6.12Three-Party Service

See section 6.15 call hold service in Recommendation I.254.2,
Three-Party Service service description.

6.13User-to-User Signalling

Any party that has placed one or more calls on hold may continue to exchange (send or receive) UUI (service 3) messages with the party(s) on hold as well as exchange UUI (service 3) messages with an active call party. A held party that is disconnecting may receive or send UUI (service 1) messages during the clearing phase of the call.

6.14Multiple Subscriber Number

This supplementary service has no impact on the operation of the other supplementary service.

6.15Call Hold Service

Assume that parties A and B have both subscribed to the call hold service. The hold service is uni-directional, so it is possible for 1) only party A to have party B on hold, 2) only party B to have party A on hold, and 3) each party to have the other on hold.

6.16Advice of Charge

This supplementary service has no impact on the operation of the other supplementary service.

7.Dynamic Description

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

I.253.3Completion of Calls to Busy Subscribers

This service being identified needs to be further studied and the description is not yet included.

See 6.10 above.

6.10.3Call Forwarding Unconditional

See 6.10 above.

6.11Line Hunting

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

6.4Connected Line Identification Restriction

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

6.5Calling Line Identification Presentation

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

6.6Calling Line Identification Restriction

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

6.7Closed User Group

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

6.8Conference 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 section 6.16 on call hold in the Conference Calling service description.

6.9Direct Dialling-In

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

6.10Diversion services

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

6.10.1Call Forwarding Busy

See 6.10 above.

6.10.2Call Forwarding No Reply

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.

6.3Connected Line Identification Presentation

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

3.3.2.2Retrieve 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.)

3.4Alternative 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

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

6.Interactions with other supplementary services

6.1Call Waiting

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

6.2Call Transfer

A served user may indicate to a service provider that a held call is to be transferred to another party. The transfer indication must explicitly identify the held call. A successful transfer will clear the held call from the served user's point of view. For more information, see the Explicit Call Transfer procedure in the call transfer service description.

Any parties on hold to a party being transferred will continue to be on hold to that party after the transfer operation. For example, if party B, currently active or on hold to party A, is transferred to another party C by served user A, then the parties held by parties B and C before the transfer will continue to be held by those parties after the transfer.

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 hold and call transfer service, to each place their active call on hold and to simultaneously transfer the other party. That is, if parties A and B have

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

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 exclusively required.

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.

3.2.2.3Reservation processing

The following conditions concerning reservation against a channel apply:

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

2)when a call is cleared, any reservation against a channel associated with the call should be cleared;

3)when all reservations are cleared, all channels become available for use by either the network or the user.

4.When any reservation is outstanding for a given user (as identified by a terminal, a set of terminals, a DN, a set of DNs or PIN) 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.

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.

3.3Exceptional procedures

3.3.1Activation/deactivation/registration

None identified.

3.3.2Invocation and operation

3.3.2.1Hold request

3.2.2.2Retrieve Request

When the user that 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.

2.2 Specific terminology

None identified.

2.3 Qualifications on the applicability to telecommunications services

This supplementary service is considered meaningful when applied to the Telephony teleservice and the speech and 3.1 kHz audio bearer services. Furthermore, it may also be meaningful when applied to other services.

3. Procedures

3.1 Provision/withdrawal

The type of reservation is specified at subscription time.

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 communications 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 completion of dialling;

-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.

If held call(s) are cleared for any reason, the service provider will continue to reserve a channel for the specified user(s)/terminal(s) until there are no more held calls with reservation associated with the specified user(s)/terminal(s). If at any time a call is in the held state, either party may clear the call.

Note 1 - The applicability of the hold service to a "call" versus a "connection" requires further study.

Note 2 - The applicability of this service definition to other access resources (e.g., H-channels, logical channels) for other services requires further study.

I.253.2 Call Hold Service Description

1. Definition

The Call Hold Service allows a user to interrupt communications on an existing call/connection (Note 1) and then subsequently, if desired, re-establish communications. A B-channel (Note 2) may or may not be reserved after the communication is interrupted to allow the origination of 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.

2. Description

2.1 General description

When the Call 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, and depending on subscription parameters, a B-channel is reserved for use by:

-the given terminal used to invoke the Call Hold Service;

-a subscription time user-defined set of terminals+;

-a user defined by director number, (Note);

-a subscription time user-defined set of directory numbers, or (Note);

-a user identified by a Personal Identification Number (Note).

Note - Methods to define implementation are for further study.

When a user (as identified by a terminal, others for further study) places a call on hold and reservation applies, a B-channel should always be available on that user's interface for the user to retrieve that call from hold; or setup, retrieve or connect to another call. One B-channel should be kept available for the user as long as the user has (i) one or more calls on hold with reservation and (ii) is not currently connected to any other call. That is, the network should not reserve more than one B-channel for a user, regardless of how a user is defined (as identified by a terminal, others for further study).

When the served user wishes to re-establish communications, the Retrieve operation is requested. The success of the Retrieve operation depends on whether or not a B-channel was reserved and whether a B-channel is currently available to the served user.

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.253.1.

6.10.3Call Forwarding Unconditional

If subscriber B has activated Call Forwarding Unconditional, then the execution of that forwarding condition takes precedence over Call Waiting.
Call Forwarding Unconditional can be activated while a call is waiting without changing the state of the waiting call.

6.11Line Hunting

The call waiting service should not be provided to a line in a hunt group.

6.12Three Party

A user at B who is involved in a Three-Party service operation (with minimal Three-Party service or active in a Three way conversation) may receive an indication of a waiting call. The procedures and restrictions for handling the waiting call are defined in the Three-Party service description.

6.13User-to-User Signalling

User-to-User Information (UUI) (Service 1) included in the call set up message will be delivered to subscriber B with the Call Waiting indication.

UUI (Service 2) sent from the calling user to the called user during the alerting phase is allowed to be sent when a point-to-point configuration exists at the called side.

If the called user subscribes to User-to-User Signalling, he may include UUI (Service 1) in a rejection of a waiting call when a point-to-point configuration exists at the called side.

There is no interaction with User-to-User Service 3.

6.14Multiple Subscriber Number

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

6.15Call Hold service

When an ISDN user receives a call waiting indication the ISDN user may use the Call Hold service to hold his active call and answer the waiting call. Use of the hold service does not place a call into a waiting state.

6.16Advice of Charge

Assume a user at C, who has subscribed to the CLIR service, reaches a user(s) at B, who has subscribed to the Call Waiting service. On invocation, the user at B would receive a call waiting indication but would not receive the calling user at C's number when the call waiting indication is given.

6.7Closed User Group

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

6.8Conference Calling

A user at B who is active on any type of conference call may receive anindication of a waiting call.

Once a conference has been established:

i)Any party that has activated Call Waiting will be able to receive an indication of an incoming call, and could place their connection to the conference on hold to accept the waiting call.

ii)The Conference Controller could, if desired, add the party from the waiting call, by answering the waiting call and using the "add party from existing call" procedures.

6.9Direct Dialling-In

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

6.10Diversion services

6.10.1Call Forwarding Busy

If user B is not NDUB, Call Waiting will take place. If user B is NDUB, CFB will take place. Therefore these services are mutually exclusive and there is no interaction.

6.10.2Call Forwarding on No Reply

If subscriber B has Call Forwarding on No Reply (CFNR) activated, then a waiting call shall still be offered as described in this definition. If no answer is received to this call during the duration of the CFNR Timer, then the CFNR service becomes invoked and the call is forwarded as per that service definition.

type of transfer invoked by user B (i.e., for normal, single step, or explicit transfers). When user A has been transferred, a B-channel would normally become idle, enabling the waiting call

to be answered by user B.

-if user A has a call waiting indication before or during the transfer process, then upon successful completion of the transfer of user A to user D, user A shall retain the waiting call indication. User a could use normal call waiting procedures (if desired) to accept the waiting call.

-if user D receives a call waiting indication during the transfer process e.g., while being in a call with user B, then upon successful completion of the transfer of user A to user D, user D shall retain the waiting call indication. User D could use normal call waiting procedures (if desired) to accept the waiting call.

In general, a call waiting indication may be delivered to users A or B (and to user D during the transfer process) when the called user has subscribed to the Call Waiting service.

6.3Connected line identification presentation

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

When user B uses one of the Call Waiting procedures to accept a waiting call (within any time limits established by the service provider), user C will be informed of the connection. The confirmation that a connection has been established may provide the connected user B's number.

6.4Connected line identification restriction

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

6.5Calling line identification presentation

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

If the user(s) at B is(are) given a call waiting indication, and has(have) subscribed to the CLIP service, then the calling party's number shall be presented to the users at B at the time the call waiting indication is given.

6.6Calling line identification restriction

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

3.4.2Invocation and operation

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

5.1ISDN served user: non-ISDN calling user

If an ISDN subscriber B receives a call from a non-ISDN calling party, the network will send the Call Waiting indication to subscriber B in the normal way.

An inband indication will be applied to channels occupied with the 3.1 kHz audio bearer service (where the call originated from the PSTN as identified by a progress indicator), only if it is destined to a number designated for inband notification by the call waiting subscriber.

5.2Non-ISDN served party: ISDN calling party

Not applicable since a non-ISDN served party will not be able to subscribe to ISDN Call Waiting.

6.Interaction with other supplementary services

6.1Call Waiting

Not relevant.

6.2Call Transfer

User B, who has subscribed to both Call Waiting and Call Transfer services, cannot transfer a waiting call from user C until he first establishes a connection to user C.

Assume that user B is on an active call with user A and has received an indication of a waiting call from user C. Users A and B have Call Waiting subscribed for their accesses and user B has subscribed to the Call Transfer service. User B intends to transfer user A to user D.

-User B may receive an indication of a waiting call from user C either before or during the transfer of user A to another party. The call waiting indication may be presented regardless of the

If the optional No Answer timer T2 expires without any acceptance from subscriber B of the incoming call, then the network shall inform subscriber B that the call is no longer waiting and also inform user C that his call cannot be connected. Normal release applies to the call attempt from user C (the call is cleared indicating no response) with an appropriate indication given to user C.

3.3.3.2Incoming call from user C rejected by user B

A rejection of the waiting call by one of the terminals on the interface of subscriber B will not stop the optional No Answer timer T2 as another terminal may subsequently accept the waiting call within the remainder of the specified period. Such a rejection may, however, cancel any indication provided to that terminal. Where rejections of a waiting call have been received from all those terminals that responded with an alerting indication before the expiry of the optional No Answer timer T2, then the network shall inform user C that his call cannot be connected. Normal release applies to the call attempt from user C with the call being cleared indicating user Rejection. Subscriber B is notified that the call is no longer waiting.

3.3.3.3Release by user C within the specified period

If calling user C informs the network, before the expiry of the optional No Answer timer T2, that he wishes to release his call attempt to subscriber B, then the network shall inform subscriber B of this situation and initiate release of the call attempt from user C.

3.3.3.4No positive response from terminals at subscriber B's interface

If no positive response that user(s) are being informed of the waiting call, is received from a terminal at subscriber B's interface during the normal call period (User Response timer T1), then the call attempt from user C shall be released by the network with user C being given the reason for the release.

3.3.3.5No resources available

If user B accepts a call and network resources do not exist to complete the call (i.e. no information channels are available), the network will indicate an error to user B with cause "no B-channels available". The network will not clear the call but will wait for another user B indication for acceptance, until user C clears the call orthe optional No Answer timer T2 expires.

3.4Alternative procedures

3.4.1Activation/deactivation/registration

None identified.

period, that user(s) is (are) being informed about the incoming call, then user C will be given an indication that the called user(s) are being informed of the incoming call. In some networks this indication may also indicate that call waiting is in operation.

3.2.3.2If user B requests to connect to the waiting call and to place the specified active call with user A into a held state, before the expiry of the optional No Answer timer T2, then the call between user C and user B is completed in the normal manner with any indications to user C being removed. The previously active call between user A and user B is put into the held state. User A may be given an indication that his call has been put into the held state.

Note - From this state other supplementary services, for example Three Party service, may be used.

3.2.3.3If user B requests to connect to the waiting call and to terminate the specified active call with user A, before the expiry of the optional No Answer timer T2, then the call between user C and user B is completed in the normal manner with any indications to user C being removed. The previously active call between user A and user B is terminated in the normal manner.

3.2.3.4If user B terminates the active call with user A before the expiry of the optional No Answer timer T2, then this call shall be released in the normal manner. User B is then able to accept the waiting call from user C using normal information channel selection procedures.

3.2.3.5If user B holds the active call with user A before the expiry of the optional No Answer timer T2, then this call shall be held in the normal manner. User B is then able to accept the waiting call from user C using normal information channel selection procedures.

3.2.3.6If user A requests to terminate the active call with user B, before the expiry of the optional No Answer timer T2, then the conditions of
paragraph 3.2.3.4 apply.

3.3.Exceptional procedures

3.3.1Activation/deactivation/registration

None identified.

3.3.2Invocation

None identified.

3.3.3Operation

3.3.3.1Incoming call from user C ignored by subscriber B

options apply separately to each ISDN number and service combination. For each subscription option, only one value can be selected. Subscription options are summarized below:

Subscription options	Value
Calls that can wait	- all - others are for further study
Calling User receives notification their call is waiting	- No - Yes

In addition, the following subscription options can be specified for each ISDN number, all ISDN numbers, or subsets of ISDN numbers on each interface.

Subscription options	Values
Maximum number of calls which can be waiting	- one - , where 1_ _ n-m

Note - The parameters m (maximum number of information channels) and n (maximum number of total calls present) are defined in the relevant basic service description (refer to Recommendations I.231 and I.241).

3.2 Normal procedures

3.2.1 Activation/deactivation

Subscriber B may activate and deactivate Call Waiting with an appropriate request. Whether, and if so to what degree, activation/deactivation is supported by the network may be network dependent. If supported, then the network shall inform subscriber B (all terminals on the access) of the success or otherwise of this action.

3.2.2 Invocation

3.2.2.1 When an incoming call from user C arrives at the access of Subscriber B and encounters the channels busy condition and a Network Determined User Busy condition does not result, then the Call Waiting service will be invoked and the call shall be offered to subscriber B with an indication that the channels busy condition exists.

3.2.3 Operation

3.2.3.1 If a response is received from a terminal at the B access, within the normal basic call

Subscriber B	This is the subscriber who is provided by the network with the Call Waiting service on a particular interface.
User B	This is the one user who reacts to the call waiting at B.
User C	This is the user who has originated a call to B which causes the Call Waiting service to be invoked.
User A	This represents a user who is engaged in a call with User B (this call can be in any state).

User Response Timer T1: This timer specifies the period the network will wait for a positive response, from a terminal at B, to the offered call. It is part of the basic call and has a value of a few seconds.

No Answer Timer T2: This optional timer specifies the period the network will wait for a response (answer), from user B, to the offered call from User C. The value of this timer is between 0.5 and 2 minutes.

2.3Qualifications on the applicability to telecommunication services

This supplementary service is considered meaningful when applied to the Telephony teleservice and the speech and 3.1 kHz audio bearer services. Furthermore, it may also be meaningful when applied to other services.

3.Procedures

3.1Provision/withdrawal

Call Waiting can be provided on a subscription basis or, as a network provider option, be generally available to all users without subscription.
Call Waiting can be withdrawn for administrative reasons.

As part of each applicable bearer service or teleservice, there is an option specifying the maximum number of information channels which can be used (occupied) on the interface for each ISDN number, all ISDN numbers or subsets of ISDN numbers. Call Waiting for bearer services or teleservices occurs only when an attempt is made to exceed these limits.

As a network provider option, Call Waiting can be offered with several subscription options. The

Recommendation I.253 - Call Completion Supplementary Services

The purpose of this Recommendation is to provide the stage 1 description of the method defined in Recommendation I.130 using the means given in Recommendation I.210.

Supplementary services are described by a prose definition and description (step 1.1) and by a dynamic description (step 1.3). The application of the attribute technique, as defined in Recommendation I.140, for supplementary services is for futher study.

This Recommendation describes the following Call Completion supplementary services:

I.253.1 Call Waiting (CW)
I.253.2 Call Hold (HOLD)
I.253.3 Completion of Calls to Busy Subscribers (CCBS) (Note 1)

Note 1 - This service being identified needs to be further studied and the description is not yet included.

I.253.1Call waiting

1.Definition

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

2.Description

2.1General description

The ISDN Call Waiting service allows notification to subscriber B of the incoming call to be out-of-band and this is the assumed case for this definition. In addition, as a service provider option, audible in-band indications may be provided to the channels occupied with the speech bearer service and the Telephony teleservice. Where applied, tones should be in accordance with Recommendation E.180.

The maximum number of calls that can be handled (e.g., active, held, alerting, waiting) for each ISDN number on a given interface is specified at subscription time.

2.2Specific terminology

Throughout this definition the following terminology will be used: