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**Integrated Services Digital Network (ISDN);
Connected Line Identification Presentation (COLP)
supplementary service;
Digital Subscriber Signalling System No. one (DSS1) protocol;
Part 1: Protocol specification**

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS is part 1 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Connected Line Identification Presentation (COLP) supplementary service, as described below:

- Part 1: "Protocol specification";**
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the user";
- Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";
- Part 5: "TSS&TP specification for the network";
- Part 6: "ATS and partial PIXIT proforma specification for the network".

In accordance with CCITT Recommendation I.130, the following three level structure is used to describe the supplementary telecommunications services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETS details the stage three aspects (signalling system protocols and switching functions) needed to support the Connected Line Identification Presentation (COLP) supplementary service. The stage one and stage two aspects are detailed in ETS 300 094 (1992) and ETS 300 096 (1992), respectively.

This reprint includes all previous Corrigenda as shown in the History box at the last page.

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1 Scope

This first part of ETS 300 097 specifies the stage three of the Connected Line Identification Presentation (COLP) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators at the T reference point or coincident S and T reference point (as defined in CCITT Recommendation I.411 [1]) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol. Stage three identifies the protocol procedures and switching functions needed to support a telecommunications service (see CCITT Recommendation I.130 [2]).

In addition this standard specifies the protocol requirements at the T reference point where the service is provided to the user via a private ISDN.

This standard does not specify the additional protocol requirements where the service is provided to the user via a telecommunications network that is not an ISDN.

The COLP supplementary service provides the calling party with the possibility to receive identification of the connected party, and is applicable to all circuit-switched telecommunications services.

Further parts of this standard specify the method of testing required to identify conformance to this standard.

This standard is applicable to equipment, supporting the COLP supplementary service, to be attached at either side of a T reference point or coincident S and T reference point when used as an access to the public ISDN.

2 Normative references

This standard incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] CCITT Recommendation I.411 (1988): "ISDN user-network interfaces Reference configurations".
- [2] CCITT Recommendation I.130 (1988): "Method for characterisation of telecommunications services supported by an ISDN and network capabilities of an ISDN".
- [3] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [4] CCITT Recommendation E.164 (1988): "Numbering plan for the ISDN era".
- [5] CCITT Recommendation E.163 (1988): "Numbering plan for the international telephone service".
- [6] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specification for basic call control".
- [7] ETS 300 195-1: "Integrated Services Digital Network (ISDN); Supplementary service interactions; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [8] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means to describe them".

- [9] ETS 300 094 (1992): "Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; Service description".
- [10] CCITT Recommendation T.50 (1988): "International Alphabet No. 5".
- [11] CCITT Recommendation Z.100 (1988): "Functional Specification and Description Language (SDL)".
- [12] ETS 300 098-1 (1992): "Integrated Services Digital Network (ISDN); Connected Line Identification Restriction (COLR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

3 Definitions

For the purpose of this standard, the following definitions apply:

Address: the ISDN number of the connected user, and a subaddress if provided by that user.

Connected number: the ISDN number of the connected user.

Connected user: it is the user that responded to the served user call request at the destination network and has been awarded the call by the network. The connected user need not have subscribed to the COLP supplementary service.

Default number: an ISDN number registered within the public ISDN following prior agreement between the connected user and the public ISDN.

IA5 characters: see CCITT Recommendation T.50 [10].

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [3], § 2.3, definition 308.

International number: an ISDN number structured as specified in § 3.2 (the paragraphs relating to international number) of CCITT Recommendation E.164 [4].

ISDN number: a number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [4].

National number; National significant number: an ISDN number structured as specified in § 3.2 (the paragraphs relating to national significant number) of CCITT Recommendation E.164 [4].

Network: the DSS1 protocol entity at the network side of the user-network interface.

Served user: it is the user of a particular ISDN number who has subscribed to the presentation of the connected line identification information in association with outgoing calls. The served user is also known as the calling user.

Service; telecommunications service: see CCITT Recommendation I.112 [3], § 2.2 definition 201.

Special arrangement: an agreement between a customer and a public network operator whereby customer supplied connected numbers are not screened by the public ISDN.

Subaddress: see CCITT Recommendation E.164 [4], § 11.2.

Subscriber number: an ISDN number structured as specified in § 3.2 (the paragraphs relating to subscriber number) of CCITT Recommendation E.164 [4].

Supplementary service: see CCITT Recommendation I.210 [8], § 2.4.

User: the DSS1 protocol entity at the user side of the user-network interface.

4 Symbols and abbreviations

COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
DSS1	Digital Subscriber Signalling System No. one
IA5	International Alphabet No. 5
ISDN	Integrated Services Digital Network

5 Description

The COLP supplementary service is a supplementary service offered to the calling user. It provides the connected user's ISDN number, possibly with subaddress information to the calling user.

The COLP supplementary service is not a dialling check but an indication to the calling subscriber of the connected address. In a full ISDN environment, the connected line identity shall include all the information necessary to unambiguously identify the connected line.

The connected line identity may include the Connected subaddress information element generated by the connected user which shall be transparently transported by the network. The network cannot be responsible for the content of this connected subaddress.

6 Operational requirements

6.1 Provision and withdrawal

See ETS 300 094 [9], subclause 6.1.

6.2 Requirements on the originating network side

See subclause 9.5.

6.3 Requirements on the destination network side

All information pertaining to the COLP supplementary service shall be inserted in the CONNECT message sent as part of the basic call procedures according to ETS 300 102-1 [6], Clause 5.

In the case where no information is provided by the connected user (as part of the basic call procedures) the network shall provide the default number associated with the connected user's access in the destination local exchange.

When the connected number information is provided by the connected user, the network can only verify that the number is within the set of numbers allocated to that user.

Where a special arrangement exists with the connected user, no verification shall be performed.

7 Coding requirements

This Clause gives the coding for the Connected number and the Connected subaddress information elements which are required to support this service.

7.1 Connected number information element

The purpose of the Connected number information element is to indicate which number is connected to a call. The connected number(s) may be different from the called party number(s) because of changes (e.g. call diversion) during the lifetime of a call.

The Connected number information element is coded as shown in figure 1. The maximum length of this information element is 24 octets.

This information element belongs to codeset 0.

	8	7	6	5	4	3	2	1		
0	Connected number information element identifier							0	0	octet 1
Length of connected number contents									2	
0/1 ext	Type of number				Numbering plan identification				3	
1 ext	Presentation indicator	0 0 0 Spare			Screening indicator			3a*		
0 Spare	Number digits (IA5 characters)							4 etc.		

Figure 1

The content of this information element is coded as defined in ETS 300 102-1 [6], table 4.10.

7.2 Connected subaddress information element

The purpose of the Connected subaddress information element is to identify the subaddress of the connected user of a call. The connected subaddress may be different from a called user subaddress because of changes (e.g. call diversion) during the lifetime of the call.

The Connected subaddress information element is coded as shown in figure 2. The maximum length of this information element is 23 octets.

This information element belongs to codeset 0.

	8	7	6	5	4	3	2	1		
0	Connected subaddress information element identifier							0	1	octet 1
Length of connected subaddress contents									2	
1 ext	Type of subaddress			Odd/ev. indic.	0 0 0 Spare			3		
Subaddress information									4 etc.	

Figure 2

The content of this information element is coded as defined in ETS 300 102-1 [6], table 4.11.

8 State definitions

No specific state definitions are required.

9 Signalling procedures at the coincident S and T reference point

9.1 Activation, deactivation and registration

Not applicable.

9.2 Actions at the destination user

9.2.1 Normal operation

These procedures shall be provided as part of the basic service and the connected user need not have subscribed to the COLP supplementary service.

The numbering plan identifier, to be indicated within the connected number information element, sent by the connected user, shall be either "ISDN/telephony numbering plan (CCITT Recommendations E.164 [4] and E.163 [5])" or "unknown".

NOTE: Either coding may be used and the treatment of both by the network is identical.

Where the connected number included by the connected user is complete, the type of number to be indicated within the Connected number information element, sent by the connected user, shall be one of the following:

- "subscriber number", in the case where the complete subscriber number is sent;
- "national number", in the case where the complete national number is sent;
- "international number", in the case where the complete international number is sent.

Where a partial connected number is included by the connected user (e.g. to indicate digits specific to the direct dialling in or the multiple subscriber number supplementary services) the user shall set the type of number to be indicated within the Connected number information element to "unknown".

9.2.2 Exceptional procedures

Not applicable.

9.3 Actions at the destination local exchange if a special arrangement does not apply

9.3.1 Normal operation

These procedures shall be provided as part of the basic service and the connected user need not have subscribed to the COLP supplementary service.

If multiple CONNECT messages are received from the called user, the network shall only perform the following procedures when it has decided which CONNECT message to acknowledge.

When a CONNECT message is received from the connected user, the network shall check to see if the Connected number and Connected subaddress information elements are included.

If the Connected number information element is received with a coding of the numbering plan identifier field other than "ISDN/telephony numbering plan (CCITT Recommendations E.164 [4] and E.163 [5])" or "unknown", then the network shall discard the Connected number information element and process the call as if that information element was not received.

At the destination side, the network shall set the value of the screening indicator based on the outcome of the screening of the connected number. The network shall disregard any value of the screening indicator, if received from the connected user.

If the Connected number information element is included, the network shall perform the screening function. If the connected number received from the connected user is determined to be correct, the network shall set the screening indicator to "user-provided, verified and passed".

NOTE: Some networks may accept a full ISDN number with the addition of a prefix or escape digits to the number digits field and the type of number field set to "unknown".

If the CONNECT message does not contain the Connected number information element or the screening function has determined the provided connected number to be incorrect, the network shall use a default number associated with the connected user. The network shall set the screening indicator to "network provided".

In the case where the connected user provides partial connected number information, and the number is a valid digit sequence for the user access arrangement, the network shall complete the number as appropriate. The network shall set the screening indicator to "user-provided, verified and passed".

NOTE: In some cases the network cannot guarantee that the completed number identifies an end user.

If the Connected subaddress information element is available, it shall be passed transparently through the network.

The number digits and the screening indicator, as determined by the procedures above, shall be forwarded to the originating local exchange, in association with the basic call response.

The presentation indicator, as determined by the procedures of the COLR supplementary service (see ETS 300 098-1 [12]), shall be forwarded to the originating local exchange, in association with the basic call response.

The actions at the destination local exchange are summarised in table 1.

Table 1: Information provided by the connected user and by the network

Information provided by the connected user		Information provided by the network		
Connected number received from the connected user (octet 4)	Type of number (octet 3)	Connected number forwarded to the calling user if COLR is not activated (octet 4)	Screening Indicator forward to the calling user (octet 3a)	Type of number forwarded to the calling user (octet 3)
No connected number information element is provided by the connected user		Default number stored at the network side	Network provided	"Inter-national number" or "national number" or "unknown" (NOTE 1,7)
Valid part of the number not sufficient for identifying the connected user (NOTE 2)	"Unknown"	Completion of the number (NOTE 3)	User-provided, verified and passed (NOTE 4)	"Inter-national number" or "national number" or "unknown" (NOTE 1,7)
Correct complete connected number (NOTE 5)	"Subscriber number" or "national number" or "international number"	Complete connected number	User-provided, verified and passed (NOTE 4)	"Inter-national number" or "national number" or "unknown" (NOTE 1,7)
Incorrect number (NOTE 6)	Any type of number	Default number stored at the network work side	Network provided	"Inter-national number" or "national number" or "unknown" (NOTE 1,7)
<p>NOTE 1: A national number shall be converted to an international number at some point in the public network path where the origination is in a different country.</p> <p>NOTE 2: This assumes that the user's equipment provides that part of the number pertaining to its own (private) domain. This may be multiple subscriber number digits provided by a terminal equipment or an extension line number provided by a private ISDN. The network shall interpret the number digits and check if it is a valid digit sequence according to the agreements existing between the connected user and the network provider.</p> <p>NOTE 3: Completion means that the remaining part of the ISDN number associated with the appropriate access is added to the user provided part of the number.</p> <p>NOTE 4: The term "verified" implies matching of the user provided number or part of this number(s) with the range(s) of numbers stored at the network side and it implies at least a valid format of user provided number information (e.g. a direct dialling in number).</p> <p>NOTE 5: The term "correct" implies from the network point of view, matching of the subscriber number provided by the user with one of the range(s) of subscriber numbers stored at the network side. This number may also contain direct dialling in and/or multiple subscriber number digits.</p> <p>NOTE 6: The number provided by the user is discarded.</p> <p>NOTE 7: As a network option, the type of number may be coded "unknown", in which case, the number is organised according to the network dialling plan, i.e. prefixes, (or the absence of a prefix) shall be used to distinguish international numbers and national numbers from each other.</p>				

9.3.2 Exceptional procedures

Not applicable.

9.4 Actions at the destination local exchange if a special arrangement applies

9.4.1 Normal operation

These procedures shall be provided as part of the basic service and the connected user need not have subscribed to the COLP supplementary service.

If multiple CONNECT messages are received from the called user, the network shall only perform the following procedures when it has decided which CONNECT message to acknowledge.

When a CONNECT message is received from the connected user, the network shall check to see if the Connected number and Connected subaddress information elements are included.

If the Connected number information element is received with a coding of the type of number field other than "national number" or "international number", then the network shall discard the Connected number information element and process the call as if that information element was not received.

If the Connected number information element is received with a coding of the numbering plan identifier field other than "ISDN/telephony numbering plan (CCITT Recommendations E.164 [4] and E.163 [5])" or "unknown", then the network shall discard the Connected number information element and process the call as if that information element was not received.

The network shall disregard any value of the screening indicator, if received from the connected user.

If the CONNECT message does not contain the Connected number information element, the network shall use a default number associated with the connected user. The network shall set the screening indicator to "network provided".

If the Connected number information element is included, the network shall set the screening indicator forwarded to the calling user to "user-provided, not screened".

If the Connected subaddress information element is available, it shall be passed transparently through the network.

The number digits and the screening indicator, as determined by the procedures above, shall be forwarded to the origination local exchange, in association with the basic call response.

The presentation indicator, as determined by the procedures of the COLR supplementary service (see ETS 300 098-1 [12]), shall be forwarded to the originating local exchange, in association with the basic call response.

The actions at the destination local exchange are summarised in table 2.

Table 2: Information provided by the connected user and by the network

Information provided by the connected user		Information provided by network		
Connected number received from the connected user (octet 4)	Type of number (octet 3)	Connected number forwarded to the calling user if COLR is not activated (octet 4)	Screening Indicator forwarded to the called user (octet 3a)	Type of number forwarded to the calling user (octet 3)
No connected number information element is provided by the connected user		Default number stored at the network side	Network provided	"International number" or "national number" or "unknown" (NOTE 1,2)
Any digit sequence conforming to E.164/E.163	"National number" or "international number"	Number provided by the user (NOTE 1)	User-provided not screened	"International number" or "national number" or "unknown" (NOTE 1,2)
<p>NOTE 1: A national number shall be converted to an international number at some point in the public network path where the origination is in a different country.</p> <p>NOTE 2: As a network option the type of number may be coded "unknown", in which case, the number is organised according to the network dialling plan, i.e. prefixes, (or the absence of a prefix) shall be used to distinguish international numbers and national numbers from each other.</p>				

9.4.2 Exceptional procedures

Not applicable.

9.5 Actions at the originating local exchange

9.5.1 Normal operation

When the network sends a CONNECT message to the calling user and if the calling user is provided with the COLP supplementary service, the network shall check to see if the connected number is available.

If the connected number is available and presentation is allowed according to the presentation indicator supplied together with the connected number, the network shall include the Connected number information element in the CONNECT message sent to the calling user. If provided, the network shall also include the Connected subaddress information element in the CONNECT message. The presentation and screening indicators associated with the connected number and the connected subaddress received at the originating exchange shall be passed transparently to the calling user.

The numbering plan identifier field shall be coded either as "ISDN/telephony numbering plan (CCITT Recommendations E.164 [4] and E.163 [5])" or "unknown".

If presentation is not allowed according to the presentation indicator supplied together with the connected number, the network shall include the Connected number information element in the CONNECT message sent to the calling user. The presentation indicator in the Connected number information element shall indicate "presentation restricted". The screening indicator shall indicate "network provided". The type of number and the numbering plan identification shall be set to "unknown" and the number digits field shall not be included. The network shall not include the Connected subaddress information element, if provided, in the CONNECT message.

If neither the connected number nor an indication that presentation is restricted is available at the originating local exchange, the network shall include the Connected number information element in the CONNECT message sent to the calling user. The presentation indicator shall be set to "number not available due to interworking" and the screening indicator shall be set to "network provided", the type of number and numbering plan identification shall be set to "unknown" and the number digits field shall not be included. The network shall not include the Connected subaddress information element, if provided, in the CONNECT message.

If the calling user is not provided with the COLP supplementary service, then neither the Connected number nor the Connected subaddress information elements shall be included in the CONNECT message sent to the calling user.

If presentation is restricted but the calling user has the "override" category (e.g. police or emergency service) marked in the originating local exchange, the network shall include the Connected number information element and Connected subaddress information element if the subaddress was supplied by the connected user, in the CONNECT message. In this case, the presentation and screening indicators shall be passed transparently to the calling user.

The numbering plan identifier field shall be coded either as "ISDN/telephony numbering plan (CCITT Recommendations E.164 [4] and E.163 [5])" or "unknown".

NOTE: If the presentation indicator in the Connected number information element received by the user is set to "number not available due to interworking" or "presentation restricted", the remaining information in the Connected number information element should be ignored by the user.

9.5.2 Exceptional procedures

Not applicable.

10 Procedures for interworking with private ISDNs

The procedures specified in Clause 9 shall be used.

NOTE: The procedures specified in subclause 9.4 are particularly appropriate for an attached private network.

11 Interaction with other networks

On calls destined for some non-ISDNs, the connected number may be delivered to the originating ISDN without an indication of connected line identity restriction. In this case a number of options exist and the selection of the following options is according to the network rules and regulations:

- the network shall send the Connected number information element according to subclause 9.5.1, fifth paragraph and shall include no Connected subaddress information element;
- the network shall send the Connected number information element according to subclause 9.5.1, fourth paragraph and shall include no Connected subaddress information element;

- the network shall send the Connected number information element according to subclause 9.5.1, second paragraph and shall include the Connected subaddress information element if the connected subaddress is available. The presentation indicator is set to "presentation allowed" and the screening indicator is set to "network provided".

For some other non-ISDNs, no complete connected number may be available to the ISDN and therefore the full number of the connected user cannot be given to the calling user who has been provided with the COLP supplementary service. In this case the network shall send the Connected number information element according to subclause 9.5.1, fifth paragraph and shall include no Connected subaddress information element.

On calls destined for some non-ISDNs, the connected number may be delivered to the originating ISDN with an indication of connected line identity restriction. In this case the network shall send the Connected number information element according to subclause 9.5.1, second paragraph, and shall include the Connected subaddress information element if the connected subaddress is available.

As a network option, the destination network may restrict any information identifying the connected user from being forwarded to another network.

12 Interaction with other supplementary services

The interactions of the COLP supplementary service with other supplementary services shall be as specified in ETS 300 195-1 [7].

13 Parameter values (timers)

No specific timers are required.

14 Dynamic description (SDLs)

The dynamic description is specified in figures 3 and 4 according to CCITT Recommendation Z.100 [11].

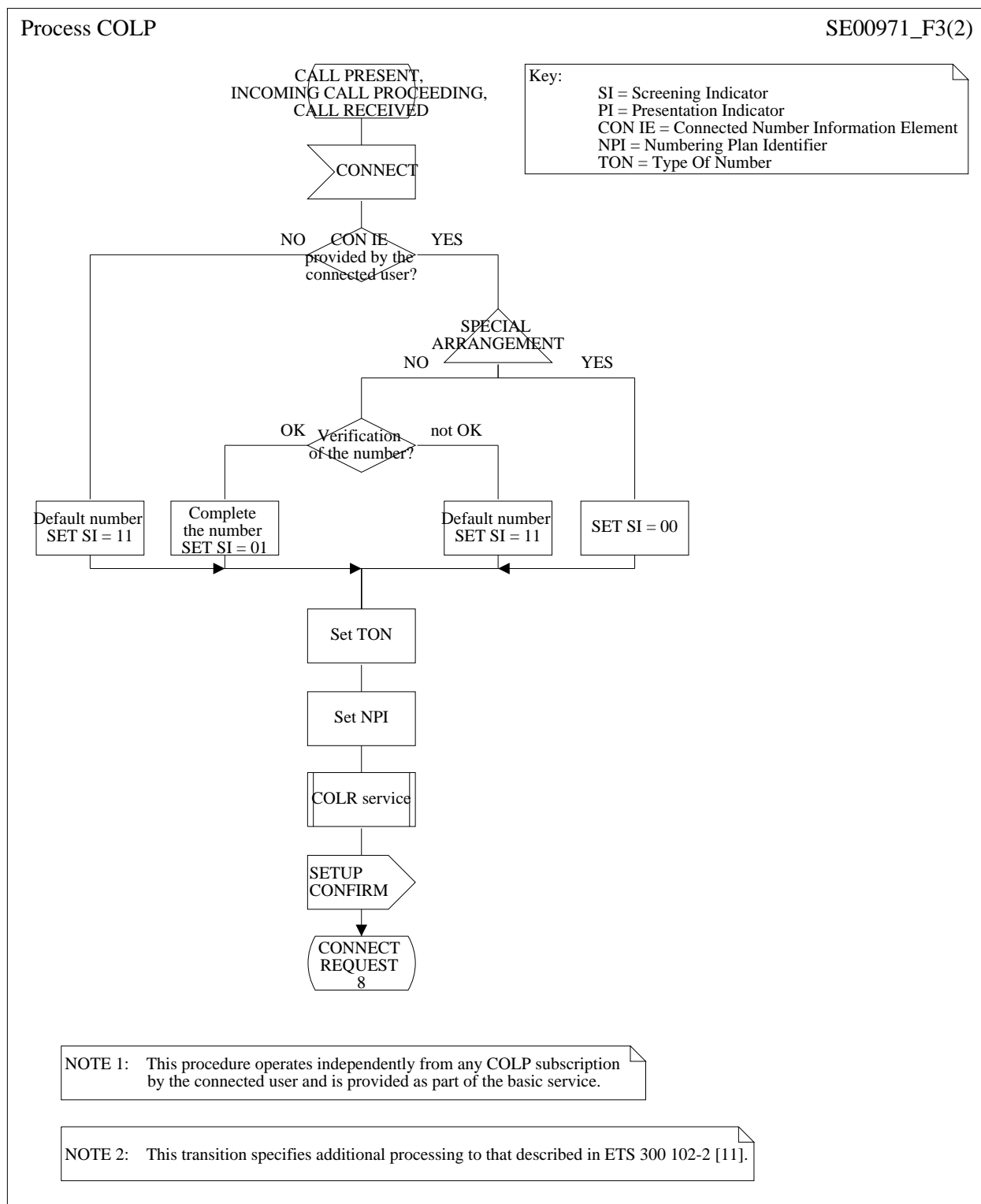
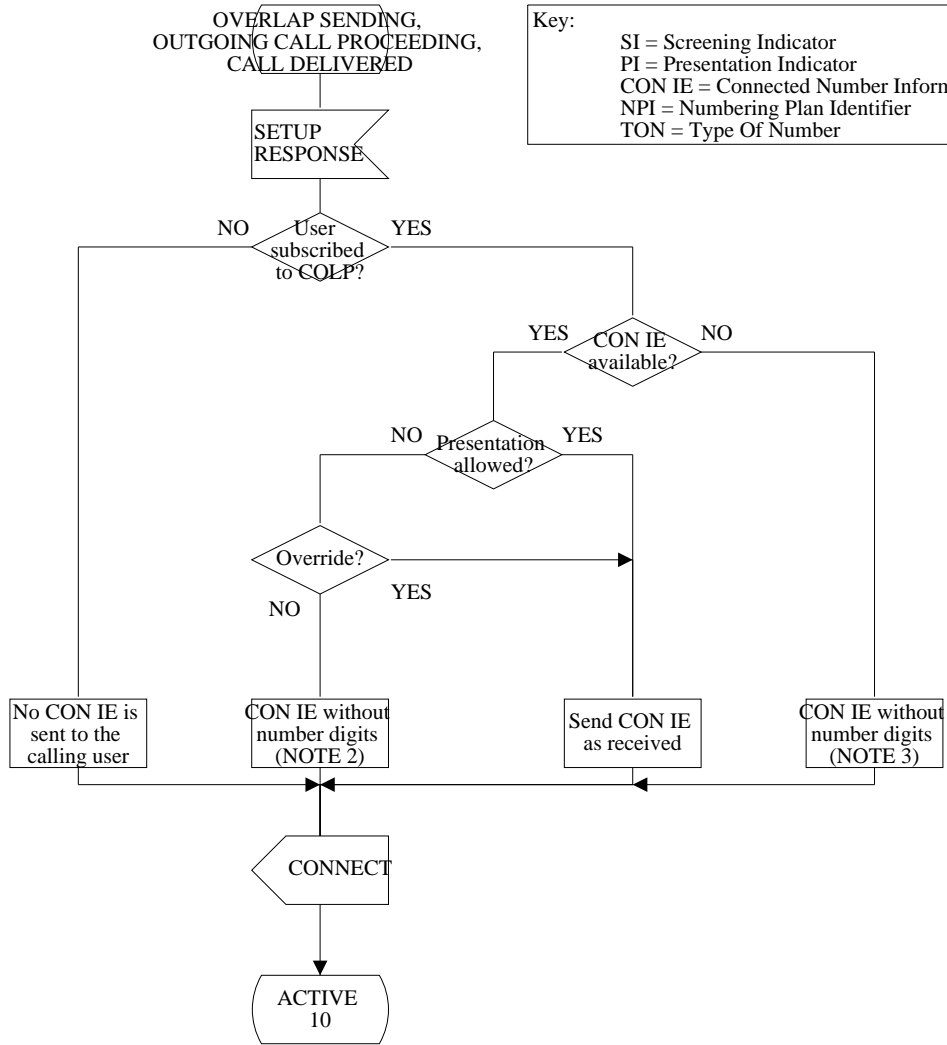


Figure 3: Destination network side dynamic description

Process COLP

SE00971_F4(2)



Key:
 SI = Screening Indicator
 PI = Presentation Indicator
 CON IE = Connected Number Information Element
 NPI = Numbering Plan Identifier
 TON = Type Of Number

NOTE 1: This transition specifies additional processing to that described in ETS 300 102-2 [11].

NOTE 2: In this case SI is set to "network provider"; PI = 01; NPI = 0000; and TON = 000.

NOTE 3: In this case SI = 11; PI = 10; NPI = 0000; and TON = 000.

Figure 4: Originating network side dynamic description

Annex A (informative): Signalling flows

No COLP supplementary service specific signalling flow is necessary in addition to basic call control according to ETS 300 102-1 [6].

Annex B (informative): Terminal interchangeability between public and private ISDNs

Terminals conforming to ETS 300 097-1 are also compatible with private ISDNs offering interfaces conforming to the Connected Line Identification Presentation supplementary service aspects of ETS 300 191, provided the terminal is able to accept the Connected number information element with numbering plan identifier coded as "private numbering plan".

Terminals conforming to the Connected Line Identification Presentation aspects of ETS 300 191 are also compatible with public ISDNs offering interfaces conforming to ETS 300 097-1.

Annex C (informative): Bibliography

ETS 300 191

"Private Telecommunications Network (PTN); Signalling protocol at the S-reference point; Identification supplementary services".

History

Document history	
May 1992	First Edition
April 1994	Corrigendum to First Edition: change to part 1 of a multi-part standard
March 1996	Converted into Adobe Acrobat Portable Document Format (PDF) and incorporation of all prior Corrigenda