INTERNATIONAL STANDARD

ISO/IEC 13868

Second edition
2003-04-01

Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Inter-exchange signalling protocol — Name identification supplementary services

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Réseau privé à intégration de services — Protocole de signalisation d'interéchange — Services supplémentaires d'identification de nom

Reference number
ISO/IEC 13868:2003(E)

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 13868 was prepared by ECMA (as ECMA-164) and was adopted, under a special “fast-track procedure”, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

This second edition cancels and replaces the first edition (ISO/IEC 13868:1995), which has been technically revised.

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Introduction

This International Standard is one of a series of Standards defining services and signalling protocols applicable to Private Integrated Services Networks (PISNs). The series uses ISDN concepts as developed by ITU-T and conforms to the framework of International Standards for Open Systems Interconnection as defined by ISO/IEC.

This International Standard specifies the signalling protocol for use at the Q reference point in support of the Calling Name Identification Presentation (CNIP) and Connected Name Identification Presentation (CONP) supplementary services. The protocol defined in this International Standard forms part of the PSS1 protocol (informally known as QSIG).

This International Standard is based upon the practical experience of ECMA member companies and the results of their active and continuous participation in the work of ISO/IEC JTC 1, ITU-T, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

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Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Inter-exchange signalling protocol — Name identification supplementary services

1 Scope

This International Standard specifies the signalling protocol for the support of name identification supplementary services at the Q reference point between Private Integrated services Network eXchanges (PINXs) connected together within a Private Integrated Services Network (PISN). The name identification supplementary services are Calling Name Identification Presentation (SS-CNIP) and Connected Name Identification Presentation (SS-CONP).

Calling Name Identification Presentation (CNIP) is a supplementary service which is offered to the called user and which provides the name of the calling user (calling party name) to the called user.

Connected Name Identification Presentation (CONP) is a supplementary service which is offered to the calling user and which provides to the calling user the following:

- the name of the user who answers the call (connected party name);
- optionally the name of the alerting user (called party name);
- optionally the name of the called user who cannot be reached (busy party name).

The supplementary service Calling/Connected Name Identification Restriction (CNIR) has no impact on the signalling at Q reference point.

Provision of a user's name to the PISN is outside the scope of this International Standard.

The Q reference point is defined in ISO/IEC 11579-1.

Service specifications are produced in three stages according to the method specified in ETS 300 387. This International Standard contains the stage 3 specification for the Q reference point and satisfies the requirements identified by the stage 1 and stage 2 specifications in ISO/IEC 13864.

The signalling protocol for SS-CNIP and SS-CONP operates on top of the signalling protocol for basic circuit switched call control, as specified in ISO/IEC 11572, and uses certain aspects of the generic procedures for the control of supplementary services specified in ISO/IEC 11582.

This International Standard also specifies additional signalling protocol requirements for the support of interactions at Q reference point between name identification supplementary services and other supplementary services and ANFs.

This International Standard is applicable to PINXs which can be interconnected to form a PISN.

2 Conformance

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

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 8859-1:1998, *Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1*

ISO/IEC 8859-2:1999, *Information technology - 8-bit single-byte coded graphic character sets - Part 2: Latin alphabet No. 2*

ISO/IEC 8859-3:1999, *Information technology - 8-bit single-byte coded graphic character sets - Part 3: Latin alphabet No. 3*

ISO/IEC 8859-4:1998, *Information technology - 8-bit single-byte coded graphic character sets - Part 4: Latin alphabet No. 4*

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ISO/IEC 8859-5:1999, *Information technology - 8-bit single-byte coded graphic character sets - Part 5: Latin/Cyrillic alphabet*

ISO 8859-7:1987, *Information processing - 8-bit single-byte coded graphic character sets - Part 7: Latin/Greek alphabet*

ISO/IEC 10646-1:2000, *Information technology - Universal Multiple-Octet Coded Character Set (UCS) - Part 1: Architecture and Basic Multilingual Plane*

ISO/IEC 11572:2000, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Circuit mode bearer services - Inter-exchange signalling procedures and protocol*

ISO/IEC 11574:2000, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Circuit-mode 64 kbit/s bearer services - Service description, functional capabilities and information flows*

ISO/IEC 11579-1:1994, *Information technology - Telecommunications and information exchange between systems - Private integrated services network - Part 1: Reference configuration for PISN Exchanges (PINX)*

ISO/IEC 11582:2002, *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*

ISO/IEC 13864:1995, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Specification, functional model and information flows - Name identification supplementary services*

ISO/IEC 13869:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call Transfer supplementary service*

ISO/IEC 13873:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call Diversion supplementary services*

ETS 300 387:1994, *Private Telecommunication Network (PTN); Method for the specification of basic and supplementary services*

ITU-T Rec. I.112:1993, *Vocabulary of terms for ISDNs*

ITU-T Rec. I.210:1993, *Principles of telecommunication services supported by an ISDN and the means to describe them*

ITU-T Rec. Z.100:1999, *Specification and description language (SDL)*

ANSI T1.641-1995, *American National Standard for Telecommunications - Calling Name Identification Presentation*

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1 External definitions

This International Standard uses the following terms defined in other documents:

- Application Protocol Data Unit (APDU) (ISO/IEC 11582)
- Basic Service (ITU-T Rec. I.210)
- Call, Basic Call (ISO/IEC 11582)
- Coordination Function (ISO/IEC 11582)
- Incoming Gateway PINX (ISO/IEC 11572)
- Integrated Services Digital Network (ITU-T Rec. I.112)
- Originating PINX (ISO/IEC 11572)
- Outgoing Gateway PINX (ISO/IEC 11572)
- Private Integrated Services Network (PISN) (ISO/IEC 11579-1)
- Private Integrated services Network eXchange (PINX) (ISO/IEC 11579-1)
- Signalling (ITU-T Rec. I.112)

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- Supplementary Service (ITU-T Rec. I.210)
- Supplementary Service Control Entity (ISO/IEC 11582)
- Terminating PINX (ISO/IEC 11572)
- Transit PINX (ISO/IEC 11572)
- User (ISO/IEC 11574)

4.2 Name

A string of maximum 50 characters which is used for the name identification of the PISN user of a call.

5 Acronyms

APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation One
ISDN	Integrated Services Digital Network
NFE	Network Facility Extension
PICS	Protocol Implementation Conformance Statement
PISN	Private Integrated Services Network
PINX	Private Integrated services Network eXchange
SDL	Specification and Description Language
SSCE	Supplementary Service Control Entity
SS-CNIP	Calling Name Identification Presentation supplementary service
SS-CONP	Connected Name Identification Presentation supplementary service

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6 SS-CNIP and SS-CONP Coding Requirements

6.1 Operations

The operations defined in Abstract Syntax Notation number 1 (ASN.1) in table 1 shall apply. The notation is in accordance with ITU-T Rec. X.680 and X.690. The ITU-T Rec. X.208 and X.209 superseded version is in annex C.

Table 1 - Operations in Support of SS-CNIP and SS-CONP

```
Name-Operations-asn1-97
                        { iso ( 1)  standard ( 0) pss1-name (13868) name-operations-asn1-97( 1)  }


DEFINITIONS   ::=

BEGIN

IMPORTS

OPERATION                FROM        Remote-Operations-Information-Objects
                         {joint-iso-itu-t remote-operations(4) informationObjects(5) version1(0)}

EXTENSION, Extension{}   FROM        Manufacturer-specific-service-extension-class-asn1-97
                  { iso standard pss1-generic-procedures (11582)  msi-class-asn1-97 ( 11) };

Name-Operations OPERATION ::= { callingName | calledName | connectedName | busyName }

callingName     OPERATION ::= {
                        ARGUMENT            NameArg
                        RETURN RESULT       FALSE
                        ALWAYS RESPONDS     FALSE
                        CODE                local: 0
                        }

calledName      OPERATION  ::= {
                        ARGUMENT            NameArg
                        RETURN RESULT       FALSE
                        ALWAYS RESPONDS     FALSE
                        CODE                local: 1
                        }

connectedName OPERATION ::= {
                        ARGUMENT            NameArg
                        RETURN RESULT       FALSE
                        ALWAYS RESPONDS     FALSE
                        CODE                local: 2
                        }

busyName        OPERATION ::= {
                        ARGUMENT            NameArg
                        RETURN RESULT       FALSE
                        ALWAYS RESPONDS     FALSE
                        CODE                local: 3
                        }
```


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Table 1 - Operations in Support of SS-CNIP and SS-CONP (continued)

```
NameArg          ::=    CHOICE {
                            name              Name,
                            nameSequence      SEQUENCE {
                                              name          Name,
                                              extension     NameExtension OPTIONAL
                                              }
                            }

NameExtension ::=       CHOICE {
                            single    [5] IMPLICIT Extension{{NameExtensionSet}},
                            multiple [6] IMPLICIT SEQUENCE OF Extension{{NameExtensionSet}}
                            }

NameExtensionSet        EXTENSION ::= {...}

Name                    ::= CHOICE
                            {       namePresentationAllowed     NamePresentationAllowed,
                                    namePresentationRestricted  NamePresentationRestricted,
                                    nameNotAvailable            NameNotAvailable }

NamePresentationAllowed ::= CHOICE
                            {       namePresentationAllowedSimple       [0] IMPLICIT NameData,
                                    namePresentationAllowedExtended     [1] IMPLICIT NameSet }
                            -- iso8859-1 is implied in namePresentationAllowedSimple.

NamePresentationRestricted ::= CHOICE
                            {       namePresentationRestrictedSimple    [2] IMPLICIT NameData,
                                    namePresentationRestrictedExtended  [3] IMPLICIT NameSet,
                                    namePresentationRestrictedNull      [7] IMPLICIT NULL}
                            -- iso8859-1 is implied in namePresentationRestrictedSimple.
                            -- namePresentationRestrictedNull shall only be used in the
                            -- case of interworking where the other network provides an
                            -- indication that the name is restricted without the name itself.

NameNotAvailable        ::= [4] IMPLICIT NULL

NameData                ::= OCTET STRING (SIZE (1..50))
                            -- The maximum allowed size of the name field is 50 octets.
                            -- The minimum required size of the name field is 1 octet.

NameSet                 ::= SEQUENCE
                            {       nameData        NameData,
                                    characterSet    CharacterSet OPTIONAL }
                            -- If characterSet is not included, iso8859-1 is implied.

CharacterSet    ::= INTEGER
                    {   unknown (0),
                        iso8859-1 (1),
                            -- The character set "iso8859-1" is specified in International
                            -- Standard ISO 8859-1
                            -- The value 2 was assigned for CCITT Rec. T.61
                            -- which has been withdrawn by ITU-T.
                        iso8859-2 (3),
                            -- The character set “iso8859-2” is specified in International
                            -- Standard ISO 8859-2
```

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Table 1 - Operations in Support of SS-CNIP and SS-CONP (concluded)

```
                    iso8859-3 (4),
                            --The character set “iso8859-3” is specified in International
                            -- Standard ISO 8859-3
                    iso8859-4 (5),
                            --The character set “iso8859-4” is specified in International
                            -- Standard ISO 8859-4
                    iso8859-5 (6),
                            --The character set “iso8859-5” is specified in International
                            -- Standard ISO 8859-5
                    iso8859-7 (7),
                            --The character set “iso8859-7” is specified in International
                            -- Standard ISO 8859-7
                    iso10646-BmpString (8),
                            -- The character set “iso10646-BmpString” is specified in International
                            -- Standard ISO 10646-1 and in ITU-T Rec. X.680
                            -- with this character set, each character occupies 2 octets in NameData
                    iso10646-utf-8String (9)
                            -- The character set “iso10646-utf-8String” is specified in International
                            -- Standard ISO 10646-1
                            -- UTF-8-String is defined in Annex R of ISO 10646-1
                            -- with this character set, each character occupies a variable
                            -- number of octets (1…6) in NameData
                                    } (0..255)
                                    -- Other character sets might be added in further editions of
                                    -- this International Standard

END                 -- of Name-Operations-asn1-97
```

6.2 Information Elements

The operations defined in 6.1 for the support of SS-CNIP and SS-CONP shall be coded in the Facility information element in accordance with ISO/IEC 11582.

When conveying the invoke APDU of the operations defined in 6.1, the destinationEntity data element of the NFE shall contain value endPINX. The Interpretation APDU in the Facility information element shall be included and shall have the value "discardAnyUnrecognisedInvokeAPDU (0)".

6.3 Messages

Basic call messages ALERTING, CONNECT, DISCONNECT, FACILITY, RELEASE, RELEASE COMPLETE, PROGRESS and SETUP shall be used for conveying the Facility information element in support of SS-CNIP and SS-CONP as specified in ISO/IEC 11582.

7 Signalling Protocol for the Support of SS-CNIP

7.1 SS-CNIP Description

Calling Name Identification Presentation (SS-CNIP) is a supplementary service which is offered to the called user and which provides the name of the calling user to the called user.

The PISN provides the calling user's name and delivers the calling user's name to the called user whenever an incoming call is presented.

The presentation of the calling user's name may be restricted as specified in SS-CNIR. Some users may have a service profile which permits the override of calling name identification restriction.

This supplementary service is applicable to all basic services, defined in ISO/IEC 11574.

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7.2 SS-CNIP Operational Requirements

7.2.1 Requirements on the Originating PINX and the Incoming Gateway PINX

Call establishment procedures, as specified in ISO/IEC 11572, shall apply. Additionally, these PINXs shall be responsible for obtaining the name information. An Originating PINX may limit, to less than 50, the number of characters that can be registered against a user.

Generic procedures for the call related control of supplementary services, as specified in ISO/IEC 11582 for a Source PINX, shall apply.

7.2.2 Requirements on the Terminating PINX and the Outgoing Gateway PINX

Call establishment procedures, as specified in ISO/IEC 11572, shall apply. Additionally, these PINXs shall be responsible for delivering the name information to the user or to the other network.

Generic procedures for the call related control of supplementary services, as specified in ISO/IEC 11582 for a Destination PINX, shall apply.

7.2.3 Requirements on a Transit PINX

Call establishment procedures, as specified in ISO/IEC 11572, shall apply.

Generic procedures for the call related control of supplementary services, as specified in ISO/IEC 11582 for a Transit PINX, shall apply.

7.3 SS-CNIP State Definitions

No specific state definitions are required.

7.4 SS-CNIP Signalling Procedures for Invocation and Operation

7.4.1 Actions at the Originating PINX

7.4.1.1 Normal procedures

If the calling user's name is available and presentation is allowed, the callingName invoke APDU shall be sent in the SETUP message from the Originating PINX to the Terminating PINX. Within the argument, the NamePresentationAllowed type shall be chosen for the element of type Name.

If the calling user's name is available and presentation is restricted, the callingName invoke APDU shall also be sent in the SETUP message from the Originating PINX to the Terminating PINX. Within the argument, the NamePresentationRestricted type shall be chosen for the element of type Name.

If the calling user's name is not available, the callingName invoke APDU may be sent in the SETUP message from the Originating PINX to the Terminating PINX. Within the argument, the NameNotAvailable type shall be chosen for the element of type Name.

7.4.1.2 Exceptional procedures

Not applicable.

7.4.2 Actions at the Terminating PINX

7.4.2.1 Normal procedures

If the callingName invoke APDU has been received with an element of type NamePresentationAllowed in the argument, the name information including the presentation indicator shall be delivered to the called user if able and authorized to receive the calling name information

If the callingName invoke APDU has been received with an element of type NamePresentationRestricted in the argument, no name information other than the presentation indictor shall be delivered to the called user, unless the called user has an override capability.

If either the callingName invoke APDU has not been received or the callingName invoke APDU has been received with an element of type NameNotAvailable in the argument, no name information other than the presentation indicator "name not available" shall be delivered to the called user.

7.4.2.2 Exceptional procedures

Not applicable.

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7.4.3 Actions at a Transit PINX

No special actions are required in support of SS-CNIP.

7.5 SS-CNIP Impact of Interworking with Public ISDNs or with Non-ISDNs

7.5.1 Actions at the Incoming Gateway PINX

On calls incoming from another network, if the other network provides the calling user's name information, it shall be sent to the Terminating PINX as specified in 7.4.1 (the Incoming Gateway PINX thereby acting as an Originating PINX). If the other network does not provide the calling user name, but provide an indication that the calling user name is restricted, the incoming gateway PINX shall include the callingName invoke APDU in the SETUP message sent to the Terminating PINX. Within the argument, choice namePresentationRestrictedNull of type NamePresentationRestricted shall be chosen for the element of type Name.

If the number of characters in the calling party name exceeds 50, the PINX shall truncate the excess characters.

A public network may send delayed calling user's name information (e.g. in a FACILITY message subsequent to sending the SETUP message when conforming to ANSI T1.641-1995). In this case, the Incoming Gateway PINX may include the name information in a callingName invoke APDU in a FACILITY message and send it to the Terminating PINX, after the first backwards end-to-end message (i.e. ALERTING, PROGRESS or CONNECT) has been received. As defined in 6.2, the Interpretation APDU shall be included in the Facility information element in that FACILITY message and shall have the value "discardAnyUnrecognisedInvokeAPDU (0)".

7.5.2 Actions at the Outgoing Gateway PINX

On outgoing calls to another network, the PISN shall deliver the calling user's name information to the other network as specified in 7.4.2 (the Outgoing Gateway PINX thereby acting as a Terminating PINX), if the other network supports an equivalent supplementary service.

7.6 Protocol interactions between SS-CNIP and other supplementary services and ANFs

This clause specifies protocol interactions with other supplementary services and ANFs for which stage 3 standards had been published at the time of publication of this International Standard. For interactions with supplementary services and ANFs for which stage 3 standards are published subsequent to the publication of this International Standard, see those other stage 3 standards.

NOTE 1 - Simultaneous conveyance of APDUs for SS-CNIP and another supplementary service or ANF in the same message, each in accordance with the requirements of its respective stage 3 standard, does not, on its own, constitute a protocol interaction.

NOTE 2 - Additional interactions that have no impact on the signalling protocol at the Q reference point can be found in the relevant stage 1 specifications.

7.6.1 Connected Name Identification Presentation (SS-CONP)

No protocol interaction.

7.6.2 Completion of Calls to Busy Subscribers (SS-CCBS)

No protocol interaction.

7.6.3 Completion of Calls on No Reply (SS-CCNR)

No protocol interaction.

7.6.4 Call Transfer (SS-CT)

Protocol interactions are specified in ISO/IEC 13869.

7.6.5 Call Forwarding Unconditional (SS-CFU)

Protocol interactions are specified in ISO/IEC 13873.

7.6.6 Call Forwarding Busy (SS-CFB)

Protocol interactions are specified in ISO/IEC 13873.

7.6.7 Call Forwarding No Reply (SS-CFNR)

Protocol interactions are specified in ISO/IEC 13873.

7.6.8 Call Deflection (SS-CD)

The protocol interactions with Call Deflection Immediate shall be as specified in 7.6.5 for interaction with SS-CFU.

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The protocol interactions with Call Deflection from Alert shall be as specified in 7.6.7 for interaction with SS-CFNR.

7.6.9 Path Replacement (ANF-PR)

No protocol interaction.

8 Signalling Protocol for the Support of SS-CONP

8.1 SS-CONP General Description

Connected Name identification Presentation (SS-CONP) is a supplementary service which is offered to the calling user and which provides to the calling user the following:

the name of the user that answers the call;

optionally the name of the alerting user;

optionally the name of the called user that cannot be reached.

The PISN provides the connected user's name and delivers the connected user's name to the calling user whenever an incoming call is answered by the called user.

Optionally, the PISN provides the name of the busy user and delivers the name to the calling user whenever the called user cannot be reached because of a busy condition.

Optionally, the PISN provides the name of the alerted user and delivers the name to the calling user whenever an incoming call commences alerting at the called user.

The presentation of the connected user's name, busy user's name and alerted user's name may be restricted as specified in SS-CNIR. Some users may have a service profile which permits the override of connected name identification restriction.

This supplementary service is applicable to all basic services defined in ISO/IEC 11574.

8.2 SS-CONP Operational Requirements

8.2.1 Requirements on the Terminating PINX and the Outgoing Gateway PINX

Call establishment procedures and the call release procedures, as specified in ISO/IEC 11572, shall apply. Additionally, these PINXs shall be responsible for obtaining the name information. A Terminating PINX may limit, to less than 50, the number of characters that can be registered against a user.

Generic procedures for the call related control of supplementary services, as specified in ISO/IEC 11582 for a Source PINX, shall apply.

8.2.2 Requirements on the Originating PINX and the Incoming Gateway PINX

Call establishment procedures and the call release procedures, as specified in ISO/IEC 11572, shall apply. Additionally, these PINXs shall be responsible for delivering the name information to the user or to the other network.

Generic procedures for the call related control of supplementary services, as specified in ISO/IEC 11582 for a Destination PINX, shall apply.

8.2.3 Requirements on a Transit PINX

Call establishment and release procedures, as specified in ISO/IEC 11572, shall apply.

Generic procedures for the call related control of supplementary services, as specified in ISO/IEC 11582 for a Transit PINX, shall apply.

8.3 SS-CONP State Definitions

No specific state definitions are required.

8.4 SS-CONP Signalling Procedures for Invocation and Operation

8.4.1 Actions at the Terminating PINX

8.4.1.1 Normal procedures

When an incoming call is answered by the called user and the connected user's name is available and presentation is allowed, the connectedName invoke APDU shall be sent in the CONNECT message from the Terminating PINX to the Originating PINX. Within the argument, the NamePresentationAllowed type shall be chosen for the element of type Name.

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When the called user cannot be reached because of a busy condition and the called user's name is available and presentation is allowed, the busyName invoke APDU may be sent in the message that indicates the busy condition. Within the argument, the NamePresentationAllowed type shall be chosen for the element of type Name.

When an incoming call commences alerting at the called user and the called user's name is available and presentation is allowed, the calledName invoke APDU may be sent in the ALERTING message from the Terminating PINX to the Originating PINX. Within the argument, the NamePresentationAllowed type shall be chosen for the element of type Name.

When an incoming call is answered by the called user and the connected user's name is available and presentation is restricted, the connectedName invoke APDU shall be sent in the CONNECT message from the Terminating PINX to the Originating PINX. Within the argument, the NamePresentationRestricted type shall be chosen for the element of type Name.

When the called user cannot be reached because of a busy condition and the called user's name is available and presentation is restricted, the busyName invoke APDU may be sent in the message that indicates the busy condition. Within the argument, the NamePresentationRestricted type shall be chosen for the element of type Name.

When an incoming call commences alerting at the called user and the called user's name is available and presentation is restricted, the calledName invoke APDU may be sent in the ALERTING message from the Terminating PINX to the Originating PINX. Within the argument, the NamePresentationRestricted type shall be chosen for the element of type Name.

When an incoming call is answered by the called user and the connected user's name is not available, the connectedName invoke APDU may be sent in the CONNECT message from the Terminating PINX to the Originating PINX. Within the argument, the NameNotAvailable type shall be chosen for the element of type Name.

When the called user cannot be reached because of a busy condition and the called user's name is not available, the busyName invoke APDU may be sent in the message that indicates the busy condition. Within the argument, the NameNotAvailable type shall be chosen for the element of type Name.

When an incoming call commences alerting at the called user and the called user's name is not available, the calledName invoke APDU may be sent in the ALERTING message from the Terminating PINX to the Originating PINX. Within the argument, the NameNotAvailable type shall be chosen for the element of type Name.

8.4.1.2 Exceptional procedures

Not applicable.

8.4.2 Actions at the Originating PINX

8.4.2.1 Normal procedures

If the connectedName invoke APDU has been received in the CONNECT message with an element of type NamePresentationAllowed in the argument, the name information including the presentation indicator shall be delivered to the calling user if able and authorized to receive the connected name information.

If the busyName invoke APDU has been received in the messages that indicates the busy condition. with an element of type NamePresentationAllowed in the argument, the name information including the presentation indicator may be delivered to the calling user if able and authorized to receive the connected name information.

If the calledName invoke APDU has been received in the ALERTING message with an element of type NamePresentationAllowed in the argument, the name information including the presentation indicator may be delivered to the calling user if able and authorized to receive the connected name information.

If the connectedName invoke APDU has been received in the CONNECT message with an element of type NamePresentationRestricted in the argument, no name information other than the presentation indicator shall be delivered to the calling user, unless the calling user has an override capability.

If the busyName invoke APDU has been received in the messages that indicates the busy condition with an element of type NamePresentationRestricted in the argument, no name information other than the presentation indicator may be delivered to the calling user, unless the calling user has an override capability.

If the calledName invoke APDU has been received in the ALERTING message with an element of type NamePresentationRestricted in the argument, no name information other than the presentation indicator may be delivered to the calling user, unless the calling user has an override capability.

If either the connectedName invoke APDU has not been received in the CONNECT message or the connectedName invoke APDU has been received in the CONNECT message with an element of type NameNotAvailable in the argument, no name information other than the presentation indicator "name not available" shall be delivered to the calling user.

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If either calledName invoke APDU has not been received in the ALERTING message or the calledName invoke APDU has been received in the ALERTING message with an element of type NameNotAvailable in the argument, only the presentation indicator "name not available" may be delivered to the calling user.

If either the busyName invoke APDU has not been received in the messages that indicates the busy condition or the busyName invoke APDU has been received in the DISCONNECT message with an element of type NameNotAvailable in the argument, only the presentation indicator "name not available" may be delivered to the calling user.

8.4.2.2 Exceptional procedures

Not applicable.

8.4.3 Actions at a Transit PINX

No special actions are required in support of SS-CONP.

8.5 SS-CONP Impact of Interworking with Public ISDNs or with Non-ISDNs

8.5.1 Actions at the Outgoing Gateway PINX

On outgoing calls to another network, if the other network provides the name of the user who has answered the call and the name of the alerted user or the name of the user who cannot be reached, it shall be sent to the Originating PINX as specified in 8.4.1 (the Outgoing Gateway PINX thereby acting as a Terminating PINX).

If the other network does not provide the name information of the user who has answered the call, of the alerted user, or of the user who cannot be reached, but provides an indication that the name is restricted, the Outgoing Gateway PINX shall include the appropriate name invoke APDU (connectedName, calledName or busyName) in the appropriate call control message sent to the Originating PINX. Within the argument, choice namePresentationRestrictedNull of type NamePresentationRestricted shall be chosen for the element of type Name.

If the number of characters in the connected/called/busy party name exceeds 50, the PINX shall truncate the excess characters.

8.5.2 Actions at the Incoming Gateway PINX

On calls incoming from another network, the PISN shall deliver the name of the user who has answered the call and the name of the alerted user or the name of the user who cannot be reached, to the other network as specified in 8.4.2 (The Incoming Gateway PINX thereby acting as an Originating PINX), if this network supports an equivalent supplementary service.

8.6 Protocol Interaction between SS-CONP and other supplementary service and ANFs

This clause specifies protocol interactions with other supplementary services and ANFs for which stage 3 standards had been published at the time of publication of this International Standard. For interactions with supplementary services and ANFs for which stage 3 standards are published subsequent to the publication of this International Standard, see those other stage 3 standards.

NOTE 1 - Simultaneous conveyance of APDUs for SS-CONP and another supplementary service of or ANF in the same message, each in accordance with the requirements of its respective stage 3 standards, does not, on its own, constitute a protocol interaction.

NOTE 2 - Additional interactions that have no impact on the signalling protocol at the Q reference point can be found in the reverent stage 1 specification.

8.6.1 Calling Name Identification Presentation (SS-CNIP)

No protocol interaction.

8.6.2 Completion of Calls to Busy Subscribers (SS-CCBS)

No protocol interaction.

8.6.3 Completion of Calls on No Reply (SS-CCNR)

No protocol interaction.

8.6.4 Call Transfer (SS-CT)

Protocol interactions are specified in ISO/IEC 13869.

8.6.5 Call Forwarding Unconditional (SS-CFU)

Protocol interactions are specified in ISO/IEC 13873.

8.6.6 Call Forwarding Busy (SS-CFB)

Protocol interactions are specified in ISO/IEC 13873.

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8.6.7 Call Forwarding No Reply (SS-CFNR)

Protocol interactions are specified in ISO/IEC 13873.

8.6.8 Call Deflection (SS-CD)

The protocol interactions with Call Deflection Immediate shall be as specified in 7.6.5 for interaction with SS-CFU.

The protocol interactions with Call Deflection from Alert shall be as specified in 7.6.7 for interaction with SS-CFNR.

8.6.9 Path Replacement (ANF-PR)

No protocol interaction.

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Annex A
(normative)

Protocol Implementation Conformance Statement (PICS) proforma

A.1 Introduction

The supplier of a protocol implementation which is claimed to conform to this International Standard shall complete the Protocol Implementation Conformance Statement (PICS) proforma in A.3.

A completed PICS proforma is the PICS for the implementation in question. The PICS is a statement of which capabilities and options of the protocol have been implemented. The PICS can have a number of uses, including use:

- by a protocol implementor, as a check list to reduce the risk of failure to conform to the standard through oversight;
- by the supplier and acquirer (or potential acquirer) of the implementation, as a detailed indication of the capabilities of the implementation, stated relative to the common basis for understanding provided by the standard PICS proforma;
- by user (or potential user) of the implementation, as a basis for initially checking the possibility of interworking with another implementation (note that, while interworking cannot be guaranteed, failure to interwork can often be predicted from incompatible PICS);
- by a protocol tester, as the basis for selecting appropriate tests against which to assess the claim for conformance of the implementation.

A.2 Instructions for completing the PICS proforma

A.2.1 General structure of the PICS proforma

The PICS proforma is a fixed format questionnaire divided into subclauses each containing a group of individual items. Each item is identified by an item number, the name of the item (question to be answered) and the reference(s) to the clause(s) that specifies (specify) the item in the main body of this International Standard.

The "Status" column indicates whether an item is applicable and if so whether support is mandatory or optional. The following terms are used:

m	mandatory (the capability is required for conformance to the protocol);
o	optional (the capability is not required for conformance to the protocol, but if the capability is implemented, it is required to conform to the protocol specifications);
o.<n>	optional, but support of at least one of the group of options labelled by the same numeral <n> is required;
x	prohibited;
c.<cond>	conditional requirement, depending on support for the item or items listed in condition <cond>;
<item>:m	simple conditional requirement, the capability being mandatory if item number <item> is supported, otherwise not applicable;
<item>:o	simple conditional requirement, the capability being optional if item number <item> is supported, otherwise not applicable.

Answers to the questionnaire items are to be provided either in the "Support" column, by simply marking an answer to indicate a restricted choice (Yes or No) or in the "Not Applicable" column (N/A).

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A.2.2 Additional Information

Items of Additional Information allow a supplier to provide further information intended to assist the interpretation of the PICS. It is not intended or expected that a large quantity will be supplied, and a PICS can be considered complete without any such information. Examples might be an outline of the ways in which a (single) implementation can be set up to operate in a variety of environments and configurations.

References to items of Additional Information may be entered next to any answer in the questionnaire, and may be included in items of Exception information.

A.2.3 Exception Information

It may occasionally happen that a supplier will wish to answer an item with mandatory or prohibited status (after any conditions have been applied) in a way that conflicts with the indicated requirements. No pre-printed answer will be found in the Support column for this. Instead, the supplier is required to write into the Support column an x.<i> reference to an item of Exception Information, and to provide the appropriate rationale in the Exception item itself.

An implementation for which an Exception item is required in this way does not conform to this International Standard. A possible reason for the situation described above is that a defect in the Standard has been reported, a correction for which is expected to change the requirement not met by the implementation.

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A.3 PICS proforma for ISO/IEC 13868

A.3.1 Implementation identification

Supplier	
Contact point for queries about the PICS	
Implementation Name(s) and Version(s)	
Other information necessary for full identification, e.g. name(s) and version(s) for machines and/or operating systems; system name(s).	

Only the first three items are required for all implementations; other information may be completed as appropriate in meeting the requirement for full identification.

The terms Name and Version should be interpreted appropriately to correspond with a supplier's terminology (e.g. Type, Series, Model).

A.3.2 Protocol Summary

Protocol Version	1.0
Addenda Implemented (if applicable)	
Amendments implemented	
Have any exception items been required (see A.2.3)?	No [ ] Yes [ ] (The answer Yes means that the implementation does not conform to this International Standard.)

Date of Statement	

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A.3.3 Supplementary Services

Item	Name of Item	Reference	Status	N/A	Support
A1	Support of SS-CNIP	7	o.1		Yes [ ] No [ ]
A2	Support of SS-CONP	8	o.1		Yes [ ] No [ ]

A.3.4 Procedures for SS-CNIP

Item	Name of Item	Reference	Status	N/A	Support
B1	Procedures at the Originating PINX	7.4.1	A1:o.2		Yes [ ] No [ ]
B2	Procedures at the Terminating PINX	7.4.2	A1:o.2		Yes [ ] No [ ]
B3	Procedures at the Incoming Gateway PINX	7.5.1	A1:o.2		Yes [ ] No [ ]
B4	Procedures at the Outgoing Gateway PINX	7.5.2	A1:o.2		Yes [ ] No [ ]
B5	Encoding of the callingName APDU	6	A1:m		Yes [ ]
B6	Sending of the callingName APDU in SETUP	6, 7.4.1	c.1	[ ]	Yes [ ]
B7	Receipt of callingName APDU in SETUP	6, 7.4.2	c.2	[ ]	Yes [ ]
B8	Sending of character set number	6.1	c.3	[ ]	Yes [ ] No [ ]
B9	Sending of callingName APDU in FACILITY	7.5.1	B3: o	[ ]	Yes [ ] No [ ]
B10	Receipt of callingName APDU in FACILITY	7.4.2	B2: o	[ ]	Yes [ ] No [ ]

c.1: if B1 or B3 then m
else N/A

c.2 if B2 or B4 then m
else N/A

c.3 if B1 or B3 then o
else N/A

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A.3.5 Procedures for SS-CONP

Item	Name of Item	Reference	Status	N/A	Support
C1	Procedures at the Terminating PINX	8.4.1	A2:o.3		Yes [ ] No [ ]
C2	Procedures at the Originating PINX	8.4.2	A2:o.3		Yes [ ] No [ ]
C3	Procedures at the Outgoing Gateway PINX	8.5.1	A2:o.3		Yes [ ] No [ ]
C4	Procedures at the Incoming Gateway PINX	8.5.2	A2:o.3		Yes [ ] No [ ]
C5	Encoding of connectedName APDU	6	A2:m		Yes [ ]
C6	Encoding of busyName APDU	6	A2:o		Yes [ ] No [ ]
C7	Encoding of calledName APDU	6	A2:o		Yes [ ] No [ ]
C8	Sending of connectedName APDU in CONNECT	6, 8.4.1	c.1	[ ]	Yes [ ]
C9	Receipt of connectedName APDU in CONNECT	6, 8.4.2	c.2	[ ]	Yes [ ]
C10	Sending of busyName APDU in DISCONNECT	6, 8.4.1	c.3	[ ]	Yes [ ] No [ ]
C11	Receipt of busyName APDU in DISCONNECT	6, 8.4.2	c.4	[ ]	Yes [ ] No [ ]
C12	Sending of calledName APDU in ALERTING	6, 8.4.1	c.3	[ ]	Yes [ ] No [ ]
C13	Receipt of calledName APDU in ALERTING	6, 8.4.3	c.4	[ ]	Yes [ ] No [ ]
C14	Sending of character set number	6.1	c.3	[ ]	Yes [ ] No [ ]

c.1: if C1 or C3 then m else N/A

c.2: if C2 or C4 then m else N/A

c3: if C1 or C3 then o else N/A

c4: if C2 or C4 then o else N/A

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Annex B
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Specification and Description Language (SDL) Representation

The diagrams in this annex use the Specification and Description Language defined in ITU-T Rec. Z.100 (1999).

Each diagram represents the behavior of an SS-CNIP or SS-CONP Supplementary Service Control entity at a particular type of PINX. In accordance with the protocol model described in CD 11582, the Supplementary Service Control entity uses, via the Coordination Function, the services of Generic Functional Procedures Control and Basic Call Control.

Where an output symbol represents a primitive to the Coordination Function, and that primitive results in a layer 3 message being sent, the output bears the name of the message and any remote operations APDU(s) or notification(s) contained in that message. In case of a message specified in DIS 11572, basic call actions associated with the sending of that message are deemed to occur.

B.1 SDL Representation of SS-CNIP

Figure B.1 shows the behavior of an SS-CNIP Supplementary Service Control entity within the Originating PINX. Figure B.2 shows the behavior of an SS-CNIP Supplementary Service Control entity within the Terminating PINX.

In figure B.1 output signals to the right represent messages sent via the outgoing side protocol control and input signals from the left represent primitives from the SSCE user.

In figure B.2 output signals to the right represent primitives to the SSCE user and input signals from the left represent messages received via the incoming side protocol control.

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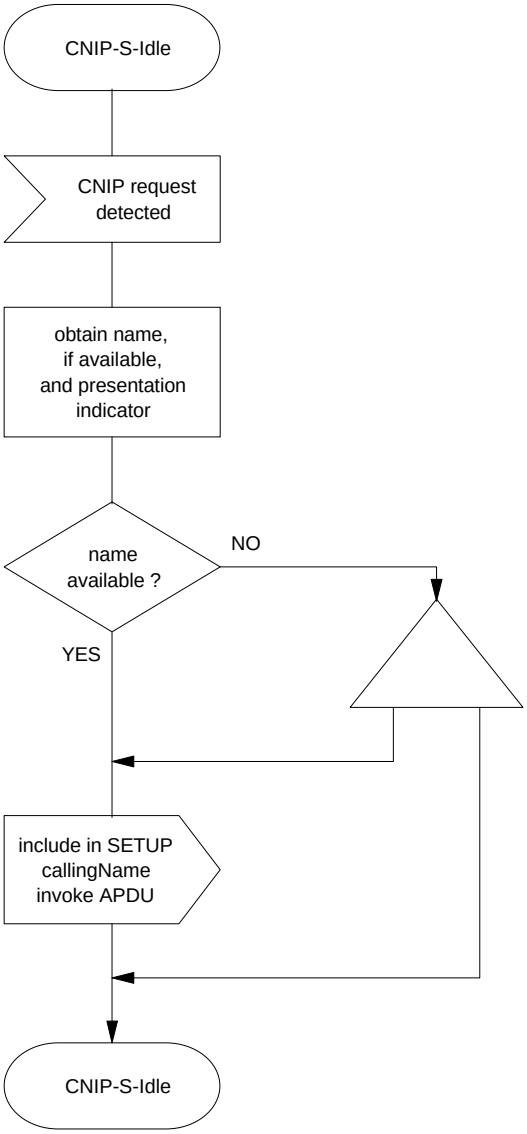


Figure B.1 - SDL Representation of SS-CNIP at the Originating PINX

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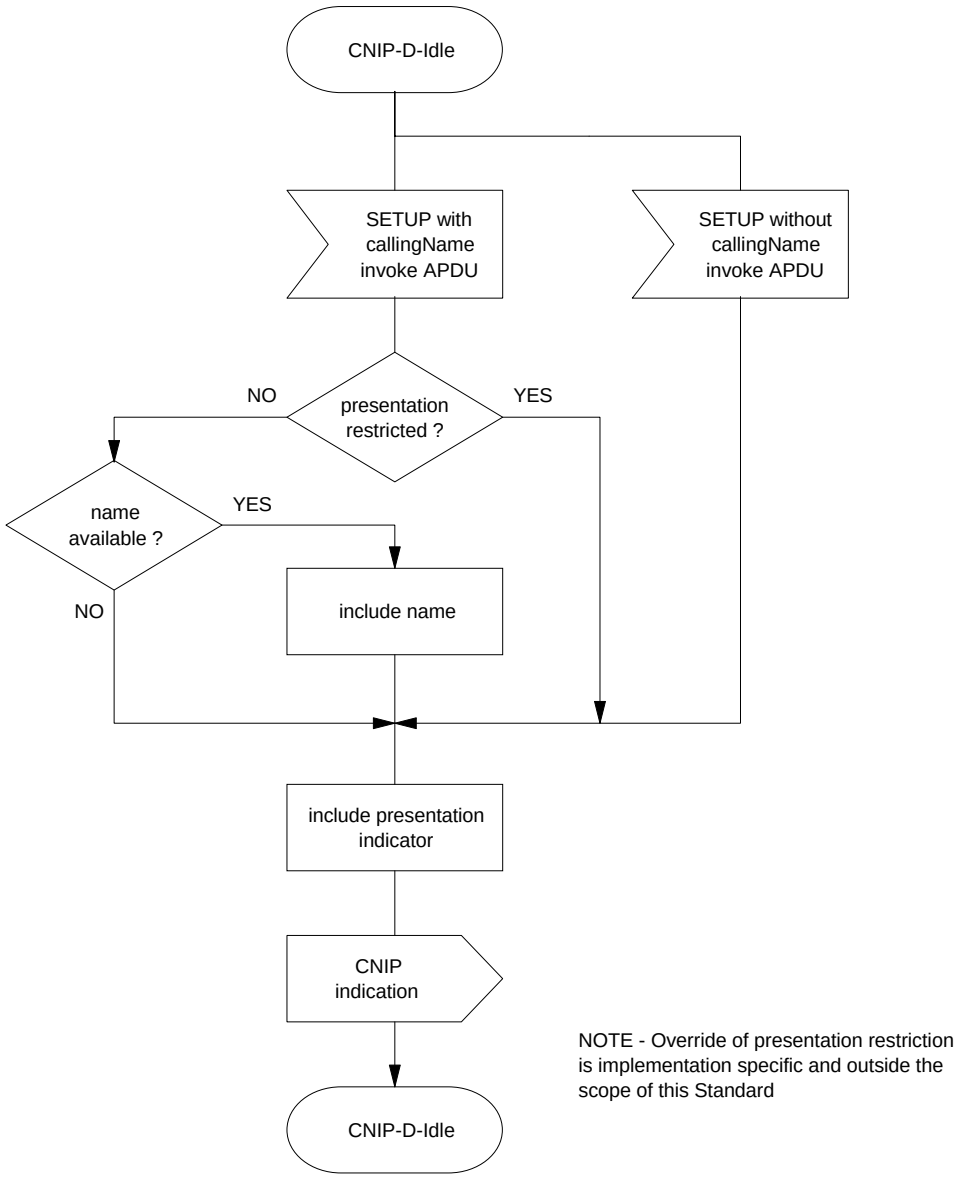


Figure B.2 - SDL Representation of SS-CNIP at the Terminating PINX

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B.2 SDL Representation of SS-CONP

Figure B.3 shows the behavior of an SS-CONP Supplementary Service Control entity within the Terminating PINX. Figure B.4 shows the behavior of an SS-CNIP Supplementary Service Control entity within the Originating PINX.

In figure B.3 output signals to the left represent messages sent via the incoming side protocol control and input signals from the right represent primitives from the SSCE user.

In figure B.4 output signals to the left represent primitives to the SSCE user and input signals from the right represent messages received via the outgoing side protocol control.

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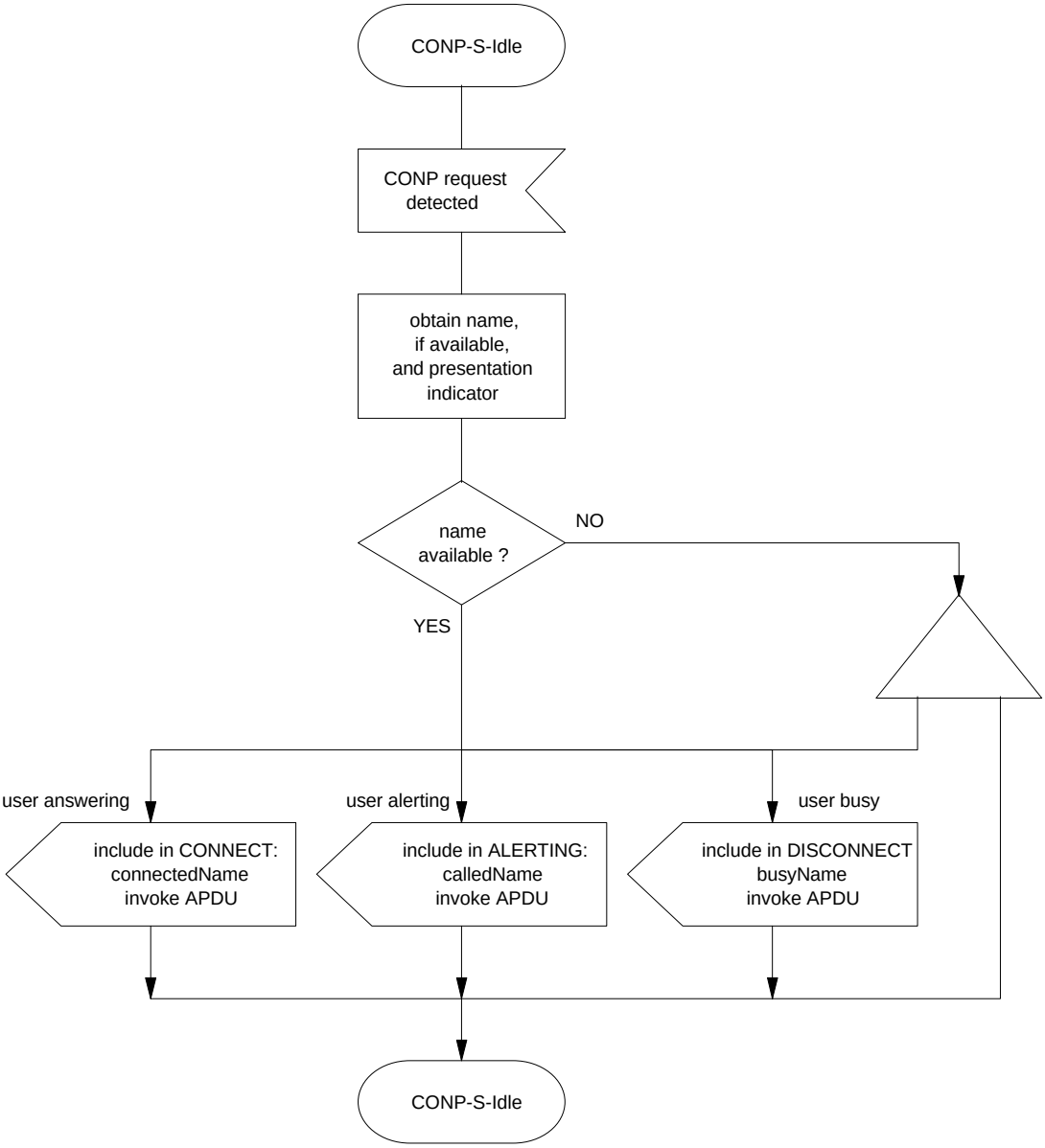


Figure B.3 - SDL Representation of SS-CONP at the Terminating PINX

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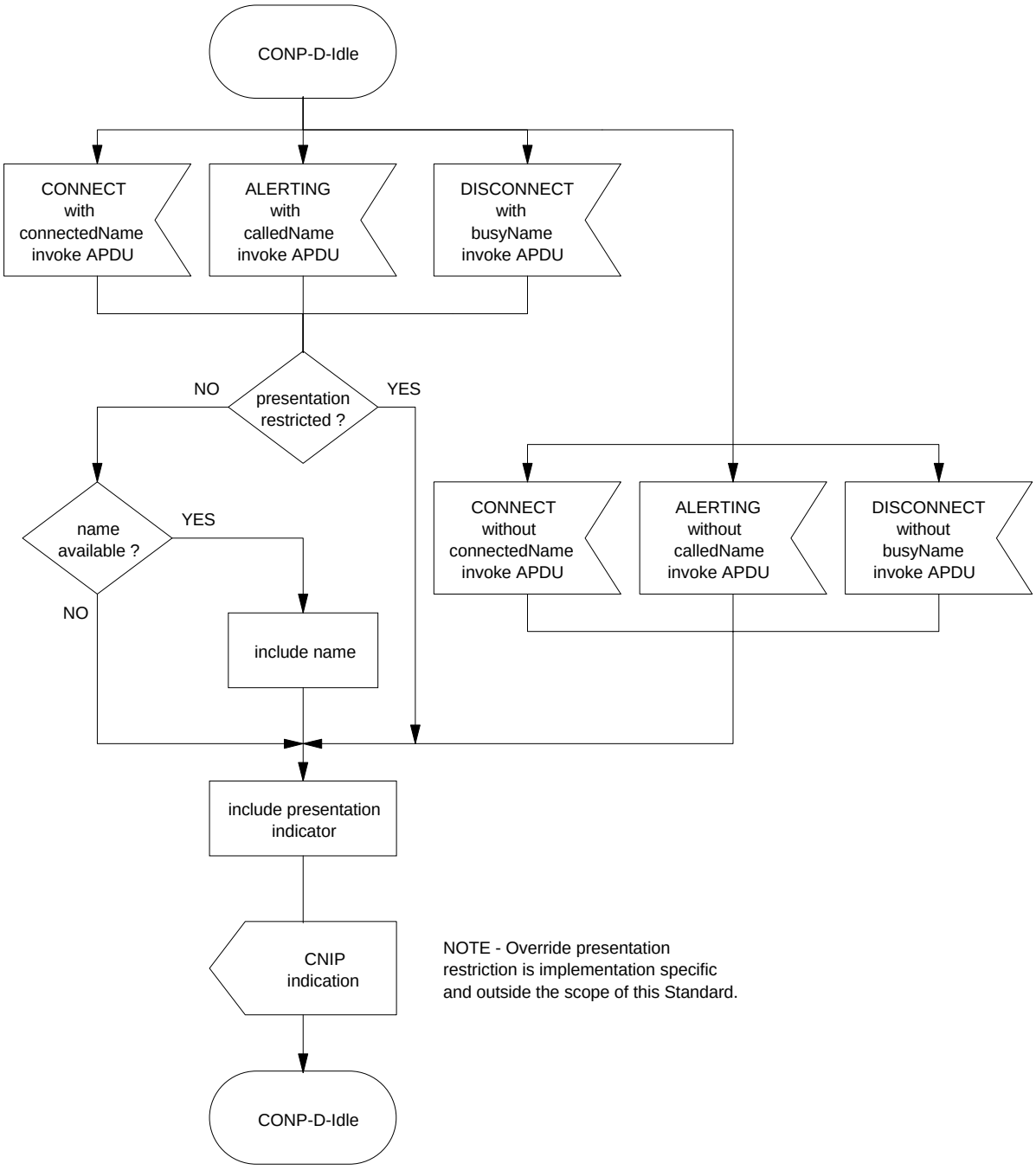


Figure B.4 - SDL Representation of SS-CONP at the Originating PINX

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Annex C
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ASN.1 definitions according to ITU-T Recs. X.208 / X.209

This annex lists all ASN.1 modules as they were defined in the previous edition of ISO/IEC 13868, i.e. based on ITU-T Recommendations X.208 / X.209. Starting with this edition the ASN.1 modules within ISO/IEC 13868 comply with ITU-T Recommendations X.680 / X.690. Please note that regardless of which version of these modules is used as a base of a QSIG implementation, the line encoding remains unchanged. Changes in future editions to modules based on X.680 / X.690 ASN.1 are not reflected in the modules in this annex.

Table C.1 - Name-Operations – based on ITU-T Recs. X.208 / X.209

```
Name-Operations
                        { iso ( 1)  standard ( 0) pss1-name (13868) name-operations( 0)  }


DEFINITIONS   ::=

BEGIN

EXPORTS       Name, NameSet;

IMPORTS

        OPERATION, ERROR    FROM        Remote-Operation-Notation
                                        {
                                        joint-iso-ccitt( 2) remote-operations( 4)
                                         notation( 0)
                                         }
        Extension           FROM        Manufacturer-specific-service-extension-definition
                                        {
                                        iso standard
                                        pss1-generic-procedures (11582)
                                        msi-definition ( 0)
                                        };
        CallingName ::=OPERATION
                        ARGUMENT CHOICE
                                {       Name, SEQUENCE {Name, CHOICE {
                                        [5] IMPLICIT Extension,
                                        [6] IMPLICIT SEQUENCE OF Extension } OPTIONAL }}

        CalledName ::= OPERATION
                        ARGUMENT CHOICE
                                {       Name, SEQUENCE {Name, CHOICE {
                                        [5] IMPLICIT Extension,
                                        [6] IMPLICIT SEQUENCE OF Extension } OPTIONAL }}
```


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Table C.1 - Name-Operations – based on ITU-T Recs. X.208 / X.209 (continued)

```
ConnectedName ::=   OPERATION
                    ARGUMENT CHOICE
                        {       Name, SEQUENCE {Name, CHOICE {
                                [5] IMPLICIT Extension,
                                [6] IMPLICIT SEQUENCE OF Extension } OPTIONAL }}

BusyName ::=        OPERATION
                    ARGUMENT CHOICE
                        {       Name, SEQUENCE {Name, CHOICE {
                                [5] IMPLICIT Extension,
                                [6] IMPLICIT SEQUENCE OF Extension } OPTIONAL }}

Name                ::= CHOICE
                        {       NamePresentationAllowed,
                                NamePresentationRestricted,
                                NameNotAvailable }

NamePresentationAllowed
                    ::= CHOICE
                        {       namePresentationAllowedSimple [0] IMPLICIT NameData,
                                namePresentationAllowedExtended [1] IMPLICIT NameSet }
                        -- iso8859-1 is implied in namePresentationAllowedSimple.

NamePresentationRestricted
                    ::= CHOICE
                        {       namePresentationRestrictedSimple [2] IMPLICIT NameData,
                                namePresentationRestrictedExtended [3] IMPLICIT NameSet,
                                namePresentationRestrictedNull [7] IMPLICIT NULL}
                        -- iso8859-1 is implied in namePresentationRestrictedSimple.
                        -- namePresentationRestrictedNull shall only be used in the
                        -- case of interworking where the other network provides an
                        -- indication that the name is restricted without the name itself.

NameNotAvailable
                    ::= [4] IMPLICIT NULL

NameData            ::= OCTET STRING (SIZE (1..50))
                        -- The maximum allowed size of the name field is 50 octets.
                        -- The minimum required size of the name field is 1 octet.

NameSet             ::= SEQUENCE
                        {       nameData        NameData,
                                characterSet    CharacterSet OPTIONAL }
                        -- If characterSet is not included, iso8859-1 is implied.
```

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Table C.1 - Name-Operations – based on ITU-T Recs. X.208 / X.209 (concluded)

```
CharacterSet    ::= INTEGER
                        {       unknown (0),
                                iso8859-1 (1),
                                -- The value 2 was assigned for CCITT Rec. T.61
                                -- which has been withdrawn by ITU-T.
                                iso8859-2 (3),
                                iso8859-3 (4),
                                iso8859-4 (5),
                                iso8859-5 (6),
                                iso8859-7 (7),
                                iso10646-BmpString (8),
                                iso10646-utf-8String (9)
                                } (0..255)
                                -- The character set "iso8859-1" is specified in International
                                -- Standard ISO 8859-1
                                -- The character set “iso8859-2” is specified in International
                                -- Standard ISO 8859-2
                                --The character set “iso8859-3” is specified in International
                                -- Standard ISO 8859-3
                                --The character set “iso8859-4” is specified in International
                                -- Standard ISO 8859-4
                                --The character set “iso8859-5” is specified in International
                                -- Standard ISO 8859-5
                                --The character set “iso8859-7” is specified in International
                                -- Standard ISO 8859-7
                                -- Other character sets might be added in further editions of
                                -- this Standard
                                -- The character set “iso10646-BmpString” is specified in International
                                -- Standard ISO 10646-1 and in ITU-T Rec. X.680
                                -- with this character set, each character occupies 2 octets
                                -- in NameData
                                -- The character set “iso10646-utf-8String” is specified in International
                                -- Standard ISO 10646-1
                                -- UTF-8-String is defined in Annex R of ISO 10646-1
                                -- with this character set, each character occupies a variable
                                -- number of octets (1…6) in NameData

callingName             CallingName             ::= localValue 0
calledName              CalledName              ::= localValue 1
connectedName           ConnectedName           ::= localValue 2
busyName                BusyName                ::= localValue 3

END                     -- of name operations
```


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ICS 33.040.35

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