ETSI TS 186 014-1 V3.1.1 (2017-12)

Core Network and Interoperability Testing (INT);
Communication Diversion (CDIV) using IP Multimedia (IM)
Core Network (CN) subsystem;
(3GPP™ Release 12);
Part 1: Protocol Implementation Conformance
Statement (PICS)

Reference
RTS/INT-00143-1

Keywords
conformance, CDIV, PICS, SIP, testing

ETSI

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

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

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

Contents

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (https://ipr.etsi.org/).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Foreword

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

The present document is part 1 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 (TSS&TP)";

Part 3: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a telecommunication specification. Such a statement is called an Implementation Conformance Statement (PICS).

1 Scope

The present document specifies the Protocol Implementation Conformance Statement (PICS) for Communications Diversion (CDIV) services, ETSI TS 124 604 [1] in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-7 [7] and ETSI ETS 300 406 [8].

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

2 References

2.1 Normative 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 referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://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.

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

[1] ETSI TS 124 604: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Communication Diversion (CDIV) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.604 Release 12)".

[3] ETSI TS 124 607 (V10.0.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Originating Identification Presentation (OIP) and Originating Identification Restriction (OIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.607 version 10.0.0 Release 10)".

[4] ETSI TS 124 608: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Terminating Identification Presentation (TIP) and Terminating Identification Restriction (TIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.608 Release 12)".

[5] ETSI TS 124 611 (V10.2.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Anonymous Communication Rejection (ACR) and Communication Barring (CB) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.611 version 10.2.0 Release 10)".

[6] ETSI TS 124 629: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.629 Release 12)".

[7] ISO/IEC 9646-7: "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 7: Implementation Conformance Statements".

[8] ETSI ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

2.2 Informative 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 referenced document (including any amendments) applies.

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

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.

[i.1] ISO/IEC 9646-1: "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 1: General concepts".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ISO/IEC 9646-1 [i.1], ISO/IEC 9646-7 [7] and the following apply.

ICS pro forma: document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS

Implementation Conformance Statement (ICS): statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented

NOTE: The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.

Protocol ICS (PICS): ICS for an implementation or system claimed to conform to a given protocol specification

NOTE: This may contain additional information.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 124 604 [1] and the following apply:

CDIV	Communication DIVersion
CDIVN	Communication DIVersion Notification
CFB	Communication Forwarding Busy
CFNL	Communication Forwarding on No Logged-in
CFNR	Communication Forwarding No Reply
CFU	Communication Forwarding Unconditional
ICB	Incoming Communications Barring
ICS	Implementation Conformance Statement
IP	Internet Protocol
IUT	Implementation under Test
OCB	Outgoing Communication Barring
OIP	Originating Identification Presentation
OIR	Originating Identification Restriction
PICS	Protocol Implementation Conformance Statement
SIP	Session Initiation Protocol
SUT	System Under Test
TIP	Terminating Identification Presentation
TIR	Terminating Identification Restriction
TP	Test Purpose
UE	User Equipment

URI Universal Resource Identifier

4 Conformance to this PICS pro forma specification

4.0 The right to copy

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the ICS proforma in this clause so that it can be used for its intended purposes and may further publish the completed ICS.

4.1 Guidance for completing the PICS pro forma

4.1.0 Introduction

If it claims to conform to the present document, the actual PICS pro forma to be filled in by a supplier shall be technically equivalent to the text of the PICS pro forma given in clause 4, and shall preserve the numbering/naming and ordering of the pro forma items.

A PICS which conforms to the present document shall be a conforming PICS pro forma completed in accordance with the guidance for completion given in clause 4.1.

4.1.1 Purposes and structure

The purpose of this ICS pro forma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in ETSI TS 124 604 [1] may provide information about the implementation in a standardized manner.

The PICS pro forma is subdivided into clauses for the following categories of information:

- guidance for completing the PICS pro forma;
- identification of the implementation;
- identification of the ETSI TS 124 604 [1];
- global statement of conformance;
- roles;
- user role:
  - major capabilities;
- network role:
  - clause 4.7.1;
  - clause 4.7.2;
  - clause 4.7.3;
  - clause 4.7.4;
  - clause 4.7.5.

4.1.2 Abbreviations and conventions

The ICS pro forma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [7].

Item column

The item column contains a number which identifies the item in the table.

Item description column

The item description column describes in free text each respective item (e.g. parameters, timers, etc.). It implicitly means "is the requirement or option supported by the implementation?".

Status column

The following notations, defined in ISO/IEC 9646-7 [7], are used for the status column:

m	mandatory - the capability is required to be supported.
o	optional - the capability may be supported or not.
n/a	not applicable - in the given context, it is impossible to use the capability.
o.i	qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table.
ci	conditional - the requirement on the capability ("m", "o", "x" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table.

Reference column

The reference column makes reference to ETSI TS 124 604 [1], except where explicitly stated otherwise.

Support column

The support column shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [7], are used for the support column:

Y or y	supported by the implementation.
N or n	not supported by the implementation.
N/A, n/a or -	no answer required (allowed only if the status is n/a, directly or after evaluation of a conditional status).

Values allowed column

The values allowed column contains the type, the list, the range, or the length of values allowed. The following notations are used:

- range of values: <min value> .. <max value>
  example: 5 .. 20

- list of values: <value1>, <value2>, ..., <valueN>
  example: 2 ,4, 6, 8, 9
  example: '1101'B, '1011'B, '1111'B
  example: '0A'H, '34'H, '2F'H

- list of named values: <name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>)
  example: reject(1), accept(2)

- length: size (<min size> .. <max size>)
  example: size (1 .. 8)

Values supported column

The values supported column shall be filled in by the supplier of the implementation. In this column, the values or the ranges of values supported by the implementation shall be indicated.

Prerequisite line

A prerequisite line takes the form: Prerequisite: <predicate>.

A prerequisite line after a clause or table title indicates that the whole clause or the whole table is not required to be completed if the predicate is FALSE.

4.1.3 Instructions for completing the PICS pro forma

The supplier of the implementation shall complete the PICS pro forma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided, using the notation described in clause 4.1.2.

However, the tables containing in "user role" clause shall only be completed for user implementations, and the tables containing in "network role" clause shall only be completed for network implementations.

If necessary, the supplier may provide additional comments in space at the bottom of the tables or separately.

More detailed instructions are given at the beginning of the different clauses of the PICS pro forma.

4.2 Identification of the implementation

4.2.0 Introduction

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information should both be filled in if they are different.

A person who can answer queries regarding information supplied in the ICS should be named as the contact person.

4.2.1 Date of the statement

.....

4.2.2 Implementation Under Test (IUT) identification

IUT name:

.....

.....

IUT version:

.....

4.2.3 System Under Test (SUT) identification

SUT name:

.....

.....

Hardware configuration:

.....

.....

.....

Operating system:

.....

4.2.4 Product supplier

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

4.2.5 Client (if different from product supplier)

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

4.2.6 PICS contact person

(A person to contact if there are any queries concerning the content of the PICS)

Name:

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

4.3 Identification of the ETSI TS 124 604

4.3.0 Introduction

This PICS pro forma applies to the following standard:

ETSI TS 124 604 (V12.9.0) (05-2016) [1]: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Communication Diversion (CDIV) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.604 version 12.9.0 Release 12)".

4.4 Global statement of conformance

Are all mandatory capabilities implemented? (Yes/No) .....

NOTE: Answering "No" to this question indicates non-conformance to the <reference specification type> specification. Non-supported mandatory capabilities are to be identified in the ICS, with an explanation of why the implementation is non-conforming, on pages attached to the ICS pro forma.

4.5 Roles

Table 4.5.1: Roles

Item	Role	Reference	Status	Support
1	User	4.5.2.1, 4.5.2.15, 4.5.2.16	o.1	
2	Network	4.5.2.6, 4.5.2.7	o.1	

o.1: It is mandatory to support exactly one of these items.

Comments:

4.6 User role

4.6.0 Introduction

This clause contains the ICS pro forma tables related to the user role. They need to be completed only for user implementations:

Prerequisite: 4.5.1/1 -- user role

4.6.1 Major capabilities

Table 4.6.1: User Equipment capabilities

Item	Requirement or option	Reference	Status	Support
1	Is the UE able to receive a 181 Call is being Forwarded response and able to display the information of the History-Info header if included?	4.5.2.1	o	
2	Is the UE able to receive a 180 Ringing response and able to display the information of the History-Info header if included?	4.5.2.7	o	
3	Is the UE able to receive a 200 OK INVITE final response and able to display the information of the History-Info header if included?	4.5.2.7	o	
4	Is the User Equipment able to receive a History-Info header in an INVITE request and able to display the information of the History-Info header?	4.5.2.15, 4.5.2.6.2	o	
5	Is the User Equipment able to send the previously stored History-Info header in a 180 Ringing provisional response?	4.5.2.7	o	
6	Is the User Equipment able to send the previously stored History-Info header in a 200 OK INVITE final response?	4.5.2.7	o	
7	Is the User Equipment able to receive communication diversion notification information for the served user in a MESSAGE request and able to display the notification information?	4.5.2.6.4	o	

Item	Requirement or option	Reference	Status	Support
8	Is the User Equipment able to subscribe the receive communication diversion notification information for the served user in a MESSAGE request and able to display the notification information?	4.5.2.6.5	o	

Comments:

4.7 Network role

4.7.0 Introduction

This clause contains the PICS pro forma tables related to the network role. They need to be completed only for network implementations:

Prerequisite: 4.5.1/2 -- network role

4.7.1 Service capabilities

Table 4.7.1: Communication DIVersion services

Item	Requirement or option	Reference	Status	Support
1	Communication Forwarding Unconditional (CFU) is supported?	4.2.1	o	
2	Communication Forwarding on Busy user (CFB) is supported?	4.2.1	o	
3	Communication Forwarding on No Reply (CFNR) is supported?	4.2.1	o	
4	Communication Deflection immediate response (CDi) is supported?	4.2.1	o	
5	Communication Deflection during alerting (CDa) is supported?	4.2.1	o	
6	Communication Forwarding on Not Logged-in (CFNL) is supported?	4.2.1	o	
7	Communication Forwarding on Subscriber Not Reachable (CFNRc)	4.2.1	o	

Comments:

4.7.2 Network capabilities

Table 4.7.2: Network capabilities

Item	Requirement or option	Reference	Status	Support
1	Is the served user notified by sending a MESSAGE request after a period of time according to the timer value T_{CDIV_IND} as defined in clause 4.8.3 that can be provided by the user?	4.5.2.6.5	o	
2	The AS initiates an announcement to be included towards the originating user in order to inform about the diversion?	4.5.2.6.4	o	
3	The Communication Diversion Notification (CDIVN) procedure of the served user is supported?	4.5.2.6.5.1	o	
4	Is a diverting user informed periodically with a MESSAGE request the information where the call is diverted to?	4.5.2.6.5	o	

Item	Requirement or option	Reference	Status	Support
5	[1/3] Is the served user in case of CFNR furthermore alerted if the alerting indication is received from the diverted-to user (**ringing continues**)?	4.5.2.6.3	o	
6	Served user communication retention on invocation of diversion (CFNR). Retain call to the served user until alerting begins at the diverted-to user?	Table 4.3.1.2	o	
7	Served user communication retention on invocation of diversion (CFNR). Clear call to the served user on invocation of call diversion?	Table 4.3.1.2	o	
8	Served user communication retention when forwarding is rejected at forwarded-to user. Continue to alert the forwarding user?	Table 4.3.1.2	o	
9	Served user communication retention when forwarding is rejected at forwarded-to user. No action at the forwarding user?	Table 4.3.1.2	o	
10	Served user communication retention on invocation of diversion (CFNR). Clear call to the served user when the diverted-to-user has accepted the communication request?	4.5.2.6.3	o	

Comments:

4.7.3 Subscription options

Table 4.7.3: Subscription options

Item	Requirement or option	Reference	Status	Support
1	Served user receives notification that a communication has been forwarded (indication of communication diversion to the diverting user)?	Table 4.3.1.1	o	
2	Served user receives reminder notification on outgoing communication that CDIV is currently activated?	Table 4.3.1.1	o	
3	Originating user receives notification that his communication has been diverted (forwarded or deflected)?	Table 4.3.1.1	o	
4	Served user allows the presentation of diverted to URI to originating user in diversion notification?	Table 4.3.1.1	o	
5	Served user allows the presentation of his/her URI to originating user in diversion notification?	Table 4.3.1.1	o	
6	Served user allows the presentation of his/her URI to diverted-to user?	Table 4.3.1.1	o	

Comments:

4.7.4 Simulation services

Table 4.7.4: Simulation services

Item	Requirement or option	Reference	Status	Support
1	Does the served user subscribes to the OIR service in permanent mode?	4.5.2.4/[3]	o	
2	Does the terminating user subscribe the override category for the OIR service?	4.5.2.9/[3]	o	
3	Does the served user subscribe the TIR service?	4.5.2.9/[4]	o	
4	Does the originating user subscribe the override category for the TIR service?	4.5.2.4/[4]	o	
5	The Outgoing Communications Barring (OCB) service is supported?	4.5.2.4.1/[5]	o	
6	The Incoming Communications Barring (ICB**)** service is supported?	4.5.2.6.1/[5]	o	
7	The Explicit Communication Transfer simulation service is supported?	4.2.1/[6]	o	

Comments:

4.7.5 Values

Table 4.7.5: Values

Item	Requirement or option	Reference	Status	Support	Values	
					Allowed	**Supported**
1	CFNR timer	Table 4.3.1.2	c2		service provider option [sec]	
2	CDIVN Buffer Timer; Timer Value for AS to store CDIVN, if it cannot be delivered as per CDIVN Configuration	Table 4.3.1.2	c1		service provider option [sec]	
3	Maximum number of diverted connections	Table 4.3.1.2	m		service provider option [number]	

c1: IF 4.7.2/10 THEN m ELSE n/a.
c2: IF 4.7.1/3 THEN m ELSE n/a.

Comments:

Annex A (informative): Bibliography

ETSI TS 124 628 (V10.2.0): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Common Basic Communication procedures using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.628 version 10.2.0 Release 10)".

History

Document history		
V2.1.1	May 2009	Publication
V2.2.1	June 2015	Publication
V3.1.1	December 2017	Publication