



**SLOVENSKI STANDARD**  
**SIST EN 301 491-1 V1.1.2:2005**  
**01-januar-2005**

---

**Zasebno omrežje z integriranimi storitvami (PISN) – Signalizacijski protokol med centralami – Dopolnilna storitev: ponudba klica – 1. del: Zgradba preskušalnega niza in namen preskušanja (TSS&TP) – Specifikacija**

Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Call offer supplementary service; Part 1: Test Suite Structure and Test Purposes (TSS&TP) specification

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 301 491-1 V1.1.2:2005](https://standards.iteh.ai/catalog/standards/sist/079f5aa4-7f37-4d1e-847d-2a24cca7ef4a/sist-en-301-491-1-v1-1-2-2005)  
<https://standards.iteh.ai/catalog/standards/sist/079f5aa4-7f37-4d1e-847d-2a24cca7ef4a/sist-en-301-491-1-v1-1-2-2005>

**Ta slovenski standard je istoveten z: EN 301 491-1 Version 1.1.2**

---

**ICS:**

33.040.35      Telefonska omrežja      Telephone networks

**SIST EN 301 491-1 V1.1.2:2005      en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 301 491-1 V1.1.2:2005

<https://standards.iteh.ai/catalog/standards/sist/079f5aa4-7f37-4d1e-847d-2a24cca7ef4a/sist-en-301-491-1-v1-1-2-2005>

# ETSI EN 301 491-1 V1.1.2 (2000-11)

---

*European Standard (Telecommunications series)*

**Private Integrated Services Network (PISN);  
Inter-exchange signalling protocol;  
Call offer supplementary service;  
Part 1: Test Suite Structure and  
Test Purposes (TSS&TP) specification**

---

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 301 491-1 V1.1.2:2005](https://standards.iteh.ai/catalog/standards/sist/079f5aa4-7f37-4d1e-847d-2a24cca7ef4a/sist-en-301-491-1-v1-1-2-2005)

<https://standards.iteh.ai/catalog/standards/sist/079f5aa4-7f37-4d1e-847d-2a24cca7ef4a/sist-en-301-491-1-v1-1-2-2005>



---

**Reference**

DEN/SPAN-05191-2

---

**Keywords**PISN, supplementary service, testing, TSS&TP,  
QSIG**ETSI**650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

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

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

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN 301 491-1 V1.1.2:2005

<https://standards.iteh.ai/catalog/standards/sist/079f5aa4-7f37-4d1e-847d-2a24cca7ef4a/sist-en-301-491-1-v1-1-2-2005>

---

**Important notice**

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <http://www.etsi.org/tb/status/>

If you find errors in the present document, send your comment to:  
editor@etsi.fr

---

**Copyright Notification**

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2000.  
All rights reserved.

# Contents

Intellectual Property Rights .....	4
Foreword.....	4
1 Scope.....	5
2 References.....	5
3 Definitions and abbreviations.....	6
3.1 Definitions .....	6
3.2 Abbreviations.....	6
4 Test Suite Structure (TSS) .....	7
5 Test Purposes (TP).....	8
5.1 Introduction.....	8
5.1.1 TP naming convention .....	8
5.1.2 Source of TP definition .....	8
5.1.3 TP structure .....	9
5.1.4 Test strategy .....	9
5.2 TPs for CO.....	9
5.2.1 SS-CO signalling procedures.....	10
5.2.1.1 Actions at the Originating PINX .....	10
5.2.1.1.1 Sending CO Request without Path Retention.....	10
5.2.1.1.2 Sending CO Request with Path Retention .....	11
5.2.1.2 Actions at the Terminating PINX .....	12
5.2.1.2.1 Receipt CO request without Path Retention .....	12
5.2.1.2.2 Receipt CO request with Path Retention .....	12
5.2.2 Impact of Interworking with Public ISDNs .....	13
5.2.3 Protocol Interaction between SS-CO and other Supplementary Services and ANFs .....	13
5.2.3.1 Interaction with Call Transfer .....	13
5.2.3.1.1 Actions at the CO-Originating PINX .....	13
5.2.3.1.2 Actions at the CO-Terminating PINX .....	13
5.2.3.2 Interaction with Call Forwarding Unconditional .....	14
5.2.3.2.1 Actions at the CO-Originating PINX .....	14
5.2.3.2.2 Actions at the CO-Terminating PINX .....	15
5.2.3.3 Interaction with Call Forwarding Busy.....	15
5.2.3.3.1 Actions at the CO-Originating PINX .....	15
5.2.3.3.2 Actions at the CO-Terminating PINX .....	16
5.2.3.4 Interaction with Do Not Disturb Override.....	18
5.2.3.4.1 Actions at the CO-Terminating PINX .....	18
5.2.3.5 Interaction with Call Intrusion.....	18
5.2.3.5.1 Actions at the CO-Originating PINX .....	18
5.2.3.5.2 Actions at the CO-Terminating PINX .....	18
6 Compliance .....	19
7 Requirements for a comprehensive testing service.....	19
History .....	20

---

## Intellectual Property Rights

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

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

---

## Foreword

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

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

The present document is part 1 of a multi-part EN covering the Private Integrated Service Network (PISN); Inter-exchange signalling protocol; Call offer 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".

SIST EN 301 491-1 V1.1.2:2005

<https://standards.iteh.ai/catalog/standards/sist-en-301-491-1-v1-1-2-2005>  
**National transposition dates**

Date of adoption of this EN:	3 November 2000
Date of latest announcement of this EN (doa):	28 February 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 August 2001
Date of withdrawal of any conflicting National Standard (dow):	31 August 2001

---

## 1 Scope

The present document specifies the Test Suite Structure and Test Purposes (TSS&TP) for the Call Offer 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 and TPs specification covers the procedures described in EN 300 362 [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 [11]) 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 [9] and ETR 172 [10].

---

## 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.

- <https://standards.iteh.ai/catalog/standards/sist/0795aa4-7f37-4d1e-847d-417c7e9f31e1/etsi-en-301-491-1-v1.1.2-2005>
- [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 (1995): "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Generic functional protocol for the support of supplementary services [ISO/IEC 11582 (1995), modified]".
- [3] ETSI EN 300 362: "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Call offer supplementary service [ISO/IEC 14843 (1996), 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] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".
- [8] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [9] ETSI EN 301 060-1: "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".
- [10] ETSI ETR 172: "Business Telecommunications (BTC); Virtual Private Networking (VPN); Services and networking aspects; Standardization requirements and work items".

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

## 3 Definitions and abbreviations

### 3.1 Definitions

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

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

**Implementation Under Test (IUT):** 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].

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

**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.

**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 [7], 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.

**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.

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

**supplementary service:** see ITU-T Recommendation I.210 [8], 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 [9] and ETR 172 [10].

### 3.2 Abbreviations

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

APDU	Application Protocol Data Unit
ATS	Abstract Test Suite
CFB	Call Forwarding Busy
CFU	Call Forwarding Unconditional
CI	Call Intrusion
CO	Call Offer
CR1	Call Reference #1



CR2	Call Reference #2
CT	Call Transfer
DNDO	Do Not Disturb Override
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
T1	Timer T1
PRT1	Timer PRT1
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 Sending SS-CO Request without Path Retention

Orig01

for Sending SS-CO Request with Path Retention

Orig02

#### Procedures at the Terminating PINX

for Receipt SS-CO Request without Path Retention

Term01

for Receipt SS-CO Request with Path Retention

Term02

#### Procedures for Protocol Interactions between Call Offer and Call Transfer

at the CO-Originating PINX

CT\_Orig

at the CO-Terminating PINX

CT\_Term

#### Procedures for Protocol Interactions between Call Offer and Call Forwarding Unconditional

at the CO-Originating PINX

CFU\_Orig

at the CO-Terminating PINX

CFU\_Term

#### Procedures for Protocol Interactions between Call Offer and Call Forwarding Busy

at the CO-Originating PINX

CFB\_Orig

at the CO-Terminating PINX

CFB\_Term

#### Procedures for Protocol Interactions between Call Offer and Do Not Disturb Override

at the CO-Terminating PINX

DNDO\_Term

#### Procedures for Protocol Interactions between Call Offer and Call Intrusion

at the CO-Originating PINX

CI\_Orig

at the CO-Terminating PINX

CI\_Term

## 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:	"CO"
<group>	=	group	up to 10 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 300 362 [3].

**ITeH STANDARD PREVIEW**  
(standards.iteh.ai)

[SIST EN 301 491-1 V1.1.2:2005](https://standards.iteh.ai/catalog/standards/sist/079f5aa4-7f37-4d1e-847d-2a24cca7ef4a/sist-en-301-491-1-v1-1-2-2005)

<https://standards.iteh.ai/catalog/standards/sist/079f5aa4-7f37-4d1e-847d-2a24cca7ef4a/sist-en-301-491-1-v1-1-2-2005>

### 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 CO**

TP part	Text	Example
<b>Header</b>	<Identifier> <i>tab</i> <Paragraph number in base ETS> <i>tab</i>	See table 1 <b>Subclause 0.0.0</b>
<b>Stimulus</b>	Ensure that the IUT in the <basic call state> or <CO state> <trigger> <i>see below for message structure</i> or <goal>	State 3 or CO-Idle, etc. Receiving a XXXX message to request a...
<b>Reaction</b>	<Action> <Conditions> <i>If the action is sending</i> <i>see below for message structure</i> <next action>, etc. and remains in the same state or and enters state <state>	Sends, saves, does, etc. Using en bloc sending...
<b>Message structure</b>	<Message type> message containing a a) <info element> information element with b) a <field name> encoded as or including <coding of the field> and <i>back to a or b</i> ,	SETUP, FACILITY, CONNECT...  Bearer capability, Facility...
<b>Selection</b>	Selection criteria reference	Support of SS-CO in Originating PINX. PICS:A1
<b>NOTE 1:</b> In order to use the same structure as for the test group selection, the selection criteria is indicated at the bottom of the test purpose.		
<b>NOTE 2:</b> 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 EN 300 362 [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 CO

All PICS items referred to in this subclause are as specified in EN 300 362 [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 this specification 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.