_B have IP bearers established to their respective IMS networks as per TS 186 011-2 [9], clause 4.2.1 UE_A is registered in IMS_A optionally using userPRES according to table 1 UE_B is registered in IMS_B optionally using userPRES according to table 1 UE_A is optionally configured to receive notifications with watcher information UE_A is authorized to see presence information of UE_B IMS_A is configured to contact AS_A 											

Interoperability Test Description												
	IMS	B is configured to contact AS_B										
	AS E	is optionally configured for reactive authorization										
	• IMS	A is within the trust domain of IMS B										
	• UE A	and UE B have already performed capability discovery process										
	• IMS	A not configured for topology hiding										
	- IIII0_											
Test Sequence:	Step											
	1	User A requests a file transfer with user B										
	2	User B is requested to accept a file transfer										
	3	User B accents a file transfer										
	4	User A is informed that request has been answered										
	5	File transfer starts										
	64	Liser A terminates file transfer										
		User R is informed that file transfer has terminated										
	0	User A is informed that file transfer has terminated										
	OA CD	User A is informed that the transfer has terminated										
		User A is informed that file transfer has terminated										
	7B	User A is informed that file transfer has terminated										
	δB	User b is informed that the transfer has terminated										
0	Ohaala											
Conformance	Спеск											
Criteria:	4											
	T1	IP_IMS_5097_01 IN CFW step 10 (INVITE):										
		ensure that {										
		when { UE_A sends an initial INVITE to UE_B }										
		then { IMS_B receives the Initial INVITE										
		indicating the SCSCE SID LIDL of IMS A										
		Indicating the S-USUF_SIF_URI of IMS_A										
		containing a P-Charging-vector_neader										
		(containing an icid-value_parameter and										
		containing a ong-ioi_parameter indicating IMS_A and										
		not containing an access-network-charging-inio_parameter and										
		not containing a term-ioi_parameter) and										
		containing a Record-Route_neader										
		indicating the originating S-CSCF_SIP_URI }										
	•											
	Z	IP_IMS_5108_03 in CFW step 14 (INVITE)										
		when {IMS_B receives an Initial INVITE from IMS_A addressed_to UE_B}										
		then {IMS_B sends the INVITE to AS_B										
		containing a topmost Route_neader										
		indicating the SIP_URI of AS_B and										
		containing a Route_neader										
		indicating the S-CSCF_SIP_URI of IMS_B and										
		containing a P-Charging-Vector_header										
		including a orig-ioi_parameter										
		indicating operator_identifier of INIS_A and										
		not including a term-loi_parameter }										
	2											
	3	11P_11V15_51115_00 IN CFVV STEP 25 (200 OK)										
		ensure that {										
		when { INS_B receives 200_response from AS_B addressed to UE_A }										
		then { IMS_B sends the 200_response to IMS_A										
		containing a P-Charging-Vector_header										
		Including a orig-ioi_parameter										
		indicating operator_identitier of IMS_A and										
		Including a term-ioi_parameter										
		indicating operator_identifier of IMS_B }										
		}										

Step			D	irection	on				Message	Comment		
	U	U			I	I	U	U				
	S	E I	ME	3	В	М	Е	S				
	е	A 1	s c			S	в	е				
	r					в		r				
1	A		<u> </u>		5			в		Lloor A requests a file transfer with user P		
1		7								USE A requests a file transfer with user B		
2										USER B		
3									100 Trying	IMS A responds with a 100 Trying provisional		
J		(roo rrying	response		
4			\rightarrow						INVITE	IMS A forwards INVITE to IBCF A		
5									100 Trvina	BCF A responds with a 100 Trying provisional		
_			\leftarrow						, , , , ,	response		
6				\longrightarrow					INVITE	IBCF_A forwards INVITE to IBCF_B		
7					ĺ				100 Trying	IBCF_B responds with a 100 Trying provisional		
				`						response		
8					\rightarrow				INVITE	IBCF_B forwards INVITE to IMS_B		
9					(100 Trying	IMS_B responds with a 100 Trying provisional		
										response		
10)		INVITE	IMS_B forwards INVITE to UE_B		
11						←	-		100 Trying	UE_B responds with a 100 Trying provisional		
10										response		
12								7	180 Pinging	USE D is requested to accept a file fidilister		
13						←	-		160 Kinging	DE_B responds to initial INVITE with Too Binging to indicate that it has started alerting		
14									180 Ringing	IMS B forwards 180 Ringing response to		
14					(roo ranging	IBCF B		
15				,					180 Ringing	IBCF_B forwards 180 Ringing response to		
				<u> </u>						IBCF_A		
16			<u> </u>						180 Ringing	IBCF_A forwards 180 Ringing response to		
			Ì							IMS_A		
17		←							180 Ringing	IMS_A forwards the 180 Ringing response to		
10								_		UE_A		
10									200 01	USE B accepts a file transier		
19						←	-		200 OK	that the request has been accented		
20					<u> </u>				200 OK	IMS B forwards 200 OK response to IBCF B		
21				\leftarrow	`				200 OK	IBCE B forwards 200 OK response to IBCE A		
22			<u> </u>	`					200 OK	IBCE A forwards 200 OK response to IMS A		
23		(ľ						200 OK	IMS A forwards 200 OK response to LIF. A		
24		È.							200 011	User A is informed that request has been		
21	K									answered		
25		Ι.							ACK	UE_A acknowledges the receipt of 200 OK for		
										INVITE		
26			\longrightarrow						ACK	IMS_A forwards ACK to IBCF_A		
27				\longrightarrow					ACK	IBCF_A forwards ACK to IBCF_B		
28					\rightarrow				ACK	IBCF_B forwards ACK to IMS_B		
29)		ACK	IMS_B forwards ACK to UE_B		
30								_		File transfer starts (see clause 5.3.3 Image		
								1		data via MSRP)		
31A		×								User A terminates file transfer		
32A		├							BYE	UE_A releases the call with BYE		
33A			$ \longrightarrow$						BYE	IMS_A forwards BYE to IBCF_A		
34A				$ \longrightarrow$					BYE	IBCF_A forwards BYE to IBCF_B		
35A					$\vdash \rightarrow$				BYE	IBCF_B forwards BYE to IMS_B		
36A						-)		BYE	IMS_B forwards BYE to UE_B		
37A								\rightarrow		User B is informed that file transfer has		
004									200.01/	terminated		
38A						(1		200 OK	UE_B sends 200 OK for BYE		
39A				Ι.	K	1			200 OK	INIS_B forwards 200 OK response to IBCF_B		
40A				\leftarrow					200 OK	IBCF_B forwards 200 OK response to IBCF_A		
41A		1	\leftarrow						200 OK	IBCF_A forwards 200 OK response to IMS_A		

Step		Direction								Message	Comment
	U	U	Ι			I	I	U	U		
	S	E	M	B	E	3	Μ	E	s		
	e	A	\$	C E			5	в	e		
	Δ		A	Δ	Ē	R	D		B		
42A	Ť	└		Ť					T	200 OK	IMS A forwards the 200 OK response to UE A
43A											User A is informed that file transfer has
											terminated
44A							4			OPTIONS	UE_B sends OPTIONS to IMS_B to verify
							Ì			0.000	availability of file transfer capability of the UE_A
45A						<u> </u>				OPTIONS	IMS_B forwards OPTIONS to IBCF_B
46A				÷						OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
47A			\leftarrow	-						OPTIONS	IBCF_A forwards OPTIONS to IMS_A
48A		←								OPTIONS	IMS_A forwards OPTIONS to UE_A
49A			\rightarrow							200 OK	UE_A responds 200 OK to IMS_A with updated capabilities
50A				\rightarrow						200 OK	IMS_A forwards 200 OK to IBCF_A
51A				-	\rightarrow					200 OK	IBCF_A forwards 200 OK to IBCF_B
52A							→			200 OK	IBCF_B forwards 200 OK to IMS_B
53A								\rightarrow		200 OK	IMS_B forwards 200 OK to UE_B
31B								+	_		User B terminates file transfer
32B							←	_		BYE	UE_B releases the call with BYE
33B						←	-			BYE	IMS_B forwards BYE to IBCF_B
34B				÷						BYE	IBCF_B forwards BYE to IBCF_A
35B			\leftarrow	-						BYE	IBCF_A forwards BYE to IMS_A
36B		←								BYE	IMS_A forwards BYE to UE_A
37B											User A is informed that file transfer has
											terminated
38B			\rightarrow			ļ				200 OK	UE_A sends 200 OK for BYE
39B				→		ļ				200 OK	IMS_A forwards 200 OK response to IBCF_A
40B				-	\rightarrow	ļ				200 OK	IBCF_A forwards 200 OK response to IBCF_B
41B							→			200 OK	IBCF_B forwards 200 OK response to IMS_B
42B			_	_			-	\rightarrow		200 OK	IMS_B forwards the 200 OK response to UE_B
43B								_	→		User B is informed that file transfer has terminated
44B			→							OPTIONS	UE_A sends OPTIONS to IMS_A to verify availability of file transfer capability of the UF_B
45B				\rightarrow						OPTIONS	IMS A forwards OPTIONS to IBCF A
46B				_	\rightarrow					OPTIONS	IBCF A forwards OPTIONS to IBCF B
47B							→			OPTIONS	IBCF B forwards OPTIONS to IMS B
48B							<u> </u>	\rightarrow		OPTIONS	IMS_B forwards OPTIONS to UE_B
49B										200 OK	UE_B responds with 200 OK to IMS_B with
											updated capabilities
50B						←	-			200 OK	IMS_B forwards 200 OK to IBCF_B
51B				÷						200 OK	IBCF_B forwards 200 OK to IBCF_A
52B			\leftarrow	-						200 OK	IBCF_A forwards 200 OK to IMS_A
53B		←								200 OK	IMS_A forwards 200 OK to UE_A

4.5.5.3.2 Stop file transfer - roaming (optional)

Interoperability Test Description										
Identifier:	TD_IMS_FILE_0006									
Summary:	IMS network supports instant File transfer service and messages exchange between two users, one user in its home network and one user roaming can be performed. User A starts file transfer, but User B terminates it in the middle of the process									
Configuration:	CF_ROAM_AS (OPTIONAL)									
SUT	IMS_A and IMS_B									

Interoperability Test Description												
References	Test Pure	oose	Specification Reference									
	TP IMS	5046_01	TS 124 229 [1], clause 5.2.6.3.3 ¶1									
			(1 st numbered list)									
	TP IMS	5067 01	TS 124 229 [1], clause 5.2.7.2 ¶5									
	TP IMS	5097 09	TS 124 229 [1], clause 5.4.3.2 ¶11									
			(items 5 and 8 in 1 st numbered list)									
Use Case ref.:	UC RCS	9 R										
Pre-test	HSS	of IMS_A and of IMS B is configu	red according to table 1									
conditions:	• UE_A	and UE_B have IP bearers estal	olished to their respective IMS networks as									
	per T	S 186 011-2 [9], clause 4.2.1										
	• UE_A	A is registered in IMS_A optionally	using userPRES according to table 1									
	 UE_E 	B is registered in IMS_B via IMS_A	A optionally using userPRES according to									
	table	1										
	• UE_#	A is optionally configured to receiv	e notifications with watcher information									
	• UE_4	A is authorized to see presence int	formation of UE_B									
	 IMS_ 	A is configured to contact AS_A										
	 IMS_ 	B is configured to contact AS_B										
	 AS_E 	3 is optionally configured for reacting and the second se second second sec	ve authorization									
	 IMS_ 	A is within the trust domain of IMS	S_B									
	• UE_/	A and UE_B have already perform	ed capability discovery process									
	 IMS_ 	A not configured for topology hidi	ng									
To al O among a sa	01.01											
Test Sequence:	Step	Lloor A requests a file transfer wi	th uppr D									
	2	User A requests a file transfer w										
	2	User B accept file transfer										
	3	User A is informed that request k	as been answered									
	4	File transfer starts										
	64	Liser A terminates file transfer										
	74	User B is informed that file transf	fer has terminated									
	84	I ser A is informed that file trans	fer has terminated									
	6B	User B terminates file transfer										
	7B	User A is informed that file trans	fer has terminated									
	8B	User B is informed that file trans	fer has terminated									
Conformance	Check											
Criteria:												
	1	TP_IMS_5046_01 in CFW step 6	6 (INVITE)									
		ensure that {										
		when { IMS_A receives an initia	al INVITE from UE_B }									
		then { IMS_A sends the INVITE	to IMS_B									
		containing a Route_nead	CE SID LIDL of IMS A and									
		containing a Poute hea	der									
		indicating the "list of S	ervice Route header LIRIs									
		from the real	stration" and									
		containing an additional	Via header									
		containing (the P-CSC	F via port number and									
		(the P-CSCF-F	QDN_address or									
		the P-CSCF-IF	P_address)) of IMS_A and									
		containing an additional	topmost Record-Route_header									
		indicating (the P-CSCF	_port_number									
		'where it awaits	subsequent requests' from UE_A and									
		(the P-CSCF-FC	QDN_address or									
		the P-CSCF-IP	_address)) of IMS_A and									
		not containing P-Preferr	ed-Identity_header and									
		containing a P-Asserted	-Identity_header									
		containing an address	or UE_B and									
		containing a P-Charging	-vector_neader									
		containing an icid-value	e_parameter }									
1	1	17										

	Interoperability Test Description
2	TP_IMS_5067_01 in CFW step 6 (INVITE)
	ensure that {
	when { IMS_A receives an initial INVITE from UE_B }
	then { IMS_A sends the INVITE to IMS_B
	containing a P-Charging-Vector_header
	}
	}
3	TP_IMS_5097_09 in CFW step 10 (INVITE)
	ensure that {
	when { IMS_B receives an initial INVITE from IMS_A addressed to UE_A }
	then { IMS_B sends the initial INVITE to AS_B
	containing a Route_header
	indicating the SIP_URI of AS_B and
	containing a P-Charging-Function-Addresses_header and
	containing a P-Charging-Vector_header
	(including a orig-ioi_parameter
	indicating operator_identifier of IMS_A and
	not including a term-ioi_parameter and
	including access-network-charging-info) }
	}

Step				D	irec	tior	n					Message	Comment
	U	U	I	I		Ι		Ι	U	U			
	S	E	M	E	3	B		Μ	E	S			
	e	Α	S		5	C		S	в	e			
	A		A		4	Б		D		B			
1		→											User A requests a file transfer with user B
2			\rightarrow									INVITE	UE_A sends INVITE to a file transfer session with user B
3		÷										100 Trying	IMS_A responds with a 100 Trying provisional response
4			_	\rightarrow							Ī	INVITE	IMS_A forwards INVITE to IBCF_A
5			÷						Ì			100 Trying	IBCF_A responds with a 100 Trying provisional response
6						\rightarrow					Ī	INVITE	IBCF_A forwards INVITE to IBCF_B
7					<u>(</u>	-					,	100 Trying	IBCF_B responds with a 100 Trying provisional response
8						_)			Ī	INVITE	IBCF_B forwards INVITE to IMS_B
9						÷						100 Trying	IMS_B responds with a 100 Trying provisional response
10						÷		_			Ī	INVITE	IMS_B forwards INVITE to IBCF_B
11						-		*				100 Trying	IBCF_B responds with a 100 Trying provisional
12					\leftarrow	_					Ī	INVITE	IBCF_B forwards INVITE to IBCF_A
13						\rightarrow					,	100 Trying	IBCF_A responds with a 100 Trying provisional response
14			÷								Ī	INVITE	IBCF_A forwards INVITE to IMS_A
15				\rightarrow							,	100 Trying	IMS_A responds with a 100 Trying provisional
16			_						→		Ī		IMS A forwards INVITE to UE B
17			÷			_						100 Trying	UE_B responds with a 100 Trying provisional response
18									-	→	Γ		User B is requested to accept file transfer
19			÷			- -		-	_		•	180 Ringing	UE_B responds to initial INVITE with 180 Ringing to indicate that it has started alerting
20				\rightarrow								180 Ringing	IMS_A forwards 180 Ringing response to IBCF_A
21						→					,	180 Ringing	IBCF_A forwards 180 Ringing response to IBCF_B
22						-		*			,	180 Ringing	IBCF_B forwards 180 Ringing response to IMS_B
23						÷		-				180 Ringing	IMS_B forwards the 180 Ringing response to IBCF_B

Step		Direction								Message	Comment			
	U	ן ו	J	I	I	I	Ι	U	U					
	S	; E	E I	M	3	В	М	Е	S					
	е		\ :	S (2	<u> </u>	S	В	е					
	r		4			F	в		r B					
24		<u> </u>			`	<u>в</u>			в	180 Ringing	IBCF_B forwards 180 Ringing response to			
25				<u> </u>						180 Ringing	IBCF_A forwards 180 Ringing response to			
26			<i>(</i>	ľ						180 Ringing	IMS_A IMS_A forwards 180 Ringing response to UE_A			
27			•					-	_		User B accepts file transfer			
28								,		200 OK	LIE B responds INVITE with 200 OK to indicate			
20				<u> </u>						200 010	that the request has been accepted			
29				\longrightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A			
30					\longrightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B			
31							\rightarrow			200 OK	IBCF_B forwards 200 OK response to IMS_B			
32						←				200 OK	IMS_B forwards 200 OK response to IBCF_B			
33					\leftarrow					200 OK	IBCF_B forwards 200 OK response to IBCF_A			
34				\leftarrow						200 OK	IBCF_A forwards 200 OK response to IMS_A			
35			(—								IMS_A forwards 200 OK response to UE_A			
36	ŧ										User A is informed that request has been			
											answered			
37										ACK	INVITE			
38				\longrightarrow						ACK	IMS_A forwards ACK to IBCF_A			
39					\longrightarrow	ĺ				ACK	IBCF_A forwards ACK to IBCF_B			
40							\rightarrow			ACK	IBCF_B forwards ACK to IMS_B			
41						←	_			ACK	IMS_B forwards ACK to IBCF_B			
42					\leftarrow					ACK	IBCF B forwards ACK to IBCF A			
43				\leftarrow						ACK	IBCE A forwards ACK to IMS A			
44								\rightarrow		ACK	IMS A forwards ACK to UE B			
								-		-	File transfer starts (see clause 5.3.3 Image			
45				<u> </u>					→		data via MSRP)			
46A	K								→		User A terminates file transfer			
47A										BYE	UE_A releases the call with BYE			
48A				\longrightarrow						BYE	IMS_A forwards BYE to IBCF_A			
49A					\longrightarrow					BYE	IBCF_A forwards BYE to IBCF_B			
50A							→			BYE	IBCF B forwards BYE to IMS B			
51A						←				BYE	IMS B forwards BYE to IBCF B			
52A					\leftarrow	-				BYE	IBCF B forwards BYE to IBCF A			
53A				<u> </u>						BYE	IBCF A forwards BYE to IMS A			
54A				<u> </u>				→		BYE	IMS A forwards BYE to UE B			
01/1											User B is informed that file transfer has			
55A									\rightarrow		terminated			
56A				<u> </u>						200 OK	UE_B sends 200 OK for BYE			
57A				\longrightarrow						200 OK	IMS_A forwards 200 OK response to IBCF_A			
58A					\rightarrow					200 OK	IBCF_A forwards 200 OK response to IBCF_B			
59A						L	\rightarrow			200 OK	IBCF B forwards 200 OK response to IMS B			
60A						←	_			200 OK	IMS B forwards the 200 OK response to IBCF B			
61A					<u> </u>	ľ				200 OK	IBCF B forwards 200 OK response to IBCF A			
624				<u> </u>	l`					200 OK	IBCE A forwards 200 OK response to IMS A			
634			(ľ		1				200 OK	IMS A forwards the 200 OK response to LIF A			
64A											User A is informed that file transfer has			
											terminated			
65A				←	<u> </u>	<u> </u>		_		OPTIONS	UE_B sends OPTIONS to IMS_A to verify availability of file transfer capability of the UE_A			
66A				\longrightarrow		1				OPTIONS	IMS A forwards OPTIONS to IBCF A			
67A				´	$ \longrightarrow $					OPTIONS	IBCE A forwards OPTIONS to IBCE B			
68A							\rightarrow			OPTIONS	IBCE B forwards OPTIONS to IMS_B			
694						4				OPTIONS	IMS_B forwards OPTIONS to IBCE_B			
704						$\left[\right]$					IBCE B forwards OPTIONS to IBCE A			
1 UA				I		1	I	1		OF HONS	IDUI _D IUIWAIUS OF IIUNS IU IDUF_A			

Step				Dire	ection				Message	Comment
	U	U	I	I	I	I	U	U	_	
	S	E	м	В	В	M	E	S		
	е	Α	S	C	C	S	В	е		
	r A		A	Г Д	R	P		R		
71A	Ê			<u> </u>					OPTIONS	IBCE A forwards OPTIONS to IMS A
72A		4							OPTIONS	IMS A forwards OPTIONS to UE A
73A		Ì							200 OK	LIE A responds 200 OK to IMS A with updated
10/1			\rightarrow						200 010	capabilities
74A				\rightarrow					200 OK	IMS_A forwards 200 OK to IBCF_A
75A					\rightarrow				200 OK	IBCF_A forwards 200 OK to IBCF_B
76A						\rightarrow			200 OK	IBCF_B forwards 200 OK to IMS_B
77A					←				200 OK	IMS_B forwards 200 OK to IBCF_B
78A				←					200 OK	IBCF_B forwards 200 OK to IBCF_A
79A			←	_					200 OK	IBCF_A forwards 200 OK to IMS_A
80A				_			\rightarrow		200 OK	IMS_A forwards 200 OK to UE_B
46B										User B terminates file transfer
47B			←	-			_		BYE	UE_B releases the call with BYE
48B				\rightarrow					BYE	IMS_A forwards BYE to IBCF_A
49B					\rightarrow				BYE	IBCF_A forwards BYE to IBCF_B
50B						\rightarrow			BYE	IBCF_B forwards BYE to IMS_B
51B					←				BYE	IMS_B forwards BYE to IBCF_B
52B				←					BYE	IBCF_B forwards BYE to IBCF_A
53B			←	_					BYE	IBCF_A forwards BYE to IMS_A
54B		←							BYE	IMS_A forwards BYE to UE_A
55B										User A is informed that file transfer has
000										terminated
56B			\rightarrow						200 OK	UE_A sends 200 OK for BYE
57B				\rightarrow					200 OK	IMS_A forwards 200 OK response to IBCF_A
58B					\rightarrow				200 OK	IBCF_A forwards 200 OK response to IBCF_B
59B						\rightarrow			200 OK	IBCF_B forwards 200 OK response to IMS_B
60B					←				200 OK	IMS_B forwards 200 OK response to IBCF_B
61B				←	_				200 OK	IBCF_B forwards 200 OK response to IBCF_A
62B			←	-					200 OK	IBCF_A forwards 200 OK response to IMS_A
63B					— -		\rightarrow		200 OK	IMS_A forwards the 200 OK response to UE_B
64B										User B is informed that file transfer has
65P									OPTIONS	LIE A sonde OPTIONS to IMS A to vorify
056			\rightarrow						OF HONS	availability of file transfer capability of the UF B
66B				\rightarrow					OPTIONS	IMS A forwards OPTIONS to IBCF A
67B					\rightarrow				OPTIONS	IBCF_A forwards OPTIONS to IBCF_B
68B						→			OPTIONS	IBCF B forwards OPTIONS to IMS B
69B					←				OPTIONS	IMS B forwards OPTIONS to IBCF B
70B				←					OPTIONS	IBCF_B forwards OPTIONS to IBCF_A
71B			←	_					OPTIONS	IBCF_A forwards OPTIONS to IMS_A
72B				_			\rightarrow		OPTIONS	IMS_A forwards OPTIONS to UE_B
73B			,						200 OK	UE_B responds with 200 OK to IMS_A with
			·	_						updated capabilities
74B				\rightarrow					200 OK	IMS_A forwards 200 OK to IBCF_A
75B					\rightarrow				200 OK	IBCF_A forwards 200 OK to IBCF_B
76B						\rightarrow			200 OK	IBCF_B forwards 200 OK to IMS_B
77B					⊬				200 OK	IMS_B forwards 200 OK to IBCF_B
78B				\leftarrow	—				200 OK	IBCF_B forwards 200 OK to IBCF_A
79B			←	-					200 OK	IBCF_A forwards 200 OK to IMS_A
80B		←			1				200 OK	IMS A forwards 200 OK to UE A
5.1 Introduction

MSRP is a text based, connection-oriented protocol specified in RFC 4975 [10], RFC 4976 [11] and RFC 6135 [12]. It is not designed for use as a standalone protocol and therefore it can be part of the SIP protocol. The MSRP URIs are exchanged using SDP in an offer/answer exchange via SIP.

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5.2 Test Prerequisites

5.2.1 Authorization over MSRP

Client that wants to use the services of IM AS they need to authenticate with authorization procedure. Expected authorization procedure is detailed described in RFC 4976 [11] and its MSRP sequence diagram is:

Stop	Direc	ction	Maasaga	Commont					
Step	UE	AS IM	Wessage	Comment					
1	-	>	AUTH	The UE sends AUTH					
2	€	-	401 Unauthorized	The AS IM responds with a valid HTTP Digest					
	, i i i i i i i i i i i i i i i i i i i			authentication challenge					
3	→ AUT		AUTH	The UE sends another AUTH with authentication					
4	← 200 OK		200 OK	The AS IM responds with 200 OK.					

5.3 Use Cases

The test descriptions with call flow diagrams in clauses 4.5.3, 4.5.4 and 4.5.5 contain basic MSRP transactions which are only marked symbolically, e.g. "Users perform chatting". Detailed MSRP call flows are described in the present clause. This split of MSRP and SIP signalling has been chosen to keep the test description more readable.

5.3.1 Chat 1 to 1 via MSRP

Use case index UC_MSRP_01 is used.

NOTE: Call flows show only the first chat transmission from one user to another and back. Other transmissions follow depending on who sends the next text message to the other user; this message is transferred with SEND request to the other user.

Step			Dire	ction				Message	Comment
	U	U				U	U		
	S	E				E	S		
	е	Α				В	е		
	r ∆						r R		
1	Ê								User A write a chat message
2		_	 _			→		SEND	UE A sends SEND MSRP with content to UE B
3		←	 			_		200 OK	UE B responds with 200 OK to UE A
4							→		User B read a chat message
5						←	-		User B write a chat message
6		←	 		_	-		SEND	UE B sends SEND MSRP with content to UE A
7			 	_		\rightarrow		200 OK	UE A responds with 200 OK to UE B
8	\leftarrow								User A read a chat message

5.3.2 Chat 1 to many via MSRP

NOTE: Call flows show only the first chat transmission from one user to all other users. Other transmissions follow depending on who sends the next text message to the other user; this message is transferred with SEND request to the other parties.

5.3.2.1 Chat 1 to many via MSRP - Interworking

Use case index UC_MSRP_02_I is used.

Step				Dire	ction				Message	Comment
	U	U	Α		U	U	U	υ		
	S	E	S/		E	S	E	S		
	е	Α			В	е	С	е		
	r A					r B		r C		
1		→								User A write a chat message
2		_	→						SEND	UE A sends SEND MSRP with content to IM SERVER
3		←	_						200 OK	IM SERVER responds with 200 OK to UE A
4			-	_ _	→				SEND	IM SERVER sends SEND MSRP with content to UE B
5			\leftarrow		-				200 OK	UE responds with 200 OK to IM SERVER
6						\rightarrow				User B read a chat message
7				_	_		\rightarrow		SEND	IM SERVER sends SEND MSRP with content to UE C
8			\leftarrow				_		200 OK	UE C responds with 200 OK to IM SERVER
9								\rightarrow		User C read a chat message

5.3.2.2 Chat 1 to many via MSRP - Roaming

Use case index UC_MSRP_02_R is used.

Step				Dire	ction				Message	Comment
	U	υ		Α	U	U	U	υ		
	S	Е		S/	E	S	Е	S		
	е	Α			В	е	С	е		
	r			M		r		r		
	<u>A</u>			в		в				
1				←	-				SEND	UE A sends SEND MSRP with content to IM SERVER
2					→				200 OK	IM SERVER responds with 200 OK to UE A
3					←					User B write a chat message
4		←	_	-					SEND	IM SERVER sends SEND MSRP with content to UE B
5				\rightarrow					200 OK	UE responds with 200 OK to IM SERVER
6	←									User A read a chat message
7							\rightarrow		SEND	IM SERVER sends SEND MSRP with content to UE C
8				\leftarrow	— —	-+	-		200 OK	UE C responds with 200 OK to IM SERVER
9								\rightarrow		User C read a chat message

5.3.2.3 Chat 1 to many via MSRP to additional user - Interworking

Use case index UC_MSRP_03_I is used.

Step				Direc	tion				Message	Comment
	υ	U	Α				U	U		
	S	E	S/				Е	S		
	е	Α	I				D	е		
	r		М					r		
	Α		Α					D		
1										Follow UC_MSRP_02_I
2							_		SEND	IM SERVER sends SEND MSRP with content to
2							1			UE D
3			←	-		-	-		200 OK	UE D responds with 200 OK to IM SERVER
4							-	→		User D read a chat message

5.3.2.4 Chat 1 to many via MSRP to additional user - Roaming

Use case index UC_MSRP_03_R is used.

Step			Direc	ction				Message	Comment
	U	U	Α	U	U	U	υ		
	S	Е	S/	E	S	E	S		
	е	Α	1	В	е	D	е		
	r		м		r		r		
	Α		В		В		D		
1									Follow UC_MSRP_02_R
2								SEND	IM SERVER sends SEND MSRP with content to
						~			UE D
3			\leftarrow	_				200 OK	UE D responds with 200 OK to IM SERVER
4							\rightarrow		User D read a chat message

5.3.3 Image data via MSRP

Use case index UC_MSRP_04 is used.

NOTE: Call flows show only the first picture transmission from one user to another and back. Other chunk transmissions in case of bigger files follow with SEND requests.

Step			Direc	tion				Message	Comment
	C	U				U	U		
	S	Е				Е	S		
	е	Α				в	е		
	r						r		
	Α						В		
1		\rightarrow							User A select a picture
2			_			_		SEND	UE A sends SEND MSRP with content to UE B
						7		(image)	
3		←	 -	-	_	-		200 OK	UE B responds with 200 OK to UE A
4						-	→		User B look a picture

5.4 Test Descriptions

5.4.1 Chat 1 to 1 procedure via MSRP

		Interoperability Test	Description
Identifier:	TD_MSRF	P_CHAT_0001	
Summary:	User A tra	nsfers message with SEND	request to User B via MSRP and if endpoint
	receives a	request it must immediately	generate response and send it back.
Configuration:			
SUT	UE_A and	UE_B	
References	Test Purp	ose	Specification Reference
	TP_MSRF	P_9000_01	RFC 4975 [10], clauses 5.4 and 7.1
	TP_MSRF	P_9000_02	RFC 4975 [10], clause 7.2
Use Case ref.:	UC_MSRI	P_01	
Pre-test	• UE	_A has_initiated_a_dialog_v	vith UE_B
conditions:			
Test Sequence:	Step		
	1	User A writes a chat messa	ge
	2	User B reads a chat messa	ge
e é			
Conformance Criteria:	Check		
	1	TP_MSRP_9000_01 step 2	and 6 (SEND):
		ensure that {	
		when { UE_A sends SEND	_MSRP to UE_B }
		then { UE_B receives the	SEND_MSRP
		containing FromP	ath_header
		indicating the m	srp_path from SDP attribute within SIP INVITE
		containing ToPath	neader
		Indicating the m	srp_path from SDP attribute within SIP
		200_response	Tupo boodor
		indicating text/n	ain
		}	
		}	
	2	TP MSRP 9001 01 step 3	and 7 (200 OK SEND):
		ensure that {	
		when { UE_B receives SE	ND_MSRP from UE_A }
		then { UE_B sends the 20	0_response_MSRP
		containing FromF	Path_header
		indicating the ms	p_path from SDP attribute within SIP INVITE
		containing ToPath	_header
		indicating the ms	p_path from SDP attribute within SIP
		200_response	
		, }	
		}	

Step				Dire	ction				Message	Comment
	U	U					U	U		
	S	E					Е	S		
	е	Α					В	е		
	r							r		
	A							В		
1		\rightarrow								User A writes a chat message
2		-	_	-		_	\rightarrow		SEND	UE A sends SEND MSRP with content to UE B
3		←	_	-		_	_		200 OK	UE B responds with 200 OK to UE A
4								→		User B reads a chat message
5							←	-		User B writes a chat message
6		←		-			_		SEND	UE B sends SEND MSRP with content to UE A
7				-	_		\rightarrow		200 OK	UE A responds with 200 OK to UE B

Step				Direc	ction				Message	Comment
	U U U U U									
	S	Е					E	s		
	е	Α					В	е		
	r							r		
	Α							В		
8	\downarrow									User A reads a chat message

5.4.2 Chat 1 to many procedure via MSRP

		Interoperability Test De	scription							
Identifier:	TD_MSR	P_CHAT_0001								
Summary:	User A transfers message with SEND request to AS IM via MSRP. AS IM transfers message to User B and User C like it is predefined in previous SIP dialog. If end users receive a request they must immediately generate response and send it back to AS IM which sends response back to User A.									
	-									
Configuration:										
SUT	UE_A, UE	E_B, UE_C and AS IM								
References	Test Purp	pose	Specification Reference							
	TP_MSRF	P_9000_01	RFC 4975 [10], clause 5.4 and 7.1							
	TP_MSRF	P_9000_02	RFC 4975 [10], clause 7.2							
Use Case ref.:	UC_MSR	P_02_I								
Pre-test conditions:	• UE	E_A has_initiated_a_dialog_with	UE_B and UE_C							
Test Sequence:	Stor									
Test Sequence.		Licor A writes a chat mossage								
	2	User B reads a chat message								
	3	User C reads a chat message								
		loser o reads a chat message								
Conformance Criteria:	Check									
	2	TP_MSRP_9000_01 step 2,5 ensure that { when { UE_A sends SEND_M then { UE_B receives the SE containing FromPath indicating the msrp containing ToPath_he indicating the msrp 200_response containing Content-Ty indicating text/plain } TP_MSRP_9001_01 step 3,6 ensure that { when { UE_B receives SEND then { UE_B sends the 200_1 containing FromPath indicating the msrp_ containing ToPath_he	and 7 (SEND): SRP to UE_B } ND_MSRP _header _path from SDP attribute within SIP INVITE ader _path from SDP attribute within SIP response_MSRP n_header path from SDP attribute within SIP INVITE eader							

Step				Dire	ction				Message	Comment
	U s r A	U E A	A S/ I M A		U E B	U s e r B	U E C	U s e r C		
1		\rightarrow								User A writes a chat message
2		-	→						SEND	UE A sends SEND MSRP with content to IM SERVER
3		←	_						200 OK	IM SERVER responds with 200 OK to UE A
4			-		→				SEND	IM SERVER sends SEND MSRP with content to UE B
5			\leftarrow		-				200 OK	UE responds with 200 OK to IM SERVER
6						\rightarrow				User B reads a chat message
7				_	_		\rightarrow		SEND	IM SERVER sends SEND MSRP with content to UE C
8			\leftarrow	-	— —	_	-		200 OK	UE C responds with 200 OK to IM SERVER
9								\rightarrow		User C reads a chat message

5.4.3 Image transfer procedure via MSRP

		Interoperability Test Desc	ription				
Identifier:	TD_MSRP_FILE_0001						
Summary:	User A transfers file with SEND request to User B via MSRP and if endpoint receives a						
	request it must immediately generate response and send it back.						
Configuration:							
SUT	UE_A and UE_B						
References	Test Purp	ose	Specification Reference				
	TP_MSRF	P_9000_02	RFC 4975 [10], clauses 5.4 and 7.1 and RFC 5547 [13]				
	TP_MSRF	P_9001_01	RFC 4975 [10], clause 7.2				
Use Case ref.:	UC_MSRP_04						
Pre-test conditions:	UE_A has_initiated_a_dialog_with UE_B						
Test Sequence:	Step						
	1	User A selects a file for sending					
	2	User B opens received file					
Conformance Criteria:	Check						
	1	TP_MSRP_9000_02 step 2 (SEN	ND):				
		ensure that {					
		when { UE_A sends SEND_MS	RP to UE_B }				
		then { UE_B receives the SEN	D_MSRP				
		containing FromPath_I	neader				
		indicating the msrp_p	oath from SDP attribute within SIP INVITE				
		containing ToPath_hea	ader				
		indicating the msrp_p	bath from SDP attribute within SIP				
		200_response	na haadar				
		indicating image/ing	be_neader				
		}					
		}					

Interoperability Test Description			
2	TP_MSRP_9001_01 step 3 (200 OK SEND):		
	when { UE_B receives SEND_MSRP from UE_A }		
	then { UE_B sends the 200_response_MSRP		
	containing FromPath_header		
	indicating the msrp_path from SDP attribute within SIP INVITE		
	containing ToPath_header		
	indicating the msrp_path from SDP attribute within SIP		
	200_response		
	}		
	}		

Step	Direction								Message	Comment
	U	U					U	U		
	S	Е					Е	S		
	е	Α					В	е		
	r							r		
	Α							В		
1	_	\rightarrow								User A selects a picture
2									SEND	UE A sends SEND MSRP with content to UE B
							7		(image)	
3		←	_	-	-	_			200 OK	UE B responds with 200 OK to UE A
4								→		User B views a picture

Annex A (normative): Zip file with TPLan code

The test purposes used in the present document have been originally generated in the TPLan text files in the archive file $ts_{102901V020101p0.zip}$ which accompanies the present document.

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History

Document history				
V1.1.1	June 2011	Publication		
V2.1.1	November 2011	Publication		

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