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Private Integrated Services Network (PISN);
Inter-exchange signalling protocol;
Call completion supplementary service
for the VPN b service entry point;
Part 1: Test Suite Structure and Test Purposes (TSS&TP)
specification

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocol and Switching (SPS).

The present document covers the Private Integrated Service Network (PISN) Inter-exchange signalling protocol - Call Completion supplementary service - Test Suite Structure and Test Purposes (TSS&TP) specification.

The present document is part 1 of a multi-part deliverable covering Call completion supplementary service, as identified below:

Part 1:   "Test Suite Structure and Test Purposes (TSS&TP) specification";

Part 2:   "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma".

National transposition dates	
Date of adoption of this EN:	8 September 2000
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1   Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) for the Call Completion supplementary services of the Interexchange signalling protocol for Private Integrated Services Networks (PISN).

The objective of the present document is to provide conformance tests, which give a greater probability of inter-operability. The TSS&TPs specification covers the procedures described in ETS 300 366 [3].

The ISO standard for the methodology of conformance testing (ISO/IEC 9646-1 [5], ISO/IEC 9646-2 [6] and ISO/IEC 9646-3 [7]) is used as basis for the test methodology.

The Test Suite Structure and Test Purposes specified in the present document are only intended for VPN scenarios at the "b" service entry point.

The VPN "b" service entry point is defined in EN 301 060-1 [10] and ETR 172 [11].

2   References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

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

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

[1]   ETSI EN 300 172 (V1.4): "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Circuit-mode basic services [ISO/IEC 11572 (1996) modified]".

[2]   ETSI ETS 300 239 (1993): "Private Telecommunication Network (PTN); Inter-exchange signalling protocol; Generic functional protocol for the support of supplementary services".

[3]   ETSI ETS 300 366 (1995): "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Call completion supplementary services [ISO/IEC 13870 (1995) modified]".

[4]   ETSI ETS 300 406 (1995): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

[5]   ISO/IEC 9646-1 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 1: General concepts".

[6]   ISO/IEC 9646-2 (1994): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 2: Abstract test suite specification".

[7]   ISO/IEC 9646-3 (1992): "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".

[8]   ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".

[9]   ITU-T Recommendation I.210 (1993): "Principles of the telecommunication services supported by an ISDN and the means to describe them".

[10]   ETSI EN 301 060-1 (V1.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Basic call control; Enhancement at the "b" service entry point for Virtual Private Network (VPN) applications; Part 1: Protocol specification".

[11]   ETSI ETR 172 (1995): "Business TeleCommunications (BTC); Virtual Private Networking (VPN); Services and Networking aspects; Standardization requirements and work items".

[12]   ETSI EN 300 196-1 (V1.2): "Integrated Services Digital Network (ISDN); Generic functional
                     protocol for the support of supplementary services; Digital Subscriber Signalling System No. one
                     (DSS1) protocol; Part 1: Protocol specification".

3   Definitions and abbreviations

3.1   Definitions

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

3.1.1   Definitions related to conformance testing

abstract test case: Refer to ISO/IEC 9646-1 [5]

Abstract Test Suite (ATS): Refer to ISO/IEC 9646-1 [5]

active test: Test case where the IUT is required to send a particular message, but not in reaction to a received message.
This would usually involve the use of PIXIT information to see how this message can be generated and quite often is
specified in an ATS using an implicit send event

component: Refer to EN 300 196-1 [12]

Implementation Under Test (IUT): Refer to ISO/IEC 9646-1 [5]

implicit send event: Refer to ISO/IEC 9646-3 [7]

lower tester: Refer to ISO/IEC 9646-1 [5]

passive test: Test case where the IUT is required to respond to a protocol event (e.g. received message) with another
protocol event (e.g. send message) which normally does not require any special operator intervention as associated with
the implicit send event

point of control and observation: Refer to ISO/IEC 9646-1 [5]

Protocol Implementation Conformance Statement (PICS): Refer to ISO/IEC 9646-1 [5]

PICS proforma: Refer to ISO/IEC 9646-1 [5]

Protocol Implementation eXtra Information for Testing (PIXIT): Refer to ISO/IEC 9646-1 [5]

PIXIT proforma: Refer to ISO/IEC 9646-1 [5]

system under test: Refer to ISO/IEC 9646-1 [5]

Test Purpose (TP): Refer to ISO/IEC 9646-1 [5]

3.1.2   Definitions related to ETS 300 366

call independent signalling connection: See ETS 300 239 [2], definition 4.7

call related: See ETS 300 239 [2], definition 4.9

incoming call: See EN 300 172 [1], subclause 4.4

incoming Gateway PINX: See EN 300 172 [1], subclause 4.6

Information Elements (IEs) with invalid contents: See EN 300 172 [1], subclause 4.14

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [8], definition 308

invoke APDU: See ETS 300 239 [2], subclause 11.3.3.4

originating PINX: See EN 300 172 [1], subclause 4.5

outgoing call: See EN 300 172 [1], subclause 4.4

outgoing Gateway PINX: See EN 300 172 [1], subclause 4.6

reject APDU: See ETS 300 239 [2], subclause 11.3.3.4

return error APDU: See ETS 300 239 [2], subclause 11.3.3.4

return result APDU: See ETS 300 239 [2], subclause 11.3.3.4

ROSE APDU: See ETS 300 239 [2], definition 4.33

service; telecommunication service: See ITU-T Recommendation I.112 [8], definition 201

supplementary service: See ITU-T Recommendation I.210 [9], subclause 2.4

terminating PINX: See EN 300 172 [1], subclause 4.5

transit PINX: See EN 300 172 [1], subclause 4.5

Virtual Private Network (VPN): Refer to EN 301 060-1 [10] and ETR 172 [11]

3.2   Abbreviations

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

APDU	Application Protocol Data Unit
ATS	Abstract Test Suite
BC	Basic Call
CCBS	Call Completion to Busy Subscriber
CCNR	Call Completion on No Reply
CR	Call Reference
IE	Information Element
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PINX	Private Integrated Services Network eXchange
PISN	Private Integrated Services Network
PIXIT	Protocol Implementation eXtra Information for Testing
PSS1	Private Integrated Signalling System Number 1
sc	call independent signalling connection
SCM	Signalling Carriage Mechanism
T1	Timer T1
T2	Timer T2
T3	Timer T3
T4	Timer T4
TP	Test Purpose
TSS	Test Suite Structure
VPN	Virtual Private Network

4   Test Suite Structure (TSS)

Signalling procedures at the VPN "b" service entry point	Group

Procedures at the Originating PINX

for SS-CCBS	Orig01
for SS-CCNR	Orig02
for User A not busy - path non-reservation method	Orig03
for User A not busy - path reservation method	Orig04
for User A busy - path non-reservation method	Orig05
for User A busy - either before or after the path reservation method	Orig06
for CCBS/CCNR cancellation	Orig07
for Timers expiry	Orig08

Procedures at the Terminating PINX

for SS-CCBS	Term01
for SS-CCNR	Term02
for indication that User B is not busy	Term03
for CC Call without Path Reservation	Term04
for CC Call with Path Reservation	Term05
for CCBS/CCNR suspension and resumption	Term06
for CCBS/CCNR cancellation	Term07

Procedures for Protocol Interactions between SS-CCBS and other supplementary services and ANFs

Procedures for the Originating PINX	Int01

Procedures for Protocol Interactions between SS-CCNR and other supplementary services and ANFs

Procedures for the Originating PINX	Int02

5   Test Purposes (TP)

5.1   Introduction

For each test requirement a TP is defined.

5.1.1   TP naming convention

TPs are numbered, starting at 001, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite and whether it applies to the network or the user (see table 1).

Table 1: TP identifier naming convention scheme

Identifier: **<ss>_<group>_<nnn>**			
<ss>	=	supplementary service:	"CC"
<group>	=	group	up to 8 digit field representing group reference according to TSS
<nnn>	=	sequential number	(001-999)

5.1.2   Source of TP definition

The TPs are based on ETS 300 366 [3].

5.1.3   TP structure

Each TP has been written in a manner which is consistent with all other TPs. The intention of this is to make the TPs more readable and checkable. A particular structure has been used and this is illustrated in table 2. This table should be read in conjunction with any TP, i.e. use a TP as an example to fully understand the table.

Table 2: Structure of a single TP for CC

TP part	Text	Example
Header	**<Identifier>** *tab* **<paragraph number in base ETS>** *tab*	see table 1 **subclause 0.0.0**
Stimulus	Ensure that the IUT, in the <basic call state> or <CC state> <trigger> *see below for message structure* *or* <goal>	state 3 or CC-Idle, etc. receiving a XXXX message to request a ...
Reaction	<action> <conditions> *if the action is sending* *see below for message structure* <next action>, *etc.* and remains in the same state *or* and enters state <state>	sends, saves, does, etc. using en bloc sending, ...
Message structure	<message type> message containing a *a)* <info element> information element with *b)* a <field name> encoded as *or* including <coding of the field> and *back to a or b,*	SETUP, FACILITY, CONNECT, ... Bearer capability, Facility, ...
Selection	Selection criteria reference	PINX can act as Originating PINX. PICS: A1
NOTE 1: In order to use the same structure as for test group selection, the selection criteria is indicated at the bottom of the test purpose. NOTE 2: Unless specified the messages are valid and contain at least the mandatory information elements and possibly optional information elements, the information elements are valid and contain at least the mandatory parameters and possibly optional parameters.		

5.1.4   Test strategy

As the base standard ETS 300 366 [3] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the corresponding PICS proforma.

The TPs are only based on conformance requirements related to the externally observable behaviour of the IUT, and are limited to conceivable situations to which a real implementation is likely to be faced (ETS 300 406 [4]).

5.2   TPs for CC signalling procedures

All PICS items referred to in this subclause are as specified in ETS 300 366 [3] unless indicated otherwise by another numbered reference.

Unless specified:

- Only the requirements from the point of view of the VPN "b" service entry point are considered. This implies that the interactions with other networks are out of scope of the present document and causes that the corresponding Test Purposes are not included in this specification.

- The messages indicated are valid and contain at least the mandatory information elements and possibly optional information elements.

- The information elements indicated are valid and contain at least the mandatory parameters and possibly optional parameters.

The following wording convention was defined to make the test purposes more readable:

- When a message is to be sent or received on a call independent signalling connection, the message name shall be followed by a '(sc)', e.g. CONNECT (sc) means that the CONNECT message is conveyed on a call independent signalling connection.

- In test cases where a bearer connection and a signalling connection is required at the same side of the interface, it is necessary to differentiate between the call states of the bearer connection and the call states of the signalling connection. Therefore the following naming convention is introduced: " Ensure that the IUT in the call states U03 and U10 (sc) … ". This means that the IUT is in call state U03 for the bearer connection, and the IUT is in the call state U10 for the signalling connection.

- All the test purposes are valid for both user and network side of the VPN b interface. In order to simplify the text and to make the test purposes more readable, only the User side Call states (Ux) are indicated in the test purposes. For the network side of the VPNb interface, the mapping table below indicates which network call state (Ny) corresponds to the user call state used in the test purpose. Equivalent call state means there that the same message flow applies from the IUT point of view (e.g.: IUT sends a SETUP message gives the call state U01 or N06).

User side call state	Equivalent network side call state
U00	N00
U01	N06
U10	N10

EXAMPLE:

Ensure that the IUT, in the call state U01 …

is equivalent to the following network side test purpose:

Ensure that the IUT, in the call state N06 …

5.2.1   SS-CC signalling procedures

5.2.1.1   Actions at the Originating PINX

5.2.1.1.1   CCBS invocation

CC_ Orig01_001   subclause 6.5.2.1.1

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, in order to initiate a CCBS call,

sends a SETUP (sc) message containing in the Facility IE a ccbsRequest invoke APDU and enters the CC-Wait-Ack state.

CC_Orig01_002   subclause 6.5.2.1.1

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a CONNECT (sc) message containing in the Facility IE a ccbsRequest return result APDU,

sends a CONNECT ACKNOWLEDGE (sc) message, enters the call state U10 (sc) and enters the CC-Invoked-User-A-RET state.

CC_Orig01_003   subclause 6.5.2.1.1

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a RELEASE (sc) message containing in the Facility IE a ccbsRequest return result APDU,

sends a RELEASE COMPLETE (sc) message and enters the call state U00 (sc) and the CC-Invoked-User-A-RLS state.

   Selection: Support of Path reservation method applies, PICS: A8.

CC_Orig01_004   subclause 6.5.2.2.1

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a RELEASE (sc) message containing in the Facility IE a ccbsRequest return error APDU,

sends a RELEASE COMPLETE (sc) message and enters the call state U00 (sc) and the CC-Idle state.

   Selection: Support of Path reservation method applies, PICS: A8.

CC_Orig01_005   subclause 6.5.2.2.1

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a RELEASE (sc) message containing in the Facility IE a ccbsRequest reject APDU,

sends a RELEASE COMPLETE (sc) message and enters the call state U00 (sc) and the CC-Idle state.

   Selection: Support of Path reservation method applies, PICS: A8.

CC_Orig01_006   subclauses 6.5.2.2.1, 6.5.2.1.10

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a RELEASE (sc) message for CR1 containing in the Facility IE a ccbsRequest return result APDU, although the connection retention method is required,

sends a SETUP (sc) message for CR2 containing in the Facility IE a ccCancel invoke APDU including the Argument fullArg with the same basic call information as previously sent in the ccbsRequest invoke APDU, in order to identify the CC request to be cancelled and enters the CC-Idle state.

5.2.1.1.2 CCNR invocation

CC_Orig02_001   subclause 6.5.2.1.2

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, in order to initiate a CCNR call,

sends a SETUP (sc) message containing in the Facility IE a ccnrRequest invoke APDU and enters the CC-Wait-Ack state.

CC_Orig02_002   subclause 6.5.2.1.2

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a CONNECT (sc) message containing in the Facility IE a ccnrRequest return result APDU,

sends a CONNECT ACKNOWLEDGE (sc) message, enters the call state U10 (sc) and enters the CC-Invoked-User-A-RET state.

CC_Orig02_003   subclause 6.5.2.1.2

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a RELEASE (sc) message containing in the Facility IE a ccnrRequest return result APDU,

sends a RELEASE COMPLETE (sc) message and enters the call state U00 (sc) and the CC-Invoked-User-A-RLS state.

   Selection: Support of Path reservation method applies, PICS: A8.

CC_Orig02_004   subclause 6.5.2.2.1

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a RELEASE (sc) message containing in the Facility IE a ccnrRequest return error APDU,

sends a RELEASE COMPLETE (sc) message and enters the call state U00 (sc) and the CC-Idle state.

   Selection: Support of Path reservation method applies, PICS: A8.

CC_Orig02_005   subclause 6.5.2.2.1

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a RELEASE (sc) message containing in the Facility IE a ccnrRequest reject APDU,

sends a RELEASE COMPLETE (sc) message and enters the call state U00 (sc) and the CC-Idle state.

   Selection: Support of Path reservation method applies, PICS: A8.

CC_Orig02_006   subclauses 6.5.2.2.1, 6.5.2.1.10

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, receiving a RELEASE (sc) message for CR1 containing in the Facility IE a ccnrRequest return result APDU, although the connection retention method is required,

sends a SETUP (sc) message for CR2 containing in the Facility IE a ccCancel invoke APDU including the Argument fullArg with the same basic call information as previously sent in the ccnrRequest invoke APDU, in order to identify the CC request to be cancelled and enters the CC-Idle state.

5.2.1.1.3   User A not busy - path non-reservation method

CC_Orig03_001   subclauses 6.5.2.1.4, 6.5.2.1.5

Ensure that the IUTin the call state U10 (sc) and in the CC-Invoked-User-A-RET state (connection retention case), receiving a FACILITY (sc) message containing in the Facility IE a ccExecPossible invoke APDU and User A is not busy,

enters state CC-Wait-User-A-Answer-N, sends a SETUP message for CR2 containing in the Facility IE a ccRingout invoke APDU and enters the CC-Ringout state.

CC_Orig03_002   subclause 6.5.2.1.5

Ensure that the IUTin the call state U03 and in the CC-Ringout state, receiving an ALERTING message,

enters the call state U04 and the CC-Idle state and waits for a CONNECT message.

CC_Orig03_003   subclause 6.5.2.1.5

Ensure that the IUTin the call state U03 and in the CC-Ringout state, receiving a CONNECT message,

sends a CONNECT ACKNOWLEDGE message and enters the call state U10 and the CC-Idle state.

CC_Orig03_004   subclause 6.5.2.2.6

Ensure that the IUTin the call state U03 and in the CC-Ringout state, receiving a DISCONNECT message containing in the Facility IE a ccRingout return error APDU with value "remoteUserBusyAgain" and the service retention method applies for that CC Request,

sends a RELEASE message and enters the CC-Invoked-User-A-RET state (connection retention case).

   Selection: Service retention method applies, PICS: A9.

CC_Orig03_005   subclause 6.5.2.2.6

Ensure that the IUTin the call state U03 and in the CC-Ringout state, receiving a DISCONNECT message for containing in the Facility IE a ccRingout return error APDU with value "remoteUserBusyAgain" when the service retention method does not apply for that CC Request and no re-invocation is selected,

sends a RELEASE message and enters the CC-Idle state.

   Selection: Failure indication to User A (no re-invocation), PICS: B13.

CC_Orig03_006   subclause 6.5.2.2.6

Ensure that the IUTin the call state U03 and in the CC-Ringout state, receiving a DISCONNECT message containing in the Facility IE a ccRingout return error APDU with value "remoteUserBusyAgain" when the service retention method does not apply for that CC Request and re-invocation is selected,

sends a SETUP (sc) message containing in the Facility IE a ccbsRequest invoke APDU, enters call state U01 and the CC-Wait-Ack state.

   Selection: Re-invocation, PICS: B14.

CC_Orig03_007   subclause 6.5.2.2.6

Ensure that the IUTin the call state U03 and in the CC-Ringout state, receiving a DISCONNECT message containing in the Facility IE a ccRingout return error APDU with value "failureToMatch" and a call independent signalling connection exists,

sends a RELEASE message enters the CC-Idle state.

CC_Orig03_008   subclause 6.5.2.2.6

Ensure that the IUTin the call state U03 and in the CC-Ringout state, receiving a DISCONNECT message containing in the Facility IE a ccRingout return error APDU with value "unspecified" and a call independent signalling connection exists,

sends a RELEASE message enters the CC-Idle state.

CC_Orig03_009   subclauses 6.5.2.2.6, 6.5.2.1.10

Ensure that the IUTin the call state U10 (sc) and in the CC-Ringout state, gets a BC indication that the CC Call failed - without ccRingout return error being received and a call independent signalling connection exists,

sends a RELEASE (sc) message containing in the Facility IE a ccCancel invoke APDU and enters the CC-Idle state.

5.2.1.1.4   User A not busy - path reservation method

Groupselection: Support of Path reservation method applies, PICS: A8 and Setup CC call with path reservation applies, PICS: B7.

CC_Orig04_001   subclauses 6.5.2.1.4, 6.5.2.1.6

Ensure that the IUTin the call states U00 and U00 (sc) and in state CC-Invoked-User-A-RLS (connection release case), receiving a SETUP (sc) message containing in the Facility IE a ccExecPossible invoke APDU and the association of the APDU with an existing CC Request is successful and User A is not busy,

sends a RELEASE (sc) message with cause value #16 "normal call clearing",

sends a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and enters the CC-Path-Setup state.

CC_Orig04_002   subclauses 6.5.2.1.4, 6.5.2.1.6

Ensure that the IUTin the call states U00 and U10 (sc) and in the CC-Invoked-User-A-RET state (connection retention case), receiving a FACILITY (sc) message containing in the Facility IE a ccExecPossible invoke APDU and the service retention method does not apply (i.e.: the call independent signalling connection can be released),

sends a RELEASE (sc) message with cause value #16 "normal call clearing",

sends a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and enters the CC-Path-Setup state.

CC_Orig04_003   subclauses 6.5.2.1.4, 6.5.2.1.6

Ensure that the IUTin the call states U00 and U10 (sc) and in the CC-Invoked-User-A-RET state (connection retention case), receiving a FACILITY (sc) message containing in the Facility IE a ccExecPossible invoke APDU and the service retention method applies (i.e.: the call independent signalling connection can not be released),

sends a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and enters the CC-Path-Setup state.

Selection: Service retention method applies, PICS: A9.

CC_Orig04_004   subclauses 6.5.2.1.6, 6.5.2.1.8, 6.5.2.1.9

Ensure that the IUTin the call state U00 and in state CC-Wait-User-A-Free, on receipt of the indication that User A is not busy,

sends a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and enters the CC-Path-Setup state.

CC_Orig04_005   subclause 6.5.2.1.6

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a PROGRESS message containing in the Facility IE a ccPathReserve return result APDU,

sends a FACILITY message containing in the Facility IE a ccRingout invoke APDU, remain in the same call state and enters the CC-Ringout state.

CC_Orig04_006   subclause 6.5.2.2.2

Ensure that the IUTin the call state U00 (sc) and in state CC-Invoked-User-A-RLS, receiving a SETUP (sc) message containing in the Facility IE a ccExecPossible invoke APDU and the association of the APDU, with a CC Request that is in state CC-Invoked-User-A-RLS, is unsuccessful,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU.

CC_Orig04_007   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve return error APDU with value "failedDueToInterworking",

sends a RELEASE message for, sends a SETUP message for CR3 containing in the Facility IE a ccRingout invoke APDU and enters call state U01 and the CC-Ringout state.

   Selection: New PICS for retry CC Call without Path Reservation: B15.

CC_Orig04_008   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve return error APDU with value "failedDueToInterworking",

sends a RELEASE message for CR, sends a SETUP message for CR3 containing in the Facility IE a ccPathReserve invoke APDU and remains in the CC-Path-Setup state.

   Selection: Setup CC call with path reservation, PICS: B7 and new PICS for retry Path Reservation on another route: B16.

CC_Orig04_009   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve return error APDU with value "failedDueToInterworking,

sends a RELEASE message for, sends a SETUP (sc) message for CR3 containing in the Facility IE a ccCancel invoke APDU including the Argument fullArg with the same basic call information as previously sent in the ccnrRequest invoke APDU, in order to identify the CC request to be cancelled and enters the CC-Idle state.

   Selection: New PICS for cancel the CC Request: B17.

CC_Orig04_010   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve reject APDU with value "unrecognizedOperation",

sends a RELEASE message for, sends a SETUP message for CR3 containing in the Facility IE a ccRingout invoke APDU and enters call state U01 and the CC-Ringout state.

   Selection: New PICS for retry CC Call without Path Reservation: B15.

CC_Orig04_011   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve reject APDU with value "unrecognizedOperation",

sends a RELEASE message for, sends a SETUP message for CR3 containing in the Facility IE a ccPathReserve invoke APDU and remains in the CC-Path-Setup state.

   Selection: New PICS for retry Path Reservation on another route: B16.

CC_Orig04_012   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve reject APDU with value "unrecognizedOperation",

sends a RELEASE message for, sends a SETUP (sc) message for CR3 containing in the Facility IE a ccCancel invoke APDU including the Argument fullArg with the same basic call information as previously sent in the ccnrRequest invoke APDU, in order to identify the CC request to be cancelled and enters the CC-Idle state.

   Selection: New PICS for cancel the CC Request: B17.

CC_Orig04_013   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve return error APDU with value "remoteUserBusyAgain" and the connection release case exists,

sends a RELEASE message for and enters the CC-Invoked-User-A-RLS state.

CC_Orig04_014   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve return error APDU with value "remoteUserBusyAgain" and the connection retention case exists,

sends a RELEASE message for and enters the CC-Invoked-User-A-RET state.

CC_Orig04_015   subclause 6.5.2.2.5

Ensure that the IUTin the call states U03 and U00 (sc) and in the CC-Path-Setup state when the connection retention case exists, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve return error APDU with value "failureToMatch",

sends a RELEASE message for, sends a RELEASE (sc) message for the existing sc connection and enters the CC-Idle state.

CC_Orig04_016   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state when the connection release case exists, receiving a DISCONNECT message for containing in the Facility IE a ccPathReserve return error APDU with value "unspecified",

sends a RELEASE message for and enters the CC-Idle state.

CC_Orig04_017   subclause 6.5.2.2.5

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a CC fail indication due to network congestion,

sends a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU, and enter state U01 and remains in the CC-Path-Setup state.

   Selection: New PICS for retry to establish a path due to network congestion: B18.

CC_Orig04_018   subclauses 6.5.2.2.5, 6.5.2.1.10

Ensure that the IUTin the call states U03 and U00 (sc) and in the CC-Path-Setup state, receiving a CC fail indication due to network congestion and the connection release case exists,

sends a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU and enters the CC-Idle state.

   Selection: New PICS for cancel the CC Request due to network congestion: B19.

5.2.1.1.5   User A busy - path non-reservation method

CC_Orig05_001   subclause 6.5.2.1.7

Ensure that the IUTin the call state U10 (sc) and in the CC-Invoked-User-A-RET state, receiving a FACILITY (sc) message containing in the Facility IE a ccExecPossible invoke APDU and User A is busy,

sends a FACILITY (sc) message containing in the Facility IE a ccSuspend invoke APDU and enters the CC-Suspended-User-A state.

CC_Orig05_002   subclause 6.5.2.1.7

Ensure that the IUTin the call state U10 (sc) and in the CC-Suspended-User-A state, and User A becomes not busy,

sends a FACILITY (sc) message containing in the Facility IE a ccResume invoke APDU and enters the CC-Invoked-User-A-RET state.

5.2.1.1.6   User A busy - either before or after the path reservation method

CC_Orig06_001   subclause 6.5.2.1.8

Ensure that the IUTin the call state U00 (sc) and in the CC-Invoked-User-A-RLS state, receiving a SETUP (sc) message containing in the Facility IE a ccExecPossible invoke APDU and User A is busy and the suspend option is not applicable,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and enters the CC-Wait-User-A-Free state.

   Selection: New PICS for suspend option (suspension is not applicable): NOT B20.

CC_Orig06_002   subclause 6.5.2.1.8

Ensure that the IUTin the call state U00 (sc) and in the CC-Invoked-User-A-RLS state, receiving a SETUP (sc) message containing in the Facility IE a ccExecPossible invoke APDU and User A is busy and the suspend option is applicable,

sends a RELEASE (sc) message containing in the Facility IE a ccSuspend invoke APDU and enters the CC-Wait-User-A-Free state.

   Selection: New PICS for suspend option (suspension is applicable): B20.

CC_Orig06_003   subclause 6.5.2.1.8

Ensure that the IUTin the call state U00 (sc) and in the CC-Invoked-User-A-RET state, receiving a SETUP (sc) message containing in the Facility IE a ccExecPossible invoke APDU and User A is busy and the path reservation method is chosen and the connection release method applies and the suspend option is not applicable,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and enters the CC-Wait-User-A-Free state.

   Selection: Setup CC call with path reservation, PICS: B7 and new PICS for suspend option (suspension is not applicable): NOT B20.

CC_Orig06_004 subclause 6.5.2.1.8

Ensure that the IUTin the call state U00 (sc) and in the CC-Invoked-User-A-RET state, receiving a SETUP (sc) message containing in the Facility IE a ccExecPossible invoke APDU and User A is busy and the path reservation method is chosen and the connection release method applies and the suspend option is applicable,

sends a RELEASE (sc) message containing in the Facility IE a ccSuspend invoke APDU and enters the CC-Wait-User-A-Free state.

> **Selection:** Setup CC call with path reservation, PICS: B7 and new PICS for suspend option (suspension is applicable): B20.

CC_Orig06_005 subclause 6.5.2.1.8

Ensure that the IUTin the call state U10 (sc) and in the CC-Invoked-User-A-RET state, receiving a FACILITY (sc) message containing in the Facility IE a ccExecPossible invoke APDU and User A is busy and the path reservation method is chosen and the connection retention method applies and the suspend option is applicable,

sends a FACILITY (sc) message containing in the Facility IE a ccSuspend invoke APDU and enters the CC-Wait-User-A-Free state.

> **Selection:** Setup CC call with path reservation, PICS: B7 and new PICS for suspend option (suspension is applicable): B20.

CC_Orig06_006 subclause 6.5.2.1.9

Ensure that the IUTin the call state U03 and in the CC-Path-Setup state, receiving a PROGRESS message containing in the Facility IE a ccPathReserve return result APDU and User A is busy,

sends a DISCONNECT message containing in the Facility IE a ccSuspend invoke APDU and enters the CC-Wait-User-A-Free state.

> **Selection:** Setup CC call with path reservation, PICS: B7.

5.2.1.1.7 CCBS/CCNR cancellation

CC_Orig07_001 subclause 6.5.2.1.10

Ensure that the IUTin the call state U10 (sc), on receiving a CC cancel request from User A and no CC call is active,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU with the argument extArg and enters the CC-Idle state.

CC_Orig07_002 subclause 6.5.2.1.10

Ensure that the IUTin the call state U00 (sc), on receiving a CC cancel request from User A and no path has been reserved,

sends a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU with the argument fullArg and enters the CC-Idle state.

CC_Orig07_003 subclause 6.5.2.1.10

Ensure that the IUTin the call states U03 and U10 (sc) and in the CC-Path-Setup state, receiving a CC cancel request from User A,

sends a DISCONNECT message,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU and enters the CC-Idle state.

> **Selection:** Support of Path reservation method applies, PICS: A8 and Setup CC call with path reservation applies, PICS: B7.

CC_Orig07_004   subclause 6.5.2.1.10

Ensure that the IUTin the call states U03 and U00 (sc) and in the CC-Path-Setup state, receiving a CC cancel request from User A,

sends a DISCONNECT message,

sends a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU and enters the CC-Idle state.

   Selection: Support of Path reservation method applies, PICS: A8 and Setup CC call with path reservation applies, PICS: B7.

CC_Orig07_005   subclause 6.5.2.1.10

Ensure that the IUTin the call states U00 and U10 (sc), on receiving a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU with the argument extArg,

sends a RELEASE COMPLETE (sc) message enters the call state U00 (sc) and the CC-Idle state.

CC_Orig07_006   subclause 6.5.2.1.10

Ensure that the IUTin the call states U03 and U10 (sc), on receiving a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU with the argument extArg,

sends a DISCONNECT message with cause value #16 "normal call clearing" and enters the CC-Idle state.

   Selection: Support of Path reservation method applies, PICS: A8 and Setup CC call with path reservation applies, PICS: B7.

CC_Orig07_007   subclause 6.5.2.1.10

Ensure that the IUTin the call states U00 and U00 (sc), on receiving a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU with the argument fullArg and the association of the APDU with an active CC Request is successful,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and enters the CC-Idle state.

CC_Orig07_008   subclause 6.5.2.1.10

Ensure that the IUTin the call states U03 and U00 (sc), on receiving a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU with the argument fullArg and the association of the APDU with an active CC Request is successful,

sends a RELEASE (sc) message with cause value #16 "normal call clearing",

sends a DISCONNECT message with cause value #16 "normal call clearing" and enters the CC-Idle state.

   Selection: Support of Path reservation method applies, PICS: A8 and Setup CC call with path reservation applies, PICS: B7.

CC_Orig07_009   subclause 6.5.2.2.2

Ensure that the IUTin the call state U00 (sc), on receiving a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU and the association of the APDU with an active CC Request is unsuccessful,

sends a RELEASE (sc) message with cause value #16 "normal call clearing".

5.2.1.1.8   Timers expiry

CC_Orig08_001   subclause 6.5.2.2.1

Ensure that the IUTin the call state U03 (sc) and in the CC-Wait-Ack state, on expiry of T1,

sends a RELEASE (sc) message and enters the CC-Idle state.

>   NOTE: Executable only if the timer values of TWAIT and of T310 (which is implementation dependent) is
>   higher then the timer value of T1 (10-30 s).

CC_Orig08_002   subclause 6.5.2.2.3

Ensure that the IUTin the call state U10 (sc) and in the CC-Invoked-User-A-RET state, on expiry of T2,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a
ccCancel invoke APDU and enters the CC-Idle state.

CC_Orig08_003   subclause 6.5.2.2.3

Ensure that the IUTin the call state U10 (sc) and in the CC-Suspended-User-A state, on expiry of T2,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a
ccCancel invoke APDU and enters the CC-Idle state.

CC_Orig08_004   subclause 6.5.2.2.3

Ensure that the IUTin the call state U00 (sc) and in the CC-Invoked-User-A-RLS state, on expiry of T2,

sends a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU and enters the CC-Idle state.

CC_Orig08_005   subclause 6.5.2.2.3

Ensure that the IUTin the call state U10 (sc) and in the CC-Wait-User-A-Free state, on expiry of T2 and a call
independent signalling connection exists,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a
ccCancel invoke APDU and enters the CC-Idle state.

>   **Selection:** Setup CC call with path reservation, PICS: B7 and new PICS for suspend option (suspension is not
>   applicable): B20.

CC_Orig08_006   subclause 6.5.2.2.3

Ensure that the IUTin the call state U00 (sc) and in the CC-Wait-User-A-Free state, on expiry of T2,

sends a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU and enters the CC-Idle state.

>   **Selection: N**ew PICS for suspend option (suspension is applicable): B20.

CC_Orig08_007   subclause 6.5.2.2.3

Ensure that the IUTin the call state U10 (sc) and in the CC-Wait-User-A-Answer-N state, on expiry of T2,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a
ccCancel invoke APDU and enters the CC-Idle state.

>   **Selection:** Cancel Option after timeout of T2 - cancel the CC Request.

CC_Orig08_008   subclause 6.5.2.2.3

Ensure that the IUTin the call states U03 and U00 (sc) and in the CC-Path-Setup state, on expiry of T2,

sends a DISCONNECT message for with cause value #16 "normal call clearing",

sends a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU and enters the CC-Idle state.

    Selection: Setup CC call with path reservation, PICS: B7 and Cancel Option after timeout of T2 **-** cancel the
           CC Request.

CC_Orig08_009   subclause 6.5.2.2.3

Ensure that the IUTin the call states U03 and U00 (sc) and in the CC-Path-Setup state, on expiry of T2,

takes no actions and remains in the CC-Path-Setup state.

    Selection: Setup CC call with path reservation, PICS: B7 and Defer Option after timeout of T2 **-** remain in the same
           state.

CC_Orig08_010   subclause 6.5.2.2.3

Ensure that the IUTin the call states U03 and U00 (sc) and in the CC-Wait-User-A-Answer-R state, on expiry of T2,

takes no actions and remains in the CC-Wait-User-A-Answer-R state.

    Selection: Setup CC call with path reservation, PICS: B7 and Defer Option after timeout of T2 **-** remain in the same
           state.

CC_Orig08_011   subclause 6.5.2.2.3

Ensure that the IUTin the call states U03 and U10 (sc) and in the CC-Wait-User-A-Answer-R state, on expiry of T2 and
a call independent signalling connection exists,

sends a DISCONNECT message for with cause value #16 "normal call clearing",

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a
ccCancel invoke APDU and enters the CC-Idle state.

    Selection: Setup CC call with path reservation, PICS: B7 and Cancel Option after timeout of T2 - cancel the
           CC Request.

CC_Orig08_012   subclause 6.5.2.2.3

Ensure that the IUTin the call state U00 (sc) and in the CC-Ringout state, on expiry of T2,

sends a DISCONNECT message for with cause value #16 "normal call clearing" and containing in the Facility IE a
ccCancel invoke APDU and enters the CC-Idle state.

    Selection: Setup CC call with path reservation, PICS: B7 and Cancel Option after timeout of T2 - cancel the
           CC Request.

CC_Orig08_013   subclause 6.5.2.2.3

Ensure that the IUTin the call state U03 and in the CC-Ringout state, on expiry of T2,

takes no actions and remains in the CC-Ringout state.

    Selection: Defer Option after timeout of T2 **-** remain in the same state.

CC_Orig08_014   subclause 6.5.2.2.4

Ensure that the IUTin the call state U10 (sc) and in the CC-Wait-User-A-Answer-N state, on expiry of T3,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU and enters the CC-Idle state.

   Selection: Setup CC call with path reservation, PICS: B7.

CC_Orig08_015   subclauses 6.5.2.2.4, 6.5.2.1.10

Ensure that the IUTin the call states U03 and U10 (sc) and in the CC-Wait-User-A-Answer-R state, on expiry of T3,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU with the argument extArg,

sends a DISCONNECT message with cause value #16 "normal call clearing" and enters the CC-Idle state.

   Selection: Setup CC call with path reservation, PICS: B7.

CC_Orig08_016   subclauses 6.5.2.2.4, 6.5.2.1.10

Ensure that the IUTin the call state U03 and in the CC-Wait-User-A-Answer-R state, on expiry of T3,

sends a DISCONNECT message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU with the argument extArg and enters the CC-Idle state.

   Selection: Setup CC call with path reservation, PICS: B7.

CC_Orig08_017   subclauses 6.5.2.2.5, 6.5.2.1.10

Ensure that the IUTin the call states U03 and U00 (sc) and in the CC-Path-Setup state, on expiry of T4,

sends a DISCONNECT message with cause value #16 "normal call clearing",

sends a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU with the argument fullArg and enters the CC-Idle state.

   Selection: Setup CC call with path reservation, PICS: B7.

CC_Orig08_018   subclauses 6.5.2.2.5, 6.5.2.1.10

Ensure that the IUTin the call states U03 and U10 (sc) and in the CC-Path-Setup state, on expiry of T4,

sends a DISCONNECT message with cause value #16 "normal call clearing",

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU with the argument extArg and enters the CC-Idle state.

   Selection: Setup CC call with path reservation, PICS: B7.

5.2.1.2   Actions at the Terminating PINX

5.2.1.2.1   CCBS invocation

CC_Term01_001   subclauses 6.5.3.1.1, 6.5.3.1.3

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, receiving a SETUP (sc) message containing in the Facility IE a ccbsRequest invoke APDU and for maintain the signalling connection,

sends a CONNECT (sc) message containing in the Facility IE a ccbsRequest return result APDU and enters the CC-Invoked-User-B state.

CC_Term01_002   subclauses 6.5.3.1.1, 6.5.3.1.3

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, receiving a SETUP (sc) message containing in the Facility IE a ccbsRequest invoke APDU and for not maintain the signalling connection,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccbsRequest return result APDU and enters the CC-Invoked-User-B state.

CC_Term01_003   subclause 6.5.3.2.1

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, receiving a SETUP (sc) message containing in the Facility IE a ccbsRequest invoke APDU including a numberB parameter for which user A has already activated a CC-Request,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccbsRequest return error APDU with value "shortTermRejection" and enters the CC-Idle state.

CC_Term01_004   subclause 6.5.3.2.1

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, receiving a SETUP (sc) message containing in the Facility IE a ccbsRequest invoke APDU for a User B which has not subscribed SS-CC,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccbsRequest return error APDU with value "longTermRejection" and enters the CC-Idle state.

5.2.1.2.2   CCNR invocation

CC_Term02_001   subclauses 6.5.3.1.2, 6.5.3.1.3

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, receiving a SETUP (sc) message containing in the Facility IE a ccnrRequest invoke APDU and for maintain the signalling connection,

sends a CONNECT (sc) message containing in the Facility IE a ccnrRequest return result APDU and enters the CC-Invoked-User-B state.

CC_Term02_002   subclauses 6.5.3.1.2, 6.5.3.1.3

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, receiving a SETUP (sc) message containing in the Facility IE a ccnrRequest invoke APDU and for not maintain the signalling connection,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccnrRequest return result APDU and enters the CC-Invoked-User-B state.

CC_Term02_003   subclause 6.5.3.2.1

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, receiving a SETUP (sc) message containing in the Facility IE a ccnrRequest invoke APDU including a numberB parameter for which user A has already activated a CC-Request,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccnrRequest return error APDU with value "shortTermRejection"and enters the CC-Idle state.

CC_Term02_004   subclause 6.5.3.2.1

Ensure that the IUTin the call state U00 (sc) and in the CC-Idle state, receiving a SETUP (sc) message containing in the Facility IE a ccnrRequest invoke APDU for a User B which has not subscribed SS-CC,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccnrRequest return error APDU with value "longTermRejection" and enters the CC-Idle state.

5.2.1.2.3   Indication that User B is not busy

CC_Term03_001   subclause 6.5.3.1.4

Ensure that the IUTin the call state U00 (sc) and in the CC-Invoked-User-B state, gets the indication that User B is not busy and the connection release method is used,

sends a SETUP (sc) message containing in the Facility IE a ccExecPossible invoke APDU with the argument fullArg and enters the CC-Await-Call-Completion state.

CC_Term03_002   subclause 6.5.3.1.4

Ensure that the IUTin the call state U10 (sc) and in the CC-Invoked-User-B state, gets the indication that User B is not busy and the connection retention method is used,

sends a FACILITY (sc) message containing in the Facility IE a ccExecPossible invoke APDU with the argument extArg and enters the CC-Await-Call-Completion state.

5.2.1.2.4   CC Call without Path Reservation

CC_Term04_001   subclause 6.5.3.1.5

Ensure that the IUTin the call states U00 and U00 (sc) and in the CC-Await-Call-Completion state, receiving a SETUP message for CR2 containing in the Facility IE a ccRingout invoke APDU and User B is still not busy (i.e. gets the BC indication that user B is alerting),

sends an ALERTING message and enters the CC-Idle state.

CC_Term04_002   subclause 6.5.3.1.5

Ensure that the IUTin the call states U00 and U10 (sc) and in the CC-Await-Call-Completion state, receiving a SETUP message for CR2 containing in the Facility IE a ccRingout invoke APDU and User B is still not busy (i.e. gets the BC indication that user B is alerting),

sends an ALERTING message,

sends a RELEASE (sc) message and enters the CC-Idle state.

CC_Term04_003   subclause 6.5.3.2.4

Ensure that the IUTin the call state U00 and in the CC-Await-Call-Completion state, receiving a SETUP message for CR2 containing in the Facility IE a ccRingout invoke APDU and User B is busy again and the service retention method applies for that CC Request,

sends a DISCONNECT message containing in the Facility IE a ccRingout return error APDU the value "remoteUserBusyAgain" and enters the CC-Invoked-User-B state.

   Selection: Service retention method applies PICS: A9.

CC_Term04_004   subclause 6.5.3.2.4

Ensure that the IUTin the call states U00 and U03 (sc) and in the CC-Await-Call-Completion state, receiving a SETUP message for CR2 containing in the Facility IE a ccRingout invoke APDU and User B is busy again and the service retention method does not apply for that CC Request,

sends a DISCONNECT message containing in the Facility IE a ccRingout return error APDU the value "remoteUserBusyAgain",

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and enters the CC-Idle state.

CC_Term04_005   subclause 6.5.3.2.2

Ensure that the IUTin the call state U00 and in the CC-Await-Call-Completion state, receiving a SETUP message for CR2 containing in the Facility IE a ccRingout invoke APDU and the association with an active CC Request is unsuccessful,

sends a DISCONNECT message containing in the Facility IE a ccRingout return error with value "failureToMatch" and remains in the same state.

5.2.1.2.5   CC Call with Path Reservation

CC_Term05_001   subclause 6.5.3.1.6

Ensure that the IUTin the call state U00 and in the CC-Await-Call-Completion state, receiving a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and the association of the APDU with an active CC Request is successful and User B is still not busy,

sends a PROGRESS message with CCITT progress description no. 8 and containing in the Facility IE a ccPathReserve return result APDU and enters the CC-Path-Complete state.

CC_Term05_002   subclauses 6.5.3.1.6, 6.5.3.1.7

Ensure that the IUTin the call state U00 and in the CC-Suspend-User-B state, receiving a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and the association of the APDU with an active CC Request is successful and User B is still not busy,

sends a PROGRESS message with CCITT progress description no. 8 and containing in the Facility IE a ccPathReserve return result APDU and enters the CC-Path-Complete state.

CC_Term05_003   subclause 6.5.3.1.6

Ensure that the IUTin the call state U09 and in the CC-Path-Complete state, receiving a FACILITY message for containing in the Facility IE a ccRingout invoke APDU and User B is not busy, e.g. gets the BC indication that User B is connected,

sends a CONNECT message and enters the CC-Idle state.

CC_Term05_004   subclause 6.5.3.2.4

Ensure that the IUTin the call state U09 and in the CC-Path-Complete state, receiving a FACILITY message containing in the Facility IE a ccRingout invoke APDU and User B is busy again and the service retention method applies for that CC Request,

sends a DISCONNECT message containing in the Facility IE a ccRingout return error APDU with value "remoteUserBusyAgain" enters the CC-Invoked-User-B state.

   Selection: Service retention method applies PICS: A9.

CC_Term05_005   subclause 6.5.3.2.4

Ensure that the IUTin the call state U09 and in the CC-Path-Complete state, receiving a FACILITY message containing in the Facility IE a ccRingout invoke APDU and User B is busy again and the service retention method does not apply for that CC Request and no call independent signalling connection exists,

sends a DISCONNECT message containing in the Facility IE a ccRingout return error APDU with value "remoteUserBusyAgain" and enters the CC-Idle state.

CC_Term05_006   subclause 6.5.3.2.4

Ensure that the IUTin the call states U09 and U03 (sc) and in the CC-Path-Complete state, receiving a FACILITY message containing in the Facility IE a ccRingout invoke APDU and User B is busy again and the service retention method does not apply for that CC Request and a call independent signalling connection exists,

sends a DISCONNECT message for containing in the Facility IE a ccRingout return error APDU with value "remoteUserBusyAgain",

sends a RELEASE (sc) message and enters the CC-Idle state.

CC_Term05_007   subclause 6.5.3.2.2

Ensure that the IUTin the call state U00 and in the CC-Await-Call-Completion state, receiving a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and the association with an active CC Request is unsuccessful,

sends a DISCONNECT message containing in the Facility IE a ccPathReserve return error with value "failureToMatch" and remains in the same state.

CC_Term05_008   subclause 6.5.3.2.2

Ensure that the IUTin the call state U00 and in state CC-Suspended-User-B, receiving a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and the association with an active CC Request is unsuccessful,

sends a DISCONNECT message containing in the Facility IE a ccPathReserve return error with value "failureToMatch" and remains in the same state.

CC_Term05_009   subclause 6.5.3.2.3

Ensure that the IUTin the call state U00 and in the CC-Await-Call-Completion state, receiving a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and the association of the APDU with an active CC Request is successful but User B is busy again,

sends a DISCONNECT message containing in the Facility IE a ccPathReserve return error APDU with value "remoteUserBusyAgain" and enters the CC-Invoked-User-B state.

CC_Term05_010   subclause 6.5.3.2.3

Ensure that the IUTin the call state U00 and in the CC-Suspend-User-B state, receiving a SETUP message for CR2 containing in the Facility IE a ccPathReserve invoke APDU and the association of the APDU with an active CC Request is successful but User B is busy again,

sends a DISCONNECT message containing in the Facility IE a ccPathReserve return error APDU with value "remoteUserBusyAgain" and enters the CC-Invoked-User-B state.

5.2.1.2.6   CCBS/CCNR Suspension and Resumption

CC_Term06_001   subclause 6.5.3.1.7

Ensure that the IUTin the call state U10 (sc) and in the CC-Await-Call-Completion state, receiving a RELEASE (sc) message containing in the Facility IE a ccSuspend invoke APDU,

sends a RELEASE COMPLETE (sc) message and enters call state U00 and the CC-Suspended-User-B state.

CC_Term06_002   subclause 6.5.3.1.7

Ensure that the IUTin the call state U09 and in the CC-Path-Complete state, receiving a DISCONNECT message containing in the Facility IE a ccSuspend invoke APDU,

send a RELEASE message and enters the CC-Await-Call-Completion state.

CC_Term06_003   subclause 6.5.3.1.7

Ensure that the IUTin the call state U10 (sc) and in state CC-Suspended-User-B, receiving a FACILITY (sc) message containing in the Facility IE a ccResume invoke APDU and if User B is not busy,

sends a FACILITY (sc) message containing in the Facility IE a ccExecPossible invoke APDU enters the CC-Await-Call-Completion state.

5.2.1.2.7   CCBS/CCNR Cancellation

CC_Term07_001   subclause 6.5.3.1.8

Ensure that the IUTin the call state U00 (sc) in order to cancel a CC Request,

sends a SETUP (sc) message with containing in the Facility IE a ccCancel invoke APDU including the Argument fullArg with the same basic call information as previously received in the ccbsRequest invoke APDU and enters the CC-Idle state.

CC_Term07_002   subclause 6.5.3.1.8

Ensure that the IUTin the call state U10 (sc) in order to cancel a CC Request,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU including the Argument extArg and enters the CC-Idle state.

CC_Term07_003   subclause 6.5.3.1.8

Ensure that the IUTin the call state U10 (sc), on receiving a RELEASE (sc) message containing in the Facility IE a ccCancel invoke APDU,

sends a RELEASE COMPLETE (sc) message and enters the call state U00 and the CC-Idle state.

CC_Term07_004   subclause 6.5.3.1.8

Ensure that the IUTin the call state U00 (sc), on receiving a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU and the association of the APDU with an active CC Request is successful,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and enters the CC-Idle state.

CC_Term07_005   subclause 6.5.3.1.8

Ensure that the IUTin the call states U09 and U00 (sc) and in the CC-Path-Complete state, receiving a DISCONNECT message containing in the Facility IE a ccCancel invoke APDU and the association of the APDU with an active CC Request is successful,

sends a RELEASE message and enters the CC-Idle state.

CC_Term07_006   subclause 6.5.3.1.8

Ensure that the IUTin the call states U09 and U03 (sc) and in the CC-Path-Complete state, receiving a DISCONNECT message containing in the Facility IE a ccCancel invoke APDU and the association of the APDU with an active CC Request is successful,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and enters the CC-Idle state.

CC_Term07_007   subclause 6.5.3.2.2

Ensure that the IUTin the call state U00 (sc), on receiving a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU and the association of the APDU with an active CC Request is unsuccessful,

sends a RELEASE (sc) message with cause value #16 "normal call clearing".

CC_Term07_008   subclause 6.5.3.2.5

Ensure that the IUTin the call states U09 and U00 (sc), on receiving a DISCONNECT message without any SS-CC invoke APDU for a CC Call in progress,

sends a SETUP (sc) message containing in the Facility IE a ccCancel invoke APDU including the Argument fullArg with the same basic call information as previously received in the ccbsRequest invoke APDU and enters the CC-Idle state.

CC_Term07_009   subclause 6.5.3.2.5

Ensure that the IUTin the call states U09 and U03 (sc), on receiving a DISCONNECT message without any SS-CC invoke APDU for a CC Call in progress,

sends a RELEASE (sc) message with cause value #16 "normal call clearing" and containing in the Facility IE a ccCancel invoke APDU including the Argument extArg and enters the CC-Idle state.

5.2.2   Impact of Interworking with Public ISDNs

This is out of the scope of the "b" service entry point as defined in EN 301 060-1 [10].

5.2.3   Protocol Interaction between SS-CCBS and other Supplementary Services and ANFs

5.2.3.1   Originating PINX procedures for invoking SS-CCBS at a SS-CFU/SS-CFB/SS-CD diverted-to User

The TPs in this subclause are only applicable to an ITU if the PICS F2 and/or G2 are supported.

CC_Int01_001   subclauses 6.8.5.1, 6.8.6.1, 6.8.8

Ensure that the IUTin the call state U00, receiving a FACILITY message for CR1 containing in the Facility IE a divertingLegInformation1 invoke APDU including in the element "nominatedNr" the party number of the diverted-to User,

sends a SETUP (sc) message reflecting in the called party number IE the "nominatedNr" and containing in the Facility IE a ccbsRequest invoke APDU including in the element "numberB" the "nominatedNr".

5.2.4   Protocol Interaction between SS-CCNR and other Supplementary Services and ANFs

5.2.4.1   Originating PINX procedures for invoking SS-CCNR at a SS-CFU/SS-CFB/SS-CCNR/SS-CD diverted-to User

The TPs in this subclause are only applicable to an ITU if the PICS H2 and/or I2 and/or J2 are supported.

CC_Int02_001   subclauses 6.9.5.1, 6.9.6.1, 6.9.7.1, 6.9.8

Ensure that the IUTin the call state U00, receiving a FACILITY message for CR1 containing in the Facility IE a divertingLegInformation1 invoke APDU including in the element "nominatedNr" the party number of the diverted-to User,

sends a SETUP (sc) message reflecting in the called party number IE the "nominatedNr" and containing in the Facility IE a ccnrRequest invoke APDU including in the element "numberB" the "nominatedNr".

6   Compliance

An ATS, which complies with this TSS&TP specification, shall:

  a) consist of a set of test cases corresponding to the set or to a subset of the TPs specified in clause 5;

  b) use a TSS which is an appropriate subset of the whole of the TSS specified in clause 4;

  c) use the same naming conventions for the test groups and test cases;

  d) maintain the relationship specified in clause 5 between the test groups and TPs and the entries in the PICS
      proforma to be used for test case deselection;

  e) comply with ISO/IEC 9646-2 [6].

In the case of a) or b), a subset shall be used only where a particular Abstract Test Method (ATM) makes some TPs
untestable. All testable TPs from clause 5 shall be included in a compliant ATS.

7   Requirements for a comprehensive testing service

As a minimum the Remote test method, as specified in ISO/IEC 9646-2 [6], shall be used by any organization claiming
to provide a comprehensive testing service for equipment claiming conformance to ETS 300 366 [3].

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

-   ETSI EN 301 061-1 (V1.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Generic functional protocol for the support of supplementary services at the "b" service entry point for Virtual Private Network (VPN) applications; Part 1: Protocol specification".

History

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