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European digital cellular telecommunications system (Phase 2); Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 2 (GSM 03.83)

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ICS:

33.070.50	Globalni sistem za mobilno telekomunikacijo (GSM)	Global System for Mobile Communication (GSM)
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supplementary services - Stage 2
(GSM 03.83)**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Special Mobile Group (SMG) Technical Committee (TC) of the European Telecommunications Standards Institute (ETSI).

This ETS defines the stage 2 of the Call Waiting (CW) and Call Hold (HOLD) supplementary services for the European digital cellular telecommunications system (Phase 2).

This ETS corresponds to GSM Technical Specification (GSM-TS) GSM 03.83 version 4.4.1.

The specification from which this ETS has been derived was originally based on CEPT documentation, hence the presentation of this ETS may not be entirely in accordance with the ETSI/PNE rules.

Reference is made within this ETS to GSM-TSs (NOTE).

NOTE: TC-SMG has produced documents which give the technical specifications for the implementation of the European digital cellular telecommunications system. Historically, these documents have been identified as GSM Technical Specifications (GSM-TSs). These TSs may have subsequently become I-ETTs (Phase 1), or ETs (Phase 2), whilst others may become ETSI Technical Reports (ETRs). GSM-TSs are, for editorial reasons, still referred to in current GSM ETs.

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0 General

0.1 Scope

This specification gives the stage 2 description of the call completion supplementary services.

The group of call completion supplementary services is divided into the following two supplementary services:

- Call waiting (CW) (section 1);
- Call hold (HOLD) (section 2).

0.2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

- [1] GSM 01.04 (ETR 100): "European digital cellular telecommunications system (Phase 2); "Abbreviations and acronyms".
- [2] GSM 02.82 (ETS 300 515): "European digital cellular telecommunications system (Phase 2); Call Forwarding (CF) supplementary services - Stage 1".
- [3] GSM 03.11 (ETS 300 529): "European digital cellular telecommunications system (Phase 2); Technical realization of supplementary services".
- [4] GSM 04.08 (ETS 300 557): "European digital cellular telecommunications system (Phase 2); Mobile radio interface layer 3 specification".

0.3 Definitions and abbreviations

Abbreviations used in this specification are listed in GSM 01.04.

1 Call waiting (CW)

1.1 Handling of call waiting

1.1.1 Activation

The call waiting supplementary service is activated at the request of the user. The activation request indicates the basic services to which the activation request refers.

The information flow for activation of call waiting is shown in figure 1.1.

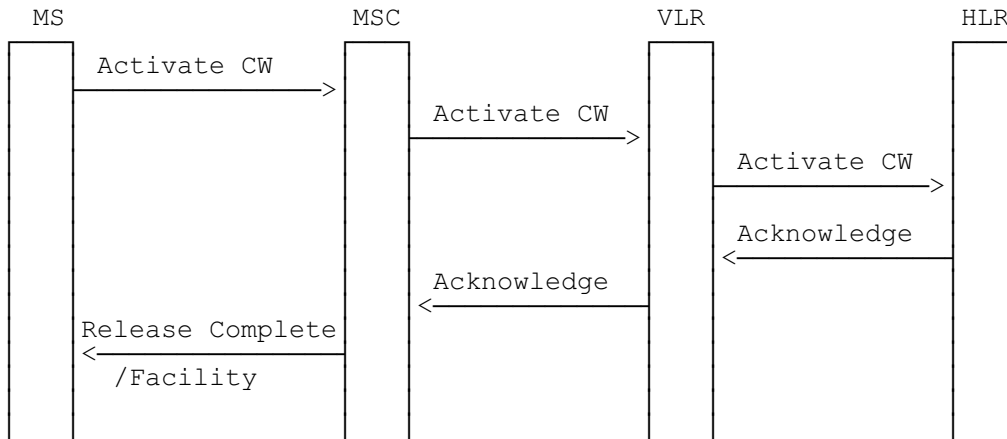


Figure 1.1: Activation of call waiting

1.1.2 Deactivation

The call waiting supplementary service is deactivated at the request of the user. The deactivation request indicates the basic services to which the deactivation request refers.

The information flow for deactivation of call waiting is shown in figure 1.2.

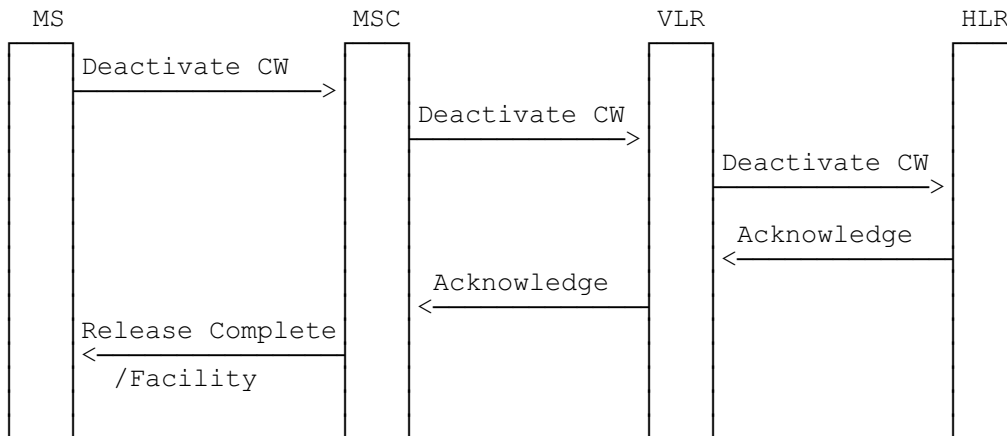


Figure 1.2: Deactivation of call waiting

1.1.3 Interrogation

Status check

The status check procedure enables the mobile subscriber to obtain information about the status of the call waiting supplementary service with respect to subscribed basic service groups.

The interrogation of call waiting is for all applicable basic services.

The information flow for interrogation of call waiting is shown in figure 1.3.

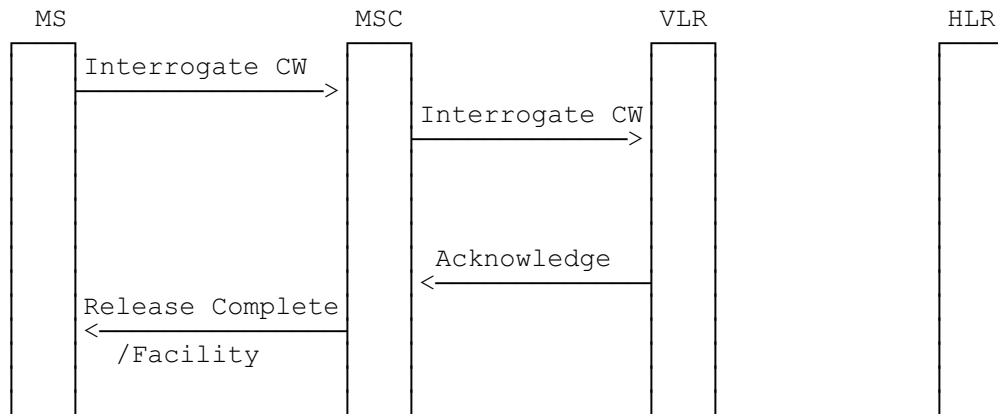


Figure 1.3: Interrogation of call waiting

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1.2 Functions and information flows

TS GSM 04.08 specifies the procedures for call control. These shall also be used for waiting calls when applicable.

The following Mobile Additional Function has been identified for the call waiting service:

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Call waiting related authorizations examination

The ability of a PLMN component to determine the authorizations relating to call waiting. See figure 1.4.

Location: VLR

Definitions:

Subscriber B:

The subscriber who is provided by the network with the call waiting supplementary service. The subscriber B is always a mobile subscriber.

User B:

The user who reacts to call waiting at subscriber B. The user B is always a mobile user.

User C:

The user who has originated a call to subscriber B which causes the call waiting supplementary service to be invoked. The user C may be a mobile user.

User A:

The user who is engaged in a call with user B. The user A may be a mobile user.

Timer T1:

This timer corresponds to T303 + T310 (as defined in TS GSM 04.08).

Timer T2:

Call Waiting Timer. This shall limit the duration of the call in the waiting condition.

Timer T3:

No Reply Condition Timer (see TS GSM 02.82).

CFNRc:

Call Forwarding on Not Reachable (see TS GSM 02.82).

CFNRy:

Call Forwarding on No Reply (see TS GSM 02.82).

CW:

Call Waiting.

The overall SDL diagram of call waiting is shown in figure 1.5. This represents the network as a whole.

The information flows are shown in figure 1.6. In these flows it is assumed that user A and user C are fixed users and that user B is a mobile user. Functions to be performed by the fixed ISDN are not shown in the information flows. Only the functions to be performed by the PLMN are shown.

1.2.1 Description of overall SDL-diagram of call waiting

In the SDL-diagrams the states are dimensioned in two dimensions. The first dimension is a normal basic call state, e.g. null or active. The second dimension is an auxiliary state associated with hold, e.g. idle or held. Active call is represented by (active, idle) state, held call by (active, held) state.

When call waiting is active and the subscriber is connected to at least one call (active or held), the arrival of a subsequent incoming call from user C to user B shall, if no other call is waiting, be signalled to the mobile equipment at B as described in TS GSM 04.08. The network shall then await an acknowledgement from the mobile termination at user B within a specific time period T1. In figure 1.5, the mobile terminated call from user C is described as being in the "Pending Ack" state during this period. The call waiting service is suspended for further incoming calls.

1.2.1.1 Behaviour during the "Pending Ack" state

Expiry of call control timers in T1

If no acknowledgement is received by the network from the mobile termination at user B within the time period T1 (timer T1 expires) then the network shall initiate clearing towards the calling user C and served user B in accordance with TS GSM 04.08. Following the expiry of call control timers in T1 the call waiting service shall be resumed for further incoming calls.

Release of active call

User A or B may release the active call between them in the normal manner. This does not change the state of the call from user C. Note that the MS has to indicate a normal ringing tone to the served subscriber.

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Release of call by user C

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User C may release the call to user B. In this case, call clearing shall take place in the normal manner, and the call waiting service shall be resumed for further incoming calls.

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Call hold service

User B can operate the call hold service on any active calls in the normal manner.

Indication of UDUB

User B may release the call from user C using the indication of UDUB. In this case, if CFB is active the call from user C shall be forwarded, if CFB is not active the call from user C shall be cleared. The call waiting service is resumed for further incoming calls.

Rejection of call from user C

User B may reject the call from user C. In this case, the call from user C shall be cleared. The call waiting service is resumed for further incoming calls.

Acknowledgement of call from user C

If the mobile termination at user B acknowledges the incoming call within the time period T1, a call is waiting indication shall be sent towards calling user C. Timer T1 is stopped. Upon reception of alerting the network shall await an acceptance from the controlling user B within the time period T2. In figure 1.5, the mobile terminated call is described as being in the "Waiting" state during this period. In case the controlling subscriber B has call forwarding on no reply active the network shall await an acceptance from user B within the time period T3 < T2. The call waiting service is still suspended for further incoming calls.