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8 [[]HJbc`ca fYy`Y`n`]bH[f]fUb]a]glcf]Hj Ua]fG8 BŁ!`8 cdc`b] bUglcf]Hj .
bYXj ci a bUdfYXU`U`]WUf07 HŁ!`Dfclt`_c`X][]HJbY`bUfc b]y`_Y`g][bU]nUW`Y`yH`r`%
fB GG%Ł!`%`XY.`GdYWZ`_UW`Udfclt`_c`U

Integrated Services Digital Network (ISDN); Explicit Call Transfer (ECT) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification

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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 1 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) diversion supplementary services, 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: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network";
- Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".

In accordance with CCITT Recommendation I.130 [3], the following three level structure is used to describe the supplementary telecommunication services as provided by European public telecommunications operators under the pan-European 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.

The present document details the stage 3 aspects (signalling system protocols and switching functions) needed to support the ECT supplementary service. The stage 1 and stage 2 aspects are detailed in EN 300 367 [15] and ETS 300 368 [16], respectively.

National transposition dates

Date of adoption of this EN:	9 October 1998
Date of latest announcement of this EN (doa):	31 January 1999
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Date of withdrawal of any conflicting National Standard (dow):	31 July 1999

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1 Scope

This first part of EN 300 369 specifies the stage three of the Explicit Call Transfer (ECT) 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 ITU-T Recommendation I.411 [5]) 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 telecommunication service (see CCITT Recommendation I.130 [3]).

In addition, the present document specifies the protocol requirements at the T reference point where the service is provided to the user via an intermediate private ISDN.

The present document 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 ECT supplementary service enables a user who has two calls, each of which can be an incoming call or an outgoing call, to connect together the other users in the two calls, into one call. One of the two calls shall be answered, the other call can be either answered or, as a network option, in the alerting phase.

The ECT supplementary service is applicable to all circuit-switched basic telecommunication services using one B-channel.

Further parts of EN 300 369 specify the method of testing required to identify conformance to the present document.

The present document is applicable to equipment supporting the ECT 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.

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2 Normative references (references.iteh.ai)

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
- 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] ITU-T Recommendation E.164 (1997): "The international public telecommunication numbering plan".
- [2] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".
- [3] CCITT Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [4] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [5] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces; Reference Configurations".
- [6] CCITT Recommendation X.208 (1988): "Specification of Abstract Syntax Notation One (ASN.1)".
- [7] CCITT Recommendation X.219 (1988): "Remote operations: Model, notation and service definitions".

- [8] CCITT Recommendation Z.100 (1988): "Specification and Description Language (SDL)".
- [9] ETS 300 092-1 including amendment A2: "Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [10] ETS 300 097-1 including amendment A1: "Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [11] ETS 300 141-1: "Integrated Services Digital Network (ISDN); Call Hold (HOLD) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [12] EN 300 195-1: "Integrated Services Digital Network (ISDN); Supplementary service interactions; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [13] EN 300 196-1: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [14] EN 300 207-1: "Integrated Services Digital Network (ISDN); Diversion supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [15] EN 300 367 (V1.2): "Integrated Services Digital Network (ISDN); Explicit Call Transfer (ECT) supplementary service; Service description".
- [16] ETS 300 368: "Integrated Services Digital Network (ISDN); Explicit Call Transfer (ECT) supplementary service; Functional capabilities and information flows".
- [17] ETS 300 402-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 1: General aspects [ITU-T Recommendation Q.920 (1993), modified]".
- [18] EN 300 403-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".
- [19] ETS 300 403-2: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 2: Specification and Description Language (SDL) diagrams".

3 Definitions

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

call A-C: The call between user A and user C.

call A-B: The call between user A and user B.

call state: A state as defined in EN 300 403-1 [18], subclause 2.1 for either the user side or the network side as appropriate. A call state may exist for each call reference value (and for each additional responding CEI in the incoming call state).

component: See EN 300 196-1 [13], subclause 8.2.2.

Connection Endpoint Identifier (CEI): See subclause 3.4.1 of ITU-T Recommendation Q.920 as modified by ETS 300 402-1 [17].

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [2], definition 308.

invoke component: See EN 300 196-1 [13], subclause 8.2.2.1. Where reference is made to a "xxxx" invoke component, an invoke component is meant with its operation value set to the value of the operation "xxxx".

ISDN number: A number conforming to the numbering plan and structure specified in ITU-T Recommendation E.164 [1].

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

network A: The network to which the served user is attached.

network B: The network to which user B is attached.

network C: The network to which user C is attached.

public network: The DSS1 protocol entity at the network side of the user-network interface at the T reference point.

private network: The DSS1 protocol entity at the user side of the user-network interface at the T reference point.

reject component: See EN 300 196-1 [13], subclause 8.2.2.4.

remote user: User B or user C.

return error component: See EN 300 196-1 [13], subclause 8.2.2.3. Where reference is made to a "xxxx" return error component, a return error component is meant with its operation value set to the value of the operation "xxxx".

return result component: See EN 300 196-1 [13], subclause 8.2.2.2. Where reference is made to a "xxxx" return result component, a return result component is meant with its operation value set to the value of the operation "xxxx".

served user; user A: The served user is the user who invokes the ECT supplementary service.

service; telecommunication service: See ITU-T Recommendation I.112 [2], definition 201.

supplementary service: See ITU-T Recommendation I.210 [4], subclause 2.4.

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

user B: The other user in one of user A's calls. By convention, in the present document, it is considered that the connection has been established on this call.

user C: The other user in another of user A's calls.

NOTE: In this context, the sequence of the call setups is of no consequence, i.e. call A-C may exist before the call A-B.

4 Abbreviations

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

CEI	Connection Endpoint Identifier
CLIR	Calling Line Identification Restriction
COLR	Connected Line Identification Restriction
DSS1	Digital Subscriber Signalling System No. one
ECT	Explicit Call Transfer
HOLD	Call Hold
ISDN	Integrated Services Digital Network
NIE	Notification indicator Information Element
RDNIE	Redirection Number Information Element
SDL	Specification and Description Language

5 Description

The ECT supplementary service enables a user (user A) who has two calls, each of which can be an incoming call or an outgoing call, to connect together the other users in the two calls, into one call. One of the two calls shall be answered, the other call can be either answered or, as a network option, in the alerting phase. At the coincident S and T reference point, the two calls shall be controlled using the same data link connection identified by the same CEI value.

As a network provider option the ECT supplementary service can be provided at the T reference point.

When the ECT supplementary service is invoked, the served user shall send a message to the network, identifying the users to be connected. The network responds by releasing both calls at user A and establishing a connection between user B and user C, and at the same time sending a notification of the transfer to both users B and C. See also EN 300 367 [15], clause 5.

The procedures are currently restricted to basic telecommunication services involving a single 64 kbit/s connection. The present document is not applicable to a video telephony call involving two 64 kbit/s connections.

6 Operational requirements

6.1 Provision and withdrawal

The ECT supplementary service is provided by prior arrangements with the service provider.

Withdrawal of the service is made by the service provider upon request by the subscriber or for service provider reasons.

6.2 Requirements on the originating network side

The originating network (served user side) shall provide the Call Hold (HOLD) supplementary service ETS 300 141-1 [11] in connection with the ECT supplementary service

In the case where the network supports the option allowing the transfer of an alerting call, the other user shall be notified when the alerting call is answered.

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6.3 Requirements on the destination network side

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The destination network (remote user sides) shall be able to:

- receive an indication of the transfer from the originating network and convey notification of the transfer, and a request for subaddress to the user who remains part of the transferred call;
- receive a subaddress from the remote user and convey it to the network of the other remote user;
- receive a subaddress from the network of the other remote user and convey it to the user.

7 Coding requirements

7.1 Coding of the Facility information element components

Table 1 shows the definition of the operations and errors required for the ECT supplementary service using Abstract Syntax Notation one (ASN.1) as defined in CCITT Recommendation X.208 [6] and using the OPERATION and ERROR macro as defined in CCITT Recommendation X.219 [7], figure 4/X.219.

The formal definition of the component types to encode these operations and errors is provided in EN 300 196-1 [13], annex D, clause D.1. The inclusion of components in Facility information elements is defined in EN 300 196-1 [13], subclause 11.2.2.1.

All components (invoke, return result, return error and reject) shall be included within a Facility information element. This Facility information element may be included in any appropriate message as specified in EN 300 196-1 [13], subclause 8.3.1.1, unless a more restrictive specification is given in clause 9.

Table 1: Operation and error definitions for the ECT supplementary service

```

Explicit-Call-Transfer-Operations-and-Errors {ccitt identified-organization etsi(0) 369
                                             version(2) operations-and-errors(1)}

DEFINITIONS ::=
BEGIN

EXPORTS
    EctLinkIdRequest,
    EctExecute,
    RequestSubaddress,
    SubaddressTransfer,
    ExplicitEctExecute,
    LinkIdNotAssignedByNetwork,
    EctLoopTest,
    EctInform;

IMPORTS
    OPERATION,
    ERROR
    FROM Remote-Operation-Notation
        {joint-iso-ccitt remote-operations(4) notation(0)}

    notAvailable,
    notSubscribed,
    resourceUnavailable,
    supplementaryServiceInteractionNotAllowed,
    invalidCallState
    FROM General-Errors
        {ccitt identified-organization etsi(0) 196 general-errors(2)}

    PartySubaddress,
    PresentedNumberUnscreened
    FROM Addressing-Data-Elements
        {ccitt identified-organization etsi(0) 196 addressing-data-elements(6)};

EctExecute ::= OPERATION
    RESULT      {notAvailable,
                notSubscribed,
                invalidCallState,
                supplementaryServiceInteractionNotAllowed}
    ERRORS

EctInform   ::= OPERATION
    ARGUMENT  SEQUENCE {
        ENUMERATED {
            alerting (0),
            active (1)},
        redirectionNumber PresentedNumberUnscreened OPTIONAL}

EctLinkIdRequest ::= OPERATION
    RESULT      LinkId
    ERRORS      {resourceUnavailable}

EctLoopTest  ::= OPERATION
    ARGUMENT    CallTransferIdentity
    RESULT      LoopResult
    ERRORS      {notAvailable}

ExplicitEctExecute ::= OPERATION
    ARGUMENT    LinkId
    RESULT
    ERRORS      {notAvailable,
                notSubscribed,
                invalidCallState,
                supplementaryServiceInteractionNotAllowed,
                LinkIdNotAssignedByNetwork}

RequestSubaddress ::= OPERATION

SubaddressTransfer ::= OPERATION
    ARGUMENT    transferredToSubaddress PartySubaddress

CallTransferIdentity ::= INTEGER (-128..127)
LinkId                ::= INTEGER (-32768..32767)
LoopResult            ::= ENUMERATED {
    insufficientInformation (0),
    noLoopExists (1),
    simultaneousTransfer (2)}

LinkIdNotAssignedByNetwork ::= ERROR

eCTOID OBJECT IDENTIFIER ::= {ccitt identified-organization etsi(0) 369
                               operations-and-errors(1)}

ectExecute          EctExecute          ::= localValue 6

```