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Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 20: Completion of Calls on No Reply (CCNR) supplementary service

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European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Signalling System No.7;
ISDN User Part (ISUP) version 3 for the international interface;
Part 20: Completion of Calls on No Reply (CCNR)
supplementary service**

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocols and Switching (SPS).

The present document is part 20 of a multi-part standard covering the ISDN User Part (ISUP) version 3 for the international interface, as identified below:

- Part 1: "Basic services";
- Part 2: "ISDN supplementary services";
- Part 3: "Calling Line Identification Presentation (CLIP) supplementary service";
- Part 4: "Calling Line Identification Restriction (CLIR) supplementary service";
- Part 5: "Connected Line Identification Presentation (COLP) supplementary service";
- Part 6: "Connected Line Identification Restriction (COLR) supplementary service";
- Part 7: "Terminal Portability (TP) supplementary service";
- Part 8: "User-to-User Signalling (UUS) supplementary service";
- Part 9: "Closed User Group (CUG) supplementary service";
- Part 10: "Subaddressing (SUB) supplementary service";
- Part 11: "Malicious Call Identification (MCID) supplementary service";
- Part 12: "Conference call, add-on (CONF) supplementary service";
- Part 14: "Explicit Call Transfer (ECT) supplementary service";
- Part 15: "Diversion supplementary services";
- Part 16: "Call Hold (HOLD) supplementary service";
- Part 17: "Call Waiting (CW) supplementary service";
- Part 18: "Completion of Calls to Busy Subscriber (CCBS) supplementary service";
- Part 19: "Three party (3PTY) supplementary service".
- Part 20: "Completion of Calls on No Reply (CCNR) supplementary service";**
- Part 31: "Basic Services; PICS proforma specification";
- Part 32: "Basic Services; Test suite structure and test purposes";
- Part 33: "Basic Services; ATS and partial PIXIT proforma specification";
- Part 34: "Supplementary Services; PICS proforma specification";
- Part 35: "Supplementary Services; Test suite structure and test purposes";
- Part 36: "Supplementary Services; ATS and partial PIXIT proforma specification".

NOTE: Part 13 has not been issued.

In accordance with CCITT Recommendation I.130, the following three level structure is used to describe the supplementary telecommunication 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 stand-point;
- 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.

The present document details the stage 3 aspects (signalling system protocols and switching functions) needed to support the CCNR supplementary service. The stage 1 aspects are detailed in EN 301 134.

NOTE: Currently no stage 2 document exists.

| National transposition dates | |
|--|-------------------|
| Date of adoption of this EN: | 18 September 1998 |
| Date of latest announcement of this EN (doa): | 31 December 1998 |
| Date of latest publication of new National Standard or endorsement of this EN (dop/e): | 30 June 1999 |
| Date of withdrawal of any conflicting National Standard (dow): | 30 June 1999 |

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1 Scope

The present document specifies the stage three of the Completion of Calls on No Reply (CCNR) supplementary service for the ISDN as provided by the European public telecommunications operators by means of the Signalling System No.7 protocol. Stage three identifies the protocol procedures and switching functions needed to support a telecommunication service (see CCITT Recommendation I.130 [3]).

The present document specifies the additional requirements where the service is provided to the user via an intermediate ISDN.

The present document does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN.

Although the present document applies only to the international interconnection, the specification of functions, formats and codes of messages and signals, and actions performed at originating and destination local exchanges are retained. Formats, codes and procedures marked for national use are included for informative purposes for the international interface specification. If these items so marked are supported within a national network and operator's network, then it is proposed that they shall be supported in this manner.

NOTE: In the case where a national signalling system behaves differently, the international gateway exchange is to support both the national network concerned and the international network.

Charging aspects are outside the scope of the present document.

2 Normative references

References may be made to:

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- a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or
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 - b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or
 - c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or
 - d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".
- [2] Void.
- [3] CCITT Recommendation I.130 (1988): "Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [4] Void.
- [5] Void.
- [6] ITU-T Recommendations X.680 - X.683 (1994): "Specification of Abstract Syntax Notation One (ASN.1)".
- [7] ETS 300 009-1: "Integrated Services Digital Network (ISDN); Signalling System No.7; Signalling Connection Control Part (SCCP) (connectionless and connection-oriented class 2) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.711 to Q.714 and Q.716 (1993), modified]".

- [8] ETS 300 287-1: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities (TC) version 2; Part 1: Protocol specification [ITU-T Recommendations Q.771 to Q.775 (1993), modified]".
- [9] ETS 300 121 (1993): "Integrated Services Digital Network (ISDN); Application of the ISDN User Part (ISUP) of CCITT Signalling System No.7 for international ISDN interconnections (ISUP version 1)".
- [10] EN 300 356-1 (V3.2): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1997), modified]".
- [11] Void.
- [12] EN 301 134 (V1.1): "Integrated Services Digital Network (ISDN); Completion of Calls on No Reply (CCNR) supplementary service; Service description".
- [13] EN 300 356-18 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 18: Completion of Calls to Busy Subscriber (CCBS) supplementary service [ITU-T Recommendation Q.733, clause 3 (1997), modified]".
- [14] EN 301 065-1 (V1.1): "Integrated Services Digital Network (ISDN); Completion of Calls on No Reply (CCNR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [15] Void.
- [16] Void. iTeh STANDARD PREVIEW
- [17] Void. (standards.iteh.ai)
- [18] ITU-T Recommendation Q.715 (1995): "SCCP user's guide".
- [19] ITU-T Recommendation Q.733.5: "Stage 3 description for Call Completion supplementary services using Signalling System No.7; Clause 5- Completion of Calls on No Reply (CCNR)".
- [20] ETS 300 264: "Integrated Services Digital Network (ISDN); Videotelephony teleservice; Service description".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

The following terms (i.e. a) through n)) are defined in EN 301 134 [12]. Abbreviated timer names are defined in the brackets.

- a) User A;
- b) Destination B;
- c) CCNR recall;
- d) CCNR call;
- e) Busy;
- f) CCNR busy;

In addition, a CCBS recall pending on user A is also considered as CCNR busy.

- g) Retention timer (CCNR-T1);
- h) CCNR service duration timer (CCNR-T3);
- i) CCNR recall timer (CCNR-T4);
- j) Destination B idle guard timer (CCNR-T8);
- k) Suspended CCNR request;
- l) CCNR request;
- m) Compatible terminal;
- n) Activity.

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Other terms:

retain option: the retain option, if supported in both the originating and destination network, will maintain the CCNR request in the destination B queue, if a CCNR call has failed due to destination busy condition.

long term denial: the network cannot accept user A's request to activate the CCNR supplementary service and a later attempt to activate the CCNR supplementary service for the same destination B will also be rejected.

short term denial: the network temporarily cannot accept user A's request to activate the CCNR supplementary service. A later attempt to activate the CCNR supplementary service for the same destination B may succeed.

CCNR call indicator: information sent in the forward direction, used in a CCNR supplementary service CCNR call set-up to distinguish this call from an ordinary call at the destination local exchange. This indicator is carried in the Call Completion Supplementary Service parameter in the IAM.

CCNR possible indicator: indicator used in the CCNR Possible Indicator parameter in the ACM/CPG to indicate the possibility to invoke a possible succeeding CCNR service request.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

| | |
|-------|---|
| ACM | Address Complete Message |
| ANM | Answer Message |
| ASE | Application Service Element |
| ASN.1 | Abstract Syntax Notation one |
| CCBS | Completion of Calls to Busy Subscriber |
| CCNR | Completion of Calls on No Reply |
| CFB | Call Forwarding Busy |
| CFNR | Call Forwarding No Reply |
| CFU | Call Forwarding Unconditional |
| CLI | Calling Line Identification |
| CON | Connect message |
| CPG | Call Progress message |
| DLE | Destination Local Exchange |
| DSS1 | Digital Subscriber Signalling System No. one |
| GT | Global Title |
| IAM | Initial Address Message |
| IPI | ISDN user part Preference Indicator |
| ISDN | Integrated Services Digital Network |
| ISPBX | Integrated Services Private Branch Exchange |
| ISUP | Integrated Services digital network User Part |
| OLE | Originating Local Exchange |
| OU | Originating User |
| PSTN | Public Switched Telephone Network |
| REL | Release Message |
| RLC | Release Complete Message |
| SCCP | Signalling Connection Control Part |
| SDL | Specification and Description Language |
| SPC | Signalling Point Code |
| SSN | Sub System Number |
| SUB | Subaddress |
| TC | Transaction Capabilities |
| TE | Transit Exchange |
| TU | Terminating User |
| USI | User Service Information |

4 Description

The CCNR supplementary service enables user A, encountering a destination B which does not answer the call (No Reply), to have the call completed without having to make a new call attempt when the destination becomes not busy after having initiated an activity.

When user A encounters a destination B which does not answer the call (No Reply), user A can request the CCNR supplementary service.

When user A requests the CCNR supplementary service, the network will monitor for destination B becoming not busy after having initiated an activity.

When destination B becomes not busy (i.e. access resources, e.g. at least one B-channel, are not busy) after having initiated an activity, then the network will wait a short time (as defined by the destination B idle guard timer) in order to allow the resources to be re-used for originating a call. If the resources are not re-used by destination B within this time, then the network will automatically recall user A.

When user A accepts the CCNR recall, then the network will automatically generate a CCNR call to destination B.

The CCNR supplementary service is applicable to all circuit-switched telecommunications services with the following exceptions:

- a) call 2 of the videotelephony teleservice (see ETS 300 264);
- b) all other circuit-switched telecommunications services requiring the use of more than one B-channel.

5 Operational requirements

5.1 Provision/withdrawal

The CCNR supplementary service may be provided to user A after prior arrangement with the service provider or may be generally available. The CCNR supplementary service shall be withdrawn by the service provider upon request of the subscriber or for service provider reasons.

See also stage one description EN 301 134 [12].

5.2 Requirements on the originating network

In order to operate the CCNR supplementary service, the originating local exchange shall have TC capabilities (ETS 300 287-1 [8]). The originating network shall have SCCP capability (ETS 300 009-1 [7]) for routing the TC operations.

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5.3 Requirements on the terminating network

In order to operate the CCNR supplementary service, the destination local exchange shall have TC capabilities. The terminating network shall have SCCP capability for routing the TC operations.

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5.4 Requirements on the transit network

The transit network shall have SCCP capability for routing the TC operations.

6 Coding requirements

6.1 Introduction

This clause describes the coding of information needed to support the CCNR supplementary service. The coding is specified for the following two protocols:

- a) ISUP (ITU-T Recommendations Q.761 to Q.764 as modified by EN 300 356-1 [10]);
- b) ASE for CCNR.