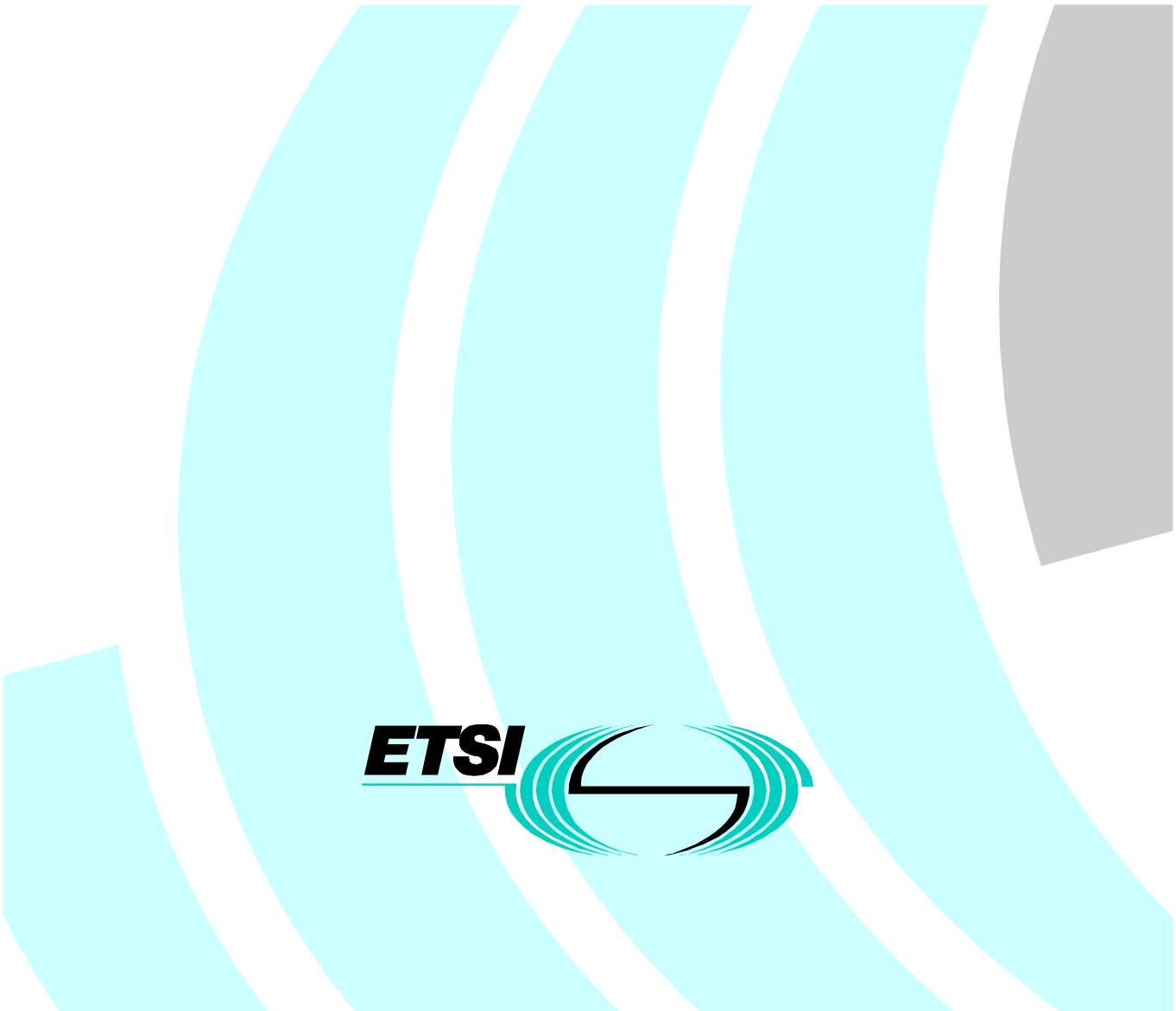
EN 301 061-3 V1.1.3 (1998-10)

European Standard (Telecommunications series)

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 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user



Reference
DEN/SPS-05110-3 (9tor0ie0.PDF)

Keywords
DSS1, generic, ISDN, supplementary service,
VPN, TSS&TP, user

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Contents

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Foreword

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

The present document is part 3 of a multi-part European Standard (Telecommunications series) covering the 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, as identified below:

Part 1: "Protocol specification";

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 3: "Test Suite Structure and Test Purposes (TSS&TP), specification for the user";

Part 4: "Abstract Test Suite (ATS), user";

Part 5: "Test Suite Structure and Test Purposes (TSS&TP), specification for the network";

Part 6: "Abstract Test Suite (ATS), network".

National transposition dates	
Date of adoption of this EN:	30 October 1998
Date of latest announcement of this EN (doa):	31 January 1999
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 July 1999
Date of withdrawal of any conflicting National Standard (dow):	31 July 1999

1 Scope

This third part of EN 301 061 specifies the Test Suite Structure and Test Purposes (TSS&TP) for the user side of the T reference point (as defined in ITU-T Recommendation I.411 [10]) of implementations conforming to the stage three standard for the generic functional protocol for the support of supplementary services for Virtual Private Network (VPN) applications for the pan-European Integrated Services Digital Network (ISDN) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, EN 301 061-1 [2].

2 Normative references

References may be made to:

a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or

b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or

c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or

d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] 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".

[2] EN 301 061-1: "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".

[3] EN 301 061-2: "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 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[4] 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] Void.

[8] ISO/IEC 11582 (1995): "Information technology; Telecommunications and information exchange between systems; Private Integrated Services Network; Generic functional protocol for the support of supplementary services; Inter-exchange signalling procedures and protocol".

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

[10] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces; reference configurations".

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 Suite (ATS): 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].

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

3.1.2 Definitions related to EN 301 061-1

component: See EN 300 196-1 [1], subclause 11.2.2.1.

invoke component: See EN 300 196-1 [1], subclause 11.2.2.1.

return error component: See EN 300 196-1 [1], subclause 11.2.2.1.

return result component: See EN 300 196-1 [1], subclause 11.2.2.1.

service; telecommunication service: See ITU-T Recommendation I.112 [9], definition 201.

3.2 Abbreviations

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

APDU	Application Protocol Data Unit
ATM	Abstract Test Method
ATS	Abstract Test Suite
GFT	Generic Functional Transport
IE	Information Element
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
NCICS	Networked Call Independent Connection oriented Signalling
PICS	Protocol Implementation Conformance Statement
PINX	Private Integrated services Network eXchange
PIXIT	Protocol Implementation eXtra Information for Testing
ROSE	Remote Operations Service Element
TP	Test Purpose
TSS	Test Suite Structure
VPN	Virtual Private Network
VPN-GFP	Generic Functional Protocol for the support of supplementary services for VPN

4 Test Suite Structure (TSS)

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Figure 1: Test suite structure

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: **<ps>_<iut><group>_<nnn>**

<ps>	=	protocol specification:	"GFP"	
<iut>	=	type of IUT:	U	User
			N	Network
<group>	=	group	2 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 EN 301 061-1 [2].

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 Generic Functional Protocol for the support of supplementary services for VPN (VPN-GFP)

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> ... <trigger> *see below for message structure* *or* <goal>	 N10 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> IE 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, ...
NOTE 1: TP are always applicable. Optional TPs are applicable according to the configuration options of the IUT. If the configuration option is covered by a Protocol Implementation Conformance Statement (PICS) item, a selection criteria is indicated, else the selection of the corresponding test cases will depend on test suite parameters Protocol Implementation eXtra Information for Testing (PIXIT) in the Abstract Test Suite (ATS). NOTE 2: Text in italics will not appear in TPs and text between <> is filled in for each TP and may differ from one TP to the next.		

5.1.4 Test strategy

As the base standard EN 301 061-1 [2] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification EN 301 061-2 [3].

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 User TPs for VPN-GFP

All PICS items referred to in this subclause are as specified in EN 301 061-2 [3] unless indicated otherwise by another numbered reference.

Unless specified, the messages and IEs indicated are valid and contain at least the mandatory parameters and possibly optional parameters.

5.2.1 Common IE approach

Selection: IUT supports the common IE category. PICS: MCu 1.

The following TPs are testing the procedures associated with the transport of components using the messages for the establishment and clearing of calls.

The primitive exchanged between the different entities are not observable. Only the PDU exchanged between peer implementations can be observed.

So to check that the component is properly transmitted to the Generic Functional Transport (GFT) entity, it shall provoke a reaction from Remote Operations Service Element (ROSE) entity that will request the transmission of the corresponding component response. This component will be transmitted in a call related message with the same call reference, which is observable.

To provoke a reaction from the ROSE entity, a return result component, with an invokeID not related to a currently active invocation, can be sent.

5.2.1.1 Bearer related transport mechanism

Selection: IUT supports the bearer related transport mechanism. PICS: MCu 1.1.

In all the TPs of this subclause, the call reference is in a Virtual Private Network (VPN) context.

5.2.1.1.1 Protocol control

In the TPs of this subclause, no NFE shall be included so that the Private Integrated services Network eXchange (PINX) entity will be the addressed PINX and can treat the received component.

5.2.1.1.1.1 Incoming call

GFP_U01_001 subclause 7.2.1.1.1
Ensure that the IUT in the call state U0, on receipt of a SETUP message containing a VPN indicator IE and a Facility IE with a component requiring an answer, sends a Facility IE with a component, included in a SETUP ACKNOWLEDGE, CALL PROCEEDING or FACILITY message and enters respectively the U25, U9 or U6 call state.

GFP_U01_002 subclause 7.2.1.1.1
Ensure that the IUT in the call state U8 , having sent a CONNECT messages, on receipt of a CONNECT ACKNOWLEDGE message containing a Facility IE with a component requiring an answer, sends a FACILITY message containing a Facility IE with a component and enters the call state U10.

GFP_U01_003 subclause 7.2.1.1.1
Ensure that the IUT in the call state U10 , on receipt of a DISCONNECT message containing a Facility IE with a component requiring an answer, sends a Facility IE with a component included in the RELEASE or a FACILITY message and enters the call state U19.

GFP_U01_004 subclause 7.2.1.1.1
Ensure that the IUT in the call state U11 , on receipt of a RELEASE message containing a Facility IE with a component requiring an answer, sends a Facility IE with a component included in the RELEASE COMPLETE or a FACILITY message and enters the call state U0.

5.2.1.1.1.2 Outgoing call

GFP_U02_001 subclause 7.2.1.1.1
Ensure that the IUT in the call state U0, in order to transmit a component during the establishment of a bearer related call , sends a SETUP message containing a VPN indicator IE and a Facility IE with a component and enters the call state U1.

GFP_U02_002 subclause 7.2.1.1.1
Ensure that the IUT in the call state U1 , on receipt of a CALL PROCEEDING message containing a Facility IE with a component requiring an answer, sends a FACILITY message containing a Facility IE with a component and enters the call state U3.

GFP_U02_003 subclause 7.2.1.1.1
Ensure that the IUT in the call state U1 , on receipt of an ALERTING message containing a Facility IE with a component requiring an answer, sends a FACILITY message containing a Facility IE with a component and enters the call state U4.

GFP_U02_004 subclause 7.2.1.1.1
Ensure that the IUT in the call state U1 , on receipt of a CONNECT message containing a Facility IE with a component requiring an answer, sends a Facility IE with a component in the CONNECT ACKNOWLEDGE or a FACILITY message, and enters the call state U10.

GFP_U02_005 subclause 7.2.1.1.1
Ensure that the IUT in the call state U10 , on receipt of a DISCONNECT message containing a Facility IE with a component requiring an answer, sends a Facility IE with a component included in the RELEASE or a FACILITY message and enters the call state U19.

GFP_U02_006 subclause 7.2.1.1.1
Ensure that the IUT in the call state U11 , on receipt of a RELEASE message containing a Facility IE with a component requiring an answer, sends a Facility IE with a component included in the RELEASE COMPLETE or a FACILITY message and enters the call state U0.

5.2.1.1.2 GFT-Control

Selection: IUT supports the termination of the GFT-Control protocol. PICS: MCu 1.1.2.

The TPs in this subclause refer to ISO/IEC 11582 [8], subclause 7.1.2, as referenced by subclause 7.2.1.1.2 of EN 301 061-1 [2].

GFP_U03_001 subclause 7.1.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, not including a NFE, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 1: The PINX entity becomes the destination entity for that Facility IE.

GFP_U03_002 subclause 7.1.2.2.1
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with no destinationEntityAddress element, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 2: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U03_003 subclause 7.1.2.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with no destinationEntityAddress element, sends a FACILITY message containing the same Facility IE at the interface to the next PINX, and remains in the call state U10.

NOTE 3: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U03_004 subclause 7.1.2.2.1
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with no destinationEntityAddress element, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 4: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U03_005 subclause 7.1.2.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with no destinationEntityAddress element, either sends a FACILITY message containing a Facility IE with a component, or sends a FACILITY message containing the same Facility IE at the interface to the next PINX, and remains in the call state U10.

NOTE 5: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U03_006 subclause 7.1.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with a destinationEntityAddress element matching the IUT address, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 6: The PINX entity becomes the destination entity for that Facility IE.

GFP_U03_007 subclause 7.1.2.2.1
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with a destinationEntityAddress element matching the IUT address, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 7: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U03_008 subclause 7.1.2.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with a destinationEntityAddress element matching the IUT address, sends a FACILITY message containing the same Facility IE at the interface to the next PINX and remains in the call state U10.

NOTE 8: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U03_009 subclause 7.1.2.2.1
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with a destinationEntityAddress element not matching the IUT address, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 9: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U03_010 subclause 7.1.2.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with a destinationEntityAddress element not matching the IUT address, sends a FACILITY message containing the same Facility IE at the interface to the next PINX and remains in the call state U10.

NOTE 10: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U03_011 subclause 7.1.2.2.1
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with a destinationEntityAddress element not matching the IUT address, sends no message and remains in the call state U10.

NOTE 11: The PINX discards the Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U03_012 subclause 7.1.2.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with a destinationEntityAddress element not matching the IUT address, sends a FACILITY message containing the same Facility IE at the interface to the next PINX and remains in the call state U10.

NOTE 12: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U03_013 subclause 7.1.2.2.1
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including an invalid NFE (coding or structure not as specified in clause 11 of ISO/IEC 11582 [8]), sends no message and remains in the call state U10.

NOTE 13: The PINX discards the Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U03_014 subclause 7.1.2.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including an invalid NFE (coding or structure not as specified in clause 11 of ISO/IEC 11582 [8]), sends a FACILITY message containing the same Facility IE at the interface to the next PINX and remains in the call state U10.

NOTE 14: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U03_015 subclause 7.1.2.2.1
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing two Facility IEs with a component requiring an answer, and including a NFE encoded with a destinationEntity element indicating "endPINX" and with no destinationEntityAddress element for the first Facility IE, and with a destinationEntity element indicating "anyTypeOfPINX" and with a destinationEntityAddress element not matching the IUT address for the second Facility IE, sends a FACILITY message containing a Facility IE with a component corresponding to the first Facility IE received and remains in the call state U10.

NOTE 15: The PINX entity becomes the destination entity for the first Facility IE and discards the second Facility IE. The components of the two Facility IEs can be distinguished against their invoke_ID.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

5.2.1.2 Connection oriented bearer independent transport mechanism

In all the TPs of this subclause, the call reference is related to a Networked Call Independant Connection oriented Signalling (NCICS) connection in VPN context.

5.2.1.2.1 Protocol control

5.2.1.2.1.1 Originating interface

GFP_U04_001 subclause 7.2.1.2.1.1.1
Ensure that the IUT in the call state U0, to initiate a NCICS connection in VPN context, sends a SETUP message requesting a NCICS connection and including a VPN indicator, and enters the call state U1.

GFP_U04_002 subclause 7.2.1.2.1.1.3
Ensure that the IUT in the call state U1 , on receipt of a CALL PROCEEDING message, sends no message and enters the call state U3.

GFP_U04_003 subclause 7.2.1.2.1.1.4
Ensure that the IUT in the call state U3 , on receipt of a CONNECT message, sends a CONNECT ACKNOWLEDGE message, and enters the call state U10.

5.2.1.2.1.2 Destination interface

GFP_U05_001 subclause 7.2.1.2.1.2.2
Ensure that the IUT in the call state U0, on receipt of a SETUP message in VPN context and indicating a NCICS request, sends a CALL PROCEEDING message and enters in the call state U9.

GFP_U05_002 subclause 7.2.1.2.1.2.5
Ensure that the IUT in the call state U9, to indicate that a NCICS connection has been accepted, sends a CONNECT message and enters the call state U8.

GFP_U05_003 subclause 7.2.1.2.1.2.5
Ensure that the IUT in the call state U8 , on receipt of a CONNECT ACKNOWLEDGE message, sends no message and enters in the call state U10.

5.2.1.2.1.3 Connection clearing

GFP_U06_001 subclause 7.2.1.2.1.3.2
Ensure that the IUT in the U10 , to initiate a clearing of a NCICS connection, sends a RELEASE message and enters the call state U19.

GFP_U06_002 subclause 7.2.1.2.1.3.2
Ensure that the IUT in the U19 , on receipt of a RELEASE COMPLETE message, sends no message and enters the call state U0.

GFP_U06_003 subclause 7.2.1.2.1.3.4
Ensure that the IUT in the call state U19 , on receipt of a RELEASE message, sends no message and enters the call state U0.

5.2.1.2.1.4 Interaction

GFP_U07_001 subclause 7.2.1.2.1.4
Ensure that the IUT in the call state R00, and , on receipt of a RESTART message with a restart indicator "all interfaces" or "single interface" indicating channel-D, release all the active NCICS connection (resulting in a sending of RELEASE message), and enters in the call state U0.

GFP_U07_002 subclause 7.2.1.2.1.5
Ensure that the IUT in the call state U1 , on receipt of an inopportune message of call rearrangement(SUSPEND), sends either a STATUS message with a Cause IE indicating the cause value 98 "message type not compatible with call state or message type non-existent or not implemented" or 101 "message not compatible with call state" or a STATUS ENQUIRY message and remains in the call state U1.

GFP_U07_003 subclause 7.2.1.2.1.5
Ensure that the IUT in the call state U1 , on receipt of an inopportune message of call rearrangement(RESUME), sends either a STATUS message with a Cause IE indicating the cause value 98 "message type not compatible with call state or message type non-existent or not implemented" or 101 "message not compatible with call state" or a STATUS ENQUIRY message and remains in the call state U1.

GFP_U07_004 subclause 7.2.1.2.1.5
Ensure that the IUT in the call state U9 , on receipt of an inopportune message of call rearrangement (SUSPEND), sends either a STATUS message with a Cause IE indicating the cause value 98 "message type not compatible with call state or message type non-existent or not implemented" or 101 "message not compatible with call state" or a STATUS ENQUIRY message and remains in the call state U9.

GFP_U07_005 subclause 7.2.1.2.1.5
Ensure that the IUT in the call state U9 , on receipt of an inopportune message of call rearrangement (RESUME), sends either a STATUS message with a Cause IE indicating the cause value 98 "message type not compatible with call state or message type non-existent or not implemented" or 101 "message not compatible with call state" or a STATUS ENQUIRY message and remains in the call state U9.

GFP_U07_006 subclause 7.2.1.2.1.5
Ensure that the IUT in the call state U10 , on receipt of an inopportune message of call rearrangement (SUSPEND), sends either a STATUS message with a Cause IE indicating the cause value 98 "message type not compatible with call state or message type non-existent or not implemented" or 101 "message not compatible with call state" or a STATUS ENQUIRY message and remains in the call state U10.

GFP_U07_007 subclause 7.2.1.2.1.5
Ensure that the IUT in the call state U10 , on receipt of an inopportune message of call rearrangement (RESUME), sends either a STATUS message with a Cause IE indicating the cause value 98 "message type not compatible with call state or message type non-existent or not implemented" or 101 "message not compatible with call state" or a STATUS ENQUIRY message and remains in the call state U10.

5.2.1.2.1.5 Handling of error conditions

GFP_U08_001 subclause 7.2.1.2.1.6
Ensure that the IUT in the call state U0, on receipt of a SETUP message indicating a NCICS request using the dummy call reference, sends no message and remains in the call state U0.

GFP_U08_002 subclause 7.2.1.2.1.6
Ensure that the IUT in the call state U0, on receipt of a SETUP message indicating a NCICS request, with a call reference flag bit set to 1, sends no message and remains in the Null call state U0.

GFP_U08_003 subclause 7.2.1.2.1.6
Ensure that the IUT in the Null call state U0, on receipt of a SETUP message indicating a NCICS request, with an erroneous protocol discriminator, coded other than '08'H, sends no message and remains in the call state U0.

GFP_U08_004 subclause 7.2.1.2.1.6
Ensure that the IUT in the call state U0, on receipt of a message which is too short, sends no message and remains in the call state U0.

GFP_U08_005 subclause 7.2.1.2.1.6
Ensure that the IUT in the call state U0, on receipt of a SETUP message indicating a NCICS request, with an invalid call reference format (octet 1, bits 4 to 1, length value too high), sends no message and remains in the call state U0.

GFP_U08_006 subclause 7.2.1.2.1.6
Ensure that the IUT in the call state U0, on receipt of a SETUP message indicating a NCICS request, with a mandatory IE content error, sends a RELEASE COMPLETE message with a Cause IE indicating the cause value 100 "invalid IE contents" and remains in the call state U0.

GFP_U08_007 subclause 7.2.1.2.1.6
Ensure that the IUT in the call state U0, on receipt of a SETUP message indicating a NCICS request with an unrecognized IE (coded comprehension required), sends a RELEASE COMPLETE message with a Cause IE indicating the cause value 96 "mandatory IE missing" and remains in the call state U0.

GFP_U08_008 subclause 7.2.1.2.1.6
Ensure that the IUT in the call state U3 , on receipt of a message with an unrecognized message type, sends either a STATUS message with a Cause IE indicating the cause value 98 "message type not compatible with call state or message type non-existent or not implemented" or 97 "message type non-existent or not implemented" or a STATUS ENQUIRY message and remains in the call state U3.

GFP_U08_009 subclause 7.2.1.2.1.6
Ensure that the IUT in the call state U1 , on receipt of an inopportune message (CONNECT ACKNOWLEDGE), sends either a STATUS message with a Cause IE indicating the cause value 98 "message type not compatible with call state or message type non-existent or not implemented" or 101 "message not compatible with call state" or a STATUS ENQUIRY message and remains in the call state U1.

GFP_U08_010 subclause 7.2.1.2.1.6
Ensure that the IUT in the call state U9 , on receipt of a SETUP ACKNOWLEDGE message, sends either a STATUS message with a Cause IE indicating the cause value 98 "message type not compatible with call state or message type non-existent or not implemented" or 101 "message not compatible with call state" or a STATUS ENQUIRY message and remains in the call state U9.

5.2.1.2.1.6 Timers

GFP_U09_001 subclause 7.2.1.2.1.1.1
Ensure that the IUT in the call state U1 , after the first expiry of the timer T303, retransmits the SETUP message and remains in the call state U1.

GFP_U09_002 subclause 7.2.1.2.1.1.1
Ensure that the IUT in the call state U1 , after the second expiry of the timer T303, sends a RELEASE COMPLETE message with cause value # 102 "recovery on timer expiry".

GFP_U09_003 subclause 7.2.1.2.1.1.3
Ensure that the IUT in the call state U3 , on the expiry of T310, sends a RELEASE message with cause value # 102 "recovery on timer expiry" and enters the call state U19.

GFP_U09_004 subclause 7.2.1.2.1.2.6
Ensure that the IUT in the call state U8 , on expiry of timer T313, send a RELEASE message with cause value # 102 "recovery on timer expiry" and enters the call state U19.

GFP_U09_005 subclause 7.2.1.2.1.3.2
Ensure that the IUT in the call state U19 , on first expiry of T308, sends a RELEASE message and remains in the call state U19.

GFP_U09_006 subclause 7.2.1.2.1.3.2
Ensure that the IUT in the call state U19 , on second expiry of T308, sends no message and enters the call state U0 .

5.2.1.2.1.7 Exchange of FACILITY messages

GFP_U10_001 subclause 7.2.1.2.1.1.1
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, sends a Facility IE with a component included in a FACILITY message and remains in the call state U10.

5.2.1.2.2 GFT-Control

Selection: IUT supports the termination of the GFT-Control protocol. PICS: MCu 1.2.2.

The TPs in this subclause refer to ISO/IEC 11582 [8], subclause 7.3.3, as referenced by subclause 7.2.1.2.2 of EN 301 061-1 [2].

5.2.1.2.2.1 Control of the Facility IE

GFP_U11_001 subclauses 7.1.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, not including a NFE, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 1: The PINX entity becomes the destination entity for that Facility IE.

GFP_U11_002 subclauses 7.1.2.2.1, 7.3.3.1.2, 7.3.3.3.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with no destinationEntityAddress element, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 2: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U11_003 subclauses 7.1.2.2.2, 7.3.3.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with no destinationEntityAddress element, sends a FACILITY message containing the same Facility IE at the interface to the next PINX, and remains in the call state U10.

NOTE 3: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U11_004 subclauses 7.1.2.2.1, 7.3.3.1.2, 7.3.3.3.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with no destinationEntityAddress element, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 4: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U11_005 subclauses 7.1.2.2.2, 7.3.3.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with no destinationEntityAddress element, either sends a FACILITY message containing a Facility IE with a component, or sends a FACILITY message containing the same Facility IE at the interface to the next PINX, and remains in the call state U10.

NOTE 5: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U11_006 subclause 7.1.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with a destinationEntityAddress element matching the IUT address, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 6: The PINX entity becomes the destination entity for that Facility IE.

GFP_U11_007 subclauses 7.1.2.2.1, 7.3.3.1.2, 7.3.3.3.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with a destinationEntityAddress element matching the IUT address, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 7: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U11_008 subclauses 7.1.2.2.2, 7.3.3.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with a destinationEntityAddress element matching the IUT address, sends a FACILITY message containing the same Facility IE at the interface to the next PINX and remains in the call state U10.

NOTE 8: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U11_009 subclauses 7.1.2.2.1, 7.3.3.1.2, 7.3.3.3.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with a destinationEntityAddress element not matching the IUT address, sends a FACILITY message containing a Facility IE with a component and remains in the call state U10.

NOTE 9: The PINX entity becomes the destination entity for that Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U11_010 subclauses 7.1.2.2.2, 7.3.3.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "endPINX" and with a destinationEntityAddress element not matching the IUT address, sends a FACILITY message containing the same Facility IE at the interface to the next PINX and remains in the call state U10.

NOTE 10: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U11_011 subclauses 7.1.2.2.1, 7.3.3.1.2, 7.3.3.3.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with a destinationEntityAddress element not matching the IUT address, sends no message and remains in the call state U10.

NOTE 11: The PINX discards the Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U11_012 subclauses 7.1.2.2.2, 7.3.3.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including a NFE with a destinationEntity element indicating "anyTypeOfPINX" and with a destinationEntityAddress element not matching the IUT address, sends a FACILITY message containing the same Facility IE at the interface to the next PINX and remains in the call state U10.

NOTE 12: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U11_013 subclauses 7.1.2.2.1, 7.3.3.1.2, 7.3.3.3.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including an invalid NFE (coding or structure not as specified in clause 11 of ISO/IEC 11582 [8]), sends no message and remains in the call state U10.

NOTE 13: The PINX discards the Facility IE.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U11_014 subclauses 7.1.2.2.2, 7.3.3.2.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing a Facility IE with a component requiring an answer, including an invalid NFE (coding or structure not as specified in clause 11 of ISO/IEC 11582 [8]), sends a FACILITY message containing the same Facility IE at the interface to the next PINX and remains in the call state U10.

NOTE 14: The PINX entity passes the Facility IE to the next PINX.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U11_015 subclauses 7.1.2.2.1, 7.3.3.1.2, 7.3.3.3.2
Ensure that the IUT in the call state U10, on receipt of a FACILITY message containing two Facility IEs with a component requiring an answer, and including a NFE encoded with a destinationEntity element indicating "endPINX" and with no destinationEntityAddress element for the first Facility IE, and with a destinationEntity element indicating "anyTypeOfPINX" and with a destinationEntityAddress element not matching the IUT address for the second Facility IE, sends a FACILITY message containing a Facility IE with a component corresponding to the first Facility IE received and remains in the call state U10.

NOTE 15: The PINX entity becomes the destination entity for the first Facility IE and discards the second Facility IE.
The components of the two Facility IEs can be distinguished against their invoke_ID.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

5.2.1.2.2.2 Control of the NCICS connection

5.2.1.2.2.2A Transit PINX

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U12_001 subclause 7.3.3.2.1
Ensure that the IUT in the call state U0, on receipt of a SETUP message containing a Called Party Number IE of another PINX to which connection is possible, sends a CALL PROCEEDING message and enters the Call state U9,
and sends a SETUP message at the interface to the subsequent PINX.

NOTE: the IUT request to send a SETUP to the subsequent PINX.

GFP_U12_002 subclause 7.3.3.2.1
Ensure that the IUT in the call state U0, on receipt of a SETUP message containing a Called Party Number IE with insufficient information to enable routing to a further PINX, sends a RELEASE message and enters the Call state U19.

GFP_U12_003 subclause 7.3.3.2.2
Ensure that the IUT in the call state U9, to indicate the receipt of a CONNECT message at the interface of the subsequent PINX, sends a CONNECT message and enters the Call state U10.

GFP_U12_004 subclause 7.3.3.2.2
Ensure that the IUT in the call state U9, to indicate the receipt of a RELEASE message at the interface of the subsequent PINX, sends a RELEASE message and enters the Call state U19.

GFP_U12_005 subclause 7.3.3.2.2
Ensure that the IUT in the call state U9, to indicate the receipt of a RELEASE COMPLETE message at the interface of the subsequent PINX, sends a RELEASE message and enters the Call state U19.

GFP_U12_006 subclause 7.3.3.2.2
Ensure that the IUT in the call state U9, on receipt of a RELEASE message, sends a RELEASE COMPLETE message, enters the Call state U0, and sends a RELEASE message at the interface to the subsequent PINX

GFP_U12_007 subclause 7.3.3.2.3
Ensure that the IUT in the call state U10, to indicate the receipt of a RELEASE message at the interface of the subsequent PINX, sends a RELEASE message and enters the Call state U19.

GFP_U12_008 subclause 7.3.3.2.3
Ensure that the IUT in the call state U10, on receipt of a RELEASE message, sends a RELEASE COMPLETE message, enters the Call state U0, and sends a RELEASE message at the interface to the subsequent PINX

5.2.2 Generic notification procedures

The TPs in this subclause refer to ISO/IEC 11582 [8], subclause 7.4, as referenced by subclause 8.1 of EN 301 061-1 [2].

5.2.2.1 Protocol control

GFP_U13_001 subclause 7.4.2
Ensure that the IUT in the call state U0, in order to initiate a call with a notification information, sends a SETUP message including a Notification IE and enter in the Call state U1.

GFP_U13_002 subclause 7.4.2
Ensure that the IUT in the call state U6 , in order to transmit a notification information, sends an ALERTING or a NOTIFY message including a Notification IE and enters respectively in the call state U7 or U6.

GFP_U13_003 subclause 7.4.2
Ensure that the IUT in the call state U9 , in order to transmit a notification information, sends an ALERTING or a NOTIFY message including a Notification IE and enters respectively in the call state U7 or U9.

GFP_U13_004 subclause 7.4.2
Ensure that the IUT in the call state U6, U7, or U9 , in order to transmit a notification information, sends a CONNECT or a NOTIFY message including a Notification IE and enters in the call state U8, or remains in the same state.

GFP_U13_005 subclause 7.4.2
Ensure that the IUT in the call state U10 , in order to release the call with a notification information, sends a DISCONNECT message including a Notification IE and enters the call state U11.

GFP_U13_006 subclause 7.4.2
Ensure that the IUT in the call state U10 , in order to release the NCICS connection with a notification information, sends a RELEASE message including a Notification IE and enters the call state U19.

5.2.2.2 GFT-control

GFP_U14_001 subclause 7.4.3
Ensure that the IUT in the call state U3 as a transit PINX , on receipt of a notify indication included in a NOTIFY, ALERTING, CONNECT, FACILITY or PROGRESS message, sends a NOTIFY, ALERTING, CONNECT, FACILITY or PROGRESS message with the notification indicator IE included to the next PINX entity.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U14_002 subclause 7.4.3
Ensure that the IUT in the call state U10 as a transit PINX , on receipt of a notify indication included in a NOTIFY or FACILITY message, sends an NOTIFY, or FACILITY message with the notification indicator IE included to the next PINX entity

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U14_003 subclause 7.4.3
Ensure that the IUT in the call state U3 as a end PINX , on receipt of a notify indication included in a NOTIFY, ALERTING, CONNECT, FACILITY or PROGRESS message, sends a NOTIFY, ALERTING, CONNECT FACILITY, or PROGRESS message with the notification indicator IE included to the end user destination interface.

Selection: PICS: IUT supports Transit PINX functionalities: TIu 3 [15].

GFP_U14_004 subclause 7.4.3
Ensure that the IUT in the call state U10 as a end PINX , on receipt of a notify indication included in a NOTIFY or FACILITY message, sends an NOTIFY or FACILITY message with the notification indicator IE included to the end user destination interface.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U14_005 subclause 7.4.3
Ensure that the IUT in the Disconnect request state U11 , on receipt of a notify indication included in a NOTIFY or FACILITY message, sends no message and remains in the call state U11.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

GFP_U14_006 subclause 7.4.3
Ensure that the IUT in the call state U19 , on receipt of a notify indication included in a NOTIFY or FACILITY message, sends no message and remains in the call state U19.

Selection: PICS: IUT supports End PINX functionalities: TIu 1 OR TIu 2 [15].

5.2.3 Co-ordination function

The TPs in this subclause refer to ISO/IEC 11582 [8], subclause 8.1, as referenced by subclause 9.1 of EN 301 061-1 [2].

GFP_U15_001 subclause 8.1.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing an Application Protocol Data Unit (APDU) with a Protocol profile not indicating ROSE operation, sends no message and remains in the call state U10.

GFP_U15_002 subclause 8.1.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing an interpretation APDU encoded as "rejectUnrecognizedInvokePdu" and an APDU of type InvokePDU with an unrecognized operation value sends a Facility IE with a component included in a FACILITY message containing an APDU of type RejectPDU and remains in the call state U10.

GFP_U15_003 subclause 8.1.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing no interpretation APDU and an APDU of type InvokePDU with an unrecognized operation value sends a Facility IE with a component included in a FACILITY message containing an APDU of type RejectPDU and remains in the call state U10.

GFP_U15_004 subclause 8.1.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing an interpretation APDU encoded as "clearCallIfAnyInvokePduNotRecognized" and an APDU of type InvokePDU with an unrecognized operation value sends a Facility IE with a component included in a RELEASE message containing an APDU of type RejectPDU and enters in the call state U19.

GFP_U15_005 subclause 8.1.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing an interpretation APDU encoded as "clearCallIfAnyInvokePduNotRecognized" and an APDU of type InvokePDU with an unrecognized operation value sends a Facility IE with a component included in a RELEASE message containing an APDU of type RejectPDU and enters in the call state U19.

GFP_U15_006 subclause 8.1.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing an interpretation APDU encoded as "discardAnyUnrecognizedInvokePdu" and an APDU of type InvokePDU with an unrecognized operation value sends no message and remains in the call state U10.

GFP_U15_007 subclause 8.1.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing an interpretation APDU encoded as "discardAnyUnrecognizedInvokePdu" and an APDU of type InvokePDU with an unrecognized operation value sends no message and remains in the call state U10.

5.2.4 ROSE requirements

The TPs in this subclause refer to ISO/IEC 11582 [8], subclause 8.2, as referenced by subclause 9.2 of EN 301 061-1 [2].

GFP_U16_001 subclause 8.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing an APDU of type InvokePDU with an unrecognized operation value, sends a Facility IE with a component included in a FACILITY message containing an APDU of type RejectPDU with the InvokeID as received and with the "problem" field encoded as "unrecognizedOperation" and remains in the call state U10.

GFP_U16_002 subclause 8.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing an APDU of type ReturnResultPDU with an unrecognized InvokeID, sends a Facility IE with a component included in a FACILITY message containing an APDU of type RejectPDU with the "problem" field encoded as "unrecognizedInvocation" and remains in the call state U10.

GFP_U16_003 subclause 8.2
Ensure that the IUT in the call state U10 , on receipt of a FACILITY message containing a Facility IE with a component containing an APDU of type ReturnErrorPDU with an unrecognized InvokeID, sends a Facility IE with a component included in a FACILITY message containing an APDU of type RejectPDU with the InvokeID as received and with the "problem" field encoded as "unrecognizedInvocation" and remains in the call state U10.

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 6;

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 network equipment claiming conformance to EN 301 061-1 [2].

History

Document history				
V1.1.1	April 1998	Public Enquiry	PE 9831:	1998-04-03 to 1998-07-31
V1.1.2	August 1998	Vote	V 9843:	1998-08-25 to 1998-10-23
V1.1.3	October 1998	Publication		

ISBN 2-7437-2638-5
Dépôt légal : Octobre 1998