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SERIES Q: SWITCHING AND SIGNALLING

Testing specifications – Testing specifications for SIP-IMS

Conference service using IP multimedia core network subsystem; Conformance testing – Part 3: User side; Test suite structure and test purposes

Recommendation ITU-T Q.4005.3

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Recommendation ITU-T Q.4005.3

Conference service using IP multimedia core network subsystem; Conformance testing – Part 3: User side; Test suite structure and test purposes

Summary

Recommendation ITU-T Q.4005.3 v.1 (2006) is part 3 of the testing specifications for conference service (CONF) implemented on IP multimedia subsystem (IMS) basis on the user side. The standard specifies the test suite structure and test purposes (TSS&TP) which can be used for testing against Recommendation ITU-T Q.3621 v.1.

The version number, v.1, indicates that this is version one of Recommendation ITU-T Q.4005.3 and that it relates to Release 10 of the relevant 3GPP/ETSI standard.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T Q.4005.3 v.1	2016-02-13	11	11.1002/1000/12740

Keywords

Conference calling, CONF, IP multimedia subsystem, IMS, network side, session description protocol, SDP, session initiation protocol, SIP, test purposes, TP, test suite structure, TSS, testing, user side.

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* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

FOREWORD

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The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

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Conference service using IP multimedia core network subsystem; Conformance testing – Part 3: User side; Test suite structure and test purposes

1 Scope

This Recommendation specifies the test suite structure and test purposes (TSS&TP) for CONF service [ITU-T Q.3621 v.1] for the user side.

The present Recommendation is part 3 of a multi-part deliverable covering CONF service, as identified below:

Part 1: "Protocol implementation conformance statement (PICS)";

Part 2: "Test suite structure and test purposes; Network side (TSS&TP)";

Part 3: "Test suite structure and test purposes; User side (TSS&TP)".

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T Q.3621 v.1]	Recommendation ITU-T Q.3621 v.1 (2016), *CONF using IP multimedia core network subsystem – Protocol specification*.
[ITU-T Q.4005.1 v.1]	Recommendation ITU-T Q.4005.1 v.1 (2016), *Conference service using IP Multimedia core network subsystem; Conformance testing – Part 1: Network side and user side; Protocol implementation conformance statement.*
[ITU-T X.290]	Recommendation ITU-T X.290 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – General concepts.*
[ETSI TS 124 147 V10.5.0]	ETSI TS 124 147 V10.5.0 (2015), *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Conferencing using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3 (3GPP TS 24.147 version 10.5.0 Release 10).*

3 Definitions

For the purposes of this Recommendation, the terms and definitions given in [ITU-T X.290] and [ITU-T X.296] apply:

3.1 implementation under test (IUT): Refer to [ITU-T X.290].

3.2 PICS proforma: Refer to [ITU-T X.290].

3.3 point of control and observation: Refer to [ITU-T X.290].

3.4 protocol implementation conformance statement (PICS): Refer to [ITU-T X.290].

3.5 system under test (SUT): Refer to [ITU-T X.290].

3.6 test purpose (TP): Refer to [ITU-T X.290].

NOTE – This may contain additional information.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

CONF Conference calling

SUT System Under Test

UE User Equipment

5 Test suite structure (TSS)

Table 1 – Test suite structure

User Equipment		
		CONF_U01_xxx

5.1 Configuration

The scope of this Recommendation is to test the signalling and procedural aspects of the stage 3 requirements as described in [ITU-T Q.3621 v.1]. The stage 3 description respects the requirements regarding end devices.

5.1.2 Testing of the UE

There are special clauses in the protocol standard describing the procedures that apply at the originating and terminating user equipment. Therefore the test configuration in Figure 5.1.2-1 has been chosen.

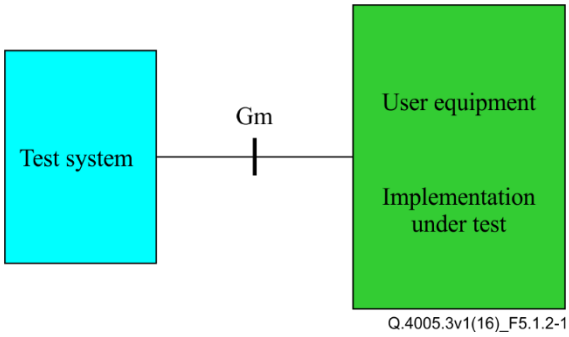

Figure 5.1.2-1 – Applicable configuration to test UE functionalities

6 Test purposes (TP)

6.1 Introduction

The reference column makes reference to [ITU-T Q.3621 v.1], except where explicitly stated otherwise.

6.1.1 TP naming convention

Test purposes (TPs) are numbered, starting at 001, within each group. Groups are organized according to the test suite structure (TSS). Additional references are added to identify the actual test suite and whether it applies to the network or the user (see Table 2).

Table 2 – TP identifier naming convention scheme

Identifier: **<ss>_<iut><group>_<nnn>**			
<ss>	= supplementary service:	e.g. "CONF"	
<iut>	= type of IUT:	U N yyy	User Network service
<group>	= group	2 digit field representing group reference according to TSS	
<nnn>	= sequential number	(001-999)	

6.1.2 Test strategy

As the base standard [ITU-T Q.3621 v.1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the protocol implementation conformance statement PICS specification [ITU-T Q.4005.1 v.1].

6.2 Signalling requirements

6.2.1 Actions at the UE

TSS	**TP**	**Reference**	**Selection expression**
User equipment	CONF_U01_001	4.5.2.1.2 of [ETSI TS 124 147]	PICS 5.1/1 AND PICS 5.2/1

Test purpose

The user equipment has the capability to create a conference. No subscription to the conference event package.

Ensure that the user equipment to create a conference with a conference factory, sends an initial INVITE request with the Request URI containing a conference factory URI.

SIP header values:

INVITE: Request URI=conference factory URI

200 OK (INVITE): Contact: conference URI;isfocus

Comments:

User equipment		**Test equipment**
INVITE	→	INVITE
200 OK	←	200 OK
ACK	→	ACK

Apply post test routine

TSS	TP	Reference	Selection expression
User equipment	CONF_U01_002	Clause 4.5.2.1.2 of [ITU-T Q.3621 v.1]	PICS 5.1/1 AND PICS 5.2/1

Test purpose

The user equipment has the capability to create a conference with subscription to the conference event package.

Ensure that the user equipment to create a conference with a conference factory, sends an initial INVITE request with the Request URI containing a conference factory URI and on receipt of a 200 OK response, to subscribe to the conference event package sends a SUBSCRIBE request with Request URI indicating the received conference URI.

SIP header values:

INVITE: Request URI=conference factory URI

200 OK (INVITE): Contact: conference URI;isfocus

SUBSCRIBE: Request URI contained the conference URI
header contains "conference"

NOTIFY: Event contains **conference**; Subscription-State contains **active; expires=xxxx**

Comments:

User equipment		**Test equipment**
INVITE	➔	INVITE
200 OK	←	200 OK
ACK	➔	ACK
SUBSCRIBE	➔	SUBSCRIBE
200 OK	←	200 OK
NOTIFY	←	NOTIFY
200 OK NOTIFY	➔	200 OK NOTIFY

Apply post test routine

TSS	TP	Reference	Selection expression
User equipment	CONF_U01_003	5.3.1.3.3, 5.3.1.5.3 of [ETSI TS 124 147]	PICS 5.1/1 AND PICS 5.2/1

Test purpose

Conference creation by Three-way session creation. REFER request to the Focus, Conference notification service is subscribed.

The conference creator is participating in two SIP sessions (S1 and S2) which are put on hold and wants to join together two of these active sessions to a so-called three-way session. The **conference notification service is subscribed**. The conference creator shall perform the following steps:

- Create a conference at the conference factory by sending an INVITE request with the conference factory URI. Receive and store the conference URI in the 200 OK response.
- For each of the active sessions, that are requested to be joined to a three-way session, sends **two REFER requests** with the Request URI indicating the previously received conference URI and the Refer-To header indicating the SIP URI or tel URL of the respective remote user.
- The conference creator releases the sessions 1 and 2 after the receipt of NOTIFY requests indicating that the remote users have successfully joined the three-way session.

SIP header values:

INVITE: Request URI indicating the conference factory URI

200 OK: conference URI and "isfocus" feature parameter indicated in Contact header field

SUBSCRIBE: Request URI contained the conference URI
header contains "conference"

NOTIFY 1 Event contains **conference**; Subscription-State contains **active; expires=xxxx**

REFER: Request URI indicating the conference URI
Refer-to header contains URI of remote user

NOTIFY 2 Event contains **conference**; Subscription-State contains **active**
message/sipfrag contains **SIP/2.0 100 Trying**

NOTIFY 3 Event contains **conference**; Subscription-State contains **active**
message/sipfrag contains **SIP/2.0 200 OK**
application/conference-info+xml contains (S1) connected, dialled-in

NOTIFY 4 Event contains **conference**; Subscription-State contains **active**
message/sipfrag contains **SIP/2.0 100 Trying**

NOTIFY 5 Event contains **conference**; Subscription-State contains **active**
message/sipfrag contains **SIP/2.0 200 OK**
application/conference-info+xml contains (S2) connected, dialled-in

Comments:		
User equipment		**Test equipment**
	Create session S1	
	Set session S1 on hold	
	Create session S2	
	Set session S2 on hold	
INVITE	→	INVITE
200 OK	←	200 OK
ACK	→	ACK
SUBSCRIBE	→	SUBSCRIBE
200 OK	←	200 OK
NOTIFY	←	NOTIFY 1
200 OK NOTIFY	→	200 OK NOTIFY
REFER (S1)	→	REFER
202 Accepted	←	202 Accepted
NOTIFY	←	NOTIFY 2 (S1, 100)
200 OK NOTIFY	→	200 OK NOTIFY
NOTIFY	←	NOTIFY 3 (S1, 200)
200 OK NOTIFY	→	200 OK NOTIFY
BYE (S1)	→	BYE
200 OK (BYE)	←	200 OK (BYE)
REFER (S2)	→	REFER
202 Accepted	←	202 Accepted
NOTIFY	←	NOTIFY 4 (S2, 100)
200 OK NOTIFY	→	200 OK NOTIFY
NOTIFY	←	NOTIFY 5 (S2, 200)
200 OK NOTIFY	→	200 OK NOTIFY
BYE (S2)	→	BYE
200 OK (BYE)	←	200 OK (BYE)
	Apply post test routine	

TSS	**TP**	**Reference**	**Selection expression**
User equipment	CONF_U01_004	5.3.1.3.3, 5.3.1.5.3 of [ETSI TS 124 147]	PICS 5.1/1 AND PICS 5.2/1

Test purpose

Conference creation by Three-way session creation. REFER request to the Focus, Conference notification service not subscribed.

The conference creator is participating in two SIP sessions (S1 and S2) which are put on hold and wants to join together two of these active sessions to a so-called three-way session. The **conference notification service is not subscribed**. The conference creator shall perform the following steps:

- Create a conference at the conference factory by sending an INVITE request with the conference factory URI. Receive and store the conference URI in the 200 OK response.
- For each of the active sessions, that are requested to be joined to a three-way session, sends **two REFER requests** with the Request URI indicating the previously received conference URI and the Refer-To header indicating the SIP URI or tel URL of the respective remote user.

SIP header values:

INVITE:	Request URI indicating the conference factory URI
200 OK:	conference URI and "isfocus" feature parameter indicated in Contact header field
REFER:	Request URI indicating the conference URI Refer-to header contains the URI of remote user

Comments:

User equipment		**Test equipment**
	Create session S1	
	Set session S1 on hold	
	Create session S2	
	Set session S2 on hold	
INVITE	→	INVITE
200 OK	←	200 OK
ACK	→	ACK
REFER (S1)	→	REFER
202 Accepted	←	202 Accepted
REFER (S2)	→	REFER
202 Accepted	←	202 Accepted
	Apply post test routine	

TSS User equipment	**TP** CONF_U01_005	**Reference** 5.3.1.3.3, 5.3.1.5.2 of [ETSI TS 124 147]	**Selection expression** PICS 5.1/1 AND PICS 5.2/1

Test purpose

Conference creation by three-way session creation. REFER request to the user, Conference notification service is subscribed.

The conference creator is participating in two SIP sessions (S1 and S2) which are put on hold and wants to join together two of these active sessions to a so-called three-way session. The **conference notification service is subscribed**. The conference creator shall perform the following steps:

- Create a conference at the conference factory by sending an INVITE request with the conference factory URI. Receive and store the conference URI in the 200 OK response.
- For each of the active sessions, that are requested to be joined to a three-way session, sends **two REFER requests** with the Request URI indicating SIP URI or tel URL of the respective remote user and the Refer-To header indicating the previously received conference URI.
- The conference creator releases the sessions 1 and 2 after the receipt of NOTIFY requests indicating that the remote users have successfully joined the three-way session.

SIP header values:

INVITE: Request URI indicating the conference factory URI
200 OK: conference URI and "isfocus" feature parameter indicated in Contact header field

SUBSCRIBE: Request URI contained the conference URI
header contains "conference"
NOTIFY 1: Event contains **conference**; Subscription-State contains **active; expires=xxxx**

REFER 1: Request URI indicating the remote user of S1
Refer-to header contains the conference URI

NOTIFY 2 Event contains **conference**; Subscription-State contains **active**
message/sipfrag contains **SIP/2.0 100 Trying**
NOTIFY 3 Event contains **conference**; Subscription-State contains **active**
message/sipfrag contains **SIP/2.0 200 OK**
application/conference-info+xml contains (S1) connected, dialled-in

REFER 2: Request URI indicating the remote user of S2
Refer-to header contains the conference URI

NOTIFY 4 Event contains **conference**; Subscription-State contains **active**
message/sipfrag contains **SIP/2.0 100 Trying**
NOTIFY 5 Event contains **conference**; Subscription-State contains **active**
message/sipfrag contains **SIP/2.0 200 OK**
application/conference-info+xml contains (S2) connected, dialled-in

Comments:		
User equipment		**Test equipment**
	Create session S1	
	Set session S1 on hold	
	Create session S2	
	Set session S2 on hold	
INVITE	→	INVITE
200 OK	←	200 OK
ACK	→	ACK
SUBSCRIBE	→	SUBSCRIBE
NOTIFY	←	NOTIFY 1
200 OK NOTIFY	→	200 OK NOTIFY
REFER (S1)	→	REFER
202 Accepted	←	202 Accepted
NOTIFY	←	NOTIFY 2 (S1, 100)
200 OK NOTIFY	→	200 OK NOTIFY
NOTIFY	←	NOTIFY 3 (S1, 200)
200 OK NOTIFY	→	200 OK NOTIFY
BYE	→	BYE (S1)
200 OK (BYE)	←	200 OK (BYE)
REFER (S2)	→	REFER
202 Accepted	←	202 Accepted
NOTIFY	←	NOTIFY 4 (S2, 100)
200 OK NOTIFY	→	200 OK NOTIFY
NOTIFY	←	NOTIFY 5 (S2, 200)
200 OK NOTIFY	→	200 OK NOTIFY
BYE	→	BYE (S2)
200 OK (BYE)	←	200 OK (BYE)
	Apply post test routine	

TSS	TP	Reference	Selection expression
User equipment	CONF_U01_006	5.3.1.3.3, 5.3.1.5.2 of [ETSI TS 124 147]	PICS 5.1/1 AND PICS 5.2/1

Test purpose

Conference creation by Three-way session creation. REFER request to the user, Conference notification service is not subscribed.

The conference creator is participating in two SIP sessions (S1 and S2) which are put on hold and wants to join together two of these active sessions to a so-called three-way session. The **conference notification service is not subscribed**. The conference creator shall perform the following steps:

- Create a conference at the conference factory by sending an INVITE request with the conference factory URI. Receive and store the conference URI in the 200 OK response.
- For each of the active sessions, that are requested to be joined to a three-way session, sends **two REFER requests** with the Request URI indicating SIP URI or tel URL of the respective remote user and the Refer-To header indicating the previously received conference URI.

SIP header values:

INVITE: Request URI indicating the conference factory URI
200 OK: conference URI and "isfocus" feature parameter indicated in Contact header field

REFER 1: Request URI indicating the remote user of S1
Refer-to header contains the conference URI

REFER 2: Request URI indicating the remote user of S2
Refer-to header contains the conference URI

Comments:

User equipment		**Test equipment**
	Create session S1	
	Set session S1 on hold	
	Create session S2	
	Set session S2 on hold	
INVITE	→	INVITE
200 OK	←	200 OK
ACK	→	ACK
REFER (S1)	→	REFER
202 Accepted	←	202 Accepted
REFER (S2)	→	REFER
202 Accepted	←	202 Accepted
	Apply post test routine	

TSS	TP	Reference	Selection expression
User equipment	CONF_U01_007	5.3.1.4 of [ETSI TS 124 147]	PICS 5.1/1 AND PICS 5.2/1

Test purpose

The user equipment has the capability to join a conference.

Ensure that the user equipment on receipt of a REFER request that contains a Refer-To header indicating a conference URI including the "method" parameter set to INVITE and contains a Referred-By header, sends an INVITE request to the conference URI including the received Referred-By header.

SIP header values:

REFER: Refer-To=conference URI; method=INVITE
Referred-By=Remote User Equipment URI
INVITE: Request URI indicating the received conference URI
Referred-By=Remote User Equipment URI

Comments:

User equipment		**Test equipment**
REFER	←	REFER
202 Accepted	→	202 Accepted
INVITE	→	INVITE
	Apply post test routine	

TSS	**TP**	**Reference**	**Selection expression**
User equipment	CONF_U01_008	5.3.1.5.2 of [ETSI TS 124 147]	PICS 4.1/1

Test purpose

The user equipment has the capability to invite a participant to the conference. REFER request to the participant.

Ensure that the user equipment is able to invite a participant to the established conference. The user equipment sends a REFER request to the participant and the Refer-To header URI is set to the conference URI.

SIP header values:

REFER: Request URI=Test Equipment (User = PIXIT)
Refer-To=conference URI

Comments:

User equipment		**Test equipment**
	Create Conference	
REFER	➔	REFER
202 Accepted	←	202 Accepted
	Apply post test routine	

TSS	**TP**	**Reference**	**Selection expression**
User equipment	CONF_U01_009	5.3.1.5.3 of [ETSI TS 124 147]	PICS 4.1/1

Test purpose

The user equipment has the capability to invite a participant to the conference. REFER request to the Focus.

Ensure that the user equipment is able to invite a participant to the established conference. The user equipment sends a REFER request to the conference AS and the Refer-To header URI is set to the inviting user's URI.

SIP header values:

REFER: Request URI=conference URI
Refer-To=Participant URI (PIXIT); method=INVITE

Comments:

User equipment		**Test equipment**
	Create Conference	
REFER	➔	REFER
202 Accepted	←	202 Accepted
	Apply post test routine	

TSS	TP	Reference	Selection expression
User equipment	CONF_U01_010	5.3.1.5.4 of [ETSI TS 124 147]	PICS 5.1/1 AND PICS 5.2/1 AND PICS 5.2/2

Test purpose
The user equipment has the capability to invite a participant to the conference. Resource list is used.

Ensure that the user equipment is able to send a resource list to the conference AS to invite participant(s) to a conference.

SIP header values:
INVITE Request URI indicating the Conference Factory URI
Content-Type: application/resource-lists+xml
Content-Disposition: recipient-list

```
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cp="urn:ietf:params:xml:ns:copyControl">
    <list>
        <entry uri="S1 URI"
            cp:copyControl="to"/>
    </list>
</resource-lists>
```

Comments:

User equipment		**Test equipment**
INVITE	←	INVITE (S1)
200 OK (INVITE)	→	200 OK (INVITE)
ACK	←	ACK

Apply post test routine

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