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European Standard (Telecommunications series)

Integrated Services Digital Network (ISDN);
Supplementary service interactions;
Digital Subscriber Signalling System No. one (DSS1) protocol;
Part 1: Protocol specification

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Contents

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocols and Switching (SPS), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure (TAP).

The present document is part 1 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol interactions of supplementary services within the pan-European Integrated Services Digital Network (ISDN), 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) for the network";
>
> Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".

The present document is an extended and updated version of ETS 300 195-1 (1995) to cover the additional supplementary services Message Waiting Indication (MWI), Outgoing Call Barring (OCB), Completion of Calls on No Reply (CCNR) and Selective Call Forwarding (SCF).

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1 Scope

This first part of EN 300 195 specifies the stage three of the supplementary service interactions 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 [32]) 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 [29]).

The present document specifies the interactions between the Advice of Charge (AOC), Completion of Calls to Busy Subscriber (CCBS), Completion of Calls on No Reply (CCNR), Call Deflection (CD), Call Forwarding Busy (CFB), Call Forwarding No Reply (CFNR), Call Forwarding Unconditional (CFU), Calling Line Identification Presentation (CLIP), Calling Line Identification Restriction (CLIR), Connected Line Identification Presentation (COLP), Connected Line Identification Restriction (COLR), Conference call, add-on (CONF), Explicit Call Transfer (ECT), Closed User Group (CUG), Call Waiting (CW), Direct Dialling In (DDI), Freephone (FPH), Call Hold (HOLD), Malicious Call Identification (MCID), Multiple Subscriber Number (MSN), Message Waiting Indication (MWI), Outgoing Call Barring (OCB), Selective Call Forwarding (SCF), Subaddressing (SUB), Terminal Portability (TP), User-to-User Signalling (UUS) and Three-Party (3PTY) supplementary services.

In addition, the present document specifies the protocol requirements at the T reference point where the supplementary services are provided to the user via a private ISDN.

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

The protocol for individual supplementary services is specified in other ETSs/ENs:

AOC:	ETS 300 182-1 [13];
CCBS:	ETS 300 359-1 [20];
CCNR:	EN 301 065-1 [26];
Diversion:	EN 300 207-1 [17];
CLIP:	ETS 300 092-1 [6];
CLIR:	ETS 300 093-1 [7];
COLP:	ETS 300 097-1 [8];
COLR:	ETS 300 098-1 [9];
CONF:	ETS 300 185-1 [14];
ECT:	ETS 300 369-1 [21];
CUG:	ETS 300 138-1 [11];
CW:	ETS 300 058-1 [3];
DDI:	ETS 300 064-1 [5];
FPH:	ETS 300 210-1 [18];
HOLD:	ETS 300 141-1 [12];
MCID:	ETS 300 130-1 [10];
MSN:	ETS 300 052-1 [1];
MWI:	ETS 300 745-1 [24];
OCB	EN 301 001-1 [25];
SUB:	ETS 300 061-1 [4];
TP:	ETS 300 055-1 [2];
UUS:	ETS 300 286-1 [19];
3PTY:	ETS 300 188-1 [15].

When two or more supplementary services are implemented, the protocol interactions are defined in the present document. These interactions are applicable to the telecommunication services as specified for the individual supplementary services.

The present document is applicable to equipment supporting supplementary services, to be attached at either side of the T reference point or coincident S and T reference point when used as an access to the public ISDN.

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

2   Normative references

References may be made to:

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]   ETS 300 052-1 (1991): "Integrated Services Digital Network (ISDN); Multiple Subscriber Number (MSN) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[2]   ETS 300 055-1 (1991): "Integrated Services Digital Network (ISDN); Terminal Portability (TP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[3]   ETS 300 058-1 (1991): "Integrated Services Digital Network (ISDN); Call Waiting (CW) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[4]   ETS 300 061-1 (1991): "Integrated Services Digital Network (ISDN); Subaddressing (SUB) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[5]   ETS 300 064-1 (1991): "Integrated Services Digital Network (ISDN); Direct Dialling In (DDI) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[6]   ETS 300 092-1 (1992) including amendment A2 (1994): "Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[7]   ETS 300 093-1 (1992): "Integrated Services Digital Network (ISDN); Calling Line Identification Restriction (CLIR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[8]   ETS 300 097-1 (1992) including amendment A1 (1994): "Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[9]   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".

[10]   ETS 300 130-1 (1992): "Integrated Services Digital Network (ISDN); Malicious Call Identification (MCID) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[11]   ETS 300 138-1 (1992) including amendment A1 (1996): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[12]   ETS 300 141-1 (1992): "Integrated Services Digital Network (ISDN); Call Hold (HOLD) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[13]   ETS 300 182-1 (1993): "Integrated Services Digital Network (ISDN); Advice of Charge (AOC) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[14]   ETS 300 185-1 (1993) including amendment A1 (1995): "Integrated Services Digital Network (ISDN); Conference call, add-on (CONF) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[15]   ETS 300 188-1 (1993): "Integrated Services Digital Network (ISDN); Three-Party (3PTY) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[16]   EN 300 196-1 (V1.2): "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".

[17]   EN 300 207-1 (V1.2): "Integrated Services Digital Network (ISDN); Diversion supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[18]   ETS 300 210-1 (1996): "Integrated Services Digital Network (ISDN); Freephone (FPH) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[19]   ETS 300 286-1 (1996): "Integrated Services Digital Network (ISDN); User-to-User Signalling (UUS) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[20]   ETS 300 359-1 (1995): "Integrated Services Digital Network (ISDN); Completion of Calls to Busy Subscriber (CCBS) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[21]   EN 300 369-1 (V1.2): "Integrated Services Digital Network (ISDN); Explicit Call Transfer (ECT) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[22]   ETS 300 402-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1); User-network interface data link layer; Part 1: General aspects [ITU-T Recommendation Q.920 (1993), modified]".

[23]   EN 300 403-1 (V1.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1); Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".

[24]   ETS 300 745-1: "Integrated Services Digital Network (ISDN); Message Waiting Indication (MWI) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[25]   EN 301 001-1 (V1.1): "Integrated Services Digital Network (ISDN); Outgoing Call Barring (OCB) supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

[26]   EN 301 065-1 (V1.1): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Completion of Calls on No Reply (CCNR) supplementary service; Part 1: Protocol specification".

[27]   CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".

[28]   ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".

[29]   CCITT Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[30]   ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means used to describe them".

[31]   ITU-T Recommendation I.221 (1993): "Common specific characteristics of services".

[32]   ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces - Reference configurations".

[33]   CCITT Recommendation X.208 (1988): "Specification of Abstract Syntax Notation One (ASN.1)".

[34]   CCITT Recommendation X.219 (1988): "Remote operations: Model, notation and service definition".

3   Definitions

The following definitions apply:

auxiliary state: A state as defined in EN 300 196-1 [16], subclause 7.1.2. An auxiliary state may exist for a call reference in parallel with the call state.

call control message: A message as defined in subclause 3.1 of ITU-T Recommendation Q.931 as modified by EN 300 403-1 [23], which on sending or receipt causes a change of the call state at either the network or the user. Call control messages also include the INFORMATION and PROGRESS message.

call state: A state as defined in subclause 3.1 of ITU-T Recommendation Q.931 as modified by EN 300 403-1 [23], for either the user or the network, as appropriate. A call state may exist for each call reference (and for each additional responding CEI in the incoming call states).

calling user: The user that initiated a call that has been diverted using the call forwarding or call deflection supplementary services.

CCBS call: A call which is established under control of the CCBS supplementary service.

channels busy: See ITU-T Recommendation I.221 [31].

Connection Endpoint Identifier (CEI): See subclause 3.4.1 of ITU-T Recommendation Q.920 as modified by ETS 300 402-1 [22].

deflected-to user: The user to which a call shall be deflected using the CD supplementary service.

diverted-to network: The network to which the forwarded-to or diverted-to user is attached.

forwarded-to user: The user to which a call shall be forwarded using one of the call forwarding supplementary services.

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [28]definition 308.

invoke component: See EN 300 196-1 [16], 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 operation "xxxx".

ISDN number: A number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [27].

local interaction: An interaction of the protocol for two or more supplementary services where the served user (of all supplementary services) is on the same access.

local interaction for the access: The calls for which the local interaction exists are at the same access.

local interaction for the call: The local interaction exists on a single call, i.e. both supplementary services are invoked for the same call.

local interaction for the CEI: The calls for which the local interaction exists are at the same access, and are identified by the same CEI.

multiple subscriber number: An ISDN number which is part of a set of ISDN numbers assigned to a user.

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

network determined user busy: See ITU-T Recommendation I.221 [31].

No Impact (NI): The interaction between the two identified supplementary services contains no requirements for the protocol over and above the requirements of the specification for each individual supplementary service.

> NOTE: Other aspects of interactions that do not affect the DSS1 protocol are covered in the service description for the relevant supplementary services.

Not Applicable (NA): The interaction between the two identified supplementary services is outside the scope of the present document, e.g. the interaction is between the supplementary service and itself, and is therefore covered in the specification for the individual supplementary service.

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

reject component: See EN 300 196-1 [16], subclause 8.2.2.4.

remote interaction: An interaction of the protocol for two or more supplementary services where one user is the served user for one supplementary service and (for the same call) the remote user for another supplementary service. The interaction for the served user's supplementary service exists at the remote user.

remote user: The DSS1 protocol entity at the user side of the user-network interface which is involved in an instance of an identified supplementary service, but which has no control of it.

return error component: See EN 300 196-1 [16], subclause 8.2.2.3. Where reference is made to a "xxxx" return error component, a return error component is meant which is related to a "xxxx" invoke component.

return result component: See EN 300 196-1 [16], subclause 8.2.2.2. Where reference is made to a "xxxx" return result component, a return result component is meant which is related to a "xxxx" invoke component.

served user: The DSS1 protocol entity at the user side of the user-network interface used to request and control an identified supplementary service.

service; telecommunication service: See ITU-T Recommendation I.112 [28], definition 201.

supplementary service: See ITU-T Recommendation I.210 [30], subclause 2.4.

user: The DSS1 protocol entity at the user side of the user-network interface when a coincident S and T reference point applies.

4   Abbreviations

The following abbreviations apply:

3PTY	Three-Party
AOC	Advice of Charge
AOC-E	Advice of Charge at the End of the call
AOC-D	Advice of Charge During the call
AOC-S	Advice of Charge at call Set-up time
ASN.1	Abstract Syntax Notation one
CCBS	Completion of Calls to Busy Subscriber
CCNR	Completion of Calls on No Reply
CD	Call Deflection
CEI	Connection Endpoint Identifier
CFB	Call Forwarding Busy
CFNR	Call Forwarding on No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
CONF	Conference call, add-on
CUG	Closed User Group
CW	Call Waiting
DCR	Dummy Call Reference
DDI	Direct Dialling In
DSS1	Digital Subscriber Signalling System No. one
ECT	Explicit Call Transfer
FPH	Freephone
HOLD	Call Hold
ISDN	Integrated Services Digital Network
MCID	Malicious Call Identification
MSN	Multiple Subscriber Number
MWI	Message Waiting Indication
NA	Not Applicable
NI	No Impact
OCB	Outgoing Call Barring
OCB-F	Outgoing Call Barring: Fixed
OCB-UC	Outgoing Call Barring: User Controlled
SCF	Selective Call Forwarding
SUB	Subaddressing
TP	Terminal Portability
UUI	User-to-User Information
UUS	User-to-User Signalling

5 Description of supplementary service interactions

Figure 1 gives an overview of the interactions between pairs of supplementary services. Only if the interaction is other than "Not Applicable (NA)" or "No Impact (NI)", a reference is given to a subclause in the present document which details this particular interaction.

	AOC-S	AOC-D	AOC-E	CCBS	CD	CFB	CFNR	CFU	CLIP	CLIR	COLP	COLR	CONF	ECT	CUG	CW	DDI	FPH	HOLD	MCID	MSN	MWI	OCB	SUB	TP	UUS	3PTY	CCNR	SCF
AOC-S	NA																												
AOC-D	NI	NA																											
AOC-E	NI	5.1	NA																										
CCBS	5.3	5.3	5.3	NA																									
CD	5.4	5.4	5.4	NI	NA																								
CFB	5.5	5.5	5.5	NI	NA	NA																							
CFNR	5.6	5.6	5.6	NI	NA	NA	NA																						
CFU	5.7	5.7	5.7	NI	NA	NA	NA	NA																					
CLIP	NI	NI	NI	5.38	NI	NI	NI	NI	NA																				
CLIR	NI	NI	NI	5.39	NI	NI	NI	NI	NI	NA																			
COLP	NI	NI	NI	NI	5.18	5.21	5.24	5.27	NI	NI	NA																		
COLR	NI	NI	NI	NI	5.19	5.22	5.25	5.28	NI	NI	NI	NA																	
CONF	5.9	5.9	5.9	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.13																
ECT	5.2	5.2	5.2	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.17	NA															
CUG	NI	NI	NI	5.40	NI	NI	NI	NI	NI	NI	NI	NI	5.12	5.44	NA														
CW	NI	NI	NI	5.47	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NA													
DDI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NA												
FPH	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.43	NI	NI	NI	NI	NI	NI	NI											
HOLD	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.11	NI	NI	NI	NI	NI	NA										
MCID	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.46	5.34	NI	NI	NI	NI	NI	NA									
MSN	NI	NI	NI	5.41	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NA								
MWI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.49	NA							
OCB	NI	NI	NI	5.50	5.55	5.52	5.53	5.54	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.51	NI	5.56						
SUB	NI	NI	NI	5.42	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NA					
TP	5.10	5.10	5.10	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.14	5.45	NI	NI	NI	NI	5.31	NI	NI	NI	NI	NI	NA				
UUS	NI	NI	NI	5.37	5.20	5.23	5.26	5.29	NI	NI	NI	NI	5.16	5.36	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.48	NA			
3PTY	5.8	5.8	5.8	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.15	5.35	5.33	NI	NI	NI	5.32	NI	NI	NI	NI	NI	5.30	NI	NA		
CCNR (1)	5.57	5.57	5.57	5.62	NI	NI	NI	NI	5.59	5.60	NI	NI	NI	NI	5.61	5.58	NI	NI	NI	NI	5.63	NI	5.66	5.64	NI	5.65	NI	NA	
SCF (2)	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	5.67	NI	NI	NI	NI	NI	NA
	AOC-S	AOC-D	AOC-E	CCBS	CD	CFB	CFNR	CFU	CLIP	CLIR	COLP	COLR	CONF	ECT	CUG	CW	DDI	FPH	HOLD	MCID	MSN	MWI	OCB	SUB	TP	UUS	3PTY	CCNR note 1	SCF note 2

NOTE 1: The procedures for the CCNR supplementary service are similar to the procedures specified in the CCBS standard. Therefore, where possible, the terms (e.g. CCBSErase invoke component or CCBSReference parameter) as defined for the CCBS supplementary service are used and in some cases a reference to the subclauses for the interactions between the CCBS and other supplementary services has been made.

NOTE 2: "NI" in the case of SCF is to be interpreted as follows: depending on the type of forwarding which is performed, the interactions between other supplementary services and CFU or CFB or CFNR apply.

Figure 1: Overview of supplementary service interactions

5.1 The AOC-D and AOC-E supplementary services

If the AOC-D and AOC-E supplementary services are activated for the same call, the network shall only send AOC-E type charging information when the call is released. AOC-E information is sent according to subclause 9.2.3.1 of ETS 300 182-1 [13].

5.2 The AOC and ECT supplementary services

5.2.1 Coding requirements

Table 1 shows the definition of the operation and errors required for the interaction between the AOC and the diversion and between the AOC and ECT supplementary services, using Abstract Syntax Notation one (ASN.1) as defined in CCITT Recommendation X.208 [33] and using the OPERATION macro as defined in CCITT Recommendation X.219 [34], figure 4.

The formal definition of the component types to encode this operation and the errors is provided in EN 300 196-1 [16], annex D, clause D.1.

The inclusion of components in Facility information elements is defined in EN 300 196-1 [16], subclause 11.2.2.1.

Table 1: ASN.1 description of the IdentificationOfCharge operation

```
Advice-of-Charge-Interaction-Operations {ccitt identified-organization etsi(0) 195
                              operations-and-errors(1)}

DEFINITIONS EXPLICIT TAGS ::=

BEGIN

EXPORTS              IdentificationOfCharge;

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

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

                     ChargingAssociation
                     FROM Advice-of-Charge-Operations
                         {ccitt identified-organization etsi(0) 182 operations-and-errors(1)};

IdentificationOfCharge  ::= OPERATION
                         ARGUMENT    ChargingAssociation
                         ERRORS {    notSubscribed,
                                     notAvailable,
                                     supplementaryServiceInteractionNotAllowed}

identificationOfCharge  IdentificationOfCharge  ::= localValue 37

END -- of Advice-of-Charge-Interaction-Operations
```

5.2.2   Signalling procedures at the coincident S and T reference point

5.2.2.1   Delivery of charging information to the transferring user

5.2.2.1.1   Normal procedures

For each call for which the AOC-D supplementary service is activated, the network shall not send any charging information to the served user after that call has been transferred. When the call transfer is completed and the network releases the served user, the network shall send AOC-D charging information in one of the call control messages clearing that call. If the served user is charged for a part of the transferred call, the network shall set the TypeOfChargingInfo = "subTotal".

If the AOC-S supplementary service is activated and if the charging rate is changed after the call has been transferred, the network shall not send any information about the changed charging rate to the served user.

As a network option, the network shall send AOC-E type charging information pertaining to a transferred call, after the transferred call is released. In this case, the charging information shall be transferred using the procedures specified in subclause 9.2.4 of ETS 300 182-1 [13]. If the served user activates the AOC-E supplementary service or if the AOC-E supplementary service is activated for all calls and the user invokes the ECT supplementary service, the user may in addition send an IdentificationOfCharge invoke component containing the argument ChargingAssociation to the network. In order to associate the IdentificationOfCharge invoke component with the call to be transferred, the user shall include the IdentificationOfCharge invoke component within the same FACILITY message that contains either the EctExecute or the ExplicitEctExecute invoke component, as defined in subclause 7.2 of EN 300 369-1 [21].

The user shall choose for each call either the PartyNumber or the ChargeIdentifier type of the ChargingAssociation, when the ChargingAssociation parameter is used.

If the network receives the IdentificationOfCharge invoke component and the network supports the option to send AOC-E charging information in connection with the ECT supplementary service, the network shall retain the provided ChargingAssociation parameter.

When the transferred call is released, the network shall send the retained ChargingAssociation parameter together with the AOC-E charging information to the served user and subsequently release the retained ChargingAssociation parameter. The ChargingAssociation parameter provides additional information for the user to identify the call to which a specific AOC-E charging information is related.

In the case that the user has subscribed to the MSN supplementary service, the network shall return the served user's number associated with the call reference on which the EctExecute or ExplicitEctExecute invoke component was sent in the Called party number information element when the AOC-E charging information is sent to the user.

When the network offers the option of sending charging information for the transferred call and if the served user is charged for both calls (before the ECT supplementary service is invoked) and if the AOC-E supplementary service is activated for each call, then the network shall send the overall charges for both calls to the served user when the transferred call is released. If the AOC-E supplementary service is only activated for one call, then the network shall only send the charge for this call to the served user when the transferred call is released.

The network shall send the charging information in the Facility information element and indicate the following information:

-   AOCECurrencyInfo, and optionally the AOCEBillingId = "callTransfer", in an AOCECurrency invoke component; or

-   AOCEChargingUnitInfo, and optionally the AOCEBillingId = "callTransfer", in an AOCEChargingUnit invoke component.

5.2.2.1.2   Exceptional procedures

If, on receipt of an IdentificationOfCharge invoke component, the user has not subscribed to the AOC-E supplementary service, the network shall send an IdentificationOfCharge return error component indicating "notSubscribed" to the user according to the procedures of subclause 8.3.1.1.2 of EN 300 196-1 [16].

If a user sends an IdentificationOfCharge invoke component to the network and the user has subscribed to AOC-E supplementary service on a per call basis but the user has not activated the AOC-E supplementary service for this particular call, the network shall send an IdentificationOfCharge return error component to the user according to the procedures of subclause 8.3.1.1.2 of EN 300 196-1 [16] "notAvailable".

5.2.3   Procedures for interworking with private ISDNs

The procedures of subclause 5.2.2. shall apply.

5.3   The AOC and CCBS supplementary services

5.3.1   Coding requirements

No impact.

5.3.2   Signalling procedures at the coincident S and T reference point

5.3.2.1   Requesting an AOC supplementary service

5.3.2.1.1   Normal operation

The network shall store the accepted request for the AOC supplementary service for the original call and apply it to the CCBS call established by this particular CCBS instance as identified for this user.

When this particular CCBS instance is completed (e.g. the CCBS call is successfully established, or the CCBS supplementary service is cancelled by the user), the network shall release the retained AOC request.

5.3.2.1.2   Exceptional procedures

The procedures specified in subclause 9.1.2 of ETS 300 182-1 [13] shall apply.

5.3.2.2   Delivery of charging information to the user

5.3.2.2.1   Normal operation

No impact.

> NOTE: Charging information sent by the network to the user for the original call and the CCBS call will follow the procedures specified for the relevant AOC supplementary services according to subclauses 9.2.1.1, 9.2.2.1 and 9.2.3.1 of ETS 300 182-1 [13].

5.3.2.2.2   Exceptional procedures

No impact.

> NOTE: The procedures defined in subclauses 9.2.1.2, 9.2.2.2 and 9.2.3.2 of ETS 300 182-1 [13] will apply.

5.3.3   Procedures for interworking with private ISDNs

5.3.3.1   Requesting an AOC supplementary service by the private network

5.3.3.1.1   Normal operation

To request an AOC supplementary service for the CCBS call the private network shall apply the procedures as defined in subclause 9.1.1 of ETS 300 182-1 [13].

> NOTE: If an AOC supplementary service was requested for the original call, then the private network will include a ChargingRequest invoke component indicating the same service in the SETUP message used to establish the CCBS call.

The network shall, upon receiving the ChargingRequest invoke component, check if the user has access to the requested AOC supplementary service and, if so, send a ChargingRequest return result component in a FACILITY message or an appropriate call control message to the private network.

5.3.3.1.2   Exceptional procedures

The procedures defined in subclause 9.1.2 of ETS 300 182-1 [13] shall apply.

5.3.3.2   Delivery of charging information to the private network

5.3.3.2.1   Normal operation

When the network sends charging information to the private network, the procedures specified in subclauses 9.2.1.1, 9.2.2.1 and 9.2.3.1 of ETS 300 182-1 [13] shall apply.

5.3.3.2.2   Exceptional procedures

The procedures defined in subclauses 9.2.1.2, 9.2.2.2 and 9.2.3.2 of ETS 300 182-1 [13] shall apply.

5.4   The AOC and CD supplementary services

5.4.1   Coding requirements

See subclause 5.2.1.

5.4.2   Signalling procedures at the coincident S and T reference point

The invocation of the following supplementary services is not applicable in combination with the invocation of the CD supplementary service:

- the AOC-S supplementary service; and

- the AOC-D supplementary service.

As a network option, if the AOC-E supplementary service is activated for all calls, the network shall send charging information to the deflecting (served) user when a deflected call is released.

5.4.2.1 Delivery of charging information to the deflecting user

5.4.2.1.1 Normal operation

If the AOC-E supplementary service is activated for all calls and the user invokes the CD supplementary service, the user may in addition send an IdentificationOfCharge invoke component containing the argument ChargingAssociation to the network. In order to associate the IdentificationOfCharge invoke component with the call to be deflected, the user shall include the IdentificationOfCharge invoke component within the same message that contains the CallDeflection invoke component as defined in subclause 7.2 of EN 300 207-1 [17].

The user shall choose for each call either the PartyNumber or the ChargeIdentifier type of the ChargingAssociation, when the ChargingAssociation parameter is used.

If the network receives the IdentificationOfCharge invoke component and the network supports the option to send AOC-E charging information in connection with the CD supplementary service, the network shall retain the provided ChargingAssociation parameter.

When the deflected call is released, and the network supports the option to send charging information to the deflecting user when a deflected call is released then the network shall send the retained ChargingAssociation parameter to the user, together with the AOC-E charging information and subsequently release the retained ChargingAssociation parameter. The ChargingAssociation parameter provides additional information for the user to identify the call to which a specific AOC-E charging information is related.

The network shall include the charging information in an invoke component within the Facility information element, to be conveyed in a FACILITY message, as specified in subclause 9.2.4 of ETS 300 182-1 [13].

The invoke component shall contain the following charging information:

- AOCECurrencyInfo and optionally the AOCEBillingId, in an AOCECurrency invoke component; or

- AOCEChargingUnitInfo and optionally the AOCEBillingId, in an AOCEChargingUnit invoke component.

The network shall set the AOCEBillingId = "callDeflection".

In the case that the user has subscribed to the MSN supplementary service, the network shall return the called party number of the deflected call in the Called party number information element when the AOC-E charging information is sent to the user.

5.4.2.1.2 Exceptional procedures

See subclause 5.2.2.1.2.

5.4.3 Procedures for interworking with private ISDNs

The invocation of the following supplementary services is not applicable in combination with the invocation of the CD supplementary service:

- the AOC-S supplementary service; and

- the AOC-D supplementary service.

5.4.3.1 Delivery of charging information to the private network when the CD supplementary service is provided to the private ISDN

As a network option, if the AOC-E supplementary service is activated for all calls, the network shall send charging information to the deflecting (served) user when a deflected call is released.

If the network supports the option to send charging information to the deflecting private network when a deflected call is released and the private network has invoked the CD supplementary service by sending a CallDeflection invoke component to the network, then the procedure of subclause 5.4.2.1 shall apply. In addition, if the DDI supplementary service applies, the network shall return the called party number of the deflected call in the Called party number information element when the AOC-E charging information is sent to the user.

5.4.3.2   Delivery of charging information to the private network when partial rerouteing applies

As a network option, if the AOC-E supplementary service is activated for all calls or activated on a per-call basis, the network shall send charging information to the deflecting (served) user when a deflected call is released.

5.4.3.2.1   Normal operation

If the private network activates the AOC-E supplementary service on a per-call basis, the ChargingRequest invoke component (as defined in subclause 7.2 of ETS 300 182-1 [13]) shall also be included within the same FACILITY message that contains the CallRerouteing invoke component as defined in subclause 7.2 of EN 300 207-1 [17], with the ChargingCase parameter indicating "chargingAtTheEndOfACall".

If the AOC-E supplementary service is activated and the private network invokes the partial rerouteing procedures, the private network may in addition send an IdentificationOfCharge invoke component containing the argument ChargingAssociation to the network. In order to associate the IdentificationOfCharge invoke component with the call to be diverted, the private network shall include the IdentificationOfCharge invoke component within the same FACILITY message that contains the CallRerouteing invoke component as defined in subclause 7.2 of EN 300 207-1 [17].

When the ChargingAssociation parameter is used, the private network shall, on a per-call basis, choose either the PartyNumber or the ChargeIdentifier type of the ChargingAssociation.

If the network receives the IdentificationOfCharge invoke component and the network supports the option to send AOC-E charging information in connection with the CD supplementary service, the network shall retain the provided ChargingAssociation parameter.

When the diverted call is released, and the network supports the option to send charging information to the deflecting user when a deflected call is released, then the network shall send the retained ChargingAssociation parameter to the private network, together with the AOC-E charging information and subsequently release the retained ChargingAssociation parameter. The ChargingAssociation parameter provides additional information for the user to identify the call to which a specific AOC-E charging information is related.

The network shall include the charging information in an invoke component within the Facility information element, to be conveyed in a FACILITY message, as specified in subclause 9.2.4 of ETS 300 182-1 [13].

The invoke component shall contain the following charging information:

- AOCECurrencyInfo and optionally the AOCEBillingId, in an AOCECurrency invoke component; or

- AOCEChargingUnitInfo and optionally the AOCEBillingId, in an AOCEChargingUnit invoke component.

If the ReroutingReason parameter received in the CallRerouteing invoke component indicated "cfu" or "unknown", then the network shall set the AOCEBillingId = "callForwardingUnconditional".

If the ReroutingReason parameter received in the CallRerouteing invoke component indicated "cfb", then the network shall set the AOCEBillingId = "callForwardingBusy".

If the ReroutingReason parameter received in the CallRerouteing invoke component indicated "cfnr", then the network shall set the AOCEBillingId = "callForwardingNoReply".

If the ReroutingReason parameter received in the CallRerouteing invoke component indicated "cd" or "cdImmediate", then the network shall set the AOCEBillingId = "callDeflection".

5.4.3.2.2   Exceptional procedures

See subclause 5.2.2.1.2.

5.5 The AOC and CFB supplementary services

5.5.1 Coding requirements

See subclause 5.2.1.

5.5.2 Signalling procedures at the coincident S and T reference point

The invocation of the following supplementary services is not applicable in combination with the invocation of the CFB supplementary service:

- the AOC-S supplementary service; and

- the AOC-D supplementary service.

As a network option, if the AOC-E supplementary service is activated for all calls and the CFB supplementary service has been activated, the network shall send charging information to the forwarding (served) user when a forwarded call is released.

5.5.2.1 Delivery of charging information to the forwarding user

5.5.2.1.1 Normal operation

If the network supports the option to send charging information to the forwarding user when a forwarded call is released, then the network shall include the charging information in an invoke component within the Facility information element, to be conveyed in a FACILITY message, as specified in subclause 9.2.4 of ETS 300 182-1 [13].

The invoke component shall contain the following charging information:

- AOCECurrencyInfo and optionally the AOCEBillingId, in an AOCECurrency invoke component; or

- AOCEChargingUnitInfo and optionally the AOCEBillingId, in an AOCEChargingUnit invoke component.

The network shall set the AOCEBillingId = "callForwardingBusy".

In the case that the user has subscribed to the MSN supplementary service, the network shall return the called party number of the diverted call in the Called party number information element when the AOC-E charging information is sent to the user.

5.5.2.1.2 Exceptional procedures

No impact.

5.5.3 Procedures for interworking with private ISDNs

The invocation of the following supplementary services is not applicable in combination with the invocation of the CFB supplementary service:

- the AOC-S supplementary service; and

- the AOC-D supplementary service.

5.5.3.1 Delivery of charging information to the private network when the CFB supplementary service is provided to the private ISDN

As a network option, if the AOC-E supplementary service is activated for all calls and the CFB supplementary service has been activated, the network shall send charging information to the forwarding (served) user when a forwarded call is released.

If the network supports the option to send charging information to the forwarding private network when a forwarded call is released and the private network has activated the CFB supplementary service for the whole private network, then the procedures of subclause 5.5.2.1 shall apply. In addition, if the DDI supplementary service applies, the network shall return the called party number of the diverted call in the Called party number information element when the AOC-E charging information is sent to the user.

5.5.3.2 Delivery of charging information to the private network when partial rerouteing applies

The procedures of subclause 5.4.3.2 shall apply.

5.6 The AOC and CFNR supplementary services

The procedures of subclause 5.5 shall apply with the exception that the network shall set the AOCEBillingId = "callForwardingNoReply".

5.7 The AOC and CFU supplementary services

The procedures of subclause 5.5 shall apply with the exception that the network shall set the AOCEBillingId = "callForwardingUnconditional".

5.8 The AOC and 3PTY supplementary services

5.8.1 Coding requirements

No impact.

5.8.2 Signalling procedures at the coincident S and T reference point

5.8.2.1 Normal operation

If the served user has activated any of the AOC supplementary services, the network shall send charging information as for a normal call to the user, i.e. for those calls originated by the served user as defined in subclauses 9.2.1.1, 9.2.2.1 and 9.2.3.1 of ETS 300 182-1 [13].

If the network option to indicate charges for the use of the conference bridge applies, then the network shall send this charging information to the user, only when an AOC supplementary service is activated for the call (identified by its call reference) that is used to convey the Begin3PTY invoke component.

5.8.2.2 Exceptional procedures

No impact.

5.8.3 Procedures for interworking with private ISDNs

No impact.

## 5.9	The AOC and CONF supplementary services

### 5.9.1	Coding requirements

No impact.

### 5.9.2	Signalling procedures at the coincident S and T reference point

#### 5.9.2.1	Normal operation

The network shall use the call reference of the conference call when it sends charging information to a conference-controlling user (local interaction for the call). In this case, the network shall send charging information related to the whole conference.

If the user invokes the CONF supplementary service from a call in the (Active call state, Idle auxiliary state) or (Active call state, Call Held auxiliary state) and an AOC supplementary service is requested for the resulting conference call, the user shall include the ChargingRequest invoke component in the same FACILITY message that contains the BeginCONF invoke component as defined in clause 7 of ETS 300 185-1 [14]. The user shall indicate in the ChargingCase parameter which AOC supplementary service is requested.

If a remote user is split from the conference, the network shall use the call reference established for the private communication when sending charging information for that connection if an AOC supplementary service is activated. When the private communication is terminated, the network shall send the relevant charging information as for a call in the clearing phase (see subclause 9.2.3 of ETS 300 182-1 [13]). If the AOC-D supplementary service is activated for the private communication, the network shall set the TypeOfChargingInfo = "total" when charging information is sent in a call control message terminating the private communication.

#### 5.9.2.2	Exceptional procedures

If a user sends a ChargingRequest invoke component requesting an AOC supplementary service in the FACILITY message together with any invoke component defined for the CONF supplementary service (see clause 7 of ETS 300 185-1 [14]) except the BeginCONF invoke component, then the network shall respond with a ChargingRequest return error component indicating "notAvailable" to the user.

If the network receives a ChargingRequest invoke component together with a BeginCONF invoke component and the network does not support the AOC supplementary service in conjunction with the CONF supplementary service, then the network shall respond with a ChargingRequest return error component indicating "notAvailable" to the user.

If a user sends a ChargingRequest invoke component requesting an AOC supplementary service in the FACILITY message together with the BeginCONF invoke component and invocation of the CONF supplementary service is not accepted by the network (e.g. no resources are available), then the network shall not activate the requested AOC supplementary service and respond with a ChargingRequest return error component indicating "notAvailable" to the user.

### 5.9.3	Procedures for interworking with private ISDNs

The procedures of subclause 5.9.2 shall apply.

5.10   The AOC and TP supplementary services

5.10.1   Coding requirements

No impact.

5.10.2   Signalling procedures at the coincident S and T reference point

5.10.2.1   In the call suspension phase

5.10.2.1.1   Normal operation

If a served user of the AOC-D supplementary service suspends a call (local interaction for the call), then as a network option, the network shall send charging information to the served user in the SUSPEND ACKNOWLEDGE message. In that case, the Facility information element shall be included in the SUSPEND ACKNOWLEDGE message containing the cumulative charge (i.e. the sub-total charge incurred up to the moment when the call is suspended).

The network shall send one of the following types of charging information to the served user:

-    AOCDCurrencyInfo in an AOCDCurrency invoke component; or

-    AOCDChargingUnitInfo in an AOCDChargingUnit invoke component.

The TypeOfChargingInfo shall be set to "subtotal".

   NOTE 1: Charging can continue during the time the call is suspended (while timer T307 is running). If the served
            user does not resume the call before T307 expires, the charging information recorded for this call may be
            different from the charging information sent to the served user either prior to or during the sending of the
            SUSPEND ACKNOWLEDGE message. This also applies if the remote user clears the call during the
            period of suspension.

In some cases the charging information cannot be available in time to be included in the SUSPEND ACKNOWLEDGE message sent to the served user.

   NOTE 2: This may happen when the charging information resides in an ISDN entity that is remote from the network
            generating the SUSPEND ACKNOWLEDGE message.

In this case the network shall send the Facility information element in the SUSPEND ACKNOWLEDGE message to indicate to the served user that the charging information is not available (i.e. "chargeNotAvailable") and the call suspension shall continue as defined in ETS 300 055-1 [2].

5.10.2.1.2   Exceptional procedures

No impact.

5.10.2.2   In the call resume phase

5.10.2.2.1   Normal operation

When a served user resumes a call, the network shall also resume sending of charging information to the user if the AOC-D supplementary service is activated for the call. In addition, charging information may, as a network option, be sent to the served user in the RESUME ACKNOWLEDGE message. In that case, the network shall include the Facility information element in the RESUME ACKNOWLEDGE message, containing one of the following types of charging information:

- AOCDCurrencyInfo in an AOCDCurrency invoke component; or

- AOCDChargingUnitInfo in an AOCDChargingUnit invoke component.

The TypeOfChargingInfo shall be set to "subtotal".

In some cases the charging information cannot be available in time to be included in the RESUME ACKNOWLEDGE message sent to the served user.

> NOTE: This may happen when the charging information resides in an ISDN entity that is remote from the network generating the RESUME ACKNOWLEDGE message.

In this case the network shall send the Facility information element in the RESUME ACKNOWLEDGE message to indicate to the served user that the charging information is not available (i.e. "chargeNotAvailable") and normal call handling shall continue. When the charging information has become available after a call has been resumed, the network shall send a FACILITY message to the served user containing the charging information shown above.

If the AOC-S supplementary service is activated for the call, the network shall send charging rates applied to the call in the first message sent to the served user after call resumption, if the charging rate has been changed during the time the call was suspended.

As a network option, the network shall transfer charging information to the served user even though the network cannot resume a suspended call (within the time the network retains the call identity of the suspended call). The network shall include the Facility information element in the RESUME REJECT message if the served user attempts to resume the call before timer T307 expires. The network shall retain the charging information for the suspended call as long as it retains the call identity of the suspended call. The following cases are applicable:

a) if the remote user disconnects while the call is suspended:

Either the AOC-D or the AOC-E type charging information can be provided, if the supplementary service is activated for the call. If the AOC-D supplementary service is activated, the network shall set the TypeOfChargingInfo = "total" when charging information is sent to the served user.

b) if resumption is rejected for any other reason:

Only cumulative charging during a call can be provided, if the supplementary service is activated for the call (i.e. the served user attempts to resume the call a number of times before the call retention timer expires). If the AOC-D supplementary service is activated, the network shall set the TypeOfChargingInfo = "subTotal" when charging information is sent to the served user.

5.10.2.2.2   Exceptional procedures

No impact.

5.10.3   Procedures for interworking with private ISDNs

No impact.

5.11   The CONF and HOLD supplementary services

5.11.1   Coding requirements

Table 2 shows the definition of the operation IdentifyConferee using ASN.1 as defined in CCITT Recommendation X.208 [33] and using the OPERATION macro as defined in CCITT Recommendation X.219 [34], figure 4/X.219.

The formal definition of the component type to encode this operation is provided in EN 300 196-1 [16], annex D, clause D.1.

The inclusion of components in Facility information elements is defined in EN 300 196-1 [16], subclause 11.2.2.1.

Table 2: ASN.1 description of the IdentifyConferee operation

```
Conference-Add-On-Operations {ccitt identified-organization etsi(0) 195
                        conference-add-on-operations(3)}

DEFINITIONS EXPLICIT TAGS ::=

BEGIN

EXPORTS              IdentifyConferee;

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

                     PartyId
                     FROM Conference-Add-On-Operations
                         {ccitt identified-organization etsi(0) 185 operations-and-errors(1)};

IdentifyConferee     ::= OPERATION
                             ARGUMENT    PartyId

identifyConferee     IdentifyConferee          ::= localValue 49

END -- of Conference-Add-On-Operations
```

5.11.2   Signalling procedures at the coincident S and T reference point

5.11.2.1   Invocation of the HOLD supplementary service by the served user of the CONF supplementary service

5.11.2.1.1   Normal operation

If the conference call is held or retrieved by the served user of the CONF supplementary service (local interaction for the call), the network shall not apply the notification procedures specified in ETS 300 141-1 [12], subclauses 9.2.1 and 9.4.1.

5.11.2.1.2   Exceptional procedures

No impact.

5.11.2.2 Invocation of the HOLD supplementary service by the remote user of the CONF supplementary service

5.11.2.2.1 Normal operation

If, during operation of the CONF supplementary service, a remote user uses the HOLD supplementary service (remote interaction), then notifications concerning the HOLD supplementary service shall be sent as normal to the served user, with the following addition:

- the network shall send the Notification indicator information to the served user in a FACILITY message according to the procedures of subclause 8.3.1.1 of EN 300 196-1 [16];

- the network shall include in the same message a Facility information element containing an IdentifyConferee invoke component. The IdentifyConferee operation is specified in table 2. The PartyId parameter shall indicate the remote user pertaining to the provided notification.

5.11.2.2.2 Exceptional procedures

No impact.

5.11.3 Procedures for interworking with private ISDNs

The procedures of subclause 5.11.2 shall apply.

5.12 The CONF and CUG supplementary service

5.12.1 Coding requirements

No impact.

5.12.2 Signalling procedures at the coincident S and T reference point

5.12.2.1 Adding a call

5.12.2.1.1 Normal operation

No impact.

5.12.2.1.2 Exceptional procedures

If, within the CONF supplementary service, the network refuses a request to add a call because this call is not a member of the closed user group of the conference, the AddCONF return error component shall contain the error "supplementaryServiceInteractionNotAllowed".

The closed user group of the conference is the closed user group of the first call in the conference. If this call is not a member of a closed user group, then the conference is not a member of a closed user group.

NOTE: If the conference is created from the Null state, the closed user group information cannot be included in the SETUP message. Therefore the closed user group of the conference is undefined until the first call is added to the conference.

5.12.3 Procedures for interworking with private ISDNs

The procedure of subclause 5.12.2.1 shall apply.

5.13 The CONF and CONF supplementary services

5.13.1 Coding requirements

No impact.

5.13.2 Signalling procedures at the coincident S and T reference point

5.13.2.1 Re-invoking the CONF supplementary service

5.13.2.1.1 Normal operation

No impact.

5.13.2.1.2 Exceptional procedures

If, within the CONF supplementary service, the network refuses a request to invoke the CONF supplementary service, because the call is part of a conference controlled by the same served user (local interaction for the call), the network shall apply the error handling specified in subclause 9.2.2.2 of ETS 300 185-1 [14], using the error value "notAvailable".

5.13.2.2 Adding a conference call to a conference

5.13.2.2.1 Normal operation

No impact.

5.13.2.2.2 Exceptional procedures

If, within the CONF supplementary service, the network refuses a request to add a call to a conference, because the call is part of a conference controlled by the same served user (local interaction for the same call), the network shall apply the error handling specified in subclause 9.2.3.2 of ETS 300 185-1 [14], using the error value "notAllowed".

5.13.2.3 Notification of the served user

5.13.2.3.1 Normal procedures

If, during operation of the CONF supplementary service, a remote user uses the CONF supplementary service (remote interaction), then notifications concerning the CONF supplementary service shall be sent as normal to the served user of the CONF supplementary service, with the following addition:

- the network shall send the Notification indicator information to the served user in a FACILITY message according to the procedures of subclause 8.3.1.1 of EN 300 196-1 [16];

- the network shall include in the same message a Facility information element containing an IdentifyConferee invoke component. The IdentifyConferee operation is specified in table 2. The PartyId parameter shall indicate the remote user pertaining to the provided notification.

5.13.2.3.2 Exceptional procedures

No impact.

5.13.3 Procedures for interworking with private ISDNs

The procedures of subclause 5.13.2 shall apply.

5.14   The CONF and TP supplementary services

5.14.1   Coding requirements

See subclause 5.11.1.

5.14.2   Signalling procedures at the coincident S and T reference point

5.14.2.1   Served user of CONF supplementary service uses TP supplementary service

5.14.2.1.1   Normal operation

No impact.

> NOTE: The invocation of the TP supplementary service is not allowed for the served user of the CONF supplementary service.

5.14.2.1.2   Exceptional procedures

If, within the TP supplementary service, the network refuses a request to suspend a call, because the call is part of a conference controlled by the same served user (local interaction for the call), or because another call for that CEI is part of a conference for which the served user is located at that CEI (local interaction for the CEI), the SUSPEND REJECT message shall contain cause value #29, "facility rejected".

5.14.2.2   Remote user of CONF supplementary service uses TP supplementary service

5.14.2.2.1   Normal operation

If, during operation of the CONF supplementary service, a remote user uses the TP supplementary service (remote interaction), then notifications concerning the TP supplementary service shall be sent as normal to the served user of the CONF supplementary service, with the following addition:

-    the network shall send the Notification indicator information to the served user in a FACILITY message according to the procedures of subclause 8.3.1.1 of EN 300 196-1 [16];

-    the network shall include in the same message a Facility information element containing an IdentifyConferee invoke component. The IdentifyConferee operation is specified in table 2. The PartyId parameter shall indicate the remote user pertaining to the provided notification.

5.14.2.2.2   Exceptional procedures

No impact.

5.14.2.3   Remote user of the TP supplementary service uses the CONF supplementary service

5.14.2.3.1   Normal operation

If, within the TP supplementary service, the served user has suspended a call, the network cannot send notifications to the served user that are caused by operation of the CONF supplementary service (remote interaction).

The network shall discard these notifications and shall not retain these for later delivery.

5.14.2.3.2   Exceptional procedures

No impact.

5.15 The CONF and 3PTY supplementary services

5.15.1 Coding requirements

No impact.

5.15.2 Signalling procedures at the coincident S and T reference point

5.15.2.1 Requesting a three-way conversation where one of the connections belongs to a conference call

5.15.2.1.1 Normal operation

No impact.

> NOTE: The invocation of the 3PTY supplementary service is not allowed for the served user of the CONF supplementary service.

5.15.2.1.2 Exceptional procedures

If, within the 3PTY supplementary service, the network refuses a request to join two calls, because one of the calls is part of a conference controlled by the same served user (local interaction for the call), the network shall send a Begin3PTY return error component to the served user, indicating "supplementaryServiceInteractionNotAllowed".

5.15.2.2 Adding a three-way conversation to a conference

5.15.2.2.1 Normal operation

No impact.

> NOTE: The invocation of the 3PTY supplementary service is not allowed for the served user of the CONF supplementary service.

5.15.2.2.2 Exceptional procedures

If, within the CONF supplementary service, the network refuses a request to add a call to a conference, because the call is part of a three-way conversation controlled by the same served user (local interaction for the same call), the network shall send an AddCONF return error component to the served user, indicating "supplementaryServiceInteractionNotAllowed".

5.15.2.3 Invocation of the CONF supplementary service for a connection in a three-way conversation

5.15.2.3.1 Normal operation

No impact.

> NOTE: The invocation of the CONF supplementary service is not allowed for the served user of the 3PTY supplementary service.

5.15.2.3.2 Exceptional procedures

If, within the CONF supplementary service, the network refuses a request to invoke the CONF supplementary service, because the call is part of a three-way conversation controlled by the same served user (local interaction for the call), the network shall send a BeginCONF return error component to the served user, indicating "supplementaryServiceInteractionNotAllowed".

5.15.2.4 Remote user uses the 3PTY supplementary service

5.15.2.4.1 Normal operation

If, during operation of the CONF supplementary service, a remote user uses the 3PTY supplementary service (remote interaction), then notifications concerning the 3PTY supplementary service shall be sent as normal to the served user, with the following addition:

- the network shall send the Notification indicator information to the served user in a FACILITY message according to the procedures of subclause 8.3.1.1 of EN 300 196-1 [16];

- the network shall include in the same message a Facility information element containing an IdentifyConferee invoke component. The IdentifyConferee operation is specified in table 2. The PartyId parameter shall indicate the remote user pertaining to the provided notification.

5.15.2.4.2 Exceptional procedures

No impact.

5.15.3 Procedures for interworking with private ISDNs

See subclause 5.15.2.4.

5.16 The CONF and UUS service 3 supplementary services

5.16.1 Coding requirements

See subclause 5.11.1.

5.16.2 Signalling procedures at the coincident S and T reference point

The served user and each individual remote user can exchange USER INFORMATION messages by use of service 3. Furthermore, the served user can send USER INFORMATION messages as broadcast to all remote users.

5.16.2.1 Service 3 activation

5.16.2.1.1 Normal operation

Before exchange of USER INFORMATION messages service 3 shall be activated for the initial call to each individual remote user which at a later time will become a conferee by being add to the conference, i.e. the activation procedure shall be performed outside the conference call. Consequently, service 3 cannot be activated to a user already acting as a conferee.

The activation of service 3 between the served user and a user which at a later time will become a remote user shall be performed according to the procedures in ETS 300 286-1 [19], subclause 9.3.1.

When a remote user is added to the conference the network shall retain knowledge of whether service 3 is active to this remote user and whether service 3 was activated by the served user or the remote user.

When a private communication is created with a remote user to which service 3 was activated, the service 3 shall remain available in association with the private communication.

When a private communication is created with a remote user for which service 3 was not available during the conference, service 3 can be activated in association with the private communication by use of the procedure described in ETS 300 286-1 [19], subclause 9.3.1.

5.16.2.1.2   Exceptional procedures

No impact.

5.16.2.2   Transfer of user information

5.16.2.2.1   Normal operation

When USER INFORMATION messages are to be exchanged between the served user and an individual remote user, the procedures described in subclause 9.3.2 of ETS 300 286-1 [19] shall apply with the following exceptions for the served user's user-network interface:

-   the served user shall include a Facility information element with an IdentifyConferee invoke component in the USER INFORMATION message sent to the network. The component shall include the PartyId parameter to identify the remote user. The network shall not include this Facility information element in the USER INFORMATION message sent to the remote user;

-   when the network receives a USER INFORMATION message from a remote user, this USER INFORMATION message shall be sent to the served user including a Facility information element with an IdentifyConferee invoke component including the PartyId parameter identifying the remote user.

If the served user sends a USER INFORMATION message to the network without the above mentioned Facility information element, the network shall treat this as a request for the broadcast capability and shall send a USER INFORMATION message to each individual remote user.

If a remote user is isolated, individual exchange of USER INFORMATION messages can be performed between that remote user and the served user provided service 3 is activated for that remote user. In case of broadcast sending from the served user, the isolated remote user shall not receive USER INFORMATION messages.

If private communication is created with a remote user, the exchange of USER INFORMATION messages shall be as described in ETS 300 286-1 [19], subclause 9.3.2. The broadcast capability is not applicable.

5.16.2.2.2   Exceptional procedures

No impact.

5.16.2.3   Flow control

5.16.2.3.1   Normal operation

For the sending of USER INFORMATION messages from the served user, the flow control procedures described in ETS 300 286-1 [19], subclause 9.3.3 shall apply for the conference controller's connection to the conference. Consequently, the served user can send up to the maximum limit of USER INFORMATION messages to the remote users in common, including broadcast sending.

Since more than one remote user can send USER INFORMATION messages to the conference controller at the same time, the normal maximum limit can be exceeded at the served user's network side. In this case, the network shall deliver the received USER INFORMATION messages to the served user without any restrictions.

Normal flow control procedures shall be followed at the remote user's network.

5.16.2.3.2   Exceptional procedures

No impact.

5.16.3   Procedures for interworking with private ISDNs

The procedures of subclause 5.16.2 shall apply.

5.17   The CONF and ECT supplementary services

5.17.1   Coding requirements

See subclause 5.11.1.

5.17.2   Signalling procedures at the coincident S and T reference point

5.17.2.1   Served user uses the ECT supplementary service

5.17.2.1.1   Normal operation

No impact.

> NOTE: The invocation of the ECT supplementary service is not allowed for the served user of the CONF
> supplementary service.

5.17.2.1.2   Exceptional procedures

If the user invokes the ECT supplementary service using the implicit linkage procedures according to subclause 9.2.1.1
of EN 300 369-1 [21], and the call is also the controlling call in the CONF supplementary service (local interaction for
the call), then the network shall reject the EctExecute invoke component according to subclause 9.2.1.2 of
EN 300 369-1 [21]. The error shall indicate "supplementaryServiceInteractionNotAllowed".

If the user invokes the ECT supplementary service using the implicit linkage procedures according to subclause 9.2.1.1
of EN 300 369-1 [21], and the call not on hold is also the controlling call in the CONF supplementary service (local
interaction for the call), then the network shall reject the EctExecute invoke component according to subclause 9.2.1.2
of EN 300 369-1 [21]. The error shall indicate "supplementaryServiceInteractionNotAllowed".

If the user invokes the ECT supplementary service using the explicit linkage procedures according to subclause 9.2.2.1
of EN 300 369-1 [21], and either call is also the controlling call in the CONF supplementary service (local interaction
for the call), then the network shall reject the ExplicitEctExecute invoke component according to subclause 9.2.2.2 of
EN 300 369-1 [21]. The error shall indicate "supplementaryServiceInteractionNotAllowed".

The network shall not reject an EctLinkIdRequest invoke component due to the user being the served user in the CONF
supplementary service.

5.17.2.2   Remote user uses the ECT supplementary service

5.17.2.2.1   Normal operation

Conferees can invoke the ECT supplementary service in order to transfer their connection to the conference to another
user after that call is answered.

If, during operation of the CONF supplementary service, a remote user uses the ECT supplementary service (remote
interaction), then notifications concerning the ECT supplementary service shall be sent as normal to the served user of
the CONF supplementary service, with the following addition:

- the network shall send the Notification indicator information to the served user in a FACILITY message
  according to the procedures of subclause 8.3.1.1 of EN 300 196-1 [16];

- the network shall include in the same message a Facility information element containing an IdentifyConferee
  invoke component. The IdentifyConferee operation is specified in table 2. The PartyId parameter shall indicate
  the remote user pertaining to the provided notification.

> NOTE: This implies that the served user of the CONF supplementary service and the other remote user will be
> notified but no notification is given to the other conferees taking part in the conference.

If, during operation of the CONF supplementary service, a remote user uses the ECT supplementary service (remote interaction), then the procedures of subclauses 9.2.4 and 9.2.5 of EN 300 369-1 [21] shall apply for the served user of the CONF supplementary service, with the following addition:

- on sending the RequestSubaddress invoke component to the served user of the CONF supplementary service, the network shall include in the same message an IdentifyConferee invoke component indicating the PartyId of the party performing the transfer;

- on sending the SubaddressTransfer invoke component to the network, the served user of the CONF supplementary service shall include in the same message an IdentifyConferee invoke component indicating the PartyId of the party performing the transfer.

A message shall only contain one IdentifyConferee invoke component and hence shall only contain components pertaining to one party.

5.17.2.2.2   Exceptional procedures

No impact.

5.17.3   Procedures for interworking with private ISDNs

No impact.

5.18   The CD and COLP supplementary services

5.18.1   Coding requirements

No impact.

5.18.2   Signalling procedures at the coincident S and T reference point

5.18.2.1   Normal operation

For the presentation of the connected line identification to the calling user the same conditions shall apply as for the presentation of the redirection number as specified in EN 300 207-1 [17], subclause 9.2.3.1:

- if the value of the summary condition "calling user is notified of diversion" is "no" or "yes, without diverted-to number", the presentation shall be considered as restricted;

- if the value of the summary condition "calling user is notified of diversion" is "yes, with diverted-to number", the presentation shall be according to the received presentation indicator.

5.18.2.2   Exceptional procedures

No impact.

5.18.3   Procedures for interworking with private ISDNs

See subclause 5.18.2.

5.19   The CD and COLR supplementary services

See subclause 9.2.3.1 of EN 300 207-1 [17].

5.20   The CD and UUS supplementary services

The following procedures apply for incoming calls to a user subscribing to the CD supplementary service. This user is identified as the served user.

5.20.1   Coding requirements

See subclause 5.23.1.

5.20.2   Signalling procedures at the coincident S and T reference point

Any User-to-User Information (UUI) and/or UUS supplementary service request shall be delivered to the served user in the SETUP message.

5.20.2.1   Procedures at the served user when deflection takes place before alerting

If the served user invokes call deflection before the ALERTING message has been received by the network, the following procedures apply.

5.20.2.1.1   Normal operation

Any UUI and/or UUS supplementary service request that is contained in the incoming call request shall be deflected with the call.

However, as a network provider option, the deflection of the UUI and/or UUS supplementary service request can be restricted to deflecting users who subscribe to the relevant UUS supplementary service.

If the network supports this option, and the deflecting user is not subscribed to the requested UUS supplementary service, and the calling user requested the service as essential, then the CD supplementary service shall not be invoked.

If the network supports this option, and the deflecting user is not subscribed to the requested UUS supplementary service, and the calling user requested the service as preferred or requested the service implicitly, the network shall not forward any UUI and/or UUS supplementary service request with the deflected call.

> NOTE: In the case of explicit request, since the request for the UUS supplementary service is not delivered to the deflected-to user, no response is received on the request. Consequently, the network will reject the UUS supplementary service request towards the calling user according to the procedures specified in subclauses 9.1.1.2.2, 9.2.1.2 or 9.3.1.1.2 of ETS 300 286-1 [19].

5.20.2.1.2   Exceptional procedures

If the served user invokes call deflection in a situation where this is not allowed according to the procedures specified in subclause 5.20.2.1.1, the network shall reject the request for invocation using the procedures described in subclause 9.2.4.5.2 of EN 300 207-1 [17] with the error value "supplementaryServiceInteractionNotAllowed".

5.20.2.2   Procedures at the served user when deflection takes place after alerting

If the served user invokes call deflection after the ALERTING message has been received by the network, the following procedures apply.

5.20.2.2.1   Service 1 implicitly requested

5.20.2.2.1.1   Normal operation

The implicit service 1 request (i.e. the UUI) that is contained in the incoming call request shall be deflected with the call.

However, as a network provider option, the deflection of the UUI can be restricted to deflecting users who subscribe to the UUS service 1 supplementary service.

If the network supports this option, and the forwarding user is not subscribed to the UUS service 1 supplementary service, and the calling user requested the service implicitly, the network shall not forward any UUI with the deflected call.

> NOTE:　If the deflected-to user provides UUI together with the alerting indication, the UUI will not be delivered to the calling user.

5.20.2.2.1.2　　　　Exceptional procedures

No impact.

5.20.2.2.2　　　　Service 1 explicitly requested

5.20.2.2.2.1　　　　Normal operation

If the service is requested as required, the CD supplementary service shall not be invoked for this call.

If the service is requested as preferred, the following procedures apply:

- if the served user accepts the service request in the ALERTING message, then as a network provider option:

    a) the service acceptance, received from the served user, shall be delivered to the calling user and the CD supplementary service shall not be invoked for this call; or

    b) the service acceptance, received from the served user, shall be delivered to the calling user and the CD supplementary service can be invoked. When the CD supplementary service is invoked, the UUS supplementary service request and the UUI, if any, shall be deflected with the call.

> NOTE 1:　If the deflected-to user includes service acceptance or rejection in the alerting or connect indication, this acceptance/rejection will not be delivered to the calling user.

> NOTE 2:　If the deflected-to user does not accept the UUS request, any UUI sent by the calling user during call clearing will be discarded by the diverted-to network as the UUS supplementary service is not activated.

> NOTE 3:　If the deflected-to user provides UUI together with the alerting indication, the UUI will not be delivered to the calling user.

> NOTE 4:　If the deflected-to user provides UUI together with the connect indication, the UUI will be delivered to the calling user according to procedures specified in subclause 9.1.2.1 of ETS 300 286-1 [19];
>
> However, as a network provider option, the deflection of the UUS supplementary service request and the UUI, if any, can be restricted to deflecting users who subscribe to the UUS service 1 supplementary service.
>
> If the network supports this option, and the deflecting user is not subscribed to the UUS service 1 supplementary service, the network shall not invoke the CD supplementary service.

- if the served user rejects the service request in the ALERTING message, then the rejection shall be delivered to the calling user and the CD supplementary service can be invoked. The call shall be deflected without the UUS supplementary service request and UUI, if any;

- if the served user does not include a response related to the UUS supplementary service request in the ALERTING message, then the CD supplementary service can be invoked. The call shall be deflected without the UUS supplementary service request and UUI, if any.

> NOTE 5:　As the UUS supplementary service request is ignored, the network will reject the UUS supplementary service request towards the calling user according to the procedures specified in subclause 9.1.1.2.2 of ETS 300 286-1 [19].

5.20.2.2.2.2　　　　Exceptional procedure

If the served user invokes call deflection in a situation where this is not allowed according to the procedures specified in subclause 5.20.2.2.2.1, the network shall reject the request for invocation using the procedures described in subclause 9.2.4.5.2 of EN 300 207-1 [17] with the error value "supplementaryServiceInteractionNotAllowed".

5.20.2.2.3   Service 2

5.20.2.2.3.1   Normal operation

If the service is requested as required, the CD supplementary service shall not be invoked for this call.

If the service is requested as preferred, the following procedures apply:

- if the served user accepts the service request in the ALERTING message, then the service acceptance, received from the served user, shall be delivered to the calling user and the CD supplementary service shall not be invoked for this call;

- if the served user rejects the service request in the ALERTING message, then the rejection shall be delivered to the calling user and the CD supplementary service can be invoked. The call shall be deflected without the UUS supplementary service request;

- if the served user ignores the UUS service request in the ALERTING message, then the CD supplementary service can be invoked. The call shall be deflected without the UUS supplementary service request.

NOTE: As the UUS supplementary service request is ignored, the network will reject the UUS supplementary service request towards the calling user according to the procedures specified in subclause 9.2.1.2 of ETS 300 286-1 [19].

5.20.2.2.3.2   Exceptional procedures

If the served user invokes call deflection in a situation where this is not allowed according to the procedures specified in subclause 5.20.2.2.3.1, the network shall reject the request for invocation using the procedures described in subclause 9.2.4.5.2 of EN 300 207-1 [17] with the error value "supplementaryServiceInteractionNotAllowed".

5.20.2.2.4   Service 3

5.20.2.2.4.1   Normal operation

A UUS supplementary service request that is contained in the incoming call request shall be deflected with the call.

However, as a network provider option, the deflection of the UUS supplementary service request can be restricted to deflecting users who subscribe to the UUS service 3 supplementary service.

If the network supports this option, and the deflecting user is not subscribed to the UUS service 3 supplementary service, and the calling user requested the service as essential, the CD supplementary service shall not be invoked.

If the network supports this option, and the deflecting user is not subscribed to the UUS service 3 supplementary service, and the calling user requested the service as preferred, the network shall not forward the UUS service 3 supplementary service request with the deflected call.

NOTE: In this case, since the request for the UUS service 3 supplementary service is not given to the deflected-to user, no response is received on the request. Consequently, the network will reject the UUS supplementary service request towards the calling user according to the procedures specified in subclause 9.3.1.1.2 of ETS 300 286-1 [19].

5.20.2.2.4.2   Exceptional procedures

If the served user invokes call deflection in a situation where this is not allowed according to the procedures specified in subclause 5.20.2.2.4.1, the network shall reject the request for invocation using the procedures described in subclause 9.2.4.5.2 of EN 300 207-1 [17] with the error value "supplementaryServiceInteractionNotAllowed".

5.20.3   Procedures for interworking with private ISDNs

5.20.3.1   Procedures where the CD supplementary service applies to the whole private ISDN

The procedures in subclauses 5.20.2 shall apply.

5.20.3.2   Procedures where partial rerouteing takes place

When a call from the public network is diverted within or beyond the private network, and partial rerouteing takes place in the public network, then the procedures in subclause 5.23.3.2 shall apply.

5.21   The CFB and COLP supplementary services

See subclause 5.18.

5.22   The CFB and COLR supplementary services

See subclause 9.2.3.1 of EN 300 207-1 [17].

5.23   The CFB and UUS supplementary services

The following procedures apply for calls incoming to a user with the CFB supplementary service activated. This user is identified as the served user.

5.23.1   Coding requirements

Table 3 shows the definition of the operation UUSRequest using ASN.1 as defined in CCITT Recommendation X.208 [33] and using the OPERATION macro as defined in CCITT Recommendation X.219 [34], figure 4/X.219.

The formal definition of component type to encode this operation is provided in EN 300 196-1 [16], annex D, clause D.1.

The inclusion of components in Facility information elements is defined in EN 300 196-1 [16], subclause 11.2.2.1.

Table 3: ASN.1 description of the UUSRequest operation

```
Diversion-Operations {ccitt identified-organization etsi(0) 195 diversion-operations(4)}

DEFINITIONS EXPLICIT TAGS ::=

BEGIN

EXPORTS              UUSRequest;

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

                     Service,
                     Preferred
                     FROM UUS-Operations
                         {ccitt identified-organization etsi(0) 286 operations-and-errors(1)};

UUSRequest           ::= OPERATION
                             ARGUMENT SEQUENCE {
                                     [1] IMPLICIT Service,
                                     [2] IMPLICIT Preferred}

uUSRequest           UUSRequest              ::= localValue 66

END -- of Diversion-Operations
```

5.23.2   Signalling procedures at the coincident S and T reference point

If the served user is not network determined user busy, any UUI and/or request for a UUS supplementary service shall be delivered to the served user in the SETUP message.

5.23.2.1   Normal operation

Any UUI and/or request for a UUS supplementary service that is contained in the incoming call request shall be forwarded with the call.

However, as a network provider option, the forwarding of the UUI and/or UUS supplementary service request can be restricted to forwarding users who subscribe to the relevant UUS supplementary service.

If the network supports this option, and the forwarding user is not subscribed to the requested UUS supplementary service, and the calling user requested the service as essential, the CFB supplementary service shall not be invoked. The network shall initiate call clearing to the calling user using cause #29, "facility rejected".

If the network supports this option, and the forwarding user is not subscribed to the requested UUS supplementary service, and the calling user requested the service as preferred or requested the service implicitly, the network shall not forward any UUI and/or UUS supplementary service request with the forwarded call.

>   NOTE: In the case of explicit request, since the request for the UUS supplementary service request is not delivered to the forwarded-to user, no response is received on the request. Consequently, the network will reject the UUS supplementary service request towards the calling user according to the procedures specified in subclauses 9.1.1.2.2, 9.2.1.2 or 9.3.1.1.2 of ETS 300 286-1 [19].

If, in case of user determined user busy, the served user includes UUI and/or UUS service 1 supplementary service response in one or more DISCONNECT, RELEASE or RELEASE COMPLETE messages, the UUI and/or UUS service 1 supplementary service response shall be discarded by the network without any indication to the served user.

5.23.2.2   Exceptional procedures

No impact.

5.23.3   Procedures for interworking with private ISDNs

5.23.3.1   Procedures where the CFB supplementary service applies to the whole private ISDN

The procedures in subclause 5.23.2 shall apply.

5.23.3.2   Procedures where partial rerouteing takes place

When a call from the public network is diverted within or beyond the private network, and partial rerouteing takes place in the public network, then the following procedures shall apply.

5.23.3.2.1   Normal operation

When a private network invokes the partial rerouteing, the private network sends a FACILITY message to the network including a CallRerouteing invoke component according to the procedures specified in subclause 10.5 of EN 300 207-1 [17].

If the private network wants to divert a request for the implicitly requested UUS service 1 supplementary service along with the call, the private network shall include the UUI in the q931InfoElement parameter contained in the CallRerouteing invoke component.

When the network receives the UUI in the CallRerouteing invoke component, it shall include the UUI in the call request towards the diverted-to user.

If the private network wants to divert a request for an explicitly requested UUS supplementary service along with the call, the private network shall send the UUSRequest invoke component to the network. In order to associate the UUSRequest invoke component with the call to be diverted, the private network shall include the UUSRequest invoke component in the same FACILITY message that contains the CallRerouteing component.

The UUSRequest invoke component shall include:

-   in the Service parameter the type of UUS supplementary service, i.e. service 1 (value "service1"), service 2 (value "service2") or service 3 (value "service3");

-   in the Preferred parameter whether the UUS supplementary service request is preferred (value "TRUE") or required (value "FALSE").

In addition, in the case of explicitly requested service 1, the UUI, if any, shall be included in the q931InfoElement parameter contained in the CallRerouteing invoke component.

When the network receives the UUSRequest invoke component, it shall include the request for the UUS supplementary service in the call request towards the diverted-to user.

NOTE 1:   It is the responsibility of the private network to ensure that the interaction between the relevant diversion supplementary service and the relevant UUS supplementary service is appropriate.

If the private network does not want to divert an explicit request for the UUS supplementary service, the UUSRequest invoke component shall not be sent to the network. If the network does not receive a UUSRequest invoke component, it shall not include a request for the UUS supplementary service in the call request towards the diverted-to user.

NOTE 2:   If, in this case, the calling user has not received a response on the UUS request, the network will reject the UUS supplementary service request according to subclauses 9.1.1.2.2, 9.2.1.2 or 9.3.1.1.2 of ETS 300 286-1 [19] since no request is sent to the diverted-to user.

However, as a network provider option, the rerouteing of the UUI and/or request of the UUS supplementary service can be restricted to users who subscribe to the relevant UUS supplementary service.

If the network supports this option, and the private network who invoked call rerouteing is not subscribed to the requested UUS supplementary service, then the public network shall ignore the UUS service request and shall not forward it with the deflected call.

NOTE 3:   In the case of explicit request, since the request for the UUS supplementary service request is not delivered to the forwarded-to user, no response is received on the request. Consequently, the network will reject the UUS supplementary service request towards the calling user according to the procedures specified in subclauses 9.1.1.2.2, 9.2.1.2 or 9.3.1.1.2 of ETS 300 286-1 [19].

5.23.3.2.2   Exceptional procedures

Not applicable.

5.24   The CFNR and COLP supplementary services

See subclause 5.18.

5.25   The CFNR and COLR supplementary services

See subclause 9.2.3.1 of EN 300 207-1 [17].

5.26 The CFNR and UUS supplementary services

The following procedures apply for calls incoming to a user with the CFNR supplementary service activated. This user is identified as the served user.

5.26.1 Coding requirements

See subclause 5.23.1.

5.26.2 Signalling procedures at the coincident S and T reference point

Any UUI and/or UUS supplementary service request that is contained in the incoming call request shall be delivered to the served user in the SETUP message.

5.26.2.1 Service 1 implicitly requested

5.26.2.1.1 Normal operation

The implicit service 1 request (i.e. the UUI) that is contained in the incoming call request shall be forwarded with the call.

However, as a network provider option, the forwarding of the UUI can be restricted to forwarding users who subscribe to the UUS service 1 supplementary service.

If the network supports this option, and the forwarding user is not subscribed to the UUS service 1 supplementary service, and the calling user requested the service implicitly, the network shall not forward UUI with the forwarded call.

   NOTE: If the forwarded-to user provides UUI together with the alerting indication, the UUI will not be delivered to the calling user.

5.26.2.1.2 Exceptional procedures

No impact.

5.26.2.2 Service 1 explicitly requested

5.26.2.2.1 Normal operation

If the service is requested as required, the CFNR supplementary service shall not be invoked for this call.

If the service is requested as preferred, the following procedures apply:

-   if the served user accepts the service request in the ALERTING message, then as a network provider option:

   a) the service acceptance, received from the served user, shall be delivered to the calling user and the CFNR supplementary service shall not be invoked for this call; or

   b) the service acceptance, received from the served user, shall be delivered to the calling user and the CFNR supplementary service can be invoked. When the CFNR supplementary service is invoked, the UUS supplementary service request and the UUI, if any, shall be forwarded with the call.

   NOTE 1:   If the forwarded-to user includes service acceptance or rejection in the alerting or connect indication, this acceptance/rejection will not be delivered to the calling user.

   NOTE 2:   If the forwarded-to user does not accept the UUS request, any UUI sent by the calling user during call clearing will be discarded by the diverted-to network as the UUS supplementary service is not activated at the forwarded-to user.

   NOTE 3:   If the forwarded-to user provides UUI together with the alerting indication, the UUI will not be delivered to the calling user.

NOTE 4:   If the forwarded-to user provides UUI together with the connect indication, the UUI will be delivered to the calling user according to the procedures specified in subclause 9.1.2.1 of ETS 300 286-1 [19];

However, as a network provider option, the forwarding of the UUS supplementary service request and the UUI, if any, can be restricted to forwarding users who subscribe to the UUS service 1 supplementary service.

If the network supports this option, and the forwarding user is not subscribed to the requested UUS supplementary service, the network shall not invoke the CFNR supplementary service.

-   if the served user rejects the service request in the ALERTING message, then the rejection shall be delivered to the calling user and the CFNR supplementary service can be invoked. The call shall be forwarded without the UUS supplementary service request and UUI, if any;

-   if the served user does not include a response related to the UUS supplementary service request in the ALERTING message, then the CFNR supplementary service can be invoked. The call shall be forwarded without the UUS supplementary service request and UUI, if any.

NOTE 5:   As the UUS supplementary service request is ignored, the network will reject the UUS supplementary service request towards the calling user according to the procedures specified in subclause 9.1.1.2.2 of ETS 300 286-1 [19].

5.26.2.2.2   Exceptional procedures

No impact.

5.26.2.3   Service 2

5.26.2.3.1   Normal operation

If the service is requested as required, the CFNR supplementary service shall not be invoked for this call.

If the service is requested as preferred, the following procedures apply:

-   if the served user accepts the service request in the ALERTING message, then the service acceptance, received from the served user, shall be delivered to the calling user and the CFNR supplementary service shall not be invoked for this call;

-   if the served user rejects the service request in the ALERTING message, then the rejection shall be delivered to the calling user and the CFNR supplementary service can be invoked. The call shall be forwarded without the UUS supplementary service request;

-   if the served user ignores the UUS service request in the ALERTING message, then the CFNR supplementary service can be invoked. The call shall be forwarded without the UUS supplementary service request.

NOTE: As the UUS supplementary service request is ignored, the network will reject the UUS supplementary service request towards the calling user according to the procedures specified in subclause 9.2.1.2 of ETS 300 286-1 [19].

5.26.2.3.2   Exceptional procedures

No impact.

5.26.2.4   Service 3

5.26.2.4.1   Normal operation

Any UUS supplementary service request that is contained in the incoming call request shall be forwarded with the call.

However, as a network provider option, the forwarding of the UUS supplementary service request can be restricted to forwarding users who subscribe to the UUS service 3 supplementary service.

If the network supports this option, and the forwarding user is not subscribed to the UUS service 3 supplementary service, and the calling user requested the service as essential, the network shall not invoke the CFNR supplementary service.

If the network supports this option, and the forwarding user is not subscribed to the UUS service 3 supplementary service, and the calling user requested the service as preferred or requested the service implicitly, the network shall not forward any UUI and/or UUS supplementary service request with the forwarded call.

> NOTE: In this case, since the request for the UUS service 3 supplementary service is not given to the forwarded-to user, no response is received on the request. Consequently, the network will reject the UUS supplementary service request towards the calling user according to the procedures specified in subclause 9.3.1.1.2 of ETS 300 286-1 [19].

5.26.2.4.2   Exceptional procedures

No impact.

5.26.3   Procedures for interworking with private ISDNs

5.26.3.1   Procedures where the CFNR supplementary services applies to the whole private ISDN

The procedures in subclause 5.26.2 shall apply.

5.26.3.2   Procedures where partial rerouteing takes place

When a call from the public network is diverted within or beyond the private network, and partial rerouteing takes place in the public network, then the procedures in subclause 5.23.3.2 shall apply.

5.27   The CFU and COLP supplementary services

See subclause 5.18.

5.28   The CFU and COLR supplementary services

See subclause 9.2.3.1 of EN 300 207-1 [17].

5.29   The CFU and UUS supplementary services

The following procedures apply for calls incoming to a user with the CFU supplementary service activated. This user is identified as the served user.

5.29.1   Coding requirements

See subclause 5.23.1.

5.29.2   Signalling procedures at the coincident S and T reference point

5.29.2.1   Normal operation

Any UUI and/or request for a UUS supplementary service that is contained in the incoming call request shall be forwarded with the call.

However, as a network provider option, the forwarding of the UUI and/or UUS supplementary service request can be restricted to forwarding users who subscribe to the relevant UUS supplementary service.

If the network supports this option, and the forwarding user is not subscribed to the requested UUS supplementary service, and the calling user requested the service as essential, the network shall not invoke the CFU supplementary service. The network shall initiate call clearing towards the calling user using the cause #29, "facility rejected".

If the network supports this option, and the forwarding user is not subscribed to the requested UUS supplementary service, and the calling user requested the service as preferred or requested the service implicitly, the network shall not forward any UUI and/or UUS supplementary service request with the forwarded call.

>   NOTE: In the case of explicit request, since the request for the UUS supplementary service request is not
>   delivered to the forwarded-to user, no response is received on the request. Consequently, the network will
>   reject the UUS supplementary service request towards the calling user according to the procedures
>   specified in subclauses 9.1.1.2.2, 9.2.1.2 or 9.3.1.1.2 of ETS 300 286-1 [19].

5.29.2.2   Exceptional procedures

No impact.

5.29.3   Procedures for interworking with private ISDNs

5.29.3.1   Procedures where the CFU supplementary service applies to the whole private ISDN

The procedures in subclause 5.29.2 shall apply.

5.29.3.2   Procedures where partial rerouteing takes place

When a call from the public network is diverted within or beyond the private network, and partial rerouteing takes place in the public network, then the procedures in subclause 5.23.3.2 shall apply.

5.30   The TP and 3PTY supplementary services

5.30.1   Coding requirements

No impact.

5.30.2   Signalling procedures at the coincident S and T reference point

5.30.2.1   Served user uses the TP supplementary service

5.30.2.1.1   Normal operation

No impact.

>   NOTE: The invocation of the TP supplementary service is not allowed for the served user of the 3PTY
>   supplementary service.

5.30.2.1.2   Exceptional procedures

If, within the TP supplementary service, the network refuses a request to suspend a call, because the call is part of a three-way conversation controlled by the same served user (local interaction for the call), or because another call for that CEI is part of a three-way conversation controlled by the same served user (local interaction for the CEI), the SUSPEND REJECT message shall contain cause value #29, "facility rejected".

5.30.2.2   Remote user of the TP supplementary service uses the 3PTY supplementary service

5.30.2.2.1   Normal operation

If, within the TP supplementary service, the served user has suspended a call, the network cannot send notifications to the served user that are caused by operation of the 3PTY supplementary service (remote interaction).

The network shall discard these notifications and shall not retain these for later delivery.

5.30.2.2.2   Exceptional procedures

No impact.

5.30.3   Procedures for interworking with private ISDNs

No impact.

5.31   The HOLD and TP supplementary services

5.31.1   Coding requirements

No impact.

5.31.2   Signalling procedures at the coincident S and T reference point

5.31.2.1   Served user of the HOLD supplementary service uses the TP supplementary service

5.31.2.1.1   Normal operation

No impact.

> NOTE: The invocation of the TP supplementary service is not allowed for the served user of the HOLD supplementary service.

5.31.2.1.2   Exceptional procedures

If, within the TP supplementary service, the network refuses a request to suspend a call e.g., because the call is in the Call Held auxiliary state (local interaction for the call), or because another call for that CEI is in the Call Held auxiliary state (local interaction for the CEI), the SUSPEND REJECT message shall contain cause value #29, "facility rejected".

5.31.2.2   Remote user of the HOLD supplementary service uses the TP supplementary service

No impact.

5.31.2.3   Remote user of the TP supplementary service uses the HOLD supplementary service

5.31.2.3.1   Normal operation

If, within the TP supplementary service, the served user has suspended a call, the network cannot send notifications to the served user that are caused by operation of the HOLD supplementary service (remote interaction).

The network shall discard these notifications and shall not retain these for later delivery.

5.31.2.3.2   Exceptional procedures

No impact.

5.31.3   Procedures for interworking with private ISDNs

No impact.

> NOTE: The invocation of the HOLD and TP supplementary service by the private network is not possible.

5.32   The HOLD and 3PTY supplementary services

Any party involved in a three-way conversation is able to put the connection to the three-way conversation on hold and later retrieve it.

5.32.1   Coding requirements

No impact.

5.32.2   Signalling procedures at the coincident S and T reference point

5.32.2.1   Creating a three-way conversation from a held call

No impact.

5.32.2.2   Holding a three-way conversation

In order to hold a three-way conversation (local interaction for the call), the procedures of ETS 300 141-1 [12], subclauses 9.1 and 9.2 shall apply with the following exceptions:

a) the Hold function shall be used only for the Active-Idle connection; and

b) the NOTIFY message, containing a Notification indicator information element with a description of "Remote hold" shall be sent to neither of the remote users.

5.32.2.3   Retrieving a three-way conversation

In order to retrieve a three-way conversation (local interaction for the call), the procedures of ETS 300 141-1 [12], subclauses 9.3 and 9.4 shall apply with the following exceptions:

a) the Retrieve function shall be used on only one of the two Active-Held connections;

b) the NOTIFY message, containing a Notification indicator description information element with a notification description of "Remote retrieval", shall be sent to neither of the remote users; and

c) if an attempt is made to perform the Retrieve function on the remaining Active-Held connection, then the Retrieve function shall be rejected according to the procedures of EN 300 196-1 [16], subclause 7.4.2.2, with cause #29 "Facility rejected".

5.32.3   Procedures for interworking with private ISDNs

No impact.

5.33   The CUG and 3PTY supplementary services

5.33.1   Coding requirements

No impact.

5.33.2   Signalling procedures at the coincident S and T reference point

5.33.2.1   Creating a three-way conversation

5.33.2.1.1   Normal operation

No impact.

5.33.2.1.2   Exceptional procedures

If, within the 3PTY supplementary service, the network refuses a request to join two calls because the constituent calls were requested using different closed user groups, the Begin3PTY return error component shall contain the error "supplementaryServiceInteractionNotAllowed".

5.33.3   Procedures for interworking with private ISDNs

No impact.

5.34   The ECT and MCID supplementary services

5.34.1   Coding requirements

No impact.

5.34.2   Signalling procedures at the coincident S and T reference point

5.34.2.1   Normal operation

No impact.

5.34.2.2   Exceptional procedures

If a user invokes the MCID supplementary service, according to subclause 9.2.1 of ETS 300 130-1 [10], after the call has been transferred (local interaction for the same call), then the network shall reject the request according to subclause 9.2.2 of ETS 300 130-1 [10]. The error shall indicate "supplementaryServiceInteractionNotAllowed".

5.35   The ECT and 3PTY supplementary services

5.35.1   Coding requirements

No impact.

5.35.2   Signalling procedures at the coincident S and T reference point

5.35.2.1   Transfer of a three-way conversation

5.35.2.1.1   Normal operation

No impact.

> NOTE: The served user can transfer the two calls involved in the three-way conversation by first terminating the three-way conversation and subsequently transferring the two calls.

5.35.2.1.2   Exceptional procedures

If the user invokes the ECT supplementary service using the implicit linkage procedures according to subclause 9.2.1.1 of EN 300 369-1 [21], and the call is part of a three-way conversation controlled by the same served user (local interaction for the call), then the network shall reject the EctExecute invoke component according to subclause 9.2.1.2 of EN 300 369-1 [21]. The error shall indicate "supplementaryServiceInteractionNotAllowed".

If the user invokes the ECT supplementary service using the implicit linkage procedures according to subclause 9.2.1.1 of EN 300 369-1 [21], and the call not on hold is part of a three-way conversation controlled by the same served user (local interaction for the call), then the network shall reject the EctExecute invoke component according to subclause 9.2.1.2 of EN 300 369-1 [21]. The error shall indicate "supplementaryServiceInteractionNotAllowed".

If the user invokes the ECT supplementary service using the explicit linkage procedures according to subclause 9.2.2.1 of EN 300 369-1 [21], and either or both calls are part of a three-way conversation controlled by the same served user (local interaction for the call), then the network shall reject the ExplicitEctExecute invoke component according to subclause 9.2.2.2 of EN 300 369-1 [21]. The error shall indicate "supplementaryServiceInteractionNotAllowed".

The network shall not reject the EctLinkIdRequest invoke component due to the call being part of a three-way conversation controlled by the same user.

5.35.3   Procedures for interworking with private ISDNs

Not applicable.

5.36   The ECT and UUS supplementary services

When the networks serving the remote users (user B and user C) perform the procedures specified in EN 300 369-1 [21], subclause 9.2.4.1 first paragraph, subclause 9.2.5.1 first paragraph and subclause 10.2.1 third paragraph, then, in addition to those procedures, any UUS supplementary service that has previously been activated shall be cancelled by the networks.

If, in this case, the remote network receives a call control message or a USER INFORMATION message with a User-user information element from the remote user, this UUS supplementary service related information shall be discarded by the network without any indication to the remote user.

If the transferred call is in the active state, UUS service 3 may be renegotiated by the remote users according to the procedures specified in ETS 300 286-1 [19] subclause 9.3.1.2.

5.37   The CCBS and UUS supplementary services

5.37.1   Coding requirements

No impact.

5.37.2   Signalling procedures at the coincident S and T reference point

5.37.2.1   Normal operation

The network shall not store any information related to the UUS supplementary service provided by the calling user in the original call, neither the request(s) for activation nor the user-to-user information for UUS service 1.

If the SETUP message received from user A for invocation of the CCBS call contains information related to the UUS supplementary service, this shall be treated as normal handling of the UUS supplementary service procedures.

5.37.2.2   Exceptional procedures

No impact.

5.37.3   Procedures for interworking with private ISDNs

The procedures as described in subclause 5.37.2 shall apply.

5.38   The CCBS and CLIP supplementary services

5.38.1   Coding requirements

No impact.

5.38.2   Signalling procedures at the coincident S and T reference point

5.38.2.1   Normal operation

The use of the calling line identity at the originating network, although provided as part of basic call, is documented in ETS 300 092-1 [6], subclauses 9.3 and 9.4. The following interaction exists with these procedures.

The calling line identity, whether network provided, user provided and screened, or user provided and not screened (i.e. a special arrangement exists) from the original call shall be retained by the originating network and used when the CCBS call is completed. Furthermore the calling line identity shall be used by the network to determine duplicate calls as specified in subclause 9.1.2 of ETS 300 359-1 [20].

5.38.2.2   Exceptional procedures

The network shall ignore any calling line identification provided by the calling user in the CCBS call.

5.38.3 Procedures for interworking with private ISDNs

5.38.3.1 Procedures for the originating T reference point

5.38.3.1.1 Normal operation

If the private network provides an originatingAddress in the CCBS-T-Request invoke component, and the public network supports the originatingAddress, then the public network shall transfer the originatingAddress parameter to the destination network.

5.38.3.1.2 Exceptional procedures

Not applicable.

5.38.3.2 Procedures for the destination T reference point

5.38.3.2.1 Normal operation

If a calling party address is available, and the network supports the originatingAddress in the CCBS-T-Request invoke component, and the user subscribes to the CLIP supplementary service, then the network shall include the originatingAddress in the CCBS-T-Request invoke component, subject to any CLIR supplementary service restriction.

5.38.3.2.2 Exceptional procedures

Not applicable.

5.39 The CCBS and CLIR supplementary services

5.39.1 Coding requirements

No impact.

5.39.2 Signalling procedures at the coincident S and T reference point

5.39.2.1 Normal operation

The CLIR supplementary service requirements from the original call shall be retained by the originating network and used when the CCBS call is completed.

5.39.2.2 Exceptional procedures

Not applicable.

5.39.3   Procedures for interworking with private ISDNs

5.39.3.1   Procedures for the originating T reference point

5.39.3.1.1   Normal operation

If the public network supports the originatingAddress parameter, then the following procedures shall apply:

-   if the CLIR supplementary service is not provided, then the network shall ignore any PresentationAllowedIndicator in the CCBS-T-Request invoke component and shall not apply restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in permanent mode, then the network shall ignore any PresentationAllowedIndicator in the CCBS-T-Request invoke component and shall apply the appropriate restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in temporary mode and the PresentationAllowedIndicator is provided in the CCBS-T-Request invoke component and set to "true", then the network shall not apply restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in temporary mode and the PresentationAllowedIndicator is provided in the CCBS-T-Request invoke component and set to "false", then the network shall apply the appropriate restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in temporary mode and the PresentationAllowedIndicator is not provided in the CCBS-T-Request invoke component and the default is "presentation restricted", then the network shall apply the appropriate restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in temporary mode and the PresentationAllowedIndicator is not provided in the CCBS-T-Request invoke component and the default is "presentation allowed", then the network shall not apply restriction to the transfer of the calling address.

5.39.3.1.2   Exceptional procedures

Not applicable.

5.39.3.2   Procedures for the destination T reference point

5.39.3.2.1   Normal operation

If a calling party address is available in the public network and the network supports the originatingAddress in the CCBS-T-Request invoke component, and presentation is allowed, then the network shall include the originatingAddress and PresentationAllowedIndicator set to "true" in the CCBS-T-Request invoke component.

If a calling party address is available in the public network and the network supports the originatingAddress in the CCBS-T-Request invoke component, and presentation is not allowed, then the network shall not include the originatingAddress and PresentationAllowedIndicator in the CCBS-T-Request invoke component.

5.39.3.2.2   Exceptional procedures

Not applicable.

5.40   The CCBS and CUG supplementary services

5.40.1   Coding requirements

No impact.

5.40.2   Signalling procedures at the coincident S and T reference point

5.40.2.1   Normal operation

If the user subscribes to the CUG supplementary service, then the CUG requirements from the original call shall be retained by the served user's network and used when the call is completed.

The user shall not include a CUGCall invoke component in the SETUP message used to establish the CCBS call.

5.40.2.2   Exceptional procedures

If the SETUP message used to establish the CCBS call contains a CUGCall invoke component, this component shall be processed by the served user's network:

- if the CUG requirements of the original call and the CCBS call are identical, the CCBS call shall be established using the CUG supplementary service related information;

- if the CUG requirements of the original call and the CCBS call are not identical, the CCBS call shall be released. The first clearing message send to the served user shall contain a Facility information element containing a return error component indicating "invalidOrUnregisteredCUGIndex" and a Cause information element indicating cause #29 "facility rejected".

5.40.3   Procedures for interworking with private ISDNs

5.40.3.1   Procedure for the originating T reference point

5.40.3.1.1   Normal operation

If the original call was subject to CUG requirements, then the private network shall include the CUGCall invoke component in the SETUP message used to establish the CCBS call.

On receipt of this invoke component the public network shall follow CUG supplementary service procedures according to ETS 300 138-1 [11].

5.40.3.1.2   Exceptional procedures

No impact.

5.40.3.2   Procedures for the destination T reference point

No impact.

5.41 The CCBS and MSN supplementary services

5.41.1 Coding requirements

No impact.

5.41.2 Signalling procedures at the coincident S and T reference point

5.41.2.1 Procedures for the originating network

5.41.2.1.1 Normal operation

The CCBS supplementary service shall be provided to a user per multiple subscriber number.

If user A subscribes to the MSN supplementary service, and the user provides a valid multiple subscriber number in the Calling party number information element of the original call, then the network shall include the calling user's identity in a Called party number information element in the FACILITY message containing the CCBSErase, CCBSRemoteUserFree, CCBSBFree, and CCBSStatusRequest invoke components. Users not addressed by the calling user's identity shall ignore the FACILITY messages.

If user A subscribes to the MSN supplementary service, and has not provided a multiple subscriber number or has provided an invalid multiple subscriber number in the Calling party number information element of the original call, then the network shall include the calling user's identity as used for the original call in a Called party number information element in the FACILITY message containing the CCBSErase, CCBSRemoteUserFree, CCBSBFree, and CCBSStatusRequest invoke components. Users not addressed by the calling user's identity shall ignore the FACILITY messages.

If user A subscribes to the MSN supplementary service and interrogates the CCBS supplementary service related to a specific multiple subscriber number, then the user shall include the appropriate number in the "partyNumberOfA" parameter in the CCBSInterrogate invoke component. The CCBSInterrogate invoke component shall be included in the Facility information element, within the FACILITY message. The network shall only provide information on CCBS activations related to the number provided in the partyNumberOfA parameter.

NOTE: The information provided relates to the A queue to which CCBS activations are assigned which contained that calling party number in the original setup request or were assigned to that number by default because no calling party number was provided.

5.41.2.1.2 Exceptional procedures

If the partyNumberOfA parameter is not provided, or if the content of the partyNumberOfA parameter is not valid in the CCBSInterrogate invoke component, then the information provided shall relate to the A queue to which also CCBS activations are assigned where the original SETUP contained no calling party number.

5.41.2.2 Procedures for the remote network

5.41.2.2.1 Normal operation

If user B subscribes to the MSN supplementary service, then the network shall provide an incoming CCBS queue per multiple subscriber number, but the buffer is processed on a per-access basis (see ETS 300 359-1 [20], clause 3).

5.41.2.2.2 Exceptional procedures

No impact.

5.41.3 Procedures for interworking with private ISDNs

No impact.

5.42 The CCBS and SUB supplementary services

5.42.1 Coding requirements

No impact.

5.42.2 Signalling procedures at the coincident S and T reference point

5.42.2.1 Normal operation

If user B subscribes to the SUB supplementary service, and called party subaddresses in the incoming call and the queued CCBS requests are available, then the network shall use the subaddresses in determining whether an incoming call and a queued CCBS request have identical destination selection information as given in subclause 9.5.4.1 of ETS 300 359-1 [20].

5.42.2.2 Exceptional procedures

No impact.

5.42.3 Procedures for interworking with private ISDNs

No impact.

5.43 The FPH and COLP supplementary services

5.43.1 Coding requirements

No impact.

5.43.2 Signalling procedures at the coincident S and T reference point

5.43.2.1 Procedure at the called user's network

5.43.2.1.1 Normal operation

The number digits, the screening indicator and the connected subaddress as determined by the procedures of subclauses 9.3 and 9.4 of ETS 300 210-1 [18] shall not be forwarded to the originating local exchange. Instead, the number digits in the Connected number information element shall contain an ISDN number consisting of a service access code and the freephone number. The screening indicator shall indicate "network provided". No Connected subaddress information element shall be provided.

5.43.2.1.2 Exceptional procedures

No impact.

5.43.3 Procedures for interworking with private ISDNs

The procedures of subclause 5.43.2 shall apply.

5.44 The ECT and CUG supplementary services

5.44.1 Coding requirements

No impact.

5.44.2 Signalling procedures at the coincident S and T reference point

5.44.2.1 Invocation of the ECT supplementary service

5.44.2.1.1 Normal operation

No impact.

5.44.2.1.2 Exceptional procedures

If the user requests a transfer of two calls using the implicit linkage procedures according to subclause 9.2.1.1 of EN 300 369-1 [21], and the two calls were established with different closed user group requirements, then the network shall reject the request according to subclause 9.2.1.2 of EN 300 369-1 [21]. The error shall indicate "supplementaryServiceInteractionNotAllowed".

If the user requests a transfer of two calls using the explicit linkage procedures according to subclause 9.2.2.1 of EN 300 369-1 [21], and the two calls were established with different closed user group requirements, then the network shall reject the request according to subclause 9.2.2.2 of EN 300 369-1 [21]. The error shall indicate "supplementaryServiceInteractionNotAllowed".

The network shall not take into account any closed user group requirements on receiving an EctLinkIdRequest invoke component.

5.44.3 Procedures for interworking with private ISDNs

No impact.

5.45 The ECT and TP supplementary services

5.45.1 Coding requirements

No impact.

5.45.2 Signalling procedures at the coincident S and T reference point

5.45.2.1 Remote user of the TP supplementary service uses the ECT supplementary service

5.45.2.1.1 Normal operation

If, within the TP supplementary service, the served user has suspended a call, the network cannot send notifications to the served user that are caused by operation of the ECT supplementary service (remote interaction).

The network shall discard these notifications and shall not retain these for later delivery.

5.45.2.1.2 Exceptional procedures

No impact.

5.45.3 Procedures for interworking with private ISDNs

No impact.

5.46 The CONF and MCID supplementary services

5.46.1 Coding requirements

No impact.

5.46.2 Signalling procedures at the coincident S and T reference point

5.46.2.1 Normal operation

No impact.

5.46.2.2 Exceptional procedures

If, within the MCID supplementary service, the network is unable to identify and register the source of the incoming call, because this call is a conference call controlled by the same served user (local interaction for the call), the network shall send a MCIDRequest return error component to the served user, indicating the error "supplementaryServiceInteractionNotAllowed".

   NOTE: Other error values are possible if supplementary service interactions are not checked first (e.g. a check for an incoming call is performed prior to any supplementary service interaction check).

5.46.3 Procedures for interworking with private ISDNs

See subclause 5.46.2.

5.47 The CCBS and CW supplementary services

5.47.1 Coding requirements

No impact.

5.47.2 Signalling procedures at the coincident S and T reference point

5.47.2.1 Normal operation

CCBS requests in the destination CCBS queue shall only be processed if there are no calls waiting.

When an incoming CCBS call arrives at the access of user B and encounters the channels busy condition and a network determined user busy condition does not result, network B shall offer the CCBS call as a waiting call.

5.47.2.2 Exceptional procedures

If the CCBS call cannot be offered as a waiting call (e.g. a network determined user busy condition would result), destination B shall be considered busy again.

5.47.3 Procedures for interworking with private ISDNs

No impact.

5.48   The UUS and TP supplementary services

5.48.1   Coding requirements

No impact.

5.48.2   Signalling procedures at the coincident S and T reference point

5.48.2.1   Normal operation

If the served user of the UUS supplementary service sends a SUSPEND message to the network while UUS service 3 supplementary service is active, then the network shall acknowledge the TP request by sending a SUSPEND ACKNOWLEDGE message to the user. The network shall maintain the flow control procedure, i.e. timer T2-UUS3 shall continue to run. Any CONGESTION CONTROL message which should have been sent to the user while the call is suspended shall be sent after the RESUME ACKNOWLEDGE message has been sent.

5.48.2.2   Exceptional procedures

If the network receives a SUSPEND message after having received the UserUserService invoke component indicating the UUS service 3 supplementary service but having not yet responded to that UUS3 request, then the network shall reject the TP supplementary service request by sending a SUSPEND REJECT message with cause #29 "facility rejected" to the user (local interaction for the same call).

If the remote network (i.e. the network of the user who has activated the TP supplementary service) receives a request for activating the UUS service 3 supplementary service from the network serving the UUS user, then the remote network shall reject the UUS service 3 supplementary service request towards the network serving the user of the UUS service 3 supplementary service (remote interaction).

5.48.3   Procedures for interworking with private ISDNs

No impact.

5.49   The MWI and MSN supplementary services

5.49.1   Coding requirements

No impact.

5.49.2   Signalling procedures at the coincident S and T reference point

5.49.2.1   Normal operation

If the receiving user is subscribed to the MSN supplementary service, the MWI supplementary service can be activated and deactivated for each multiple subscriber number individually. The invocation of the MWI supplementary service shall take place individually for each multiple subscriber number. When invocation takes place and the receiving user is subscribed to the multiple subscriber number supplementary service, the network shall include the Called party number information element in the FACILITY message used to convey the MWIIndicate invoke component(s) as specified in subclause 8.3.2.4 of EN 300 196-1. The Called party number information element shall contain the ISDN number of the receiving user.

If the controlling user is subscribed to the MSN supplementary service, the MWI supplementary service can be activated and deactivated by each multiple subscriber number individually. The controlling user can indicate the ISDN number in the controllingUserNumber parameter in the MWIActivate or MWIDeactivate invoke components.

5.49.2.2   Exceptional procedures

Not applicable.

5.49.3   Procedures for interworking with private ISDNs

No impact.

5.50   The OCB and CCBS supplementary services

5.50.1   Coding requirements

Not applicable.

5.50.2   Procedures at the coincident S and T reference point

5.50.2.1   Normal operation

When the OCB-F or OCB-UC supplementary service is activated after the served user activates the CCBS supplementary service, the normal OCB invocation procedures shall be applied to the CCBS call.

When the OCB-UC supplementary service is activated before the served user activates the CCBS supplementary service, then the OCB-UC requirements (i.e. disabling) from the original call shall be retained by the served user's network and used when the call is completed.

The served user shall not include a DisableOcb invoke component in the SETUP message used to establish the CCBS call.

When the served user performs a CCBS activation while OCB-F or OCB-UC is activated, the OCB invocation procedures shall not be applied to this CCBS activation request.

5.50.2.2   Exceptional procedures

If the SETUP message used to establish the CCBS call contains a DisableOcb invoke component, this component shall be ignored.

5.50.3   Procedures for interworking with private networks

5.50.3.1   Normal operation

When the OCB-F or OCB-UC supplementary service is activated after the served user activates the CCBS supplementary service, the normal OCB invocation procedures shall be applied to the CCBS call.

If the SETUP message of the original call contained a DisableOcb invoke component, then the private network shall include this same component in the SETUP message used to establish the CCBS call.

5.50.3.2   Exceptional procedures

Not applicable.

5.51 The OCB and MSN supplementary services

5.51.1 Coding requirements

Not applicable.

5.51.2 Procedures at the coincident S and T reference point

5.51.2.1 Normal operation

If the OCB-F or OCB-UC supplementary service is provided on a per ISDN number basis, the network shall use the ISDN number resulting from the MSN supplementary service.

5.51.2.2 Exceptional procedures

Not applicable.

5.51.3 Procedures for interworking with private networks

Not applicable.

5.52 The OCB and CFB supplementary services

5.52.1 Coding requirements

Not applicable.

5.52.2 Procedures at the coincident S and T reference point

5.52.2.1 Normal operation

When the network receives an ActivationDiversion invoke component containing in the forwardedToAddress parameter an address that is to be barred according to the activated barring program for (any of) the instance(s) identified by the servedUserNr and basicService parameters, then the network shall reject the call forwarding activation request using the procedure in subclause 9.1.1.2 of EN 300 207-1 [17]. The indicated error value shall be "supplementaryServiceInteractionNotAllowed".

   NOTE: Activation of the OCB-UC supplementary service has no effect on currently active call forwarding
            supplementary services.

5.52.2.2 Exceptional procedures

Not applicable.

5.52.3 Procedures for interworking with private networks

The procedures of subclause 5.52.2 shall apply.

5.53 The OCB and CFNR supplementary services

See subclause 5.52.

5.54   The OCB and CFU supplementary services

See subclause 5.52.

5.55   Call deflection

5.55.1   Coding requirements

Not applicable.

5.55.2   Procedures at the coincident S and T reference point

5.55.2.1   Normal operation

When the network receives a CallDeflection invoke component containing in the deflectionAddress parameter an address that is to be barred according to the activated barring program for the instance identified by the call reference in the FACILITY message, then the network shall reject the call deflection invocation request using the procedure in subclause 9.2.4.5.2 of EN 300 207-1 [17]. The indicated error value shall be "supplementaryServiceInteractionNotAllowed".

> NOTE: The call reference in the FACILITY message containing the CallDeflection invoke component provides the means to find the basic service and the ISDN number the network has to use to check if a barring program is activated. The Called party number, Bearer capability and High layer compatibility information elements of the initial, related SETUP message will be used for this purpose.

5.55.2.2   Exceptional procedures

Not applicable.

5.55.3   Procedures for interworking with private networks

The procedures of subclause 5.55.2 shall apply.

5.56   The OCB-UC and the OCB-F supplementary services

No protocol impact.

If both the OCB-UC and the OCB-F supplementary services are activated, then an outgoing call shall be tested against the active barring program of each supplementary service before being allowed to proceed.

5.57   The CCNR and AOC supplementary services

The procedures in subclause 5.3 shall apply.

5.58   The CCNR and CW supplementary services

The procedures in subclause 5.47 shall apply.

5.59   The CCNR and CLIP supplementary services

5.59.1   Coding requirements

The procedures in subclause 5.38.1 shall apply.

5.59.2   Signalling procedures at the coincident S and T reference point

The procedures in subclause 5.38.2 shall apply.

5.59.3   Procedures for interworking with private ISDNs

5.59.3.1   Procedures for the originating T reference point

5.59.3.1.1   Normal operation

If the private network provides an originatingAddress in the CCNR-T-Request invoke component, and the public network supports the originatingAddress, then the public network shall transfer the originatingAddress parameter to the destination network.

5.59.3.1.2   Exceptional procedures

Not applicable.

5.59.3.2   Procedures for the destination T reference point

5.59.3.2.1   Normal operation

If a calling party address is available, and the network supports the originatingAddress in the CCNR-T-Request invoke component, and the user subscribes to the CLIP supplementary service, then the network shall include the originatingAddress in the CCNR-T-Request invoke component, subject to any CLIR supplementary service restriction.

5.59.3.2.2   Exceptional procedures

Not applicable.

5.60   The CCNR and CLIR supplementary services

5.60.1   Coding requirements

The procedures in subclause 5.39.1 shall apply

5.60.2   Signalling procedures at the coincident S and T reference point

The procedures in subclause 5.39.2 shall apply.

5.60.3   Procedures for interworking with private ISDNs

5.60.3.1   Procedures for the originating T reference point

5.60.3.1.1   Normal operation

If the public network supports the originatingAddress parameter, then the following procedures shall apply:

-   if the CLIR supplementary service is not provided, then the network shall ignore any PresentationAllowedIndicator in the CCNR-T-Request invoke component and shall not apply restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in permanent mode, then the network shall ignore any PresentationAllowedIndicator in the CCNR-T-Request invoke component and shall apply the appropriate restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in temporary mode and the PresentationAllowedIndicator is provided in the CCNR-T-Request invoke component and set to "true", then the network shall not apply restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in temporary mode, and the PresentationAllowedIndicator is provided in the CCNR-T-Request invoke component and set to "false", then the network shall apply the appropriate restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in temporary mode and the PresentationAllowedIndicator is not provided in the CCNR-T-Request invoke component and the default is "presentation restricted", then the network shall apply the appropriate restriction to the transfer of the calling address;

-   if the CLIR supplementary service is provided in temporary mode and the PresentationAllowedIndicator is not provided in the CCNR-T-Request invoke component and the default is "presentation allowed", then the network shall not apply restriction to the transfer of the calling address.

5.60.3.1.2   Exceptional procedures

Not applicable.

5.60.3.2   Procedures for the destination T reference point

5.60.3.2.1   Normal operation

If a calling party address is available in the public network and the network supports the originatingAddress in the CCNR-T-Request invoke component, and presentation is allowed, then the network shall include the originatingAddress and PresentationAllowedIndicator set to "true" in the CCNR-T-Request invoke component.

If a calling party address is available in the public network and the network supports the originatingAddress in the CCNR-T-Request invoke component, and presentation is not allowed, then the network shall not include the originatingAddress and PresentationAllowedIndicator in the CCNR-T-Request invoke component.

5.60.3.2.2   Exceptional procedures

Not applicable.

5.61   The CCNR and CUG supplementary services

The procedures in subclause 5.40 shall apply.

5.62   The CCNR and CCBS supplementary services

5.62.1   Coding requirements

No impact.

5.62.2   Signalling procedures at the coincident S and T reference point

5.62.2.1   Normal operation

NOTE 1:   In addition to the definition of 'CCBS busy' given in clause 3 of ETS 300 359-1 [20], the 'CCBS busy' condition is also caused when a CCNR recall is pending on user A.

NOTE 2:   Only one network option "check for identical calls" exists for the CCNR and the CCBS supplementary service.

NOTE 3:   Only one network option "CCBS request retention" exists for the CCNR and the CCBS supplementary service.

The cCBSReference parameter shall have significance on the whole access, i.e. a cCBSReference parameter value shall not be reused for subsequent CCNR or CCBS requests on an access before it is released.

5.62.2.2   Exceptional procedures

If the network A option "check for identical calls" is set to "yes", network A shall check if the call for which CCNR or CCBS is requested and a call in queue A are identical. If network A cannot accept the CCNR request because user A has already activated the CCBS supplementary service for an identical call placed in queue A, then network A shall send a CCNRRequest return error component indicating "cCBSIsAlreadyActivated" to user A, using the procedure in subclause 10.2.2.2 of EN 300 196-1 [16]. If network A cannot accept the CCBS request because user A has already activated the CCNR supplementary service for an identical call placed in queue A, then network A shall send a CCBSRequest return error component indicating "cCBSIsAlreadyActivated" to user A, using the procedure in subclause 10.2.2.2 of EN 300 196-1 [16].

NOTE: If the network option "check for identical calls" is set to "no", network A does not check if CCNR is requested for a call identical to a call for which CCBS is already activated and vice versa.

If network B cannot establish the CCNR call because user B is busy and the network option "CCBS request retention" is either set to "yes" or to "no", then in addition to the procedures described in subclause 9.4.3.2 of EN 301 065-1 [26], for the activation of the CCBS supplementary service the procedures in subclause 9.1.1 of ETS 300 359-1 [20] shall apply.

5.62.3   Procedures for interworking with private ISDNs

5.62.3.1   Normal operation

Not applicable.

5.62.3.2   Exceptional procedures

Not applicable.

5.63 The CCNR and MSN supplementary services

5.63.1 Coding requirements

No impact.

5.63.2 Signalling procedures at the coincident S and T reference point

5.63.2.1 Normal operation

The CCNR supplementary service shall be provided to a user per multiple subscriber number.

If user A subscribes to the MSN supplementary service, and the user provides a valid multiple subscriber number in the Calling party number information element of the original call, then the network shall include the calling user's identity in a Called party number information element in the FACILITY message containing the CCBSErase, CCBSRemoteUserFree, CCBSBFree and CCBSStatusRequest invoke components. Users not addressed by the calling user's identity shall ignore the FACILITY messages.

If user A subscribes to the MSN supplementary service, and has not provide a multiple subscriber number or has provided an invalid multiple subscriber number in the Calling party number information element of the original call, then the network shall include the calling user's identity as used for the original call in a Called party number information element in the FACILITY message containing the CCBSErase, CCBSRemoteUserFree, CCBSBFree and CCBSStatusRequest invoke components. Users not addressed by the calling user's identity shall ignore the FACILITY messages.

If user A subscribes to the MSN supplementary service and interrogates the CCNR supplementary service related to a specific multiple subscriber number, then the user shall include the appropriate number in the "partyNumberOfA" parameter in the CCNRInterrogate invoke component. The CCNRInterrogate invoke component shall be included in the Facility Information element, within the FACILITY message. The network shall only provide information on CCNR activations related to the number provided in the partyNumberOfA parameter.

NOTE: The information provided relates to the A queue to which CCNR activations are assigned which contained that calling party number in the original setup request or were assigned to that number by default because no calling party number was provided.

5.63.2.2 Exceptional procedures

If the partyNumberOfA parameter is not provided, or if the content of the partyNumberOfA parameter is not valid in the CCNRInterrogate invoke component, then the information provided shall relate to the A queue to which also CCNR activations are assigned where the original SETUP message contained no calling party number.

5.63.3 Procedures for the remote network

5.63.3.1 Normal operation

If user B subscribes to the MSN supplementary service, then the network shall apply queue B of the CCNR supplementary service per multiple subscriber number, but the buffer is processed on a per-access basis (see EN 301 065-1 [26], clause 3).

5.63.3.2 Exceptional procedures

No impact.

5.63.4 Procedures for interworking with private ISDNs

No impact.

5.64 The CCNR and SUB supplementary services

The procedures in subclause 5.42 shall apply.

5.65 The CCNR and UUS supplementary services

The procedures in subclause 5.37 shall apply.

5.66 The CCNR and OCB supplementary services

The procedures in subclause 5.50 shall apply.

5.67 The OCB and SCF supplementary services

5.67.1 Coding requirements

Not applicable.

5.67.2 Procedures at the coincident S and T reference point

5.67.2.1 Normal operation

When the network receives an ActivationSCF invoke component containing in the forwardedToAddress parameter an address that is to be barred according to the activated barring program for (any of) the instance(s) identified by the servedUserNr and basicService parameters, then the network shall reject the selective call forwarding activation request using the procedure in subclause 9.1.1.4 of EN 300 207-1 [17]. The indicated error value shall be "supplementaryServiceInteractionNotAllowed".

> NOTE: Activation of the OCB-UC supplementary service has no effect on currently active call forwarding supplementary services.

5.67.2.2 Exceptional procedures

Not applicable.

5.67.3 Procedures for interworking with private networks

The procedures of subclause 5.67.2 shall apply.

6   General procedures

6.1   Identification of charge

6.1.1   Normal operation

No impact.

6.1.2   Exceptional procedures

If a user sends an IdentificationOfCharge invoke component to the network and the user has not subscribed to the AOC-E supplementary service, the network shall return an IdentificationOfCharge return error component indicating "notSubscribed" to the user. The network shall include the IdentificationOfCharge return error component in a Facility information element, either in an appropriate call control message or in a FACILITY message.

If a user sends an IdentificationOfCharge invoke component to the network and the user has subscribed to the AOC-E supplementary service except when in combination with the ECT and CD supplementary services and partial rerouteing in conjunction with the diversion supplementary services, the network shall return an IdentificationOfCharge return error component indicating "supplementaryServiceInteractionNotAllowed" to the user. The network shall include the IdentificationOfCharge return error component in a Facility information element, either in an appropriate call control message or in a FACILITY message.

6.2   Ordering of checks

When two or more supplementary services interact and for each of these supplementary services a condition has to be met to allow the related basic call procedures to proceed, the order in which these conditions are checked is an implementation option as long as not demanded by service requirements. Similarly the procedure(s) to be followed when one of the conditions is not met is an implementation option.

Annex A (informative):
Signalling flows

The signalling flows in figures A.1, A.2 and A.3 show the interaction between the AOC and TP supplementary service.
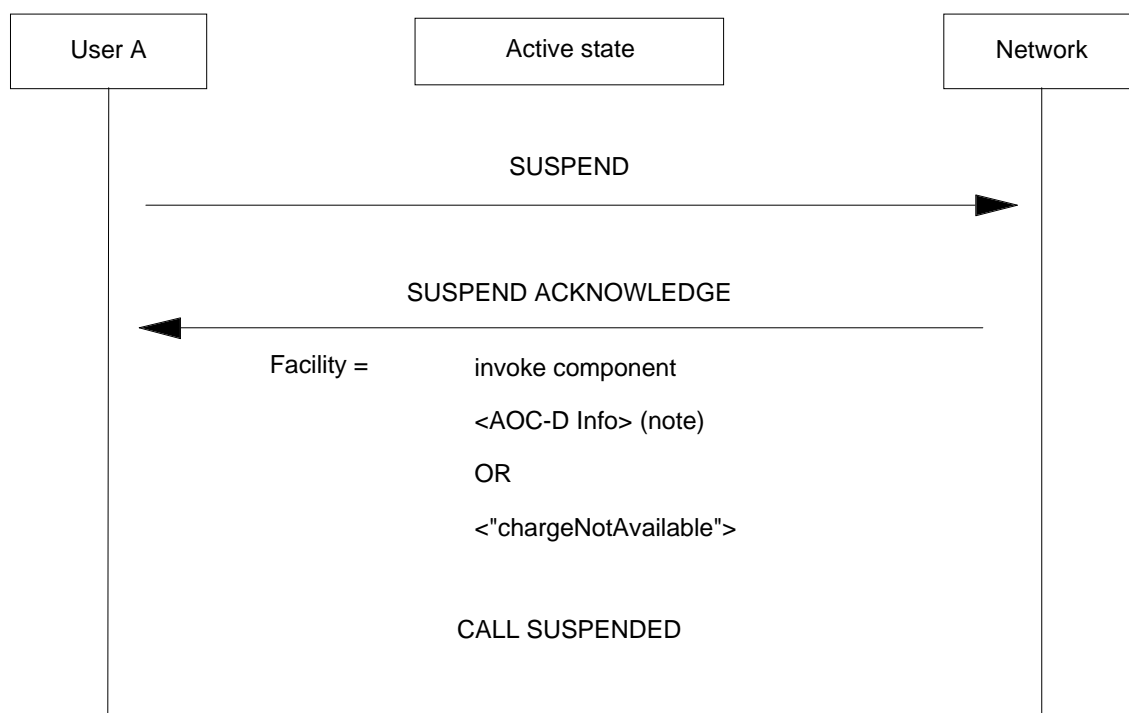
NOTE: Cumulative charging information can be sent to the served user, as a network option.

Figure A.1: Transfer of charging information in the call suspension phase

```
  ┌──────────┐              CALL SUSPENDED              ┌──────────┐
  │  User A  │                                          │ Network  │
  └──────────┘                                          └──────────┘
       │                                                      │
       │                      RESUME                          │
       │─────────────────────────────────────────────────────▶│
       │                                                      │
       │                 RESUME ACKNOWLEDGE                   │
       │◀─────────────────────────────────────────────────────│
       │                                                      │
       │     Facility =      invoke component                 │
       │                                                      │
       │                     <AOC-S Info> (note 1)            │
       │                                                      │
       │                     OR                               │
       │                                                      │
       │                     <AOC-D Info>                     │
       │                                                      │
       │                     OR                               │
       │                                                      │
       │                     <"chargeNotAvailable">           │
       │                                                      │
       │                 ┌──────────────────┐                 │
       │                 │   Active state   │                 │
       │                 └──────────────────┘                 │
       │                                                      │
       │                 FACILITY  (note 2)                   │
       │◀─────────────────────────────────────────────────────│
       │                                                      │
       │     Facility =      invoke component                 │
       │                                                      │
       │                     <AOC-S Info> (note 1)            │
       │                                                      │
       │                     OR                               │
       │                                                      │
       │                     <AOC-D Info>                     │
       │                                                      │
       │                     OR                               │
       │                                                      │
       │                     <"chargeNotAvailable">           │
       │                                                      │
```
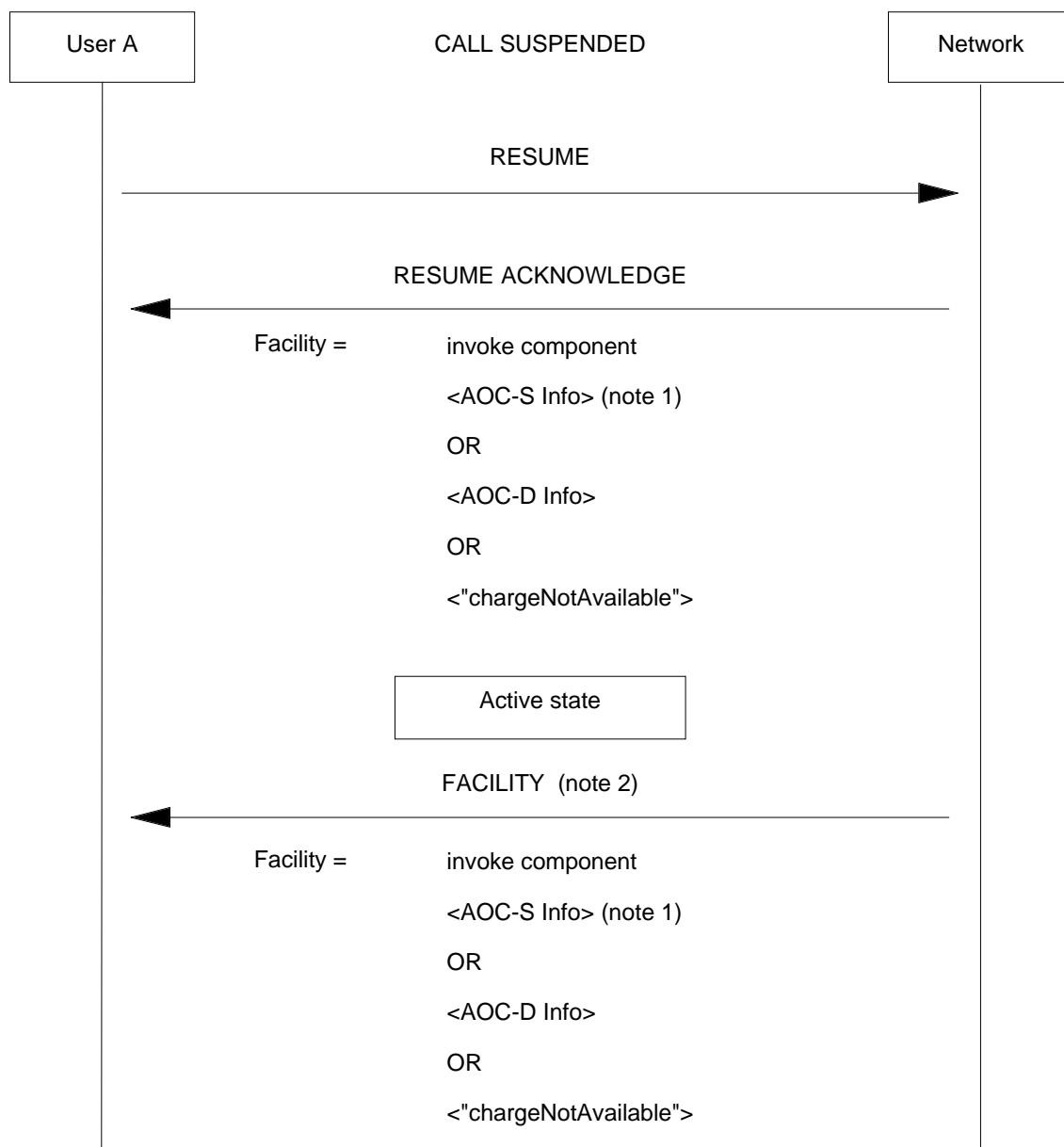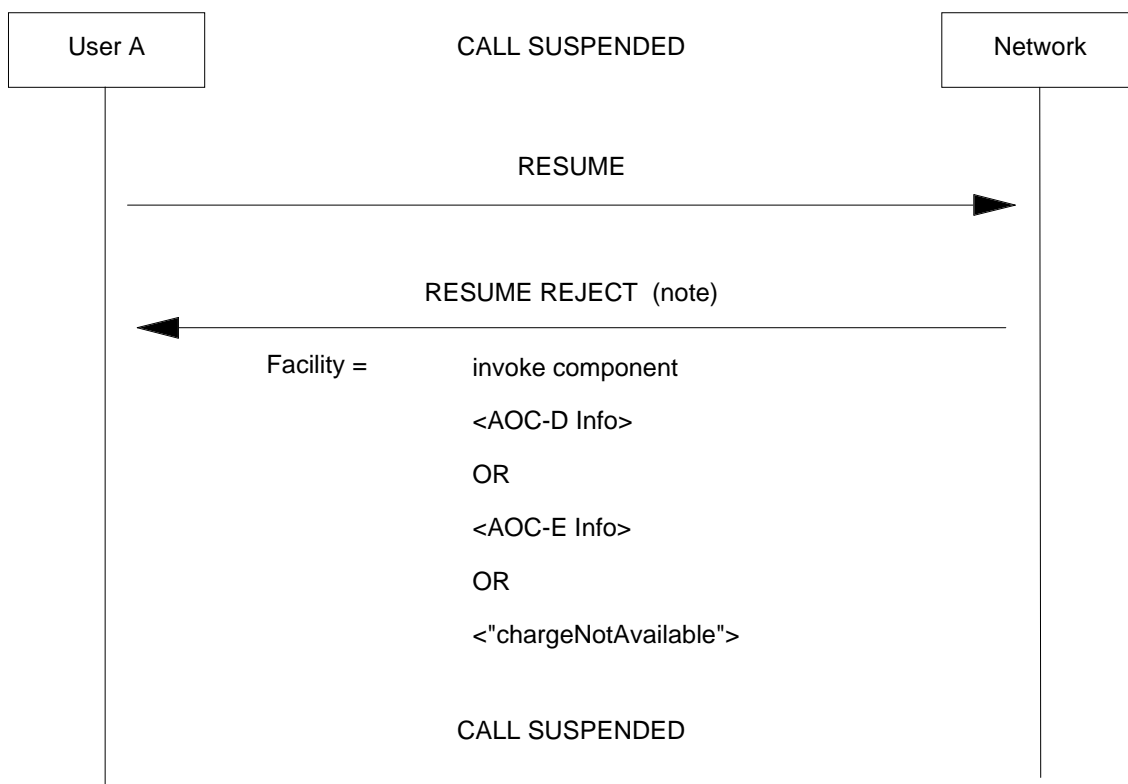
NOTE 1: Only provided if there is a change in the charging rate during suspension time.
NOTE 2: The first FACILITY message following the RESUME ACKNOWLEDGE message is only used if the charging information has not already been sent in the RESUME ACKNOWLEDGE message. This is a network provider option.

Figure A.2: Transfer of charging information in the call resumption phase

User A	CALL SUSPENDED	Network

RESUME

RESUME REJECT (note)

Facility =   invoke component

                    <AOC-D Info>

                    OR

                    <AOC-E Info>

                    OR

                    <"chargeNotAvailable">

CALL SUSPENDED

NOTE: It is a network provider option to provide this capability. The network has retained the call identity of the
         suspended call. If the network shall send charging information, the charging information needs to be
         available for the duration of the call retention timer.

Figure A.3: Transfer of charging information in the case of a call resume reject

Annex B (informative):
Example of the interaction between the AOC-E and CONF supplementary services

Figure B.1 shows a configuration with four conferees connected to a conference bridge together with the CONF-served user. Figure B.2 shows at what point in time the AOC-E charging information is sent to user A and the content of this information, during the time the connection is established.

User A has activated the AOC-E supplementary service "for all calls". For this particular case, user A requests the CONF supplementary service from an already existing call (established to user B1).
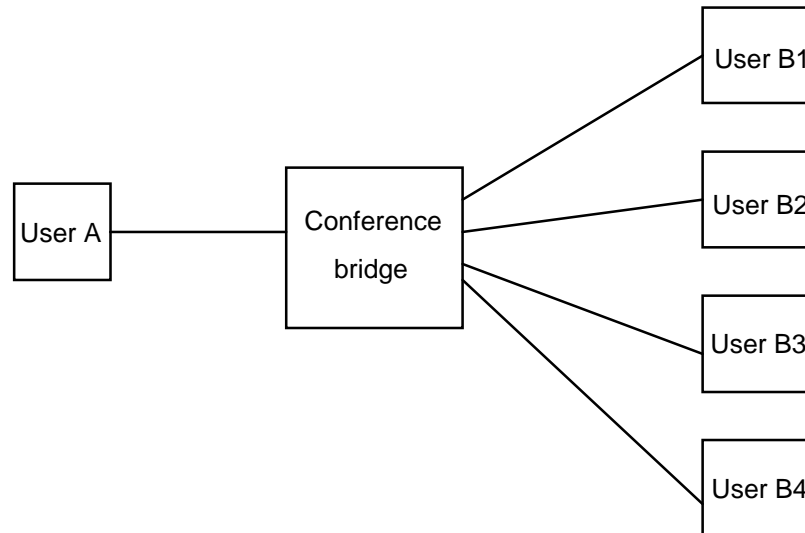

Figure B.1: Served user (user A) of the CONF supplementary service, and conferees

Figure B.2 shows the sequence of events which occur at certain moments in time, as indicated by t0 through t8.

At time t0:   User A establishes a call to user B1.

At time t1:   User A requests the CONF supplementary service in the active state using the call established to user B1.

At time t2:   User A places the conference on hold, and establishes a new connection to user B2.

At time t3:   User A adds the call to user B2 to the conference. The network sends AOC-E information about the connection between user A and user B2.

At time t4:   User A places the conference on hold, and establishes a new connection to user B3.

At time t5:   User A adds the call to user B3 to the conference. The network sends AOC-E information about the connection between user A and user B3.

At time t6:   User A places the conference on hold, and establishes a new connection to user B4.

At time t7:   User A adds the call to user B4 to the conference. The network sends AOC-E information about the connection between user A and user B4.

At time t8:   User A releases the conference call. The network sends AOC-E information about the conference call to user A.

When user A releases the conference call at time t8, the network sends the accumulated sum of the following charges to user A:

AOC-E at t8:   A-B1(t0 to t8) + A-B2(t3 to t8) + A-B3(t5 to t8) + A-B4(t7 to t8)

NOTE: A-B1(t0 to t8) means the charges applied for the connection between user A and user B1 during the time period from t0 to t8.

If the user wants to indicate the total charges applied by the network on all calls from user A during the time period from t0 to t8, the following applies:

Total cost: [AOC-E at t8] + A-B2(t2 to t3) + A-B3(t4 to t5) + A-B4(t6 to t7)
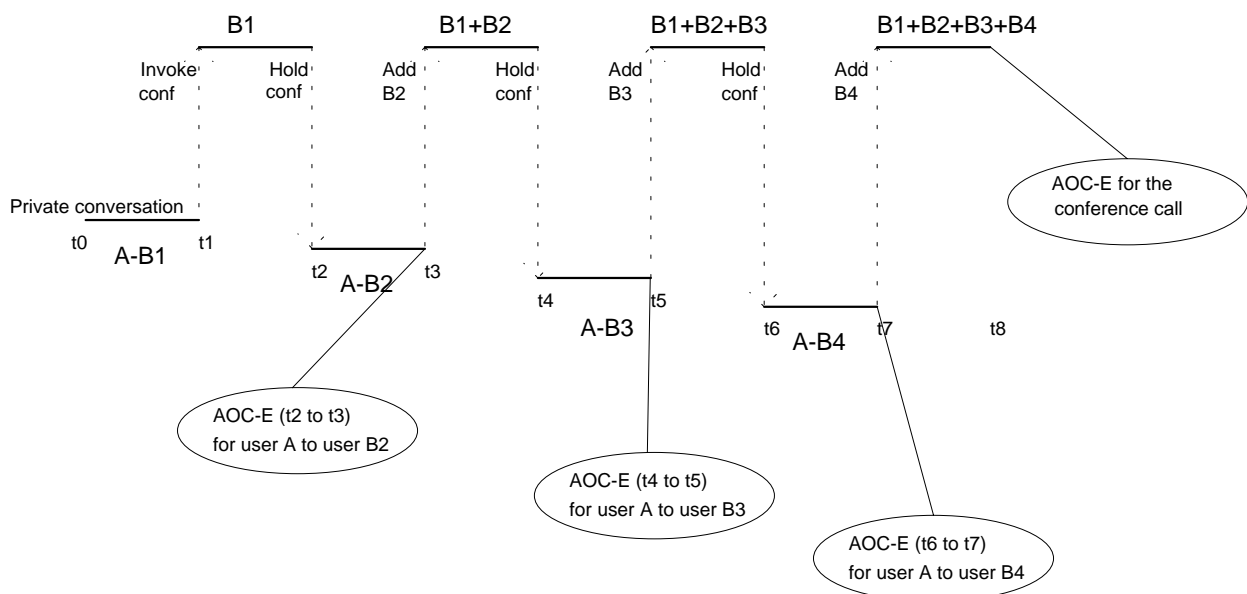
Figure B.2: Sending charging information to user A

History

Document history		
Edition 1	February 1995	Publication as ETS 300 195-1
V1.3.1	December 1997	Public Enquiry PE 9815: 1997-12-12 to 1998-04-10