



SLOVENSKI STANDARD
SIST ETS 300 257 E1:2005
01-maj-2005

Zasebno telekomunikacijsko omrežje (PTN) – Zasebno omrežje z integriranimi storitvami (PISN) - Medcentralni signalizacijski protokol - Dopolnilna storitev: izsmeritev klica

Private Telecommunication Network (PTN); Inter-exchange signalling protocol; Diversion supplementary services

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ETS 300 257 E1:2005](https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a7b4d022140/sist-ets-300-257-e1-2005)

Ta slovenski standard je istoveten z: **ETS 300 257 Edition 1**

ICS:

33.040.35 Telefonska omrežja Telephone networks

SIST ETS 300 257 E1:2005 **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST ETS 300 257 E1:2005

<https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005>



EUROPEAN
TELECOMMUNICATION
STANDARD

ETS 300 257

November 1993

Source: ETSI TC-ECMA

Reference: DE/ECMA-00048

ICS: 33.080

Key words: PTN, ECMA-174, QSIG-CF

iTeh STANDARD PREVIEW
(standards.itih.ai)
Private Telecommunication Network (PTN);
Inter-exchange signalling protocol
Diversion supplementary services

SIST ETS 300 257 E1:2005
<https://standards.itih.ai/standards/3a9b4d622140/sist-ets-300-257-e1-2005>

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

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

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 1993. All rights reserved.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST ETS 300 257 E1:2005](https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005)

<https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005>

Contents

Foreword	7
1 Scope	9
2 Conformance	9
3 References	9
4 Definitions	10
4.1 External definitions	10
4.2 Activating PTNX	10
4.3 Busy	10
4.4 Connected number	11
4.5 Deactivating PTNX	11
4.6 Diversion	11
4.7 Diverted-to number	11
4.8 Diverted-to PTNX	11
4.9 Diverted-to user	11
4.10 Diverting cause	11
4.11 Diverting number	11
4.12 Forwarding	11
4.13 Forward switching	11
4.14 Interrogating PTNX	11
4.15 Last diverting user	11
4.16 Original called number	12
4.17 Original called user	12
4.18 Partial re-routing	12
4.19 Presentation indicator	12
4.20 Re-routing	12
4.21 Re-routing PTNX	12
4.22 Served user	12
4.23 User A	12
4.24 User B	12
4.25 User B1, user B2, user B3, etc.	12
4.26 User C	13
5 List of acronyms	13
6 Signalling protocol for the support of SS-CF	13
6.1 SS-CF description	13
6.2 SS-CF operational requirements	13
6.2.1 Provision/withdrawal	13
6.2.2 Requirements on the Originating PTNX	14
6.2.3 Requirements on the Served User PTNX	14
6.2.4 Requirements on the Diverted-to PTNX	14
6.2.5 Requirements on the Re-routing PTNX	15
6.2.6 Requirements on a Transit PTNX	15
6.2.7 Requirements on the Activating PTNX	15
6.2.8 Requirements on the Deactivating PTNX	15
6.2.9 Requirements on the Interrogating PTNX	15
6.3 SS-CF coding requirements	15
6.3.1 Operations	15
6.3.2 Information elements	21
6.3.2.1 Facility information element	21
6.3.2.2 Notification indicator information element	21
6.3.3 Messages	21
6.4 SS-CF state definitions	21

6.4.1	States at the Originating PTNX.....	21
6.4.2	States at the Served User PTNX.....	22
6.4.3	States at the Diverted-to PTNX.....	22
6.4.4	States at the Re-routing PTNX.....	22
6.4.5	States at the Activating PTNX.....	23
6.4.6	States at the Deactivating PTNX.....	23
6.4.7	States at the Interrogating PTNX.....	23
6.5	SS-CF signalling procedures.....	23
6.5.1	Actions at the Originating PTNX.....	23
6.5.1.1	Normal procedure.....	23
6.5.1.2	Exceptional procedures.....	24
6.5.2	Actions at a Transit PTNX.....	24
6.5.3	Actions at the Served User PTNX.....	25
6.5.3.1	Normal procedure.....	25
6.5.3.1.1	Activation.....	25
6.5.3.1.2	Deactivation.....	25
6.5.3.1.3	Interrogation.....	25
6.5.3.1.4	Verification of the diverted-to user's number.....	26
6.5.3.1.5	Invocation.....	26
6.5.3.2	Exceptional procedures.....	27
6.5.3.2.1	Activation.....	27
6.5.3.2.2	Deactivation.....	27
6.5.3.2.3	Interrogation.....	27
6.5.3.2.4	Verification of the diverted-to user's number.....	27
6.5.3.2.5	Invocation.....	28
6.5.4	Actions at the Re-routing PTNX.....	28
6.5.4.1	Normal procedure.....	28
6.5.4.2	Exceptional procedures.....	30
6.5.5	Actions at the Diverted-to PTNX.....	31
6.5.5.1	Normal procedure.....	31
6.5.5.1.1	Invocation.....	31
6.5.5.1.2	Verification of the diverted-to user's number.....	31
6.5.5.2	Exceptional procedures.....	31
6.5.5.2.1	Invocation.....	31
6.5.5.2.2	Verification of the diverted-to user's number.....	31
6.5.6	Actions at the Activating PTNX.....	31
6.5.6.1	Normal procedure.....	31
6.5.6.2	Exceptional procedures.....	32
6.5.7	Actions at the Deactivating PTNX.....	32
6.5.7.1	Normal procedure.....	32
6.5.7.2	Exceptional procedures.....	32
6.5.8	Actions at the Interrogating PTNX.....	33
6.5.8.1	Normal procedure.....	33
6.5.8.2	Exceptional procedures.....	33
6.6	SS-CF impact of interworking with public ISDNs.....	33
6.6.1	Impact of interworking on incoming calls.....	33
6.6.1.1	Diversion within the PTN.....	33
6.6.1.2	Diversion within the public ISDN.....	34
6.6.1.3	Partial re-routing.....	34
6.6.2	Impact of interworking on outgoing calls.....	34
6.6.2.1	Diversion within the PTN.....	34
6.6.2.2	Diversion within the public ISDN.....	35
6.7	SS-CF impact of interworking with non-ISDNs.....	35
6.7.1	Impact of interworking on incoming calls.....	35
6.7.2	Impact of interworking on outgoing calls.....	35
6.8	SS-CF parameter values (Timers).....	35
6.8.1	Timer T1.....	35
6.8.2	Timer T2.....	35
6.8.3	Timer T3.....	35

6.8.4	Timer T4.....	36
6.8.5	Timer T5.....	36
Annex A (normative): Protocol Implementation Conformance Statement (PICS) proforma		37
A.1	Introduction.....	37
A.2	Instructions for completing the PICS proforma	37
A.2.1	General structure of the PICS proforma	37
A.2.2	Additional information	38
A.2.3	Exception information	38
A.3	PICS proforma for ETS 300 257	39
A.3.1	Implementation identification	39
A.3.2	Protocol summary	40
A.3.3	General	40
A.3.4	Procedures.....	41
A.3.5	Coding.....	42
A.3.6	Timers.....	44
Annex B (informative) : Examples of message sequences		45
B.1	Message sequences for SS-CFU/SS-CFB invocation	45
B.2	Message sequences for SS-CFNR invocation.....	47
B.3	Message sequences for activation, deactivation and interrogation.....	50
Annex C (informative): Specification and Description Language (SDL) representation of procedures...52		
C.1	SDL representation of SS-CF at the Originating PTNX	52
C.2	SDL representation of SS-CF at the Re-routing PTNX.....	53
C.3	SDL representation of SS-CF at the Served User PTNX.....	55
C.4	SDL representation of SS-CF at the Diverted-to PTNX	58
C.5	SDL representation of SS-CF at the Activating PTNX	59
C.6	SDL representation of SS-CF at the Deactivating PTNX.....	60
C.7	SDL representation of SS-CF at the Interrogating PTNX.....	61
Annex D (informative) : Imported ASN.1 definitions.....		62
History.....		66

Blank page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ETS 300 257 E1:2005](https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005)

<https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005>

Foreword

This European Telecommunication Standard (ETS) has been produced by the European Computer Manufacturers Association (ECMA) on behalf of its members and those of the European Telecommunications Standards Institute (ETSI).

This ETS is one of a series of standards defining services and signalling protocols applicable to Private Telecommunication Networks (PTNs). The series uses the ISDN concepts as developed by CCITT and is also within the framework of standards for open systems interconnection as defined by ISO.

This ETS specifies the signalling protocol for use at the Q reference point in support of the Call Forwarding Unconditional, Call Forwarding Busy, and Call Forwarding No Reply supplementary services.

The ETS is based upon the practical experience of ECMA member companies and the results of their active and continuous participation in the work of ISO, CCITT, ETSI and other international and national standardisation bodies. It represents a pragmatic and widely based consensus.

This ETS was produced by ECMA using the ECMA guidelines for the production of standards and using the ECMA stylesheet. In order to avoid undue delays in the voting process of this ETS it has been agreed that this ETS will not be converted to the ETSI stylesheet.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST ETS 300 257 E1:2005](https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005)

<https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005>

Blank page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ETS 300 257 E1:2005](https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005)

<https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005>

1 Scope

This ETS specifies the signalling protocol for the support of Call Forwarding supplementary services at the Q reference point between Private Telecommunication Network Exchanges (PTNXs) connected together within a Private Telecommunication Network (PTN). The Call Forwarding supplementary services are: Call Forwarding Unconditional (SS-CFU), Call Forwarding Busy (SS-CFB), and Call Forwarding No Reply (SS-CFNR).

SS-CFU, SS-CFB and SS-CFNR are supplementary services which permit a served user to have the PTN send all or specific incoming calls addressed to the served user's PTN number to another number.

The Q reference point is defined in ENV 41004.

Service specifications are produced in three stages and according to the method specified in ENV 41005. This ETS contains the stage 3 specification for the Q reference point and satisfies the requirements identified by the stage 1 and stage 2 specifications in ETS 300 256.

The signalling protocol for SS-CFU, SS-CFB and SS-CFNR operates on top of the signalling protocol for basic circuit switched call control, as specified in ETS 300 172, and uses certain aspects of the generic procedures for the control of supplementary services specified in ETS 300 239.

The impact on the protocol of interactions between the supplementary services specified in this ETS and other supplementary services is outside the scope of this ETS.

This ETS is applicable to PTNXs which can be interconnected to form a PTN.

2 Conformance

In order to conform to this ETS, a PTNX shall satisfy the requirements identified in the Protocol Implementation Conformance Statement (PICS) proforma in annex A.

3 References

ENV 41004	Reference configuration for connectivity relations of private telecommunication network exchanges (1989).
ENV 41005	Method for the specification of basic and supplementary services of private telecommunication networks (1989).
ENV 41007	Definition of terms in private telecommunication networks (1989).
ETS 300 171	Private Telecommunications Network (PTN); Specification, functional models and information flows; Control aspects of circuit mode basic services (1992).
ETS 300 172	Private Telecommunication Network (PTN); Inter-exchange signalling protocol, Circuit mode basic services (1992).
ETS 300 189	Private Telecommunication Network (PTN); Addressing (1992).
ETS 300 196	ISDN - Generic Functional Protocol for the Support of Supplementary Services - DSS1 Protocol.
ETS 300 238	Private Telecommunication Network (PTN); Signalling between private telecommunication exchanges, Protocol for the support of name identification supplementary services (1993).
ETS 300 239	Private Telecommunication Network (PTN); Signalling between private telecommunication exchanges, Generic functional protocol for the support of supplementary services (1993).

iTeh STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005>

ETS 300 256	Private Telecommunication Networks (PTN); Specification, Functional Model and Information Flows, Diversion Supplementary Services (1993).
prETS 300 207	Integrated Services Digital Network (ISDN) Diversion supplementary services Digital Subscriber Signalling No. one (DSS1) protocol.
CCITT Recommendation I.112	Vocabulary of terms for ISDNs (1988).
CCITT Recommendation I.210 an ISDN and (1988).	Principles of telecommunication services supported by the means to describe them
CCITT Recommendation I.221	Common specific characteristics of services (1988).
CCITT Recommendation Z.100	Specification and description language (1988).

4 Definitions

For the purpose of this ETS the following definitions apply.

4.1 External definitions

This ETS uses the following terms defined in other documents:

- Application Protocol Data Unit	(ETS 300 239)
- Basic Service	(CCITT Recommendation I.210)
- Call, Basic Call	(ETS 300 239)
- Co-ordination Function	(ETS 300 239)
- End PTNX	(ETS 300 239)
- Incoming Gateway PTNX	(ETS 300 172)
- Integrated Services Digital Network	(CCITT Recommendation I.112)
- Interpretation APDU	(ETS 300 239)
- Network determined user busy	(CCITT Recommendation I.221)
- Notification	(ETS 300 239)
- NFE	(ETS 300 239)
- Originating PTNX	(ETS 300 172)
- Outgoing Gateway PTNX	(ETS 300 172)
- Private	(ENV 41007)
- Private Telecommunication Network Exchange	(ENV 41007)
- PTN number	(ETS 300 189)
- Public ISDN	(ENV 41007)
- Signalling	(CCITT Recommendation I.112)
- Supplementary Service	(CCITT Recommendation I.210)
- Supplementary Service Control Entity	(ETS 300 239)
- Telecommunication Network	(ENV 41007)
- Terminal, Terminal Equipment	(ENV 41007)
- Terminating PTNX	(ETS 300 172)
- Transit PTNX	(ETS 300 172)
- User	(ETS 300 171)
- User determined user busy	(CCITT Recommendation I.221)

4.2 Activating PTNX

The PTNX serving the activating user.

4.3 Busy

An ISDN destination is considered to be busy if either a "network determined user busy" or a "user determined user busy" condition exists.

4.4 Connected number

The number of the user that answers (user C).

4.5 Deactivating PTNX

The PTNX serving the deactivating user.

4.6 Diversion

The redirection of a call, on request of a called user and prior to answer, to a number different from the number of that called user.

4.7 Diverted-to number

The number to which a call is diverted.

4.8 Diverted-to PTNX

The PTNX serving the diverted-to user.

4.9 Diverted-to user

The user to which a call is diverted.

4.10 Diverting cause

The parameter which contains the reason for the diversion, e.g. CFU, CFB, CFNR.

4.11 Diverting number

The number of the served user.

4.12 Forwarding

The type of diversion invoked automatically by the network in accordance with information previously registered in the network against the called number.

NOTE 1

Forwarding can occur as a result of the supplementary services specified in this ETS (CFU, CFB, CFNR). Diversions of types other than forwarding (e.g. Call Deflection, whereby the diversion is invoked by action of the called user) are outside the scope of this edition of this ETS.

4.13 Forward switching

Network routing algorithm which performs the diversion by joining together the first connection from user A's node to user B's node and a second, new connection from user B's node to user C's node.

4.14 Interrogating PTNX

The PTNX serving the interrogating user.

4.15 Last diverting user

The served user from the point of view of the diverted-to user for a particular stage of call diversion. In the case of a call subject to a single stage of call diversion, user B is the last diverting user from the point of view of user C. In the case of a call subject to multiple stages of call diversion, user B1 is the last diverting user from the point of view of user B2, user B2 is the

last diverting user from the point of view of user B3, etc. The served user for the final stage of call diversion is the last diverting user from the point of view of user C.

4.16 Original called number

The number of user B (in case of multiple call diversion user B1).

4.17 Original called user

The first served user of a call which is subject to one or more stages of call diversion, i.e. user B or user B1.

4.18 Partial re-routing

Network routing algorithm which performs the call diversion by replacing a particular part of the connection from user A's node (located in the public ISDN) to user B's node (located in a private ISDN) by another connection from user A's node to user C's node (located in the public ISDN). The new connection is established completely within the public ISDN by joining together the original connection from user A's node to the public ISDN gateway node and a second, new connection from the public ISDN gateway node to user C's node.

NOTE 2

Re-routing by a Transit PTNX is not considered as partial re-routing.

4.19 Presentation indicator

The indicator showing whether the diverted-to number should be presented to the calling user, as derived from user C's COLR supplementary service.

4.20 Re-routing

Network routing algorithm which performs the call diversion by replacing the connection from user A's node to user B's node by another connection, possibly using some of the elements of the old connection, from user A's node to user C's node.

4.21 Re-routing PTNX

The PTNX which executes call diversion.

NOTE 3

In case of re-routing, the Re-routing PTNX is either the Originating PTNX or the Incoming Gateway PTNX. In case of forward switching, the Re-routing PTNX is the Terminating PTNX.

4.22 Served user

The user of a particular PTN number who is requesting that calls to his number be diverted. This user may also be referred to as the diverting user or the called user.

4.23 User A

The calling user of a call which is subject to call diversion.

4.24 User B

The served (diverting) user of a call which is subject to call diversion.

4.25 User B1, user B2, user B3, etc.

Served (diverting) users of a call which is subject to multiple stages of diversion. B1 is the first served user, B2 is the second served user, B3 is the third served user, etc.

NOTE 4

B2 is also the diverted-to user with respect to the first stage of call diversion, B3 is also the diverted-to user with respect to the second stage of call diversion, etc.

4.26 User C

The diverted-to user with respect to the final stage of call diversion.

5 List of acronyms

APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation One
SS-CLIR	Calling/Connected Line Identification Restriction supplementary service
SS-CNIP	Calling Name Identification Presentation supplementary service
SS-CNIR	Calling/Connected Name Identification Restriction supplementary service
ISDN	Integrated Services Digital Network
NDUB	Network Determined User Busy
NFE	Network Facility Extension
PICS	Protocol Implementation Conformance Statement
PTN	Private Telecommunication Network
PTNX	Private Telecommunication Network Exchange
SDL	Specification and Description Language
SS-CF	Call Forwarding supplementary service
SS-CFB	Call Forwarding Busy supplementary service
SS-CFNR	Call Forwarding No Reply supplementary service
SS-CFU	Call Forwarding Unconditional supplementary service
TE	Terminal Equipment
UDUB	User Determined User Busy

6 Signalling protocol for the support of SS-CF

6.1 SS-CF description

[SIST ETS 300 257 E1:2005](https://standards.iteh.ai/catalog/standards/sist/017977aa-3d7f-448f-a9c7-3a9b4d622140/sist-ets-300-257-e1-2005)

SS-CFU enables a served user to have the PTN redirect to another user calls which are addressed to the served user's PTN number. SS-CFU may operate on all calls, or just those associated with specified basic services. The served user's ability to originate calls is unaffected by SS-CFU. After SS-CFU has been activated, calls are forwarded independently of the status of the served user.

SS-CFB enables a served user to have the PTN redirect to another user calls which are addressed to the served user's PTN number and meet busy. SS-CFB may operate on all calls, or just those associated with specified basic services. The served user's ability to originate calls is unaffected by SS-CFB.

SS-CFNR enables a served user to have the PTN redirect to another user calls which are addressed to the served user's PTN number and for which the connection is not established within a defined period of time. SS-CFNR may operate on all calls, or just those associated with specified basic services. The served user's ability to originate calls is unaffected by SS-CFNR.

The maximum number of diversions to a single call is an implementation option. When counting the number of diversions, all types of diversions shall be included.

SS-CFU, SS-CFB and SS-CFNR are applicable to all basic services defined in ETS 300 171.

6.2 SS-CF operational requirements

6.2.1 Provision/withdrawal

Provision and withdrawal shall be in accordance with 6.2.1, 7.2.1 and 8.2.1 of ETS 300 256.