
**Information technology —
Telecommunications and information
exchange between systems —
Private Integrated Services Network —
Specification, functional model and
information flows — Common information
additional network feature**

*Technologies de l'information — Télécommunications et échange
d'information entre systèmes — Réseau privé à intégration de services —
Spécification, modèle fonctionnel et flux d'information — 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. 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.

International Standard ISO/IEC 15771 was prepared by ECMA (as ECMA-250) 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.

Annex A of this International Standard is for information only.

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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 the ISDN concepts as developed by ITU-T and is also within the framework of standards for open systems interconnection as defined by ISO.

This International Standard specifies the Common Information 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 JTC 1, ITU-T, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

There is currently no equivalent feature specified by ITU-T or ETSI for public ISDNs.

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Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Common information additional network feature

1 Scope

This International Standard specifies the additional network feature Common Information (ANF-CMN), which is applicable to various basic services supported by Private Integrated Services Networks (PISN). Basic services are specified in ISO/IEC 11574.

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.

Additional network feature specifications are produced in three stages, according to the method described in ITU-T Rec. I.130. This International Standard contains the stage 1 and stage 2 specifications of ANF-CMN. The stage 1 specification (clause 6) specifies the additional network feature as seen by users of the feature. The stage 2 specification (clause 7) identifies the functional entities involved in the additional network feature 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 additional network feature 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 standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 11574:1994, *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)*.

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

ITU-T Rec. I.130:1988, *Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN*.

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

ITU-T Rec. Z.100:1993, *Specification and description language*.

4 Definitions

For the purposes of this International Standard, the following definitions apply.

4.1 External definitions

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

— Basic Service	(ITU-T Rec. I.210)
— Connection	(ITU-T Rec. I.112)
— 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)
— Signalling	(ITU-T Rec. I.112)
— Supplementary Service	(ITU-T Rec. I.210)
— User (except in the context of ANF-CMN user)	(ISO/IEC 11574)

This International Standard refers to the following basic call functional entities (FEs) 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
- SETUP response/confirmation

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

4.3 ANF-CMN User : An entity that acts on behalf of one end of a connection through a PISN by using ANF-CMN to exchange Common Information with a peer entity acting on behalf of the other end of the connection.

4.4 Backward direction : Within the context of a call, the direction from the called user towards the calling user.

4.5 Call, Basic Call : An instance of the use of a basic service.

4.6 Common Information : Information relating to the user or equipment at one end of a connection through a PISN. This information includes one or more of the following: Feature Identifiers, Party Category, Equipment Identity.

4.7 Feature Identifier : In the context of a particular call, an indication of the availability of a supplementary service or ANF or of a particular capability of a supplementary service or ANF.

4.8 Forward direction : Within the context of a call, the direction from the calling user towards the called user.

4.9 Equipment Identity : A unique identity, three-level structured consisting of Node identity, Group identity, Unit identity.

NOTE The purpose of the Equipment Identity 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 International Standard.

4.10 Node Identity : The identity of the PINX at which a unit of equipment is located.

4.11 Group Identity : Within the context of a PINX, the identity of the group of equipment to which a unit of equipment belongs.

4.12 Unit Identity : Within the context of a PINX or a group of equipment within a PINX, the identity of a unit of equipment.

4.13 Party Category : Indicates the category of a party involved in a call.

NOTE The purpose of the Party Category is to indicate to the other end of a connection the category of a user involved in a call. A received Party Category information may be used for display at the user's terminal or for the PISN-internal call handling process, e.g. depending whether the calling party is an extension or PISN attendant, the call handling may invoke different options of a supplementary service related to that call.

5 List of acronyms

ANF	Additional Network Feature
ANF-CMN	Additional Network Feature Common Information
CC	Call Control (functional entity)
CCA	Call Control Agent (functional entity)
FE	Functional Entity
FI	Feature Identifier
ISDN	Integrated Services Digital Network
PINX	Private Integrated Services Network Exchange
PISN	Private Integrated Services Network
SDL	Specification and Description Language
SS	Supplementary Service

6 ANF-CMN stage 1 specification

6.1 Description

6.1.1 General 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 can be offered to an ANF-CMN user (which may be located at either end of a connection).

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

The unsolicited service enables an ANF-CMN user to supply Common Information to a peer ANF-CMN user.

These services may be combined and are not mutually exclusive.

6.1.2 Qualifications on Applicability to Telecommunication Services

ANF-CMN is applicable to all circuit-mode basic services defined in ISO/IEC 11574.

6.2 Procedures

6.2.1 Provision/Withdrawal

ANF-CMN shall be PISN instigated.

6.2.2 Normal procedures

6.2.2.1 Activation/Deactivation/Registration/Interrogation

Not applicable.

6.2.2.2 Invocation and operation

The conditions under which ANF-CMN is invoked shall be an implementation matter. Also, Common Information offered by a PISN shall be an implementation matter.

An ANF-CMN user may invoke ANF-CMN at any time during a call

- to send its own Common Information to the peer ANF-CMN user (unsolicited service), or
- to request the Common Information of the peer ANF-CMN user (solicited service).

Sending and requesting the Common Information may be combined.

NOTE Typically the Common Information is exchanged during the establishment of a call.

On receiving a request for Common Information the receiving ANF-CMN user shall respond with its Common Information.

6.2.3 Exceptional procedures

6.2.3.1 Activation/Deactivation/Registration/Interrogation

Not applicable.

6.2.3.2 Invocation and Operation

If no response is received on a request for Common Information (solicited service), the action to be taken shall be implementation dependent.

6.3 Interactions 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.

6.3.1 Calling Line Identification Presentation (CLIP)

No interaction.

6.3.2 Connected Line Identification Presentation (COLP)

No interaction.

6.3.3 Calling/Connected Line Identification Restriction (CLIR)

No interaction.

6.3.4 Calling Name Identification Presentation (CNIP)

No interaction.

6.3.5 Connected Name Identification Presentation (CONP)

No interaction.

6.3.6 Calling/Connected Name Identification Restriction (CNIR)

No interaction.

6.3.7 Call Forwarding Unconditional (CFU)

Common Information relating to the originating end of a call sent at the time of the call establishment request shall, if the call is diverted, be diverted to the ANF-CMN user at the terminating end of the diverted call.

6.3.8 Call Forwarding Busy (CFB)

Clause 6.3.7 shall apply.

6.3.9 Call Forwarding No Reply (CFNR)

Unsolicited Common Information relating to the originating end of a call sent at the time of the call establishment request shall, if the call is diverted, be diverted to the ANF-CMN user at the terminating end of the diverted call.

A request for solicited Common Information relating to the originating end of a call sent at the time of the call establishment request shall not, if the call is diverted, be diverted to the ANF-CMN user at the terminating end of the diverted call.

6.3.10 Call Deflection (CD)

In case of Call Deflection immediate, clause 6.3.7 shall apply.

In case of Call Deflection on alerting, clause 6.3.9 shall apply.

6.3.11 Call Transfer (CT)

No interaction.

NOTE ANF-CMN users involved in a call resulting from Call Transfer may exchange Common Information subsequent to transfer.

6.3.12 Completion of Calls to Busy Subscriber (CCBS)

No interaction.

6.3.13 Completion of Calls on No Reply (CCNR)

No interaction.

6.3.14 Call Intrusion (CI)

No interaction.

6.3.15 Call Offer (CO)

No interaction.

6.3.16 Do Not Disturb (DND)

No interaction.

6.3.17 Do Not Disturb Override (DNDO)

No interaction.

6.3.18 Call Interception (CINT)

In case of Call Interception immediate, clause 6.3.7 shall apply.

In case of Call Interception delayed, clause 6.3.9 shall apply.

6.3.19 Advice Of Charge (AOC)

No interaction.

6.3.20 Message Waiting Indication (MWI)

No interaction.

6.3.21 Path Replacement (PR)

No interaction.

6.3.22 Recall (RE)

No interaction.

6.3.23 Wireless Terminal Mobility, Outgoing call (WTMO)

No interaction.

6.3.24 Wireless Terminal Mobility, Incoming call (WTMI)

Clause 6.3.7 shall apply.

6.3.25 Wireless Terminal, Location Registration (WTLR)

No interaction.

6.3.26 Wireless Terminal, Authentication (WTAN, WTAT)

No interaction.

6.3.27 Transit Counter (TC)

No interaction.

6.4 Interworking considerations

On a call to or from another network both ANF-CMN users will be located within the PISN, with one ANF-CMN user acting on behalf of the other network. That ANF-CMN user may use information from the other network in compiling its own Common Information and may send some or all of the peer ANF-CMN user's Common Information to the other network.

6.5 Overall SDL

Figure 1 contains the dynamic description of ANF-CMN using the Specification and Description Language (SDL) defined in ITU-T Rec. Z.100 (1988). The SDL process represents the behaviour of the network in providing ANF-CMN. The relationship of this process to the basic call process is indicated in the annotations.

Input signals from the left and output signals to the left represent primitives from and to the invoking ANF-CMN user.

Input signals from the right represent primitives from the non-invoking ANF-CMN user or internal stimuli.

Output signals to the right represent primitives to the non-invoking ANF-CMN user.

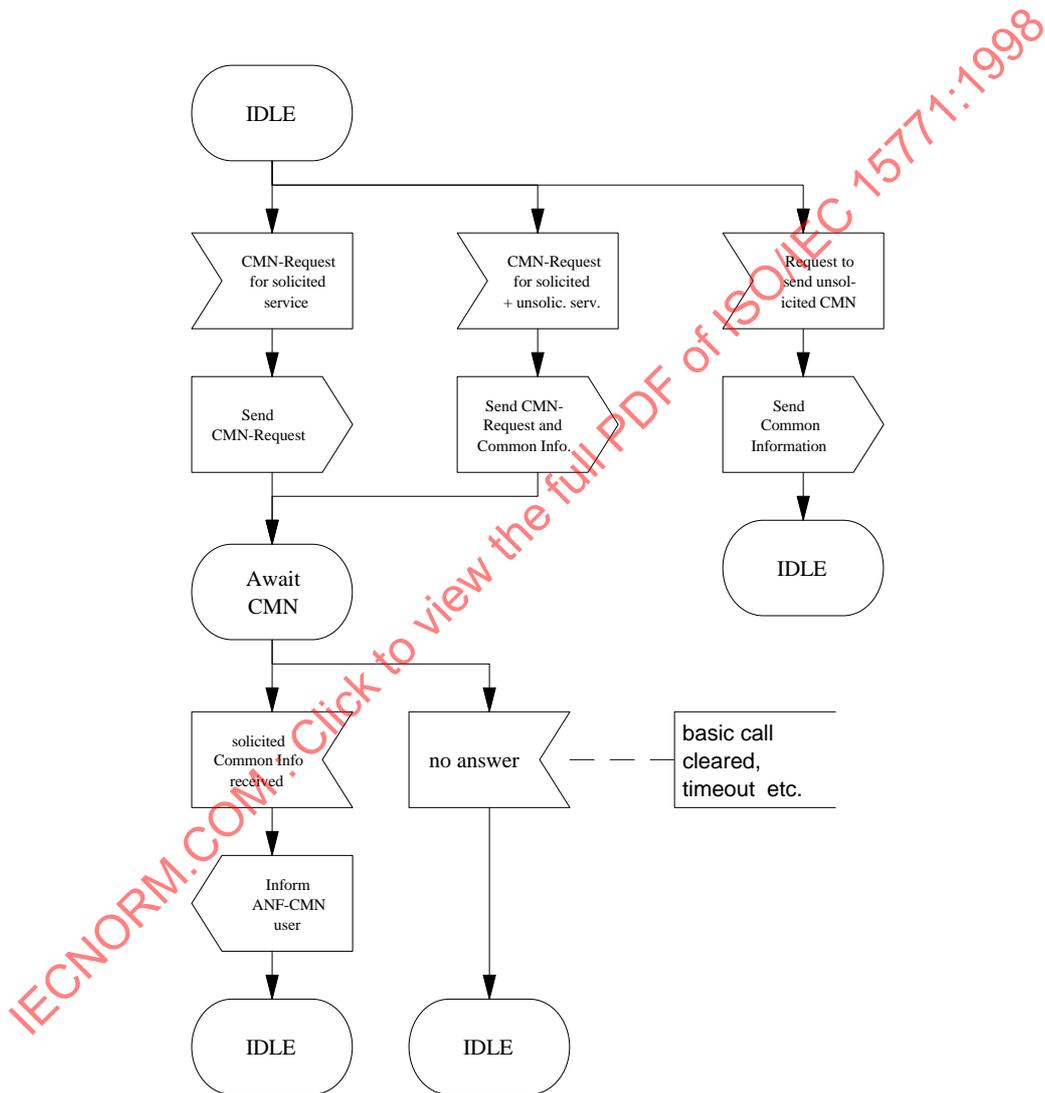


Figure 1 — ANF-CMN, Overall SDL

7 ANF-CMN stage 2 specification

7.1 Functional Model

7.1.1 Functional Model Description

The functional model shall comprise the following functional entities (FEs):

FE1	ANF-CMN Invoke
FE2	ANF-CMN Remote

The following functional relationship shall exist between these FEs:

ra between FE1 and FE2

Figure 2 shows these FEs and this relationship.

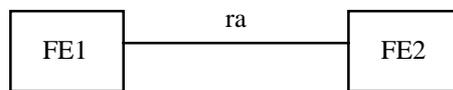


Figure 2 — Functional Model for ANF-CMN

7.1.2 Description of Functional Entities

7.1.2.1 ANF-CMN Invoke Functional Entity, FE1

This functional entity

- receives requests from the local ANF-CMN user
- for the solicited service:
 - sends a Common Information request to FE2
 - receives the response from FE2 and passes the received Common Information to the local ANF-CMN user.
- for the unsolicited service:
 - sends the Common Information to FE2.

7.1.2.2 ANF-CMN Remote Functional Entity, FE2

This functional entity

- for the solicited service:
 - receives the Common Information request
 - obtains Common Information from the local ANF-CMN user and responds to FE1.
- for the unsolicited service:
 - receives the Common Information and passes it to the local ANF-CMN user.

7.1.3 Relationship of Functional Model to Basic Call Functional Model

Functional entity FE1 is collocated with invoking ANF-CMN user's CC.

Functional entity FE2 is collocated with non-invoking ANF-CMN user's CC.

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

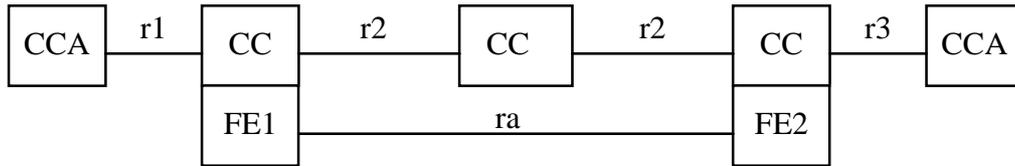


Figure 3 — Example Relationship between Model for ANF-CMN and Basic Call

7.2 Information Flows

7.2.1 Definition of Information Flows

In the tables listing the service 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, and the column headed "Confirm" (confirmed information flows only) indicates which of these elements are mandatory (M) and which are optional (O) in a response/confirmation information flow.

7.2.1.1 ra-CMN-REQUEST

ra-CMN-REQUEST is a confirmed information flow across ra between FE1 and FE2 which is used to request the remote Common Information. The response contains the requested remote Common Information (solicited service).

Table 1 lists the service elements within the ra-CMN-REQUEST information flow. The contents of the service elements in table 1 are defined in 7.2.1.3.

Table 1 — Content of ra-CMN-REQUEST

Service element	Request	Confirm
FI-list	-	O (Note 1)
Equipment Id	-	O (Note 1)
Party Category	-	O (Note 1)
Note 1 - At least one of these three service elements shall be present within the ra-CMN-REQUEST confirmation.		

7.2.1.2 ra-CMN-INFORM

ra-CMN-INFORM is an unconfirmed information flow across ra from FE1 to FE2 which is used to send unsolicited Common Information.

Table 2 lists the service elements within the ra-CMN-INFORM information flow. The contents of the service elements in table 2 are defined in 7.2.1.3.

Table 2 — Content of ra-CMN-INFORM

Service element	Request
FI-list	O (Note 1)
Equipment Id	O (Note 1)
Party Category	O (Note 1)
Note 1 - At least one of these three service elements shall be present within the ra-CMN-INFORM request.	

7.2.1.3 Contents of Service Elements of ANF-CMN

The service elements of ANF-CMN are listed in tables 3 and 4.

NOTE Future supplementary services or additional network features will specify the appropriate Feature Identifiers in their service descriptions.

The service element FI-list, when used in forward direction, shall include one or more of the Feature Identifiers listed in table 3.

Table 3 — Feature Identifiers in Forward Direction

Feature Identifiers	Values	Comments
SS-CF re-routeing available	Yes/No	Call Forwarding
SS-CT re-routeing available	Yes/No	Call Transfer
SS-CI protection level	0 1 2 3	Call Intrusion
ANF-PR available at a co-operating PINX	Yes/No	Path Replacement
ANF-CINT can intercept - interception immediate	Yes/No	Call Interception
ANF-CINT can intercept - interception delayed	Yes/No	
ANF-WTMI re-routeing available	Yes/No	Wireless Terminal Incoming Call

The service element FI-list, when used in backward direction, shall include one or more of the Feature Identifiers listed in table 4.

Table 4 — Feature Identifiers in Backward Direction

Feature Identifiers	Values	Comments
SS-CT re-routeing available	Yes/No	Call Transfer
SS-CCBS available	Yes/No	Call Completion on Busy Subscriber
SS-CCNR available	Yes/No	Call Completion on No Reply
SS-CO available	Yes/No	Call Offer
SS-DNDO available SS-DNDO protection level	Yes/No 0 1 2 3	Do Not Disturb Override
SS-CI available SS-CI protection level <i>options:</i> SS-CI Forced Release available SS-CI Isolation available SS-CI Wait on Busy available	Yes/No 0 1 2 3 Yes/No Yes/No Yes/No	Call Intrusion
SS-AOC Support of charge rate provision at a gateway PINX	Yes/No	Advice Of Charge
SS-AOC Support of interim charge provision at a gateway PINX	Yes/No	
SS-AOC Support of final charge provision at a gateway PINX	Yes/No	
ANF-PR available at a co-operating PINX	Yes/No	Path Replacement

Table 5 — Equipment Identity

Parameter	Indication	Values	Mandatory / Optional Indication	Comments
Equipment Identity	Node Identity	alphanum. string	O	
	Group Identity	alphanum. string	O	
	Unit Identity	alphanum. string	O	

Table 6 — Party Category

Parameter	Values	Mandatory / Optional Indication	Comments
Party Category	Unknown Extension PISN attendant Emergency extension	O	

7.2.2 Relationship of Information Flows to Basic Call Information Flows

When ra-CMN-REQUEST request/indication information flow is sent it shall be:

- together with a basic call information flow if this is sent at the same time,
- otherwise independently of a basic call information flow.

NOTE At call setup time ra-CMN-REQUEST is sent together with r2-SETUP request/indication.

When ra-CMN-REQUEST response/confirmation information flow is sent it shall be:

- together with a basic call information flow if this is sent at the same time,
- otherwise independently of a basic call information flow.

When ra-CMN-INFORM request/indication information flow is sent it shall be:

- together with a basic call information flow if this is sent at the same time,
- otherwise independently of a basic call information flow.

7.2.3 Information Flow Sequences

A stage 3 standard for ANF-CMN shall provide signalling procedures in support of the information flow sequences specified below. In addition, signalling procedures should be provided to cover other sequences arising from error situations, interactions with basic call, interactions with other supplementary services and ANFs, different topologies, etc.

In the figures, ANF-CMN 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-CMN functional entity, the numbers refer to functional entity actions as listed in 7.3.

7.2.3.1 Normal Operation of ANF-CMN

Figure 4 shows an example of the information flow sequence for normal operation of ANF-CMN for the solicited service at call setup time.

Figure 5 shows an example of the information flow sequence for normal operation of ANF-CMN for the unsolicited service, independently of any basic call information flow.

Figure 6 shows an example of the information flow sequence for normal operation of ANF-CMN for a combination of the solicited and unsolicited service at call setup time.

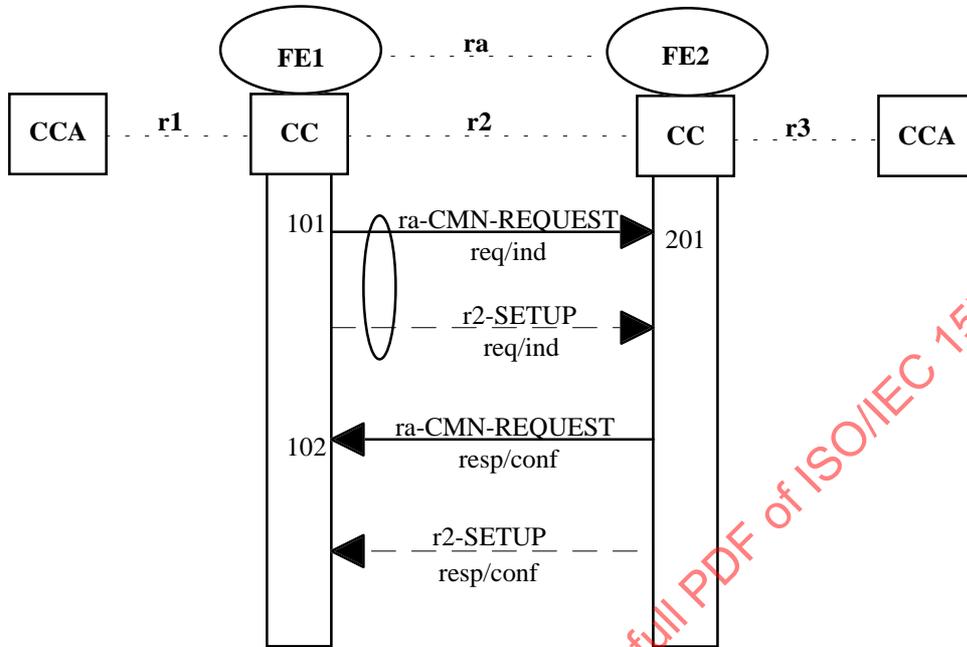


Figure 4 — Information Flow Sequence - Normal Operation of ANF-CMN solicited service at call setup time

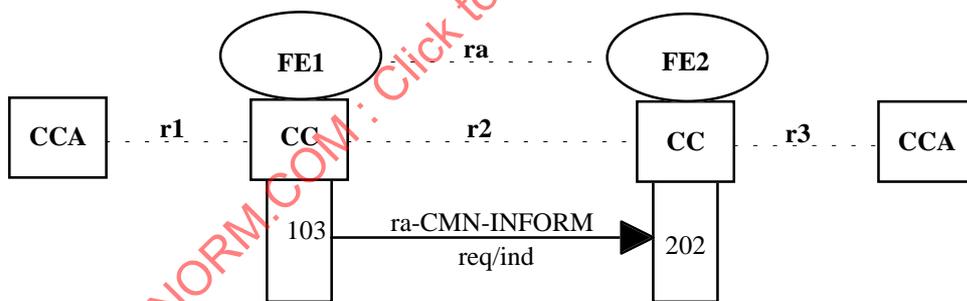


Figure 5 — Information Flow Sequence - Normal Operation of ANF-CMN unsolicited service

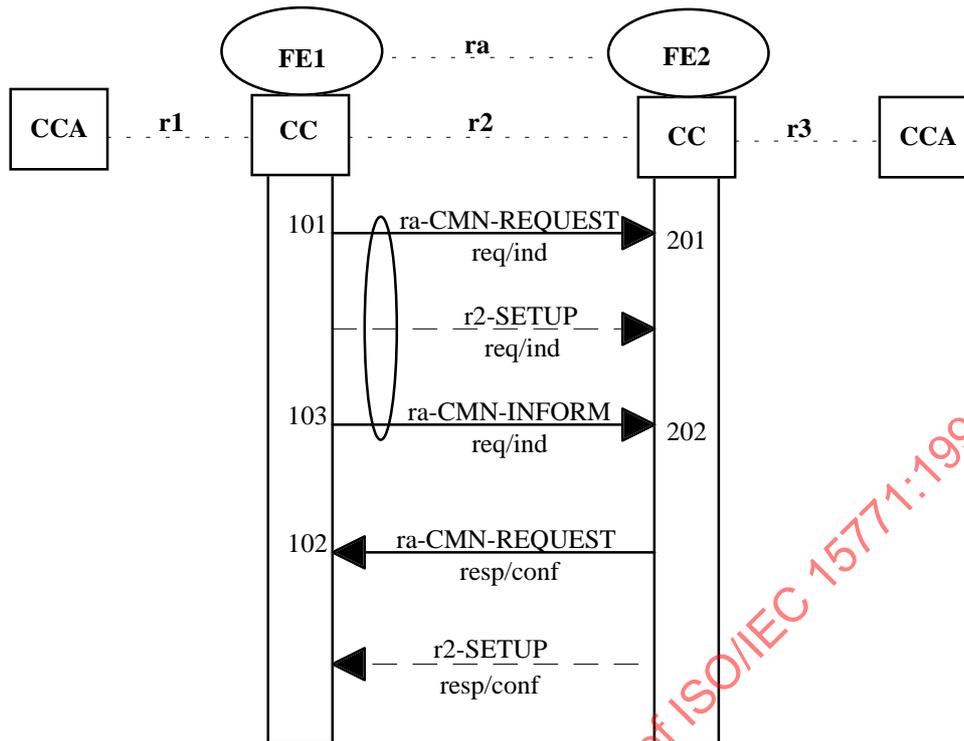


Figure 6 — Information Flow Sequence - Normal Operation of ANF-CMN combination of solicited and unsolicited service at call setup time

7.3 Functional entity actions

The following FE actions shall occur at the points indicated in the figures of 7.2.3.

7.3.1 Functional entity actions of FE1

- 101 Send ra-CMN-REQUEST req/ind to FE2 in order to request Common Information from FE2.
- 102 Pass on the received Common Information to the requesting ANF-CMN user.
- 103 Obtain Common Information from the local ANF-CMN user and send ra-CMN-INFORM req/ind to FE2.

7.3.2 Functional entity actions of FE2

- 201 On receipt of the request for Common Information obtain the Common Information from the local ANF-CMN user and send ra-CMN-REQUEST resp/conf to FE1.
- 202 Pass on the received Common Information to the local ANF-CMN user.

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 (1988).