

ETSI EN 301 484-1 V1.1.1 (2000-04)

European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Line Hunting (LH) supplementary service;
Digital Subscriber Signalling System No. one (DSS1);
Part 1: Protocol specification**



Reference

DEN/SPAN-05171-1

KeywordsISDN, DSS1, supplementary service, LH,
protocol**ETSI**

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 1 of a multi-part EN covering the Integrated Services Digital Network (ISDN); Line Hunting (LH) supplementary service; Digital Subscriber Signalling System No. one (DSS1), as identified below:

Part 1: "Protocol specification";

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specifications for the user";

Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";

Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network";

Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".

In accordance with CCITT Recommendation I.130 [7], the following three level structure is used to describe the supplementary telecommunication services as provided by European public telecommunications operators under the pan-European ISDN:

- stage 1: is an overall service description, from the user's standpoint;
- stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and
- stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

The present document details the stage 3 aspects (signalling system protocols and switching functions) needed to support the Line Hunting supplementary service. The stage 1 aspects are detailed in draft EN 301 479 [1]. The stage 2 aspects of the Line Hunting supplementary service have not been specified.

National transposition dates

Date of adoption of this EN:	21 April 2000
Date of latest announcement of this EN (doa):	31 July 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2001
Date of withdrawal of any conflicting National Standard (dow):	31 January 2001

1 Scope

The present document specifies the stage three of the Line Hunting (LH) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by the European public telecommunications operators at the T reference point or coincident S and T reference point (as defined in ITU-T Recommendation I.411 [13]) by means of the Digital Subscriber System No. one (DSS1). Stage three identifies the protocol procedures and switching functions needed to support a telecommunications service (see CCITT Recommendation I.130 [7]).

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

The LH supplementary service enables calls to a single ISDN number to be offered to a free access in a group of accesses to which terminals are connected.

The principles for the selection of a free channel within an access are a network provider matter as part of the basic call procedures and so are outside the scope of the present document.

The LH service is applicable to all circuit-switched telecommunication services with the exception of services requiring the use of more than one B-channel.

Further parts of EN 301 484 specify the method of testing required to identify conformance to the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, 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] ETSI EN 301 479: "Integrated Services Digital Network (ISDN); Line Hunting (LH) supplementary service; Service Description".
- [2] ETSI EN 300 195-1: "Integrated Services Digital Network (ISDN); Supplementary service interactions; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [3] ETSI EN 300 196-1: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [4] ETSI EN 300 403-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".
- [5] ITU-T Recommendation I.112: "Vocabulary of terms for ISDNs".
- [6] ITU-T Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [7] CCITT Recommendation I.130: "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

- [8] ETSI EN 300 089: "Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service; Service description".
- [9] ITU-T Recommendation Z.100: "CCITT Specification and description language (SDL)".
- [10] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".
- [11] ITU-T Recommendation X.680: "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [12] ITU-T Recommendation X.880: "Information technology - Remote Operations: Concepts, model and notation".
- [13] ITU-T Recommendation I.411: "ISDN user-network interfaces - Reference configurations".
- [14] ITU-T Recommendation I.221: "Common specific characteristics of services".

3 Definitions

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

Access: general term used in the present document, denoting basic accesses and as a network provider option, primary rate accesses

Basic access: see ITU-T Recommendation I.112 [5], subclause 2.4, definition 425

Basic call procedures: procedures by which a call (as an instance of a basic telecommunications service) is established and terminated

Cyclic hunting: selection of a free access always starts at the next access after the one used last, and follows a fixed order. When the last access in the group is reached, the search continues from the beginning of the group until all accesses in the group have been searched, or a free access is found

Default number: defined for the CLIP service in EN 300 089 [8]

NOTE: In order to provide consistency from a customer perspective the same default number may be associated with all the accesses that go to a user installation. In this situation the default number is a Hunt Group Number and the Hunt Group it relates to contains all the accesses that go to a user installation.

Free access: access to which the call can be offered without exceeding the number of used B-channels specified for this access

Hunt group: number of accesses over which the LH supplementary service applies for the assigned ISDN number. A hunt group may consist of a single access

Hunt group number: ISDN number, to which the LH supplementary service is allocated and to which ISDN basic services and supplementary services relating to the hunt group are allocated

Hunt group withdrawal: request by an access of the hunt group in order to temporarily prevent this access from receiving calls to the hunt group (existing calls are not affected)

Individual number: (in the context of the present document) ISDN number which is not a hunt group number, but which can be associated with an access that belongs to a hunt group in order to identify one or more terminals connected to the access

Integrated Services Digital Network (ISDN): see ITU-T Recommendation I.112 [5], subclause 2.3, definition 308

ISDN number: number conforming to the numbering plan and structure specified in ITU-T Recommendation E.164 [10]

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

Network determined user busy: see ITU-T Recommendation I.221 [14], subclause 2.1.4

Primary rate access: see ITU-T Recommendation I.112 [5], subclause 2.4, definition 426

Sequential hunting: selection of a free access always starts with the same access and then follows a fixed order until all accesses in the hunt group have been searched or a free access is found

Served user: user to whom the LH service is provided

Service; telecommunications service: see ITU-T Recommendation I.112 [5], subclause 2.2, definition 201

Supplementary service: see ITU-T Recommendation I.210 [6], subclause 2.4

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

User determined user busy: see ITU-T Recommendation I.221 [14], subclause 2.1.4

4 Abbreviations

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

HG	Hunt Group
ISDN	Integrated Services Digital Network
LH	Line Hunting
LHG	Line Hunt Group

5 Description

The LH supplementary service is intended for use on accesses to which terminals are connected at the S/T reference point.

The LH supplementary service enables calls to an ISDN number (i.e. the hunt group number) to be offered to a free access in a hunt group. The hunt group can comprise basic accesses, primary rate accesses (as a network option), or a mixture of these types of accesses.

The LH supplementary service applies to accesses within a hunt group that are connected to the same exchange. As a network option the LH supplementary service can be used to create a multi-nodal service that allows line hunting across accesses on multiple exchanges. The specification of the multi-nodal service is outside the scope of the present document, however annex A of EN 301 479 [1] considers some of the implications of this service.

Calls made to an individual number (see note 1) may be offered on the corresponding access without being subject to hunting procedures (channel hunting may be performed within the access itself).

NOTE 1: The individual accesses that are members of the hunt group can also have individual numbers (e.g., with the multiple subscriber number supplementary service) allocated.

It is the user's responsibility to ensure compatibility of the equipment connected to an access in a hunt group.

The served user can determine at subscription for each access how many B-channels shall be available for the hunt group. A call to the hunt group can only be presented to an access, if the number of used B-channels specified for an access will not be exceeded (independent of the required telecommunications service).

NOTE 2: In order to minimize the user determined user busy condition after the call has been presented to an access, the user should only allocate as many B-channels for each access of the hunt group, as compatible terminals are connected to that access.

An access can only be a member of one hunt group.

The method of selecting an access shall be either sequential or cyclic hunting.

An access in a hunt group can activate "hunt group withdrawal" to be temporarily prevented from receiving calls to the hunt group, if this option is subscribed to.

As a subscription option the served user can receive an indication that the served user's access is currently withdrawn from its hunt group. This indication shall be provided when the served user originates a call on the access, which is withdrawn from the hunt group.

Services can be subscribed to on the hunt group identified by the hunt group number. Some supplementary services on the hunt group number which need special authorization can only be activated and deactivated from an access which is a member of the hunt group and on which the option "activation allowance" is subscribed to. These supplementary services are listed in clause 8 of EN 301 479 [1].

NOTE 3: Services can also be subscribed to on an individual access or on individual numbers (e.g., with the multiple subscriber number supplementary service).

6 Operational Requirements

6.1 Provision and Withdrawal

The LH supplementary service shall be provided after prior arrangement with the network provider. To establish the hunt group, the following data shall be provided:

- the list of the accesses;
- the hunt group number.

The LH supplementary service shall be withdrawn at the network provider or subscriber's request.

The network options having an impact on the protocol are summarized in table 1.

Table 1: Network options

Network option	Values
Primary rate access	- yes - no

As a network option, the LH supplementary service can be offered with a number of subscription options which are given in EN 301 479 [1] and summarized in tables 2 and 3.

Table 2: Subscription option applying for each individual hunt group

Subscription Option	Values
Selection Method	- sequential hunting - cyclic hunting

If the LH supplementary service is provided without the subscription option "selection method", the network shall determine the selection method.

Table 3: Subscription options applying to each access in a hunt group

Subscription option	Values
Number of B-channels available for the hunt group	value 1 or 2 for BA and 1 to 30 for PRA
Activation allowance (for supplementary services related to the hunt group)	- yes - No
Temporary Hunt group withdrawal	- available - not available
User receives notification, that his access is currently withdrawn from its hunt group.	- yes - no

If the network does not offer the subscription option "number of B-channels available for the hunt group", then all B-channels of the access shall be available for the hunt group.

If the network does not offer the subscription option "activation allowance", then the supplementary services subscribed for the whole hunt group can be activated and deactivated from all accesses which are member of the hunt group.

If the network does not offer the subscription option "temporary hunt group withdrawal", then, as a network option, the accesses may or may not be allowed to be withdrawn from the hunt group by the user.

If the network does not offer the subscription option "user receives notification, that his access is currently withdrawn from the hunt group", then, as a network option, the user may or may not receive a notification if his access is withdrawn from its hunt group.

6.2 Requirements on the originating network side

The procedures at the coincident S and T reference point in EN 300 403-1 [4], subclause 5.1 and the procedures of clause 9 in the present document shall apply.

6.3 Requirements on the destination network side

The procedures at the coincident S and T reference point in EN 300 403-1 [4], subclause 5.2 and the procedures of clause 9 in the present document shall apply.

7 Coding requirements

7.1 Coding of the Facility information element components

Table 4 shows the definitions of the operations and errors required for the LH supplementary service using ASN.1 as specified in ITU-T Recommendation X.680 [11] and ITU-T Recommendation X.880 [12].

The formal definition of the component types to encode these operations and errors is provided in clause D.1 of EN 300 196-1 [3].

The inclusion of components in Facility information elements is defined in subclause 11.2.2.1 of EN 300 196-1 [3]. All components (invoke, return result, return error and reject) shall be included within a Facility information element. This Facility information element may be included in any appropriate message as specified in subclause 8.3.1.1 of EN 300 196-1 [3], unless a more restrictive specification is given in clause 9 of the present document.

Table 4: Definitions of operations and errors

```

Line Hunting-Operations { itu-t identified-organization etsi(0) xxxx operations-and-errors(1) }
DEFINITIONS EXPLICIT TAGS::=
BEGIN
EXPORTS
    withdrawLHG;
    cancelWithdrawLHG;
    interrogationLHG;
    withdrawnFromLHG;
    withdrawalNotSupported;
    withdrawalNotSubscribed.

IMPORTS
    OPERATION,
    ERROR
    FROM Remote-Operations-Information-Objects
        { joint-iso-itu-t remote-operations (4) informationObjects(5) version1 (0) }

        PartyNumber
        FROM Revised-Addressing-Data-Elements
            { itu-t identified-organization etsi (0) 196 revised-addressing-data-elements (14) }

        notSubscribed;
        notAvailable;
        supplementaryServiceInteractionNotAllowed
    FROM Revised-General-Errors
        { itu-t identified-organization etsi (0) 196 revised-general-errors (10) }

IHOID OBJECT IDENTIFIER ::= {itu-t identified-organization etsi (0) xxxx -operations-and-errors (1) }

withdrawLHG OPERATION ::=
    RESULT
    ERRORS {
        notSubscribed|
        withdrawalNotSubscribed|
        notAvailable|
        withdrawalNotSupported|
        supplementaryServiceInteractionNotAllowed}
    CODE global:{IHOID 1}
    }
-- End of WithdrawLHG operation definition.

cancelWithdrawLHG OPERATION ::=
    RESULT
    ERRORS {
        notAvailable|
    }
    CODE global:{IHOID 2}
    }
-- End of CancelWithdrawLHG operation definition.

interrogationLHG OPERATION ::=
    {
    ARGUMENT SEQUENCE {
    RESULT IntResultLHG
    ERRORS {
        notAvailable|
        notSubscribed }
    CODE global: {IHOID 3}
    }
    }
-- End of InterrogationLHG operation definition.

withdrawnFromLHG OPERATION ::=
    {
    CODE global: {IHOID 4}
    }

IntResultLHG ::= ENUMERATED {active (0),
    withdrawn (1)}

```

withdrawalNotSupported,	ERROR ::= {CODE global:{IHOID 10}}
withdrawalNotSubscribed	ERROR ::= {CODE global:{IHOID 11}}
END – of LH – Operations – and - Errors	
...	

8 State Definitions

Table 5 defines the states for the LH supplementary service.

Table 5: State definitions for User States and Network States

User States		
Idle	The LH supplementary service is idle.	
Wait LHG Withdrawal	The user has requested a Withdrawal and is waiting	for a response.
Wait LHG Cancellation	The user has requested cancellation of Withdrawal	and is waiting for a
	response.	
Wait LHG Interrogation	The user has requested interrogation and is waiting for	a response.
Network States		
Idle	The LH supplementary service is idle.	
Wait LHG Withdrawal	The network has received a Withdrawal	request.
Wait LHG Cancellation	The network has received a Cancellation of	Withdrawal request.
Wait LHG Interrogation	The network has received an interrogation request.	

9 Signalling Procedures at the coincident S and T reference points

9.1 Activation, deactivation and interrogation

The LH supplementary service shall be activated on provision and deactivated on withdrawal. The LH supplementary service requires no registration.

However, as a network option, the LH supplementary service can be offered with the subscription option to temporarily withdraw an access from a hunt group and subsequently cancel that withdrawal by the user.

9.1.1 Temporary Hunt Group withdrawal

9.1.1.1 Normal operation

When the served user has subscribed to the LH supplementary service with the subscription option which allows temporary withdrawal of an access from a hunt group and subsequently cancellation of withdrawal, the following procedures apply.

In order to withdraw an access (which the option is allowed for) from its hunt group, the served user shall:

- send on that access a WithdrawLHG invoke component to the network, in an appropriate bearer-independent transport message as described in subclause 8.3.2.2 of EN 300 196-1 [3];
- start timer T-WITHDRAWAL; and
- enter the Wait LHG Withdrawal state.

The network on receiving such a WithdrawLHG invoke component shall enter the Wait LHG Withdrawal state.

If the requested withdrawal is successful, or if a withdrawal request is made on an access that has already been withdrawn from its hunt group, the network shall:

- send a WithdrawLHG return result component to the user in an appropriate bearer-independent transport message as described in subclause 8.3.2.2 of EN 300 196-1 [3]; and
- enter the Idle state.

The user, on receiving such a WithdrawLHG return result component shall stop timer T-WITHDRAWAL and enter the Idle state.

9.1.1.2 Exceptional procedures

If the network is unable to withdraw an access from its hunt group, the network shall send an WithdrawLHG return error component to the served user in an appropriate bearer-independent transport messages described in subclause 8.3.2.2 of EN 300 196-1 [3] indicating one of the following error values and return to the Idle state:

- "notSubscribed", if the access has not been defined as a member of any hunt group;
- "withdrawalNotSubscribed", when the hunt group withdrawal option is not subscribed to with the value "available" for the access; or
- "withdrawalNotSupported", when hunt group withdrawal is not supported by the network; or
- "supplementaryServiceInteractionNotAllowed"; or
- "notAvailable", the LH service is not available, (e.g. temporary fault).

On receiving such an WithdrawLHG return error component, the user shall stop timer T-WITHDRAWAL and return to the Idle state.

On expiration of timer T-WITHDRAWAL and the served user not having received any response to the WithdrawLHG invoke component, the served user shall consider that this attempt to withdraw an access from the hunt group has failed and shall return to the Idle state.

The served user, on receiving a reject component that he can correlate with the procedure in this subclause, shall stop timer T_WITHDRAWAL, and shall return to the idle state.

If the network receives a reject component from the served user, it need not correlate it to the procedure in this subclause and it shall have no impact on the LH supplementary service.

9.1.2 Cancellation of Temporary Hunt Group withdrawal

9.1.2.1 Normal operation

When the served user has subscribed to the LH supplementary service with the subscription option which allows temporarily withdrawal of an access from a hunt group and subsequently cancellation of withdrawal, the following procedures apply.

In order to cancel the withdrawal of the access from its hunt group, the served user shall;

- send on that access a CancelWithdrawLHG invoke component to the network in an appropriate bearer-independent transport message as described in subclause 8.3.2.2 of EN 300 196-1 [3]; and
- start timer T-CANCELLATION; and
- enter the Wait HG Cancellation state.

The network on receiving such a CancelWithdrawLHG invoke component shall enter the Wait HG Cancellation state:

- if the requested cancellation is successful; or
- if a request for cancellation of a withdrawal on an access that has not been withdrawn from its hunt group is made; or
- when the hunt group withdrawal option is not subscribed to with the value "available" for the access; or
- when hunt group withdrawal is not supported by the network.

The network shall:

- send a CancelWithdrawLHG return result component to the user in an appropriate bearer-independent transport message as described in subclause 8.3.2.2 of EN 300 196-1 [3], and enter the Idle state.

The user, on receiving such a CancelWithdrawLHG return result component shall stop timer T-CANCELLATION and enter the Idle state.

9.1.2.2 Exceptional procedures

If the network is unable to cancel withdrawal of an access from a hunt group, the network shall send an CancelWithdrawLHG return error component to the served user in an appropriate bearer-independent transport message as described in subclause 8.3.2.2 of EN 300 196-1 [3] indicating the following error value and return to the Idle state:

- "notAvailable", the LH service is not available, (e.g. temporary fault).

On receiving such an CancelWithdrawLHG return error component, the served user shall stop timer T-CANCELLATION and return to the Idle state.

On expiration of timer T-CANCELLATION and the served user not having received any response to the CancelWithdrawLHG invoke component, the served user shall consider that this attempt to cancel withdrawal of an access from its hunt group has failed and that the hunt group withdrawal may still be implemented and shall return to the Idle state.

The served user, on receiving a reject component that he can correlate with the procedure in this subclause, shall stop timer T-CANCELLATION, and shall return to the same state as before the CancelWithdrawLHG invoke component was sent.

If the network receives a reject component from the served user, it need not correlate it to the procedure in this subclause and it shall have no impact on the LH supplementary service.

9.1.3 Interrogation

9.1.3.1 Normal Operation

In order to obtain the status of an access relating to the LH supplementary service, the served user shall;

- send on that access an InterrogationLHG invoke component to the network in an appropriate bearer-independent transport message as described in subclause 8.3.2.2 of EN 300 196-1 [3]; and
- start timer T-INTERROGATE; and
- enter the Wait LHG Interrogation state.

The network on receiving such a InterrogationLHG invoke component shall enter the Wait LHG Interrogation state and collect the requested status.

The collected status shall be included within the IntResultLHG parameters of the InterrogationLHG return result component sent to the served user in an appropriate bearer-independent transport message as described in subclause 8.3.2.2 of EN 300 196-1 [3]. The network shall then return to the Idle state.

The user, on receiving such a InterrogationLHG return result component shall stop timer T-INTERROGATE and enter the Idle state.

9.1.3.2 Exceptional procedures

If the network is unable to provide the information requested, the network shall send an InterrogationLHG return error component to the user in an appropriate bearer-independent transport message as described in subclause 8.3.2.2 of EN 300 196-1[3], indicating one of the following error values and return to the idle state:

- "notSubscribed", if the access has not been defined as a member of any hunt group; or
- "notAvailable", the LH service is not available, (e.g. temporary fault).

On receiving such a InterrogationLHG return error component, the user shall stop timer T-INTERROGATE and return to the idle state.

On expiration of timer T-INTERROGATE and the served user not having received any response to the InterrogationLHG invoke component, the served user shall consider that this attempt to interrogate the LH supplementary service has failed and return to the Idle state.

The served user, on receiving a reject component that he can correlate with the procedure in this subclause, shall stop timer T-INTERROGATE and return to the idle state.

If the network receives a reject component from the served user, it need not correlate it to the procedure in this subclause but it shall have no impact on the LH supplementary service.

9.2 Invocation and Operation

9.2.1 Normal operation

The LH supplementary service shall be invoked automatically by the network on calls to a hunt group number. A free access in the hunt group shall be selected according to the selection method provided to the user.

Once an access is selected, the network shall indicate the arrival of an incoming call to users on that access according to the basic call procedures specified in EN 300 403-1 [4].

9.2.2 Exceptional procedures

If no free access is available, or if all accesses have been withdrawn from a hunt group, the hunt group shall be considered as network determined user busy and no calls shall be presented on any access in the hunt group. This shall be indicated to the calling user according to the basic call procedures specified in EN 300 403-1 [4].

Once the network has indicated the arrival of the incoming call to the users on an access, then failures due to called user state shall be reported by means of basic call procedures specified in EN 300 403-1 [4].

If a user determined user busy condition results from presenting a call to an access, then the selection mechanism shall make only one more attempt to select another free access. If hunting has already been continued once, then the call shall be treated as user determined user busy according to the basic call procedures specified in EN 300 403-1 [4].

9.3 Notification to user of withdrawal of an access from a hunt group

If the subscription option applies, to indicate that the served user's access is currently withdrawn from its hunt group, when the served user originates a call on an access which is withdrawn from a hunt group, the network shall include a withdrawnFromLHG invoke component in the first call control message for that call sent from the network to the served user, using the procedure in subclause 8.3.1.1 of EN 300 196-1 [3].

10 Procedures for interworking with private ISDNs

Not applicable.

11 Interactions with other networks

The LH supplementary service can be invoked on calls which originate in other networks and non-ISDNs.

12 Interaction with other supplementary services

Supplementary services can be subscribed to on the hunt group identified by the hunt group number, refer to EN 301 479 [1].

The interaction with other supplementary services shall be as specified in EN 300 195-1 [2].

13 Parameter values (timers)

The following values of timers shall be used by this application when using the procedures of subclause 10.2 of EN 300 196-1 [3].

- T-WITHDRAWAL: The duration of the timer shall be 4 seconds.
- T-CANCELLATION: The duration of the timer shall be 4 seconds.
- T-INTERROGATE: The duration of the timer shall be 4 seconds.

14 Dynamic description (SDL diagrams)

The following SDL diagrams are specified according to ITU-T Recommendation Z.100 [9].

NOTE 1: Notification to the served user on outgoing calls is not shown in the SDL diagrams.

NOTE 2: Reject components are not shown in the SDL diagrams.

Annex A (informative): Signalling flows

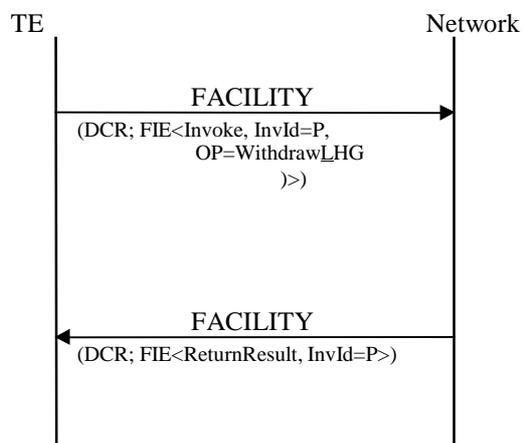


Figure A.1: Successful temporary withdrawal of an access from a hunt group

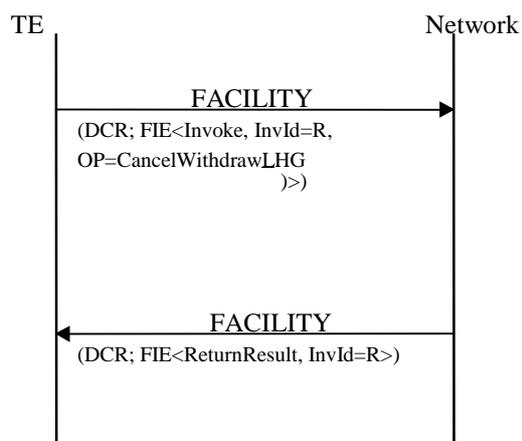


Figure A.2: Successful cancellation of withdrawal of an access from a hunt group

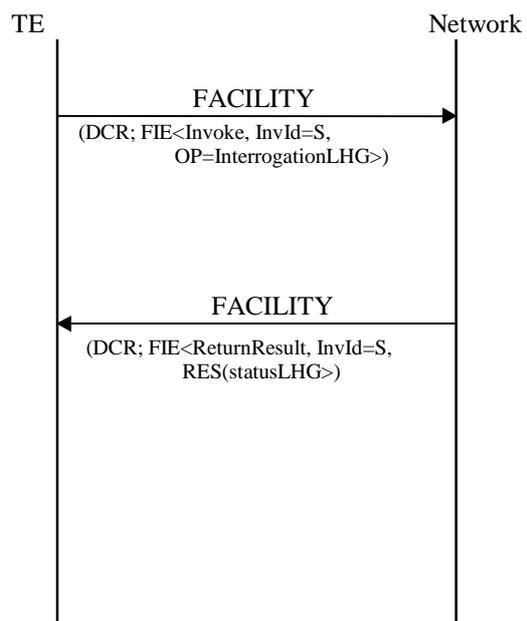


Figure A.3: Successful Interrogation of LHG

History

Document history		
V1.1.1	December 1999	One-step Approval Procedure OAP 200016: 1999-12-22 to 2000-04-21
V1.1.1	April 2000	Publication