INTERNATIONAL TELECOMMUNICATION UNION

ITU-T Q.734.2

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TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

SERIES Q: SWITCHING AND SIGNALLING

Specifications of Signalling System No. 7 – ISDN supplementary services

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Stage 3 description for multiparty supplementary services using Signalling System No. 7: Three-party service

ITU-T Recommendation Q.734.2

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION Q.734.2

STAGE 3 DESCRIPTION FOR MULTIPARTY SUPPLEMENTARY SERVICES USING SIGNALLING SYSTEM NO. 7: THREE-PARTY SERVICE

Summary

This Recommendation defines the essential functions, procedures and messages required for the transportation of information relating to the three-party supplementary service. This Recommendation has been updated due to a need for alignment with the revised specification of this supplementary service within DSS 1.

Source

ITU-T Recommendation Q.734.2 was prepared by ITU-T Study Group 11 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 9th 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. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

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NOTE

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

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As of the date of approval of this Recommendation, the ITU had/had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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Recommendation Q.734.2

STAGE 3 DESCRIPTION FOR MULTIPARTY SUPPLEMENTARY SERVICES USING SIGNALLING SYSTEM NO. 7: THREE-PARTY SERVICE

(Geneva, 1996)

2 Three-Party Service

2.1 Introduction

2.1.1 Scope

This Recommendation describes the stage 3 of the three-party supplementary service for the Integrated Services Digital Network (ISDN) by means of the Signalling System No. 7 ISDN User Part (ISUP).

The three-party (3PTY) supplementary service enables a user to establish a three-way conversation, i.e. a simultaneous communication between the served user and two other users.

The 3PTY supplementary service is applicable to all circuit-switched telecommunication services carrying speech.

2.1.2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[1] ITU-T Recommendation Q.730 (1993), *ISDN supplementary services.*

[2] ITU-T Recommendation Q.761 (1993), *Functional description of the ISDN user part of Signalling System No. 7.*

[3] ITU-T Recommendation Q.762 (1993), *General function of messages and signals of the ISDN user part of Signalling System No. 7.*

[4] ITU-T Recommendation Q.763 (1993), *Formats and codes of the ISDN user part of Signalling System No. 7.*

[5] ITU-T Recommendation Q.764 (1993), *ISDN user part signalling procedures.*

[6] CCITT Recommendation I.254.2 (1992), *Three-Party supplementary service.*

[7] ITU-T Recommendation Q.84.2 (1995), *Stage 2 description for multiparty supplementary services: Three-Party service.*

[8] ITU-T Recommendation Q.954.2 (1995), *Stage 3 description for multiparty supplementary services using DSS 1: Three-Party service.*

[9] ITU-T Recommendation I.112 (1993), *Vocabulary of terms for ISDNs.*

[10] ITU-T Recommendation I.210 (1993), *Principles of telecommunication services supported by an ISDN and the means to describe them.*

2.1.3 Terms and definitions

This Recommendation defines the following terms.

2.1.3.1 served user (user A): The user who has the service under his control during the invocation and the active phase.

2.1.3.2 remote users (user B and user C): The users involved in the two calls that are joined together into a three-way conversation.

2.1.3.3 integrated services digital network (ISDN): See 2.3/I.112 [9], definition 308.

2.1.3.4 private communication: Communication between the served user and one remote user. This excludes communication with the other remote user.

2.1.3.5 service; telecommunications service: See 2.2/I.112 [9], definition 201.

2.1.3.6 supplementary service: See 2.4/I.210 [10].

2.1.3.7 three-way conversation: Communication between all three users, i.e. the served user and both remote users.

2.1.4 Abbreviations

This Recommendation uses the following abbreviations.

3PTY Three-Party Service

CPG Call Progress Message

DSS 1 Digital Subscriber Signalling System No. 1

ISDN Integrated Services Digital Network

ISUP ISDN Signalling User Part

SS No. 7 Signalling System No. 7

2.2 Description

2.2.1 General description

The served user, which has two calls can join the two calls, to form a three-way conversation.

NOTE – Each call, to be involved in the 3PTY supplementary service, can have been originated by either the served user, or by the appropriate remote user.

During the three-way conversation, the served user can request that the network:

– explicitly disconnects one of the remote users, and the connection to that remote user;

– terminates the three-way conversation;

– creates a private communication with one of the remote users; or

– in conjunction with the call hold supplementary service, place its connection to the three-way conversation on hold.

Either of the remote users (user B or user C) can request that the network disconnects the connection.

Remote users are notified of these actions.

The stage 1 ITU-T definitions for the 3PTY supplementary service is given in Recommendation I.254.2 [6]. The stage 2 ITU-T description is given in Recommendation Q.84.2 [7]. The stage 3 DSS 1 ITU-T description is given in Recommendation Q.954.2 [8]. This stage 3 description of the 3PTY supplementary service uses the ISDN User Part protocol as defined in Recommendations Q.761 [2], Q.762 [3], Q.763 [4], Q.764 [5] and Q.730 [1].

2.2.2 Specific terminology

See 2.1.3.

2.2.3 Qualification on the applicability to telecommunication services

See 2.1.1.

2.2.4 State definitions

No specific states are required.

2.3 Operational requirements

2.3.1 Provision/withdrawal

See Recommendation I.254.2 [6].

2.3.2 Requirements on the originating network side

This subclause is not applicable to SS No. 7.

2.3.3 Requirements in the network

No specific requirements are needed in the network.

2.3.4 Requirements at the destination network side

This subclause is not applicable to SS No. 7.

2.4 Coding requirements

For the 3PTY supplementary service, the call progress message, containing the generic notification indicator parameter, shall be used to send the appropriate notification towards the remote user.

The generic notification indicator is accompanied by the parameter compatibility information parameter. The procedures for compatibility are defined in 2.9.5/Q.764 [5].

The event indicator is set to "Progress".

The following notification descriptions are used:

– conference established;

– conference disconnected;

– remote hold.

The generic notification indicator parameter field shall be coded as shown below See Table 2-1.

Table 2-1/Q.734.2 – Coding of the generic notification indicator parameter

Bits **7 6 5 4 3 2 1**	Description
1 0 0 0 0 1 0	Conference established
1 0 0 0 0 1 1	Conference disconnected
1 1 1 1 0 0 1	Remote hold

2.5 Signalling requirements

2.5.1 Activation/deactivation/registration

This subclause is not applicable to SS No. 7.

2.5.2 Invocation and operation

2.5.2.1 Actions at the originating local exchange

The originating local exchange is the exchange where the service is controlled. The originating local exchange for this description is not necessarily the originating exchange for the basic call.

2.5.2.1.1 Normal operation

2.5.2.1.1.1 Requirements related to echo control

a) *General*

When the conference bridge is located in the originating local exchange, this exchange shall have the capability to invoke echo-control procedures. This is necessary in the case the total propagation delay for the two legs of the three-way conversation is above the value for which echo control is necessary. (Reference: 2.6/Q.764 [5].)

The exchange shall also have the capability of storing propagation delay information received either in a received Initial Address message (for incoming calls) or in an Answer/Connect message (for outgoing calls) until call release. This shall be done for both legs included in the three-way conversation.

b) *Criteria to initiate echo control procedures*

The originating local exchange has to sum up the propagation delay values of the calls A-B and A-C in order to determine the total value of propagation delay of the three-way conversation.

If echo control is necessary, the exchange shall initiate echo control procedures for each of the legs concerned. (Reference: 2.7/Q.764 [5].)

2.5.2.1.1.2 Beginning the three-way conversation

Prior to the invocation of the 3PTY supplementary service, the served user (user A) shall be involved in two calls, both in the answered state: one call (e.g. with user B) in a held state and the other one (e.g. with user C) in an active state.

When the 3PTY supplementary service is invoked the originating exchange, to which the served user’s equipment is connected, shall:

a) join the two calls together into a three-way conversation;

b) on request of the access protocol (see 2.9.2.1.1/Q.954) send a call progress message to each remote user, containing the generic notification indicator parameter with the notification "conference established".

NOTE 1 – See Figure 2-1 and also Figure 2-I.1/Q.954.

NOTE 2 – For an interim period of time, some networks may not support the sending of notifications to the remote users.

NOTE 3 – Procedure a) does not have any impact on ISUP protocol.

2.5.2.1.1.3 Managing the three-way conversation

During the three-way conversation mode, the served user shall be able to:

a) Create a private communication with a remote user.

There are two possible cases which are identified dependent on the local DSS 1 network entity:

Case 1 – Creating a private communication with the user who has been in the held state prior to establishment of the three-way conversation (see also Note 3).

On request of the access protocol [see 2.9.2.4.1 a)/Q.954], the local exchange shall send the following messages to the remote users:

- A call progress message to the user who has been in the held state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Remote Hold".
- A call progress message to the user who has been in the active state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Conference Disconnected".
- A call progress message to the user who has been in the active state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Remote Hold".
- A call progress message to the user who has been in the held state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Conference Disconnected".

NOTE 1 – See Figure 2-6 and also Figure 2-I.6/Q.954.

Case 2 – Creating a private communication with the user who has been in the active state prior to establishment of the three-way conversation (see also Note 3).

On request of the access protocol [see 1.9.2.4.1 b)/Q.954], the local exchange shall send the following messages to the remote users:

- A call progress message to the user who has been in the held state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Conference Disconnected".
- A call progress message to the user who has been in the held state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Remote Hold".
- A call progress message to the user who has been in the active state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Conference Disconnected".

NOTE 2 – See Figure 2-7 and also Figure 2-I.7/Q.954.

NOTE 3 – If the three-way conversation is held and retrieved using the call hold supplementary service, then the DSS 1 states which existed for the initiation of the three-way conversation may be different to those that exist at the time of the request for creation of a private communication. The current DSS 1 states specify which case applies.

b) Disconnect one remote user and retain the other.

There are two possible cases which are identified dependent on the local DSS 1 network entity:

Case 1 – Disconnection of the user who has been in the held state prior to establishment of the three-way conversation (see also Note 6).

On request of the access protocol (see 2.9.2.2.1/Q.954), the local exchange shall send the following messages to the remote users:

– A call progress message to the user who has been in the active state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Conference Disconnected".

NOTE 4 – See Figure 2-2 and also Figure 2-I.2/Q.954.

Case 2 – Disconnection of the user who has been in the active state prior to establishment of the three-way conversation (see also Note 6).

On request of the access protocol [see 2.9.2.2.1 b)/Q.954], the local exchange shall send the following messages to the remote users:

– A call progress message to the user who has been in the held state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Remote Hold".

– A call progress message to the user who has been in the held state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Conference Disconnected".

NOTE 5 – See Figure 2-3 and also Figure 2-I.3/Q.954.

NOTE 6 – If the three-way conversation is held and retrieved using the call hold supplementary service, then the DSS 1 states which existed for the initiation of the three-way conversation may be different to those that exist at the time of the request for disconnection of one remote party. The current DSS 1 states specify which case applies.

c) Disconnect both remote users and terminate the call.

There are two possible cases which are identified dependent on the local DSS 1 network entity:

Case 1 – Disconnection of both remote users, the user who has been in the held state prior to establishment of the three-way conversation released first (see also Note 9).

On request of the access protocol (see 2.9.2.3.1/Q.954), the local exchange shall send the following messages to the remote users:

– A call progress message to the user who has been in the active state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Conference Disconnected".

NOTE 7 – See Figure 2-4 and also Figure 2-I.4/Q.954.

Case 2 – Disconnection of both remote users, the user who has been in the active state prior to establishment of the three-way conversation released first (see also Note 9).

On request of the access protocol (see 2.9.2.3.1/Q.954), the local exchange shall send the following messages to the remote users:

– A call progress message to the user who has been in the held state prior to establishment of the three-way conversation containing the generic notification indicator parameter with the notification "Remote Hold".

NOTE 8 – See Figure 2-5 and also Figure 2-I.5/Q.954.

NOTE 9 – If the three-way conversation is held and retrieved using the call hold supplementary service, then the DSS 1 states which existed for the initiation of the three-way conversation may be different to those that exist at the time of the request for disconnection of one remote party. The current DSS 1 states specify which case applies.

2.5.2.1.2 Exceptional procedures

No exceptional procedures are identified.

2.5.2.2 Actions at the transit exchange

2.5.2.2.1 Normal operation

The exchange shall transfer transparently the messages related to the notification mechanism.

See also 2.5.2.1.1.1.

2.5.2.2.2 Exceptional procedures

No exceptional procedures are identified.

2.5.2.3 Actions at the outgoing international gateway exchange

2.5.2.3.1 Normal operation

The exchange shall transfer transparently the messages related to the notification mechanism.

See also 2.5.2.1.1.1.

2.5.2.3.2 Exceptional procedures

No exceptional procedures are identified.

2.5.2.4 Actions at the incoming international gateway exchange

2.5.2.4.1 Normal operation

The exchange shall transfer the messages related to the notification mechanism.

See also 2.5.2.1.1.1.

2.5.2.4.2 Exceptional procedures

No exceptional procedures are identified.

2.5.2.5 Actions at the destination local exchange

The destination local exchange for this description is not necessarily the destination exchange for the basic call.

2.5.2.5.1 Normal operation

The information contained in the call progress message related to the notification mechanism received by the destination local exchange shall be passed along to the access signalling system.

See also 2.5.2.1.1.1.

2.5.2.5.2 Exceptional procedures

No exceptional procedures are identified.

2.6 Interactions with other supplementary services

2.6.1 Call Waiting (CW)

No impact on ISUP.

2.6.2 Explicit Call Transfer (ECT)

No applicable interaction at this time.

2.6.3 Connected line identification presentation (COLP)

No impact on ISUP.

2.6.4 Connected line identification restriction (COLR)

No impact on ISUP.

2.6.5 Calling Line Identification Presentation (CLIP)

No impact on ISUP.

2.6.6 Calling Line Identification Restriction (CLIR)

No impact on ISUP.

2.6.7 Closed User Group (CUG)

For the successful invocation of the 3PTY supplementary service, any closed user group restrictions normally applied to individual closed user group calls between users A-B, or A-C shall still apply when the 3PTY supplementary service is invoked, i.e. the closed user group check procedure is only performed on each individual leg of the call.

NOTE – Closed user group restrictions cannot be guaranteed between users B and C.

2.6.8 Conference calling (CONF)

No impact on ISUP.

2.6.9 Direct-Dialling-In (DDI)

No impact on ISUP.

2.6.10 Diversion services

2.6.10.1 Call Forwarding Busy (CFB)

No impact on ISUP.

2.6.10.2 Call Forwarding no Reply (CFNR)

No impact on ISUP.

2.6.10.3 Call Forwarding Unconditional (CFU)

No impact on ISUP.

2.6.10.4 Call Deflection (CD)

No impact on ISUP.

2.6.11 Line Hunting (LH)

No impact on ISUP.

2.6.12 Three-Party Service (3PTY)

Not applicable.

2.6.13 User-to-User Signalling (UUS)

2.6.13.1 Service 1

No impact on ISUP.

2.6.13.2 Service 2

No impact on ISUP.

2.6.13.3 Service 3

No impact on ISUP.

2.6.14 Multiple Subscriber Number (MSN)

No impact on ISUP.

2.6.15 Call hold (HOLD)

In case of a hold request sent by a served user during the three-way conversation active phase, no notifications shall be sent toward the remote users.

2.6.16 Advice of Charge (AOC)

No impact on ISUP.

2.6.17 Sub-addressing (SUB)

No impact on ISUP.

2.6.18 Terminal Portability (TP)

No impact on ISUP.

2.6.19 Completion of Calls to Busy Subscriber (CCBS)

No applicable interaction at this time.

2.6.20 Malicious Call Identification (MCID)

No impact on ISUP.

2.6.21 Reverse charging (REV)

No applicable interaction at this time.

2.6.22 Multi-Level Precedence and Preemption (MLPP)

No impact on ISUP.

2.6.23 Support of Private Numbering Plan (SPNP)

No applicable interaction at this time.

2.6.24 International telecommunication charge card

No applicable interaction at this time.

2.7 Interactions with other networks

In case of interactions with networks which do not provide the notification procedure, the interaction exchange shall discard the call progress message. However, the three-way conversation will be completed according to the proper basic call procedures as described in Recommendation Q.764 [5].

2.8 Signalling flows

Information flows for the 3PTY supplementary service are shown in Figures 2-1 through 2-9.

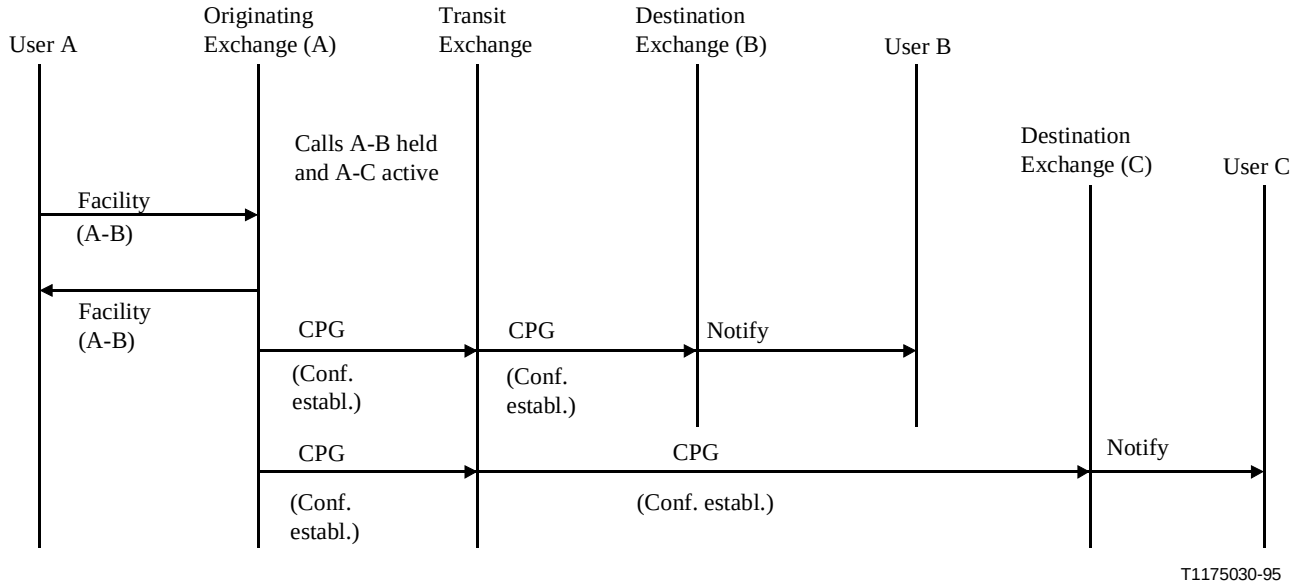
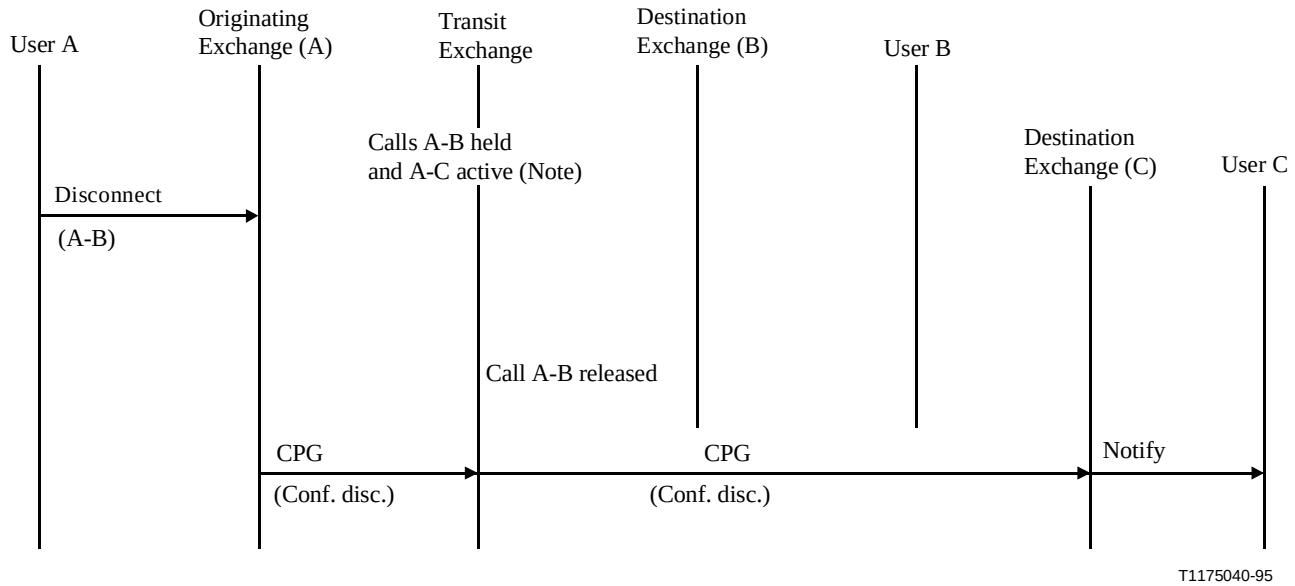
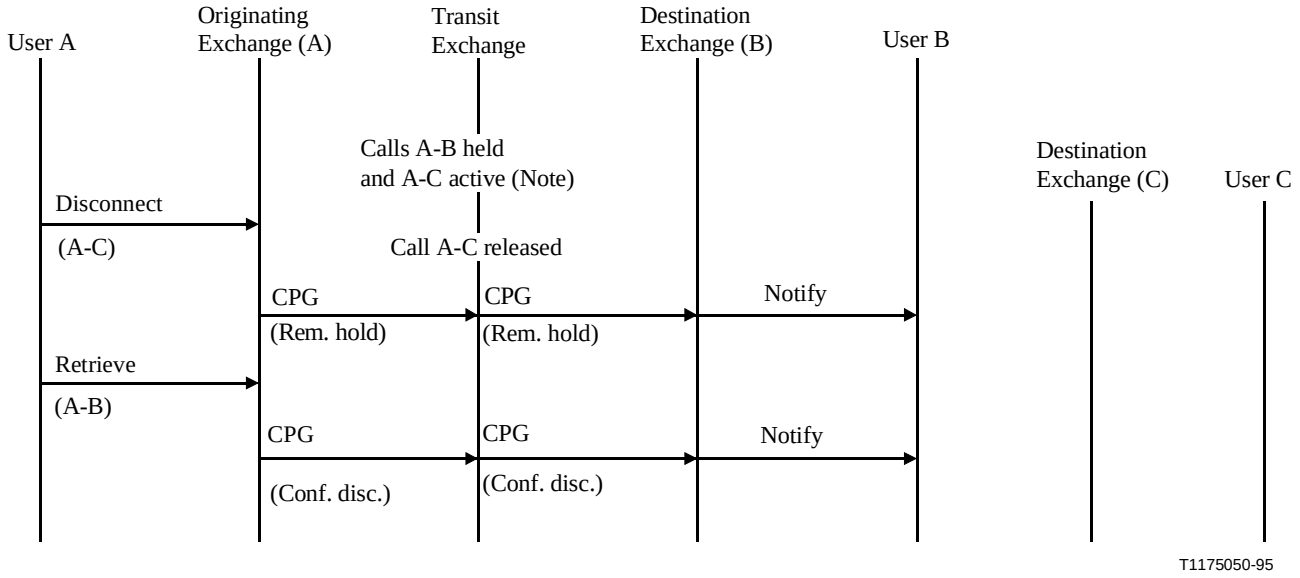


Figure 2-1/Q.734.2 – Request for a three-way conversation



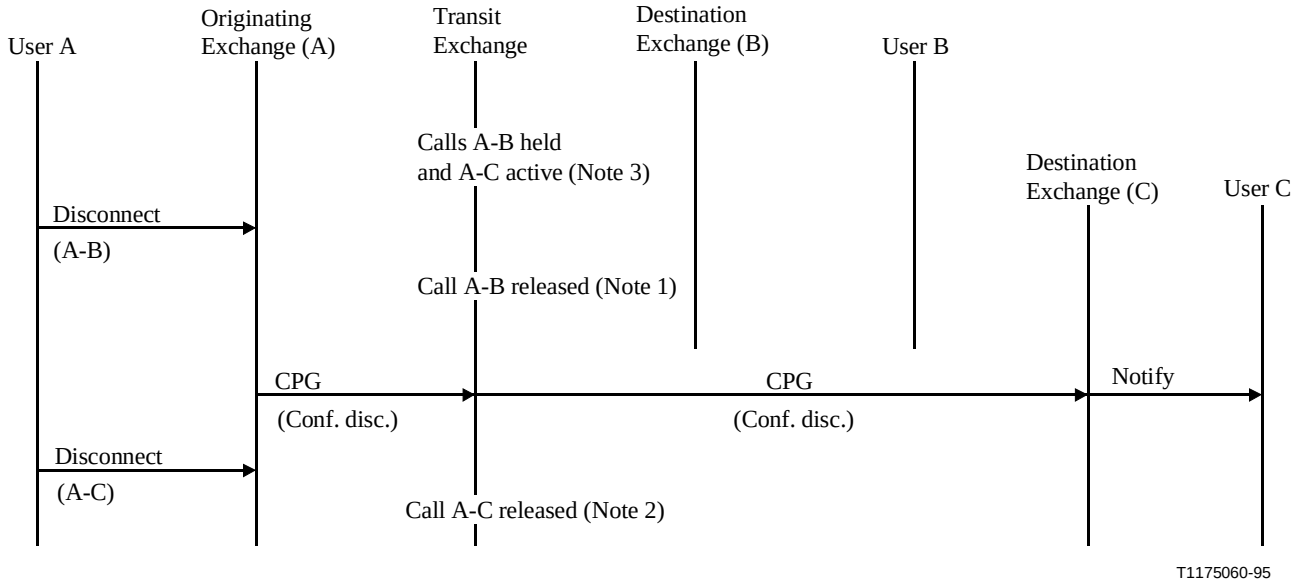
NOTE – These states relate to the states of the calls before the invocation of the three-party supplementary service.

Figure 2-2/Q.734.2 – Disconnection of user B



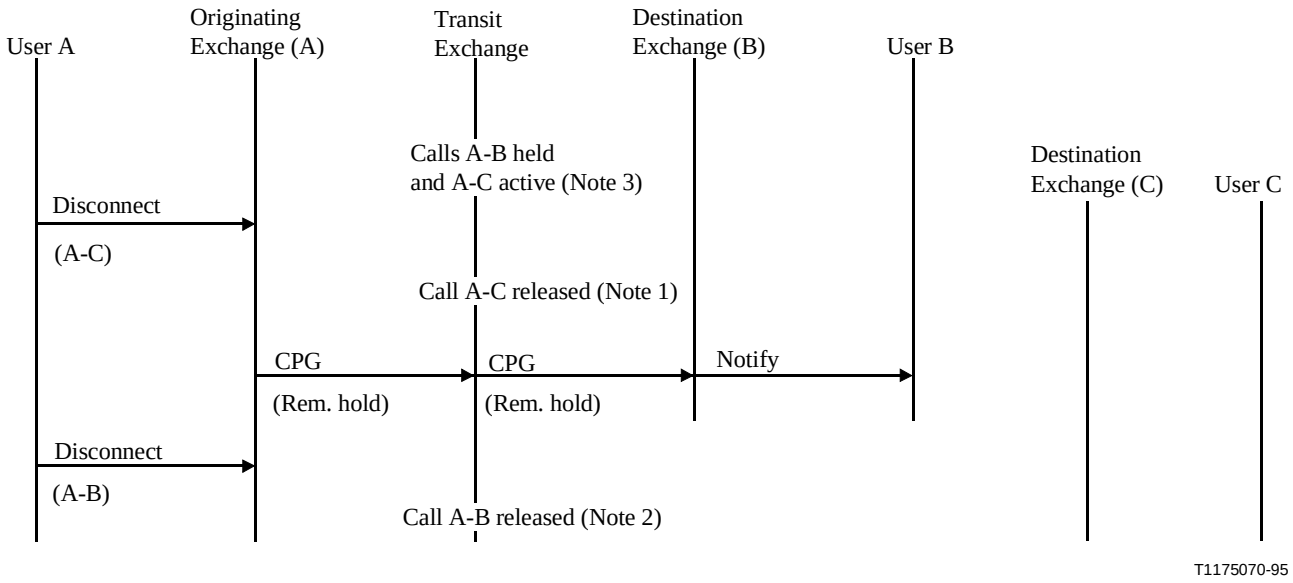
NOTE – These states relate to the states of the calls before the invocation of the three-party supplementary service.

Figure 2-3/Q.734.2 – Disconnection of user C



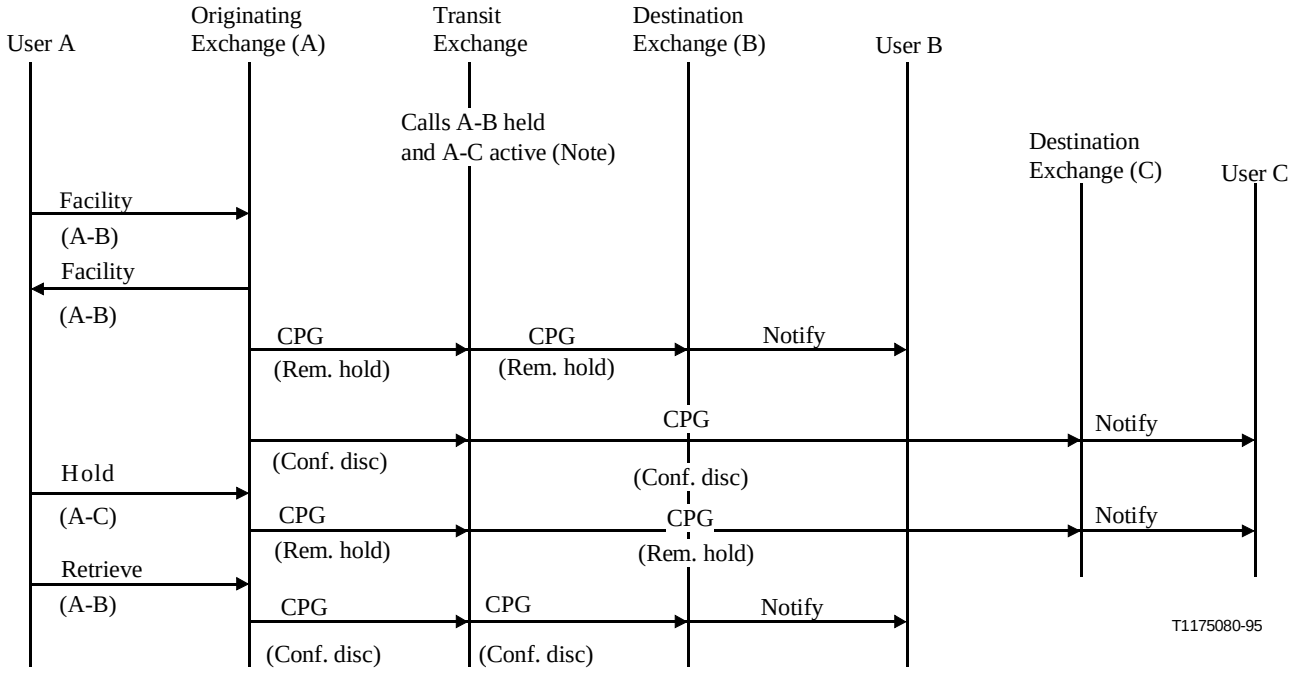
NOTE 1 – The call between user A and user B is released by the served user according to the "Disconnection of user B" procedure (see Figure 2-2).
NOTE 2 – The call between user A and user C is released by the served user according to the basic call procedures.
NOTE 3 – These states relate to the states of the calls before the invocation of the three-party supplementary service.

Figure 2-4/Q.734.2 – Disconnection of both remote users, user B released first



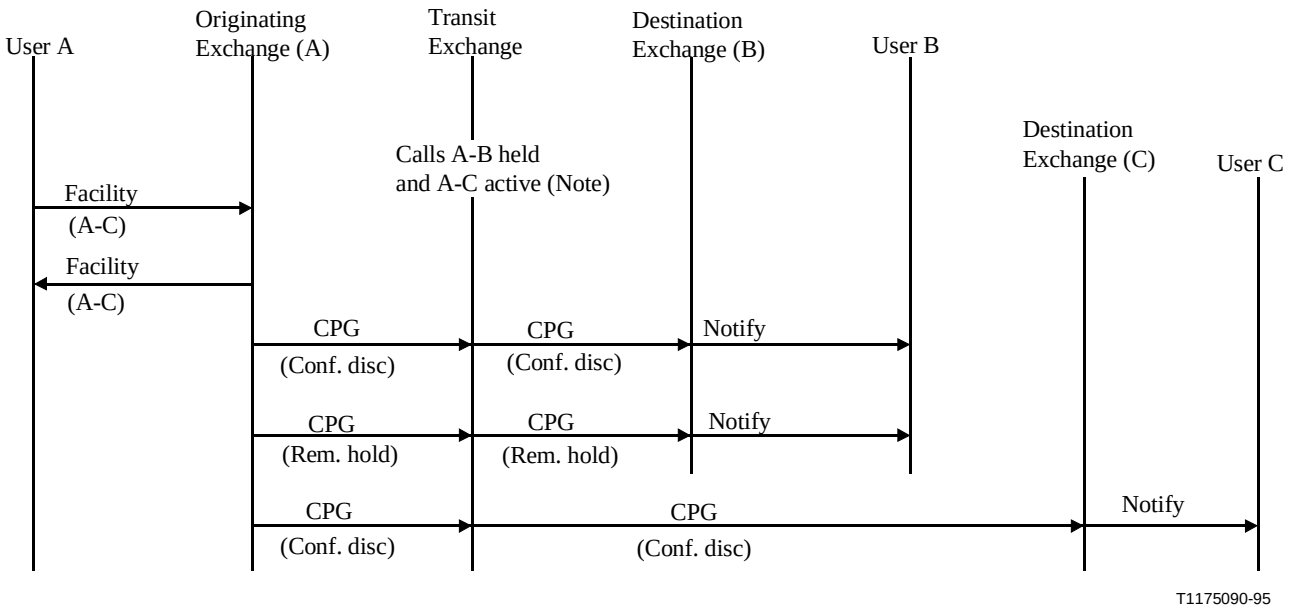
NOTE 1 – The call between user A and user C is released by the served user according to the "Disconnection of user C" procedure (see Figure 2-3).
NOTE 2 – The call between user A and user B is released by the served user according to the basic call procedures.
NOTE 3 – These states relate to the states of the calls before the invocation of the three-party supplementary service.

Figure 2-5/Q.734.2 – Disconnection of both remote users, user C released first



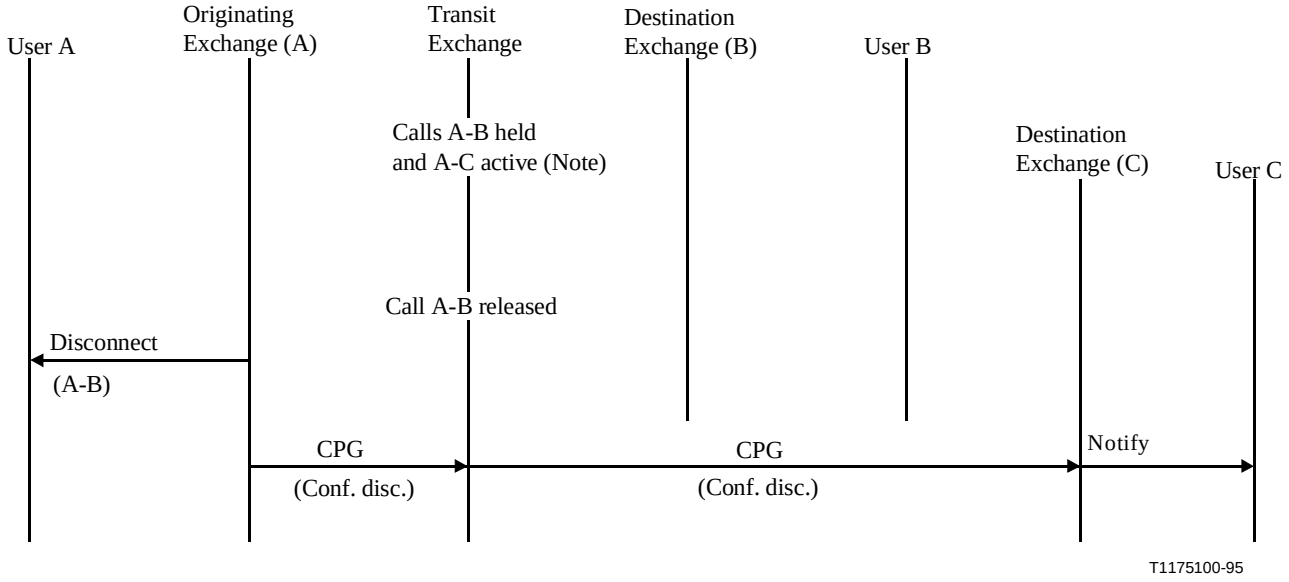
NOTE – These states relate to the states of the calls before the invocation of the three-party supplementary service.

Figure 2-6/Q.734.2 – Creating a private communication with user B



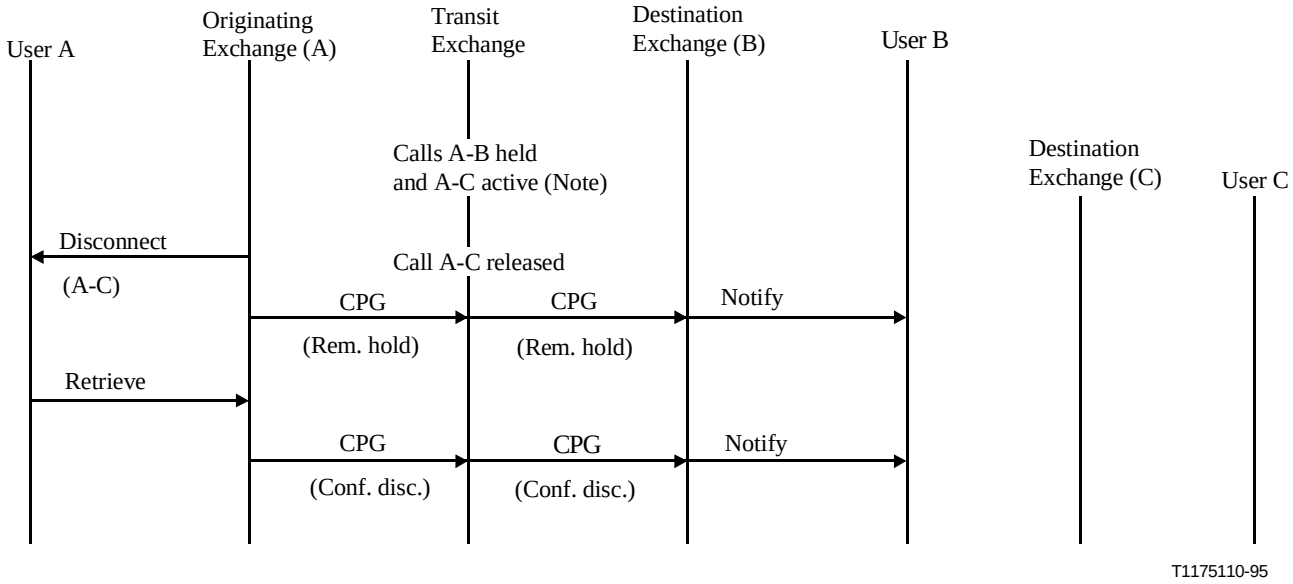
NOTE – These states relate to the states of the calls before the invocation of the three-party supplementary service.

Figure 2-7/Q.734.2 – Creating a private communication with user C



NOTE – These states relate to the states of the calls before the invocation of the three-party supplementary service.

Figure 2-8/Q.734.2 – User B disconnects



NOTE – These states relate to the states of the calls before the invocation of the three-party supplementary service.

Figure 2-9/Q.734.2 – User C disconnects

2.9 Parameter values (timers)

No specific timers are required.

2.10 Dynamic description

No dynamic description is required.

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