

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.4004.2

(02/2016)

SERIES Q: SWITCHING AND SIGNALLING

Testing specifications – Testing specifications for SIP-IMS

Communication diversion using IP multimedia core network subsystem; Conformance testing – Part 2: Network side; Test suite structure and test purposes

Recommendation ITU-T Q.4004.2

ITU-T

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Recommendation ITU-T Q.4004.2

Communication diversion using IP multimedia core network subsystem; Conformance testing – Part 2: Network side; Test suite structure and test purposes

Summary

Recommendation ITU-T Q.4004.2 v.1 (2016) is part 2 of the testing specifications for communications diversion (CDIV) service implemented on IP multimedia subsystem (IMS) basis on the network side. The Recommendation specifies the test suite structure and test purposes (TSS&TP) which can be used for testing against the Recommendation [ITU-T Q.3620 v.1].

The version number, v.1, indicates that this is version one of Recommendation ITU-T Q.4004.2 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.4004.2 v.1	2016-02-13	11	11.1002/1000/12737

Keywords

Communications diversion, CDIV, IP multimedia subsystem, IMS, network side session description protocol, SDP, session initiation protocol, SIP, test purposes, TP, test suite structure, TSS, testing.

* 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>.

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Recommendation ITU-T Q.4004.2

Communication diversion using IP multimedia core network subsystem; Conformance testing – Part 2: Network side; Test suite structure and test purposes

1 Scope

The present Recommendation specifies the test suite structure and test purposes (TSS&TP) for communications diversion (CDIV) services [ITU-T Q.3620 v.1] for the network side.

The communications diversion (CDIV) services enables diverting user, to divert the communications addressed to diverting user to another destination.

The present Recommendation is part 2 of a multi-part deliverable covering communication diversion (CDIV), 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.3620 v.1] | Recommendation ITU-T Q.3620 v.1 (2016), <i>Communication diversion (CDIV) using IP multimedia core network subsystem – Protocol specification.</i> |
| [ITU-T Q.4004.1 v.1] | Recommendation ITU-T Q.4004.1 v.1 (2016), <i>Communication diversion using IP multimedia core network subsystem; Conformance testing – Part 1: Network side and user side; Protocol implementation conformance statement.</i> |
| [ITU-T X.290] | Recommendation ITU-T X.290 (1995), <i>OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – General concepts.</i> |
| [IETF RFC 4244] | IETF RFC 4244 (2005), <i>An Extension to the Session Initiation Protocol (SIP) for Request History Information.</i> |

3 Definitions

For the purposes of this Recommendation, the terms and definitions given in [ITU-T Q.3620 v.1] and the following apply:

- 3.1 abstract test suite (ATS):** Refer to [ITU-T X.290].
- 3.2 implementation under test (IUT):** Refer to [ITU-T X.290].
- 3.3 pics proforma:** Refer to [ITU-T X.290].

- 3.4 point of control and observation:** Refer to [ITU-T X.290].
- 3.5 protocol implementation conformance statement (PICS):** Refer to [ITU-T X.290].
- 3.6 system under test (SUT):** Refer to [ITU-T X.290].
- 3.7 test purpose (TP):** Refer to [ITU-T X.290].

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

Gm	Reference Point between a UE and a P-CSCF
ISC	IP Multimedia Subsystem Service Control
Mg	Reference Point between an MGCF and a CSCF
Mw	Reference Point between a CSCF and another CSCF
Mx	Reference Point between a CSCF/BGCF and IBCF
NDUB	Network Determined User Busy
NNI	Network - Network Interface
TSS	Test Suite Structure
UDUB	User Determined User Busy

5 Test suite structure (TSS)

Table 1 – Test suite structure

Netw	ASdivertingUser/DivProcedures	CDIV_N01_xxx
	ASdivertingUser/NotOrigUser	CDIV_N02_xxx
	ASdivertingUser/NotTermUser	CDIV_N03_xxx
	ASdivertingUser/NotDivUser	CDIV_N04_xxx
	ASdiverted-to	CDIV_N05_xxx
Interaction		
	TIP	CDIV_N06_xxx
	TIR	CDIV_N07_xxx
	OIR	CDIV_N08_xxx
	ACR-CB	CDIV_N09_xxx
	ECT	CDIV_N10_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.3620 v.1]. The stage 3 description respects the requirements to several network entities and also to requirements regarding end devices. Therefore several interfaces (reference points) are addressed to satisfy the test of the different entities.

In order to test the appropriate entities the configurations below are applicable:

Testing of the Application Server: This entity is responsible for performing the service. Hence the ISC interface is the appropriate access point as shown in Figure 1.

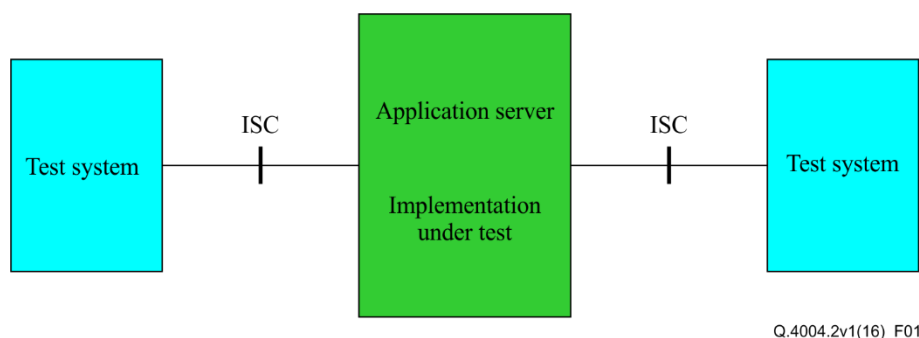


Figure 1 – Applicable interface to test AS functionalities

If the ISC interface is not accessible it is also applicable to perform the test of the AS using any NNI (Mw, Mg, Mx) interface (see Figure 2). In case only the Gm interface is accessible this shall be used instead. In this case, be aware that the verification of several requirements is impeded.

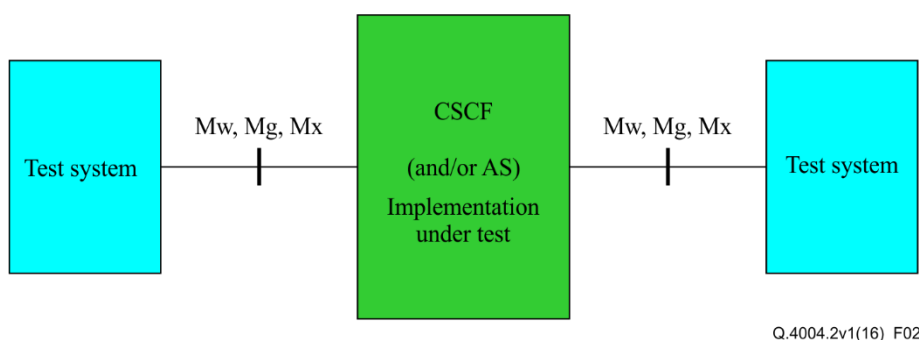


Figure 2 – Applicable interfaces to test using the (generic) NNI interface

6 Test purposes (TP)

6.1 Introduction

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 Figure 3).

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

Figure 3 – TP identifier naming convention scheme

6.1.2 Test strategy

As the base standard [ITU-T Q.3620 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.4004.1 v.1].

6.2 Signalling requirements

6.2.1 Actions at the AS of the diverting user

6.2.1.1 Diversion procedures

TSS Netw/ASdivertingUser/DivProcedures	TP CDIV_N01_001	Reference [ITU-T Q.3620 v.1] 4.5.2.6.1	Selection expression PICS 1/2
Test purpose <i>Served user has activated CFB, maximum number of diversion exceeded.</i>			
Ensure that the 486 (Busy here) final response with a Warning header is sent to the original user if the served user has activated the CFB simulation service and the served user is busy and if the maximum number of diversions is exceeded.			
SIP header values: INVITE: sip:SIP#n@ example.com SIP/2.0 History-Info: <sip: non significant uri value >;index=1, Build additional entries with non significant uri values <sip:SIP#n; cause=VA_CAUSE>;index=1.n.1 Warning: is present			
NOTE: For each redirection a history-entry is added the History-Info header and the relevant index is incremented according the rules described in clause 4.5.2.6.2.3 [ITU-T Q.3620 v.1]. In short: each redirection is represented by a "." (dot) in the latest history-entry.			
Comments:			
SIP#1	AS	SIP#n	SIP#n+1
INVITE 1	→	→	INVITE 1
486 (Busy here)	←	←	486 Busy Here
ACK	→	→	ACK

TSS Netw/ASdivertingUser/DivProcedures	TP CDIV_N01_002	Reference [ITU-T Q.3620 v.1] 4.5.2.6.1	Selection expression PICS 1/3
Test purpose <i>Served user has activated CFNR, maximum number of diversion exceeded.</i>			
Ensure that the 480 (Temporarily unavailable) final response with a Warning header is sent to the original user if the served user does not answer the communication request and if the maximum number of diversions is exceeded.			
SIP header values: INVITE: sip:SIP#n@ example.com SIP/2.0 History-Info: <sip: non significant uri value>;index=1, Build additional entries with non significant uri values <sip:SIP#n; cause=VA_CAUSE>;index=1.n.1 Warning: is present			
NOTE: For each redirection a history-entry is added to the History-Info header and the relevant index is incremented according the rules described in clause 4.5.2.6.2.3 [ITU-T Q.3620 v.1]. In short: each redirection is represented by a "dot" in the latest history-entry.			
Comments:			
SIP#1	AS	SIP#n	SIP#n+1
INVITE	→	→	INVITE
180 Ringing	←	←	180 Ringing
	No reply timer expires		
480 (Temporarily unavailable)	←	→	CANCEL
ACK	→	←	200 OK CANCEL
		←	487 Request Terminated
		→	ACK

TSS Netw/ASdivertingUser/DivProcedures	TP CDIV_N01_003	Reference [ITU-T Q.3620 v.1] 4.5.2.6.1	Selection expression PICS 1/1
Test purpose Served user has activated CFU, maximum number of diversion exceeded.			
Ensure that the 480 (Temporarily unavailable) final response with a Warning header is sent to the original user if the served user has activated the CFU simulation service and if the maximum number of diversions is exceeded.			
SIP header values: INVITE: sip:SIP#n@ example.com SIP/2.0 History-Info: <sip: non significant uri value >;index=1, Build additional entries with non significant uri values <sip:SIP#n; cause=VA_CAUSE>;index=1.n.1 Warning: is present			
NOTE: For each redirection a history-entry is added the History-Info header and the relevant index is incremented according the rules described in clause 4.5.2.6.2.3 [ITU-T Q.3620 v.1]. In short: each redirection is represented by a "dot" in the latest history-entry.			
Comments:			
SIP#1	AS	SIP#n	SIP#n+1
INVITE	→		
480 (Temporarily unavailable)	←		
ACK	→		

TSS Netw/ASdivertingUser/DivProcedures	TP CDIV_N01_004	Reference [ITU-T Q.3620 v.1] 4.5.2.6.1	Selection expression PICS 1/4 OR PICS 1/5
Test purpose Served user has activated CD, maximum number of diversion exceeded.			
Ensure that the 480 (Temporarily unavailable) final response with a Warning header is sent to the original user if the served user has activated the CD simulation service and if the maximum number of diversions is exceeded.			
SIP header values: INVITE: sip:SIP#n@ example.com SIP/2.0 History-Info: <sip: non significant uri value >;index=1, Build additional entries with non significant uri values <sip:SIP#n; cause=VA_CAUSE>;index=1.n.1 Warning: is present			
NOTE: For each redirection a history-entry is added the History-Info header and the relevant index is incremented according the rules described in clause 4.5.2.6.2.3 [ITU-T Q.3620 v.1]. In short: each redirection is represented by a "dot" in the latest history-entry.			
Comments:			
SIP#1	AS	SIP#n	SIP#n+1
INVITE	→	→ INVITE	
180 Ringing	←	← 180 Ringing	
	←	← 302 Moved Temporarily	
		→ ACK	
480 (Temporarily unavailable)	←		
ACK	→		

6.2.1.2 Notification procedure of the originating terminating and diverting user

6.2.1.2.1 Originating user

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_001	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 3/3 AND (PICS 1/1 OR PICS1/2 OR PICS 1/6 OR PICS 1/7)
Test purpose <i>Communication forwarding using CFU or using CFB NDUB, CFNL or CFNRc with applying diversion condition; originating user is not notified.</i>			
When communication diversion occurs and if the notification procedures of the originating user is supported then no 181 (Call Is Being Forwarded) response shall be sent towards the originating user if the served users subscription option is set to: <i>Originating</i> user receives notification that his communication has been diverted (forwarded or deflected) = no.			
Subscription options: <i>Originating</i> user receives notification that his communication has been diverted (forwarded or deflected) = no			
Comments: SIP#1 INVITE → AS SIP#2 SIP#3 → INVITE			

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_002	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 3/3 AND PICS 3/4 AND PICS 3/5 AND (PICS 1/1 OR PICS1/2 OR PICS 1/6 OR PICS 1/7)
Test purpose <i>Communication forwarding using CFU or using CFB NDUB, CFNL or CFNRc with applying diversion condition; originating user is notified.</i>			
When communication diversion occurs and if the notification procedures of the originating user is supported then a 181 (Call Is Being Forwarded) response shall be sent towards the originating user containing: - a P-Asserted-Identity header with the URI of the served user and - a History-Info header including a first entry with the hi-targeted-to-URI of the served, index = 1 and including a second entry with the hi-targeted-to-URI of the diverted-to user, cause = CAU_VA and escaped Privacy header set to 'history', index = 1.1			
Subscription options: <i>Originating</i> user receives notification that his communication has been diverted (forwarded or deflected) = yes Served user allows the presentation of diverted to URI to <i>originating</i> user in diversion notification = yes Served user allows the presentation of his/her URI to <i>originating</i> user in diversion notification = yes			
SIP header values: 181 Call is Being Forwarded: P-Asserted-Identity: SIP#2 History-Info: <sip:SIP#2 >;index=1, <sip:SIP#3;cause=CAU_VA?Privacy=history>;index=1.1			
Comments: SIP#1 INVITE → AS SIP#2 SIP#3 181 Call is Being Forwarded ← → INVITE			

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_003	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 3/3 AND (PICS 3/5 OR PICS 4/3) AND PICS 3/4 AND (PICS 1/1 OR PICS1/2 OR PICS 1/6 OR PICS 1/7)
Test purpose Communication forwarding using CFU or using CFB NDUB, CFNL or CFNRc with applying diversion condition; originating user is notified. When communication diversion occurs and if the notification procedures of the originating user is supported then a 181 (Call Is Being Forwarded) response shall be sent towards the originating user containing: a P-Asserted-Identity header with the URI of the served user and a Privacy header set to "id" and a History-Info header including a first entry with the hi-targeted-to-URI of the served user with a Privacy header set to "history", index = 1 and including a second entry with the hi-targeted-to-URI of the diverted-to user with a Privacy header set to "history", cause = CAU_VA, index = 1.1			
Subscription options: Originating user receives notification that his communication has been diverted (forwarded or deflected) = yes Served user allows the presentation of diverted to URI to <i>originating</i> user in diversion notification = no Served user allows the presentation of his/her URI to <i>originating</i> user in diversion notification = no OR Served user has subscribed to TIR in permanent mode			
SIP header values: 181 Call is Being Forwarded: P-Asserted-Identity: SIP#2 Privacy: id History-Info: <sip:SIP#2?Privacy=history>;index=1, <sip:SIP#3;cause=CAU_VA?Privacy=history>;index=1.1			
Comments:			
SIP#1	AS	SIP#2	SIP#3
INVITE	➔		
181 Call is Being Forwarded	←		
			➔ INVITE

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_004	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 3/3 AND (PICS 3/5 OR PICS 4/3) AND PICS 3/4 AND (PICS 1/1 OR PICS1/2 OR PICS 1/6 OR PICS 1/7)
Test purpose Communication forwarding using CFU or using CFB NDUB, CFNL or CFNRc with applying diversion condition; originating user is notified. When communication diversion occurs and if the notification procedures of the originating user is supported then a 181 (Call Is Being Forwarded) response shall be sent towards the originating user containing: a P-Asserted-Identity header with the URI of the served user and a Privacy header set to "id" and a History-Info header including a first entry with the hi-targeted-to-URI of the served user with a Privacy header set to "history", index = 1 and including a second entry with the hi-targeted-to-URI of the diverted-to user, cause = CAU_VA and escaped Privacy header set to 'history', index = 1.1			
Subscription options: Originating user receives notification that his communication has been diverted (forwarded or deflected) = yes Served user allows the presentation of diverted to URI to <i>originating</i> user in diversion notification = yes Served user allows the presentation of his/her URI to <i>originating</i> user in diversion notification = no OR Served user has subscribed to TIR in permanent mode			
SIP header values: 181 Call is Being Forwarded: P-Asserted-Identity: SIP#2 Privacy: id History-Info: <sip:SIP#2?Privacy=history>;index=1, <sip:SIP#3;cause=CAU_VA?Privacy=history>;index=1.1			
Comments:			
SIP#1	AS	SIP#2	SIP#3
INVITE	➔		
181 Call is Being Forwarded	⬅		
			➔ INVITE

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_005	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 3/3 AND (PICS 3/5 OR PICS 4/3) AND PICS 3/4 AND (PICS 1/1 OR PICS1/2 OR PICS 1/6 OR PICS 1/7)
Test purpose Communication forwarding using CFU or using CFB NDUB, CFNL or CFNRc with applying diversion condition; originating user is notified. When communication diversion occurs and if the notification procedures of the originating user is supported then a 181 (Call Is Being Forwarded) response shall be sent towards the originating user containing: a P-Asserted-Identity header with the URI of the served user and a History-Info header including a first entry with the hi-targeted-to-URI of the served user, index = 1 and including a second entry with the hi-targeted-to-URI of the diverted-to user with a Privacy header set to "history", cause = CAU_VA, index = 1.1			
Subscription options: Originating user receives notification that his communication has been diverted (forwarded or deflected) = yes Served user allows the presentation of diverted to URI to <i>originating</i> user in diversion notification = no Served user allows the presentation of his/her URI to <i>originating</i> user in diversion notification = yes			
SIP header values: 181 Call is Being Forwarded: P-Asserted-Identity: SIP#2 History-Info: <sip:SIP#2>;index=1, <sip:SIP#3;cause=CAU_VA?Privacy=history>;index=1.1			
Comments:			
SIP#1	AS	SIP#2	SIP#3
INVITE	➔		
181 Call is Being Forwarded	➔		
			➔ INVITE

Table 2 – Communication diversion cause, used in CDIV_N02_001-005

CAU_VA	Communication diversion	Value
1	CFU	302
2	CFB NDUB	486
3	CFNL	404
4	CFNRc	503

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_006	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 3/3 AND PICS1/2
Test purpose <i>Communication forwarding using CFB UDUB with applying diversion condition; originating user is not notified.</i>			
When communication diversion occurs (served user sends 486 response) and if the notification procedures of the originating user is supported then no 181 (Call Is Being Forwarded) response shall be sent towards the originating user if the served users subscription option is set to: <i>Originating</i> user receives notification that his communication has been diverted (forwarded or deflected) = no.			
Subscription options: <i>Originating</i> user receives notification that his communication has been diverted (forwarded or deflected) = no			
Comments:			
SIP#1 INVITE	→	AS	
		→	SIP#2 INVITE
		←	486 Busy Here
		→	ACK
			→ INVITE

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_007	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 1/2 AND PICS 3/3 AND PICS 3/4 AND PICS 3/5	
Test purpose <i>Communication forwarding using CFB UDUB with applying diversion condition; originating user is notified.</i> When communication diversion occurs (served user sends 486 response) and if the notification procedures of the originating user is supported then a 181 (Call Is Being Forwarded) response shall be sent towards the originating user containing: a P-Asserted-Identity header with the URI of the served user and a History-Info header including a first entry with the hi-targeted-to-URI of the served, index = 1 and including a second entry with the hi-targeted-to-URI of the diverted-to user, cause = 486 and escaped Privacy header set to 'history', index = 1.1				
Subscription options: <i>Originating user receives notification that his communication has been diverted (forwarded or deflected) = yes</i> <i>Served user allows the presentation of diverted to URI to originating user in diversion notification = yes</i> <i>Served user allows the presentation of his/her URI to originating user in diversion notification = yes</i>				
SIP header values: 181 Call is Being Forwarded: P-Asserted-Identity: SIP#2 History-Info: <sip:SIP#2?Reason=SIP%3Bcause%3D486>;index=1, <sip:SIP#3;cause=486?Privacy=history>;index=1.1 NOTE: According to [ITU-T Q.3620 v.1] clause 4.5.2.6.2.2.b: "If the diversion is based on a SIP response from the served user, a Reason header in escaped form shall be included in accordance with [IETF RFC 4244]".				
Comments:				
SIP#1		AS	SIP#2	SIP#3
INVITE	➔		➔ ➤ ➔	INVITE 486 Busy Here ACK
181 Call is Being Forwarded	➤			➔ INVITE

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_008	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 3/3 AND (PICS 3/5 OR PICS 4/3) AND PICS 3/4 AND PICS1/2
Test purpose Communication forwarding using CFB UDUB with applying diversion condition; originating user is notified. When communication diversion occurs (served user sends 486 response) and if the notification procedures of the originating user is supported then a 181 (Call Is Being Forwarded) response shall be sent towards the originating user containing: a P-Asserted-Identity header with the URI of the served user and a Privacy header set to "id" and a History-Info header including a first entry with the hi-targeted-to-URI of the served user with a Privacy header set to "history", index = 1 and including a second entry with the hi-targeted-to-URI of the diverted-to user with a Privacy header set to "history", cause = 486, index = 1.1			
Subscription options: Originating user receives notification that his communication has been diverted (forwarded or deflected) = yes Served user allows the presentation of diverted to URI to <i>originating</i> user in diversion notification = no Served user allows the presentation of his/her URI to <i>originating</i> user in diversion notification = no OR Served user has subscribed to TIR in permanent mode			

SIP header values: 181 Call is Being Forwarded: P-Asserted-Identity: SIP#2 Privacy: id History-Info: <sip:SIP#2?Privacy=history&Reason=SIP%3Bcause%3D486>;index=1, <sip:SIP#3;cause=486?Privacy=history>;index=1.1 NOTE: According to [ITU-T Q.3620 v.1] clause 4.5.2.6.2.2.b: "If the diversion is based on a SIP response from the served user, a Reason header in escaped form shall be included in accordance with [IETF RFC 4244] ".			
Comments: SIP#1 INVITE → AS → SIP#2 INVITE ← 486 Busy Here → ACK 181 Call is Being Forwarded ← → INVITE			

Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_009	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 3/3 AND (PICS 3/5 OR PICS 4/3) AND PICS 3/4 AND PICS1/2
Test purpose Communication forwarding using CFB UDUB with applying diversion condition; originating user is notified. When communication diversion occurs (served user sends 486 response) and if the notification procedures of the originating user is supported then a 181 (Call Is Being Forwarded) response shall be sent towards the originating user containing: a P-Asserted-Identity header with the URI of the served user and a Privacy header set to "id" and a History-Info header including a first entry with the hi-targeted-to-URI of the served user with a Privacy header set to "history", index = 1 and including a second entry with the hi-targeted-to-URI of the diverted-to user, cause = 486 and escaped Privacy header set to 'history', index = 1.1			
Subscription options: Originating user receives notification that his communication has been diverted (forwarded or deflected) = yes Served user allows the presentation of diverted to URI to <i>originating</i> user in diversion notification = yes Served user allows the presentation of his/her URI to <i>originating</i> user in diversion notification = no OR Served user has subscribed to TIR in permanent mode			
SIP header values: 181 Call is Being Forwarded: P-Asserted-Identity: SIP#2 Privacy: id History-Info: <sip:SIP#2?Privacy=history&Reason=SIP%3Bcause%3D486>;index=1, <sip:SIP#3;cause=486?Privacy=history>;index=1.1 NOTE: According to [ITU-T Q.3620 v.1] clause 4.5.2.6.2.2.b: "If the diversion is based on a SIP response from the served user, a Reason header in escaped form shall be included in accordance with [IETF RFC 4244] ".			
Comments: SIP#1 INVITE → AS → SIP#2 INVITE ← 486 Busy Here → ACK 181 Call is Being Forwarded ← → INVITE			

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_010	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 3/3 AND (PICS 3/5 OR PICS 4/3) AND PICS 3/4 AND PICS1/2	
Test purpose <i>Communication forwarding using CFB UDUB with applying diversion condition; originating user is notified.</i>				
When communication diversion occurs (served user sends 486 response) and if the notification procedures of the originating user is supported then a 181 (Call Is Being Forwarded) response shall be sent towards the originating user containing: a P-Asserted-Identity header with the URI of the served user and a History-Info header including a first entry with the hi-targeted-to-URI of the served user, index = 1 and including a second entry with the hi-targeted-to-URI of the diverted-to user, with a Privacy header set to "history", cause = 486, index = 1.1				
Subscription options: <i>Originating user receives notification that his communication has been diverted (forwarded or deflected) = yes</i> <i>Served user allows the presentation of diverted to URI to originating user in diversion notification = no</i> <i>Served user allows the presentation of his/her URI to originating user in diversion notification = yes</i>				
SIP header values: 181 Call is Being Forwarded: P-Asserted-Identity: SIP#2 History-Info: <sip:SIP#2?Reason=SIP%3Bcause%3D486>;index=1, <sip:SIP#3;cause=486?Privacy=history>;index=1.1 NOTE: According to [ITU-T Q.3620 v.1] clause 4.5.2.6.2.2.b: "If the diversion is based on a SIP response from the served user, a Reason header in escaped form shall be included in accordance with [IETF RFC 4244] ".				
Comments:				
SIP#1		AS	SIP#2	SIP#3
INVITE	➔		➔ INVITE	
			⬅ 486 Busy Here	
			➔ ACK	
181 Call is Being Forwarded	⬅			
				➔ INVITE

TSS Netw/ASdivertingUser/NotOrigUser	TP CDIV_N02_011	Reference [ITU-T Q.3620 v.1] 4.5.2.6.4	Selection expression PICS 1/3 AND PICS 3/3	
Test purpose <i>Communication forwarding using CFNR with applying diversion condition; originating user is not notified.</i>				
When communication diversion occurs (served user does not respond) and if the notification procedures of the originating user is supported then no 181 (Call Is Being Forwarded) response shall be sent towards the originating user if the served users subscription option is set to: <i>Originating user receives notification that his communication has been diverted (forwarded or deflected) = no.</i>				
Subscription options: <i>Originating user receives notification that his communication has been diverted (forwarded or deflected) = no</i>				
Comments:				
SIP#1		AS	SIP#2	SIP#3
INVITE	➔		➔ INVITE	
180 Alerting	⬅		⬅ 180 Alerting	
		No reply timer expires		
			➔ CANCEL/BYE	
			⬅ 200 OK CANCEL/BYE	
			⬅ 487 Request Terminated	
			➔ ACK	
				➔ INVITE