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Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Call Identification and Call Linkage Additional Network Feature

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Réseau privé à intégration de services — Spécifications, modèle fonctionnel et flux d'informations — Identification d'appel et caractéristique de réseau additionnelle de liaison d'appel

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. 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 International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 21888 was prepared by ECMA (as ECMA-313) 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.

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Introduction

This International Standard is one of a series of Standards defining services and signalling procedures applicable to Private Integrated Services Networks (PISNs). The series uses the 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 Call Identification and Call Linkage (CIDL) additional network feature.

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 JTC1, ITU-T, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

There is currently no equivalent service specified by ITU-T or ETSI for public ISDN.

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Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Call Identification and Call Linkage Additional Network Feature

1 Scope

This International Standard specifies the Additional Network Feature (ANF) Call Identification and Call Linkage (CIDL), which is applicable to various basic services supported by Private Integrated Services Networks (PISN). Basic services are specified in ISO/IEC 11574.

ANF-CIDL is an additional network feature which allows the identification and correlation of calls throughout a PISN by assigning unambiguous identifiers to each new call and also, as an option, to transformed and logically linked calls.

NOTE 1 - This ANF has been developed to support the use of CSTA (ISO/IEC 18051) in a networked environment, i.e. in a PISN. Use of this ANF for other applications is not precluded.

Supplementary service specifications are produced in three stages, according to the method described in ETS 300 387. This International Standard contains the stage 1 and stage 2 specifications of ANF-CIDL. The stage 1 specification (clause 6) specifies the general feature principles and capabilities. The stage 2 specification (clause 7) identifies the Functional Entities involved in the supplementary service and the information flows between them.

2 Conformance

In order to conform to this International Standard, a stage 3 standard shall specify signalling protocols and equipment behaviour that are capable of being used in a PISN which supports the supplementary service specified in this International Standard. This means that, to claim conformance, a stage 3 standard is required to be adequate for the support of those aspects of clause 6 (stage 1) and clause 7 (stage 2) which are relevant to the interface or equipment to which the stage 3 standard applies.

3 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 11571:1998, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Networks — Addressing*

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 13863:1998, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Path replacement additional network feature*

ISO/IEC 13865:1995, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Call transfer supplementary service*

ISO/IEC 13866:1995, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Call completion supplementary services*

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ISO/IEC 13872:1995, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Call diversion supplementary services*

ISO/IEC 14841:1996, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Call offer supplementary service*

ISO/IEC 14842:1996, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Do not disturb and do not disturb override supplementary services*

ISO/IEC 14845:1996, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Call intrusion supplementary service*

ISO/IEC 15053:1997, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Call interception additional network feature*

ISO/IEC 15428:1999, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Wireless terminal location registration supplementary service and wireless terminal information exchange additional network feature*

ISO/IEC 15430:1999, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Wireless terminal call handling additional network features*

ISO/IEC 15432:1999, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Wireless terminal authentication supplementary services*

ISO/IEC 17875:2000, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Private User Mobility (PUM) — Registration supplementary service*

ISO/IEC 17877:2000, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Private User Mobility (PUM) — Call handling additional network features*

ISO/IEC 18051:2000, *Information technology — Telecommunications and information exchange between systems — Services for Computer Supported Telecommunications Applications (CSTA) Phase III*

ISO/IEC 19459:2001, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Single step call transfer supplementary service*

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)*

4 Terms and definitions

For the purposes of this International Standard the following terms and definitions apply.

4.1 External definitions

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

— Basic service (ITU-T Rec. I.210)

— PISN Number (ISO/IEC 11571)

— Private Integrated Services Network (PISN) (ISO/IEC 11579-1)

— Private Integrated Services Network Exchange (PINX) (ISO/IEC 11579-1)

— Service (ITU-T Rec. I.112)

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— Signalling (ITU-T Rec. I.112)

— Supplementary Service (ITU-T Rec. I.210)

— User (ISO/IEC 11574)

This International Standard refers to the following basic call Functional Entities (FE) defined in ISO/IEC 11574:

— Call Control (CC)

— Call Control Agent (CCA)

This International Standard refers to the following basic call inter-FE relationships defined in ISO/IEC 11574:

— r1

— r2

— r3

This International Standard refers to the following basic call information flows defined in ISO/IEC 11574:

— SETUP request/indication

4.2 Additional Network Feature (ANF) : A capability over and above that of the basic service provided by a PISN, but not directly to a user.

4.3 ANF-CIDL user : An entity, within a PISN, that requests ANF-CIDL.

4.4 Call : The term call is used within this International Standard for a Basic Call as defined in ISO/IEC 11574 or a Call Independent Signalling Connection.

4.5 Call Identification Data, CIDL-Data : The Leg ID and Call Linkage Data assigned to a specific call.

4.6 Call Linkage Data : The Global Call ID and Thread ID assigned to a specific call, as specified in ISO/IEC 18051.

4.7 Global Call Identification, Global Call ID, GID : A value assigned to a call end-to-end to uniquely identify that call throughout the PISN, without regards to its route or its history. If different calls are being transformed into a new call (i.e. due to Supplementary Service / ANF interaction), the GIDs of the old calls are updated (i.e. replaced / overwritten) with a new GID value for the new call.

4.8 Leg Identification, Leg ID, LID : A value assigned to a new call to uniquely identify that call throughout the PISN. The Leg ID does not change (i.e. is never overwritten) during the lifetime of the call, even if the call is transformed due to Supplementary Service / ANF interactions. After the transformation of two or more calls with different Leg IDs into one resulting call (e.g. after call transfer), the different parts (legs) of the resulting call retain their originally assigned Leg IDs.

4.9 Thread Identification, Thread ID, TID : A value assigned to calls which are logically linked together for the purpose of correlating them throughout the PISN. If two ore more calls are logically linked together (i.e. due to Supplementary Service / ANF interaction), the Thread IDs of all these calls are updated (i.e. replaced / overwritten) with the current Thread ID of one of these calls.

5 List of acronyms

ANF	Additional Network Feature
ANF-CIDL	ANF – Call Identification and Call Linkage
CC	Call Control (Functional Entity)
CCA	Call Control Agent (Functional Entity)
FE	Functional Entity
GID	Global Call Identification
CIDL	Call Identification and Call Linkage
ID	Identification
ISDN	Integrated Services Digital Network
LID	Leg Identification
PINX	Private Integrated Services Network Exchange

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PISN	Private Integrated Services Network
SDL	Specification and Description Language
SS	Supplementary Service
TID	Thread Identification

6 ANF-CIDL stage 1 specification

6.1 Description

6.1.1 General description

ANF-CIDL is an additional network feature which allows the assignment of a Global Call Identification to identify a call end-to-end. As an option, a Thread Identification may be assigned to different calls which are logically linked together due to the operation of other supplementary services and/or ANFs. Additionally a Leg Identification may be assigned, to identify the different call legs of a global call.

6.1.2 Qualifications on applicability to telecommunication services

ANF-CIDL is applicable to all basic services defined in ISO/IEC 11574.

6.2 Procedure

6.2.1 Provision/withdrawal

ANF-CIDL shall be generally available throughout the PISN.

6.2.2 Normal procedures

6.2.2.1 Activation, deactivation and interrogation

The feature shall be permanently activated.

6.2.2.2 Invocation and operation

A Global Call ID shall be assigned to each new call that is set up. Due to transformation of a call, the Global Call ID may be updated. At one time there can only be one Global Call ID assigned to a specific call. Once a Global Call ID is assigned, it shall not be re-used, even not after the call, to which it is assigned, has been cleared.

Optionally, a Thread ID may be assigned to each new call that is set up. It may be updated during the lifetime of a call. At one time there can only be one Thread ID assigned to a specific call. Once a Thread ID is assigned, it shall not be re-used, even not after the call, to which it is assigned, has been cleared.

NOTE 2 - This is guaranteed by adding a time element to the Global Call ID and the Thread ID.

Optionally, a Leg ID may be assigned to each new call that is set up. Due to supplementary service / ANF interactions, different Leg IDs may be assigned to the different parts of a transformed call. At one time there can only be one Leg ID assigned to a specific part of a call. After the call has been cleared, the Leg ID shall be available for re-use.

6.2.3 Exceptional procedures

6.2.3.1 Activation, deactivation, and interrogation

Not applicable.

6.2.3.2 Invocation and operation

When both sides of a call simultaneously attempt to update a Global Call ID or a Thread ID assigned to that call, the GID / TID with the higher value shall take precedence.

6.3 Interaction with other supplementary services and ANFs

Interactions with other supplementary services and ANFs for which PISN standards were available at the time of publication of this International Standard are specified below.

For the purpose of the Leg ID no interactions with other supplementary services apply, as it shall be unique for each new call. All interactions described in this sub-clause apply only to the Global Call ID and / or the Thread ID.

If no interactions for the Global Call ID / Thread ID are mentioned, these values shall not be updated.

If not otherwise stated, the values for Global Call ID / Thread ID shall be updated for a call, at the same time the specific Supplementary Service / ANF is completed.

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6.3.1 Calling Line Identification Presentation (SS-CLIP)

No interaction.

6.3.2 Connected Line Identification Presentation (SS-COLP)

No interaction.

6.3.3 Calling/Connected Line Identification Restriction (SS-CLIR)

No interaction

6.3.4 Calling Name Identification Presentation (SS-CNIP)

No interaction.

6.3.5 Calling Name Identification Restriction (SS-CNIR)

No interaction.

6.3.6 Connected Name Identification Presentation (SS-CONP)

No interaction.

6.3.7 Completion of Call to Busy Subscriber (SS-CCBS)

The Thread ID of the unsuccessful call attempt shall be assigned to

— the connection used to invoke CCBS; and

— the call attempt used to complete the call; and

— the connection used to indicate that User B has become not busy in case the connection release option was chosen.

New and different Global Call IDs and also new and different Leg IDs shall be assigned to these calls.

6.3.8 Completion of Call on No Reply (SS-CCNR)

6.3.7 shall apply accordingly for SS-CCNR.

6.3.9 Call Transfer (SS-CT)

The resulting call shall be updated with a new Global Call ID.

The resulting call shall be updated with the Thread ID of the primary call if

— the primary call is an incoming call and the secondary call is an outgoing call; or

— both calls are incoming calls and the primary call has been established before the secondary call; or

— both calls are outgoing calls and the primary call has been established before the secondary call.

The resulting call shall be updated with the Thread ID of the secondary call if

— the secondary call is an incoming call and the primary call is an outgoing call; or

— both calls are incoming calls and the secondary call has been established before the primary call; or

— both calls are outgoing calls and the secondary call has been established before the primary call.

The Leg IDs of the primary and the secondary call shall not be changed due to SS-CT invocation.

6.3.10 Call Forwarding Unconditional (SS-CFU)

The Global Call ID and Thread ID of the call from the calling user to the diverting user and a new Leg ID shall be assigned to the call from the calling user to the diverted-to user.

6.3.11 Call Forwarding Busy (SS-CFB)

6.3.10 shall apply.

6.3.12 Call Forwarding No Reply (SS-CFNR)

6.3.10 shall apply.

6.3.13 Call Deflection (SS-CD)

6.3.10 shall apply.

6.3.14 Path Replacement (ANF-PR)

The Global Call ID and the Thread ID of the old connection but a new Leg ID shall be assigned to the new connection.

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6.3.15 Call Offer (SS-CO)

The call between the called user and a third user may be updated with the Thread ID of the call from the calling user.

6.3.15.1 Without Path Retention

The Thread ID of the failed call shall be assigned to the call requesting Call Offering.

6.3.15.2 With Path Retention

No interaction.

6.3.16 Call Intrusion (SS-CI)

In case of a Conference type connection between the served user, the wanted user and the unwanted user, the resulting call shall be updated with the same new Global Call ID. The Thread ID shall be updated in the same way as described in 6.3 for the Conference service (see ISO/IEC 18051).

If the unwanted user is isolated, the call between the wanted user and the unwanted user may be updated with the Thread ID of the intruding call.

6.3.16.1 Without Path Retention

The Thread ID of the failed call shall be assigned to the call requesting Call Intrusion.

6.3.16.2 With Path Retention

No interaction.

6.3.17 Do not Disturb (SS-DND)

No interaction.

6.3.18 Do not Disturb Override (SS-DNDO)

6.3.18.1 Without Path Retention

The Thread ID of the failed call shall be assigned to the call requesting Do not Disturb Override.

6.3.18.2 With Path Retention

No interaction.

6.3.19 Advice of Charge (SS-AOC)

No interaction.

6.3.20 Recall (SS-RE)

No interaction.

6.3.21 Call Interception (ANF-CINT)

The Global Call ID and Thread ID of the call from the calling user to the called user and a new Leg ID shall be assigned to the call from the calling user to the intercepted-to user.

6.3.22 Transit Counter (ANF-TC)

No interaction.

6.3.23 Route Restriction Class (ANF-RRC)

No interaction.

6.3.24 Message Waiting Indication (SS-MWI)

No interaction.

6.3.25 Wireless Terminal Location Registration (SS-WTLR)

In case of automatic de-registration of a WTM user due to a new registration, the Thread ID of the registration call shall be assigned to the de-registration call.

In case of an enquiry call prior to the registration call, the Thread ID of the enquiry call shall be assigned to the registration call.

6.3.26 Wireless Terminal Incoming Call (ANF-WTMI)

The Global Call ID and Thread ID of the incoming call and a new Leg ID shall be assigned to the call to the WTM user.

In case of an enquiry call, the Thread ID of the incoming call shall be assigned to the enquiry call.

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6.3.27 Wireless Terminal Outgoing Call (ANF-WTMO)

The Global Call ID and Thread ID of the call to the home address and a new Leg ID shall be assigned to the call to the called user.

6.3.28 Wireless Terminal Authentication of a WTM User (SS-WTAT)

In case of an enquiry call, the Thread ID of the enquiry call shall be assigned to the authentication call.

6.3.29 Wireless Terminal Authentication of the PISN (SS-WTAN)

No interaction.

6.3.30 Private User Mobility Incoming Call (ANF-PUMI)

The Global Call ID and Thread ID of the incoming call and a new Leg ID shall be assigned to the call to the PUM user.

In case of an enquiry call, the Thread ID of the incoming call shall be assigned to the enquiry call.

6.3.31 Private User Mobility Outgoing Call (ANF-PUMO)

The Global Call ID and Thread ID of the call to the home address and a new Leg ID shall be assigned to the call to the called user.

6.3.32 Private User Mobility Registration (SS-PUMR)

In case of automatic de-registration of a PUM user due to a new registration, the Thread ID of the registration call shall be assigned to the de-registration call.

In case of an enquiry call prior to the registration call, the Thread ID of the enquiry call shall be assigned to the registration call.

In case of remote registration, the Thread ID of the registration call shall be assigned to the call from the remote address.

6.3.33 Common Information (ANF-CMN)

No interaction.

6.3.34 Call Priority Interruption (Protection) (SS-CPI(P))

No interaction.

6.3.35 Single Step Call Transfer (SSCT)

The Thread ID of the call to the transferring user shall be assigned to the call to the transferred-to user.

A new Global Call ID shall be assigned to the resulting call between the transferred user and the transferred-to user.

6.3.36 Other interactions

A consultation call, as defined in ISO/IEC 18051, shall be assigned the same Thread ID as the call being put on hold.

Upon initiation of a conference, as defined in ISO/IEC 18051, all calls within the conference shall be updated with the same new Global Call ID. The Thread ID for the conferenced calls shall be updated in the following way:

— if exactly one of the conferenced calls was an incoming call, the Thread ID for the linked calls shall be the same as for the incoming call;

— if several of the calls were incoming calls, the Thread ID for the linked calls shall be the same as for the first incoming call;

— if all calls are outgoing calls, the Thread ID for the linked calls shall be the same as for the first established call.

Upon adding a user to an already existing conference, the call to the new conference member and all calls within the conference shall be updated with the same new Global Call ID. The call to the new conference member shall be updated with the Thread ID which is assigned to the other calls in the conference.

6.4 Interworking considerations

As no similar service exists for public ISDN, ANF-CIDL shall be terminated at the boundaries of the PISN.

6.5 Overall SDL

Figure 1 contains the dynamic description of ANF-CIDL using the Specification and Description Language (SDL) defined in ITU-T Rec. Z.100 (1993). The SDL process represents the behaviour of the PISN in providing ANF-CIDL.

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Input signals from the left represent primitives from the ANF-CIDL user.

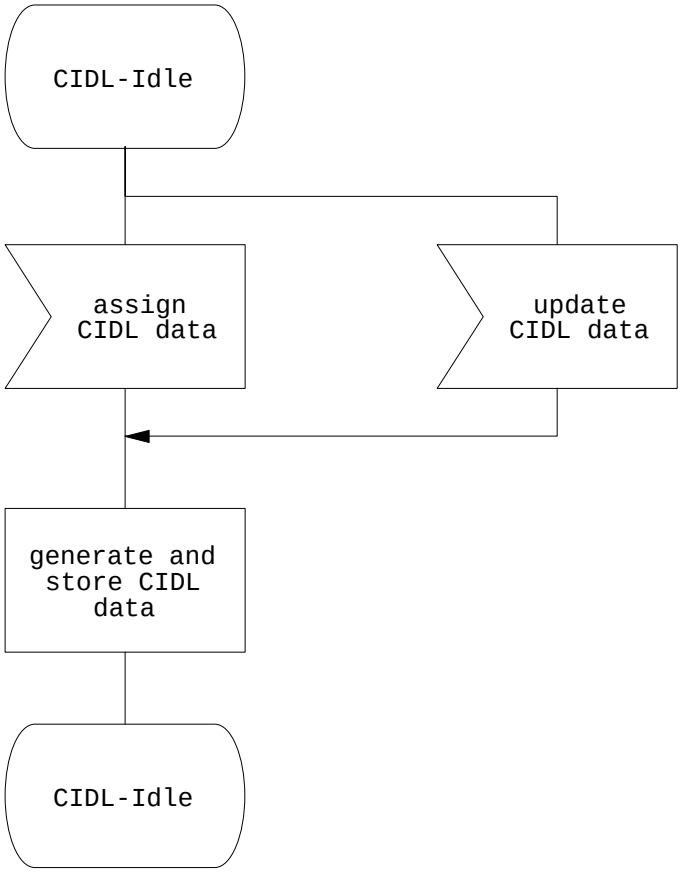


Figure 1 - ANF-CIDL, Overall SDL

7 ANF-CIDL stage 2 specification

A stage 3 standard for ANF-CIDL shall be capable of supporting the functional breakdown of the service specified in this clause.

7.1 Functional model

7.1.1 Functional model description

The functional model shall comprise the following Functional Entities:

FE1 Calling Service Control

FE2 Transit Service Control

FE3 Called Service Control

The following functional relationships shall exist between these FEs:

ra between FE1 and FE2, between FE2 and FE3 or between FE1 and FE3

Figure 2 shows these FEs and relationships.

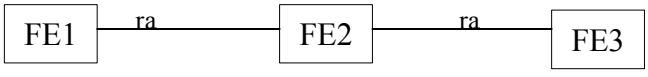


Figure 2 - Functional model of ANF-CIDL

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7.1.2 Description of functional entities

7.1.2.1 Calling Service Control, FE1

This FE

— generates, upon an internal request, call identification data for a new call and sends it in an assign request to FE2 or FE3;

— receives an update request for call identification data from FE2 or FE3;

— generates, upon an internal request, call identification data for a call and sends it in an update request to FE2 or FE3.

7.1.2.2 Transit Service Control, FE2

This FE

— receives an assign request for call identification data for a new call from FE1 and sends it on in an assign request to FE3;

— receives an update request for call identification data from FE1 and sends it on in an update request to FE3;

— receives an update request for call identification data from FE3 and sends it on in an update request to FE1.

7.1.2.3 Called Service Control, FE3

This FE

— receives an assign request for call identification data for a new call from FE1 or FE2;

— receives an update request for call identification data from FE1 or FE2;

— generates, upon an internal request, call identification data for a call and sends it in an update request to FE1 or FE2.

7.1.3 Example relationship of functional model to Basic Call functional model

Functional Entity FE1 shall be collocated with the originating CC.

Functional Entity FE2 shall be collocated with the transit CC.

Functional Entity FE3 shall be collocated with the destination CC.

An example of a relationship between the FEs for ANF-CIDL and FEs for the basic call is shown in figure 3.

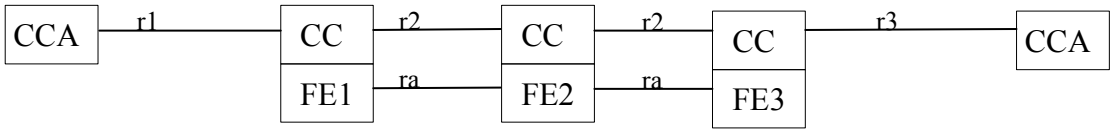


Figure 3 - Example Relationship between Model for ANF-CIDL and Basic Call

7.2 Information flows

7.2.1 Definition of information flows

In the tables listing the elements in information flows, the column headed "Request" indicates which of these elements are mandatory (M) and which are optional (O) in a request/indication information flow.

7.2.1.1 Assign

This is an unconfirmed information flow across ra from FE1 to FE2 or from FE2 to FE3 or from FE1 to FE3 which is associated with a “basic call” Setup Information flow in call related case. It can also be used independent of a basic call. It assigns call identification data to a new call.

Table 1 lists the service elements within the Assign information flow.

Table 1 - Content of Assign

Service element	Request
Global Call Identification	M
Thread Identification	O
Leg Identification	O

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Service element Global Call Identification shall contain the Global Call ID for he particular call as it has been generated and stored in FE1.

Service element Thread Identification if present shall contain the Thread ID for the particular call as it has been generated and stored in FE1.

Service element Leg Identification if present shall contain the Leg ID for the particular call as it has been generated and stored in FE1.

7.2.1.2 Update

This is an unconfirmed information flow across ra either from FE1 to FE2 or from FE2 to FE3 or from FE1 to FE3 or from FE3 to FE2 or from FE2 to FE1 or from FE3 to FE1. It updates call identification data for an already existing call.

Table 2 lists the service elements within the Update information flow.

Table 2 - Content of Update

Service element	Request
Global Call Identification	O
Thread Identification	O
Leg Identification	O

Service element Global Call Identification if present shall contain the Global Call ID for the particular call as it has been generated and stored in FE1/FE3.

Service element Thread Identification if present shall contain the Thread ID for the particular call as it has been generated and stored in FE1/FE3.

Service element Leg Identification may contain the Leg ID for the particular call as it has been generated and stored in FE1/FE3.

7.2.2 Examples of information flow sequences

Below are examples of typical sequences of information flows. In addition to providing signalling procedures in support of these sequences, a stage 3 standard shall also cover other sequences arising from error situations, interactions with basic call, interactions with other supplementary services, different topologies, etc.

In the figures, ANF-CIDL information flows are represented by solid arrows and basic call information flows are represented by broken arrows. An ellipse embracing two information flows indicates that the two information flows occur simultaneously. Within a column representing an ANF-CIDL functional entity, the numbers refer to functional entity actions listed in 7.3.

7.2.2.1 Successful CIDL assignment to a new call

Figure 4 shows the information flow sequence for normal operation of ANF-CIDL upon successful assignment for call identification data to a new call.

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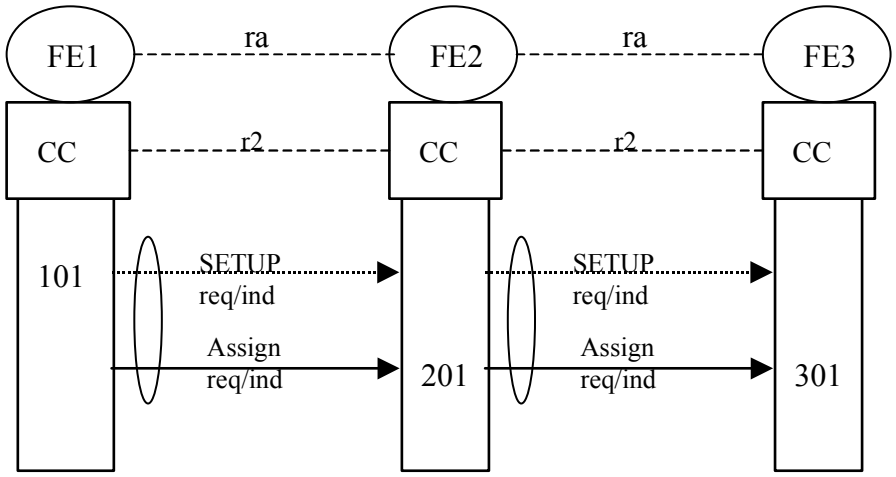


Figure 4 - Information Flow Sequence - Normal Operation of ANF-CIDL, assignment of call identification data for a new call

7.2.2.2 Successful CIDL, update of call identification data, initiated by FE1

Figure 5 shows the information flow sequence for normal operation of ANF-CIDL when the call identification data for a already existing call is being updated due to a request from FE1.

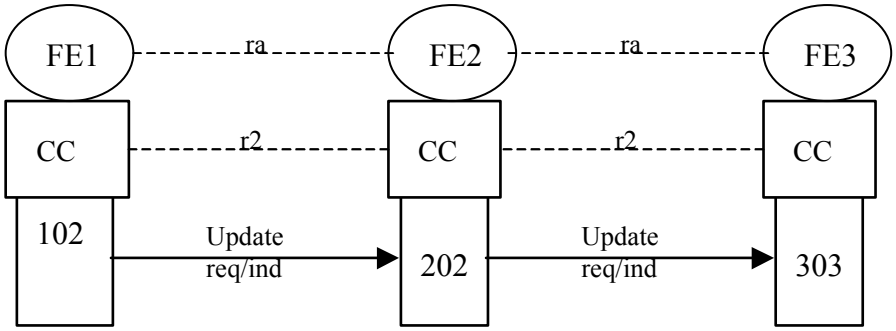


Figure 5 - Information Flow Sequence - Normal Operation of ANF-CIDL, update of call identification data initiated by FE1

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7.2.2.3 Successful CIDL, update of call identification data, initiated by FE3

Figure 6 shows the information flow sequence for normal operation of ANF-CIDL when the call identification data for a already existing call is being updated due to a request from FE3.

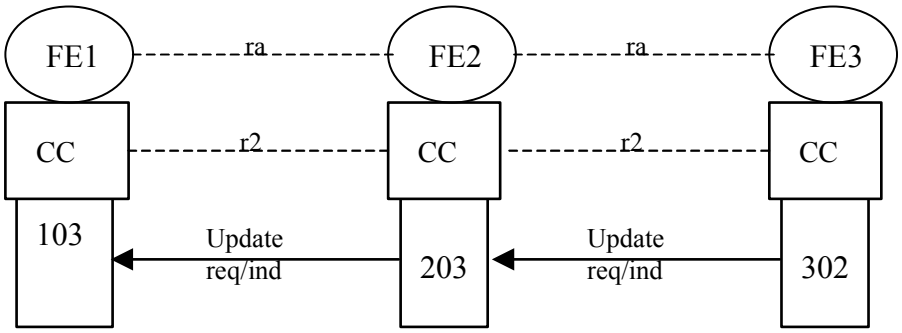


Figure 6 - Information Flow Sequence - Normal Operation of ANF-CIDL, update of call identification data initiated by FE3

7.3 Functional Entity actions

The following FE actions shall occur at the points indicated in the figures of 7.2.2.

7.3.1 Functional Entity actions of FE1

101 Generate call identification data for a new call and send it in Assign req/ind to FE2 or FE3.

102 Generate new call information data and send it in Update req/ind to FE2 or FE3.

103 Receive Update req/ind from FE2 or FE3 and store received call information data.

7.3.2 Functional Entity actions of FE2

201 Receive Assign req/ind from FE1 and send it in Assign req/ind to FE3.

202 Receive Update req/ind from FE1 and send it in Update req/ind to FE3.

203 Receive Update req/ind from FE3 and send it in Update req/ind to FE1.

7.3.3 Functional Entity actions of FE3

301 Receive Assign req/ind from FE1 or FE2 and store received call information data.

302 Generate new call information data and send it in Update req/ind to FE1 or FE2.

303 Receive Update req/ind from FE1 or FE2 and store received call information data.

7.4 Functional Entity behaviour

The FE behaviours shown below are intended to illustrate typical FE behaviour in terms of information flows sent and received.

The behaviour of each FE is shown using the Specification and Description Language (SDL) defined in ITU-T Rec. Z.100.

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7.4.1 Behaviour of FE1

Figure 7 shows the normal behaviour of FE1. Input signals from the left and output signals to the left represent primitives from and to the ANF-CIDL user. Input signals from the right and output signals to the right represent information flows from and to FE2 and FE3.

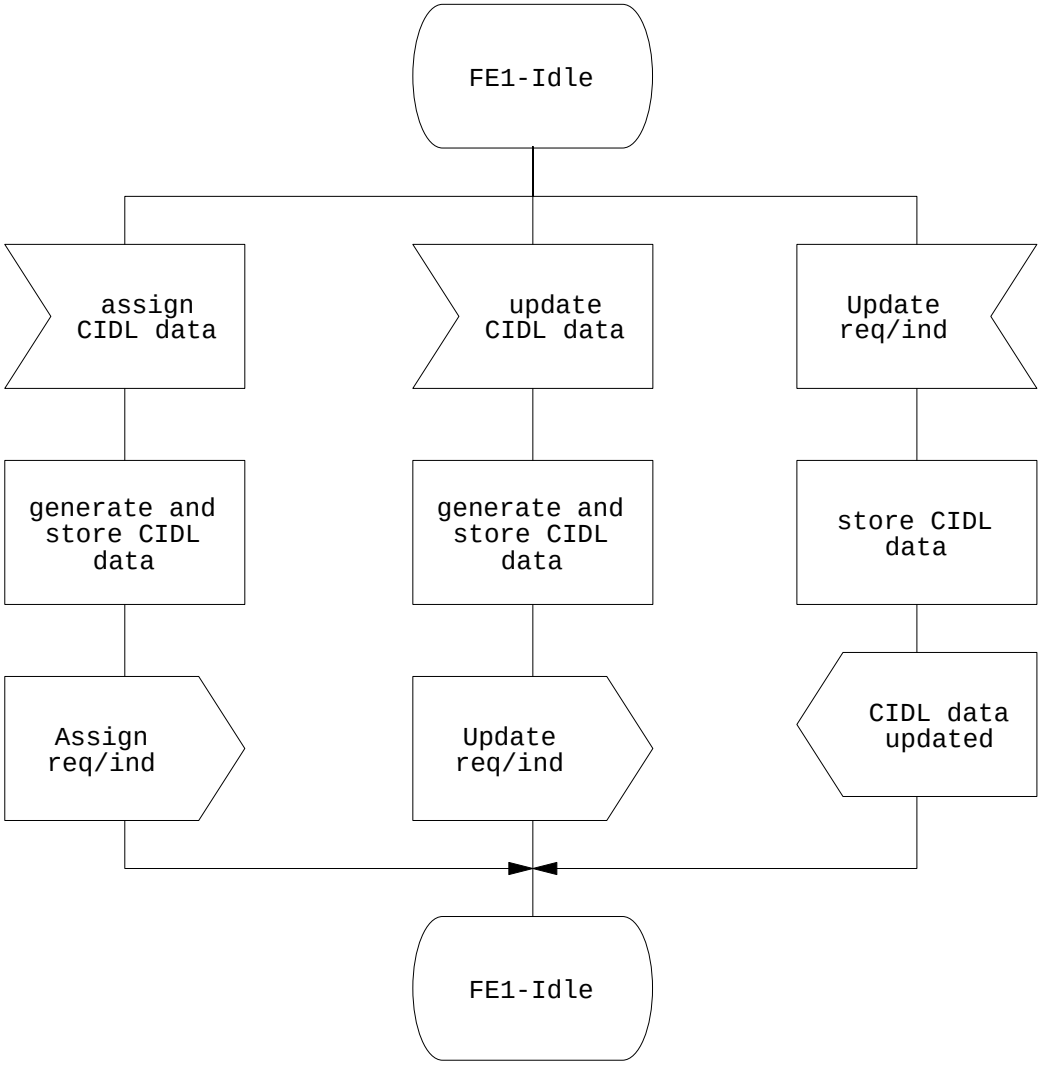


Figure 7 – ANF-CIDL, SDL for Functional Entity 1

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7.4.2 Behaviour of FE2

Figure 8 shows the normal behaviour of FE2. Output signals to the right represent primitives to the ANF-CIDL user. Input signals from the left and output signals to the left represent information flows from and to FE1 and FE3.

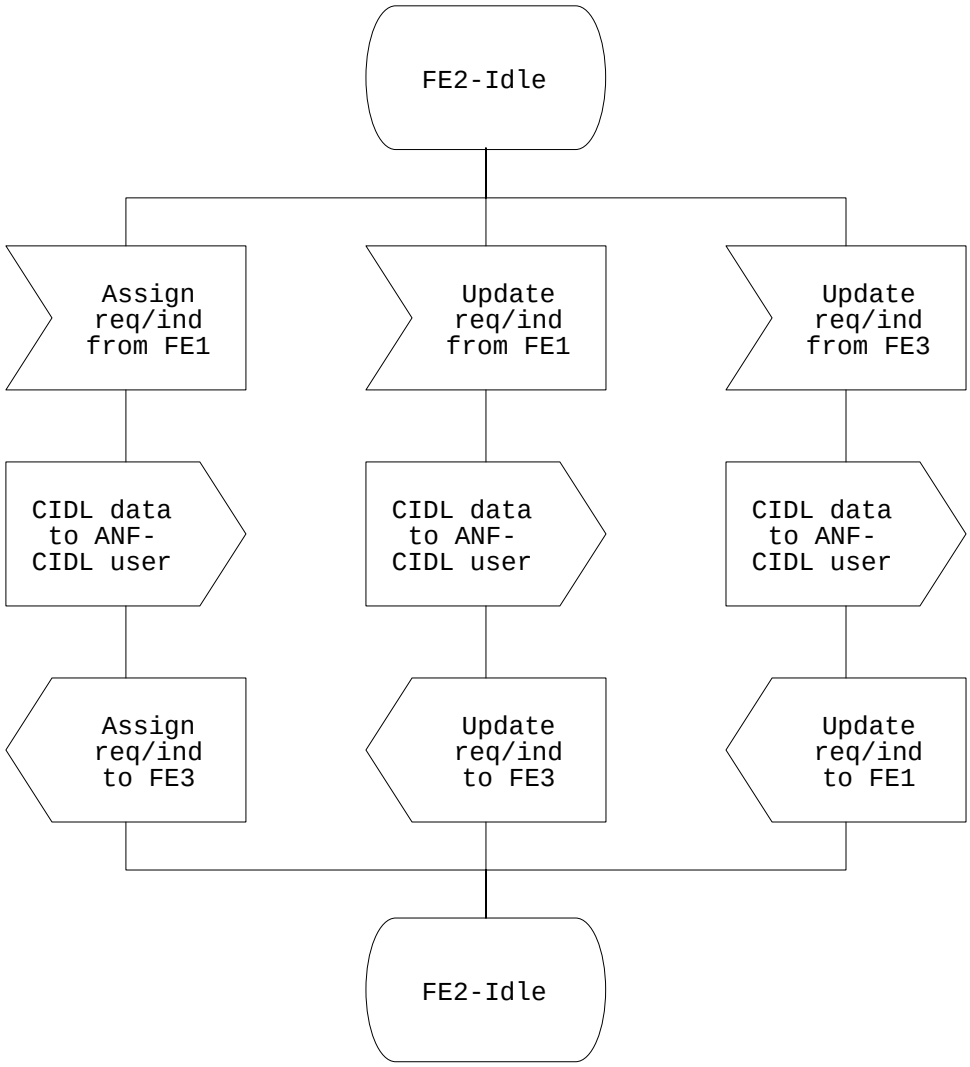


Figure 8 – ANF-CIDL, SDL for Functional Entity 2

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7.4.3 Behaviour of FE3

Figure 9 shows the normal behaviour of FE3. Input signals from the right and output signals to the right represent primitives from and to the ANF-CIDL user. Input signals from the left and output signals to the left represent information flows from and to FE1 and F2.

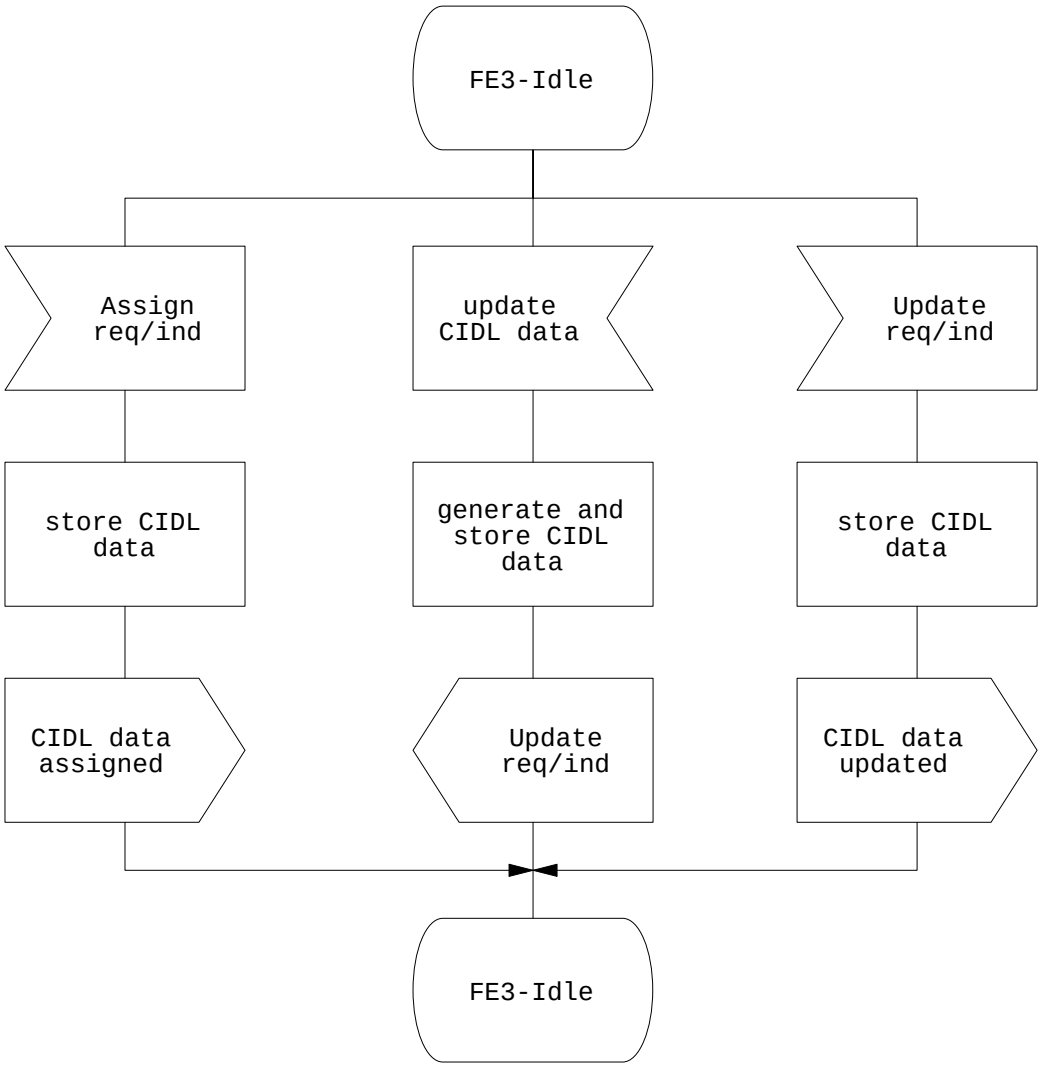


Figure 9 – ANF-CIDL, SDL for Functional Entity 3

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7.5 Allocation of Functional Entities to physical equipment

The allocation of FEs to physical locations as shown in table 3 shall apply.

Table 3 - Scenarios for the allocation of FEs to physical equipment

	FE1	**FE2**	**FE3**
Scenario 1	Originating PINX	Transit PINX	Terminating PINX
Scenario 2	Incoming Gateway PINX	Transit PINX	Terminating PINX
Scenario 3	Originating PINX	Transit PINX	Outgoing Gateway PINX
Scenario 4	Originating PINX	Transit PINX	PINX invoking Supplementary Service / ANF
Scenario 5	Incoming Gateway PINX	Transit PINX	PINX invoking Supplementary Service / ANF

Additional scenarios 6 to 10 are existing and are similar to scenarios 1 to 5 but without any allocation of FE2 to physical equipment, i.e. FE2 is absent.

7.6 Interworking considerations

When interworking with another network which does not support an equivalent feature, the FEs for ANF-CIDL shall be located within PINXs, in accordance with 7.5. All information flows will be internal to the PISN.

When interworking with another network which supports an equivalent feature, the two networks may cooperate in the operation of ANF-CIDL. In this case, either FE1 or FE3 will be located in the other network and the information flows within the PISN will map on to equivalent information flows in the other network.

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