INTERNATIONAL TELECOMMUNICATION UNION

CCITT

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THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

GENERAL STRUCTURE AND SERVICE CAPABILITIES

CALL HOLD

Recommendation I.253.2

Geneva, 1992

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation I.253.2 was revised by Study Group I and was approved under the Resolution No. 2 procedure on the 4th of August 1992.

CCITT NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication Administration and a recognized private operating agency.

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Recommendation I.253.2

CALL HOLD

(revised 1992)

1 Definition

The **Call Hold** service allows a user to interrupt communications on an existing call and then subsequently, if desired, re-establish communications. A B-channel (see Note) may or may not be reserved after the communication is interrupted to allow the origination or possible termination of other calls. Reservation must be provided by the service provider as a user option. The Call Hold service includes the retrieve operation which re-establishes communication on a B-channel between the served user and the held party.

Note – Use of the Call Hold supplementary service to hold calls by a particular terminal simultaneously using more than one B-channel is outside the scope of this Recommendation.

2 Description

2.1 *General description*

When the Call Hold (HOLD) service is invoked, communication on a B-channel is interrupted and the B-channel is released from use by the existing call.

If reservation is subscribed to, a B-channel is reserved for use by the given terminal used to invoke the Call Hold supplementary service.

When a user (as identified by a terminal) places a call on hold and reservation applies, a B-channel should always be available on that user's interface so that the user may retrieve that call from hold, or set up, retrieve or connect to another call. One B-channel should be kept available for the user as long as the user:

i) has one or more calls on hold with reservation; and

ii) is not currently connected to any other call.

Hence, the network should not reserve more than one B-channel for the terminal used to invoke the Call Hold supplementary service.

When the served user wishes to re-establish communications, the retrieve operation is requested. The success of the retrieve operation depends on whether a B-channel was reserved and whether a B-channel is currently available to the served user.

2.2 *Specific terminology*

None identified.

2.3 *Qualifications on the applicability to telecommunication services*

The Call Hold supplementary service is applicable to all circuit mode basic telecommunication services. Although it may not be meaningful for some services, the network will not otherwise restrict its applicability.

3 Procedures

3.1 *Provision/withdrawal*

The Call Hold service is provided after prior arrangement with the service provider or may be generally available. As the Call Hold service can often be used together with other supplementary services (e.g. the Call Waiting

and Three-Party supplementary services) a service provider may choose to make the subscription to the Call Hold service implied by the subscription of these supplementary services. Withdrawal shall be at the request of the customer or for administrative reasons.

3.2 Normal procedures

3.2.1 *Activation/deactivation/registration*

None identified.

3.2.2 *Invocation and operation*

3.2.2.1 *Hold request*

The served user indicates to the service provider that the communication on the interface is to be interrupted. A call may be placed on hold:

- on the calling user's interface, by the calling user at any time after the call has been answered but before the call is terminated or additionally as a service provider option: after alerting has commenced, or after the calling user has provided all of the information necessary for processing the call;
- on the called user's interface, by the called user at any time after the call has been answered and before call clearing has begun.

The communication on the interface is then interrupted. The service provider acknowledges this action, and the associated channel is made available for other uses, depending on the reservation option. As an option, the network may send a notification to the held party indicating that the call has been placed on hold. When the call is held before the call has been answered, then as a service provider option:

1) the user shall be notified when the call is answered; or
2) the users that have responded shall be notified at any time.

If at any time a call is in the held state, either party may clear the call.

3.2.2.2 *Retrieve request*

When the user who invoked the Call Hold service indicates that the call is to be retrieved, the service provider will re-establish communications, provided that a B-channel is available, and acknowledge to the served user and optionally to the held party that the call is now active.

When the call is retrieved before the call has been answered, then as a service provider option:

- if the user was not notified that the call was held, the retrieval shall cancel any hold notification pending answer and the user shall not be notified; or
- the users that have responded shall be notified at that time.

The user may optionally indicate a B-channel selection parameter in the retrieve request. The parameter may indicate:

1) any channel acceptable;
2) specified channel is preferred; or
3) specified channel is required exclusively.

If the service provider can satisfy the request, the call will be returned to the active phase; if it cannot, the request will be rejected with the appropriate cause returned to the user.

3.2.2.3 *Reservation processing*

The following conditions concerning reservations against a channel apply:

1) when the call is retrieved, any reservation against a channel associated with that call should be cleared, regardless of which channel is used to retrieve the call;

2) when a call is cleared, any reservation against a channel associated with this call should be cleared and the service provider should continue to reserve a B-channel for the terminal until there are no more held calls associated with the terminal;

3) when all reservations are cleared normal channel allocation procedures will apply;

4) when any reservation is outstanding for a given user (as identified by a terminal) and that user is not using a channel for an active call, then the network must consider a channel as "not free" for that user for subsequent incoming calls.

3.3 *Exceptional procedures*

3.3.1 *Activation/deactivation/registration*

None identified.

3.3.2 *Invocation and operation*

3.3.2.1 *Hold request*

If the user tries to hold a call while not subscribed to the service or if, for some other reason, the service provider cannot hold the call, an indication will be provided to the user for the reason of failure.

3.3.2.2 *Retrieve request*

If the service provider cannot retrieve a previously held call, the user will be informed of the reason for failure. (For example, there may not be any channel available, or the call may be in the process of being cleared.)

3.4 *Alternative procedures*

None identified.

4 Network capabilities for charging

This Recommendation does not cover charging principles. Future Recommendations in the D-Series are expected to contain that information.

It shall be possible to charge the subscriber accurately for the service.

5 Interworking requirements

5.1 *Interworking with non-ISDNs*

The operation of this feature is not affected by the nature (i.e. integrated services digital network (ISDN) or non-ISDN) of the far end of the connection.

If the distant user is a non-ISDN user, the notifications about the held and retrieved state of the call to that user may not be supported. In this interworking case it may also occur that a call is held before alerting has commenced.

5.2 *Interworking with private ISDN*

When a remote user is on a network different from that of the served user (e.g. one user on a private ISDN and the other user on a public ISDN), indications to the remote user shall be sent to the remote user's network for forwarding to the remote user.

6 Interactions with other supplementary services

6.1 *Call Waiting*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

Note – If all channels are "not free" (busy or reserved) and a user has also subscribed to the Call Waiting service the network would be able to offer an incoming call with an indication that "no interface information channels are available". The served user may accept that incoming call using a reserved channel.

A user may use the hold feature to hold an active call and answer an incoming call that is being given call waiting treatment.

6.2 *Call Transfer*

The invocation of the Call Transfer supplementary service should have no impact on any held calls not involved in the transfer.

If either of the transferred users have put their call on hold prior to the transfer, the resulting transferred call should remain on hold by that user. The transferring user should be replaced as the held user in the resulting call by the other user.

Note – The hold process is symmetric, i.e. both parties may place each other on hold. It is possible, therefore, for two parties that have subscribed to the Call Hold and Call Transfer services, to each place their active call on hold and to simultaneously transfer the other party. That is, if parties A and B have an active connection, party A may place the call on hold and transfer party B to another party C while at the same time party B puts his call to party A on hold and transfers party A to another party D.

6.3 *Connected Line Identification Presentation*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.4 *Connected Line Identification Restriction*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.5 *Calling Line Identification Presentation*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.6 *Calling Line Identification Restriction*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.7 *Closed User Group*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.8 *Conference Calling*

Any party involved in an active conference (i.e. the conference controller or a conferee) may place the conference call on hold and later retrieve the connection to the conference. Any party placing the conference on hold may retrieve any other party it had previously placed on hold. See also the Conference Calling service description Recommendation I.254, § 1.6.15.

6.9 *Direct-Dialling-In*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.10 Call diversion services

6.10.1 *Call Forwarding Busy*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.10.2 *Call Forwarding No Reply*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.10.3 *Call Forwarding Unconditional*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.10.4 *Deflection*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.11 *Line Hunting*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.12 *Three-Party service*

Any party involved in a three-way conversation can place the connection to the three-way conversation on hold and later retrieve it.

While the connection of one party to the three-way conversation is held, the other parties can continue to communicate.

6.13 *User-to-User Signalling*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.14 *Multiple Subscriber Number*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.15 *Call Hold*

If the Call Hold supplementary service is provided to both users involved in one call, each of these users can hold and retrieve the call independently from these operations having been carried out by the other user.

6.16 *Advice of Charge*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.17 *Multi-level Precedence and Preemption*

A held call may be preempted due to lack of network resources or channels at the held party's interface. The call is cleared and the served user, who invoked the call hold service, will be notified of the preemption.

For the case of multiple terminals on an interface, an idle channel that is reserved for a call held by another terminal may be seized in order to complete a higher precedence call. In addition, an active channel that is reserved for a held call may be preempted and seized in order to complete a higher precedence call. In both cases, the held call is not preempted and may be retrieved when a channel becomes available.

6.18 *Priority Service*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.19 *Malicious Call Identification*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.20 *Outgoing Call Barring*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.21 *Reverse Charging*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

6.22 *Sub-addressing*

No impact, i.e. neither supplementary service affects the operation of the other supplementary service.

7 Dynamic description

The dynamic description of this service is given in Figure 1/I.253.2.

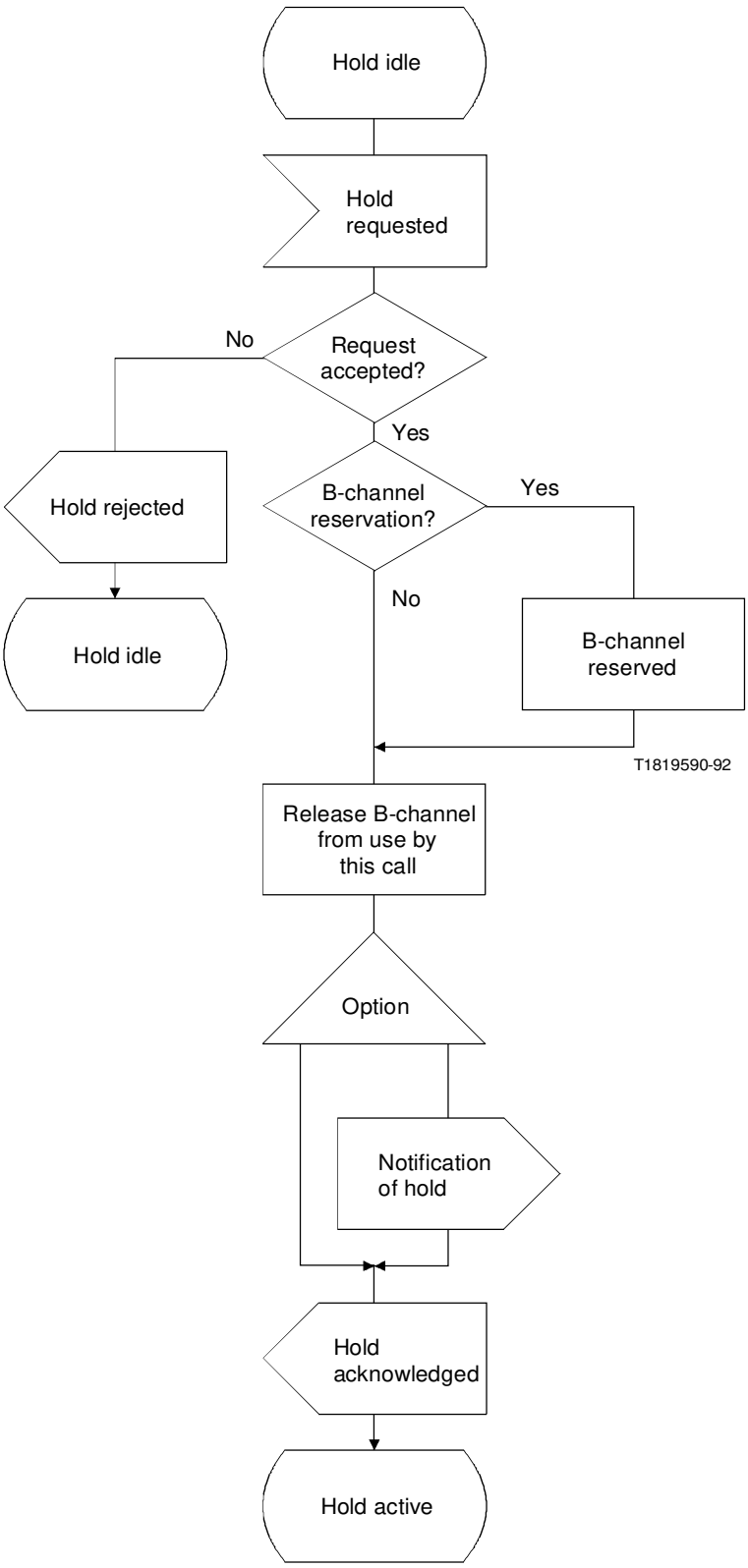

FIGURE 1/I.253.2 (sheet 1 of 2)

Overall SDL diagram of Call Hold

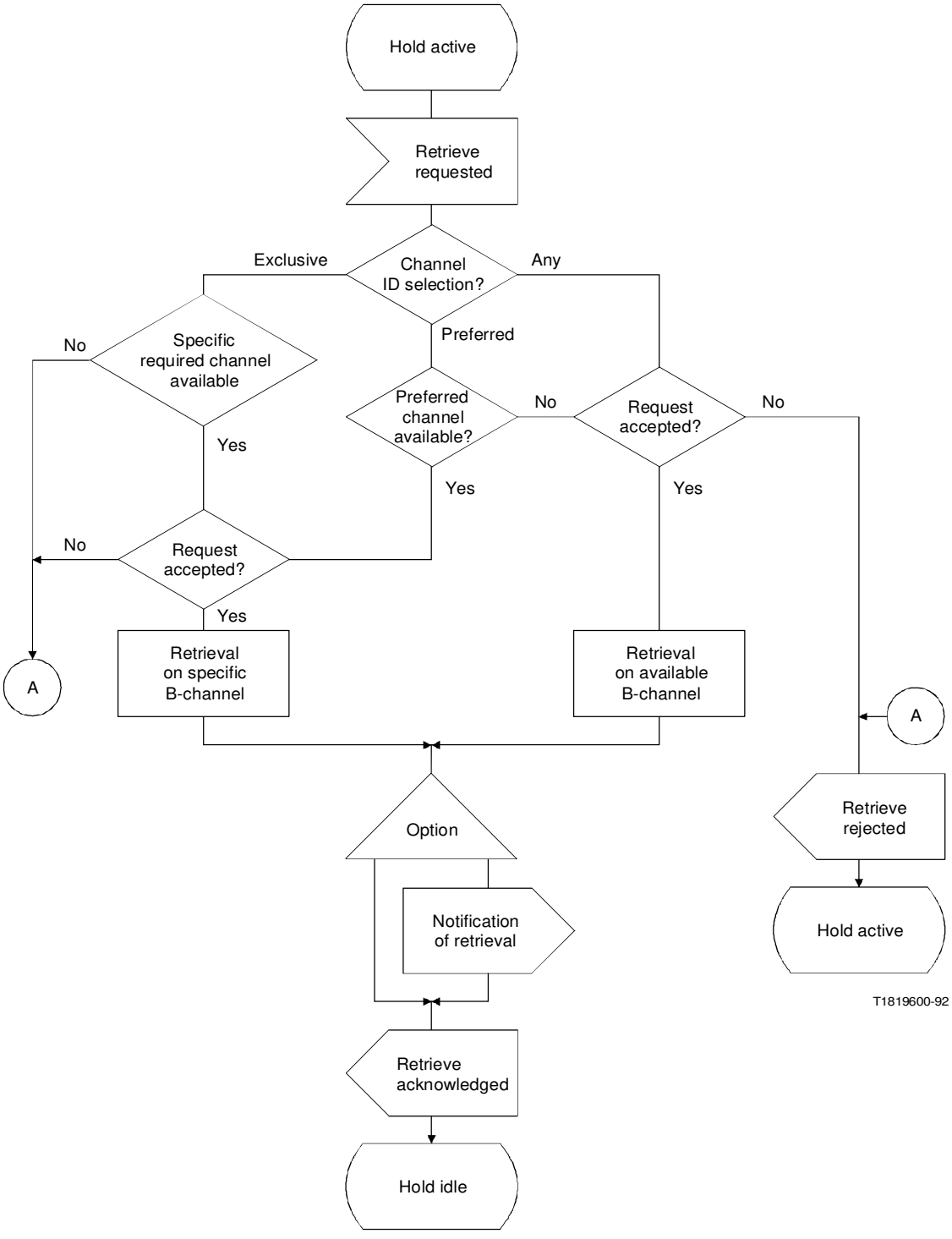

FIGURE 1/I.253.2 (sheet 2 of 2)

Overall SDL diagram of Call Hold