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Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Inter-exchange signalling protocol — Common Information additional network feature

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Réseau privé à intégration de services — Protocole de signalisation d'échange — Caractéristique de réseau additionnelle d'information courante

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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 15772 was prepared by ECMA (as ECMA-251) 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 15772:1998), 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. The series uses ISDN concepts as developed by ITU-T and conforms to the framework of 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 Common Information additional network feature.

The 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 — Common Information additional network feature

1 Scope

This International Standard specifies the signalling protocol for the support of the Common Information additional network feature (ANF-CMN) at the Q reference point between Private Integrated services Network eXchanges (PINX) connected together within a Private Integrated Services Network (PISN).

ANF-CMN is an additional network feature which enables the exchange of Common Information between entities acting on behalf of the two ends of a connection through a PISN. This Common Information is a collection of miscellaneous information that relates to the user or equipment at one end of a connection and includes one or more of the following: Feature Identifiers, Party Category, Equipment Identity. This information, when received by an entity, can be used for any purpose, e.g. as the basis for indications to the local user or to another network or in order to filter feature requests.

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

Additional network feature specifications are produced in three stages and according to the method described 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 15771.

The signalling protocol for ANF-CMN 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 the Q reference point between ANF-CMN and other supplementary services and ANFs.

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

This International Standard is applicable to PINXs which can interconnect 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.

Conformance to this International Standard includes conforming to those clauses that specify protocol interactions between ANF-CMN and other supplementary services and ANFs for which signalling protocols at the Q reference point are supported in accordance with the stage 3 standards concerned.

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 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 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*

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

ISO/IEC 15054:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call Interception additional network feature*

ISO/IEC 15771:1998, *Information technology -Telecommunications and information exchange between systems - Private Integrated Services Network - Specification, functional model and information flows - Common information additional network feature*

ISO/IEC 15431:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Wireless terminal call handling additional network features*

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. Q.950:2000, *Supplementary services protocols, structure and general principles*

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

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:

- ANF-CMN user (ISO/IEC 15771)
- Application Protocol Data Unit (APDU) (ISO/IEC 11582)
- Backward direction (ISO/IEC 15771)
- Basic Service (ITU-T Rec. I.210)
- Call, Basic Call (ISO/IEC 11582)
- Equipment Identity (ISO/IEC 15771)
- Feature Identifier (ISO/IEC 15771)
- Forward direction (ISO/IEC 15771)
- Originating PINX (ISO/IEC 11572)
- Party Category (ISO/IEC 15771)
- 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)
- Supplementary Service (ITU-T Rec. I.210)
- Supplementary Service Control Entity (ISO/IEC 11582)
- Terminating PINX (ISO/IEC 11572)
- Transit PINX (ISO/IEC 11572)

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5 List of acronyms

ANF	Additional Network Feature
ANF-CMN	Additional Network Feature Common Information
APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation no.1
ISDN	Integrated Services Digital Network
NFE	Network Facility Extension
PICS	Protocol Implementation Conformance Statement
PINX	Private Integrated services Network eXchange
PISN	Private Integrated Services Network
SDL	Specification and Description Language
SS	Supplementary Service

6 Signalling protocol for the support of ANF-CMN

6.1 ANF-CMN description

ANF-CMN is an additional network feature which enables the exchange of Common Information between ANF-CMN users acting on behalf of the two ends of a connection through a PISN. This Common Information is a collection of miscellaneous information that relates to the user or equipment at one end of a connection and includes one or more of the following: Feature Identifiers, Party Category, Equipment Identity. This information, when received by an ANF-CMN user, can be used for any purpose, e.g. as the basis for indications to the local user or to another network or in order to filter feature requests.

A solicited and an unsolicited service is offered to an ANF-CMN user.

The solicited service enables the ANF-CMN user to request the Common Information from a remote ANF-CMN user.

The unsolicited service supplies the Common Information to an ANF-CMN user.

These services may be combined and are not mutually exclusive.

The Common Information contains the SS/ANF-identifiers supported by the ANF-CMN user and available for the particular call, the possible options and - if applicable - details of the SS/ANF. Additionally, equipment identity and party category are contained.

6.2 ANF-CMN operational requirements

6.2.1 Requirements on an Originating PINX

Call establishment procedures for the outgoing side of an inter-PINX link and call 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 an End PINX, shall apply.

6.2.2 Requirements on a Terminating PINX

Call establishment procedures for the incoming side of an inter-PINX link and call 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 an End PINX, shall apply.

6.2.3 Requirements on a Transit PINX

Basic call procedures as specified in ISO/IEC 11572 for a Transit PINX shall apply.

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

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6.3 ANF-CMN coding requirements

6.3.1 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 D.

Table 1 - Operations in Support of ANF-CMN

```
Common-Information-Operations-asn1-97
                {iso (1)  standard (0) pss1-common-information (15772) operations-asn1-97 (1)}

DEFINITIONS EXPLICIT TAGS ::=

BEGIN

IMPORTS         OPERATION, ERROR FROM Remote-Operations-Information-Objects
                        {joint-iso-itu-t (2) remote-operations (4) informationObjects (5) version1 (0)}
                EXTENSION, Extension{} FROM Manufacturer-specific-service-extension-class-asn1-97
                        {iso (1) standard (0) pss1-generic-procedures (11582) msi-class-asn1-97 (11)};

CMN-Operations OPERATION ::= {cmnRequest | cmnInform }

cmnRequest      OPERATION ::= {
                        ARGUMENT                DummyArg
                        RESULT                  CmnArg
                        ALWAYS RESPONDS         FALSE
                        CODE                    local: 84}

cmnInform       OPERATION ::= {
                        ARGUMENT                CmnArg
                        RETURN RESULT           FALSE
                        ALWAYS RESPONDS         FALSE
                        CODE                    local: 85}

CmnArg          ::=  SEQUENCE  {
                        featureIdentifier       [2] IMPLICIT FeatureIdList              OPTIONAL,
                        ssDNDOprotectionLevel   [3] IMPLICIT INTEGER (0..3)             OPTIONAL,
                                -- Supplementary Service Do Not Disturb Override Protection level,
                                -- meaningful only in backward direction; inclusion indicates
                                -- support of SS-DNDO as well as the applicable protection level.
                        ssCIprotectionLevel     [4] IMPLICIT INTEGER (0..3)             OPTIONAL,
                                -- Supplementary Service Call Intrusion Protection level,
                                -- meaningful both in forward & backward direction; inclusion indicates support
                                -- of SS-CI as an Unwanted user PINX (forward direction) or as a Terminating
                                -- PINX (backward direction), as well as the applicable protection level.
                        equipmentIdentity       [5] IMPLICIT EquipmentId                OPTIONAL,
                        partyCategory           [6] IMPLICIT PartyCategory              OPTIONAL,
                        extension               CHOICE      {
                                                        single          [7] IMPLICIT Extension{{CMNExtSet}},
                                                        multiple        [8] IMPLICIT SEQUENCE OF
                                                                Extension{{CMNExtSet}}
                                                                }   OPTIONAL        }
```


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Table 1 - Operations in Support of ANF-CMN (continued)

```
DummyArg ::= CHOICE {
                null        NULL,
                single      [1] IMPLICIT Extension{{CMNExtSet}},
                multiple    [2] IMPLICIT SEQUENCE OF Extension{{CMNExtSet}}
                }

FeatureIdList ::= BIT STRING { -- bit set to ONE means the corresponding feature
                               -- is available for this call
    reserved                                (0),  -- this Bit shall be reserved
    ssCFreRoutingSupported                  (1),  -- Call Forwarding rerouting supported
                                                  -- meaningful only in forward direction
                                                  -- during call establishment
    ssCTreRoutingSupported                  (2),  -- Call Transfer rerouting supported
                                                  -- meaningful both in forward & backward
                                                  -- direction during call establishment
    ssCCBSpossible                          (3),  -- CCBS possible
                                                  -- meaningful only in backward direction
                                                  -- before receipt of ALERTING/CONNECT
    ssCCNRpossible                          (4),  -- CCNR possible
                                                  -- meaningful only in backward direction
                                                  -- before receipt of CONNECT
    ssCOsupported                           (5),  -- Call Offer supported
                                                  -- meaningful only in backward direction
                                                  -- during call establishment

                                                  -- Call Intrusion
    ssCIforcedRelease                       (6),  -- meaningful only in backward direction
    ssCIisolation                           (7),  -- meaningful only in backward direction
    ssCIwaitOnBusy                          (8),  -- meaningful only in backward direction

                                                  -- Advice of Charge
    ssAOCsupportChargeRateProvAtGatewPinx   (9),  -- meaningful only in
                                                  -- backward direction
    ssAOCsupportInterimChargeProvAtGatewPinx (10), -- meaningful only in
                                                  -- backward direction
    ssAOCsupportFinalChargeProvAtGatewPinx  (11), -- meaningful only in
                                                  -- backward direction

    anfPRsupportedAtCooperatingPinx         (12), -- Path replacement
                                                  -- meaningful both in forward &
                                                  -- backward direction

                                                  -- Call Interception
    anfCINTcanInterceptImmediate            (13), -- meaningful only in
                                                  -- forward direction
    anfCINTcanInterceptDelayed              (14), -- meaningful only in
                                                  -- forward direction
```

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Table 1 - Operations in Support of ANF-CMN (concluded)

```
                    anfWTMIreRoutingSupported       (15),  -- Incoming WTM call
                                                           -- meaningful only in
                                                           -- forward direction
                    anfPUMIreRoutingSupported       (16),  -- Incoming PUM call
                                                           -- meaningful only in
                                                           -- forward direction
                    ssSSCTreRoutingSupported        (17)   -- Single Step Call Transfer rerouting
                                                           -- supported
                                                           -- meaningful both in forward and
                                                           -- backward direction during call
                                                           -- establishment
                        } (SIZE (1..64))

EquipmentId     ::= SEQUENCE {
                    nodeId          [1] IMPLICIT IA5String (SIZE (1..10))  OPTIONAL,
                    groupId         [2] IMPLICIT IA5String (SIZE (1..10))  OPTIONAL,
                    unitId          [3] IMPLICIT IA5String (SIZE (1..10))  OPTIONAL
                        }
-- NOTE:
-- The purpose of the Equipment Id is to indicate, to another user or to another PINX, information about a
-- calling or called party involved in a call.
-- Assignment of network wide unique Equipment Id values is outside the scope of this Standard.

PartyCategory   ::= ENUMERATED {
                    unknown         (0),
                    extension       (1),
                    pisnAttendant   (2),
                    emergExt        (3)
                        }

-- NOTE:
-- The purpose of the Party category is to indicate, to another user or to another PINX, the category of a user
-- involved in a call. An Originating PINX may include an indication of the calling user's category in the SETUP
-- message sent across an inter-PINX link. A Terminating PINX may include an indication of the called user's
-- category in an ALERTING message or CONNECT message sent across an inter-PINX link. A received
-- Party category information may be used for display at the user's terminal or for PINX internal call handling,
-- e.g. depending on whether the calling or called party is an extension or a PISN attendant, the PINX internal
-- call handling may invoke different options of a supplementary service related to that call.

CMNExtSet EXTENSION ::= {...}


END                 -- of Common-Information-Operations-asn1-97
```

6.3.2 Notifications

Not applicable.

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6.3.3 Information elements

6.3.3.1 Facility information element

The operations defined in 6.3.1 shall be coded in the Facility information element in accordance with ISO/IEC 11582.

The Facility information element shall contain a NFE with the destinationEntity element having the value endPINX.

A Facility information element conveying a CmnInform invoke APDU shall also contain an Interpretation APDU with the value discardAnyUnrecognisedInvokePdu.

In a Facility information element conveying a CmnRequest invoke APDU, the Interpretation APDU shall either be omitted or included with the value rejectAnyUnrecognisedInvokePdu.

6.3.3.2 Other information elements

No other information elements used.

6.3.4 Messages

The Facility information element shall be conveyed in the messages as specified in clause 10 of ISO/IEC 11582.

6.4 ANF-CMN State definitions

6.4.1 States at the Originating PINX

The procedures for the Originating PINX are written in terms of the following conceptual states existing within the ANF-CMN Supplementary Service Control entity in that PINX in association with a particular call.

6.4.1.1 State CMN-Idle

ANF-CMN is not operating.

6.4.1.2 State CMN-Wait-Answer

The Originating PINX has requested common information and is waiting for an answer from the Terminating PINX.

6.4.2 States at the Terminating PINX

The procedures for the Terminating PINX are written in terms of the following conceptual states existing within the ANF-CMN Supplementary Service Control entity in that PINX in association with a particular call.

6.4.2.1 State CMN-Idle

ANF-CMN is not operating.

6.4.2.2 State CMN-Wait-Answer

The Terminating PINX has requested common information and is waiting for an answer from the Originating PINX (ANF-CMN invoked in backward direction).

6.5 ANF-CMN Signalling procedures for activation, deactivation and registration

Not applicable.

6.6 ANF-CMN Signalling procedures for invocation and operation

The procedures described in the following for the invocation of ANF-CMN at call establishment are mandatory, whereas the procedures for the invocation in the active phase of a call are optional.

Examples of message sequences are shown in annex B.

6.6.1 Actions at the Originating PINX

The SDL representation of procedures at the Originating PINX is shown in C.1 of annex C.

6.6.1.1 Normal procedures

To invoke the solicited service of ANF-CMN, i.e. to request common information from the remote side, the Originating PINX shall send a CmnRequest invoke APDU. For invocation during the establishment phase of a call, the APDU may either be sent within a SETUP message or within a FACILITY message using the call reference of that call. However, the FACILITY message shall not be used before the first end-to-end basic call message (i.e. ALERTING, CONNECT, PROGRESS) has been received. For invocation during the active phase of a call, the APDU shall be sent within a FACILITY message using the call reference of that call. Only if the CmnRequest invoke APDU is sent in a FACILITY message, timer T1 shall be started. If the CmnRequest invoke APDU is sent in a SETUP message, basic call timers provide sufficient protection. In both cases, after sending the CmnRequest invoke APDU, the Originating PINX shall enter the CMN-Wait-Answer state.

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In the CMN-Wait-Answer state, upon receipt of a CmnRequest return result APDU in a basic call message (e.g. ALERTING, CONNECT, PROGRESS) or in a FACILITY message, the Originating PINX shall stop timer T1, if running, and enter the CMN-Idle state.

NOTE - The common information contained in the received CmnRequest return result APDU should be conveyed to the ANF-CMN user.

To invoke the unsolicited service of ANF-CMN, i.e. to send unsolicited common information to the remote side, the Originating PINX shall send a CmnInform invoke APDU. For invocation during the establishment phase of a call, the APDU may either be sent within a SETUP message or within a FACILITY message using the call reference of that call. However, the FACILITY message shall not be used before the first end-to-end basic call message (i.e. ALERTING, CONNECT, PROGRESS) has been received. For invocation during the active phase of a call, the APDU shall be sent within a FACILITY message using the call reference of that call.

NOTE - The CmnInform invoke APDU contains the common information provided by the ANF-CMN user.

If the solicited service of ANF-CMN is invoked in backward direction, i.e. upon receipt of a CmnRequest invoke APDU in a basic call message (e.g. ALERTING, CONNECT, PROGRESS) or in a FACILITY message in the CMN-Idle state, the Originating PINX, if common information is available, shall send a CmnRequest return result APDU in order to send the solicited common information to the remote side and remain in the CMN-Idle state. The CmnRequest return result APDU shall be sent within a FACILITY message using the call reference of that call.

NOTE - The invocation of ANF-CMN, solicited service, should be indicated to the ANF-CMN user. The common information contained in the CmnRequest return result APDU to be sent has to be provided by the ANF-CMN user.

Upon receipt of a CmnInform invoke APDU in any message, the Originating PINX shall remain in the CMN-Idle state.

NOTE - The common information contained in the received CmnInform invoke APDU should be conveyed to the ANF-CMN user.

6.6.1.2 Exceptional procedures

In the CMN-Wait-Answer state, upon receipt of any message containing a CmnRequest reject APDU, the Originating PINX shall stop timer T1, if running, and enter the CMN-Idle state, and the call shall continue in accordance with ISO/IEC 11572.

Upon expiry of timer T1 the Originating PINX shall enter the CMN-Idle state and the call shall continue in accordance with ISO/IEC 11572.

In the CMN-Wait-Answer state, if timer T1 is not running (i.e. the CmnRequest invoke APDU was sent in a SETUP message), the receipt of a CONNECT message that does not contain a CmnRequest return result or reject APDU shall cause state CMN-Idle to be entered.

If the basic call is cleared, while in the CMN-Wait-Answer state, timer T1 shall be stopped and the CMN-Idle state shall be entered.

NOTE - Failure of ANF-CMN should be indicated to the ANF-CMN user.

6.6.2 Actions at the Terminating PINX

The SDL representation of procedures at the Terminating PINX is shown in C.2 of annex C.

6.6.2.1 Normal procedures

Upon receipt of a CmnRequest invoke APDU in a SETUP or a FACILITY message, the Terminating PINX, if common information is available, shall send a CmnRequest return result APDU in order to send the solicited common information to the remote side and remain in the CMN-Idle state. The CmnRequest return result APDU may either be sent within a basic call message (e.g. ALERTING, CONNECT, PROGRESS) or within a FACILITY message using the call reference of that call. However, if the CmnRequest invoke APDU was received in a SETUP message, the CmnRequest return result APDU shall be sent within the CONNECT message, if not already sent.

NOTE - The invocation of ANF-CMN, solicited service, should be indicated to the ANF-CMN user. The common information contained in the CmnRequest return result APDU to be sent has to be provided by the ANF-CMN user.

Upon receipt of a CmnInform invoke APDU in any message, the Terminating PINX shall remain in the CMN-Idle state.

NOTE - The common information contained in the received CmnInform invoke APDU should be conveyed to the ANF-CMN user.

To invoke the solicited service of ANF-CMN in backward direction, the Terminating PINX shall send a CmnRequest invoke APDU, start timer T1 and enter the CMN-Wait-Answer state. For invocation during the establishment phase of a call, the APDU may either be sent within a basic call message (e.g. ALERTING, CONNECT, PROGRESS) or within a FACILITY

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message using the call reference of that call. For invocation during the active phase of a call, the APDU shall be sent within a FACILITY message using the call reference of that call.

In the CMN-Wait-Answer state, upon receipt of a CmnRequest return result APDU in a FACILITY message, the Terminating PINX shall stop timer T1 and enter the CMN-Idle state.

NOTE - The common information contained in the received CmnRequest return result APDU should be conveyed to the ANF-CMN user.

To invoke the unsolicited service of ANF-CMN in backward direction, the Terminating PINX shall send a CmnInform invoke APDU. For invocation during the establishment phase of a call, the APDU may either be sent within a basic call message (e.g. ALERTING, CONNECT, PROGRESS) or within a FACILITY message using the call reference of that call. For invocation during the active phase of a call, the APDU shall be sent within a FACILITY message using the call reference of that call.

NOTE - The CmnInform invoke APDU contains the common information provided by the ANF-CMN user.

6.6.2.2 Exceptional procedures

In the CMN-Wait-Answer state, upon receipt of any message containing a CmnRequest reject APDU, the Terminating PINX shall stop timer T1 and enter the CMN-Idle state, and the call shall continue in accordance with ISO/IEC 11572.

Upon expiry of timer T1 the Terminating PINX shall enter the CMN-Idle state and the call shall continue in accordance with ISO/IEC 11572.

If the basic call is cleared, while in the CMN-Wait-Answer state, timer T1 shall be stopped and the CMN-Idle state shall be entered.

NOTE - Failure of ANF-CMN should be indicated to the ANF-CMN user.

6.6.3 Actions at a Transit PINX

Not applicable.

6.7 ANF-CMN Impact of interworking with public ISDNs

At the time of publication of this International Standard, no equivalent service exists in public ISDNs.

In case of interworking with a public ISDN, the Incoming Gateway PINX shall behave as an Originating PINX for ANF-CMN and the Outgoing Gateway PINX shall behave as a Terminating PINX.

Any information obtained from the public ISDN concerning availability of supplementary services shall, if possible, be mapped to Common Information in the Gateway PINX and vice versa.

6.8 ANF-CMN Impact of interworking with non-ISDNs

In case of interworking with a non-ISDN, the Incoming Gateway PINX shall behave as an Originating PINX for ANF-CMN and the Outgoing Gateway PINX shall behave as a Terminating PINX.

Any information obtained from the non- ISDN concerning availability of supplementary services shall, if possible, be mapped to Common Information in the Gateway PINX and vice versa.

6.9 Protocol interactions between ANF-CMN 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 other 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 - Simultaneous conveyance of APDUs for ANF-CMN and another supplementary service and 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.

6.9.1 Interactions with Calling Name Identification Presentation (CNIP)

No interaction.

6.9.2 Interactions with Connected Name Identification Presentation (CONP)

No interaction.

6.9.3 Interactions with Call Forwarding Unconditional (CFU)

The following interaction shall apply if SS-CFU is supported in accordance with ISO/IEC 13873.

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6.9.3.1 Actions at a SS-CFU Rerouting PINX

When executing SS-CFU, the Rerouting PINX shall include a CmnRequest invoke APDU (for the ANF-CMN solicited service) or a CmnInform invoke APDU (for the unsolicited service) in the SETUP message to the Diverted-to PINX if this was included in the SETUP message to the Served User PINX.

6.9.4 Interactions with Call Forwarding Busy (CFB)

If SS-CFB is supported in accordance with ISO/IEC 13873, the procedures specified in 6.9.3 of this International Standard shall apply, with SS-CFU replaced by SS-CFB.

6.9.5 Interactions with Call Forwarding No Reply (CFNR)

The following interaction shall apply if SS-CFNR is supported in accordance with ISO/IEC 13873.

6.9.5.1 Actions at a SS-CFNR Rerouting PINX

When executing SS-CFNR, the Rerouting PINX shall include a CmnInform invoke APDU (for the unsolicited service) in the SETUP message to the Diverted-to PINX if this was included in the SETUP message to the Served User PINX.

A CmnRequest invoke APDU (for the solicited service), if included in the SETUP message to the Served User PINX shall not be forwarded to the Diverted-to PINX.

6.9.6 Interactions with Call Deflection (CD)

If SS-CD is supported in accordance with ISO/IEC 13873, in case of Call Deflection Immediate, the procedures specified in 6.9.3 of this International Standard shall apply, with SS-CFU replaced by SS-CD.

If SS-CD is supported in accordance with ISO/IEC 13873, in case of Call Deflection from Alert, the procedures specified in 6.9.5 of this International Standard shall apply, with SS-CFNR replaced by SS-CD.

6.9.7 Interactions with Call Transfer (CT)

No interaction.

NOTE - Common Information may be exchanged between primary PINX and secondary PINX subsequent to call transfer. In this case the primary PINX is considered to be the originating PINX and the secondary PINX to be the terminating PINX.

6.9.8 Interactions with Completion of Call on Busy Subscriber (CCBS)

No interaction.

6.9.9 Interactions with Completion of Call on No Reply (CCNR)

No interaction.

6.9.10 Interactions with Call Intrusion (CI)

No interaction.

6.9.11 Interactions with Call Offer (CO)

No interaction.

6.9.12 Interactions with Do Not Disturb (DND)

No interaction.

6.9.13 Interactions with Do Not Disturb Override (DNDO)

No interaction.

6.9.14 Interactions with Call Interception (CINT)

The following interaction shall apply if ANF-CINT is supported in accordance with ISO/IEC 15054.

6.9.14.1 Actions at an ANF-CINT Intercepting PINX

When executing ANF CINT immediate procedures, the Intercepting PINX shall include a CmnRequest invoke APDU (for the ANF-CMN solicited service) or a CmnInform invoke APDU (for the unsolicited service) in the SETUP message to the Intercepted-to PINX if this was included in the SETUP message to the Terminating PINX.

When executing ANF CINT delayed procedures, the Intercepting PINX shall include a CmnInform invoke APDU (for the unsolicited service) in the SETUP message to the Intercepted-to PINX if this was included in the SETUP message to the Terminating PINX.

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When executing ANF CINT delayed procedures, a CmnRequest invoke APDU (for the solicited service), if included in the SETUP message to the Terminating PINX shall not be forwarded to the Intercepted-to PINX.

6.9.15 Interactions with Advice Of Charge (AOC)

No interaction.

6.9.16 Interactions with Message Waiting Indication (MWI)

No interaction.

6.9.17 Interactions with Path Replacement (PR)

No interaction.

6.9.18 Interactions with Recall (RE)

When executing SS-RE, the SS-RE Served User PINX may send a cmnInform invoke APDU together with the recallAnswered invoke APDU to the SS-RE Primary PINX. This cmnInform invoke APDU shall convey the Common Information of the SS-RE served user.

6.9.19 Interactions with Wireless Terminal Mobility, Outgoing call (WTMO)

No interaction.

6.9.20 Interactions with Wireless Terminal Mobility, Incoming call (WTMI)

The following interaction shall apply if ANF-WTMI is supported in accordance with ISO/IEC 15431.

6.9.20.1 Actions at an ANF-WTMI Rerouting PINX or WTMI-Detect PINX

When executing ANF-WTMI, the Rerouting PINX or (in case of forward switching) the WTMI-Detect PINX shall include a CmnRequest invoke APDU (for the ANF-CMN solicited service) or a CmnInform invoke APDU (for the unsolicited service) in the SETUP message to the Visitor PINX if this was included in the SETUP message to the WTMI-Detect PINX.

6.9.21 Interactions with Wireless Terminal, Location Registration (WTLR)

No interaction.

6.9.22 Interactions with Wireless Terminal, Authentication (WTAN, WTAT)

No interaction.

6.9.23 Interactions with Transit Counter (TC)

No interaction.

6.10 ANF-CMN Parameter values (timers)

Timer T1

Timer T1 shall operate during the CMN-Wait-Answer state, if the CmnRequest invoke APDU was not sent in a SETUP message. Its purpose is to protect against an absence of response to ANF-CMN invocation for the solicited service.

Timer T1 shall have a value of not less than 30 s.

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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 following Protocol Implementation Conformance Statement (PICS) proforma.

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 the 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's PICS proforma;
- by the user or potential user of the implementation, as a basis for initially checking the possibility of interworking with another implementation - while interworking can never be guaranteed, failure to interwork can often be predicted from incompatible PICS's;
- 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 sub-clauses 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 requirement. 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 ANF-CMN

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 suppliers 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 General

Item	Question/feature	References	Status	N/A	Support
A1	Support of ANF-CMN solicited service in an originating PINX		o.1		Yes[ ] No[ ]
A2	Support of ANF-CMN unsolicited service in an originating PINX		o.1		Yes[ ] No[ ]
A3	Support of ANF-CMN solicited service in a terminating PINX		o.1		Yes[ ] No[ ]
A4	Support of ANF-CMN unsolicited service in a terminating PINX		o.1		Yes[ ] No[ ]
A5	Support of ANF-CMN solicited service as Incoming Gateway PINX		o.1		Yes[ ] No[ ]
A6	Support of ANF-CMN unsolicited service as Incoming Gateway PINX		o.1		Yes[ ] No[ ]
A7	Support of ANF-CMN solicited service as Outgoing Gateway PINX		o.1		Yes[ ] No[ ]
A8	Support of ANF-CMN unsolicited service as Outgoing Gateway PINX		o.1		Yes[ ] No[ ]

A.3.4 Procedures

Item	Question/feature	References	Status	N/A	Support
B1	Support of relevant procedures as specified in ISO/IEC 11572 and ISO/IEC 11582 for an originating PINX	6.2.1	c.1	[ ]	m:Yes[ ]
B2	Support of relevant procedures as specified in ISO/IEC 11572 and ISO/IEC 11582 for a terminating PINX	6.2.2	c.2	[ ]	m:Yes[ ]
B3	Support of signalling procedures for the invocation of the solicited service at call establishment at the originating PINX	6.6.1	A1: m	[ ]	m:Yes[ ]
B4	Support of signalling procedures for the invocation of the solicited service in active call at the originating PINX	6.6.1	A1: o	[ ]	Yes[ ] No[ ]
B5	Support of signalling procedures for responding to the solicited service at the originating PINX	6.6.1	A1: m	[ ]	m:Yes[ ]
B6	Support of signalling procedures for the invocation of the unsolicited service at call establishment at the originating PINX	6.6.1	A2: m	[ ]	m:Yes[ ]
B7	Support of signalling procedures for the invocation of the unsolicited service in active call at the originating PINX	6.6.1	A2: o	[ ]	Yes[ ] No[ ]
B8	Support of signalling procedures for the receipt of the unsolicited service at the originating PINX	6.6.1	A2: m	[ ]	m:Yes[ ]

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B9	Support of signalling procedures for the invocation of the solicited service at call establishment at the terminating PINX	6.6.2	A3: m	[ ]	m:Yes[ ]
B10	Support of signalling procedures for the invocation of the solicited service in active call at the terminating PINX	6.6.2	A3: o	[ ]	Yes[ ] No[ ]
B11	Support of signalling procedures for responding to the solicited service at the terminating PINX	6.6.2	A3: m	[ ]	m:Yes[ ]
B12	Support of signalling procedures for the invocation of the unsolicited service at call establishment at the terminating PINX	6.6.2	A4: m	[ ]	m:Yes[ ]
B13	Support of signalling procedures for the invocation of the unsolicited service in active call at the terminating PINX	6.6.2	A4: o	[ ]	Yes[ ] No[ ]
B14	Support of signalling procedures for the receipt of the unsolicited service at the terminating PINX	6.6.2	A4: m	[ ]	m:Yes[ ]
B15	Support of signalling procedures for the interworking with public ISDNs	6.7	c.3	[ ]	m:Yes[ ]
B16	Support of signalling procedures for the interworking with non-ISDNs	6.8	c.3	[ ]	m:Yes[ ]

c.1 = IF(A1 OR A2 OR A5 OR A6) THEN m, ELSE N/A

c.2 = IF(A3 OR A4 OR A7 OR A8) THEN m, ELSE N/A

c.3 = IF(A5 OR A6 OR A7 OR A8) THEN m, ELSE N/A

A.3.5 Coding

Item	Question/feature	References	Status	N/A	Support
C1	Sending of CmnRequest invoke and receipt of CmnRequest return result	6.3.1	c.1	[ ]	m:Yes[ ]
C2	Receipt of CmnRequest invoke and sending of CmnRequest return result	6.3.1	c.2	[ ]	m:Yes[ ]
C3	Sending of CmnInform invoke	6.3.1	c.3	[ ]	m:Yes[ ]
C4	Receipt of CmnInform invoke	6.3.1	c.4	[ ]	m:Yes[ ]

c.1 = IF(B3 OR B4 OR B9 OR B10) THEN m, ELSE N/A

c.2 = IF(B5 OR B11) THEN m, ELSE N/A

c.3 = IF(B6 OR B7 OR B12 OR B13) THEN m, ELSE N/A

c.4 = IF(B8 OR B14) THEN m, ELSE N/A

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A.3.6 Timer

Item	Question/feature	References	Status	N/A	Support
D1	Support of Timer T1 at an originating PINX	6.10	B4: m	[ ]	m:Yes[ ]
D2	Support of Timer T1 at a terminating PINX	6.10	c.1	[ ]	m:Yes[ ]

c.1 = IF(B9 OR B10) THEN m, ELSE N/A

A.3.7 Interactions between ANF-CMN and SS-CFU

Item	Question/feature	References	Status	N/A	Support
E1	Support of SS-CFU as a rerouting PINX		o	[ ]	Yes[ ] No[ ]
E2	Support of procedures for interaction with SS-CFU	6.9.3	E1: m	[ ]	m:Yes[ ]

A.3.8 Interactions between ANF-CMN and SS-CFB

Item	Question/feature	References	Status	N/A	Support
F1	Support of SS-CFB as a rerouting PINX		o	[ ]	Yes[ ] No[ ]
F2	Support of procedures for interaction with SS-CFB	6.9.4	F1: m	[ ]	m:Yes[ ]

A.3.9 Interactions between ANF-CMN and SS-CFNR

Item	Question/feature	References	Status	N/A	Support
G1	Support of SS-CFNR as a rerouting PINX		o	[ ]	Yes[ ] No[ ]
G2	Support of procedures for interaction with SS-CFNR	6.9.5	G1: m	[ ]	m:Yes[ ]

A.3.10 Interactions between ANF-CMN and SS-CD

Item	Question/feature	References	Status	N/A	Support
H1	Support of SS-CD as a rerouting PINX		o	[ ]	Yes[ ] No[ ]
H2	Support of procedures for interaction with SS-CD	6.9.6	H1: m	[ ]	m:Yes[ ]

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A.3.11 Interactions between ANF-CMN and SS-CINT

Item	Question/feature	References	Status	N/A	Support
I1	Support of SS-Call Interception as an intercepting PINX		o	[ ]	Yes[ ] No[ ]
I2	Support of procedures for interaction with SS-CINT	6.9.14	I1: m	[ ]	m:Yes[ ]

A.3.12 Interactions between ANF-CMN and ANF-WTMI

Item	Question/feature	References	Status	N/A	Support
J1	Support of ANF-WTMI as a rerouting PINX or (in case of forward switching) as a WTMI detect PINX		o	[ ]	Yes[ ] No[ ]
J2	Support of procedures for interaction with ANF-WTMI	6.9.20	J1: m	[ ]	m:Yes[ ]

A.3.13 Interactions between ANF-CMN and SS-RE

Item	Question/feature	References	Status	N/A	Support
K1	Support of SS-RE as a Served User PINX		o	[ ]	Yes[ ] No[ ]
K2	Support of procedures for interaction with SS-RE	6.9.18	K1: o	[ ]	Yes[ ] No[ ]

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Annex B
(informative)

Examples of message sequences

This annex describes some typical message flows for ANF-CMN. The following conventions are used in the figures of this annex.

1. The following notation is used:

Basic call message containing ANF-CMN information

Call related signalling message containing ANF-CMN information

Symbolic primitive carrying ANF-CMN information

xxx.inv	Invoke APDU for operation xxx
xxx.rr	Return result APDU for operation xxx

2. The figures show messages exchanged via Protocol Control between PINXs involved in ANF-CMN. Only messages relevant to ANF-CMN are shown.
3. Only the relevant information content (e.g. remote operation APDUs, information elements) is listed below each message name. The Facility information elements containing remote operation APDUs are not explicitly shown. Information with no impact on ANF-CMN is not shown.
4. Some interactions with users are included in the form of symbolic primitives. The actual protocol at the terminal equipment interface is outside the scope of this International Standard.

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B.1 Example message sequence for normal operation of ANF-CMN for the solicited service

Figure B.1 shows an example of normal operation of ANF-CMN for the solicited service using basic call messages.

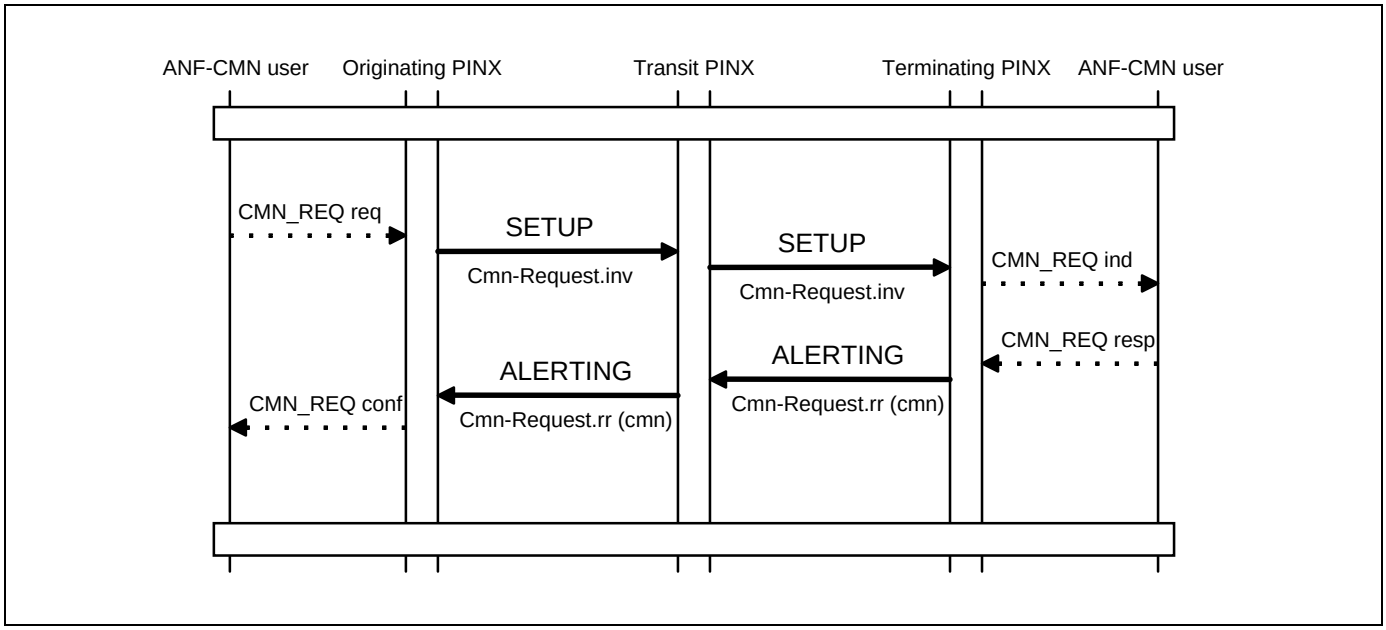

Figure B.1 - Example of normal operation of ANF-CMN (solicited service)

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B.2 Example message sequences for normal operation of ANF-CMN for the unsolicited service

Figure B.2 shows an example of normal operation of ANF-CMN for the unsolicited service using the FACILITY message in forward direction.

Figure B.3 shows an example of mutual exchange of common information during call establishment using the unsolicited service.

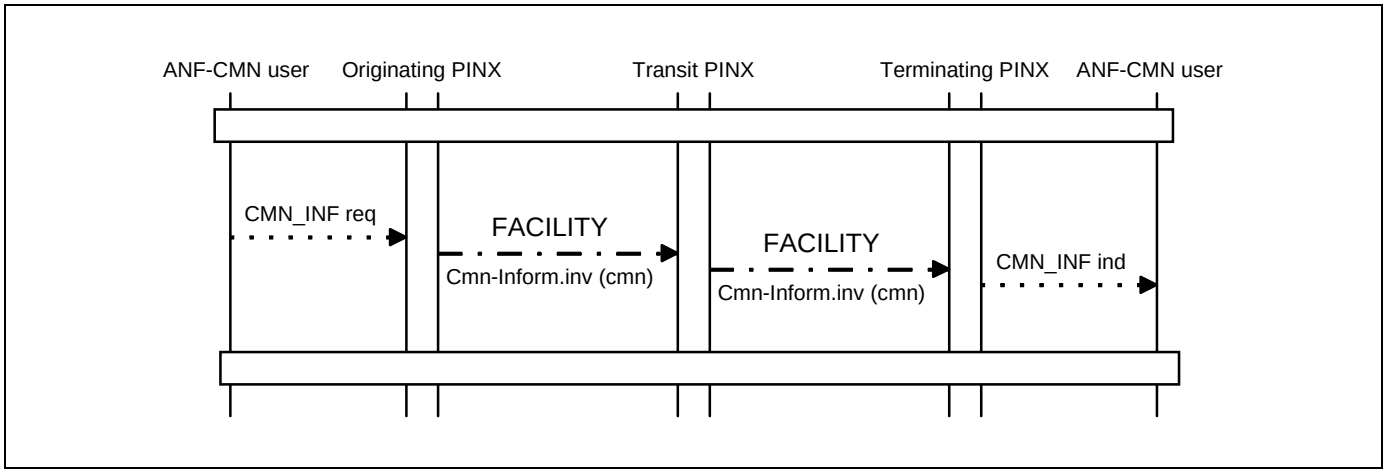

Figure B.2 - Example of normal operation of ANF-CMN in forward direction (unsolicited service)

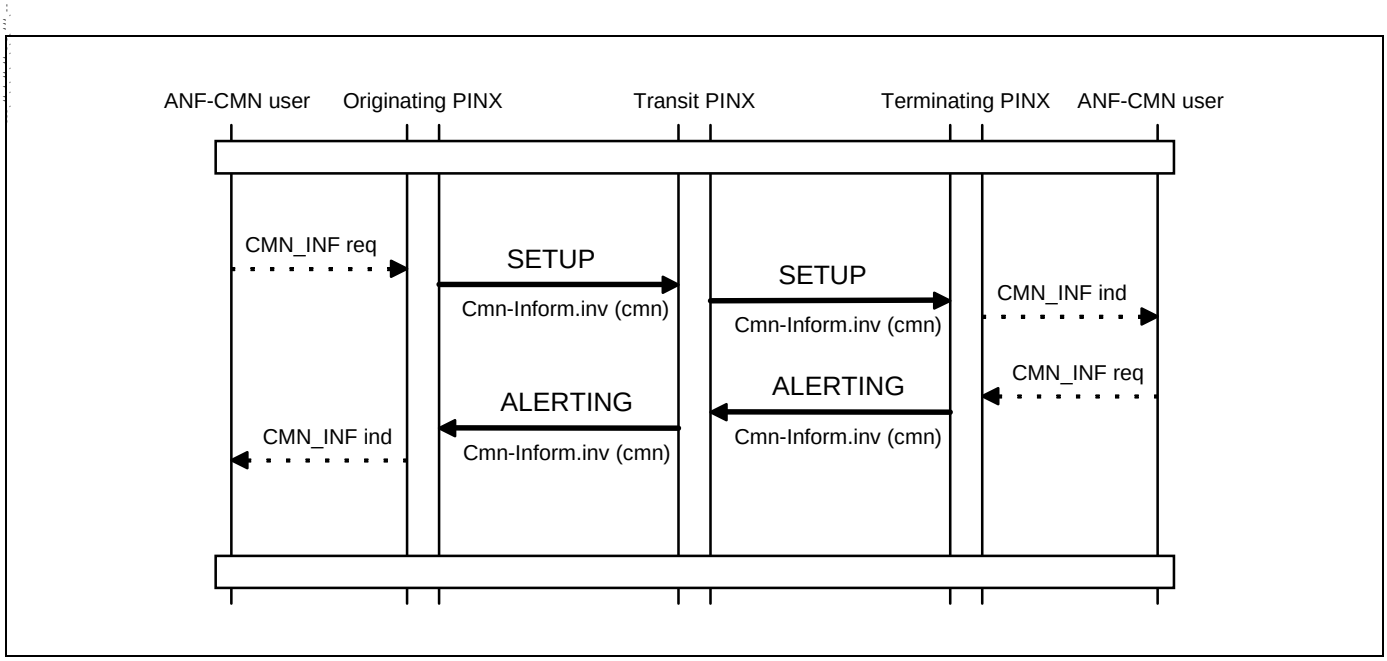

Figure B.3 - Example of normal operation of ANF-CMN in both directions (unsolicited service)

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B.3 Example message sequence for normal operation of ANF-CMN for the combined service

Figure B.4 shows an example of normal operation of ANF-CMN for the combined solicited and unsolicited service during call establishment.

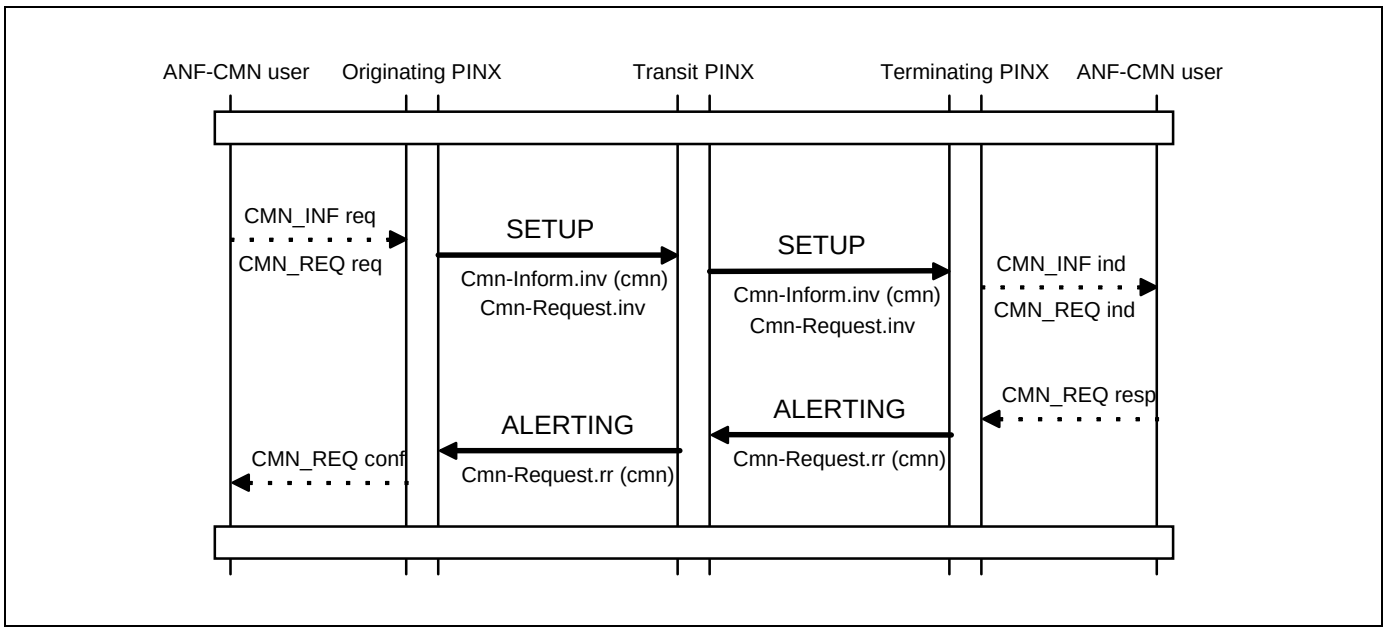

Figure B.4 - Example of normal operation of ANF-CMN (solicited and unsolicited service combined)

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Annex C
(informative)

Specification and Description Language (SDL) representation of procedures

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

Each diagram represents the behaviour of an ANF-CMN Supplementary Service Control entity at a particular type of PINX. In accordance with the protocol model described in ISO/IEC 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 message being sent, the output symbol bears the name of the message and any remote operations APDU(s) or notification(s) contained in that message. In the case of a message specified in ISO/IEC 11572, basic call actions associated with the sending of that message are deemed to occur.

Where an input symbol represents a primitive from the Coordination Function, and that primitive is the result of a message being received, the input symbol bears the name of the message and any remote operations APDU(s) or notification(s) contained in that message. In the case of a message specified in ISO/IEC 11572, basic call actions associated with the receipt of that message are deemed to have occurred.

The following abbreviations are used:

inv. invoke APDU

res. return result APDU

err. return error APDU

rej. reject APDU

C.1 SDL representation of ANF-CMN at the Originating PINX

Figure C.1 shows the behaviour of an ANF-CMN Supplementary Service Control entity within the Originating PINX.

Input signals from the left and output signals to the left represent primitives to and from the user.

Input signals from the right and output signals to the right represent primitives to and from the Coordination Function in respect of messages received and sent. Also protocol timer expiry is indicated by an input signal from the right.

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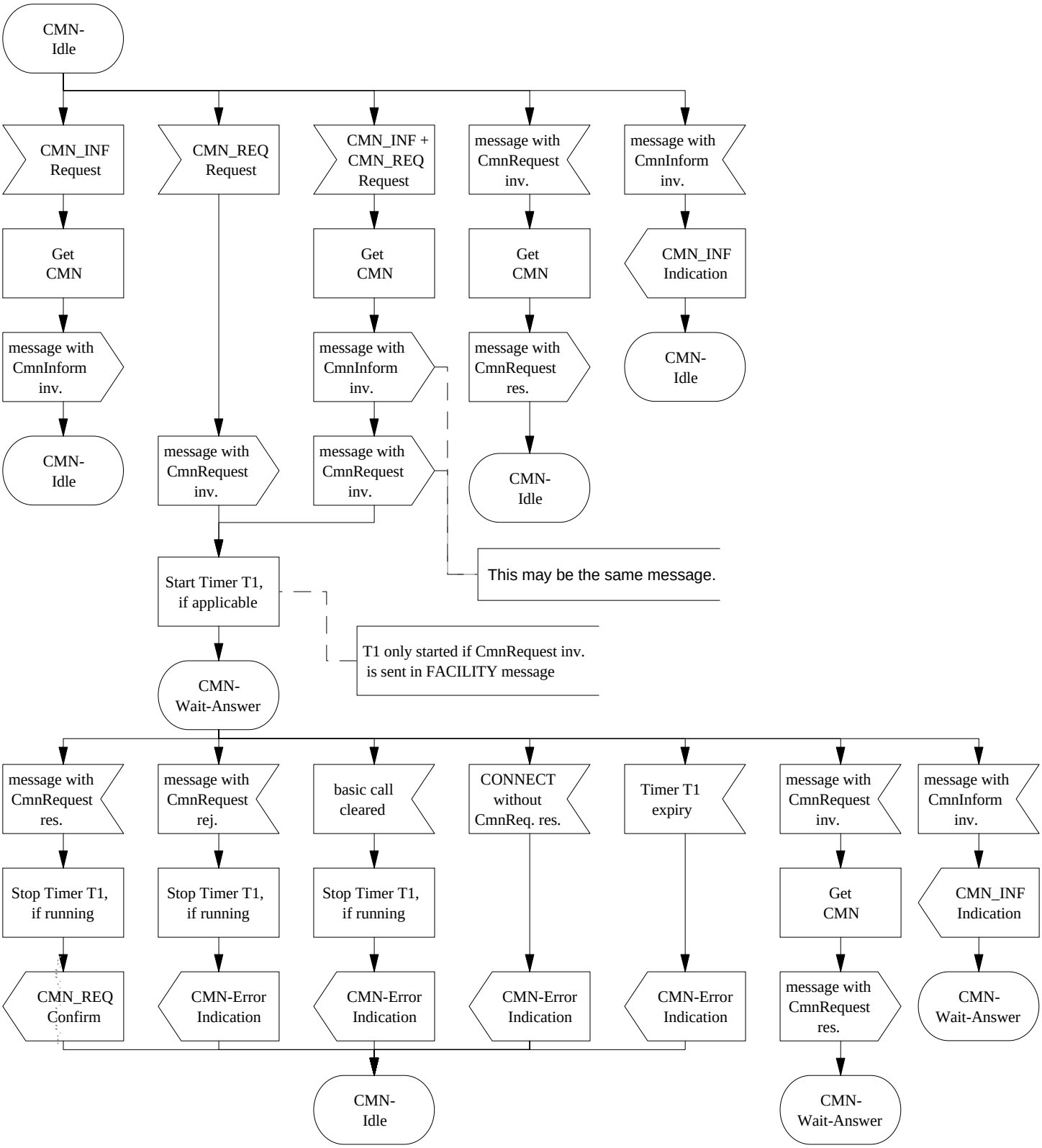

Figure C.1 - SDL Representation of ANF-CMN at the Originating PINX

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C.2 SDL representation of ANF-CMN at the Terminating PINX

Figure C.2 shows the behaviour of an ANF-CMN Supplementary Service Control entity within the Terminating PINX.

Input signals from the right and output signals to the right represent primitives to and from the user.

Input signals from the left and output signals to the left represent primitives to and from the Coordination Function in respect of messages received and sent. Also protocol timer expiry is indicated by an input signal from the left.

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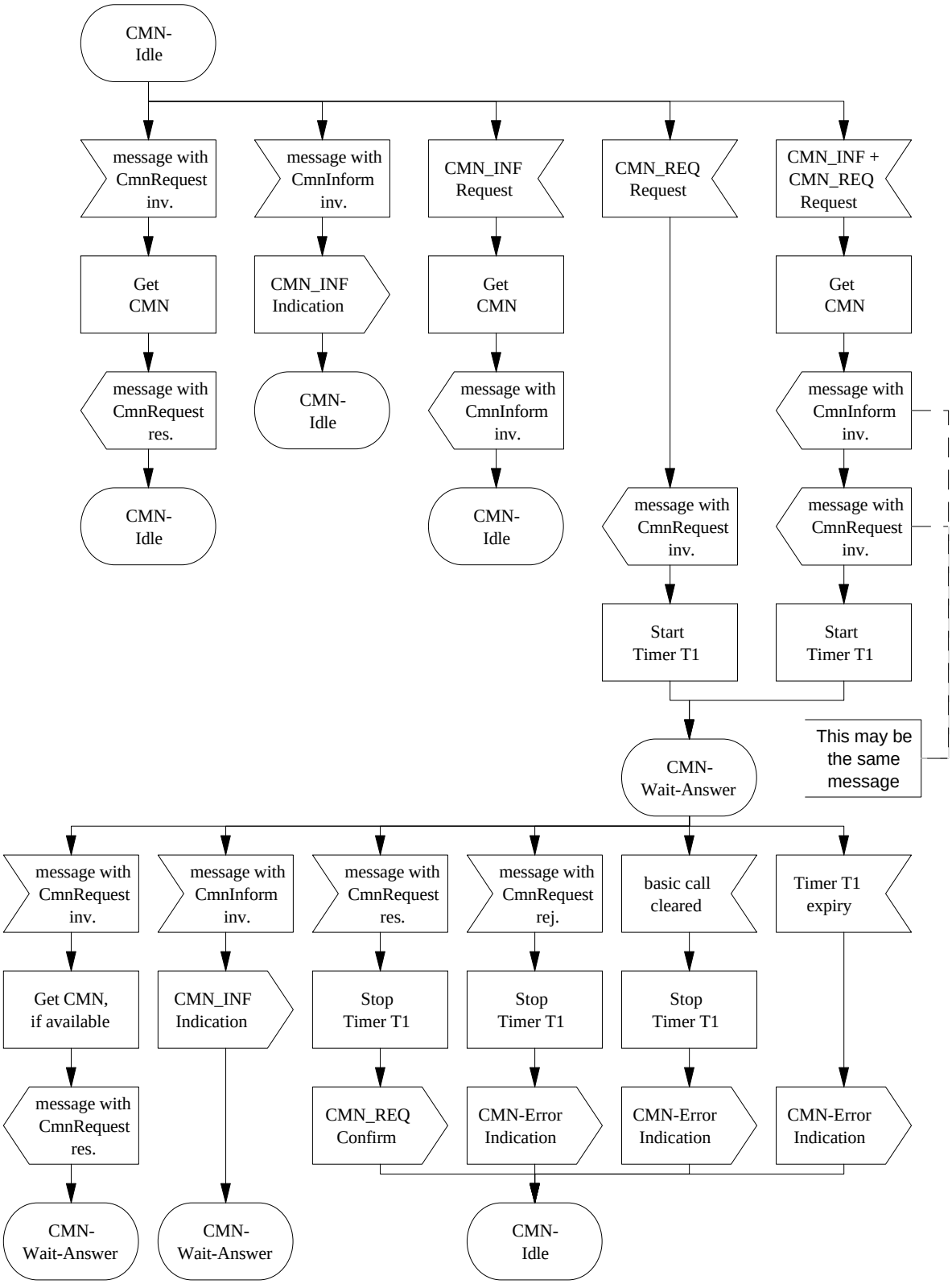

Figure C.2 - SDL Representation of ANF-CMN at the Terminating PINX

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Annex D
(normative)

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 first edition of ISO/IEC 15772, i.e. based on ITU-T Recommendations X.208 / X.209. Starting with this edition the ASN.1 modules within ISO/IEC 15772 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 D.1 - Common-Information-Operations – based on ITU-T Recs. X.208 / X.209

```
Common-Information-Operations
                {iso (1)  standard (0)
                pss1-common-information (15772) operations (0)}

DEFINITIONS EXPLICIT TAGS ::=

BEGIN

IMPORTS         OPERATION, ERROR FROM Remote-Operation-Notation
                        {joint-iso-ccitt (2) remote-operations (4) notation (0)}
                Extension FROM Manufacturer-specific-service-extension-definition
                        {iso (1) standard (0) pss1-generic-procedures (11582) msi-definition (0)};


CmnRequest      ::= OPERATION
                        ARGUMENT        DummyArg
                        RESULT          CmnArg

CmnInform       ::= OPERATION
                        ARGUMENT        CmnArg

CmnArg          ::= SEQUENCE  {
                        featureIdentifier           [2] IMPLICIT FeatureIdList          OPTIONAL,
                        ssDNDOprotectionLevel       [3] IMPLICIT INTEGER (0..3)         OPTIONAL,
                                -- Supplementary Service Do Not Disturb Override Protection level,
                                -- meaningful only in backward direction; inclusion indicates
                                -- support of SS-DNDO as well as the applicable protection level.
                        ssCIprotectionLevel         [4] IMPLICIT INTEGER (0..3)         OPTIONAL,
                                -- Supplementary Service Call Intrusion Protection level,
                                -- meaningful both in forward & backward direction; inclusion indicates support
                                -- of SS-CI as an Unwanted user PINX (forward direction) or as a Terminating
                                -- PINX (backward direction), as well as the applicable protection level.
                        equipmentIdentity           [5] IMPLICIT EquipmentId            OPTIONAL,
                        partyCategory               [6] IMPLICIT PartyCategory          OPTIONAL,
```

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Table D.1 - Common-Information-Operations – based on ITU-T Recs. X.208 / X.209 (continued)

```
                    extension               CHOICE      {
                                                single          [7] IMPLICIT Extension,
                                                multiple        [8] IMPLICIT SEQUENCE OF Extension
                                                        }   OPTIONAL
                        }

DummyArg        ::=     CHOICE  {
                                null            NULL,
                                single          [1] IMPLICIT Extension,
                                multiple        [2] IMPLICIT SEQUENCE OF Extension
                                }

FeatureIdList   ::= BIT STRING {  -- bit set to ONE means the corresponding feature
                                -- is available for this call
                    reserved                        (0),    -- this Bit shall be reserved
                    ssCFreRoutingSupported          (1),    -- Call Forwarding rerouting supported
                                                            -- meaningful only in forward direction
                                                            -- during call establishment
                    ssCTreRoutingSupported          (2),    -- Call Transfer rerouting supported
                                                            -- meaningful both in forward & backward
                                                            -- direction during call establishment
                    ssCCBSpossible                  (3),    -- CCBS possible
                                                            -- meaningful only in backward direction
                                                            -- before receipt of ALERTING/CONNECT
                    ssCCNRpossible                  (4),    -- CCNR possible
                                                            -- meaningful only in backward direction
                                                            -- before receipt of CONNECT
                    ssCOsupported                   (5),    -- Call Offer supported
                                                            -- meaningful only in backward direction
                                                            -- during call establishment

                                                            -- Call Intrusion
                    ssCIforcedRelease               (6),    -- meaningful only in backward direction
                    ssCIisolation                   (7),    -- meaningful only in backward direction
                    ssCIwaitOnBusy                  (8),    -- meaningful only in backward direction

                                                            -- Advice of Charge
                    ssAOCsupportChargeRateProvAtGatewPinx       (9),    -- meaningful only in
                                                                        -- backward direction
                    ssAOCsupportInterimChargeProvAtGatewPinx    (10),   -- meaningful only in
                                                                        -- backward direction
                    ssAOCsupportFinalChargeProvAtGatewPinx      (11),   -- meaningful only in
                                                                        -- backward direction

                    anfPRsupportedAtCooperatingPinx             (12),   -- Path replacement
                                                                        -- meaningful both in forward &
                                                                        -- backward direction
```


--`,,`-`-`,,`,,`,`,,`---
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Table D.1 - Common-Information-Operations – based on ITU-T Recs. X.208 / X.209 (concluded)

```
                                                                -- Call Interception
                    anfCINTcanInterceptImmediate        (13),   -- meaningful only in
                                                                -- forward direction
                    anfCINTcanInterceptDelayed          (14),   -- meaningful only in
                                                                -- forward direction

                    anfCTMIreRoutingSupported           (15)    -- Incoming CTM call
                                                                -- meaningful only in
                                                                -- forward direction
                    anfPUMIreRoutingSupported           (16)    -- Incoming PUM call
                                                                -- meaningful only in
                                                                -- forward direction
                    ssSSCTreRoutingSupported            (17)    -- Single Step Call Transfer rerouting
                                                                -- supported
                                                                -- meaningful both in forward and
                                                                -- backward direction during call
                                                                -- establishment
                        } (SIZE (1..64))

EquipmentId     ::= SEQUENCE {
                    nodeId          [1] IMPLICIT IA5String (SIZE (1..10))  OPTIONAL,
                    groupId         [2] IMPLICIT IA5String (SIZE (1..10))  OPTIONAL,
                    unitId          [3] IMPLICIT IA5String (SIZE (1..10))  OPTIONAL
                        }
-- NOTE:
-- The purpose of the Equipment Id is to indicate, to another user or to another PINX, information about a
-- calling or called party involved in a call.
-- Assignment of network wide unique Equipment Id values is outside the scope of this Standard.

PartyCategory   ::= ENUMERATED {
                    unknown         (0),
                    extension       (1),
                    pisnAttendant   (2),
                    emergExt        (3)
                        }
-- NOTE:
-- The purpose of the Party category is to indicate, to another user or to another PINX, the category of a user
-- involved in a call. An Originating PINX may include an indication of the calling user's category in the SETUP
-- message sent across an inter-PINX link. A Terminating PINX may include an indication of the called user's
-- category in an ALERTING message or CONNECT message sent across an inter-PINX link. A received
-- Party category information may be used for display at the user's terminal or for PINX internal call handling,
-- e.g. depending on whether the calling or called party is an extension or a PISN attendant, the PINX internal
-- call handling may invoke different options of a supplementary service related to that call.

cmnRequest      CmnRequest      ::= localValue 84
cmnInform       CmnInform       ::= localValue 85


END             -- of Common-Information-Operations
```

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