

**SLOVENSKI STANDARD**  
**SIST EN 301 061-6 V1.1.4:2003**  
**01-december-2003**

8 [[ ]HJbc`ca fYy`n]bhY[ f]fUb]a ]glcf]hj Ua ]fIG8 BL`E`Dfcfc\_c`X[[ ]HJbY`bUfc b]y\_Y  
 g][ bU]nUWY`yH`%fB GG`L`E`; YbYf] b]Z b\_W]g\_]dfcfc\_c`nUdcXdcfc`Xcdc`b]b]a  
 glcf]hj Ua ]j`j`glc`db]`tc\_]`V`glcf]hj YnUd\_]\_UWY`bUj ]XYnbY[ UnUgYVbY[ Uca fYy`U  
 fU DBL`E`\* `XY. 5 VglfU\_Hb]dfYg\_i yU`b]`b]n`fB HGL]b`XY`bUXcXU`bU]bZ`fa UWY`UnU  
 dfYg\_i yU`b]`nj YXVY`dfcfc\_c`UfD`L`+L`E`DfcZ`fa UgdYWZ\_]\_UWY`UnUca fYy`Y

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 6: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network

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**Ta slovenski standard je istoveten z: EN 301 061-6 Version 1.1.4**

**ICS:**

33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)
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**SIST EN 301 061-6 V1.1.4:2003 en**

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# ETSI EN 301 061-6 V1.1.4 (1999-10)

*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 6: Abstract Test Suite (ATS) and partial Protocol  
Implementation eXtra Information for Testing (PIXIT) proforma  
specification for the network**

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**Reference**

DEN/SPS-05110-6 (9tpi0ieo.PDF)

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**Keywords**

ATS, DSS1, generic, ISDN, PIXIT,  
supplementary services, VPN, network

**ETSI**

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Sous-Préfecture de Grasse (06) N° 7803/88

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## Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 6 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Generic functional protocol for the support of supplementary services for Virtual Private Network (VPN) applications, as described 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) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";
- Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network";
- Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".**

### National transposition dates

Date of adoption of this EN:	1 October 1999
Date of latest announcement of this EN (doa):	31 January 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 July 2000
Date of withdrawal of any conflicting National Standard (dow):	31 July 2000

## 1 Scope

This sixth part of EN 301 061 is applicable to 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 [1].

The present document specifies the Abstract Test Suite (ATS), and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the network side of the T reference point or coincident S and T reference point of implementation conforming to EN 301 061-1 [1] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646.

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

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- [1] 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". [SIST EN 301 061-6 V1.1.4:2003](https://standards.iteh.ai/catalog/standards/sist/e1c0c79b-2e5a-4496-b1a6-301-061-6-v1.1.4-2003)  
<https://standards.iteh.ai/catalog/standards/sist/e1c0c79b-2e5a-4496-b1a6-301-061-6-v1.1.4-2003>
- [2] 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".
- [3] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection -- Conformance testing methodology and framework - Part 1: General concepts".
- [4] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection -- Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".
- [5] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection -- Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [6] ETS 300 403-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".
- [7] ITU-T Recommendation I.112 (1993): "Vocabulary and terms for ISDNs".
- [8] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".
- [9] ITU-T Recommendation I.210 (1993): "Principles of the telecommunication services supported by an ISDN and the means to describe them".
- [10] ETS 300 239: "Private Telecommunication Network (PTN); Inter-exchange signalling protocol; Generic functional protocol for the support of supplementary services; ECMA-QSIG-GF".



- [11] ISO/IEC 9646-5: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 5: Requirements on test laboratories and clients for the conformance assessment process".
- [12] ISO/IEC 9646-4: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realization".
- [13] EN 301 061-5: "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 5: Test Suite Structure and Test Purposes (TSS&TP) specification for the network".

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## 3 Definitions and abbreviations

### 3.1 Definitions

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

#### 3.1.1 Definitions related to conformance testing

**abstract test case:** refer to ISO/IEC 9646-1 [3].

**Abstract Test Suite (ATS):** refer to ISO/IEC 9646-1 [3].

**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.

**Implementation Under Test (IUT):** refer to ISO/IEC 9646-1 [3].

**implicit send event:** refer to ISO/IEC 9646-3 [5].

**lower tester:** refer to ISO/IEC 9646-1 [3].

**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 [3].

**Protocol Implementation Conformance Statement (PICS):** refer to ISO/IEC 9646-1 [3].

**PICS proforma:** refer to ISO/IEC 9646-1 [3].

**Protocol Implementation eXtra Information for Testing (PIXIT):** refer to ISO/IEC 9646-1 [3].

**PIXIT proforma:** refer to ISO/IEC 9646-1 [3].

**system under test:** refer to ISO/IEC 9646-1 [3].

**Test Purpose (TP):** refer to ISO/IEC 9646-1 [3].

#### 3.1.2 Definitions related to EN 301 061-1

**dummy call reference:** see ETS 300 403-1 [6], subclause 4.3.

**Integrated Services Digital Network (ISDN):** see ITU-T Recommendation I.112 [7], definition 308.

**ISDN number:** number conforming to the numbering and structure specified in ITU-T Recommendation E.164 [8].

**service; telecommunication service:** see ITU-T Recommendation I.112 [7], definition 201.

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

**T:** DSS1 protocol entity at the User side of the user-network interface where a T reference point applies (User is a Private ISDN).

## 3.2 Abbreviations

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

ATS	Abstract Test Suite
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
TP	Test Purpose
TSS	Test Suite Structure
VPN	Virtual Private Network
ASP	Abstract Service Primitive
ATM	Abstract Test Method
BA	Basic Access
CES	Connection Endpoint Suffix
CM	Co-ordination Message
ExTS	Executable Test Suite
LT	Lower Tester
MOT	Means Of Testing
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PRA	Primary Rate Access
SUT	System Under Test
TTCN	Tree and Tabular Combined Notation

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## 4 Abstract Test Method

### 4.1 Description of ATM used

Clause 4.1 describes the different Abstract Test Methods (ATM) used for testing the Generic Functional Protocol. Two methods are applied; the Remote test method, and the Multi-Party test method.

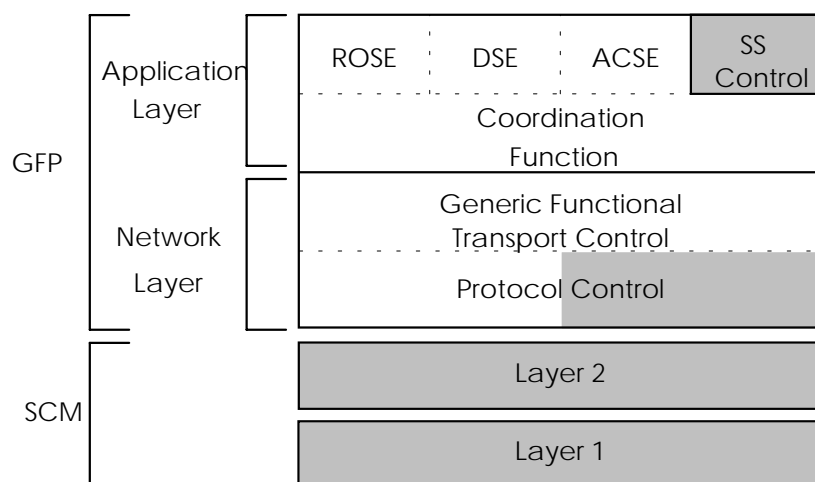
An ATS based on a multi-party test method is considered to be more useful in that it is closer to how a real test suite would be constructed. Such a test method specifies behaviour at multiple network interfaces. One very important limitation here is that tests are focussed on one particular interface. Thus the test system is made up one Main Test Component (MTC) and one or more Parallel Test Components (PTC), see figure 1.

#### 4.1.1 Functional subsets

The Generic Function Protocol is divided into a number of entities as shown in figure 1. This ATS is principally concerned with the testing of the Protocol Control and Generic Functional Transport Control entities, Co-ordination functions and ROSE entities.

**NOTE:** Valid behaviour of the application layer is supplementary service specific and its testing is specified in test specifications for individual supplementary services (if any). DSE requirements are excluded from the scope of the present document.

The testing of all these layers is performed using a PCO at the SCM/Network layer boundary.



NOTE: Grey shading indicates entities not part of the Generic Functional Protocol.

**Figure 1: GFP functional subsets**

## 4.1.2 PINX role and Test Component Configuration considerations

A PINX may act either in the role of an End PINX or in the role of a Transit PINX. A particular PINX may be capable of acting in one or both roles. Whereas the Generic Functional Transport Control (GFTC) requirements generally depend on which role is involved, the Protocol Control (PC) requirements do not.

Depending on the role of the PINX, it may be necessary to use different procedures in the preambles to achieve the pre-condition in some TPs concerned with PC requirements. For these cases, which will require different test component configurations, there may be two separate Test Cases (TCs), one for each role, generated from each relevant TP.

The different configurations used are depending on the role of the PINX, in the sense that the slave part will use a different access point to the public network.

### 4.1.2.1 Single PCO testing

Single PCO testing is used for the tests when events at the outgoing side are not required to be tested and when no activity is expected at the outgoing side, i.e. only one interface is reacting.

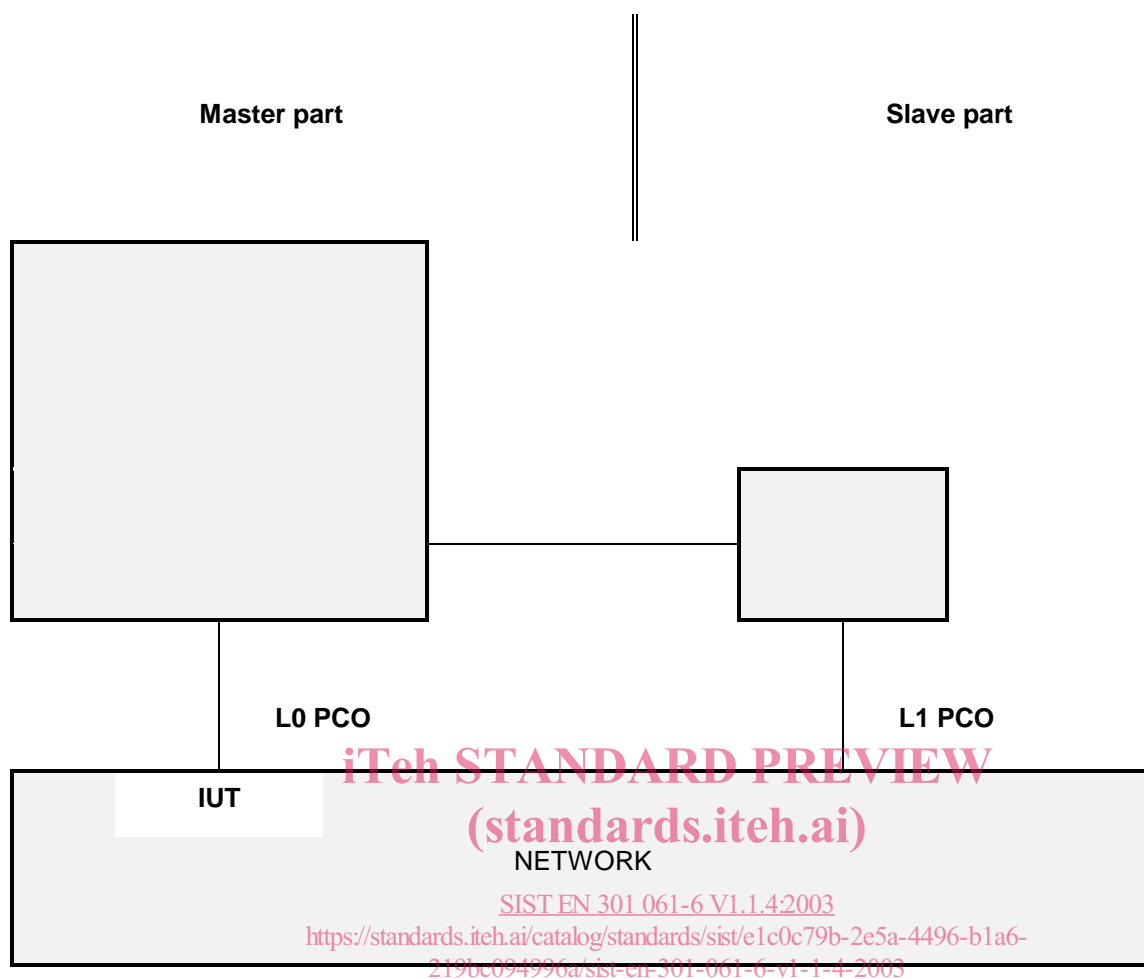
CONFIG\_MONO: this configuration is mainly used for NCICS connection.

### 4.1.2.1 Multi PCO testing

Multi PCO testing is used for the tests when events at the outgoing side are required either to be tested or to provoke a reaction of the IUT at the tested interface. the configuration defined is depending on the role of the PINX at the tested interface:

CONFIG\_DUAL: The remote access for this configuration is directly dependant on the role of the PINX, transit or end.

## 4.2 Conventions for test components and PCOs



**Figure 2: Multi-party test method**

In a master/slave arrangement, the MTC is considered to be the master while the PTCs are the slaves. The "slave" testers are only an explicit description of how to deal with the "other" interfaces during the testing process, i.e. "how to make the IUT send the required message".

This means, in particular, that the verdict will only be assigned from the protocol aspects observed on *the* interface under test (i.e. by the "master" tester), as it would be observed by a terminal connected to this interface. A failure in the correlation between the protocol at the different interfaces to which the different testers are connected, i.e. in the mechanism of the functional service itself, will not cause a FAIL verdict. For instance, if the IUT fails to send a message on the tested interface after another interface has received the proper stimulus, the verdict will be INCONCLUSIVE.

The MTC MTCA has two functions in this configuration. Firstly, it has the MTC function of controlling the one or more PTCs. Thus it is responsible for starting the PTCs and afterwards co-ordinates activities by exchanging Co-ordination Messages (CM) with the PTCs. Secondly it is responsible for the behaviour of the Lower Tester (LT) at PCO L0.