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Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Identification supplementary services

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Réseau privé avec intégration de services — Spécifications, modèle fonctionnel et flux d'informations — Compléments de service d'identification



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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 14136 was prepared by European Computer Manufacturers Association (ECMA) (as Standard ECMA-148) 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 International Standards defining services and signalling protocols applicable to Private Integrated Services Networks (PISNs). The series uses ISDN concepts as developed by ITU-T and conforms to the framework of International Standards for Open Systems Interconnection as defined by ISO/IEC.

This particular International Standard specifies the Identification supplementary services, which allow a user involved in a call to receive information concerning the identity (number and subaddress) of the other user in the call. In addition a user can prevent the presentation of his number to other users. Corresponding services are specified for public ISDNs in CCITT recommendations I.251 and Q.81 (1992), and annex A to this International Standard provides a comparison.

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Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Specification, functional model and information flows - Identification supplementary services

1 Scope

This International Standard specifies the following Identification supplementary services: Calling Line Identification Presentation (SS-CLIP), Connected Line Identification Presentation (SS-COLP) and Calling/Connected Line Identification Restriction (SS-CLIR), which are applicable to various basic services supported by Private Integrated Services Networks (PISN). Basic services are specified in ISO/IEC 11574.

Calling Line Identification Presentation (SS-CLIP) is a supplementary service which is offered to the called user and which provides the calling user's PISN number, and possibly a subaddress, to the called user.

Connected Line Identification Presentation (SS-COLP) is a supplementary service which is offered to the calling user and which provides the called (connected) user's PISN number, and possibly a subaddress, to the calling user.

Calling/connected Line Identification Restriction (SS-CLIR) is a supplementary service offered to a user to restrict presentation of that user's PISN number to another user.

Supplementary service specifications are produced in three stages, according to the method described in CCITT Recommendation I.130. This International Standard contains the stage 1 and stage 2 specifications of SS-CLIP, SS-COLP and SS-CLIR. The stage 1 specifications (clauses 6, 7 and 8) specify the supplementary services as seen by users of PISNs. The stage 2 specifications (clauses 9, 10 and 11) identify the functional entities involved in the supplementary services and the information flows between them.

2 Conformance

In order to conform to this International Standard, a stage 3 International Standard shall specify signalling protocols and equipment behaviour that are capable of being used in a PISN which supports the supplementary services specified in this International Standard. This means that, to claim conformance, a Stage 3 International Standard is required to be adequate for the support of those aspects of clauses 6, 7 and 8 (stage 1) and clauses 9, 10 and 11 (stage 2) which are relevant to the interface or equipment to which the Stage 3 International 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 11571:1994, *Information technology - Telecommunications and information exchange between systems - Numbering and sub-addressing in private integrated services networks.*

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).*

CCITT Rec. I.112:1988, *Vocabulary of terms for ISDNs (Blue Book).*

CCITT Rec. I.130:1988, *Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN (Blue Book).*

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CCITT Rec. I.210:1988, *Principles of telecommunication services supported by an ISDN and the means to describe them (Blue Book).*

CCITT Rec. Z.100:1988, *Specification and Description Language (Blue Book).*

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 (CCITT 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 (CCITT Rec. I.112)
- Signalling (CCITT Rec. I.112)
- Subaddress (ISO/IEC 11571)
- Supplementary Service (CCITT Rec. I.210)
- 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 Other definitions

4.2.1 calling user number: The PISN number of the calling user.

4.2.2 calling user subaddress: The subaddress supplied by the calling user for identification purposes.

4.2.3 connected user: The called user that answers a call.

4.2.4 connected user number: The PISN number of the connected user for identification purposes.

4.2.5 connected user subaddress: The subaddress supplied by the connected user.

5 List of acronyms

CC Call Control (functional entity)

CCA Call Control Agent (functional entity)

CGLI Calling Line Identification

CN Connected Number

COLI Connected Line Identification

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CS	Connected Subaddress
FE	Functional Entity
ISDN	Integrated Services Digital Network
ON	Originating Number
OS	Originating Subaddress
PINX	Private Integrated Services Network Exchange
PISN	Private Integrated Services Network
PSTN	Public Switched Telephone Network
RI	Restriction Indicator
SS-CLIP	Supplementary Service Calling Line Identification Presentation
SS-CLIR	Supplementary Service Calling/Connected Line Identification Restriction
SS-COLP	Supplementary Service Connected Line Identification Presentation
SDL	Specification and Description Language
TE	Terminal Equipment

6 SS-CLIP stage 1 specification

6.1 Description

6.1.1 General description

The PISN provides the called user with the PISN number of the calling user whenever an incoming call is presented. The number provided should be sufficient to enable the called user to return the call.

The calling user number may be accompanied by the calling user subaddress.

6.1.2 Qualifications on applicability to telecommunication services

SS-CLIP is applicable to all basic services defined in ISO/IEC 11574.

6.2 Procedure

6.2.1 Provision/withdrawal

SS-CLIP shall be generally available. There is no need for service profile control.

Some users may have a service profile which permits the override of calling line identification restriction.

6.2.2 Normal procedures

6.2.2.1 Activation/deactivation/registration/interrogation

SS-CLIP shall be permanently activated. No information needs to be registered with the PISN for this supplementary service, and therefore interrogation is not applicable.

6.2.2.2 Invocation and operation

The PISN shall provide the called user with the calling user number at the same time as indicating an incoming call.

The number presented shall be accompanied by indications of the numbering plan and type of number, and should be sufficient to unambiguously identify the calling user.

Where the number presented has been wholly or partially provided by the calling user, it shall be marked "user provided, verified and passed". Otherwise it shall be marked "network-provided".

If the calling user has also provided a calling user subaddress, it shall be delivered to the called user along with the calling user number.

In some cases where calling line identification restriction has been invoked, there may be certain categories of called user that have the service profile to override this restriction and have the calling user number presented, e.g. emergency

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stations, PISN attendants. In these circumstances, presentation shall include an indication that restriction has been invoked.

6.2.3 Exceptional procedures

6.2.3.1 Activation/deactivation/registration/interrogation

Not applicable.

6.2.3.2 Invocation and operation

There are two exceptions when the calling user number is not presented to the called user:

- when calling line identification restriction has been invoked (see definition of Calling/Connected Line Identification Restriction) and the called user does not have the service profile to override this restriction; and
- when the calling user number is not available, e.g. due to interworking with the analogue telephone network (PSTN).

In such cases the called user shall receive an indication of the situation. In either case the called user can receive the calling user subaddress, if available.

6.3 Interaction with other supplementary services and ANFs

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

6.3.1 Connected Line Identification Presentation (SS-COLP)

No interaction.

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

The calling user number shall not be presented if calling line identification restriction has been invoked at the calling user, unless the called user has the service profile to override this restriction.

6.4 Interworking considerations

6.4.1 Incoming calls

On calls incoming from another network, the calling user number, and calling user subaddress, if available, are obtained from the other network. In some circumstances the number may be marked "user provided, not screened".

Where no number is provided by the other network, the called user shall be given an indication "number unavailable due to interworking" or "presentation restricted", as appropriate.

6.4.2 Outgoing calls

This PISN supplementary service does not apply to outgoing calls.

NOTE 1 — The possible provision of the calling user number and/or calling user subaddress to another network is part of the basic call, see ISO/IEC 11574.

6.5 Overall SDL

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

Output signals to the right represent primitives to the called user. Input signals from the left represent internal stimuli.

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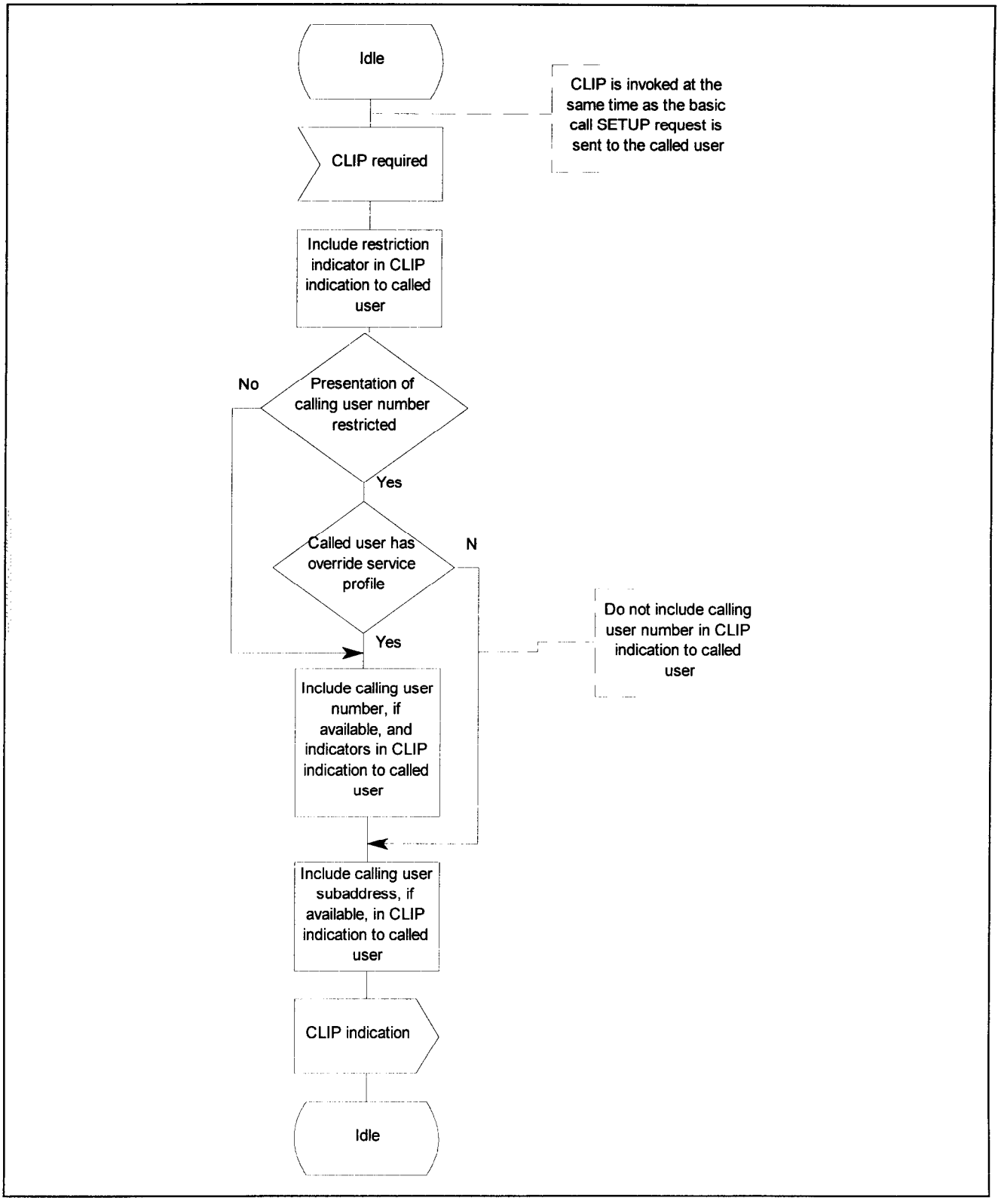


Figure 1 - SS-CLIP, overall SDL

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7 SS-COLP stage 1 specification

7.1 Description

7.1.1 General description

The PISN provides the calling user with the PISN number of the called user (connected user number) when the called user connects to the incoming call. The number provided should be sufficient to enable the calling user to repeat the call.

NOTE 2 — The number provided is the number of the connected user. Interactions with certain supplementary services may cause the connected user number to differ from the called user number requested by the calling user.

The connected user number may be accompanied by a connected user subaddress.

7.1.2 Qualifications on applicability to telecommunication services

SS-COLP is applicable to all basic services defined in ISO/IEC 11574.

7.2 Procedure

7.2.1 Provision/withdrawal

SS-COLP shall be generally available. There is no need for service profile control.

Some users may have a service profile which permits the override of connected line identification restriction.

7.2.2 Normal procedures

7.2.2.1 Activation/deactivation/registration/interrogation

SS-COLP shall be permanently activated. No information needs to be registered with the PISN for this supplementary service, and therefore interrogation is not applicable.

7.2.2.2 Invocation and operation

The calling user, when notified that call establishment is complete, shall be presented with the connected user number.

The number presented shall be accompanied by indications of the numbering plan and type of number, and should be sufficient to unambiguously identify the connected user.

Where the number presented has been wholly or partially provided by the connected user, it shall be marked "user provided, verified and passed". Otherwise it shall be marked "network-provided".

If the connected user has provided a connected user subaddress, it shall be delivered to the calling user along with the connected user number.

In some cases where connected line identification restriction has been invoked, there may be certain categories of calling user that have the service profile to override this restriction and have the connected user number presented, e.g. emergency stations, PISN attendants. In these circumstances, presentation shall include an indication that restriction has been invoked.

7.2.3 Exceptional procedures

7.2.3.1 Activation/deactivation/registration/interrogation

Not applicable.

7.2.3.2 Invocation and operation

There are two exceptions when the connected user number is not presented to the calling user:

- when connected line identification restriction has been invoked (see definition of Calling/Connected Line Identification Restriction) and the calling user does not have the service profile to override this restriction; and
- when the connected user number is not available, e.g. due to interworking with the analogue telephone network (PSTN).

In such cases the calling user shall receive an indication of the situation. In either case the calling user can receive the connected user subaddress, if available.

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7.3 Interaction with other supplementary services and ANFs

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

7.3.1 Calling Line Identification Presentation (SS-CLIP)

No interaction.

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

The connected user number shall not be presented if connected line identification restriction has been invoked at the connected user unless the calling user has the service profile to override this restriction.

7.4 Interworking considerations

7.4.1 Outgoing calls

On calls outgoing to another network, the connected user number, and connected user subaddress, if available, are obtained from the other network. In some circumstances the number may be marked "user-provided, unscreened".

Where no number is provided by the other network, the calling user shall be given an indication "number unavailable due to interworking" or "presentation restricted", as appropriate.

7.4.2 Incoming calls

This PISN supplementary service does not apply to incoming calls.

NOTE 3 — The possible provision of the connected user number and/or connected user subaddress to another network is part of the basic call, see ISO/IEC 11574.

7.5 Overall SDL

Figure 2 contains the dynamic description of SS-COLP using the Specification and Description Language (SDL) defined in CCITT Rec. Z.100 (1988). The SDL process represents the behaviour of the PISN in providing SS-COLP. The relationship of this process to the basic call process is indicated in the annotations.

Output signals to the left represent primitives to the calling user. Input signals from the right represent internal stimuli.

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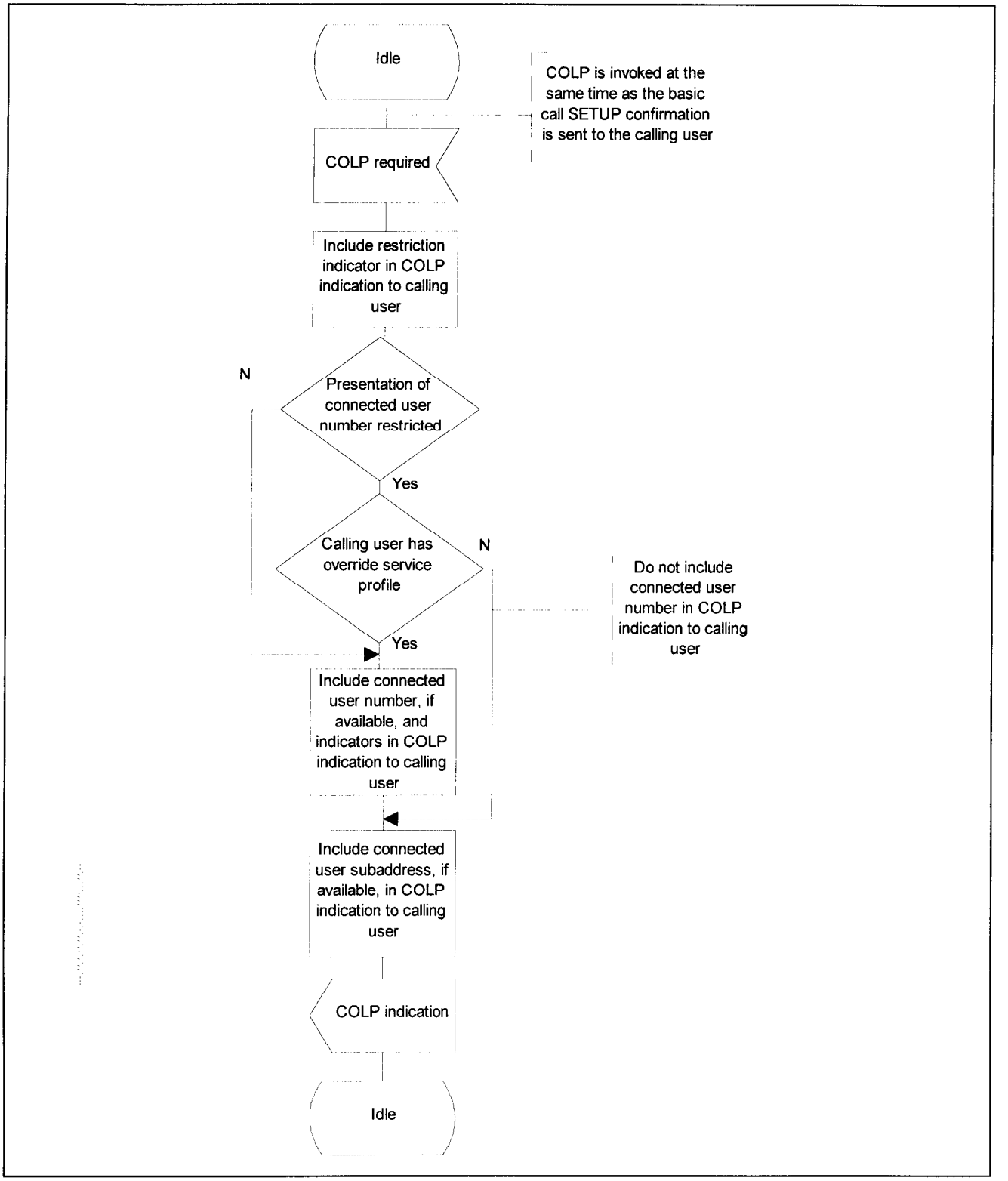


Figure 2 - SS-COLP, overall SDL

8 SS-CLIR stage 1 specification

8.1 Description

8.1.1 General description

When SS-CLIR applies to a user, the user number is not normally presented to any other user. SS-CLIR has no impact on the delivery of a subaddress another user.

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8.1.2 Qualifications on applicability to telecommunication services

SS-CLIR is applicable to all basic services defined in ISO/IEC 11574.

8.2 Procedure

8.2.1 Provision/withdrawal

SS-CLIR is provided on a service profile basis. A PISN may provide one or more of several service profile options. The options apply separately to each PISN number. Service profile options are summarised in Table 1.

Table 1 - Service Profile Options

Service Profile Option	Values
SS-CLIR mode	– permanent (invoked for all calls) – temporary (specified by user per call)
Default (only for temporary mode)	– presentation restricted – presentation not restricted

8.2.2 Normal procedures

8.2.2.1 Activation/deactivation/registration/interrogation

The service is activated on provision and deactivated on withdrawal. No information needs to be registered with the PISN for this supplementary service, and therefore interrogation is not applicable.

8.2.2.2 Invocation and operation

If permanent mode is provided, restriction shall be invoked automatically for all calls originating or terminating at the user concerned. If temporary mode with default "presentation restricted" is provided, restriction shall be invoked automatically for all calls originating or terminating at the user concerned, unless requested otherwise by the user at call establishment time. If temporary mode with default "presentation not restricted" is provided, restriction shall not be invoked for any call originating or terminating at the user concerned, unless requested otherwise by the user at call establishment time.

To override the default for an outgoing call when temporary mode is provided, the calling user shall be able to make a request for restriction or no restriction at the same time as requesting call establishment. To override the default for an incoming call when temporary mode is provided, the called user shall be able to make a request for restriction or no restriction at the same time as responding to the incoming call indication.

If restriction is invoked for an outgoing call, the calling user number shall be marked by the network as "presentation restricted". This prevents presentation to the called user (unless the called user has an override service profile). The calling user may still provide a calling user subaddress, delivery of which to the called user shall be unaffected by the invocation of restriction.

If restriction is invoked for an incoming call, the connected user number shall be marked by the network as "presentation restricted". This prevents presentation to the calling user (unless the calling user has an override service profile). The connected user may still provide a connected user subaddress, delivery of which to the calling user shall be unaffected by the invocation of restriction.

8.2.3 Exceptional procedures

8.2.3.1 Activation/deactivation/registration/interrogation

Not applicable.

8.2.3.2 Invocation and operation

A request from the user for the override of a default shall be ignored if the user is not provided with temporary mode.

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8.3 Interaction with other supplementary services and ANFs

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

8.3.1 Calling Line Identification Presentation (SS-CLIP)

The calling user number shall not be presented if calling line identification restriction has been invoked at the calling user, unless the called user has the service profile to override this restriction.

8.3.2 Connected Line Identification Presentation (SS-COLP)

The connected user number shall not be presented if connected line identification restriction has been invoked at the connected user unless the calling user has the service profile to override this restriction.

8.4 Interworking considerations

8.4.1 Incoming calls

This PISN supplementary service does not apply to the calling user of an incoming call. The other network may provide the equivalent service, in which case the PISN can receive an indication that presentation of the calling user number is restricted. In such a situation the other network may or may not supply the calling user number to the PISN. If not provided, even a called user with an override service profile will be given only an indication that presentation is restricted.

NOTE 4 — In the case of an incoming call from a public ISDN, no calling user subaddress will be delivered to the PISN if calling line identification restriction has been invoked.

If the connected user has invoked connected line identification restriction, the connected user number will be marked as "presentation restricted". This indication shall be passed on to the other network. The provision of the connected user number to the other network in this situation depends on the arrangement with the other network.

8.4.2 Outgoing calls

This PISN supplementary service does not apply to the connected user of an outgoing call. A public ISDN may provide the equivalent service, in which case the PISN can receive an indication that presentation of the connected user number is restricted. In such a situation the other network may or may not supply the connected user number to the PISN. If not provided, even a calling user with an override service profile will be given only an indication that presentation is restricted.

NOTE 5 — In the case of an outgoing call to a public ISDN, no connected user subaddress will be delivered to the PISN if connected line identification restriction has been invoked.

If the calling user has invoked restriction, the calling user number will be marked as "presentation restricted". This indication shall be passed on to the other network. The provision of the calling user number to the other network in this situation depends on the arrangement with the other network.

8.5 Overall SDL

Figure 3 contains the dynamic description of SS-CLIR using the Specification and Description Language (SDL) defined in CCITT Rec. Z.100 (1988). The SDL process represents the behaviour of the PISN in providing SS-CLIR.

Input signals from the left represent primitives from the served user and input signals from the right represent internal stimuli.

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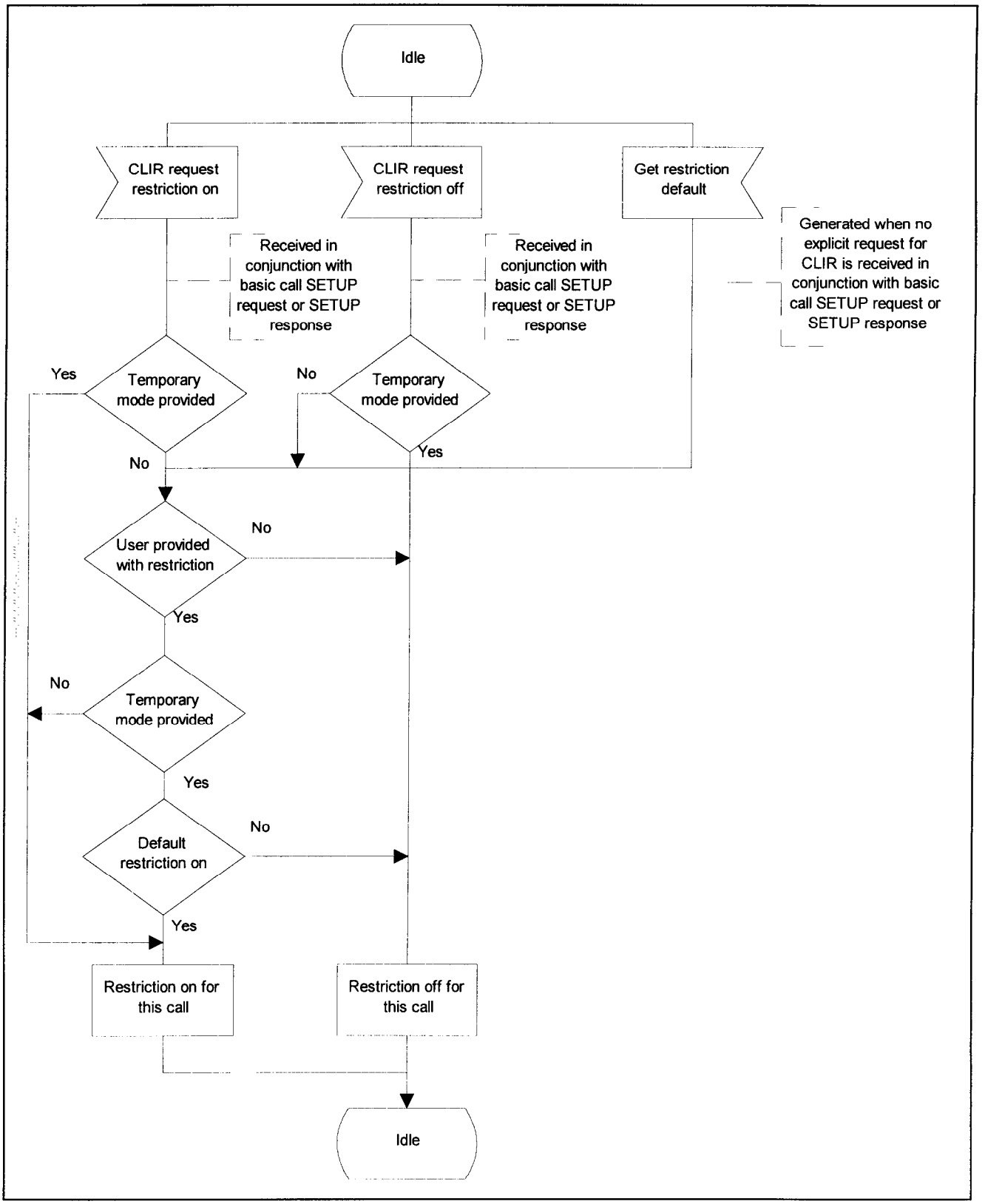


Figure 3 - SS-CLIR, overall SDL

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9 SS-CLIP stage 2 specification

9.1 Functional model

9.1.1 Functional model description

The functional model shall comprise the following functional entities:

FE1 CGLI Presentation

FE2 CGLI Reception

The following functional relationships shall exist between these FEs:

rx between FE1 and FE2

Figure 4 shows these FEs and relationships.

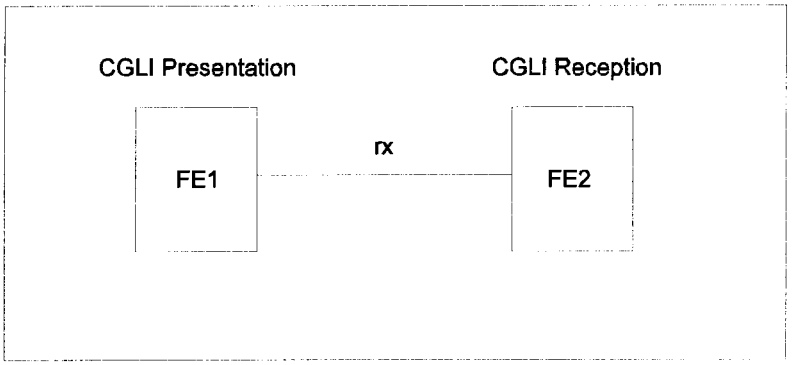


Figure 4 - Functional model for SS-CLIP

9.1.2 Description of functional entities

9.1.2.1 CGLI Presentation, FE1

This functional entity is responsible for reporting the calling user identity and associated indicators to the CGLI Reception FE.

9.1.2.2 CGLI Reception, FE2

This functional entity receives the calling user identity and associated indicators and delivers this information to the user.

9.1.3 Relationship of functional model to basic call functional model

FE1 shall be collocated with the terminating CC.

FE2 shall be collocated with the terminating CCA.

NOTE 6 — Where the called user's terminal is stimulus with respect to SS-CLIP but functional with respect to the basic call, FE2 is collocated with the terminating CC.

Figure 5 shows an example of the relationship between the model for SS-CLIP and the model for the basic call.

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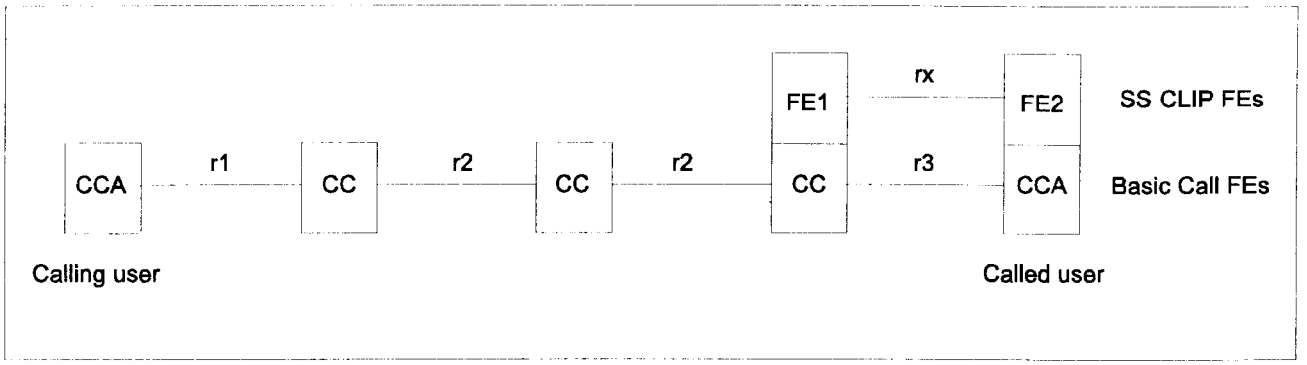


Figure 5 - Example relationship between models for SS-CLIP and basic call

9.2 Information flows

9.2.1 Definition of information flows

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

9.2.1.1 CGLI (Calling Line Identification)

CGLI is an unconfirmed information flow across rx conveys calling line identification information from FE1 to FE2.

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

Table 2 - Content of CGLI

Service element	Request
Originating Number (ON)	M
Originating Subaddress (OS)	O

Service element ON shall always be included in the CGLI request/indication information flow at rx. As a minimum it shall contain one of the following presentation indicators:

- presentation of number not restricted;
- presentation of number restricted;
- calling user number not available owing to interworking.

In addition ON shall contain the calling user number if it is available and if presentation is not restricted (or if presentation is restricted and the called user has an override service profile). The calling user number, if present, shall be accompanied by the numbering plan identifier, the type of number, and one of the following screening indicators:

- network provided;
- user provided, verified and passed;
- user provided, not screened (only occurs in certain interworking situations).

Service element OS shall be included in the CGLI request/indication information flow at rx only if the calling user subaddress is available.

9.2.2 Relationship of information flows to basic call information flows

The CGLI request/indication information flow shall be sent across rx at the same time as the basic call information flow SETUP request/indication is sent across basic call relationship r1 (terminating CC to terminating CCA).

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NOTE 7 — The information content of CGLI is gained from information received in the basic call information flow SETUP request/indication received from basic call relationship r2, i.e. from the CC prior to the terminating CC. This information ultimately comes from the originating CC and/or the originating CCA.

9.2.3 Examples of information flow sequences

A stage 3 International Standard for SS-CLIP 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, different topologies, etc..

In the figures, SS-CLIP 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 SS-CLIP functional entity, the numbers refer to functional entity actions listed in 9.3. The following abbreviations are used:

req request

ind indication

9.2.3.1 Normal operation of SS-CLIP

Figure 6 shows the information flow sequence for normal operation of SS-CLIP.

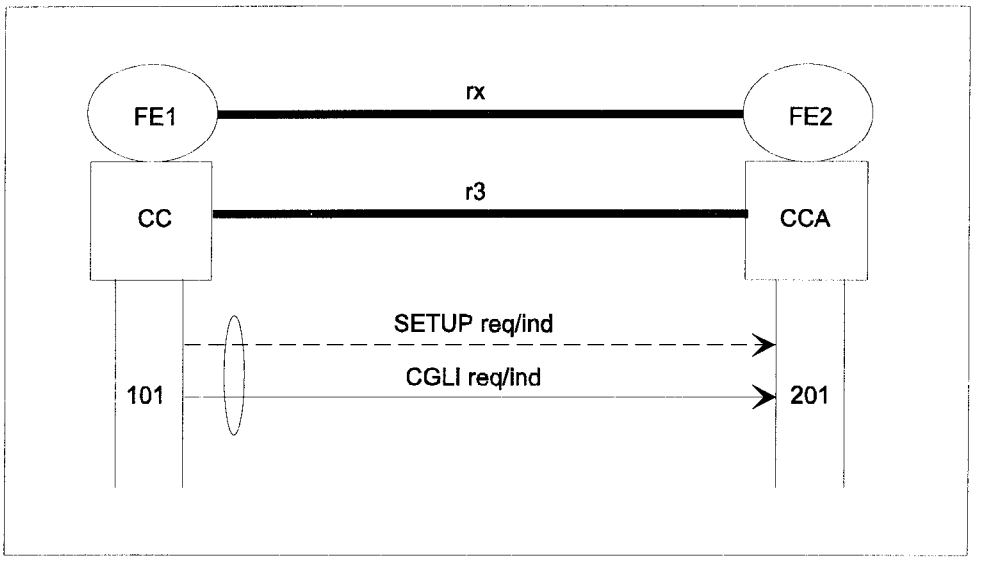


Figure 6 - Information flow sequence - normal operation of SS-CLIP

9.3 Functional entity actions

The following FE actions shall occur at the points indicated in the figures of 9.2.3.

9.3.1 Functional entity actions of FE1

101 Obtain calling user number and/or calling user subaddress for transmission to FE2, taking into account any restriction on presentation of the number and the called user's authority to override such restriction. If the calling user number is not available, indicate this to FE2.

9.3.2 Functional entity actions of FE2

201 Pass any calling user number and/or calling user subaddress received from FE1 to the connected user.

9.4 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 CCITT Rec. Z.100 (1988).

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9.4.1 Behaviour of FE1

Figure 7 shows the normal behaviour of FE1. Output signals to the right represent information flows to FE2. Input signals from the left represent internal stimuli.

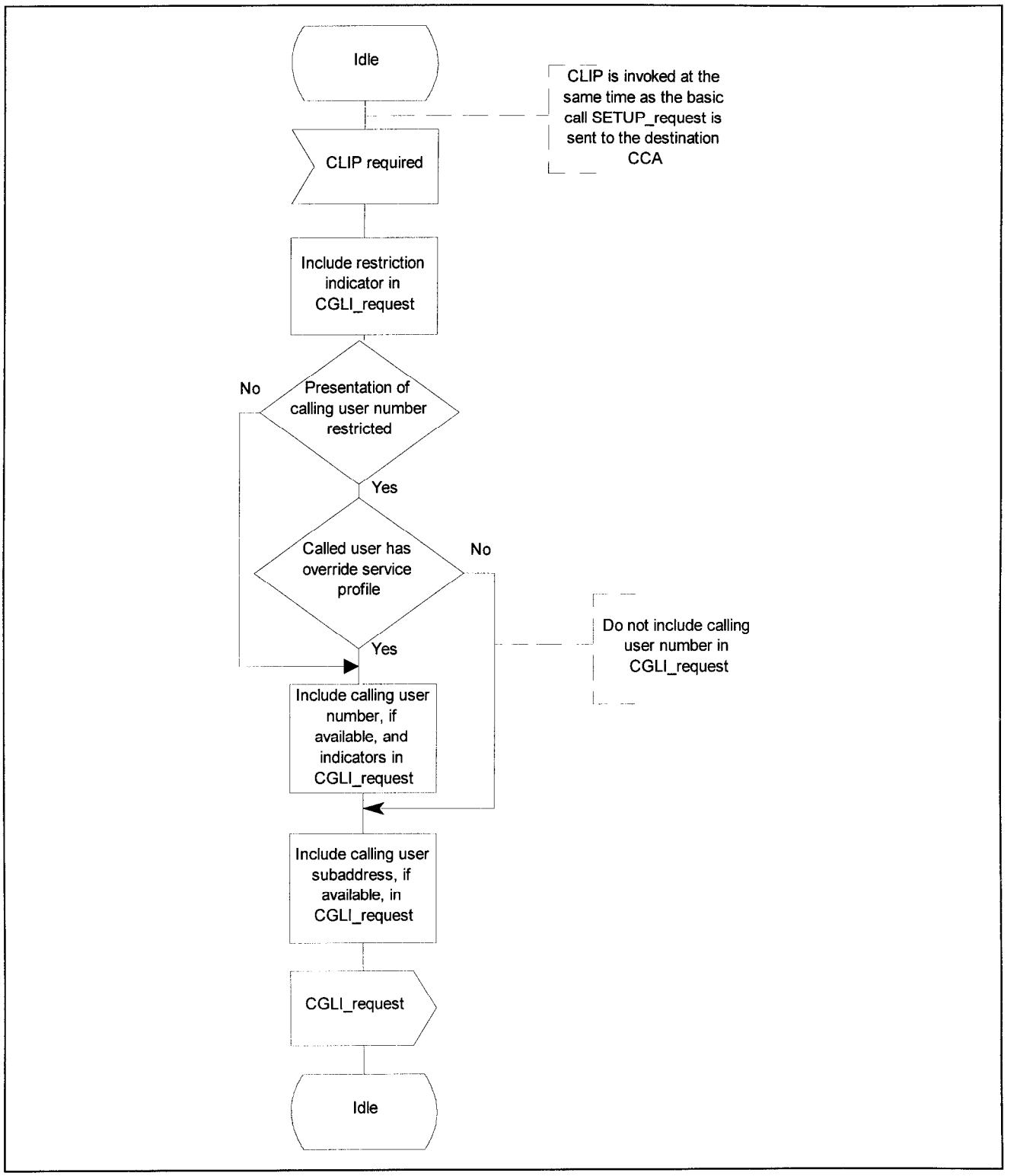


Figure 7 - SS-CLIP, SDL for functional entity FE1

9.4.2 Behaviour of FE2

Figure 8 shows the normal behaviour of FE2. Output signals to the right represent primitives to the called user. Input signals from the left represent information flows from FE1.

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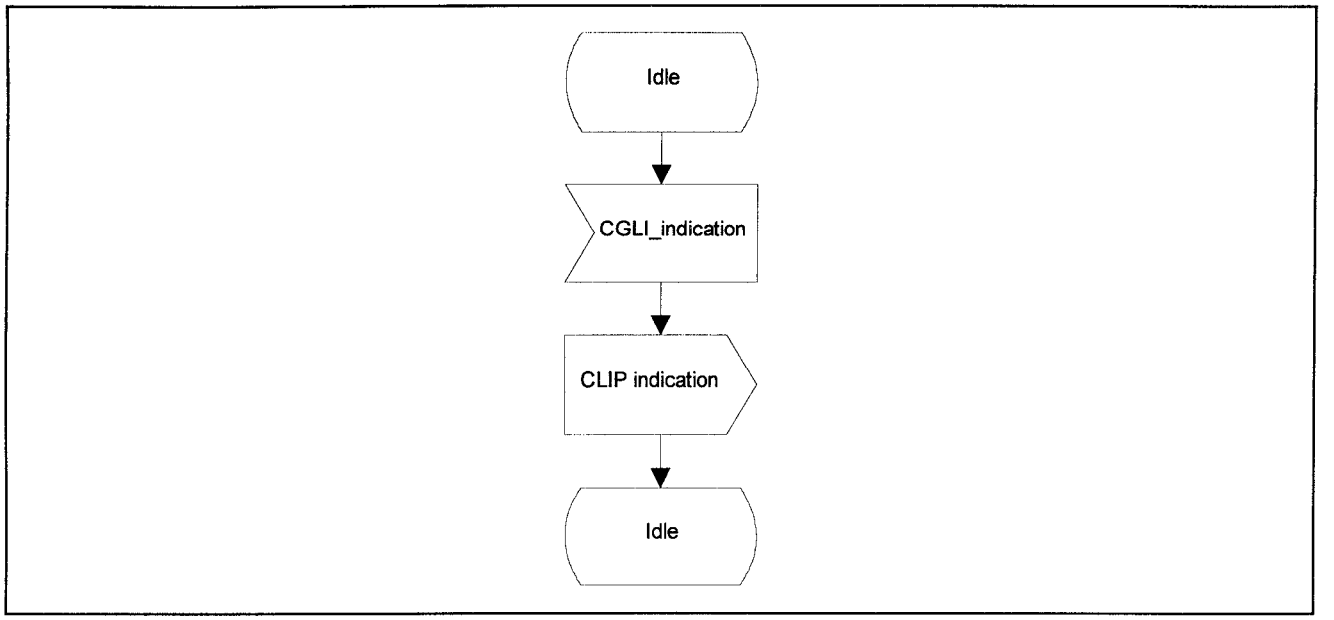


Figure 8 - SS-CLIP, SDL for functional entity FE2

9.5 Allocation of functional entities to physical equipment

The allocations of FEs to physical equipment shown in Table 3 shall apply. Where the called user's TE is stimulus with respect to SS-CLIP, FE2 shall reside instead in the Terminating PINX.

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

	FE1	FE2
Scenario 1	Terminating PINX	Called user's TE

9.6 Interworking considerations

All FEs for SS-CLIP are always located within PINXs and terminals attached to PINXs.

When SS-CLIP is invoked on behalf of a basic call which has originated in another network, the basic call delivers to the served user's PINX calling line identification information obtained from the other network. In the case of a public ISDN, the CC in the gateway PINX uses the public ISDN's Calling Line Identification Presentation supplementary service to obtain this information.

Where the other network is unable to provide this information, the CC at the gateway PINX provides instead an indication that the calling user number is unavailable owing to interworking.

10 SS-COLP stage 2 specification

10.1 Functional model

10.1.1 Functional model description

The functional model shall comprise the following functional entities:

FE1 COLI Presentation (FE1)

FE2 COLI Reception (FE2)

The following functional relationships shall exist between these FEs:

rx between FE1 and FE2

Figure 9 shows these FEs and relationships.

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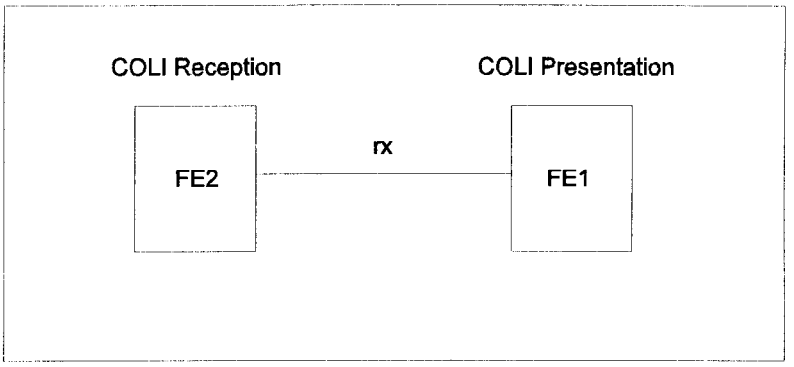


Figure 9 - Functional model for SS-COLP

10.1.2 Description of functional entities

10.1.2.1 COLI Presentation, FE1

This functional entity is responsible for reporting the connected user identity and associated indicators to the COLI Reception FE.

10.1.2.2 COLI Reception, FE2

This functional entity receives the connected user identity and associated indicators and delivers this information to the user.

10.1.3 Relationship of functional model to basic call functional model

FE1 shall be collocated with the originating CC.

FE2 shall be collocated with the originating CCA.

NOTE 8 — Where the calling user's terminal is stimulus with respect to SS-COLP but functional with respect to the basic call, FE2 is collocated with the originating CC.

Figure 10 shows an example of the relationship between the model for SS-COLP and the model for the basic call.

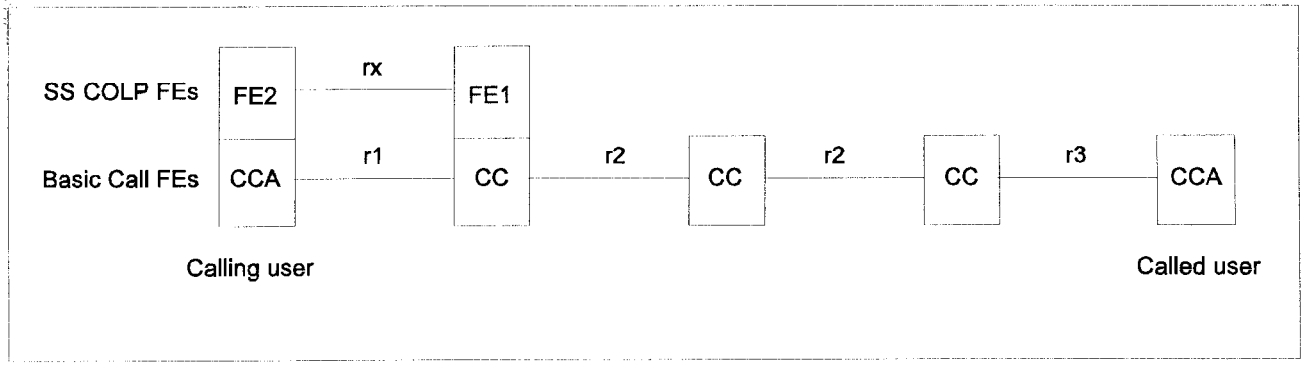


Figure 10 - Example relationship between models for SS-COLP and basic call

10.2 Information flows

10.2.1 Definition of information flows

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

10.2.1.1 COLI (Connected Line Identification)

COLI is an unconfirmed information flow across rx which conveys connected line identification information from FE1 to FE2.

Table 4 lists the service elements within the COLI information flow.

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Table 4 - Content of COLI

Service element	Request
Connected Number (CN)	M
Connected Subaddress (CS)	O

Service element CN shall always be included in the COLI request/indication information flow at rx. As a minimum it shall contain one of the following presentation indicators:

- presentation of number not restricted;
- presentation of number restricted;
- connected user number not available owing to interworking.

In addition CN shall contain the connected user number if it is available and if presentation is not restricted (or if presentation is restricted and the calling user has an override service profile). The connected user number, if present, shall be accompanied by the numbering plan identifier, the type of number, and one of the following screening indicators:

- network provided;
- user provided, verified and passed;
- user provided, not screened (only occurs in certain interworking situations).

Service element CS shall be included in the COLI request/indication information flow at rx only if the connected user subaddress is available.

10.2.2 Relationship of information flows to basic call information flows

The COLI request/indication information flow shall be sent across rx at the same time as the basic call information flow SETUP response/confirmation is sent across basic call relationship r1 (originating CC to originating CCA).

NOTE 9 — The information content of COLI is gained from information received in the basic call information flow SETUP response/confirmation received from basic call relationship r2, i.e., from the CC next to the originating CC. This information ultimately comes from the terminating CC and/or the terminating CCA.

10.2.3 Examples of information flow sequences

A stage 3 International Standard for SS-COLP 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, different topologies, etc..

In the figures, SS-COLP 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 SS-COLP functional entity, the numbers refer to functional entity actions listed in 10.3. The following abbreviations are used:

req request

ind indication

res response

cfm confirmation

10.2.3.1 Normal operation of SS-COLP

Figure 11 shows the information flow sequence for normal operation of SS-COLP.

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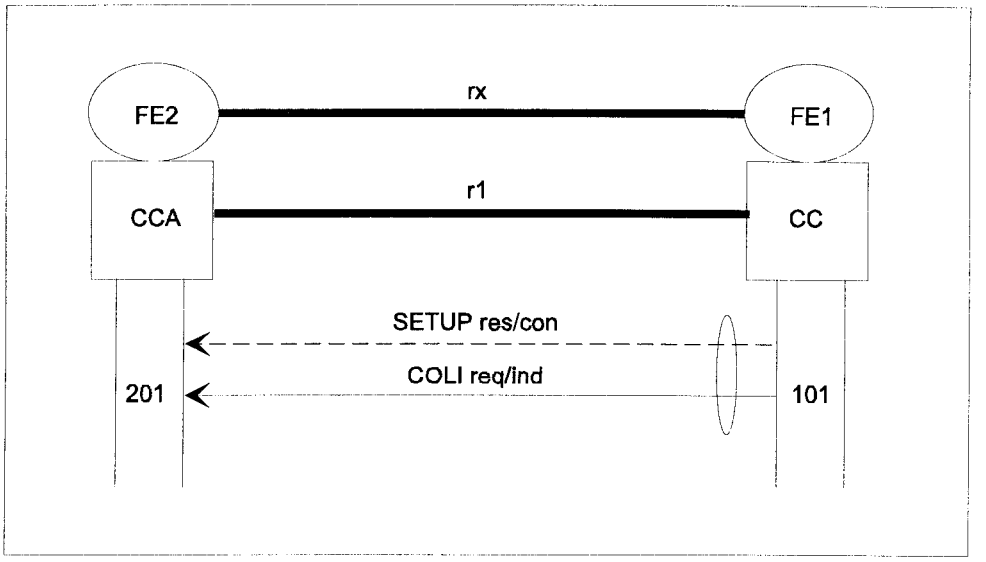


Figure 11 - Information flow sequence - normal operation of SS-COLP

10.3 Functional entity actions

The following FE actions shall occur at the points indicated in the figures of 10.2.3.

10.3.1 Functional entity actions of FE1

101 Obtain connected user number and/or connected user subaddress for transmission to FE2, taking into account any restriction on presentation of the number and the calling user's authority to override such restriction. If the connected user number is not available, indicate this to FE2.

10.3.2 Functional entity actions of FE2

201 Pass any connected user number and/or connected user subaddress received from FE1 to the calling user.

10.4 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 CCITT Rec. Z.100 (1988).

10.4.1 Behaviour of FE1

Figure 13 shows the normal behaviour of FE1. Output signals to the left represent information flows to FE2. Input signals from the right represent internal stimuli.

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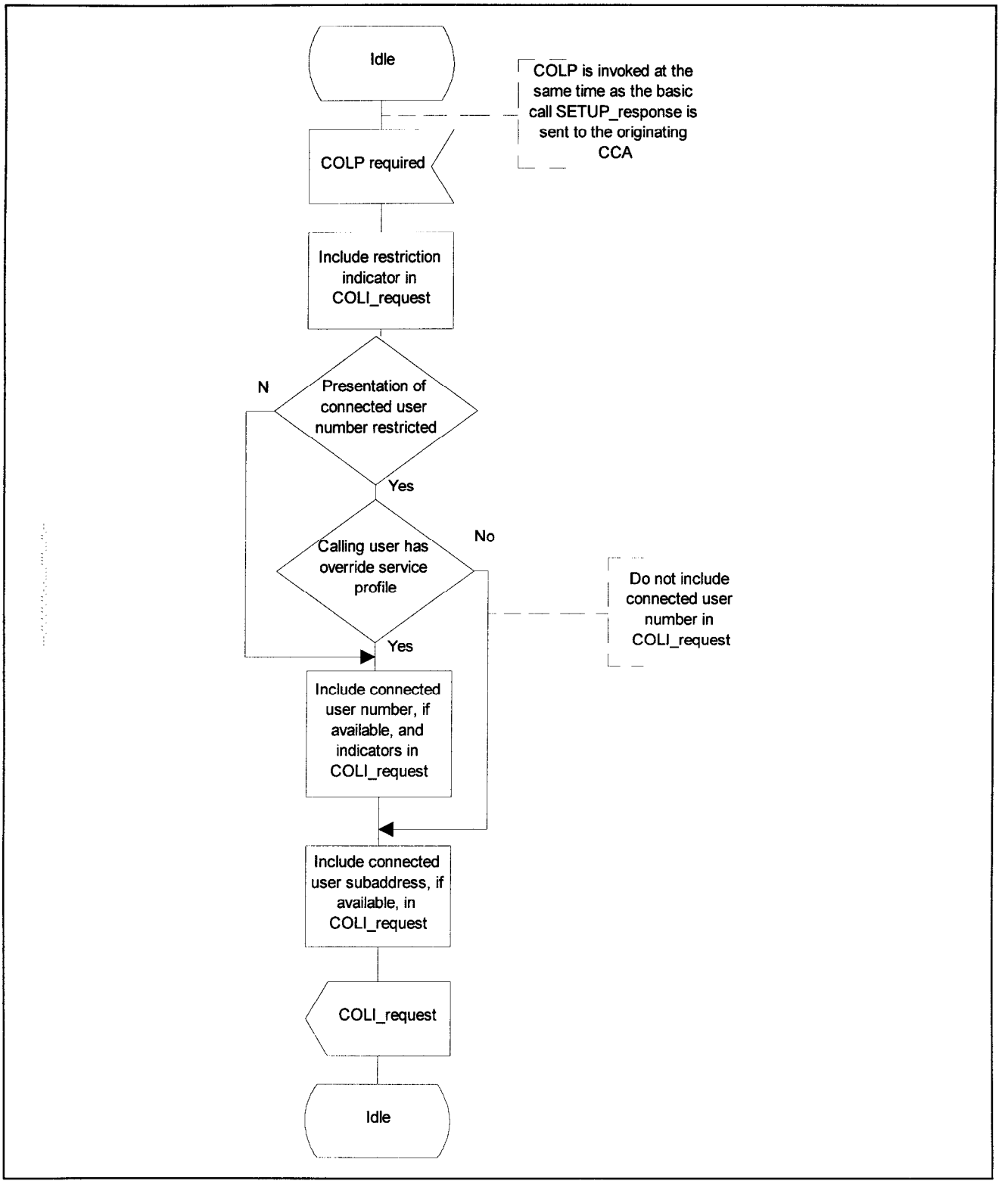


Figure 12 - SS-COLP, SDL for functional entity FE1

10.4.2 Behaviour of FE2

Figure 13 shows the normal behaviour of FE2. Output signals to the left represent primitives to the calling user. Input signals from the right represent information flows from FE1.

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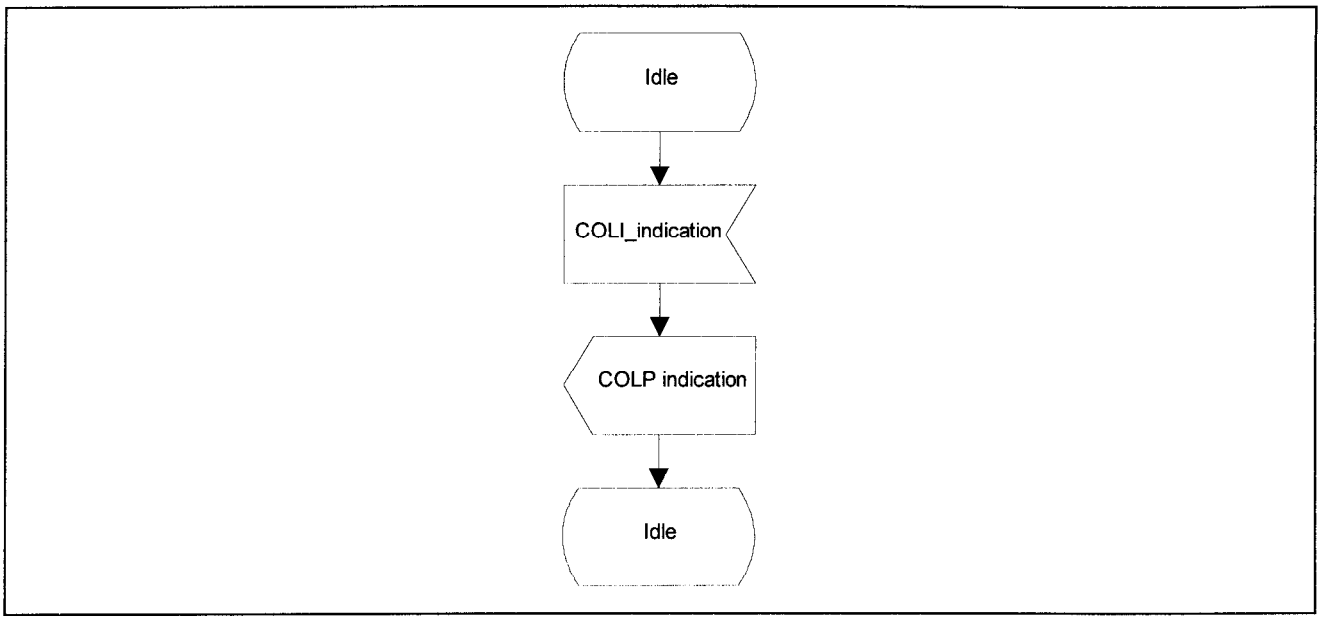


Figure 13 - SS-COLP, SDL for functional entity FE2

10.5 Allocation of functional entities to physical equipment

The allocations of FEs to physical equipment shown in Table 5 shall apply. Where the calling user's TE is stimulus with respect to SS-COLP, FE2 shall reside instead in the Originating PINX.

Table 5 - Scenarios for the allocation of FEs to physical equipment

	FE1	FE2
Scenario 1	Originating PINX	Calling user's TE

10.6 Interworking considerations

All FEs for SS-COLP are always located within PINXs and terminals attached to PINXs.

When SS-COLP is invoked on behalf of a basic call which has its destination in another network, the basic call delivers to the served user's PINX connected line identification information obtained from the other network. In the case of a public ISDN, the CC in the gateway PINX uses the public ISDN's Connected Line Identification Presentation supplementary service to obtain this information.

Where the other network is unable to provide this information, the CC at the gateway PINX provides instead an indication that the connected user number is unavailable owing to interworking.

11 SS-CLIR stage 2 specification

11.1 Functional model

11.1.1 Functional model description

The functional model shall comprise the following functional entities:

FE1 Restriction Request

FE2 Restriction Control

The following functional relationships shall exist between these FEs:

rx between FE1 and FE2

Figure 14 shows these FEs and relationships.

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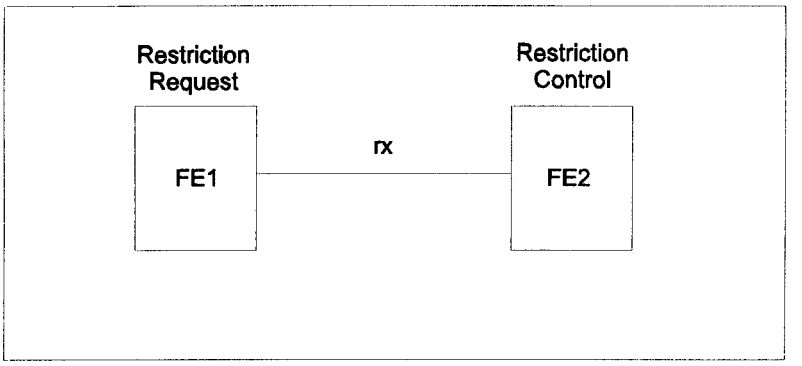


Figure 14 - Functional model for SS-CLIR

11.1.2 Description of functional entities

11.1.2.1 Restriction Request, FE1

This functional entity is responsible for receiving user requests for override of the temporary mode default and passing them on to the Restriction Control FE.

11.1.2.2 Restriction Control, FE2

This functional entity is responsible for determining whether to invoke restriction on behalf of a user in a call, based on the user's service profile and any requests from FE1 for the override of the temporary mode default.

11.1.3 Relationship of functional model to basic call functional model

FE2 shall be collocated with the CC local to the served user, i.e. the originating CC or the terminating CC.

FE1 shall be collocated with the served user's CCA.

NOTE 10 — Where the served user's terminal is stimulus with respect to SS-CLIR but functional with respect to the basic call, FE1 is collocated with FE2.

Figure 15 shows an example of the relationship between the model for SS-CLIR and the model for the basic call. SS-CLIR can be available to both the calling user (for calling line identification restriction) and the called user (for connected line identification restriction). This is reflected in this example by two instances each of FE1 and FE2.

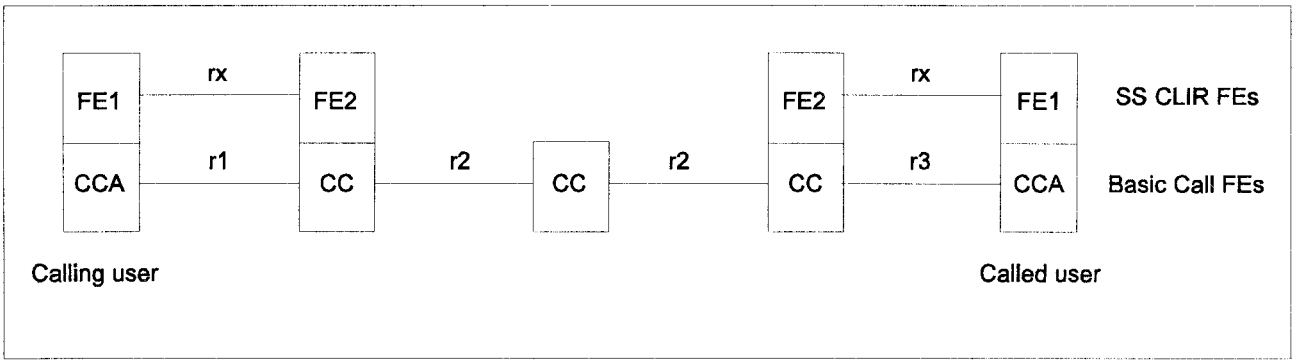


Figure 15 - Example relationship between models for SS-CLIR and basic call

11.2 Information flows

11.2.1 Definition of information flows

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

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11.2.1.1 RESTRICT

RESTRICT is an unconfirmed information flow across rx which conveys a user request to override the SS-CLIR temporary mode default from FE1 to FE2.

Table 6 lists the service elements within the RESTRICT information flow.

Table 6 - Content of RESTRICT

Service element	Request
Restriction Indicator (RI)	M

Service element RI shall be included in the RESTRICT request/indication information flow at rx. It shall contain one of the following indicators:

- presentation not restricted;
- presentation restricted.

11.2.2 Relationship of information flows to basic call information flows

When the calling user wishes to override the SS-CLIR temporary mode default, the RESTRICT request/indication information flow shall be sent across rx at the same time as the basic call information flow SETUP request/indication is sent across basic call relationship r1 (originating CCA to originating CC).

When the called user wishes to override the SS-CLIR temporary mode default, the RESTRICT request/indication information flow shall be sent across rx at the same time as the basic call information flow SETUP response/confirmation is sent across basic call relationship r1 (terminating CCA to terminating CC).

NOTE 11 — If FE2 invokes SS-CLIR on behalf of the calling or called user (automatically or on request from the user), an indication that restriction applies is included in the basic call SETUP request/indication or the SETUP response/confirmation information flow respectively across r2. It is then the responsibility of FEs of SS-CLIP or SS-COLP respectively to ensure that identification information is not presented to the other user.

11.2.3 Examples of information flow sequences

A stage 3 International Standard for SS-CLIR 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, different topologies, etc..

In the figures, SS-CLIR 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 SS-CLIR functional entity, the numbers refer to functional entity actions listed in 11.3. The following abbreviations are used:

req request

ind indication

res response

cfm confirmation

11.2.3.1 Normal operation of SS-CLIR

Figure 16 shows the information flow sequence for normal operation of SS-CLIR when invoked by both the calling user and the connected user. The RESTRICT information flow is sent only when the served user wishes to override the SS-CLIR temporary mode default.

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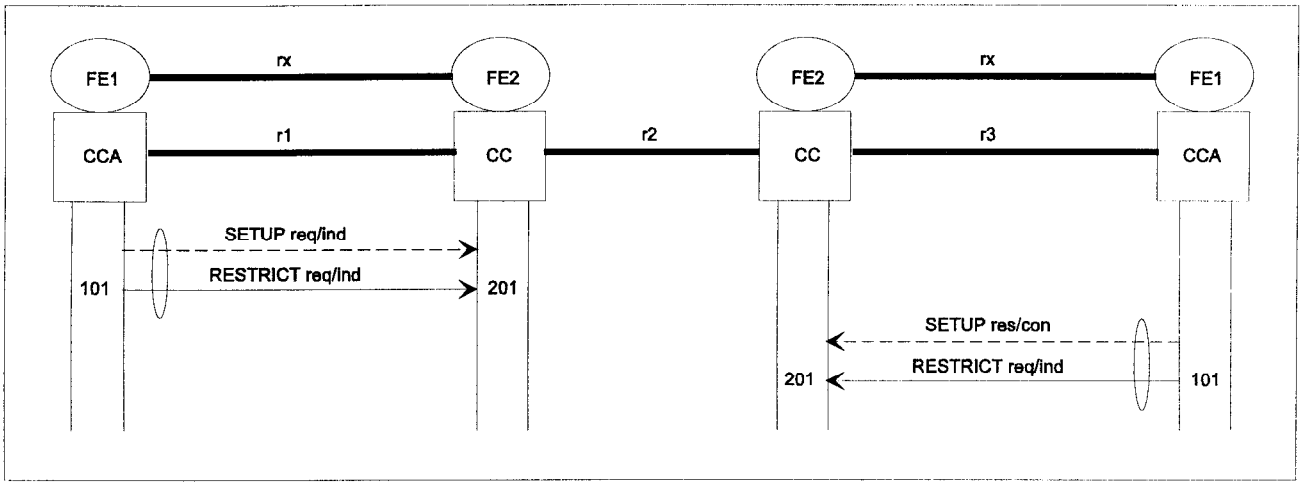


Figure 16 - Information flow sequence - normal operation of SS-CLIR

11.3 Functional entity actions

The following FE actions shall occur at the points indicated in the figures of 11.2.3.

11.3.1 Functional entity actions of FE1

101 If the served user wishes to override the CLIR temporary mode restriction default, generate a request and send to FE2.

11.3.2 Functional entity actions of FE2

201 Assign the appropriate presentation restriction indicator to the served user's PISN number, based on whether CLIR permanent mode or temporary mode applies and, in the case of temporary mode, whether a request to override the default has been received from FE1.

11.4 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 CCITT Rec. Z.100 (1988).

11.4.1 Behaviour of FE1

Figure 17 shows the normal behaviour of FE1. Output signals to the right represent information flows to FE2. Input signals from the left represent primitives from the served (calling or connected) user.

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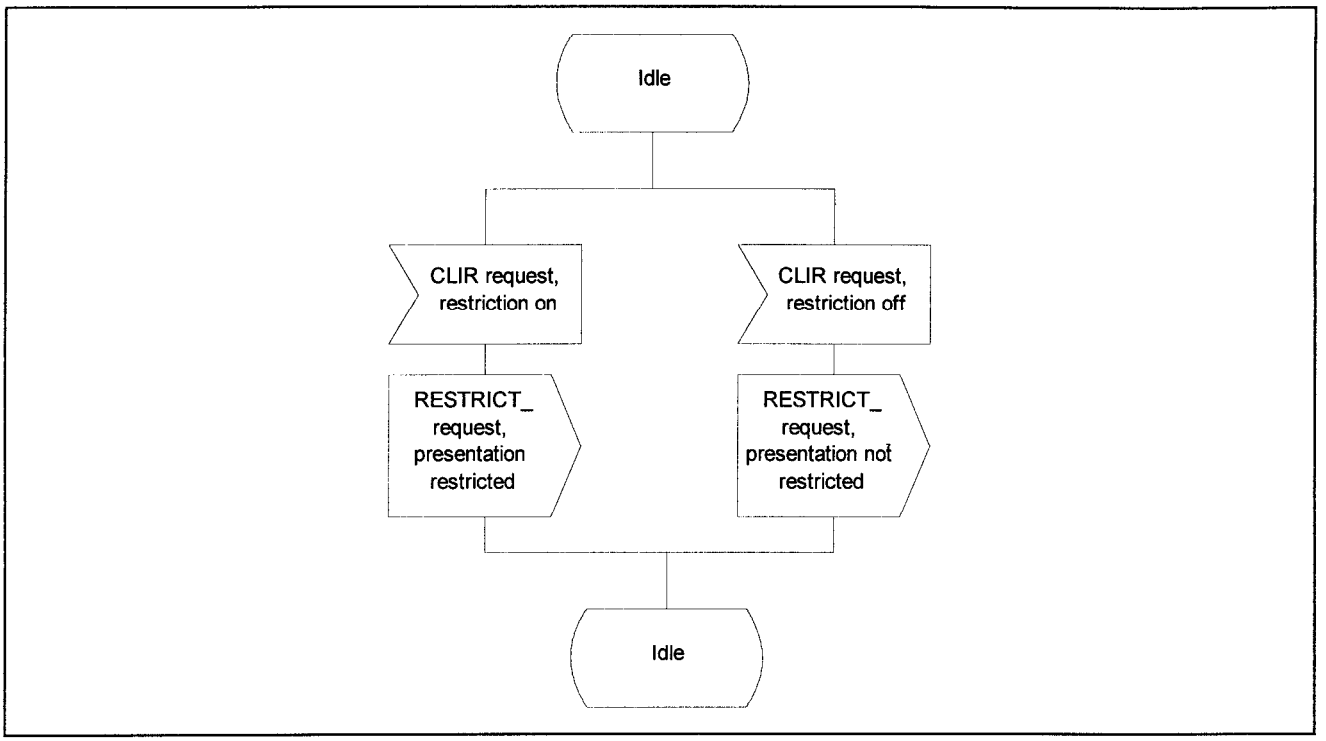


Figure 17 - SS-CLIR, SDL for functional entity FE1

11.4.2 Behaviour of FE2

Figure 18 shows the normal behaviour of FE2. Input signals from the left represent information flows from FE1. Input signals from the right represent internal stimuli.

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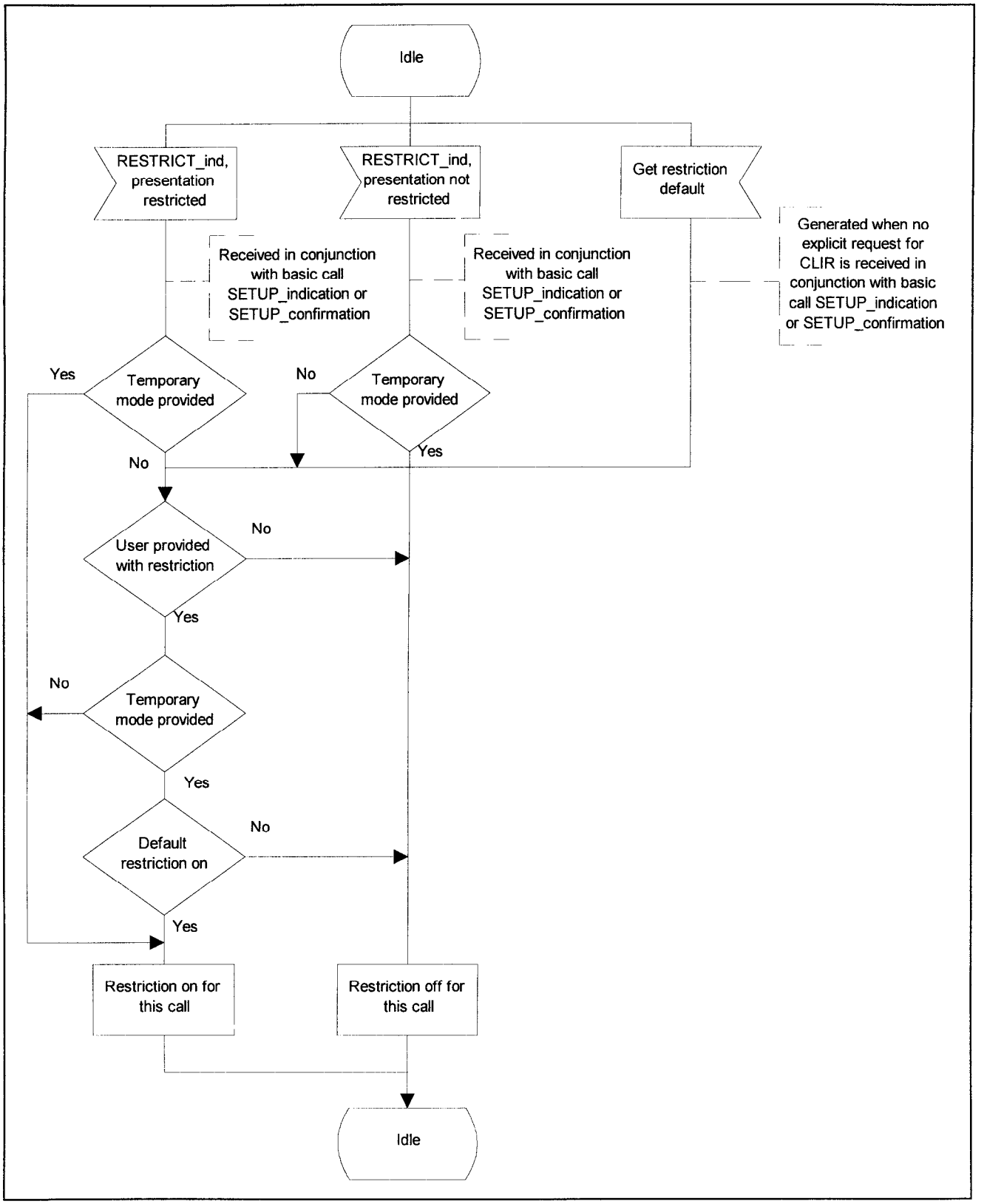


Figure 18 - SS-CLIR, SDL for functional entity FE2

11.5 Allocation of functional entities to physical equipment

The allocations of FEs to physical equipment shown in Table 7 shall apply. Where the served user's TE is stimulus with respect to SS-CLIR, FE2 shall reside instead in the served user's PINX.

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Table 7 - Scenarios for the allocation of FEs to physical equipment

	FE1	FE2
Scenario 1	Served user's PINX (Originating PINX or Terminating PINX)	Served user's TE

11.6 Interworking considerations

All FEs for SS-CLIR are always located within PINXs and terminals attached to PINXs.

When SS-CLIR is invoked for a basic call which has originated or which has its destination in another network, the basic call delivers to the other network an indication that presentation of the calling user number or the connected user number is restricted. In the case of a public ISDN, the CC in the gateway PINX uses the public ISDN's Calling Line Identification Restriction or Connected Line Identification Restriction supplementary service to indicate this. The provision of the calling user number or connected user number to the other network in this situation depends on the arrangement with the other network.

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Annex A

(informative)

Relationship to corresponding recommendations for public ISDNs

The Identification Supplementary Services for PISNs specified in this International Standard complement and are compatible with the corresponding services for public ISDNs as specified in CCITT recommendations I.251 and Q.81. There are no differences which will prevent terminal interchangeability between PISNs and public ISDNs. However, there are significant differences in the style and layout of this International Standard in comparison with the corresponding CCITT recommendations for public ISDNs and some technical differences. The main differences can be summarised as follows.

1. PISN terminology is used, where appropriate, instead of public ISDN terminology.
2. Whereas this International Standard specifies a single supplementary service for restriction (SS-CLIR - Calling/Connected Line Identification Restriction), two separate supplementary services (Calling Line Identification Restriction and Connected Line Identification Restriction) have been defined for public ISDNs.
3. Stage 1 and stage 2 specifications for public ISDNs appear in separate recommendations.
4. The scope of SS-CLIP and SS-COLP in this International Standard is limited to the presentation of information to the served user. The derivation of the information by the network, including the possible supply of information by the user to be identified and the passing of that information across the network and to, and from, other networks, is considered to be part of the basic call and is specified in ISO/IEC 11574. Although when interworking with a public ISDN, identification information is obtained from the public ISDN by means of the public ISDN's Calling Line Identification Presentation and Connected Line Identification Presentation supplementary services, this is not considered to be part of the SS-CLIP and SS-COLP as provided by a PISN to its users. Instead it is considered to be part of the basic call and is specified in ISO/IEC 11574. The provision of information relating to restriction by a user is specified as part of SS-CLIR.
5. In the stage 1 specifications, interactions with other supplementary services are specified only for those other supplementary services for which PISN International Standards were available at the time of publication of this International Standard. Interactions with supplementary services for which PISN International Standards subsequently become available will be specified in those other International Standards.
6. In the stage 2 specifications in this International Standard, a clear separation has been maintained between functions and information flows for the supplementary services and functions and information flows for the basic call.
7. In this International Standard, the presentation of calling and connected user subaddresses is not subject to restriction. The reason for this is that some applications may depend on receiving a subaddress, even when no number is received. A user can avoid having a subaddress delivered to the other user, if not needed by the application, simply by not submitting a subaddress to the PISN, since the PISN does not require the subaddress for any other purpose. Note also that in some cases a subaddress can identify the user without revealing the user's location, whereas the number may identify the user's location. In this situation presentation of the subaddress can be acceptable to the user even though presentation of the number is unacceptable.

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