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SERIES I: INTEGRATED SERVICES DIGITAL NETWORK

Service capabilities – Supplementary services in ISDN

Call completion supplementary services: Completion of calls to busy subscribers

ITU-T Recommendation I.253.3

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION I.253.3

CALL COMPLETION SUPPLEMENTARY SERVICES: COMPLETION OF CALLS TO BUSY SUBSCRIBERS

Source

ITU-T Recommendation I.253.3 was prepared by ITU-T Study Group 1 (1993-1996) and was approved under the WTSC Resolution N°1 procedure on the 19th of July 1996.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. Some 179 member countries, 84 telecom operating entities, 145 scientific and industrial organizations and 38 international organizations participate in ITU-T which is the body which sets world telecommunications standards (Recommendations).

The approval of Recommendations by the Members of ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, 1993). In addition, the World Telecommunication Standardization Conference (WTSC), which meets every four years, approves Recommendations submitted to it and establishes the study programme for the following period.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

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

CONTENTS

Recommendation I.253.3

CALL COMPLETION SUPLEMENTARY SERVICES: COMPLETION OF CALLS TO BUSY SUBSCRIBERS

(Geneva, 1996)

1 Definition

The **completion of Calls to Busy Subscribers (CCBSs) supplementary service** enables a calling user A, upon encountering a busy destination B, to be notified when the busy destination B becomes free and to have the service provider reinitiate the call to the specified destination B if user A desires.

2 Description

2.1 General description

The CCBS supplementary service is applicable to users who are connected to the network via a basic access or a primary rate access.

The CCBS supplementary service enables user A, upon encountering a busy destination B, to have the call completed without having to make a new call attempt when destination B becomes free.

When user A requests the CCBS supplementary service, the network will monitor for destination B becoming free.

When destination B becomes free, then the network will wait a short time as defined in the destination B idle guard timer in order to allow the resources to be reused for originating a call. If the resources are not reused by destination B within this time, then the network will automatically recall user A.

When user A accepts the CCBS recall, then the network will automatically generate a CCBS call to destination B.

2.2 Specific terminology

For the purposes of this Recommendation, the following definitions apply.

2.2.1 user A: The user who originated the call and to whom the CCBS supplementary service is provided.

2.2.2 destination B: The entity that was addressed in the original call set-up.

2.2.3 CCBS request: An instance of an activation of the CCBS supplementary service which is held in a queue pending the correct conditions for the CCBS supplementary service to be completed.

2.2.4 CCBS recall: A network-to-user indication, informing user A that the network is ready to initiate a CCBS call to destination B and that the network is awaiting a response to this indication from user A.

2.2.5 CCBS call: Call set-up by the network from user A to destination B resulting from user A's acceptance of a CCBS recall.

2.2.6 busy: See clause 2/I.221.

2.2.7 network determined user busy: See clause 2/I.221.

2.2.8 user determined user busy: See clause 2/I.221.

2.2.9 free: Destination B is considered free when it is not busy.

2.2.10 CCBS busy: Any one of the following conditions will cause user A to be considered as CCBS busy:

– maximum number of calls reached at user A;

– no B-channels available at user A;

– CCBS recall pending on user A.

2.2.11 retention timer: This timer specifies the amount of time that the network retains all of the information supplied by the calling user when the call encounters busy. This timer is part of the basic call procedures. Although this timer is optional for the basic call procedures, it is needed for the operation of the CCBS supplementary service. The minimum value of the timer shall be 15 seconds.

2.2.12 CCBS service duration timer: This timer specifies the maximum time the CCBS supplementary service will remain activated for user A within the network. The value of this timer is a network option, typically 15-45 minutes.

2.2.13 CCBS recall timer: This timer specifies the maximum time the network will wait for a response from user A to a CCBS recall. The value of this timer is between 10 and 20 seconds.

2.2.14 destination B idle guard timer: This timer specifies the amount of time the network will wait after destination B has become free before informing user A. The value of this timer is between 0 and 15 seconds.

2.2.15 compatible terminal: A terminal which can support the bearer service or teleservice requested for the original call to destination B and which can accept calls to the ISDN number and sub-address identifying the called user in the original call to destination B.

2.3 Qualifications on the applicability to telecommunication services

The CCBS supplementary service shall be applicable to all circuit mode bearer services defined in Recommendation I.230, and all teleservices defined in Recommendation I.240 with the following exceptions:

a) call 2 of the videotelephony service (see Recommendation F.721);

b) all other circuit-switched telecommunications services requiring the use of more than one B-channel.

3 Procedures

3.1 Provision/withdrawal

The CCBS supplementary service may be provided to user A after prior arrangement with the service provider or may be generally available.

The CCBS supplementary service shall be withdrawn by the service provider upon request of the subscriber or for service provider reasons.

As a service provider option, the CCBS supplementary service can be offered with a subscription option which shall apply to the whole access of user A. The subscription option is detailed in Table 1.

TABLE 1/I.253.3

Subscription option	Values
Recall mode	– CCBS recall offered to all terminals on the access – CCBS recall offered to the terminal that activated the CCBS supplementary service

If the subscription option is not offered, one of the two values given in Table 1 shall be chosen by the service provider.

As a network option, the presence of compatible terminals at the destination user's access may be verified.

3.2 Normal procedures

3.2.1 Activation/deactivation/registration

3.2.1.1 Activation

When user A encounters a busy destination B, the network shall retain the call information for the period defined by the retention timer, during which user A can activate the CCBS supplementary service.

An attempt to activate the CCBS supplementary service shall be accepted by the network only if a compatible terminal is present on the destination B access. The network assumes that all terminals can indicate their compatibility.

NOTE 1 – Some service providers may not provide the compatibility check.

If the network accepts the activation of the CCBS supplementary service, the network shall store the identification of the destination contained in the original call request, and user A shall be informed that the activation was successful. Multiple requests against destination B shall be queued.

When the activation of the CCBS supplementary service is accepted, the CCBS service duration timer is started. The network shall monitor for destination B becoming free.

NOTE 2 – Some networks may not support the monitoring of destination B becoming free in the case where user A requests the CCBS supplementary service against a destination B, which is user determined user busy. In this case the CCBS request should be rejected with the reason "short-term denial".

User A can have a limited number of CCBS requests outstanding. This limit is a service provider option with a maximum value of five. The requests can be to different destinations, or can be to the same destination B with different service requirements (e.g. bearer service and teleservice requirements), or as a service provider option, the same service requirements.

Destination B can have a limited number of incoming CCBS requests queued. This limit is a service provider option with a maximum value of five.

Having activated the CCBS supplementary service, user A can originate calls and receive calls as normal.

3.2.1.2 Deactivation

The following deactivation requests shall be made available to user A:

1) deactivate a specific CCBS request. This request shall contain enough information to correlate with the initial activation; or

2) deactivate all outstanding CCBS requests.

Upon successful deactivation the corresponding CCBS request shall be discarded.

User A shall be informed that the deactivation has been successful. If a specific CCBS request is deactivated, the network shall indicate which specific CCBS request has been deactivated.

If the recall mode is "CCBS recall offered to all terminals", then user A can deactivate any outstanding CCBS requests stored for that user from any of user A's terminals.

If the recall mode is "CCBS recall offered to the terminal which has activated the CCBS supplementary service", then user A can deactivate only those outstanding CCBS requests made from that specific terminal.

3.2.1.3 Registration

Not applicable.

3.2.2 Erasure

Not applicable.

3.2.3 Invocation and operation

When destination B becomes free, or when destination B is free and either of the following occurs:

– a CCBS request is received; or

– a CCBS request becomes not suspended,

then the destination B CCBS queue shall be processed, provided that an entry in the destination B CCBS queue is not currently being processed. Entries shall not be processed in parallel.

The first request which is not suspended shall be selected and the network shall reserve on destination B's interface the resources (e.g. a B-channel) which are necessary to complete the CCBS call. Destination B can use the reserved access resources or other free resources, in order to originate a call. An incoming call shall not use these reserved resources.

A check for the existence of a compatible terminal which is free at destination B shall be performed.

NOTE – Some service providers may not provide the compatibility check.

If the compatibility check is performed and is unsuccessful, further requests which are not suspended shall be examined. Otherwise, the network shall start the destination B idle guard timer.

When the destination B idle guard timer expires, then, provided that interface resources are still available at destination B, and, provided that if a compatibility check has been done, a compatible terminal at destination B is still free, user A shall be informed.

If user A is neither busy nor CCBS busy, user A shall be recalled with an indication that it is a CCBS recall, and with an indication to which CCBS request it applies. Then the CCBS recall timer shall be started.

If user A accepts the recall before the CCBS recall timer expires, then user A's network shall initiate the CCBS call to destination B. When the network receives an indication that the destination B is being informed of the CCBS call, the corresponding CCBS request shall be considered as completed.

While the idle guard timer is running, and also while awaiting the CCBS call to destination B, a new incoming call shall not be offered to destination B if it has service requirements and destination selection information identical to the (not suspended) request which is currently being processed in the destination B CCBS queue.

For such incoming calls, the called user shall be considered as being busy and the calling user shall be informed as for basic call procedures.

The CCBS requests in the destination B CCBS queue shall be processed in the order they are received. During the processing of the destination B CCBS queue, CCBS requests which are currently suspended shall be ignored.

If, for any reason, no CCBS call results from the processing of a CCBS request, then provided that access resources are still available at destination B, the next request in the destination B CCBS queue shall be selected for processing. This procedure shall be repeated until the processing of the destination B CCBS queue is complete.

If, for any reason, no CCBS call results from the processing of a CCBS request and the access resources are no longer available at destination B, then the resources reserved for the CCBS supplementary service shall be released and the network shall monitor for destination B becoming free.

If all of the destination B CCBS queue has been processed and no CCBS call results, then processing is complete and the resources reserved for the CCBS supplementary service shall be released.

If requests which are not suspended exist in the destination B CCBS queue, then:

– if destination B is busy, the network shall monitor for destination B becoming free; or

– if destination B is free, then the destination B CCBS queue shall be processed.

3.2.4 Interrogation

User A can request the status of the CCBS supplementary service. In response to the request the following information may be provided:

1) in response to a general request user A shall be given a list of the addresses against which CCBS requests are outstanding; or

2) in response to a specific request concerning one particular address, user A shall be informed whether or not user A has a CCBS request outstanding against that address.

NOTE – In both cases, the network provides information relating to CCBS requests (i.e. bearer service and teleservice requirements, the destination selection information and calling user identity, if any). It is a matter for terminal implementation whether or not user A is given information about CCBS requests which are not compatible with the terminal.

3.3 Exceptional procedures

3.3.1 Activation/deactivation/registration

3.3.1.1 Activation

The activation of the CCBS supplementary service shall be rejected if the user has not subscribed to the CCBS supplementary service.

The activation of the CCBS supplementary service shall be rejected if a compatibility check has been carried out and there is no compatible terminal at destination B.

If the network cannot accept user A's request to activate the CCBS supplementary service, the network shall inform user A and give one of the following reasons:

1) Short-term denial: The network temporarily cannot accept user A's request to activate the CCBS supplementary service. A later attempt to activate the CCBS supplementary service for the same destination B may succeed. This reason will be given e.g.:

   – if user A has reached the limit of CCBS requests outstanding; or

   – if there are already the maximum number of requests queued against destination B; or

– if there is an interaction with a supplementary service which temporarily prevents the activation of the CCBS supplementary service; or

– if no compatible terminal is found at destination B.

NOTE – If the network does not support the monitoring of destination B becoming free in the case, where user A requests the CCBS supplementary service against a destination B, which is user determined user busy, then the network should inform user A with the reason "short-term denial".

2) Long-term denial: The network cannot accept user A's request to activate the CCBS supplementary service and a later attempt to activate the CCBS supplementary service for the same destination B will also be rejected. An example of long-term denial is where destination B's network does not support the CCBS supplementary service.

If destination B is free when the CCBS request arrives, then the CCBS request shall be accepted. Normal procedures shall apply, as described in 3.2.1.1.

3.3.1.2 Deactivation

A CCBS request shall be automatically deactivated by the network(s) and user A shall be informed if:

1) the CCBS service duration timer expires; or

2) user A does not accept the CCBS recall before the CCBS recall timer expires; or

3) destination B invokes a service that conflicts with the existing CCBS request and deactivation becomes necessary.

The user shall only be given information about deactivation of a CCBS request, if that user would have been given the CCBS recall associated with that CCBS request.

3.3.1.3 Registration

Not applicable.

3.3.2 Erasure

Not applicable.

3.3.3 Invocation and operation

3.3.3.1 Exceptional situation at destination B's side

The following situations can occur at the destination B's side:

a) Resources or compatible terminal at destination B no longer available, when the destination B idle guard timer expires:

If no access resources are available at destination B when the idle guard timer expires, then processing the destination B CCBS queue shall cease. The network shall monitor for destination B becoming free and the procedures of 3.2.3 shall then apply.

If a compatibility check is made and no compatible terminal(s) at destination B is free when the idle guard timer expires, then the next CCBS request in the destination B CCBS queue shall be selected for processing.

b) Destination B is busy upon arrival of CCBS call:

If destination B is busy again when the network attempts to make the CCBS call, then, as service provider option either:

– the corresponding CCBS request shall be deactivated. If user A activates the CCBS supplementary service again, this activation shall be considered as a new CCBS request, which will be put at the end of the destination B queue; or

– the original CCBS request shall retain its position in the queue, and the CCBS service duration timer shall not be restarted. If user A attempts to activate the CCBS supplementary service again, this shall be treated as described in 3.3.3.2 c).

NOTE – It is the responsibility of networks supporting the option to retain the original CCBS request to provide interworking with those networks that do not.

3.3.3.2 Exceptional situation at user A's side

The following situations can occur at user A's side:

a) Non-acceptance or rejection of the CCBS recall:

If user A rejects the CCBS recall or the CCBS recall timer expires, then the CCBS request shall be deactivated.

b) User A is found to be busy or CCBS busy:

If user A is found to be busy or CCBS busy at the time of a recall, then user A shall be notified and the CCBS request shall be suspended until user A becomes free and not CCBS busy. The network shall receive no response from user A to this notification.

When a CCBS request becomes not suspended due to user A becoming free and not CCBS busy, then user A's CCBS request associated with the bearer services and/or teleservices for which user A is considered free shall become not suspended and the procedures of 3.2.3 shall apply.

NOTE – Some networks may not support either the determination that user A is user determined user busy or the monitoring of user A until no longer user determined user busy. In such networks user A shall be offered the recall if no CCBS recall is pending and the user is not network determined user busy.

c) User A reactivates the CCBS supplementary service:

If user A does not wait for the CCBS recall to a particular destination B, but makes another call to the same (busy) destination B and requests the CCBS supplementary service again then, as a network option, one of the following shall occur:

1) the network shall check if an identical CCBS request already exists:

   – if so, then the original request shall be retained with the current request being discarded and user A shall be informed that the request has not been accepted because a CCBS request had already been stored against the requested destination B;

   – if not, then the network shall treat this as a new CCBS request.

   In order to determine that the two CCBS requests are identical, the network shall only compare the basic call information, i.e. the bearer service and teleservice requirements, the destination selection information and calling user identity (if any); or

2) the network shall not check if an identical CCBS request already exists and the procedures of 3.2.1.1 shall apply for this new CCBS request.

d) No resources available at user A when user A accepts the CCBS recall:

If user A accepts the CCBS recall but there are insufficient resources for the CCBS call available at user A's access, then user A shall be informed, and the CCBS request shall be suspended until user A becomes free again.

3.3.3.3 Network congestion

If the CCBS call encounters network congestion, then user A shall be informed as for the basic call procedures. In addition, the CCBS request shall be deactivated and user A shall be informed accordingly.

3.3.4 Interrogation

If there are no CCBS requests outstanding when user A requests a general interrogation, user A shall be explicitly informed.

3.4 Alternate procedures

3.4.1 Activation/deactivation/registration

None identified.

3.4.2 Invocation 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 lnterworking considerations

When user A and destination B belong to different networks, then the CCBS supplementary service can operate successfully only if all networks involved support the CCBS supplementary service.

5.1 lnterworking with non-ISDNs

If destination B resides within a non-ISDN which supports the CCBS service functionality, then the CCBS supplementary service may be supported.

NOTE – In some networks, which cannot distinguish between a normal incoming call and a CCBS call, the CCBS call may not succeed.

When the call passes from one network to another network that cannot determine busy/free status, the CCBS request will not be accepted and the CCBS supplementary service will not be activated.

5.2 lnterworking with private ISDNs

The CCBS supplementary service shall not apply in the case of congestion at the interface between a public ISDN and a private ISDN. Therefore the CCBS supplementary service cannot be activated in this situation.

Where the CCBS supplementary service involves users attached to the public ISDN and the private ISDN then, for the supplementary service to be successful, these networks need to interwork on a cooperative basis. This interworking needs to take account of the fact that one network cannot directly monitor a user attached to the other network.

Where a private ISDN supports the CCBS supplementary service, then this information shall be registered with the public ISDN in order to support destination Bs who are attached to the private ISDN.

In order to request the activation of the CCBS supplementary service in the public ISDN, subscription will be necessary as normal.

NOTES

1 The subscription option "recall mode" does not apply at the interface between the public ISDN and the private ISDN.

2 In private ISDNs, path reservation may be used for the CCBS call.

6 Interaction with other supplementary services

Unless stated otherwise below, the supplementary services requested for the original call shall be used in association with the CCBS call.

6.1 Advice of charge services

Charging information may be given for the original call and for the resulting CCBS call.

6.1.1 Charging information at call set-up time (AOC-S)

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

6.1.2 Charging information during the call (AOC-D)

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

6.1.3 Charging information at the end of the call (AOC-E)

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

6.2 Call hold (HOLD)

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

NOTES

1 When receiving a CCBS recall indication, user A may invoke the call hold supplementary service, which may make interface resources available for the establishment of the CCBS call, assuming a B-channel is available.

2 When user A is busy or CCBS busy and is notified that destination B is not busy, invocation of the call hold supplementary service will not result in the CCBS call being established.

6.3 Call transfer

6.3.1 Explicit Call Transfer (ECT)

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

6.3.2 Normal Call Transfer (NCT)

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

6.4 Call Waiting (CW)

NOTE – For a waiting call, destination B is not considered as busy. If the call waiting indication cannot be given to destination B, user A will receive busy indication and can invoke the CCBS supplementary service to destination B.

CCBS requests in the destination B CCBS queue shall only be processed, if there are no calls waiting, and destination B is free.

When a CCBS call arrives at destination B and if destination B is not network determined user busy, then the CCBS call may be presented via the call waiting supplementary service.

6.5 Closed User Group (CUG)

Closed user group information from the original call shall be stored by the network and shall be included in the CCBS call.

NOTE – Closed user group information is not included in the check for a compatible terminal. If a terminal performs an internal closed user group check and uses the closed user group information provided on a call to determine whether or not to inform the user of the incoming call, then such a terminal may react positively to the check for a compatible terminal due to the absence of closed user group information, but due to the internal closed user group check such a terminal may then not inform the user of the arrival of the resulting CCBS call.

6.6 Completion of calls services

6.6.1 Completion of Calls on No Reply (CCNR)

A user can be both, a "user A" and a "destination B" simultaneously, i.e. that user can have activated the CCBS or CCNR supplementary service and have CCBS or CCNR requests outstanding while at the same time that user can be the destination of CCNR or CCBS requests from other users.

If a user receives a CCBS or CCNR recall while that user's destination B CCNR or CCBS queue is being processed, then the CCBS or CCNR recall shall take priority over the handling of the destination B CCNR or CCBS queue. The handling of CCBS or CCNR requests activated by this user shall have priority over the handling of CCNR or CCBS requests activated by other users on this user.

If one of the user's CCBS or CCNR requests can be processed as a result, then the user shall be given a CCBS or CCNR recall or notification as described in clause 3. The served user's destination B idle guard timer, if running, shall be cancelled.

The CCBS requests shall be processed before the completion of calls on no reply requests.

If user A has a completion of calls on no reply recall pending on arrival of the CCBS recall, this should be treated in the same way as in the case where user A is CCBS busy [see 3.2.3 and 3.3.3.2.b)].

6.6.2 Completion of Calls to Busy Subscribers (CCBSs)

A user can be both, a "user A" and a "destination B" simultaneously, i.e. that user can have activated the CCBS supplementary service and have CCBS requests outstanding while at the same time that user can be the destination of CCBS requests from other users.

If a user receives a CCBS recall while that user's destination B CCBS queue is being processed, then the CCBS recall shall take priority over the handling of the destination B CCBS queue. The handling of CCBS requests activated by this user shall have priority over the handling of CCBS requests activated by other users on this user.

If one of the user's CCBS requests matures as a result, then the user shall be given a CCBS recall or notification as described in clause 3. The served user's destination B idle guard timer, if running, shall be cancelled.

6.7 Conference services

6.7.1 Conference calling (CONF)

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

NOTES

1 If the conference controller attempts to establish a call to a party and receives an indication that the user is busy, the conference controller may invoke CCBS to that party, provided the conference controller has also subscribed to CCBS. When the conference controller receives the CCBS recall the conference controller may place the conference on hold, assuming a B-channel is available, complete the call and add that call to the conference, if the number of active parties does not exceed the maximum number of conferees.

2 When the conference controller has a conference call active, CCBS can be applied to that user's line. For the determination of busy, the conference call appears the same as a two-party call.

6.7.2 Meet-Me Conference (MMC)

An attempt to activate the CCBS supplementary service on a call to a busy conference shall be rejected.

6.7.3 Preset Conference Calling (PCC)

An attempt by the conference controller to activate the CCBS supplementary service on a call to a busy conferee shall be rejected.

6.7.4 Three-Party Service (3PTY)

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

6.8 Diversion services

CCBS recalls shall not be diverted. They are given to user A at user A's original location.

6.8.1 Call Deflection (CD)

a) *Calling user (user A)*

If user A calls destination B and the call is deflected to user C by the call deflection supplementary service and user C is busy, then a request by user A to activate the CCBS supplementary service shall be applied to destination B.

b) *Called user (destination B)*

If destination B requests invocation of the call deflection supplementary service on a call resulting from the CCBS supplementary service, then the following actions shall result:

– if the request for call deflection was made before alerting, then the request from destination B to deflect a CCBS call shall be rejected; or

– if the request for call deflection was made after alerting, then this request from destination B to deflect a CCBS call shall be accepted. The CCBS call shall be deflected as a normal call.

The corresponding CCBS shall be deactivated.

6.8.2 Call Forwarding Busy (CFB)

It is assumed, in this case, that user A calls user B and that user B is busy and activates or has activated the call forwarding busy supplementary service to user C. Using this assumption, the following situations may occur:

a) The call forwarding busy supplementary service was activated by user B before user A requests the CCBS supplementary service on user B:

   If user B has activated the call forwarding busy supplementary service and is busy and the forwarded-to user C is also busy, then a request by user A to activate the CCBS supplementary service shall be applied to the originally called user B.

b) The call forwarding busy supplementary service is activated by user B after user A has activated the CCBS supplementary service on user B:

   If user B activates the call forwarding busy supplementary service after user A has activated the CCBS supplementary service on user B, the CCBS call shall still be applied to the originally called user B.

c) Arrival of the CCBS call after the call forwarding busy supplementary service has been activated:

   If user B has activated the call forwarding busy supplementary service and is busy upon the arrival of a CCBS call, then according to a network option, the call shall be treated as follows:

   – user B shall be considered as being busy and the procedures of the CCBS supplementary service shall apply; or
   – the CCBS call shall be forwarded as a normal call to user C.

6.8.3 Call Forwarding No Reply (CFNR)

It is assumed, in this case, that user A calls user B and that user B activates or has activated the call forwarding on no reply supplementary service to user C. Using this assumption, the following situations may occur:

a) The call forwarding on no reply supplementary service was activated by user B before user A requests the CCBS supplementary service on user B:

   If user A calls user B and the call is forwarded on no reply to user C and user C is then busy and the call is not retained at user B, then any request by user A for the CCBS supplementary service shall be rejected. User A shall be informed that the request has been rejected with "short-term denial" as the reason.

   NOTE – If the call is retained at user B then the CCBS supplementary service does not apply.

b) The call forwarding on no reply supplementary service is activated by user B after user A has activated the CCBS supplementary service on user B:

   If user B activates the call forwarding on no reply supplementary service after user A has activated the CCBS supplementary service on user B, then the CCBS call shall be presented to user B. After the no reply timer has expired at user B, the CCBS call shall be forwarded as a normal call to user C.

6.8.4 Call Forwarding Unconditional (CFU)

It is assumed, in this case, that user A calls user B and that user B activates or has activated the call forwarding unconditional supplementary service to user C. Using this assumption, the following situations may occur:

a) The call forwarding unconditional supplementary service was activated by user B before user A requests the CCBS supplementary service on user B:

If the call to user B is forwarded to user C by the call forwarding unconditional supplementary service and user C is busy, then a request by user A to activate the CCBS supplementary service shall be rejected. User A shall be informed that the CCBS request has been rejected with "short-term denial" as the reason.

b) The call forwarding unconditional supplementary service is activated by user B after user A has activated the CCBS supplementary service on user B:

If user B activates the call forwarding unconditional supplementary service after user A has activated the CCBS supplementary service, then all outstanding queued CCBS requests shall remain in the user B CCBS request queue until the CCBS service duration timer expires. If user B deactivates the call forwarding unconditional supplementary service before the expiry of the CCBS service duration timer and subsequently becomes free, the outstanding CCBS requests shall be processed again.

If user B activates the call forwarding unconditional supplementary service between the expiry of the user B idle guard timer and the arrival of the CCBS call, the CCBS call shall be forwarded as a normal call to user C.

6.8.5 Selective Call Forwarding (SCF)

When the selective call forwarding supplementary service has been activated on busy and if an incoming call matches the selection conditions, then the interaction described in 6.8.2 applies.

When the selective call forwarding supplementary service has been activated on no reply and if an incoming call matches the selection conditions, then the interaction described in 6.8.3 applies.

When the selective call forwarding supplementary service has been activated unconditionally and if an incoming call matches the selection conditions, then the interaction described in 6.8.4 applies.

6.9 Direct-Dialling-In (DDI)

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

6.10 In-call Modification (IM)

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

6.11 ISDN Freephone Service (IFS)

A request for the CCBS supplementary service on a call to a freephone number shall be rejected.

Freephone calls shall take precedence over CCBS requests.

6.12 Line Hunting (LH)

The CCBS supplementary service cannot be activated against a line hunting group.

NOTE – The CCBS supplementary service can be activated against an individual number in a line hunting group.

6.13 Malicious Call Identification (MCID)

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

6.14 Multi-Level Precedence and Preemption (MLPP)

The precedence level of calls is retained along with other call information. The network assists the user to establish the connection at the same precedence level.

CCBS requests for MLPP calls are queued and processed on a first in, first out basis with no preference given for the precedence level of the call.

If destination B terminates the existing call and starts a new call, the network compares the precedence of the new call with that of the CCBS call. If the new call is of lower precedence, a CCBS recall is provided to user C. If the CCBS recall is accepted by user C, the new call is preempted and the CCBS call is connected. This is also true for calls which are originated prior to the expiry of the idle guard timer. The CCBS recall should include an indication that destination B is busy with a call of lower precedence.

6.15 Multiple Subscriber Number (MSN)

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

NOTE – The limit of entries in the destination B CCBS queue applies per multiple subscriber number. Entries are processed in the order that they are received for the whole access. The service provider may limit the maximum number of entries in the combined destination B CCBS queue for the access.

6.16 Name identification services

6.16.1 Calling Name Identification Presentation (CNIP)

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

NOTE – If user A accepts a CCBS recall, the resulting call is a normal call and destination B can receive calling name identification presentation.

6.16.2 Calling Name Identification Restriction (CNIR)

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

NOTE – If user A has calling name identification restriction and user A accepts a CCBS recall, then the resulting call is a normal call and destination B will not receive the calling name identification of user A.

6.17 Number identification services

6.17.1 Calling Line Identification Presentation (CLIP)

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

NOTE – If user A accepts a CCBS recall, the resulting call is a normal call and destination B can receive calling line identification presentation.

6.17.2 Calling Line Identification Restriction (CLIR)

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

NOTE – If user A has calling line identification restriction and user A accepts a CCBS recall, then the resulting call is a normal call and destination B will not receive the calling line identification of user A.

6.17.3 Connected Line Identification Presentation (COLP)

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

6.17.4 Connected Line Identification Restriction (COLR)

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

6.18 Outgoing Call Barring (OCB)

When the outgoing call barring supplementary service is activated after the served user activates the CCBS supplementary service, the CCBS call shall be barred according to the barring program which is active at the served user's access or ISDN number, and the associated basic service for the CCBS call.

When the CCBS call is barred, the corresponding CCBS request shall be deactivated.

6.19 Reverse charging (REV)

Reverse charging requested by the calling user at call set-up time:

If CCBS is requested after reverse charging has been requested at call set-up time, the request for reverse charging shall be stored and automatically be included in the CCBS call.

All other cases of reverse charging:

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

6.20 Sub-addressing (SUB)

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

NOTE – The user A's sub-address (if any) which was supplied in the original call request can be included when notifying or recalling user A.

6.21 Support of Private Numbering Plan (SPNP)

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

6.22 Terminal Portability (TP)

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

NOTE – In the case of disconnected terminals, a CCBS recall will be treated as not accepted upon expiry of the CCBS recall timer.

6.23 User-to-User Signalling (UUS)

The network shall not store any information related to the user-to-user signalling supplementary service provided by user A in the original call.

User A can request the activation of the user-to-user signalling supplementary service and provide the user-to-user information, as required, when accepting the CCBS recall. If the resulting CCBS call contains information related to the user-to-user signalling supplementary service, this shall be handled as for the normal operation of the user-to-user signalling supplementary service.

7 SDL description

See Figure 1.

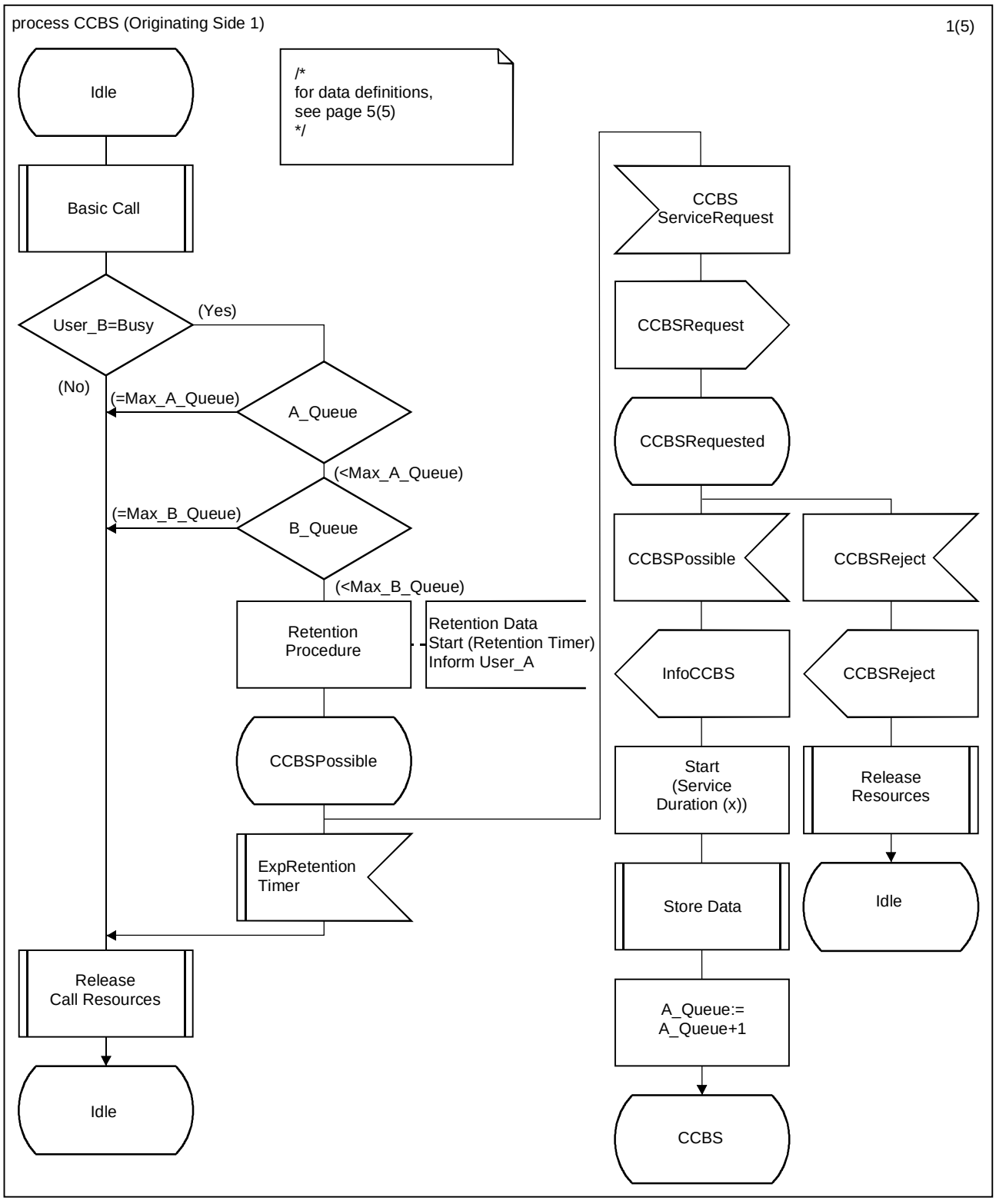

FIGURE 1/I.253.3 (sheet 1 of 5)

CCBS SDL description

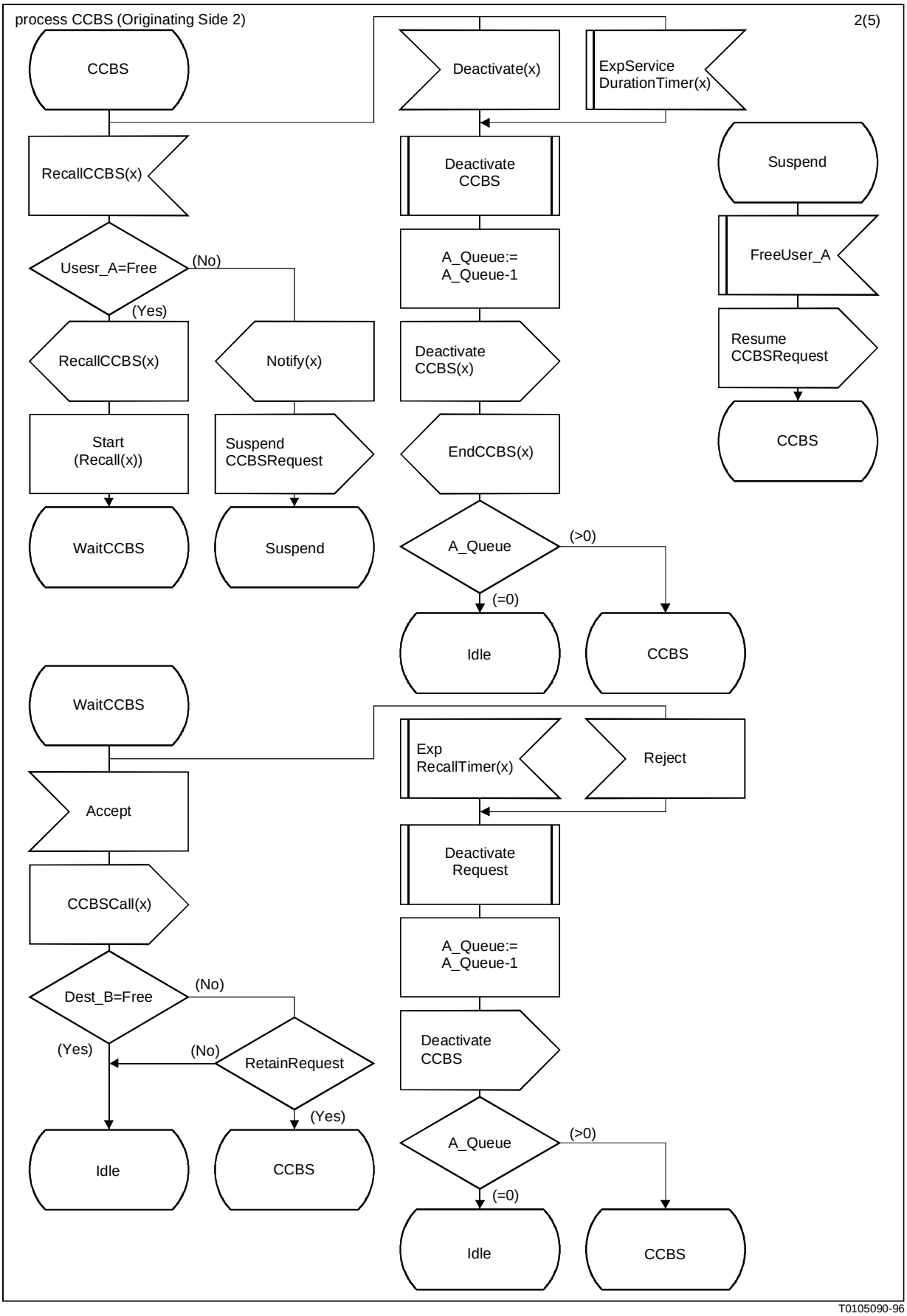

FIGURE 1/I.253.3 (sheet 2 of 5)

CCBS SDL description

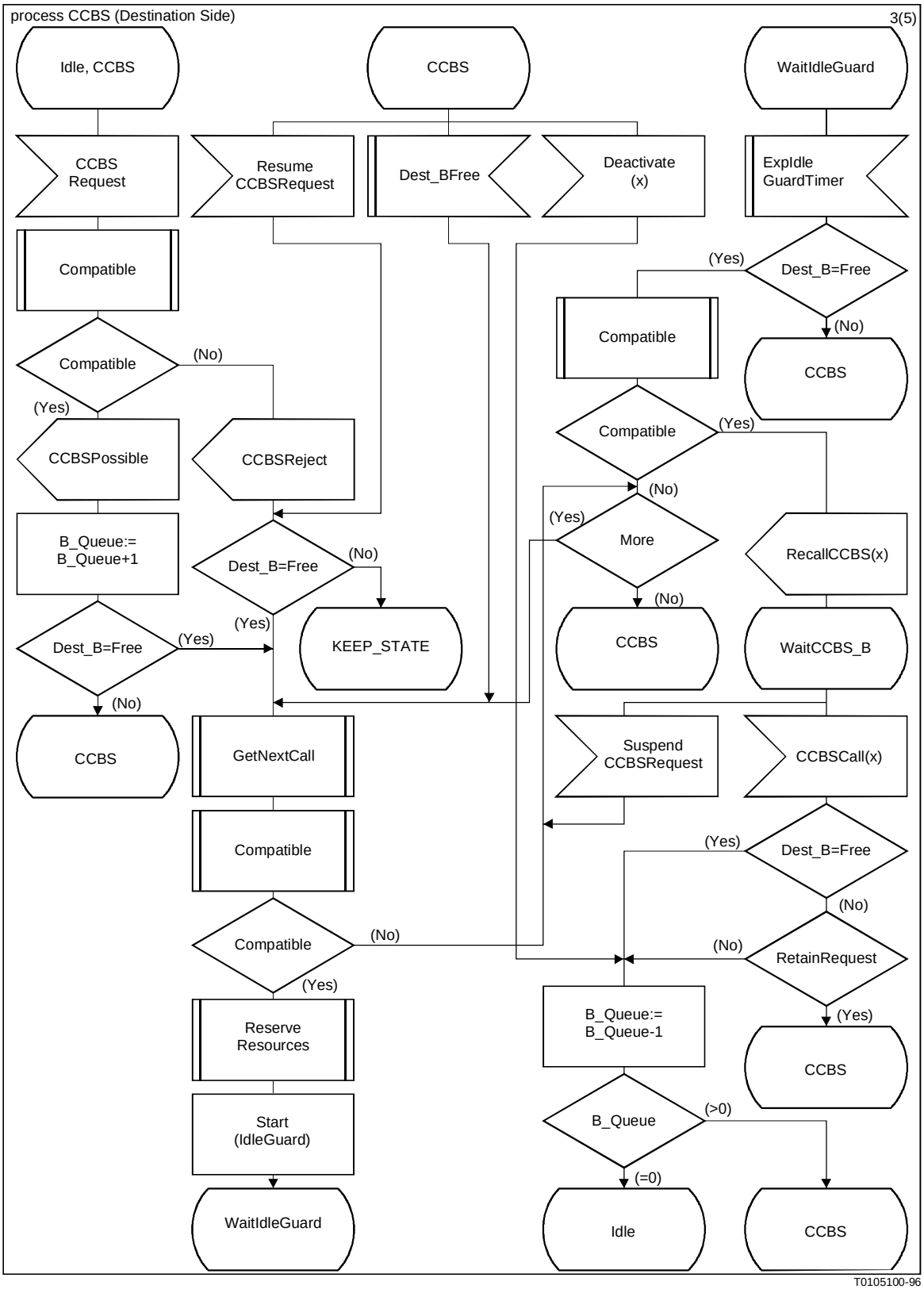

FIGURE 1/I.253.3 (sheet 3 of 5)

(CCBS SDL description)

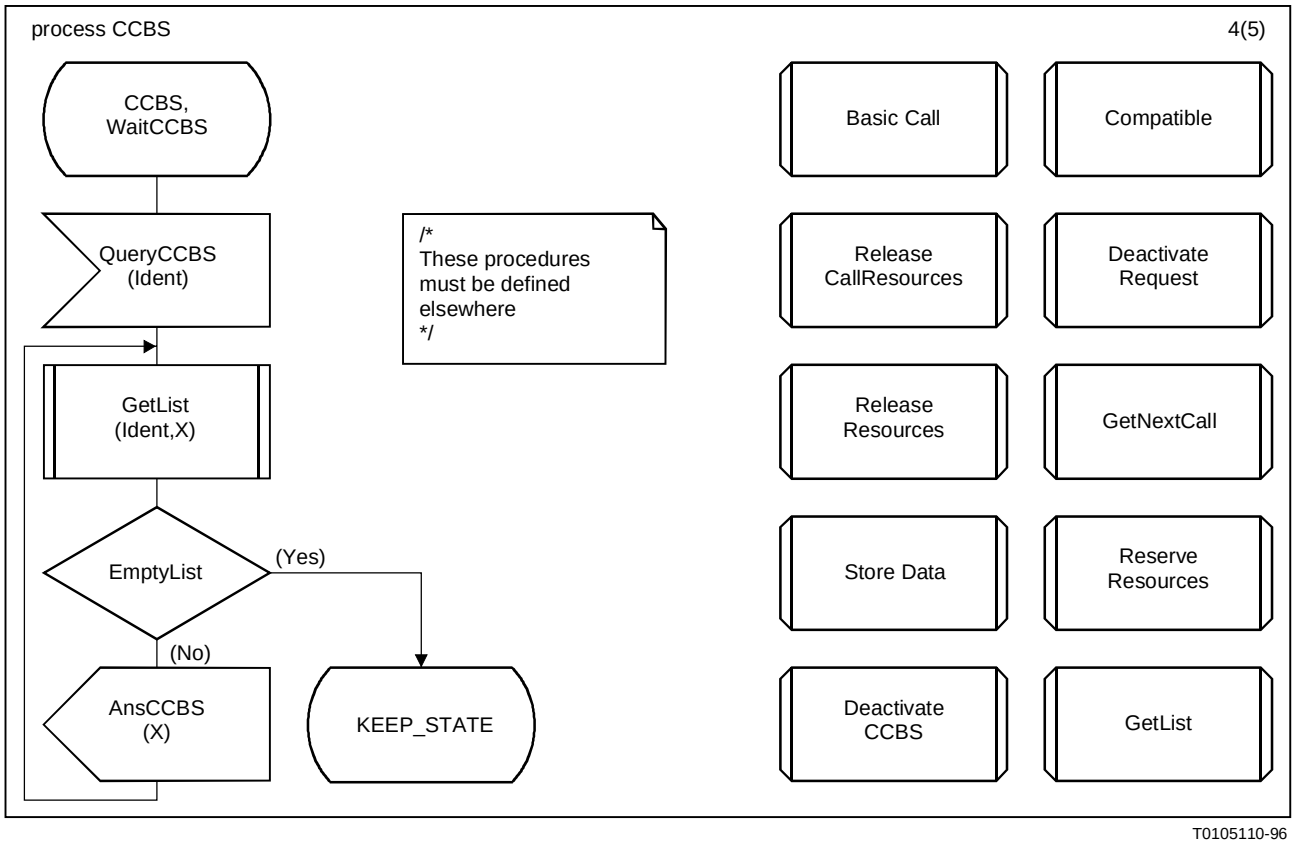

FIGURE 1/I.253.3 (sheet 4 of 5)

CCBS SDL description

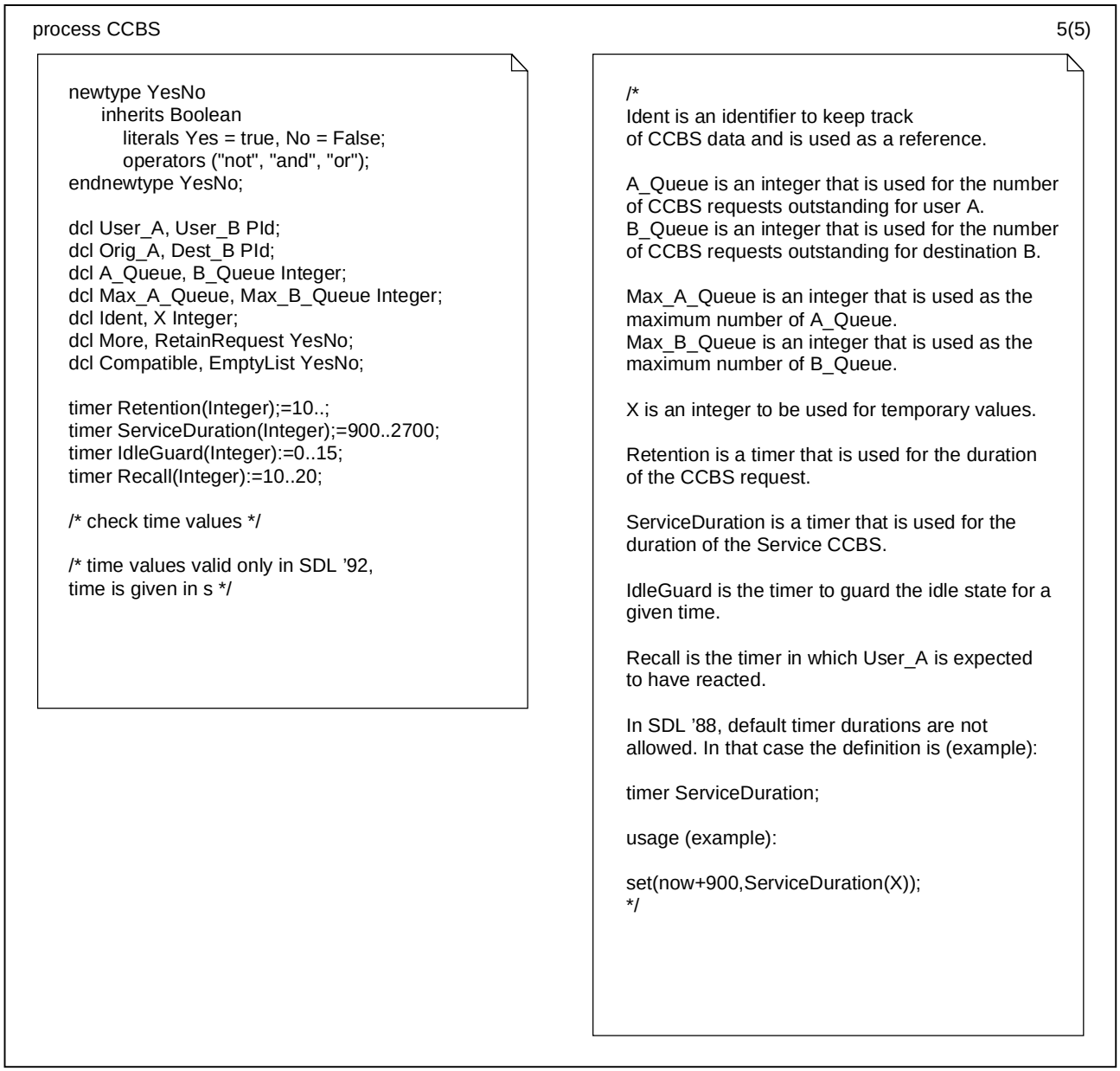

FIGURE 1/I.253.3 (sheet 5 of 5)

CCBS SDL description

ITU-T RECOMMENDATIONS SERIES

Series A	Organization of the work of the ITU-T
Series B	Means of expression
Series C	General telecommunication statistics
Series D	General tariff principles
Series E	Telephone network and ISDN
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media
Series H	Transmission of non-telephone signals
Series I	**Integrated services digital network**
Series J	Transmission of sound-programme and television signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	Maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
Series N	Maintenance: international sound-programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminal equipment and protocols for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks and open system communication
Series Z	Programming languages