Technical Document TNA 134

Telecom ISDN User-Network Interface: Layer 3:

PART D

Procedures for Specific Supplementary Services


Spark
New Zealand

TELECOM ISDN USER-NETWORK INTERFACE
LAYER 3
PART D
PROCEDURES FOR SPECIFIC SUPPLEMENTARY SERVICES

CONTENTS


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1 General

This Part describes specific ISDN supplementary services that are supported by Telecom. Details are given of the signalling requirements to support these services.

This Specification does not cover the commercial or financial arrangements required for the provision of the services or options. Information on any particular service in this specification does not imply the comercial availability of this service from any particular Telecom exchange.

Notes on the implementation of specific supplementary services at this time are included in Appendix I.

2 Direct Dialling In

2.1 Description

Direct Dialling In (DDI) enables a user to call directly to another user on an ISDN Private Branch Exchange (ISPBX) or other private systems, without attendant intervention. This supplementary service is based on the use of the ISDN number and does not include Sub-addressing

A part of the ISDN number, which is significant to the called user, is passed to that user during call establishment. This supplementary service is based on the use of the ISDN called party number and does not include subaddressing.

Services are assigned to the interface or group of interfaces. Therefore, all DDI numbers within a group of interfaces will inherit the same services.

DDI is based on ITU-T Recommendations I.251.1 and Q.951.1.

2.2 Protocol

The last 2-7 digits of the user's number can be forwarded to the called user. The number of digits will be based on the total number of DDI numbers associated with the access or group of access lines. This will be agreed to between the user and Telecom at subscription time.

The DDI number will be delivered in the Called party number information element of the SETUP message offering the call to the access. En-bloc procedures will be used in accordance with Part B.

Refer to clause 4.5.8 of Part B for the structure and coding of the Called party number information element.

The Called party number information element will be coded:

Numbering Plan Identifier (NPI)	0001	E.164
Type Of Number (TON)	000	unknown

The Number field will be coded with IA5 characters representing the agreed number of digits.

The Sending complete information element is always included in the SETUP message sent to the user.

Special arrangements may exist where other formats and ranges of numbers may be sent to the user. This will be done by mutual arrangement with the user.

2.3 Point-to-point configuration

On a Basic rate interface, where Line Hunting applies, the user may specify the configuration at the interface. The options are:

1) Point-to-multipoint configuration. This is the default. When a call is offered to the user a point-tomultipoint data link is used and the network will code the Channel identification information element:

   Information channel selection = *B1* or *B2*

   Preferred/exclusive = *exclusive*

   The user terminal(s) shall respond to the SETUP message using point-to-point data link(s).

2) Point-to-point with network determined channel selection. When a call is offered to the user a point-topoint data link is used and the network will code the Channel identification information element:

   Information channel selection = *B1* or *B2*

   Preferred/exclusive = *preferred*

3) Point-to-point with user determined channel selection. When a call is offered to the user a point-to-point data link is used and the network will code the Channel identification information element:

   Information channel selection = *any channel*

   Preferred/exclusive = *preferred*

   The user equipment must assign a B-channel in the first message sent in response to the SETUP message.

The configuration affects other aspects of signalling which are identified throughout the text.

2.4 Interactions with other services

A similar method to select a terminal on a passive bus is described in the supplementary service MSN (Multiple Subscriber Number). The DDI and MSN services are mutually exclusive.

For interaction of DDI with Line Hunting see section 15.3.

3 Multiple Subscriber Number

3.1 Description

Multiple Subscriber Number (MSN) provides the possibility for assigning multiple ISDN numbers to a single interface. This allows e.g.

1) to dial from a line connected to a public network directly to specific terminals connected to a passive access which has subscribed to MSN (e.g. in a passive bus configuration);
2) the network to determine which ISDN number is applicable on originating calls, e.g. for charging purposes, for notification to the called party and application of basic and supplementary services.

MSN is available on Basic access lines only.

Up to eight different ISDN numbers can be registered against one Basic access line.

Each number can be assigned different basic services and supplementary services.

The user's complete directory number will be forwarded by the network.

MSN is based on ITU-T Recommendations I.251.2 and Q.251.2.

3.2 At the Originating Interface

The user's number may be included in the Calling party number information element of the SETUP message initiating the call.

The Calling party number information element shall be coded:

Numbering Plan Identifier (NPI)	0000	unknown; or,
	0001	E.164
Type Of Number (TON)	000	unknown; or,
	100	subscriber number

The Number field will be coded with IA5 characters representing the subscriber's directory number.

If the calling number is not present, or is not a valid number for the interface, the network will generate or substitute the default number for the interface.

If the calling number is present, and is a valid number for the interface, the network will use the supplied number.

The resulting number will be used to determine what services apply to the call.

3.3 At the Destination Interface

The number will be delivered in the Called party number information element of the SETUP message offering the call to the access. En-bloc procedures will be used in accordance with Part B.

Refer to Part B for the structure of the Called party number information element.

The Called party number information element will be coded:

Numbering Plan Identifier (NPI)	0001	E.164
Type Of Number (TON)	100	subscriber number

The Number field will be coded with IA5 characters representing the subscriber's directory number.

The Sending complete information element will always be present in the SETUP message indicating that the complete number has been included.

3.4 Interactions with other services

The DDI and MSN services are mutually exclusive.

As different services can be assigned to different MSNs, the operation of other services is dependent on the MSN associated with the call.

4 Calling Line Identification Presentation

4.1 Description

Calling Line Identification Presentation (CLIP) is a supplementary service offered to the called party which provides the calling party's ISDN number, possibly with subaddress information as well.

The information provided to the called party consists of the ISDN number of the calling party in a form sufficient to allow the returning of the call (i.e., a national number or an international number and optional subaddress if provided by the calling party). See clause 4.6 for notes on the number presented.

Calling numbers provided to the called ISDN user are not restricted to calling ISDN lines. The numbers of most calling lines within New Zealand will be available, except where the number is restricted. The availability of numbers from overseas networks (both ISDN and PSTN lines) is subject to the service provided by the overseas network and to bilateral arrangements concerning the provision of the restriction service. Depending on the arrangements with network operators in other countries, the number presented for international calls may be:

- international number
- the digits “0000”

CLIP is marketed under the product name Caller Display.

CLIP is based on ITU-T Recommendations I.251.3 and Q.251.3.

4.2 Specific Terminology

A served party is the user of a particular ISDN number who has subscribed to the presentation of the calling line identification information in association with incoming calls.

A calling party is the user that initiated an incoming call to the served user. The calling party need not have subscribed to the Calling Line Identification Presentation supplementary service.

An ISDN number is the number of a subscriber belonging to the public ISDN. An ISDN number provided by the user shall be coded according to the numbering plan specified in the Numbering plan identification field defined in clause 4.5.10 of Part B.

An address is the number of the calling party (normally ISDN number), and a subaddress as specified by that user (where applicable).

A default number is an agreed number between the user at the calling side and the network provider.

4.3 Operational and coding requirements

All information pertaining to CLIP is inserted in the SETUP message sent as part of the basic call procedures according to section 5 of Part B. Clauses 4.5.10 and 4.5.11 of Part B give the codings for the Calling party number and the Calling party subaddress information elements which are required to support this service.

In the case where no calling party number is provided by the calling party (as part of the basic call procedures) the network will provide the default number associated with the user access from which the call was generated in the originating local exchange.

4.4 Procedures at the originating interface

The following procedures are provided as part of the basic service and the calling user need not have subscribed to the CLIP supplementary service.

When a SETUP message is received from the calling user the network will check to see if the Calling party number and Calling party subaddress information elements are included.

If there is a user provided calling party number, that number will be screened to determine if it is a valid number by which a calling user can be addressed. The network disregards any value of the Screening indicator that may be received from the calling user.

If the calling party number is a valid number, the number is given a Screening indicator value of *User provided, verified and passed*.

If the SETUP message does not contain the Calling party number information element, or the screening function has determined that the provided calling party number is incorrect, the network will use the default number associated with the calling user. The Screening indicator is set to *Network provided*.

The Calling party number information element sent by the calling user shall be coded:

Numbering Plan Identifier (NPI)	0000	unknown; or,
	0001	E.164
Type Of Number (TON)	000	unknown; or,
	100	subscriber number

The Number field will be coded with IA5 characters representing the subscriber's directory number.

The Presentation indicator, as determined by the procedures of CLIR, is forwarded to the destination exchange, in association with the basic call request.

If the user provided the Calling party subaddress, it will be sent transparently through the network.

4.5 Procedures at the destination interface

When the destination local exchange receives a network setup request, basic call handling occurs and a SETUP message is sent to the called user. If the called user has the Calling Line Identification Presentation supplementary service, the network checks to see if the calling party number is available.

If the calling party number is available and presentation is allowed according to the presentation indicator supplied with the calling party number, the Calling party number information element is included in the SETUP message sent to the called user. If provided, the Calling party subaddress information element will also be included in the SETUP message. The presentation and screening indicators associated with the calling party number are passed unchanged to the called user.

If the calling party number is available, but presentation is restricted (i.e., not allowed) according to the presentation indicator supplied with the calling party number, the Calling party number information element is included in the SETUP message sent to the called user. The presentation indicator in the Called party number information element will indicate *Presentation restricted*. No number digits will be provided. The screening indicator will be set to *network provided*. The type of number and numbering plan identification will be set to *unknown*. The Calling party subaddress information element, if provided, will not be included in the SETUP message.

If the calling party number is not available at the destination local exchange, a Calling party information element will be included in the SETUP message. The presentation indicator is set to *Number not available due to interworking*, the screening indicator is set to *Network provided* and the type of number and numbering plan identification are set to *Unknown*. The Calling party number information element will contain only the presentation and screening indicator and no number digits.

If the called user does not have the Calling Line Identification Presentation service, neither the Calling party number nor the Calling party subaddress information elements will be included in the SETUP message sent to the called user.

4.6 Use of the number by the called user

For public calls the number will be presented as a national number or an international number (see clause 4.45.10 of Part B.) The Type of Number field of the Calling party number information element will be coded to identify the type of number. To make a call back to the number that is presented, the user must either:

- include the *Type of Number* field in the Called party number information element sent to the network; or,
- set the *Type of Number* field in the Called party number information element to *unknown* and add the appropriate prefix for the national number or the international number; or,
- by analysis of the number, and if it can be determined that the call is a local call, set the *Type of Number* field in the Called party number information element to *unknown* and remove the area code.

5 Calling line identification restriction

5.1 Description

Calling Line Identification Restriction (CLIR) is a supplementary service offered to the calling party to restrict presentation of the calling party's ISDN number and subaddress to the called party.

When CLIR is applicable and activated the originating node provides the destination node with a notification that the calling party's ISDN number and any subaddress information, is not allowed to be presented to the called party. In this case no calling party number is included in the call offering to the called user.

Three modes of CLIR are provided.

a) Permanent CLIR restricts the presentation of calling number for all calls originated by the interface. The user cannot change this for any call.

b) Restriction with per call unblocking normally restricts the presentation of the calling number but allows the user to unblock this restriction on a per call basis by including a prefix with the call.

c) If the presentation of the calling number is not normally restricted the user may restrict the presentation for a call by including a prefix with the call.

It is not possible to change the presentation of the calling number by the use of the screening indicator field in the Calling party number information element.

CLIR is based on ITU-T Recommendations I.251.4 and Q.951.4.

5.2 Procedures at the originating interface

If the calling user has subscribed to the permanent mode of Calling Line Identification Restriction supplementary service, the presentation indicator received in the SETUP message will be ignored. The presentation indicator forwarded through the network will indicate *Presentation restricted*.

If the calling user has subscribed to Calling Line Identification Restriction with per call unblocking, the presentation indicator received in the SETUP message will be ignored. The presentation indicator forwarded through the network will, by default, be set to *Presentation restricted.* When the caller includes the correct unblocking code prefix with the called number the presentation indicator will be set to *Presentation allowed*.

If the calling user has not subscribed to either form of CLIR the presentation indicator will, by default, be set to *Presentation allowed*. When the caller includes the correct blocking code prefix with the called number the presentation indicator will be set to *Presentation restricted.*

The service options and procedures for CLIR are identical on ISDN and PSTN lines. The operation of the CLIR service will be identical from a user's perspective for:

an analogue telephone connected to an ISDN line via a terminal adaptor;

or, an analogue telephone connected to a PSTN line; or, an ISDN

telephone connected to an ISDN line.

On Centrex and VPN lines the same options and procedures apply. However, the public network escape prefix should precede the CLIP/CLIR prefix.

5.3 Procedures at the diverting interface

If a line has restriction enabled as described in 5.1 a) or 5.1 b), the redirecting number information as described in clause 26 will also be restricted.

5.4 Procedures at the destination interface

The actions to be performed at the destination interface are provided as part of the CLIP service.

6 Connected line identification presentation

6.1 Description

Connected line identification presentation (COLP) is a supplementary service offered to the calling party which provides the connected party's number, with possible additional sub-address information, to the calling party.

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

Moreover, the information on the connected line identity may include additional sub-address information (i.e. the Connected sub-address information element) generated by the connected user and transparently transported by the network. The network is not responsible for the content of this additional sub-address information.

Unless Connected line identification restriction (COLR) has been subscribed to by the connected user, the network delivers the connected line identity to the calling user regardless of the terminal capability to handle the information.

Connected numbers provided are not restricted to ISDN lines. The numbers of most calling lines within Telecom's network will be available, except where the number is restricted. The availablity of numbers from other national networks (both ISDN and PSTN) is subject to the service provided by the other network and interconnection agreements. The availability of numbers from overseas networks (both ISDN and PSTN lines) is subject to the service provided by the overseas network and to bilateral arrangements concerning the provision of the restriction service.

In some cases a call may be answered before the call is forwarded to the final destination. This may occur with some operator assisted calls. In this case the connected number will be returned when the call is initially answered. The number of the final connected line will not be available.

For some special call types, such as 0800 or Call Minder calls, special arrangements apply. The number returned as the connected number may not be the actual network number that answers the call as this destination cannot normally be directly called by the caller. The number returned will be the number the caller can dial to call the connected line.

Note that calls to a PABX may return the pilot number, and not the number dialled.

COLP is based on ITU-T Recommendations I.251.5 and Q.951.5.

6.2 Specific terminology

For the purposes of this Specification, the following terms apply:

A connected user is the user that responded to the call request at the destination network and has been awarded the call by the network. The connected user need not have subscribed to the Connected Line Identification Presentation supplementary service.

A default number is an agreed number between the user at the connected side and the network provider.

6.3 Procedures at the originating interface

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

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

For public calls the numbering plan identification field will be coded either as *ISDN/telephony numbering plan* (see ITU-T Recommendation E.164) or *unknown*.

If presentation is not allowed according to the presentation indicator supplied together with the connected number, the network will include the Connected number information element in the CONNECT message sent to the calling user. The

presentation indicator in the Connected number information element will indicate *presentation restricted*. The network will encode the screening indicator, numbering plan identification and the type of number according to one of the following options:

i) The screening indicator shall indicate *network provided*. The type of number and numbering plan identification shall be set to *unknown*. Telecom implements this option. ii) The screening indicator, numbering plan identification and the type of number shall be passed as received at the destination network. Telecom does not implement this option.

The network will not include the number digits field. The network will not include the Connected sub-address information element, if provided, in the CONNECT message.

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

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

If presentation is restricted but, as a national network option, the calling user has the *override* category (e.g police or emergency service) marked in the originating local exchange, the network will include the Connected number information element and Connected sub-address information element if the sub-address was supplied by the connected user, in the CONNECT message. In this case, the presentation and screening indicators will be passed transparently to the calling user. Override category is not currently supported.

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

6.4 Procedures at the destination user

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

The numbering plan identification to be indicated within the Connected number information element, sent by the connected user shall be either *ISDN/telephony numbering plan* (see ITU-T Recommendation E.164) or *unknown*.

The type of number to be indicated within the Connected number information element, sent by the connected user, shall be *Subscriber number*.

6.5 Actions at the destination local exchange

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

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

Where a CONNECT message is received from the connected user, the network will check to see if the Connected number and Connected sub-address information elements are included.

If the Connected number information element is received with a coding of the numbering plan identification field other than “ISDN/telephony numbering plan” (see ITU-T Recommendation E.164) or “unknown”, then the network will discard the Connected number information element and process the call as if that information was not received.

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

If the Connected number information element is included, the network will perform the screening function.

If the connected number received from the connected user is determined to be correct, the network will set the screening indicator to “user-provided, verified and passed”.

If the screening function fails, the network will note that the screening is failed and will use a default number associated with the connected user. The network will set the screening indicator to “network provided”.

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

The information, as determined by the procedures above, will be forwarded to the originating local exchange, in association with the basic call response.

The presentation indicator, as determined by the procedures of the COLR supplementary service, will be forwarded to the originating local exchange, in association with the basic call response.

If the Connected sub-address information element is available, it will be passed transparently through the network.

6.6 Interactions with other services

If the called user has subscribed to MSN then only the particular MSN number used to access the interface is considered valid by the network.

If the called number is a freephone number (eg. an 0800 number) then the freephone number will be returned to the calling user as the connected number. No Connected subaddress information element will be included.

7 Connected line identification restriction

7.1 Description

Connected line identification restriction (COLR) is a supplementary service offered to the connected party to restrict presentation of the connected party’s ISDN number and sub-address to the calling party.

When COLR is applicable and activated, the destination network shall provide the originating network with an indication that the connected user’s ISDN number and sub-address information is (if provided by the connected user) are not allowed to be presented to the calling user. In this case no connected number and sub-address shall be included in the call connected information to the calling user.

Only permanent mode COLR is supported. COLR on a per call basis is not currently supported.

COLR is available on all ISDN lines and all PSTN lines where their connected number may be presented to the calling user. COLR is not applicable to PSTN lines whose connected number will not be available due to interworking.

COLR is based on ITU-T Recommendations I.251.6 and Q.951.6.

7.2 Procedures at the originating interface See

the procedures for COLP.

7.3 Procedures at the destination interface

If the connected user has subscribed to the Connected Line Identification Restriction supplementary service permanent mode, the presentation indicator received in the CONNECT message will be ignored. The network shall set the presentation indicator to “presentation restricted”.

The presentation indicator shall be forwarded to the originating network in association with the basic call response.

8 Malicious Call Identification

8.1 Description

Malicious Call Identification (MCID) gives a called user the possibility to cause, by an appropriate request, the registration in the network of the following items:

- called party number;
- calling party number;
- local time and date of the invocation in the network serving the called user.

The location of the registration function in the served user's network is a matter of implementation. The information will not be available to the terminal equipment under the control of the called user nor the calling user. The information will be stored at a location(s) under the control of the network operator.

The provision of call information for MCID purposes on calls between different networks is subject to bilateral agreement between the service providers involved. Furthermore, the provision of call information for MCID purposes across international boundaries will be subject to bilateral agreement between the legal authorities of the countries involved.

The MCID supplementary service can either be invoked during or after the active phase of the call, but before the called user has cleared.

The ITU-T MCID service is based on ITU-T Recommendations I.251.7 and Q.951.7.

8.2 Implementation

Malicious Call Identification (MCID) as defined by ITU-T is not currently supported. Telecom provides other means for identifying malicious or nuisance calls even after the call has been cleared. No DSS1 signalling is involved.

9 Sub-addressing

9.1 Description

The Subaddressing (SUB) supplementary service allows the called user to expand their addressing capacity beyond the one given by the ISDN number.

A called party subaddress, if presented by a calling user, is delivered unaffected to the called user. The called party subaddress may form part of the compatibility checking by the called user. Only the called user defines the significance of the subaddress. Applications can be for example:

1) to select or to prefer a specific terminal at the called customer's termination;
2) to invoke a specific process in a terminal at the called customer's termination.

The functions offered by this supplementary service can be used to identify a particular endpoint of a call beyond the ISDN access point.

If a calling user wants to transfer called party subaddress information to the called user, the calling user shall insert the Called party subaddress information element in the SETUP message as part of the basic call (see Figure 9-1/D).

Note - Other subaddress information elements, e.g. Calling party subaddress information element, are not the subject of the SUB supplementary service and hence are described in the appropriate supplementary service specification (e.g., in the calling line identification presentation supplementary service).

Subaddress supplementary service is provided to all ISDN lines without subscription by either the calling or called user.

SUB is based on ITU-T Recommendations I.251.8 and Q.951.8.

9.2 Operational and coding requirements

The SUB supplementary service uses the incoming call and call offering procedures described in section 5 of Part B. The called party sub-address information is included in the Called party sub-address information element which will be carried by the SETUP message sent to the called user.

9.3 Exceptional procedures

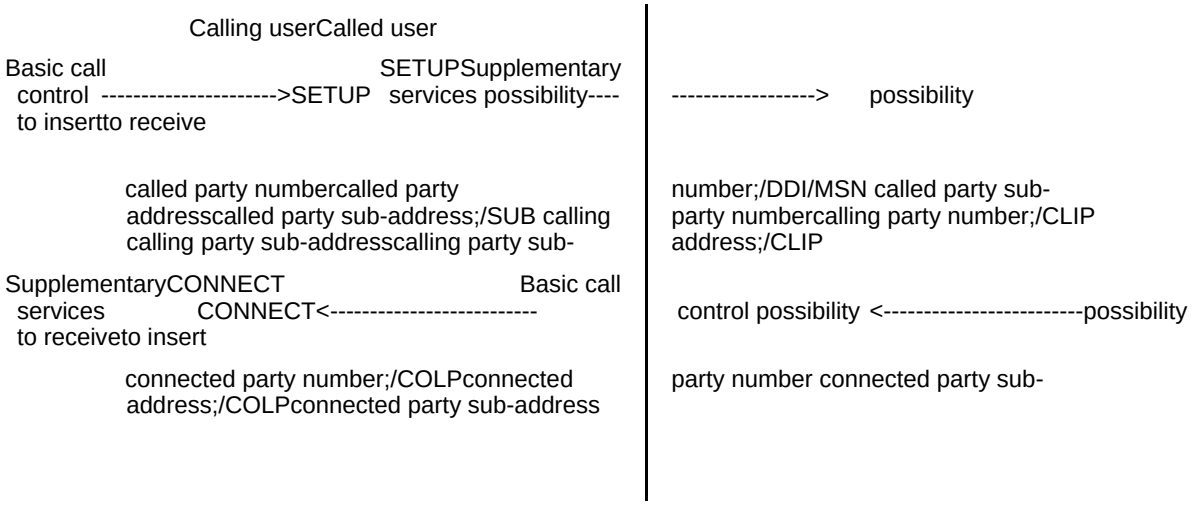
If the SUB supplementary service is not provided to the called user or the length of the called party sub-address information element exceeds the maximum length of 23 octets the network shall discard the Called party sub-address information element. No indication shall be given to the calling user.

If the SUB supplementary service is provided to the called user but no sub-address information has been included by the calling user in the called party sub-address information element, the SUB supplementary service cannot be provided and the call shall be offered to the called user without the called party sub-address information element.

If a terminal supports the SUB supplementary service but the received sub-address information does not match with the terminal's own sub-address, then the call shall be ignored [see also clause B.3.1 a) of Part B].

If a terminal supports the SUB supplementary service and a SETUP message without sub-address is received, then the terminal shall handle the call according to clause 5.2 of Part B.

Note – If a terminal which does not support the SUB supplementary service receives a SETUP message with called party sub-address information, then the terminal will handle the call according to clause 5.2 of Part B [see also clause B.3.1 b) of Part B].



The following symbols appearing after an information element name indicate the service to which they apply:

DDI	Direct-Dialling-In supplementary service
MSN	Multiple Subscriber Number supplementary service
SUB	Sub-addressing supplementary service
CLIP	Calling Line Identification Presentation supplementary service
COLP	Connected Line Identification Presentation supplementary service

FIGURE 9-1/D

Correlations of address information elements to the basic call control or supplementary services

10 Call Transfer

10.1 Description

Call Transfer (CT) enables a user to connect an existing call, either incoming or outgoing, to a third user.

Call Transfer is currently supported on Centrex lines only. It is supported on both Primary rate and Basic rate interfaces.

ITU CT is based on ITU-T Recommendations I.252.7 and Q.952.7.

10.2 Procedures

Call Transfer is initiated by the feature key and information request procedures described in section 5 and Appendix I of Part C. The invoking user sends an INFORMATION message with a Feature activation information element to request the service. The network will respond with an INFORMATION message containing an Information request information element prompting for address digits. The user may disconnect before or after the new user answers.

11 Call Forwarding Busy

11.1 Description

For a given ISDN number, the Call Forwarding Busy (CFB) service (including options) may be subscribed to for each basic service to which the user(s) of the number subscribes, or collectively for all the basic services to which the user(s) subscribes. Since subscription is on an ISDN number basis, the same call forwarding subscriptions will apply to all terminals using this number.

Note – In this service description, it is assumed that a single ISDN number is not shared across multiple interfaces. A single ISDN number may, however, be shared by multiple terminals on the same interface.

The same forwarded-to number will apply to all basic service subscription parameter values to which the user has subscribed.

An indication that the CFB service is activated on a number may, as an option, be given to the user who has forwarding activated, each time an outgoing call is made. This may take the form of a special dial tone.

The called user may be presented with information about the diverting line. See the Dialled Number Information Service (DNIS) for details (see clause 26).

Call Forwarding Busy is also known as Call Diversion on Busy (CDB).

CFB is available on Basic rate and Primary rate interfaces.

CFB is based on ITU-T Recommendations I.252.2 and Q.952.2.

11.2 Procedures

Call Forwarding Busy is activated and deactivated by using the keypad protocol described in clause 4 and Appendix I of Part C. Registering the diverted to number and activation of the diversion are completed in separate steps.

Registration is achieved by including a sequence of digits consisting of a prefix and the address to which calls are to be forwarded in the Keypad information element or the Called party number information element in the SETUP message. A confirmation tone will be returned to the user by the network. Confirmation tone is an interrupted dial tone.

Activation is achieved by including a sequence of digits in the Keypad information element or the Called party number information element in the SETUP message. A confirmation tone will be returned to the user by the network.

With Remote Control of Call Diversion it is possible to activate and deactivate forwarding from any other line (ISDN or PSTN). For this service a Personal Identification Number (PIN) must be assigned to the controlled line.

On a Primary rate interface CFB applies only to Network Determined User Busy (NDUB).

By default, only calls to the pilot number for the Primary rate group are forwarded. As an option calls to DDI numbers are also forwarded.

11.3 Interactions with other services

If an interface has CFB activated and is part of a multihunting group, multihunting takes precedence.

12 Call Forwarding No Reply

12.1 Description

Call Forwarding No Reply (CFNR) permits a "served user" to have the network send to another number all incoming calls for the served user's ISDN number which meet no reply, or just those associated with a specified basic service which meet no reply. The user's originating service is unaffected.

Call Forwarding No Reply (also known as Call Diversion No Answer (CDNA)) currently applies only to Basic rate lines.

The forwarded-to number is registered with the network for use on all calls.

Note

– In normal situations, the Call Forwarding No Reply service is provided on a per access basis. (In these situations, there is a one-to-one relationship between ISDN number and access.) However, the network may recognize multiple numbers on a single interface; in addition, it may not understand a complete ISDN number (e.g. Direct-Dialling-In). In these cases, the Call Forwarding No Reply service is offered on the basis of the part of the ISDN number which the network can recognize.

For a given ISDN number, the Call Forwarding No Reply (CFNR) service (including options), may be subscribed to for each basic service to which the user(s) of the number subscribes, or collectively for all the basic services to which the user(s) subscribes. Since subscription is on an ISDN number basis, the same call forwarding subscriptions will apply to all terminals using this number.

Two conditions of CFNR are possible as follows:

1) the call is offered and no indication of a compatible terminal is received;

or 2) the call is offered and an indication of a compatible terminal is received.

Only case 2) is considered here. Case 1) is for further study.

Note – In this service description, it is assumed that a single ISDN number is not shared across multiple interfaces. A single ISDN number may, however, be shared by multiple terminals on the same interface. Procedures permitting an ISDN number to be shared across multiple interfaces are for further study.

The same forwarded-to number will apply to all basic service subscription parameter value to which the user has subscribed.

An indication that the CFNR service is activated on a number may, as an option, be given to the user who has forwarding activated, each time an outgoing call is made. This may take the form of a special dial tone.

The called user may be presented with information about the diverting line. See the Dialled Number Information Service (DNIS) for details (see clause 26).

CFNR is based on ITU-T Recommendations I.252.3 and Q.952.3.

12.2 Procedures

Call Forwarding No Reply is activated and deactivated by using the keypad protocol described in clause 4 and Appendix I of Part C.

Registration is achieved by including a sequence of digits consisting of a prefix and the address to which calls are to be forwarded in the Keypad information element or the Called party number information element in the SETUP message. A confirmation tone will be returned to the user by the network.

Activation is achieved by including a sequence of digits in the Keypad information element or the Called party number information element in the SETUP message. A confirmation tone will be returned to the user by the network.

With Remote Control of Call Diversion it is possible to activate and deactivate forwarding from any other line (ISDN or PSTN). For this service a Personal Identification Number (PIN) must be assigned to the controlled line.

Note

13 Call Forwarding Unconditional

13.1 Description

Call forwarding unconditional (CFU) permits a "served user" to have the network send to another number all incoming calls for the served user's ISDN number (or just those associated with a specified basic service). The served user's originating service is unaffected. If this service is activated, calls are forwarded no matter what the condition of the termination. Other call forwarding services provide for call forwarding based on condition, e.g. Call Forwarding Busy and Call Forwarding No Reply.

Call Forwarding Unconditional (also known as Call Diversion Immediate (CDI)) is supported on Basic rate and Primary rate interfaces.

The forwarded-to number is registered with the network for use on all calls.

– In normal situations, the Call Forwarding Unconditional service is provided on a per access basis. (In these situations, there is a one-to-one relationship between ISDN number and access.) However, the network may recognize multiple numbers on a single interface; in addition, it may not understand a complete ISDN number (e.g. Direct-DiallingIn). In these cases, the Call Forwarding Unconditional service is offered on the basis of the part of the ISDN number which the network can recognize.

For a given ISDN number, Call Forwarding Unconditional (CFU) service (including options) may be subscribed to for each basic service to which the user(s) of the number subscribes, or collectively for all the basic services to which the user(s) subscribes. Since subscription is on an ISDN number basis, the same call forwarding subscriptions will apply to all terminals using this number.

Note – In this service description, it is assumed that a single ISDN number is not shared across multiple interfaces. A single ISDN number may, however, be shared by multiple terminals on the same interface.

The same forwarded-to number will apply to all basic service subscription parameter values to which the user has subscribed.

An indication that the CFU service is activated on a number may, as an option, be given to the user who has forwarding activated, each time an outgoing call is made. This may take the form of a special dial tone.

The called user may be presented with information about the diverting line. See the Dialled Number Information Service (DNIS) for details.

CFU is based on ITU-T Recommendations I.252.4 and Q.952.4.

13.2 Procedures

Call Forwarding Unconditional is activated and deactivated by using the keypad protocol described in clause 4 and Appendix I of Part C. Registering the diverted to number and activation of the diversion are completed in separate steps.

Registration is achieved by including a sequence of digits consisting of a prefix and the address to which calls are to be forwarded in the Keypad information element or the Called party number information element in the SETUP message. A confirmation tone will be returned to the user by the network.

Activation is achieved by including a sequence of digits in the Keypad information element or the Called party number information element in the SETUP message. A confirmation tone will be returned to the user by the network.

With Remote Control of Call Diversion it is possible to activate and deactivate forwarding from any other line (ISDN or PSTN). For this service a Personal Identification Number (PIN) must be assigned to the controlled line.

On a Primary rate interface CFU applies only to Network Determined User Busy (NDUB).

Note
By default only calls to the pilot number for the Primary rate group are forwarded. As an option calls to DDI numbers are also forwarded.

14 Call Deflection

Call Deflection (CD) permits a served user to, in real time, request that the network redirects an incoming call addressed to the served user's ISDN number to another number. The served user's originating service is unaffected.

Call Deflection (CD) allows a user to forward a call that has been offered by the network before answer. If a DDI extension on a PABX has diverted their calls ack into the public network, the PABX could deflect the call back into the public network. The B-channel used for the call offering would then be released.

Note – In normal situations, the Call Deflection service is provided on a per access basis. (In these situations, there is a one-to-one relationship between ISDN number and access.) However, the network may recognize multiple numbers on a single interface; in addition, it may not understand a complete ISDN number (e.g. Direct-Dialling-In). In these cases, the Call Deflection service is offered on the basis of the part of the ISDN number which the network can recognize.

For a given ISDN number, Call Deflection (CD) service (including options) may be subscribed to for each basic service to which the user(s) of the number subscribes, or collectively for all the basic services to which the user(s) subscribes. Since subscription is on an ISDN number basis, the same call deflection subscriptions will apply to all terminals using this number.

– In this service description it is assumed that a single ISDN number is not shared across multiple interfaces. A single ISDN number may, however, be shared by multiple terminals on the same interface. Procedures permitting an ISDN number to be shared across multiple interfaces are for further study.

Call Deflection is not currently supported. PABX users can still achieve an equivalent function by extending the call back into the public network. From the perspective of the public network this will treated as an independent call.

CD is based on ITU-T Recommendations I.252.5 and Q.952.5.

CD is not curently supported.

15 Line Hunting

15.1 Description

Line Hunting (LH) is a supplementary service which enables incoming calls to a specific ISDN number to be distributed over a group of interfaces.

It is the responsibility of the user to provision terminals to the interfaces for effective operation of the service. The problem of terminal compatibility in the line hunting supplementary service is also the responsibility of the user of the service.

LH is based on ITU-T Recommendations I.252.6 and Q.952.6.

Note

15.2 Procedures

Line hunting is possible over multiple ISDN interfaces. This is referred to as series completion. If an interface is Network Determined User Busy (NDUB) the network will test the next interface in the series until an available B-channel is found.

In linear hunting, searching stops when the last interface is reached. In circular hunting any line can be called and all interfaces are searched.

If all interfaces in the series are NDUB, except for interactions with other services (see clause 15.3), a busy indication is returned to the calling user.

Once an interface has been selected by the network, normal call set-up procedures described in Part B apply. Except for interactions with other services (see clause 15.3), if the interface is User Determined User Busy (UDUB) a busy indication is returned to the calling user.

There is no limit on the number of interfaces in a series completion set. However they all must be on the same network switch.

15.3 Interactions with other services

Line Hunting can be used to hunt across multiple DDI groups. This applies only to calls to the pilot number of a DDI group. Calls to a DDI number will be offered only to interfaces within that DDI group.

If a CFB service is assigned to the last line for linear hunting, or to all lines for circular hunting, and all lines in the hunt sequence are NDUB then the diversion will occur.

For calls under the control of the Intelligent Network (IN), e.g., 0800 calls, diversion of calls can be initiated for other causes in addition to NDUB. If one of the causes:

1 Unallocated (unassigned) number
3 No route to destination
17 User busy
18 No user responding
19 No answer from user (user alerted) (NAnswer)
21 Call rejected
22 Number changed
27 Destination out of order
28 Invalid number format (address incomplete)
29 Facility rejected
31 Normal, unspecified
34 No circuit/channel available
41 Temporary failure
42 Switching equipment congestion
47 Resource unavailable, unspecified
50 Requested facility not subscribed 55
Incoming calls barred within CUG
57 Bearer capability not authorized
58 Bearer capability not presently available
63 Service or option not available, unspecified
65 Bearer capability not implemented
79 Service or option not implemented, unspecified
87 User not member of CUG
88 Incompatible destination
91 Invalid transit network selection
95 Invalid message, unspecified
97 Message type non-existent or not implemented
99 Information element /parameter non-existent or not implemented
101 Message not compatible with call state
102 Recovery on timer expiry
111 Protocol error, unspecified 127
Interworking, unspecified

is received from the network or from the user then the call will directed to an alternative destination determined by the IN. Thus non-termination of the call because of NDUB, UDUB, failure in the public network or failure in the private network will trigger call rerouting.

16 Call Waiting

The Call Waiting (CW) supplementary service permits a subscriber to be notified of an incoming call (as per basic call procedures) with an indication that no information channel is available. The user then has the choice of accepting, rejecting, or ignoring the waiting call.

Call Waiting may be provided on Basic rate lines only. If both B-channels are in use and one or both B-channels are carrying a call with a bearer capability of *speech* or *3.1kHz audio* then a call waiting tone will be superimposed on the first B-channel with a speech or 3.1kHz audio call.

The user may answer the new call by sending an INFORMATION message containing a Feature activation element to the network as described in clause 5 and Appendix I of Part C.

17 Completion of Calls to Busy Subscriber

Completion of Calls to Busy Subscriber (CCBS) allows customers to register a request for the network to monitor a called line that is busy and call them back when the line becomes free.

CCBS is based on ITU-T Recommendations I.253.3 and Q.953.3.

CCBS is activated by using the keypad protocol described in clause 4 and Appendix I of Part C

18 Terminal Portability

18.1 Description

The Terminal Portability supplementary service allows a user to move a terminal from one socket to another within one given basic access during the active phase of a call. It also allows a user to move from one terminal to another within one given basic access during the active phase of a call.

The portability of a terminal during the idle state is part of the basic access capabilities and does not require any procedure.

The portability of a terminal in the call establishment and in the call clearing phases is not possible.

The relative terminals should provide at the man/machine interface the capabilities for:

- suspension of the call(s)
- resumption of the call(s)
- indication of the phase of the call(s) (i.e. active phase and suspended phase) as long as the terminal remains plugged in.

The Terminal portability supplementary service does not apply to non-interactive services such as facsimile, teletex, mixed-mode, computer communication, etc. The relative terminals should not provide for the above mentioned capabilities.

It is a user's responsibility to resume the call with a terminal which is compatible both with the remote terminal and with the type of connection previously established.

TP is based on ITU-T Recommendations I.253.4 and Q.953.4.

18.2 Procedures

The procedures for terminal portability are fully described in clause 5.6 of Part B.

19 Conference Calling

The Conference Calling (CONF) supplementary service provides a user with the ability to have a multi-connection call, i.e. a simultaneous communication between more than two parties.

When conference calling is invoked, conference resources (e.g. a “bridge”) are allocated to the served user and any calls indicated by the service request are added to the conference. Once a conference is active, parties may be added, dropped, isolated (i.e. prevented from communicating with the conference), reattached or split (i.e. removed from the conference but remain connected to the conference controller). The controller can place his/her connection to the conference on hold, retrieve the conference, end the conference, or disconnect himself/herself from the conference.

ITU CONF is based on ITU-T Recommendations I.254.1 and Q.954.1.

An alternative conference service is available through a conference bridge controlled by in-band DTMF.

20 Three Party Service

ITU Three Party Service (3PTY) is based on ITU-T Recommendations I.254.2 and Q.954.2.

The ITU-T version not implemented but another version is available using Feature key and information request procedures described in clause 5 and Appendix I of Part C.

21 Outgoing Call Barring

The supplementary service **Outgoing Call Barring** enables a user to bar calls which are originating from this user's access. However, this service does not restrict the reception of incoming calls.

The user may select between two main versions of this supplementary service:

— barring of all calls;

— barring of a special group of calls (e.g. national or international calls).

Outgoing Call Barring (OCB) service may be subscribed to for each basic service to which the user of the access subscribes, or collectively for all basic services to which the user subscribes.

For each of the basic services, the subscriber may request one of the versions as follows:

a) *General Outgoing Call Barring (GOCB)*

For one basic service all originating calls, except some special numbers (e.g. police, fire brigade) are barred.

Note — The service provider decides which numbers are not barred.

b) *Special Outgoing Call Barring (SOCB)*

For one basic service all originating calls, belonging to a special group of calls (e.g. national calls or international calls) are barred.

Note — The service provider may either offer a fixed set of barred numbers to all subscribers or an individual set of barred numbers may be agreed with each subscriber.

OCB is based on ITU-T Recommendations I.255.5 and Q.955.5.

22 Credit Card Calling

ITU-T have not defined access procedures for Credit Card Calling (CRED).

A service is available through Telecom's calling card service by dialling a prefix and entering card details by DTMF inband after answer.

23 Advice of Charge

ITU-T Advice of Charge (AOC) is not implemented. An equivalent service is available by dialling a prefix when making the call. After call completion an operator will call back with charge information.

ITU-T AOC is based on ITU-T Recommendations I.256.2 and Q.956.2.

24 Reverse Charging

Reverse Charging (REV) is a supplementary service allowing the served (called) user to be charged for the entire call or part of the call. Only usage-based charges can be charged to the called user.

ITU-T REV is not implemented. An equivalent service is available through the operator for speech and 3.1 kHz audio calls.

ITU REV is based on ITU-T Recommendations I.256.3 and Q.956.3.

25 User-to-User Signalling

25.1 Description

UUS is based on ITU-T Recommendations I.257.1 and Q.957.1.

The user-user signalling (UUS) supplementary service allows an ISDN user to send/receive a limited amount of information to/from another ISDN user over the signalling channel in association with a call to the other ISDN user.

The UUS supplementary services provide a means of communication between two users by using as a basis the layer 3 protocol defined in section 5 of Part B. The exchange of user-user signalling is limited by flow control procedures provided by the network or the user. The exchange of user-to-user information is not a network acknowledged service. Any acknowledgement procedure shall be controlled at a higher layer between users.

Three UUS services associated with circuit-switched calls that may be provided by the network to users are:

i) service 1 – User-user information exchanged during the setup and clearing phases of a call, by transporting User-user information element within Q.931 call control messages;

ii) service 2 – User-user information exchanged from the caller's point of view during call establishment, between the ALERTING and CONNECT messages, within USER INFORMATION messages; and

iii) service 3 – User-user information exchanged while a call is in the Active state, within USER INFORMATION messages.

Currently Telecom supports service 1 with implicit invocation only.

UUS service 1 must be subscribed to by the calling user.

25.2 Assumptions made about the terminal

Terminal equipment using UUS service 1 is expected to be able to generate and accept the User-user information element (see 4.5.30 of Part B) as described in 25.3.2 below.

The following messages are applicable to the operation of service 1: SETUP, ALERTING, CONNECT, DISCONNECT, RELEASE, RELEASE COMPLETE.

25.3 Signalling requirements

25.3.1 Activation/deactivation/registration

Services 1, 2 and 3 may be provided on a per call basis following an explicit request from a user. The Specification explicit activation procedure makes use of the Facility information element defined in ITU-T Recommendation Q.932 [2].

Service 1 may also be activated implicitly as described in 25.3.2.1 below. In this case, activation and operation of the service are indistinguishable.

Procedures for call establishment are described in Part B with the following modifications. On call request, the SETUP message sent by the calling user shall contain independent service 1, 2 and 3 requests.

The SETUP message sent by the network towards the called user shall also contain the same independent service requests. If the called user can support the indicated services requested by the explicit mechanism, then specific service acceptances shall be indicated in the appropriate message(s) as defined in 25.3.2 below.

Deactivation procedures are not required to support these services.

Called user procedures during activation (and, for service 1, normal operation) of these services are restricted in the case that call contention for calls is possible. For the purposes of these procedures, when a SETUP message is delivered to the called user, the called user should assume that call contention for the call may occur unless at least one of the following applies:

a) the SETUP message is delivered using a point-to-point data link;

b) terminal identification procedures have been successfully completed (see Annex A/Q.932 [2]) and the SETUP message contains an Endpoint identifier information element which uniquely selects the user equipment (i.e. the USID and TID values match the corresponding stored values and the interpreter bit value is 0);

c) the user equipment knows, based on addressing and/or compatibility information in the SETUP message, that it is uniquely identified;

d) the user equipment has local (i.e. configured) knowledge that call contention shall not occur.

From the network's point of view, call contention exists if, based upon knowledge of terminal configuration (or other means, e.g. subscription), the network expects more than one ALERTING message for an incoming call request at the called user's interface.

25.3.2 Invocation and operation

25.3.2.1 Call establishment phase

Service 1 may be implicitly requested by including a User-user information element of variable length as specified in 4.5 of Part B in the SETUP message, transferred across the user-network interface at the calling side as described in 5.1.1 of Part B. This information element is transported by the network and delivered unchanged in the User-user information element included in the SETUP message transferred across the user-network interface at the called side as described in 5.2.1 of Part B. For activation purposes, this information element must be at least three octets long, as defined in 4.5 of Part B.

In the case where call contention by users for the incoming call is not possible, a User-user information element may be included in the ALERTING and/or CONNECT messages transferred across the user-network in the interface at the called side as described in 5.2.5 of Part B. It may also be included in the DISCONNECT or RELEASE COMPLETE message (see 25.3.2.2). The content of this information element is transported by the network and delivered in the User-user information element included in the corresponding message(s) transferred across the user-network interface at the calling side as described in 5.1.7 and 5.1.8 of Part B.

In the case where the network has knowledge that call contention exists, the User-user information element may be included by the called user in the CONNECT message transferred at the called side. It may also be included in the DISCONNECT or RELEASE COMPLETE message (see 25.3.2.2). The content of the User-user information element delivered to the calling user shall be that received from the selected terminal as described in 5.2.8 of Part B.

NOTE – In accordance with the Network Service Definition for Open Systems Interconnection, ISO 8348/Recommendation X.213 [6], the called user may perform compatibility checking using the User-user information element contents (see Annex B of Part B). In the context of the OSI Network Service, service 1 may be used to support the conveyance of the NS-User-Data parameter of the N-Connect and N-Disconnect primitives.

25.3.2.2 Call clearing phase

A User-user information element may be included in the first message used to initiate the normal call clearing phase (see 5.3.3 and 5.3.4 of Part B).

The information contained in such an information element is transferred to the remote user in the first clearing message (see 5.3.3 and 5.3.4 of Part B). Such a transfer is only performed if the information is received at the local exchange of the other party before sending a clearing message to that user; otherwise, the information is discarded without sending any notification.

In addition, when a SETUP message has been delivered using the broadcast capability at the data link layer, and the network is unable to determine from the first response received from the user that there is no call contention, only the following User-user information element transfer is allowed:

a) in the network to called user direction, in the case of premature clearing by the calling user, a User-user information element is sent in the RELEASE message to each called user that has already responded to the incoming SETUP message;

b) in the called user-network direction, the User-user information element shall only be accepted from a terminal which is selected.

If multiple clearing messages are received, the network may, as a network option, retain the User-user information element and, in case of explicit request, the Facility information element along with the cause retained according to 5.2.4.3 of Part B. In the event that this cause is returned to the calling user, the associated User-user information element shall also be returned. If there are multiple clearing messages containing causes of equal priority and User-user information elements, the User-user information element contained in the first clearing message shall be sent to the calling user. If any of the clearing messages with the highest priority causes do not contain User-user information elements and other clearing messages with causes of lower priority do contain User-user information elements, no User-user information element shall be sent back to the calling user. If the network does not retain User-user information elements, it shall include the Cause information element with cause value #43, "access information discarded", in the next sequential message sent to the called user (as specified in 25.3.2).

In the case where call contention by users for the incoming call is not possible, a User-user information element may be included in the first normal clearing message sent by the called user during call establishment at the destination interface.

If the called user rejects the call with a clearing message containing a User-user information element, the network shall deliver the User-user information element in the DISCONNECT message sent to the calling user. However, if the network is providing in-band information to the calling user, and chooses not to initiate clearing procedures at that time, the network may deliver the User-user information element in a PROGRESS message sent to the calling user.

NOTE – It is intended that this capability may be used to provide the clearing data transfer (i.e. conveyance of the NS-User-Data parameter to the N-Disconnect primitives) described in CCITT Rec. X.213 [6] | ISO 8348.

25.3.3 Exceptional procedures

25.3.3.1 Rejection of implicit service requests

The network shall discard the User-user information element if it is received from the calling user in a SETUP message, but the calling user has not subscribed to UUS service 1. If the discard occurs, the network shall continue to process the call request. The network may also inform the calling user that the UUS request is not accepted by sending a STATUS message containing cause #50, "requested facility non-subscribed", or cause #43, "access information discarded".

The called user may not be able to interpret incoming User-user information elements. In such situations, the user should discard this information without disrupting normal call handling. No specific signalling is provided by the network to accommodate this situation.

25.3.3.2 Unexpected User-user information element in call control messages

The network shall discard the User-user information element if it is received from the called user in the ALERTING or CONNECT message, but a request for UUS was not indicated (either explicitly or implicitly) in the SETUP message delivered to the called user. If discard occurs, the network shall take action on the remaining contents of the message received from the calling user and shall send a STATUS message to the called user containing cause #43, "access information discarded".

The network shall discard the User-user information element if it is received from either user in a DISCONNECT, RELEASE or RELEASE COMPLETE message, but a request for UUS was not indicated (either explicitly or implicitly) in the SETUP message delivered to the called user. If discard occurs, the network shall take action on the remaining contents of the message received from the user. If the clearing party has sent a DISCONNECT (or RELEASE) message, the network shall send to the clearing party a RELEASE (or RELEASE COMPLETE) message containing cause #43, "access information discarded". If the clearing party had sent a RELEASE COMPLETE message, the network shall consider the call as cleared to that party; no additional action shall be taken.

If the SETUP message delivered to the called user contains the User-user information element, the network shall discard the User-user information element if it is received in the ALERTING message and call contention is allowed. If discard occurs, the network shall take action on the remaining contents of the message received from the called user and shall send a STATUS message to the called user containing cause #43, "access information discarded".

The network shall discard the entire User-user information element in the following cases not explicitly discussed elsewhere in 25.3:

– the overall length of the User-user information element is greater than 131 octets and UUS service 1 was activated either explicitly or implicitly;

– the network receives a message containing the User-user information element, but that message is not allowed to contain UUS as defined by this document.

If discard occurs, the network shall take action on the remaining contents of the message received from the sending user and shall send a STATUS message to that user containing cause #43, "access information discarded". However, if the network discards a User-user information element from a received clearing message, the network shall include cause #43, "access information discarded", in the next sequential clearing message sent to the user as specified in 5.3 of Part B. If the network discards a User-user information element from a RELEASE COMPLETE message, the network shall consider the call as cleared to that party; no additional action shall be taken.

25.4 Interactions with other networks

In the case of interworking with a non-ISDN network, the return to the calling user of a PROGRESS or an ALERTING message with the Progress indicator information element indicating #1 *call is not end-to-end ISDN; further call progress information may be available in-band* shall serve as indication that the delivery of User-user information elements in call control messages cannot be guaranteed.

In the case of interworking with a non-ISDN called user, the return of a PROGRESS or an ALERTING message with the Progress indicator information element indicating #2 "destination address is non-ISDN" to the calling user shall serve as indication that the delivery of User-user information elements in call control messages is not possible.

26 Dialled Number Information Service

26.1 Description

The Dialled Number Information Service (DNIS) provides information to the called ISDN user about the numbers of the lines that have redirected a call.

Redirecting numbers provided to the called user are not restricted to ISDN lines. The number of any redirecting PSTN or ISDN line will be presented, subjected to the restriction service and interworking. The availability of redirecting numbers from other networks within New Zealand and overseas will be subject to the availability of the redirecting number from the other network and interconnection agreements.

Some network based services such as 0800 may also provide redirecting number.

26.2 Procedures at the redirecting interface

There is no impact on DSS1 signalling by DNIS. The redirecting number is provided by the network.

The redirecting number is provided if the call is redirected because of Call Forwarding Unconditional, Call Forwarding on Busy, Call Forwarding on No Answer and some network based redirection such as 0800 and 0900 service.

In the case of interworking with older technology parts of the network some redirecting information may not be available.

26.3 Procedures at the (final) destination interface

When the destination local exchange receives a network setup request, basic call handling occurs and a SETUP message is sent to the called user. If the called user has the DNIS supplementary service, the network checks to see if redirecting number information is available.

If at least one redirecting number is available, and presentation is allowed according to the presentation indicator supplied with the redirecting number, the Redirecting number information element is included in the SETUP message sent to the called user. This will indicate the number of the last line that redirected the call. The presentation and screening indicators associated with the redirecting number are passed unchanged to the called user.

If the redirecting number is available, but presentation is restricted (i.e., not allowed) according to the presentation indicator supplied with the redirecting number, the Redirecting number information element is included in the SETUP message sent to the called user. The presentation indicator in the Redirecting number information element shall indicate *Presentation restricted*. No number digits shall be provided. The screening indicator shall be set to *network provided*. The type of number and numbering plan identification shall be set to *unknown*.

If a second redirecting number is available and presentation is allowed according to the presentation indicator supplied with the redirecting number, a second Redirecting number information element is included in the SETUP message sent to the called user. This will indicate the number of the first line that redirected the call. This number may be the same as the first presented redirecting number. The presentation and screening indicators associated with the redirecting number are passed unchanged to the called user.

If the second redirecting number is available, but presentation is restricted (i.e., not allowed) according to the presentation indicator supplied with the second redirecting number, the second Redirecting number information element is included in the SETUP message sent to the called user. The presentation indicator in the Redirecting number information element shall indicate *Presentation restricted*. No number digits will be provided. The screening indicator shall be set to *network provided*. The type of number and numbering plan identification shall be set to *unknown*.

As specified by ITU-T Recommendations, if the call has been diverted more than two times, all diverting numbers other than the first and last will not be available.

If the called user does not have the Dialled Number Information Service, the Redirecting information element will not be included in the SETUP message sent to the called user.

27 Dialled Number Information Restriction

27.1 Description

Dialled number Identification Restriction (DNIR) is a supplementary service offered to the redirecting party to restrict presentation of the redirecting party's ISDN number to the called party.

When DNIR is applicable and activated the originating node provides the destination node with a notification that the calling party's ISDN number is not allowed to be presented to the called party. In this case no redirecting number is included in the call offering to the called user.

DNIR is provided for on all ISDN lines and all PSTN lines where their redirecting number may be presented to the calling user. DNIR is not applicable to PSTN lines whose connected number will not be available due to interworking.

DNIR applies if a restriction as described in 5.1 a) or 5.1 b) for Calling Line Identification Restriction (CLIR) is enabled. It cannot be applied independent of these services.

27.2 Procedures at the redirecting interface

If the redirecting user has subscribed to DNIR the presentation indicator for the redirecting number forwarded through the network shall indicate *presentation restricted*.

If the redirecting user has not subscribed to DNIR the presentation indicator for the redirecting number forwarded through the network shall indicate *presentation allowed*.

27.3 Procedures at the destination interface

The actions to be performed at the destination interface are provided as part of the DNIS service.

28 Date and Time

28.1 Description

Date and Time is based on ITU-T Recommendation Q.931.

Date and Time is a service to supply date and time information to the user for originated and terminated calls.

28.2 Procedures for Originating Calls

For originated calls a Date/time information is included in the CONNECT message. This information could be used with call log information.

28.3 Procedures for Terminating Calls

For terminating calls a Date/time information is included in the SETUP message.

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