

ETSI TS 101 818-1 V1.1.1 (2000-07)

Technical Specification

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



Reference

DTS/SPAN-05172-1

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

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF).

In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at <http://www.etsi.org/tb/status/>

If you find errors in the present document, send your comment to:

editor@etsi.fr

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2000.
All rights reserved.

Contents

Intellectual Property Rights	4
Foreword	4
1 Scope	5
2 References	5
3 Definitions and abbreviations	6
3.1 Definitions	6
3.2 Abbreviations	7
4 Description	7
5 Operational Requirements	7
5.1 Provision and Withdrawal	7
5.2 Requirements on the originating network side	8
5.3 Requirements on the destination network side	8
6 Coding requirements	8
6.1 Coding of the Facility information element components	8
7 State Definitions	10
8 Signalling Procedures at the coincident S and T reference point	10
9 Procedures for interworking with private ISDNs	10
9.1 Activation, deactivation and interrogation	10
9.1.1 Temporary Hunt Group withdrawal	11
9.1.1.1 Normal operation	11
9.1.1.2 Exceptional procedures	12
9.1.2 Cancellation of Temporary Hunt Group withdrawal	12
9.1.2.1 Normal operation	12
9.1.2.2 Exceptional procedures	13
9.1.3 Interrogation	14
9.2 Invocation and Operation	14
9.2.1 Normal operation	14
9.2.2 Exceptional procedures	14
10 Interactions with other networks	14
11 Interaction with other supplementary services	14
12 Parameter values (timers)	14
13 Dynamic description (SDL diagrams)	15
Annex A (informative): Examples of Signalling flows	22
History	23

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://www.etsi.org/ipr>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 1 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) Trunk Hunting (TH) supplementary service, as described below:

- Part 1: "Protocol specification";**
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the user";
- Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";
- Part 5: "TSS&TP specification for the network";
- Part 6: "ATS and partial PIXIT proforma specification for the network".

In accordance with CCITT Recommendation I.130 [6], 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 Trunk Hunting supplementary service. The stage 2 aspects of the Trunk Hunting supplementary service have not been specified.

1 Scope

The present document specifies the stage three of the Trunk Hunting (TH) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators at the T reference point or coincident S and T reference point (as defined in CCITT Recommendation I.411 [12]) 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 [6]).

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

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

The TH supplementary service enables calls to a single ISDN number to be offered to a free access in a group of accesses to which a private ISDN is connected (T reference point).

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 TH service is applicable to all circuit-switched telecommunication services.

Further parts of EN 301 484 [13] 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 300 195-1: "Integrated Services Digital Network (ISDN); Supplementary service Interactions; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol Specification".
- [2] 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".
- [3] 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]".
- [4] ITU-T Recommendation I.112: "Vocabulary of terms for ISDNs".
- [5] ITU-T Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [6] CCITT Recommendation I.130: "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [7] ITU-T Recommendation I.221 (1993): "Common specific characteristics of services".

- [8] CCITT Recommendation Z.100: "Specification and Description Language (SDL)".
- [9] ITU-T Recommendation E.164: "The International public telecommunications Numbering plan".
- [10] ITU-T Recommendation X.680: "Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [11] ITU-T Recommendation X.880: "Information technology – remote operations: concepts, model and notation".
- [12] CCITT Recommendation I.411: "ISDN user-network interfaces - Reference configurations".
- [13] ETSI EN 301 484: "Integrated Services Digital Network (ISDN); Line Hunting (LH) supplementary service; Digital Subscriber Signalling System No. one (DSS1)".

3 Definitions and abbreviations

3.1 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/or primary rate accesses.

Basic access: See ITU-T Recommendation I.112 [4], 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.

Channels busy: See ITU-T Recommendation I.221 [7], subclause 2.1.3.

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.

Free access: Access for which the channels busy condition does not exist (i.e., one or more information channels are available).

Hunt group: Number of accesses over which the TH supplementary service applies for the assigned ISDN number.

Hunt group number: The ISDN number to which the TH 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 the private ISDN in order to temporarily prevent an access from receiving calls to the hunt group (existing calls are not affected).

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [4], subclause 2.3, definition 308.

ISDN number: Number conforming to the numbering plan and structure specified in ITU-T Recommendation E.164 [9].

Primary rate access: See ITU-T Recommendation I.112 [4], 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 (i.e., a private ISDN) to whom the TH service is provided.

Service; telecommunications service: See ITU-T Recommendation I.112 [4], subclause 2.2, definition 201.

Supplementary service: See ITU-T Recommendation I.210 [5], subclause 2.4.

Uniform Hunting:

NOTE: Uniform hunting is not explicitly identified but not necessarily excluded for future enhancement.

3.2 Abbreviations

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

HG	Hunt Group
ISDN	Integrated Services Digital Network
TH	Trunk Hunting

4 Description

The TH supplementary service is intended for use on accesses to which a private ISDN is connected to the public ISDN at the T reference point.

The TH supplementary service enables calls to an ISDN number assigned to the private ISDN (i.e. the hunt group number and any DDI number associated with 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, or a mixture of these types of accesses.

The TH supplementary service applies to accesses within a hunt group that are connected to the same exchange. As a network operator option the TH supplementary service can be used to create a multi-nodal service that allows Trunk Hunting across accesses on multiple exchanges. The specification of the multi-nodal service is outside the scope of the present document.

As a network option an access can be member of more than one hunt group. The maximum number of hunt groups of which an access can be a member, shall be a network option with an upper limit of 15.

The method of selecting the access shall be either sequential, uniform or cyclic hunting.

As a service provider option, the TH supplementary service can be offered with the possibility for hunt group withdrawal. If the option of "hunt group withdrawal" is supported by the service provider, the served user can request that an access can be temporarily prevented from receiving calls to the hunt group.

Services can be subscribed to on the hunt group identified by the hunt group number.

5 Operational Requirements

5.1 Provision and Withdrawal

The TH supplementary service shall be provided after prior arrangement with the network provider.

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

The network option having an impact on the protocol is described in Table 1.

Table 1: Network options

Network option	Values
Max number of HGs for which one access may be a member	1 to 15

As a network option, the TH supplementary service can be offered with subscription options which are provided on a hunt group basis. The subscription options are summarized in Table 2.

If the network supports the option "hunt group withdrawal" then the subscription option for "hunt group withdrawal" shall be available to all accesses of the hunt group.

Table 2: Subscription option applying for the whole hunt group

Subscription Option	Values
Selection Method	- sequential hunting - cyclic hunting - uniform hunting (see Note)
Hunt group withdrawal	- available - not available
NOTE: Uniform hunting is not explicitly identified as an option but is not necessarily excluded for future enhancement.	

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

If the network does not offer the subscription option "hunt group withdrawal", then the accesses cannot be withdrawn from the hunt group by the user.

5.2 Requirements on the originating network side

The procedures at the T reference point in EN 300 403-1 [3], subclause 5.1 and the procedures of Clause 9 in the present document shall apply.

5.3 Requirements on the destination network side

The procedures at the T reference point in EN 300 403-1 [3], subclause 5.2 and the procedures of Clause 9 in the present document shall apply.

6 Coding requirements

6.1 Coding of the Facility information element components.

Table 3 shows the definitions of the operations and errors required for the TH supplementary service using ASN.1 as specified in ITU-T Recommendation X.680 [10] and ITU-T Recommendation X.880 [11].

The formal definition of the component types to encode these operations and errors is provided in Clause D.1 of EN 300 196-1 [2].

The inclusion of components in Facility information elements is defined in subclause 11.2.2.1 of EN 300 196-1 [2]. 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 [2], unless a more restrictive specification is given in Clause 9 of the present document.

Table 3: Definitions of operations and errors

<pre> Trunk-Hunting-Operations { itu-t identified-organization etsi(0) 1xxx revised-operations-and-errors(2) } DEFINITIONS EXPLICIT TAGS::= BEGIN EXPORTS withdrawTHG, cancelWithdrawTHG, wrongHuntGroupNr, noHuntGroupNr, withdrawalNotSupported, </pre>
--


```

        withdrawalNotSubscribed;

IMPORTS      OPERATION,
            ERROR
            FROM Remote-Operations-Information-Objects
                { joint-iso-itu-t remote-operations (4) informationObjects(5) version2 (1) }

                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) }

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

withdrawTHG          OPERATION ::=
    {
        ARGUMENT SEQUENCE {
            huntGroupNr    HuntGroupNr OPTIONAL}

        ERRORS {
            notSubscribed|
            wrongHuntGroupNr|
            noHuntGroupNr|
            withdrawalNotSubscribed|
            notAvailable
                withdrawalNotSupported|
                supplementaryServiceInteractionNotAllowed}
        CODE global:{tHOID 1}
    }
-- End of WithdrawTHG operation definition.

cancelWithdrawTHG    OPERATION ::=
    {
        ARGUMENT SEQUENCE {
            huntGroupNr    HuntGroupNr OPTIONAL}

        ERRORS {
            wrongHuntGroupNr|
            noHuntGroupNr|
            withdrawalNotSubscribed|
                withdrawalNotSupported}
        CODE global:{tHOID 2}
    }
-- End of CancelWithdrawTHG operation definition.

ServedUserNr          ::= CHOICE {
    individualNumber    PartyNumber,
    allNumbers          NULL }

HuntGroupNr           ::= CHOICE{
    individualNumber    PartyNumber,
    allNumbers          NULL }

wrongHuntGroupNr      ERROR ::= {CODE global:{tHOID 10}}
noHuntGroupNr         ERROR ::= {CODE global:{tHOID 11}}
withdrawalNotSupported ERROR ::= {CODE global:{tHOID 12}}

```

```
withdrawalNotSubscribed      ERROR::= {CODE global:{tHOID 13}}
```

```
END
```

```
-- End of Trunk Hunting operations and Errors
```

7 State Definitions

Table 4 defines the states for the TH supplementary service.

Table 4: State definitions for User States and Network States

User States

Idle	The TH supplementary service is idle.
Wait HG Withdrawal	The user has requested a Withdrawal and is waiting for a response.
Wait HG Cancellation	The user has requested cancellation of Withdrawal and is waiting for a response.

Network States

Idle	The TH supplementary service is idle.
Wait HG Withdrawal	The network has received a Withdrawal request.
Wait HG Cancellation	The network has received a Cancellation of Withdrawal request.

8 Signalling Procedures at the coincident S and T reference point

Not Applicable.

9 Procedures for interworking with private ISDNs

9.1 Activation, deactivation and interrogation

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

However, as a network option, the TH supplementary service can be offered with the subscription option to temporarily withdraw an access from a hunt group or all hunt groups the access belongs to 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 TH supplementary service with the subscription option which allows temporary withdrawal of an access from a hunt group, or all hunt groups the access belongs to and subsequently cancellation of withdrawal, the following procedures apply.

In order to withdraw an access from a particular hunt group, or from all the hunt groups the access belongs to, the served user shall:

- send on that access a WithdrawTHG 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 [2];
- start timer T-WITHDRAWAL; and
- enter the Wait HG Withdrawal state.

The network on receiving such a WithdrawTHG invoke component shall enter the Wait HG Withdrawal state.

The served user shall indicate the instance(s) of the supplementary service by use of the following parameter:

- - in the huntGroupNr parameter, the hunt group number(s) for which the withdrawal applies. Dependant on the value of the network option 'Maximum number of hunt groups for which one access may be a member', the inclusion of this parameter shall be mandatory or optional as follows:
 - If the value is 1, the served user doesn't need to include this parameter. The network shall ignore the value of the parameter and shall withdraw the access from the hunt group it is member of.
 - If the value is more than 1, but the access to be withdrawn has been defined as a member of only one hunt group, the served user doesn't need to include this parameter. The network shall ignore the value of the parameter and shall withdraw the access from the hunt group it is member of.
 - If the value is more than 1, and the access to be withdrawn has been defined as a member of more than one hunt group, the served user shall indicate in this parameter the hunt group number(s) for which the withdrawal applies:
 - The huntGroupNr parameter is set to "individualNumber" to request withdrawal for a specific hunt group number.
 - The huntGroupNr parameter is set to "allNumbers" to request withdrawal from all hunt groups the access is a member of.

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

- send an WithdrawTHG 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 [2]; and
- enter the Idle state.

The user, on receiving such a WithdrawTHG 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 a hunt group, the network shall send an WithdrawTHG 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 [2] 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;
- "wrongHuntGroupNr", if the access has been defined as a member of more than one hunt group but the served user has provided a huntGroupNr parameter that does not correspond to one of these hunt groups;
- "noHuntGroupNr", when the served user has not provided a huntGroupNr parameter although the access used has been defined as a member of more than one hunt group;
- "supplementaryServiceInteractionNotAllowed";
- "withdrawalNotSubscribed", when the hunt group withdrawal option is not subscribed to with the value "available" for the related instance of the supplementary service; or
- "withdrawalNotSupported", when hunt group withdrawal is not supported by the network;
- "NotAvailable", the TH service is not available.

On receiving such a WithdrawTHG 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 WithdrawTHG invoke component, the served user shall consider that this attempt to withdraw access from the hunt group has failed and shall return to the Idle state.

When multiple instances of hunt group withdrawal are requested, and if any instance cannot be implemented, then none of the requested instances shall be implemented. The error value shall be related to an instance that could not be implemented.

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 same state as before the WithdrawTHG 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 TH 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 TH supplementary service with the subscription option which allows temporary withdrawal of an access from a hunt group, or all hunt groups the access belongs to and subsequently cancellation of withdrawal, the following procedures apply.

In order to cancel the withdrawal of the access from a hunt group, or all the hunt groups the access belongs to, the served user shall:

- send on that access a CancelWithdrawTHG 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 [2]; and
- start timer T-CANCELLATION; and
- enter the Wait HG Cancellation state.

The network on receiving such a CancelWithdrawTHG invoke component shall enter the Wait HG Cancellation state.

The served user shall indicate the instance(s) of the supplementary service by use of the following parameter:

- in the huntGroupNr parameter, the hunt group number(s) for which the cancellation applies. Dependent on the value of the network option 'Maximum number of hunt groups for which one access may be a member', the inclusion of this parameter shall be mandatory or optional as follows:
 - If the value is 1, the served user doesn't need to include this parameter. The network shall ignore the value of the parameter and shall cancel the withdrawal of the access from the hunt group it is member of.
 - If the value is more than 1, but the access has been defined as a member of only one hunt group, the served user doesn't need to include this parameter. The network shall ignore the value of the parameter and shall cancel the withdrawal of the access from the hunt group it is member of.
 - If the value is more than 1, and the access has been defined as a member of more than one hunt group, the served user shall indicate in this parameter the hunt group number(s) for which cancellation of withdrawal applies:
 - The huntGroupNr parameter is set to "individualNumber" to request cancellation of withdrawal for a specific hunt group number.
 - The huntGroupNr parameter is set to "allNumbers" to request cancellation of withdrawal from all hunt groups the access has been previously withdrawn.

If all the requested cancellations are successful, or if a request for cancellation of a withdrawal on an access that has not been withdrawn from the indicated hunt group is made, the network shall:

- send a CancelWithdrawTHG 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 [2]; and
- enter the Idle state.

The user, on receiving such a CancelWithdrawTHG 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 CancelWithdrawTHG 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 [2] indicating one of the following error values and return to the Idle state:

- "wrongHuntGroupNr", if the access has been defined as a member of any hunt group but the served user has provided a huntGroupNr parameter that does not correspond to one of these hunt groups;
- "noHuntGroupNr", when the served user has not provided a huntGroupNr parameter although the access used has been defined as a member of more than one hunt group;
- "WithdrawalNotSubscribed", when the hunt group withdrawal option is not subscribed to with the value "available" for the related instance of the supplementary service; or
- "withdrawalNotSupported", when hunt group withdrawal is not supported by the network.

On receiving such a CancelWithdrawTHG 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 CancelWithdrawTHG invoke component, the served user shall consider that this attempt to cancel withdrawal of an access from a hunt group has failed and that the hunt group withdrawal may still be implemented and shall return to the Idle state.

When cancellation of multiple instances of hunt group withdrawal is requested, and if any instance cannot be cancelled, then none of the requested instances shall be cancelled. The error value shall be related to an instance that could not be cancelled.

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 CancelWithdrawTHG 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 TH supplementary service.

9.1.3 Interrogation

Not Applicable.

9.2 Invocation and Operation

9.2.1 Normal operation

The TH supplementary service shall be invoked automatically by the network on calls to a hunt group number or to any DDI number associated with the 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 [3].

9.2.2 Exceptional procedures

If no free access is available, the TH supplementary service shall be considered unsuccessful and the call establishment shall be ceased. This shall be indicated to the calling user according to the basic call procedures specified in EN 300 403-1 [3].

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 [3].

If all accesses have been withdrawn from a hunt group, the hunt group shall be considered as no channels are available and no calls shall be presented on any access in the hunt group.

10 Interactions with other networks

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

11 Interaction with other supplementary services

Supplementary services can be subscribed to on the hunt group identified by the hunt group number.

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

12 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 [2]:

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

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

13 Dynamic description (SDL diagrams)

The following SDL diagrams are specified according to CCITT Recommendation Z.100 [8].

SDL input and output symbols with direction entering and leaving to the left indicate internal events.

SDL input and output symbols with direction entering and leaving to the right indicate a protocol message exchange.

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

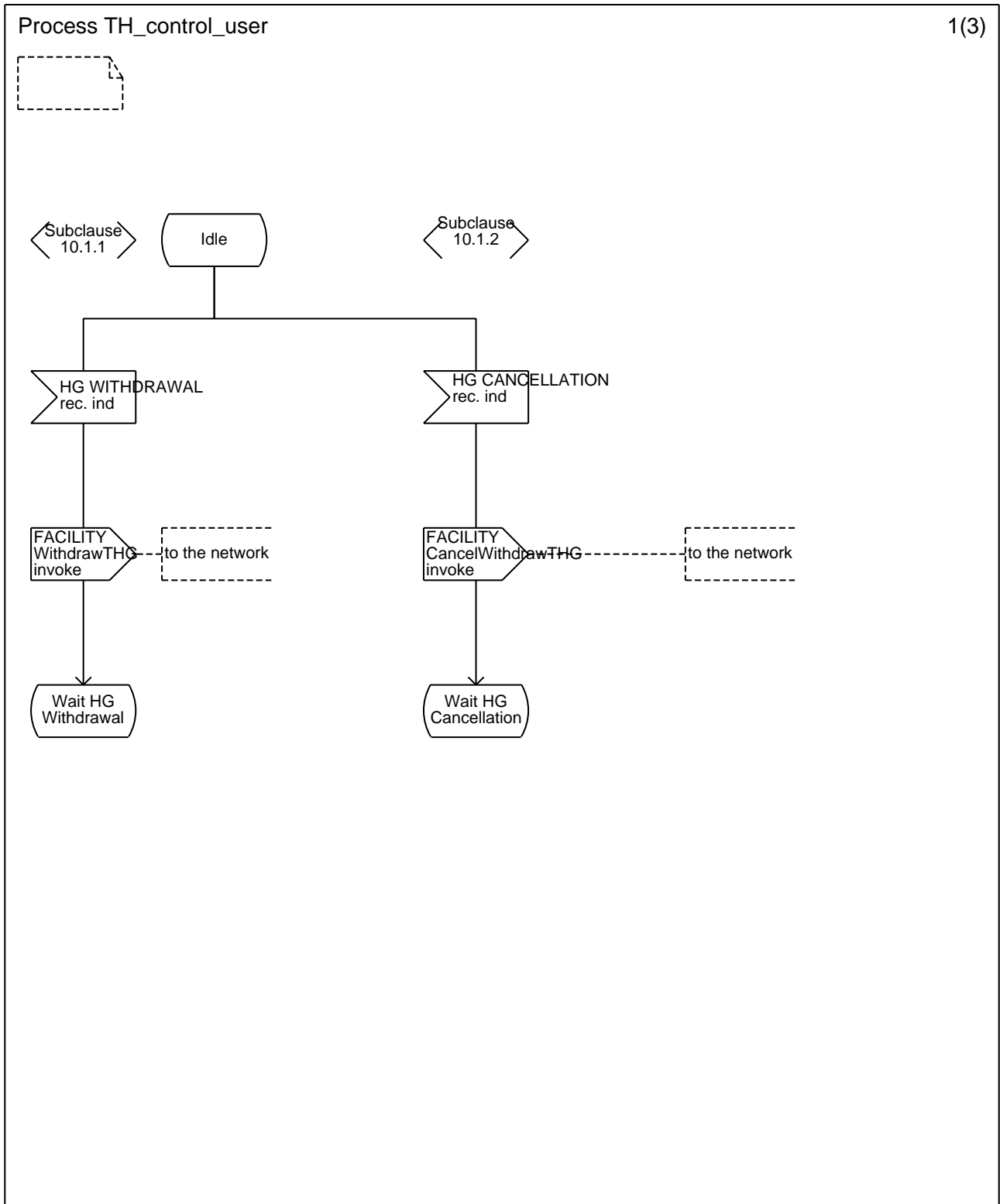


Figure 1: SDL for Trunk Hunting control, user at the T reference point

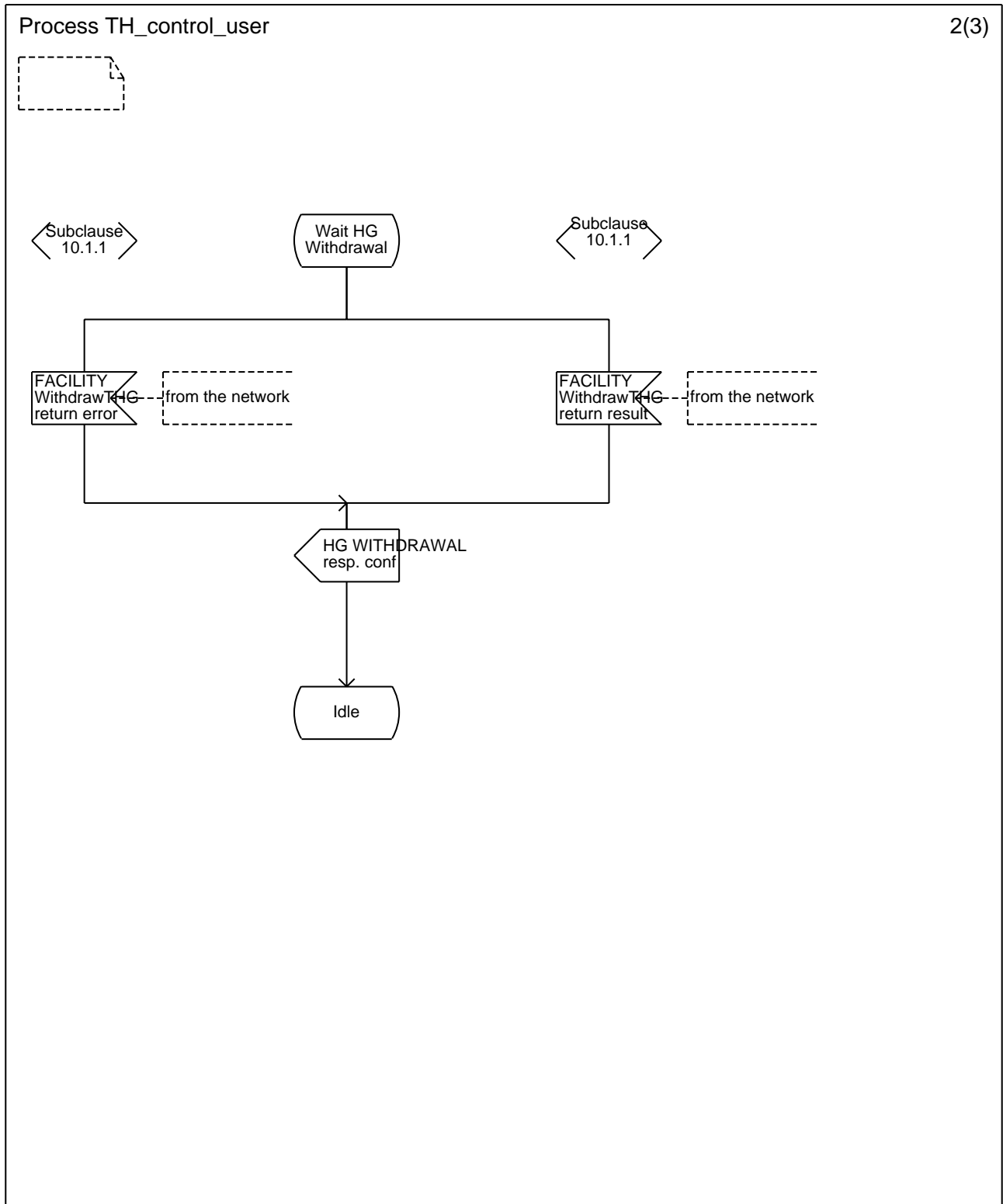


Figure 2: SDL for Trunk Hunting control, user at the T reference point

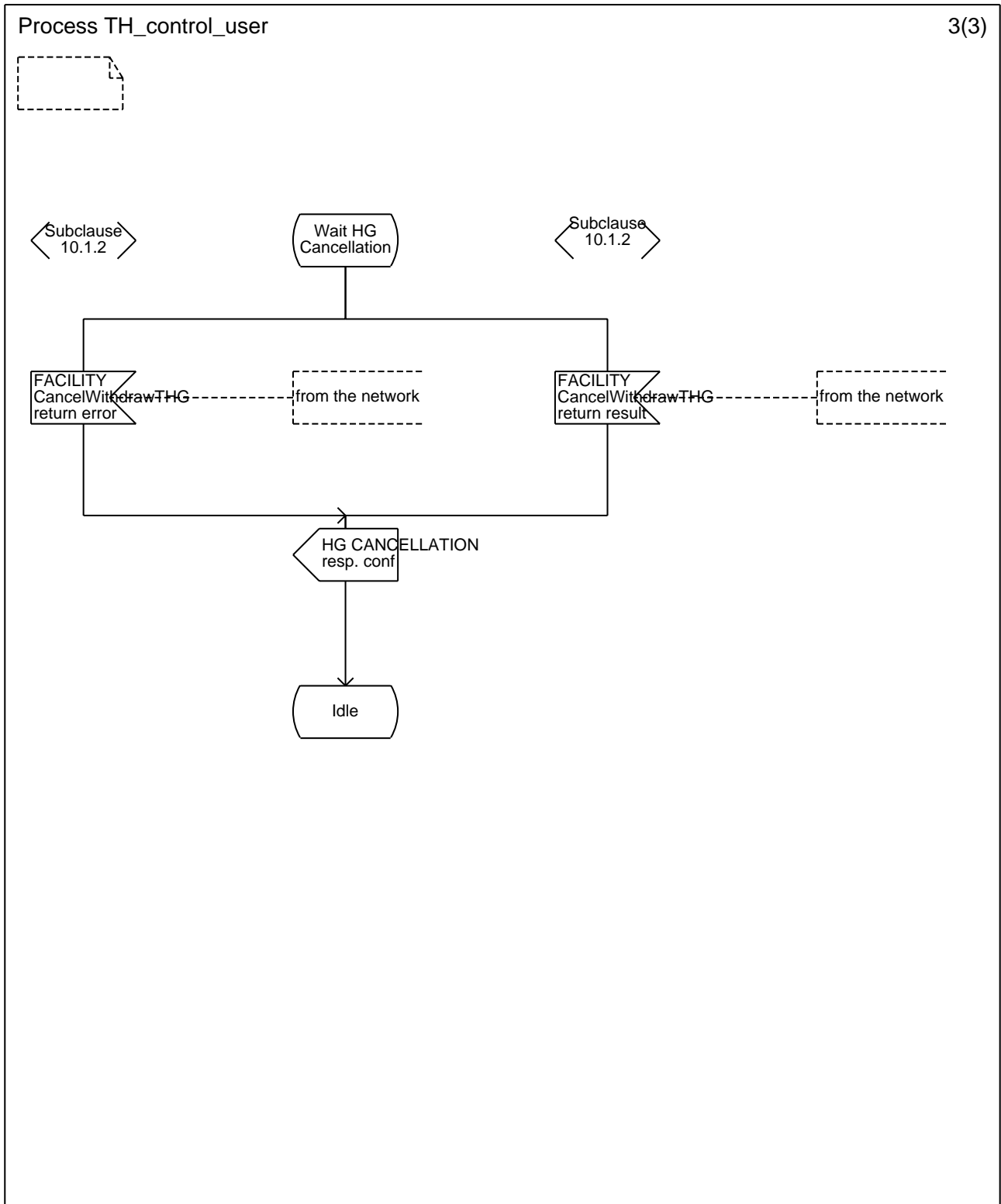


Figure 3: SDL for Trunk Hunting control, user at the T reference point

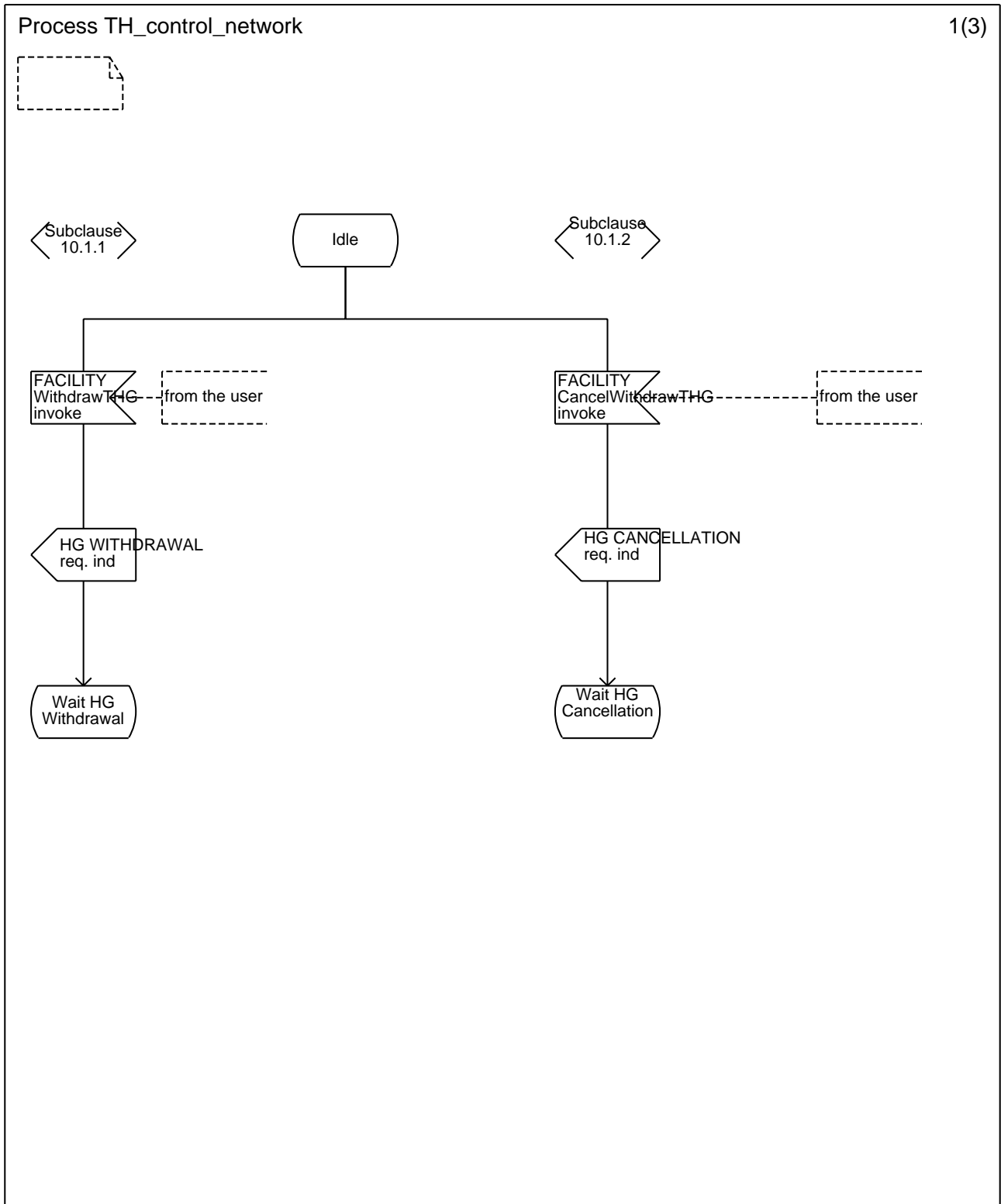


Figure 4: SDL for Trunk Hunting control, network at the T reference point

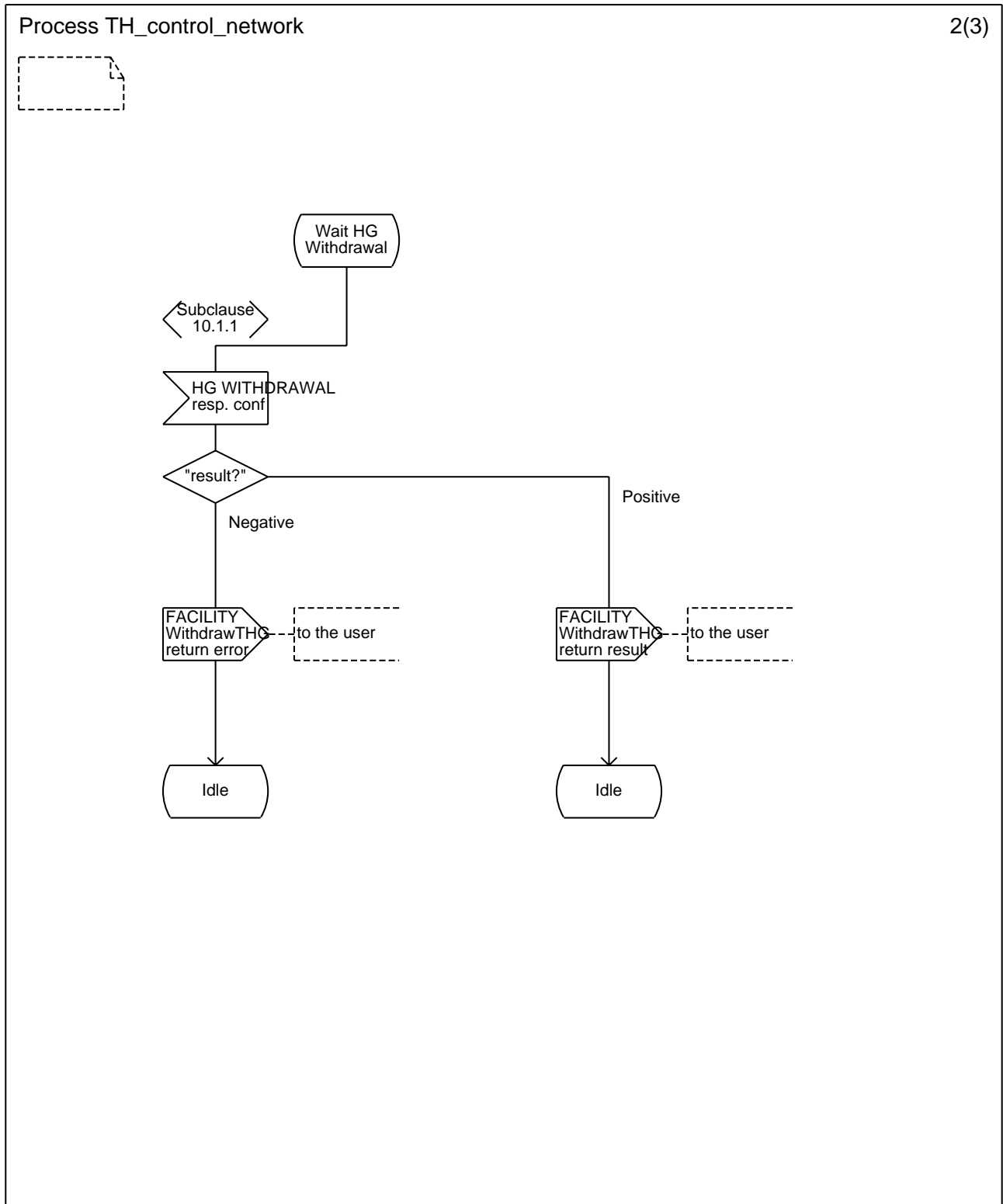


Figure 5: SDL for Trunk Hunting control, network at the T reference point

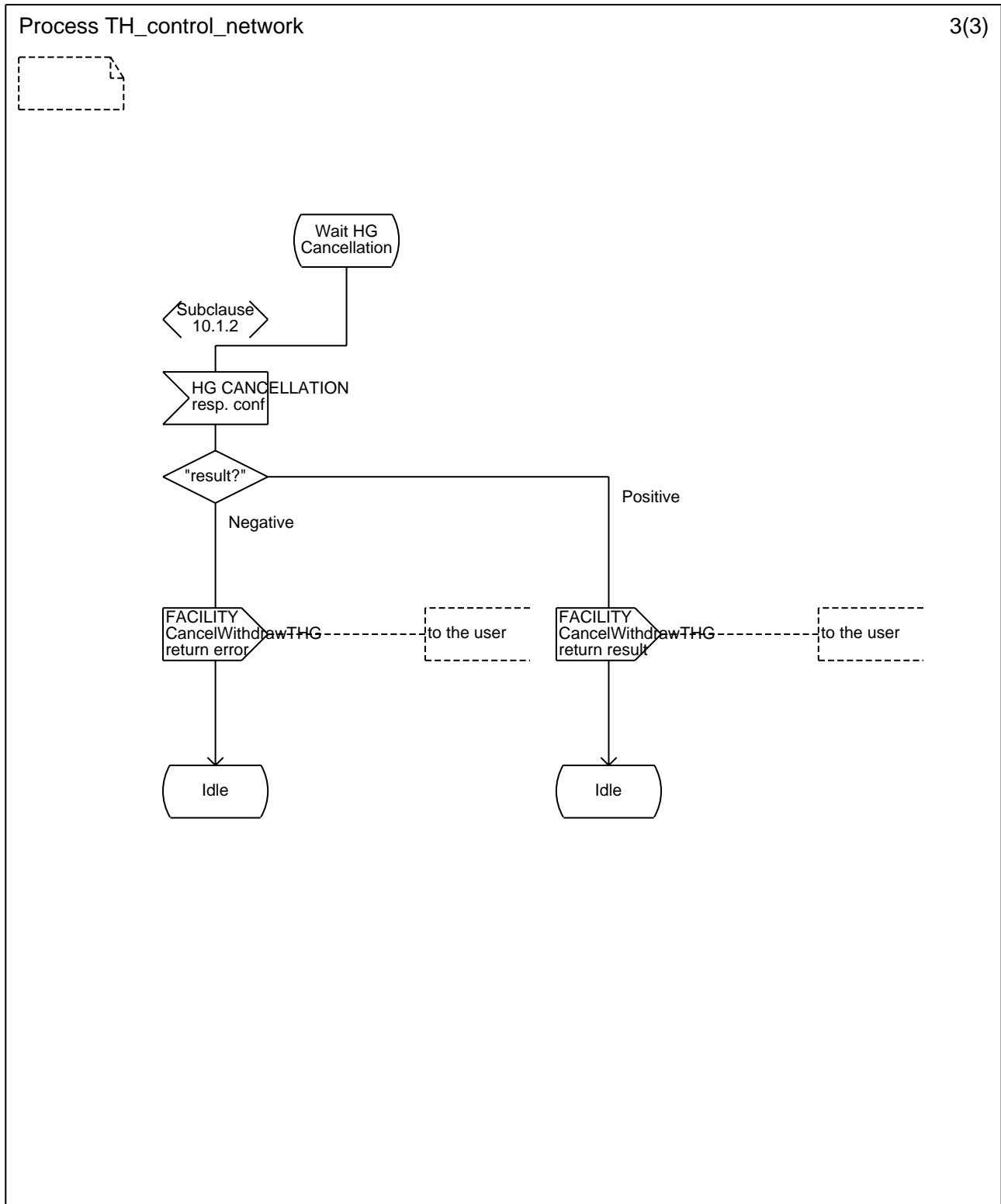


Figure 6: SDL for Trunk Hunting control, network at the T reference point

Annex A (informative): Examples of Signalling flows

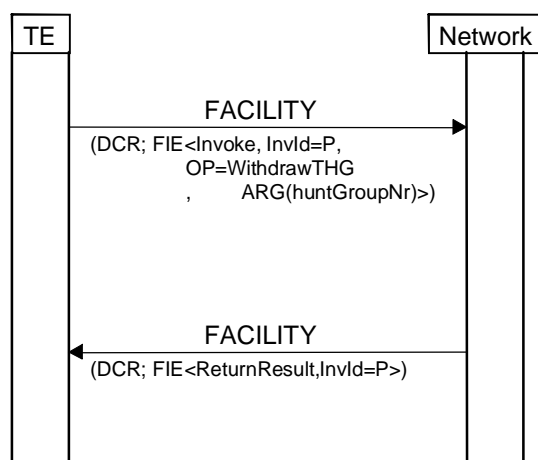


Figure A.1: Withdrawal of an access from a hunt group

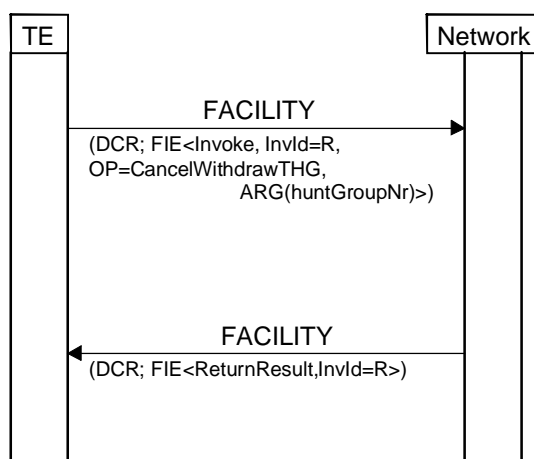


Figure A.2: Cancellation of Withdrawal of an access from a hunt group

History

Document history		
V1.1.1	July 2000	Publication