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**Integrated Services Digital Network (ISDN);
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ISDN User Part (ISUP) version 2 for the international interface;
Part 14: Explicit Call Transfer (ECT)
supplementary service**

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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 14 of a multi-part standard covering the ISDN User Part (ISUP) version 2 for the international interface, as described 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".

NOTE: Part 13 has been withdrawn.

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.

This ETS details the stage three aspects (signalling system protocols and switching functions) needed to support the Explicit Call Transfer (ECT) supplementary service. The stage 1 and stage 2 aspects are detailed in ETS 300 367 and ETS 300 368, respectively.

Transposition dates	
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1 Scope

This fourteenth part of ETS 300 356 specifies the stage three of the Explicit Call Transfer (ECT) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by the European public telecommunications operators by means of the Signalling System No.7 protocol for the ISDN User Part (ISUP). Stage three identifies the protocol procedures and switching functions needed to support a telecommunication service (see CCITT Recommendation I.130 [3]).

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

Although this ETS applies only to the international section, the specification of functions, formats and codes of messages and signals, and actions performed at originating and destination local exchanges are retained. All formats, codes and procedures, if any, marked for national use are included for informative purposes only.

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

Charging aspects are outside the scope of this ETS.

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.

The ECT supplementary service is applicable to all circuit-switched telecommunication services.

2 Normative references

This ETS incorporates by dated or 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 amendments or revision. For undated references the latest edition of the publication referred to applies.

- [1] CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".
- [2] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".
- [3] CCITT Recommendation I.130 (1988): "Method for the characterisation 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] ETS 300 090 (1992): "Integrated Services Digital Network (ISDN); Calling Line Identification Restriction (CLIR) supplementary service; Service description".
- [6] ETS 300 356-1 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1993), modified]".
- [7] ETS 300 356-2 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 2: ISDN supplementary services [ITU-T Recommendation Q.730 (1993), modified]".

- [8] ETS 300 356-3 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 3: Calling Line Identification Presentation (CLIP) supplementary service [ITU-T Recommendation Q.731, clause 3 (1993), modified]".
- [9] ETS 300 356-5 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 5: Connected Line Identification Presentation (COLP) supplementary service [ITU-T Recommendation Q.731, clause 5 (1993), modified]".
- [10] ETS 300 356-8 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 8: User-to-User Signalling (UUS) supplementary service [ITU-T Recommendation Q.737, clause 1 (1993), modified]".
- [11] ETS 300 367 (1995): "Integrated Services Digital Network (ISDN); Explicit Call Transfer (ECT) supplementary service; Service description".
- [12] ETS 300 368 (1995): "Integrated Services Digital Network (ISDN); Explicit Call Transfer (ECT) supplementary service; Functional capabilities and information flows".
- [13] ETS 300 369-1 (1995): "Integrated Services Digital Network (ISDN); Explicit Call Transfer (ECT) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

3 Definitions

For the purposes of this ETS, the following definitions apply:

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

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

call B-C: The call between user B and user C, i.e., the call established between the remote users after the successful invocation of ECT supplementary service.

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

remote user number: The ISDN number, conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [1], which identifies the remote user.

remote user's subaddress: The subaddress associated with the remote user.

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

subaddress: See CCITT Recommendation E.164 [1].

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

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

user B: The other user in one of the user A's calls. By convention, it is considered that this user is the one involved in the answered call.

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

4 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

ANM	Answer message
CLIP	Calling Line Identification Presentation
COLP	Connected Line Identification Presentation
CPG	Call progress message
DSS1	Digital Subscriber Signalling System No. one
ECT	Explicit Call Transfer
FAC	Facility message
HOLD	Call hold
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
LOP	Loop prevention
PSTN	Public Switched Telephone Network

5 Description

The ECT supplementary service enables a user (user A) to transform two of that user's calls (an answered and a held call), each of which can be an incoming call or an outgoing call, into a new call between user B and user C.

After the call transfer has occurred, each remote user involved may release the new call according to basic call procedure as specified in ETS 300 356-1 [6].

NOTE: The new call between the remote users will no longer be under user A's control since the served user is simultaneously disconnected (see ETS 300 369-1 [13]).

The request for ECT supplementary service shall be rejected if, as a network option (see subclause 9.2.1.2.1), it can be determined that the resulting connection would lead into a loop in the network.

The service description is given in ETS 300 367 [11] and the functional capabilities and information flows are given in ETS 300 368 [12]. The stage three Digital Subscriber Signalling System No. one (DSS1) description is given in ETS 300 369-1 [13].

This stage three description of the ECT supplementary service is based on the ISUP protocol as defined in ETS 300 356-1 [6] and ETS 300 356-2 [7].

6 Operational requirements

6.1 Provision and withdrawal

See ETS 300 367 [11], subclause 6.1.

6.2 Requirements on the originating network side

Not applicable.

6.3 Requirements on the destination network side

Not applicable.

7 Coding requirements

The ECT supplementary service requires the use of the following messages:

- Call progress (CPG);
- Facility (FAC); and
- Loop prevention (LOP).

The format and coding of the Facility and Call progress messages are given in ETS 300 356-1 [6].

The Facility message is used according to the service activation procedure defined in ETS 300 356-2 [7]. For this description, the service activation parameter is coded "call transfer" (see ETS 300 356-1 [6]).

The Call progress message is used with the event indicator of the event information parameter, set to "PROGRESS" (see ETS 300 356-1 [6]).

The Loop prevention message is sent in either direction when the loop prevention procedure is performed (see subclause 9.2.1.2.1).

The message type code for the Loop prevention message is given in table 4/Q.763 as modified by ETS 300 356-1 [6].

The format of the Loop prevention message is given in table 49A of ETS 300 356-1 [6].

The parameters which may be conveyed, when appropriate (see clause 9), by the messages listed above are the following:

- access transport;
- call transfer number;
- call transfer reference;
- generic notification indicator;
- generic number; and
- loop prevention indicators.

a) access transport parameter

The access transport parameter is used to deliver the remote user's subaddress from one user (user B or user C) to the other user (user C or user B).

b) call transfer number parameter

The call transfer number parameter is used to exchange the remote user number of the users involved in the transferred call.

The parameter name code of the call transfer number parameter is given in table 5/Q.763 as modified by ETS 300 356-1 [6]. The format of the call transfer number parameter is given in subclause 3.8A of ETS 300 356-1 [6].

The call transfer number parameter is included as an optional parameter in the Facility and Call progress messages and is accompanied by the parameter compatibility information parameter (see clause B.1).

c) call transfer reference parameter

The call transfer reference parameter is an optional parameter which contains an integer (0 ... 255) allocated unambiguously to the particular ECT supplementary service invocation.

The parameter name code of the call transfer reference parameter is given in table 5/Q.763 as modified by ETS 300 356-1 [6]. The format of the call transfer reference parameter is given in subclause 3.8B of ETS 300 356-1 [6].

The call transfer identity is a pure binary representation of the integer assigned unambiguously to the particular ECT supplementary service invocation.

The call transfer reference parameter is included as an optional parameter in the Loop prevention message and is accompanied by the parameter compatibility information parameter (see clause B.1).

d) generic notification indicator parameter

The generic notification indicator parameter is used, according to the generic notification procedure defined in ETS 300 356-2 [7], to notify one remote user that the call is now transferred to another user; it also gives an indication of the state of the new call (i.e. answered or alerting). The notifications which are used for this purpose are:

- "call transfer, alerting"; and
- "call transfer, active".

The format of the generic notification indicator parameter is given in ETS 300 356-1 [6].

The generic notification indicator parameter is accompanied by the parameter compatibility information parameter (see clause B.1).

e) generic number parameter

The generic number parameter is used according to the Calling Line Identification Presentation (CLIP) and Connected Line Identification Presentation (COLP) supplementary services (see ETS 300 356-3 [8] and ETS 300 356-5 [9]).

The allowed coding for the generic number parameter can be found in ETS 300 356-3 [8] and ETS 300 356-5 [9].

f) loop prevention indicators parameter

The loop prevention indicators parameter is sent in association with a request (or response to a request) when the loop prevention procedure is performed (see subclause 9.2.1.2.1).

Two possible type of Loop prevention messages are identified:

- Loop prevention (request) message;
- Loop prevention (response) message.

The parameter name code of the loop prevention indicators parameter is given in table 5/Q.763 as modified by ETS 300 356-1 [6]. The format of the loop prevention indicators parameter is given in subclause 3.30A of ETS 300 356-1 [6].

8 State definitions

No specific state definitions are required.

9 Signalling procedures

9.1 Activation, deactivation and registration

None identified.

9.2 Actions at the originating local exchange

The originating local exchange is the exchange where the ECT supplementary service is invoked. The originating local exchange, for this description, is not necessarily the originating exchange for the basic call (that is, the call between user A and each remote user can be set up either by the served user or by the remote user).

9.2.1 Normal operation

9.2.1.1 Actions required prior to the invocation of the service

Prior to the invocation of ECT supplementary service, the originating local exchange should have the capability of storing the remote user number received from the users involved in the two calls until call transfer is performed.

The remote user number may be received according to the CLIP or COLP supplementary services (see ETS 300 356-3 [8] and ETS 300 356-5 [9]). The relevant information to be stored is the following:

- a) if user A is the called user for one (or both) call(s), then:
 - if both the calling party number and the generic number parameters are received according to the CLIP supplementary service, the originating local exchange shall store only the information contained in the generic number parameter;
 - if only the calling party number parameter is received, then the relevant information shall be stored.
- b) If user A is the calling user for one (or both) call(s), then:
 - if both the connected party number and the generic number parameters are received according to the COLP supplementary service, the originating local exchange shall store only the information contained in the generic number parameter;
 - if only the connected party number parameter is received, then the relevant information shall be stored.

If either the generic number parameter or the connected number parameter are received with the address presentation restricted indicator set to "address not available", then no storage of number information shall occur.

9.2.1.2 Actions required after the invocation of the service

If the loop prevention procedure is supported (as a network option), the originating local exchange shall act according to subclause 9.2.1.2.1, otherwise it shall act according to subclause 9.2.1.2.2.

9.2.1.2.1 Loop prevention procedure

When the originating local exchange receives from the access signalling system an ECT supplementary service invocation (see ETS 300 369-1 [13]), then the originating local exchange shall send a Loop prevention (request) message, with the call transfer reference parameter, for both calls and shall start timer (T_{ECT}).

The call transfer reference parameter shall contain the call transfer identity which is unambiguously assigned to the particular ECT supplementary service invocation.

The call transfer is allowed and will be performed, according to subclause 9.2.1.2.2:

- if the originating local exchange receives at least one Loop prevention (response) message, in response to a Loop prevention (request) message, including the response indicator set to "no loop exists" and an identical call transfer identity in the call transfer reference parameter.

In this case, the reception of the Loop prevention (request) message shall stop timer (T_{ECT}).

The originating local exchange shall reject the call transfer:

- if a Loop prevention (request) message containing an identical call transfer reference parameter is received;
- on reception of Loop prevention (response) messages containing the response indicator set to "simultaneous transfer" and an identical call transfer identity in the call transfer reference parameter, for both calls;

In both cases, timer (T_{ECT}) shall be stopped.

In addition, the originating local exchange may reject the call transfer:

- on timer expiry;
- on reception of Loop prevention (response) messages containing the response indicator set to "insufficient information" and an identical call transfer identity in the call transfer reference parameter, for both calls. Timer (T_{ECT}) is stopped when both messages are received.

NOTE: In case of timer expiry or reception of Loop prevention (response) messages with the response indicator set to "insufficient information" for both calls, it may not be possible to decide whether the resulting connection would result in a loop (e.g. interworking between different signalling systems). In such cases, as a network option, the call transfer may be completed, or rejected.

9.2.1.2.2 Signalling procedures to complete the call transfer

a) Information sent to the destination local exchange

When the ECT supplementary service is invoked (see ETS 300 369-1 [13]), the originating local exchange shall send to each destination local exchange a Facility or Call progress message depending on whether the call between the served user and the specific remote user is answered or alerting, respectively:

- if both calls are answered, the originating local exchange shall send to each destination local exchange a Facility message;
- if one call is alerting (call A-C), the Facility message shall be sent to the exchange involved in the answered call (call A-B), while a Call progress message shall be sent to the exchange involved in the alerting call.

Either the Facility or the Call progress message shall convey the generic notification parameter as follows:

- the notification indicator subfield in the generic notification indicator parameter sent to user B, shall be set to "call transfer, active" or "call transfer, alerting", depending of whether call A-C is active or alerting, respectively;

- the notification indicator subfield in the generic notification indicator parameter sent to user C, shall be set to "call transfer, active".

In addition to the generic notification parameter, these messages may include the call transfer number parameter if the relevant information is available in the originating local exchange (see subclause 9.2.1.1).

b) Information received from the destination local exchange

If the call between the served user and one remote user is answered, the originating local exchange may receive from the corresponding destination local exchange a Facility message with the service activation parameter set to "call transfer", and the access transport parameter; in this case, the received message shall be transferred transparently to the other remote user.

If the ECT is invoked while one call (call A-C) is alerting, as soon as the originating local exchange receives the Answer message from the relevant destination local exchange, a Facility message is sent to user B with the notification indicator in the generic notification indicator parameter set to "call transfer, active".

In addition, the Facility message shall convey the call transfer number parameter if the Answer message provides the remote user number:

- if both the connected number and generic number parameters are received in the Answer message, the call transfer number parameter shall convey the information received in the generic number parameter;
- if both the connected number and generic number parameters are received but the address presentation restriction indicator conveyed in the generic number parameter is set to "address not available", then the relevant information in the connected number parameter shall be mapped into the call transfer number parameter.

The call transfer number parameter shall not be included if both the generic number and the connected number parameters are received with the address presentation restriction indicator set to "address not available".

9.2.1.2.3 Signalling procedures after call transfer

When call transfer is completed the originating local exchange shall act as a transit exchange for the new call between the remote users.

All actions to complete call transfer are described in ETS 300 369-1 [13].

9.2.2 Exceptional procedures

No exceptional procedures are identified.

9.3 Actions at the transit exchange

9.3.1 Normal operation

Each message (see clause 7) received by a transit exchange shall be passed on unchanged to the following exchange.

9.3.2 Exceptional procedures

No exceptional procedures are identified.

9.4 Actions at the outgoing international gateway exchange

9.4.1 Normal operation

Each message (see clause 7) received by the outgoing international exchange shall be passed on unchanged to the following exchange except in the cases below.

If the outgoing international exchange receives from the preceding (national) exchange either a Facility message or a Call progress message including the call transfer number parameter and if the address presentation restricted indicator subfield in the call transfer number parameter is set to "presentation restricted", before sending the message to the succeeding (international) exchange, the call transfer number parameter may be omitted if there is no bilateral agreement for the transfer of restricted numbers between the two networks involved in the call (see ETS 300 090 [5], clause 7). If the parameter is not omitted, if necessary and before sending the message to the succeeding (international) exchange, the exchange shall convert the number contained in the call transfer number parameter to an international number and shall set the nature of address indicator subfield to "international number".

If the Facility message or Call progress message is received from the succeeding (international) exchange including the call transfer number parameter, the outgoing international exchange shall check whether the received country code is the network's own country code. If so, then the country code shall be removed and the nature of address indicator shall be set to "national (significant) number".

9.4.2 Exceptional procedures

No exceptional procedures are identified.

9.5 Actions at the incoming international gateway exchange

9.5.1 Normal operation

Each message (see clause 7) received by the incoming international exchange shall be passed on unchanged to the following exchange except in the cases below.

If either a Facility message or a Call progress message is received from the preceding (international) exchange with the call transfer number parameter, the exchange shall check if the received country code is the network's own country code. If so, the country code shall be removed and the nature of address indicator shall be set to "national (significant) number".

If the call transfer number parameter is received from the succeeding (national) exchange and if the address presentation restricted indicator subfield is set to "presentation restricted", before sending the message to the preceding (international) exchange, the call transfer number parameter may be omitted if there is no bilateral agreement for the transfer of restricted numbers between the two networks involved in the call (see ETS 300 090 [5], clause 7). If the parameter is not omitted, if necessary and before sending the received message to the preceding (international) exchange, the exchange shall convert the received number to an international number and shall set the nature of address indicator subfield to "international number".

9.5.2 Exceptional procedures

No exceptional procedures are identified.

9.6 Actions at the destination local exchange

The destination local exchange is the exchange where the remote user(s) is(are) connected to. The destination local exchange, for this description, is not necessarily the destination exchange for the basic call (that is, the call between user A and user B or user C can be set up either by the remote user or by the served user).

9.6.1 Normal operation

If the network supports the loop prevention procedure, and if a Loop prevention (request) message is received with the call transfer reference parameter, the destination local exchange shall return a Loop prevention (response) message including the Response indicator set to "no loop exists" and identical call transfer identity in the call transfer reference parameter.

If the destination local exchange does not support the loop prevention procedure, then any received Loop prevention messages are discarded.

The handling of other messages related with ECT supplementary service are described in the following:

a) Information received from the originating local exchange

If the destination local exchange receives a Facility message with the service activation parameter set to "call transfer", the information contained in the generic notification indicator parameter is passed on to the access signalling system (see ETS 300 369-1 [13]).

NOTE 1: In this case, the access signalling system shall send a requestSubaddress invoke component to the remote user (see ETS 300 369-1 [13]).

If the destination local exchange receives a Call progress message from the served user's exchange, the information contained in the generic notification indicator parameter is passed on to the access signalling system (see ETS 300 369-1 [13]).

If either the Facility message or Call progress message are received including the call transfer number parameter, the relevant information is passed on to the access signalling system (see ETS 300 369-1 [13]).

NOTE 2: It is the function of the user-network interface to check whether the received address information must be restricted or not (see ETS 300 369-1 [13]).

b) Information sent to the originating local exchange

If the exchange receives the remote user's subaddress from the access signalling system (see ETS 300 369-1 [13]), a Facility message is sent to the originating local exchange with the subaddress information mapped into the access transport parameter.

9.6.2 Exceptional procedures

No exceptional procedures are identified.

9.7 Requirement related to echo control

9.7.1 General

The originating local exchange should have the capability to invoke echo control procedures. This is necessary if the total propagation delay for the two legs of the transferred call is above the value where echo control is necessary.

The exchange should also have the capability of storing propagation delay information received either in the Initial address message (for incoming calls) or in the Answer/Connect message (for outgoing calls) until call release. This has to be done for both legs of the transferred calls, see ETS 300 365-1 [6].

9.7.2 Criteria to initiate echo control procedures

The originating local exchange has to sum up the propagation delay values of the calls A-B and A-C in order to determine the total value of the propagation delay of the transferred call.

If echo control is necessary, the exchange shall initiate echo control procedures for the transferred call, see ETS 300 356-1 [6].

10 Interaction with other networks

No particular requirements are needed when peer-to-peer interworking (see ETS 300 356-1 [6]) takes place between two exchanges that support different versions of the ISUP protocol.

NOTE 1: If received, the Call progress message containing the generic notification indicator parameter is discarded by the exchange supporting ISUP version 1 according to ETS 300 121 (this is because the Call progress message is discarded by a "Q.767 exchange" as it is sent during alerting in the forward direction of the call); the Facility message is always discarded.

If either the Facility or the Call progress messages containing the generic notification indicator parameter are received by a "CCITT Blue Book exchange", they may be discarded or passed on according to the appropriate procedures.

In case of call control interworking between ISUP version 2 and protocols that do not support neither the notification mechanism (e.g. PSTN) nor the Simple service activation procedure, the interworking exchange shall discard the Facility and Call progress messages.

In case of call control interworking between ISUP version 2 supporting the loop prevention procedure and protocols that do not support the loop prevention procedure, then at the reception of a Loop prevention (request) message with the call transfer reference parameter, the interworking exchange shall return a Loop prevention (response) message with the indication "insufficient information" and an identical call transfer reference parameter.

Independent of whether peer-to-peer or call control interworking takes place, the call shall be completed according to the compatibility procedure described in ETS 300 356-1 [6].

NOTE 2: If the ISUP used in the interworking exchange does not support the loop prevention procedure, then any received Loop prevention messages are discarded.

In case user A is located in a private ISDN and invokes the ECT supplementary service, the public local exchange which interfaces the private network may receive from the access signalling system a notification information (i.e., "call transfer, active" or "call transfer, alerting"); this information shall be mapped into the generic notification indicator parameter and sent in a Facility or Call progress message to the relevant remote user depending on the state of each call, as described in subclause 9.2.1.

If the public local exchange supports the loop prevention procedure, then the information received in any Loop prevention messages shall be passed on to the access signalling system and vice versa.

All other information received from the access signalling system, such as the remote user number and/or subaddress, shall be mapped into the call transfer number and access transport parameters, respectively, and sent to the relevant remote user.

11 Interaction with other supplementary services

11.1 Advice of charge

No impact on ISUP.

11.2 Call waiting

No impact on ISUP.

11.3 Call hold

No impact on ISUP.

11.4 Call transfer

11.4.1 Explicit call transfer

The destination local exchange for the one instance of the ECT supplementary service can also act as the originating local exchange for another instance of the ECT supplementary service on the same call.

Under such circumstances, if the local exchange (acting as a destination local exchange) receives a Loop prevention (request) message with any value of the call transfer reference parameter, and if the local exchange (acting as an originating local exchange) is running timer T_{ECT} , then the local exchange shall respond with a Loop prevention (response) message containing the same call transfer reference parameter, and also containing the Response indicator set to "simultaneous transfer"

11.5 Number identification services

11.5.1 Calling line identification presentation

No impact on ISUP.

11.5.2 Calling line identification restriction

No impact on ISUP.

11.5.3 Connected line identification presentation

No impact on ISUP.

11.5.4 Connected line identification restriction

No impact on ISUP.

11.6 Closed user group

No impact on ISUP.

11.7 Completion of calls to busy subscriber

No impact on ISUP.

11.8 Conference services

11.8.1 Conference call, add-on

No impact on ISUP.

11.8.2 Meet-me conference

No impact on ISUP.

11.9 Direct dialling in

No impact on ISUP.

11.10 Diversion services

11.10.1 Call forwarding unconditional

No impact on ISUP.

11.10.2 Call forwarding busy

No impact on ISUP.

11.10.3 Call forwarding no reply

No impact on ISUP.

11.10.4 Call deflection

No impact on ISUP.

11.11 Freephone

No impact on ISUP.

11.12 Malicious call identification

No impact on ISUP.

11.13 Multiple subscriber number

No impact on ISUP.

11.14 Subaddressing

No impact on ISUP.

11.15 Terminal portability

No impact on ISUP.

11.16 Three party

No impact on ISUP.

11.17 User-to-user signalling

11.17.1 User-to-user signalling service 1

If the ECT supplementary service is invoked while user C is alerting, the originating local exchange shall discard the User-to-user information parameter if received in the Answer message or if received, before answer, in a Release message from any remote user (see ETS 300 356-8 [10]).

11.17.2 User-to-user signalling service 2

If the ECT supplementary service is invoked while user C is alerting, the originating local exchange shall discard all the User-to-user information messages received from the remote user (see ETS 300 356-8 [10]) until the Answer message is received.

11.17.3 User-to-user signalling service 3

When the ECT supplementary service is invoked, all User-to-user information messages received from one remote user afterwards are discarded by the originating local exchange until ECT is completed.

For the originating local exchange, ECT can be considered as completed when:

- the Facility message is sent to user B's and user C's destination local exchange, in case ECT is invoked when both calls are answered (see subclause 9.2.1.2.2 item a));
- the Answer message is received from user C, in case ECT is invoked during alerting (see subclause 9.2.1.2.2 item b)).

12 Parameter values (timers)

For this description, timer T_{ECT} is defined as follows:

Table 1

Symbol	Time-out value	Cause for initiation	Normal termination	At expiry
T_{ECT}	2-6 seconds	When LOP (request) message, with the call transfer reference parameter, is sent.	At the receipt of LOP (response) message, with "no loop exists" indication and identical call transfer reference parameter. At the receipt of LOP (response) message, with "simultaneous transfer" and identical call transfer reference parameter. At the receipt of LOP (request) message with identical call transfer reference parameter. At the receipt of LOP (response) messages with "insufficient information" indication and identical call transfer reference parameter, for both calls.	Call transfer may be rejected.

13 Dynamic description

No dynamic description is required.

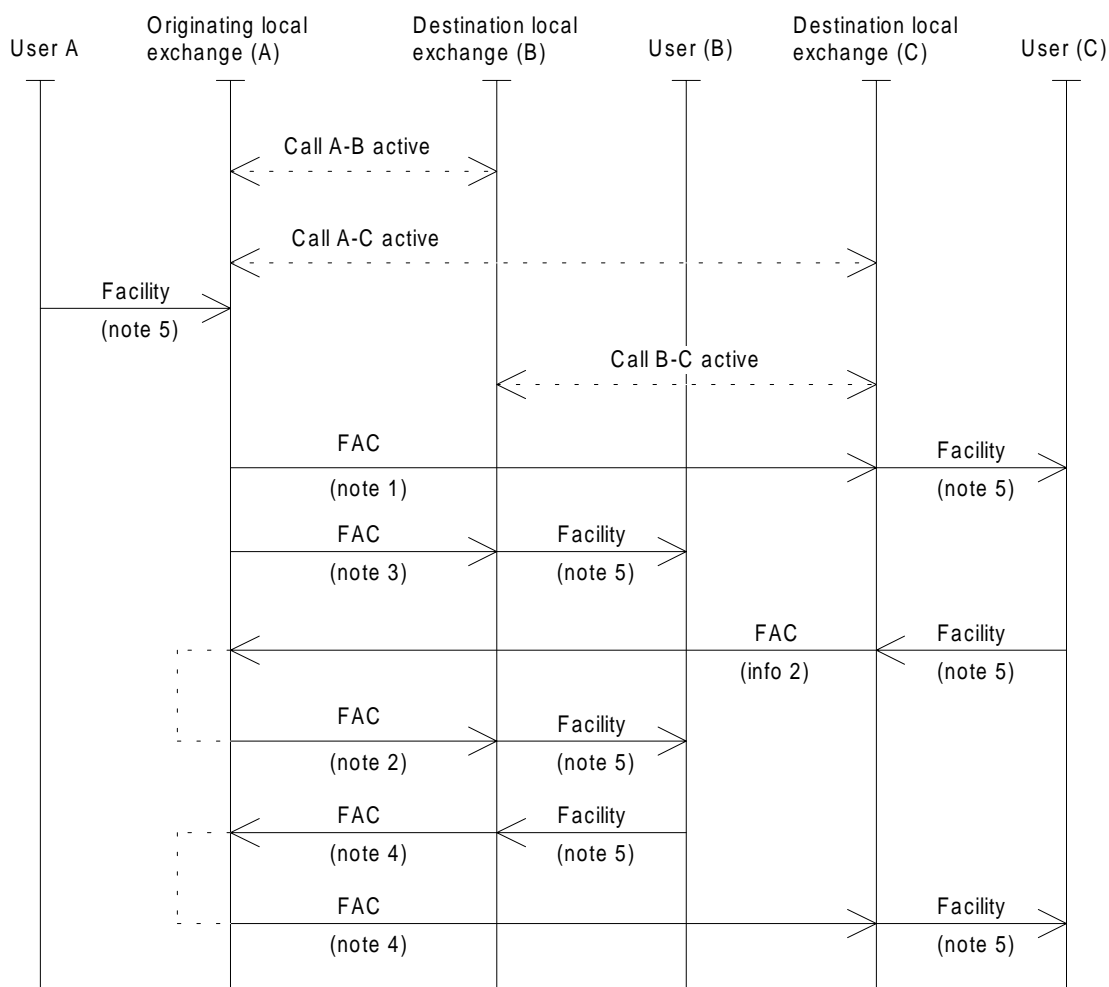
Annex A (informative): Signalling flows

The signalling flows include indication of both DSS1 and ISUP signalling flows. The DSS1 messages are included for illustrative purpose only.

The contents of DSS1 and ISUP messages are not complete. The contents of messages are only shown to the extent they are significant for the understanding of the procedure.

The loop prevention procedure is not shown in any of the following figures.

- Figure A.1 shows the invocation of the ECT supplementary service when both calls, A-B and A-C, are answered.
- Figure A.2 shows the invocation of the ECT supplementary service when call A-B is answered and call A-C is alerting.
- Figure A.3 shows the invocation of the ECT supplementary service when the served user as well as one of the remote users (user C) are located in a private network (private ISDN).
- Figure A.4 shows the invocation of the ECT supplementary service when one remote user (user B) is located inside a private ISDN.



NOTE 1: The generic notification indicator parameter is included with the notification indicator subfield set to "call transfer, active".

The call transfer number parameter is included if user B's remote user number is available (see subclause 9.2.1).

NOTE 2: User C's subaddress, received from the access signalling system, is included in the access transport parameter and transferred to user B.

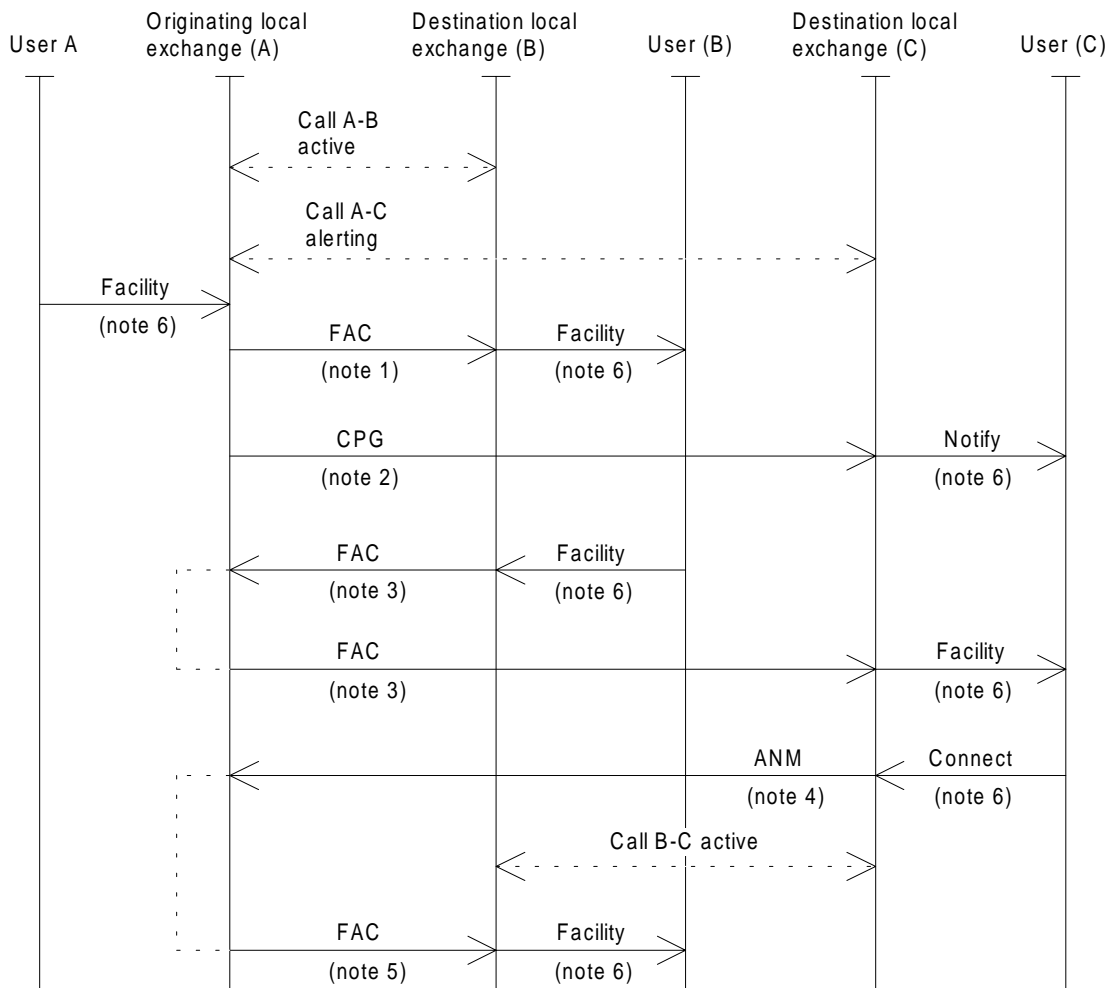
NOTE 3: The generic notification indicator parameter is included with the notification indicator subfield set to "call transfer, active".

The call transfer number parameter is included if user C's remote user number is available (see subclause 9.2.1).

NOTE 4: User B's subaddress, received from the access signalling system, is included in the access transport parameter and transferred to user C.

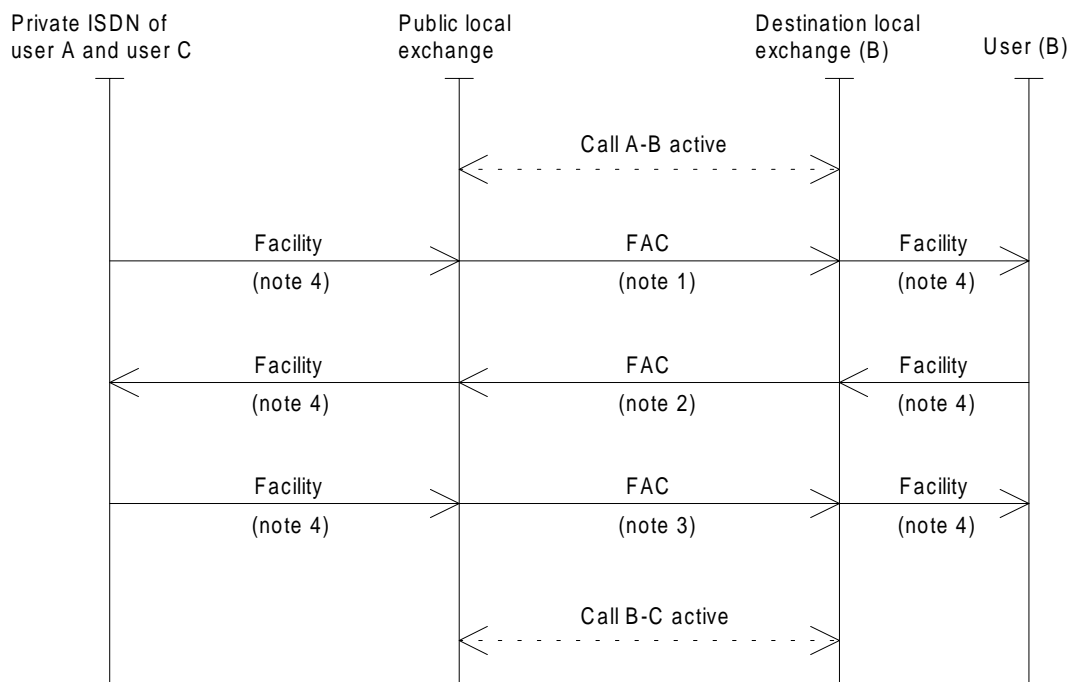
NOTE 5: See ETS 300 369-1 [13], figures A.1 and A.6.

Figure A.1: ECT invocation when both calls (call A-B and call A-C) are answered



- NOTE 1: The generic notification indicator parameter is included with the notification indicator subfield set to "call transfer, alerting". The call transfer number parameter is included if user C's remote user number is available (see subclause 9.2.1).
- NOTE 2: The generic notification indicator parameter is included with the notification indicator subfield set to "call transfer, active". The call transfer number parameter is included if user B's remote user number is available (see subclause 9.2.1).
- NOTE 3: User B's subaddress, received from the access signalling system, is included in the access transport parameter and transferred to user C.
- NOTE 4: User C's connected line identity (see subclause 9.2.1) and subaddress, received from the access signalling system, can be included.
- NOTE 5: The generic notification indicator parameter is included with the notification indicator subfield set to "call transfer, active". The call transfer number parameter is included if user C's connected line identity is available (see subclause 9.2.1). User C's subaddress, if received in the Answer message, is included in the access transport parameter.
- NOTE 6: See ETS 300 369-1 [13], figures A.2, A.3, A.7 and A.8.

Figure A.2: ECT invocation when one call (call A-B) is answered and one call (call A-C) is alerting



NOTE 1: The generic notification indicator parameter is included with the notification indicator subfield set to "call transfer, active".

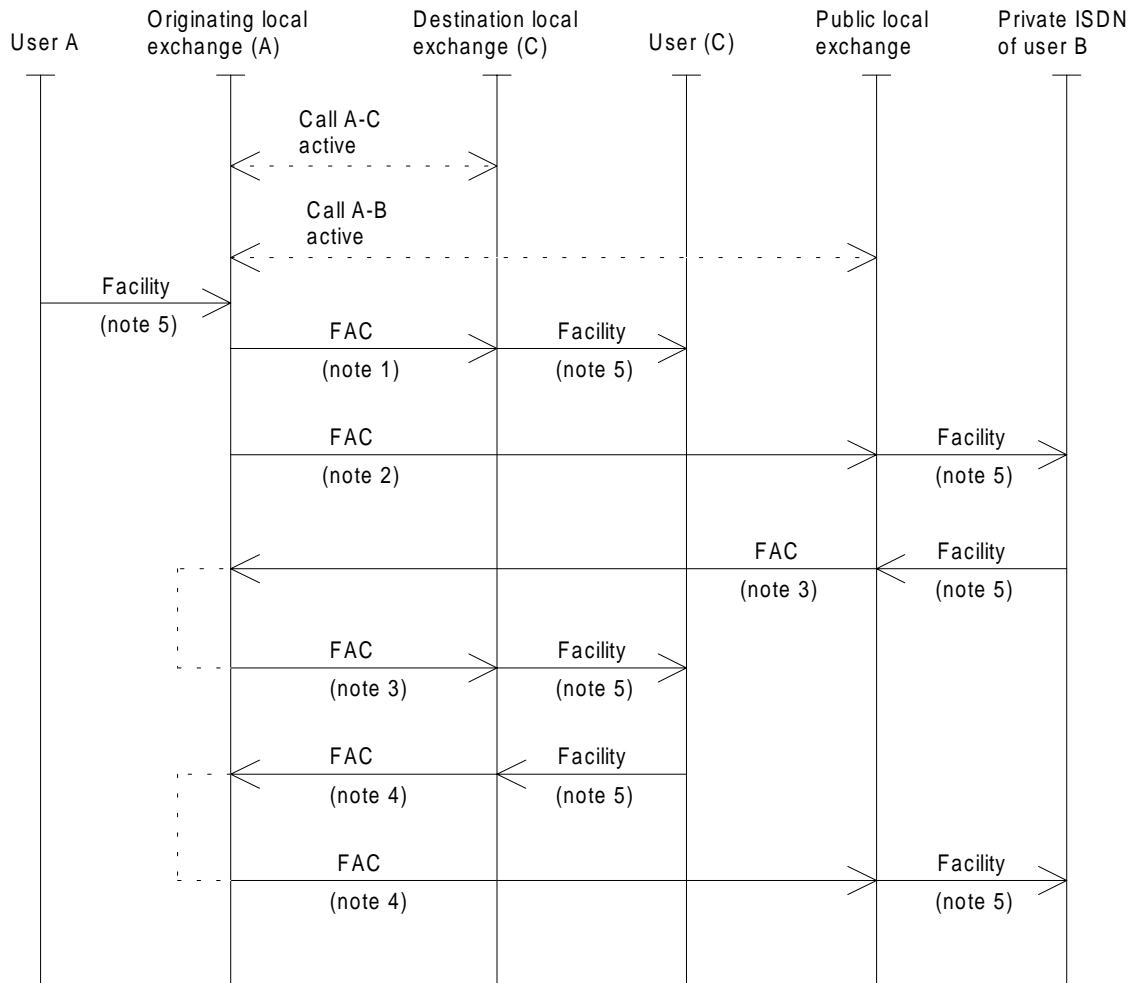
The call transfer number parameter is included if user C's remote user number is received from the access signalling system.

NOTE 2: User B's subaddress, received from the access signalling system, is included in the access transport parameter.

NOTE 3: User C's subaddress, received from the access signalling system, is included in the access transport parameter.

NOTE 4: See ETS 300 369-1 [13], figure A.9.

Figure A.3: ECT invocation when the served user (user A) and one remote user (user C) belong to a private ISDN



NOTE 1: The generic notification indicator parameter is included with the notification indicator subfield set to "call transfer, active".

The call transfer number parameter is included if user B's remote user number is available (see subclause 9.2.1).

NOTE 2: The generic notification indicator parameter is included with the notification indicator subfield set to "call transfer, active".

The call transfer number parameter is included if user C's remote user number is available (see subclause 9.2.1).

NOTE 3: User B's subaddress, received from the access signalling system, is included in the access transport parameter and transferred to user C.

NOTE 4: User C's subaddress, received from the access signalling system, is included in the access transport parameter and transferred to user B.

NOTE 5: See ETS 300 369-1 [13], figure A.10.

Figure A.4: ECT invocation when one remote user (user B) belongs to a private ISDN

Annex B (normative): Coding of the compatibility information

B.1 Coding of the parameter compatibility information parameter

The parameter compatibility information parameter for the call transfer number parameter shall be coded as follows:

- a) Nth upgraded parameter
0100 0101 call transfer number
- b) Instruction indicators
 - bit A Transit at intermediate exchange indicator
0 transit interpretation
 - bit B: Release call indicator
0 do not release call
 - bit C: Send notification indicator
0 do not send notification
 - bit D: Discard message indicator
0 do not discard message (pass on)
 - bit E: Discard parameter indicator
1 discard parameter
 - bits GF: Pass on not possible indicator
10 discard parameter
- c) Extension indicator
1 last octet

The parameter compatibility information parameter for the call transfer reference parameter shall be coded as follows:

- a) Nth upgraded parameter
0100 0011 call transfer reference
- b) Instruction indicators
 - bit A: Transit at intermediate exchange indicator
0 transit interpretation
 - bit B: Release call indicator
0 do not release call
 - bit C: Send notification indicator
0 do not send notification
 - bit D: Discard message indicator
0 do not discard message (pass on)
 - bit E: Discard parameter indicator
0 do not discard parameter
 - bits GF: Pass on not possible indicator
10 discard parameter

- c) Extension indicator
1 last octet

The parameter compatibility information parameter for the generic notification indicator parameter shall be coded as follows:

- a) Nth upgraded parameter
0010 1100 generic notification parameter

- b) Instruction indicators

bit A: Transit at intermediate exchange indicator
0 transit interpretation

bit B: Release call indicator
0 do not release call

bit C: Send notification indicator
0 do not send notification

bit D: Discard message indicator
0 do not discard message (pass on)

bit E: Discard parameter indicator
0 do not discard parameter (pass on)

bits GF: Pass on not possible indicator
10 discard parameter

- c) Extension indicator
1 last octet

The parameter compatibility information parameter for the loop prevention indicators parameter shall be coded as follows:

- a) Nth upgraded parameter
0100 0100 loop prevention indicators

- b) Instruction indicators

bit A: Transit at intermediate exchange indicator
0 transit interpretation

bit B: Release call indicator
0 do not release call

bit C: Send notification indicator
0 do not send notification

bit D: Discard message indicator
0 do not discard message (pass on)

bit E: Discard parameter indicator
0 do not discard parameter (pass on)

bits GF: Pass on not possible indicator
10 discard parameter

- c) Extension indicator
1 last octet

B.2 Coding of the message compatibility information parameter

The message compatibility information parameter for the loop prevention message shall be coded as follows:

a) Instruction indicators

bit	A	Transit at intermediate exchange indicator
	0	transit interpretation

bit	B	Release call indicator
	0	do not release call

bit	C	Send notification indicator
	0	do not send notification

bit	D:	Discard message indicator
	1	discard message

bit	E:	Pass on not possible indicator
	1	discard information

b) Extension indicator

1	last octet
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History

Document history	
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