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# European digital cellular telecommunications system (Phase 2); Call Baring (CB) supplementary services - Stage 3 (GSM 04.88)

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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 specifies the procedures used at the radio interface (reference point Um as defined in ETS 300 551) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of Call Barring (CB) supplementary services within the European digital cellular telecommunications system (Phase 2).

This ETS corresponds to GSM technical specification, GSM 04.88 version 4.6.3.

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 Technical Specifications (GSM-TS) (NOTE).

Reference is also made within this ETS to GSM 02.8x and 03.8x series. The specifications in the series can be identified, with their full title, within the normative reference Clause of this ETS by the last two digits of their GSM reference number e.g. GSM 03.8x series, refers to GSM 03.81, GSM 03.82, etc.

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-TS). These TSs may have subsequently become I-ETSs (Phase 1), or ETSs (Phase 2), whilst others may become ETSI Technical Reports (ETRs). GSM-TSs are, for editorial reasons, still referred to in current GSM ETSs.

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# 0 General

## 0.1 Scope

This technical specification specifies the procedures used at the radio interface (reference point Um as defined in technical specification GSM 04.02) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call offering supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In technical specification GSM 04.10 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

Technical specification GSM 04.80 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in technical specifications GSM 02.04, GSM 02.8x and 02.9x-series.

Technical realization of supplementary services is described in technical specifications GSM 03.11, GSM 03.8x and 03.9x-series.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in technical specifications GSM 04.07 and GSM 04.08.

The following supplementary services belong to the call restriction supplementary services and are described in this technical specification:

- Barring of outgoing calls (section 1):
  - * Barring of all outgoing calls (BAOC) (Barring program 1);
  - * Barring of outgoing international calls (BOIC) (Barring program 2);
  - * Barring of outgoing international calls EXCEPT those directed to the home PLMN country (BOIC-exHC) (Barring program 3).

- Barring of incoming calls (section 2):
  - * Barring of all incoming calls (BAIC) (Barring program 1);
  - * Barring of incoming calls when roaming outside the home PLMN country (BIC-Roam) (Barring program 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 telecommunication system (Phase 2); "Abbreviations and acronyms".

[2] GSM 02.04 (ETS 300 503): "European digital cellular telecommunication system (Phase 2); General on supplementary services".

[3] GSM 02.81 (ETS 300 514): "European digital cellular telecommunication system (Phase 2); Line identification supplementary services - Stage 1".

[4] GSM 02.82 (ETS 300 515): "European digital cellular telecommunication system (Phase 2); Call Forwarding (CF) supplementary services - Stage 1".

[5] GSM 02.83 (ETS 300 516): "European digital cellular telecommunication system (Phase 2); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1".

[6] GSM 02.84 (ETS 300 517): "European digital cellular telecommunication system (Phase 2); Multi Party (MPTY) supplementary services - Stage 1".

[7] GSM 02.85 (ETS 300 518): "European digital cellular telecommunication system (Phase 2); Closed User Group (CUG) supplementary services - Stage 1".

[8] GSM 02.86 (ETS 300 519): "European digital cellular telecommunication system (Phase 2); Advice of charge (AoC) supplementary services - Stage 1".

[9] GSM 02.88 (ETS 300 520): "European digital cellular telecommunication system (Phase 2); Call Barring (CB) supplementary services - Stage 1".

[10] GSM 02.90 (ETS 300 521): "European digital cellular telecommunication system (Phase 2); Unstructured supplementary services operation - Stage 1".

[11] GSM 03.11 (ETS 300 529): "European digital cellular telecommunication system (Phase 2); Technical realization of supplementary services".

[12] GSM 03.81 (ETS 300 542): "European digital cellular telecommunication system (Phase 2); Line identification supplementary services - Stage 2".

[13] GSM 03.82 (ETS 300 543): "European digital cellular telecommunication system (Phase 2); Call Forwarding (CF) supplementary services - Stage 2".

[14] GSM 03.83 (ETS 300 544): "European digital cellular telecommunication system (Phase 2); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 2".

[15] GSM 03.84 (ETS 300 545): "European digital cellular telecommunication system (Phase 2); Multi Party (MPTY) supplementary services - Stage 2".

[16] GSM 03.85 (ETS 300 546): "European digital cellular telecommunication system (Phase 2); Closed User Group (CUG) supplementary services - Stage 2".

[17] GSM 03.86 (ETS 300 547): "European digital cellular telecommunication system (Phase 2); Advice of Charge (AoC) supplementary services - Stage 2".

[18] GSM 03.88 (ETS 300 548): "European digital cellular telecommunication system (Phase 2); Call Barring (CB) supplementary services - Stage 2".

[19] GSM 03.90 (ETS 300 549): "European digital cellular telecommunication system (Phase 2); Unstructured supplementary services operation - Stage 2".

[20] GSM 04.02 (ETS 300 551): "European digital cellular telecommunication system (Phase 2); GSM Public Land Mobile Network (PLMN) access reference configuration".

[21] GSM 04.07 (ETS 300 556): "European digital cellular telecommunication system (Phase 2); Mobile radio interface signalling layer 3 General aspects".

[22] GSM 04.08 (ETS 300 557): "European digital cellular telecommunication system (Phase 2); Mobile radio interface layer 3 specification".

[23] GSM 04.10 (ETS 300 558): "European digital cellular telecommunication system (Phase 2); Mobile radio interface layer 3 Supplementary services specification General aspects".

[24] GSM 04.80 (ETS 300 564): "European digital cellular telecommunication system (Phase 2); Mobile radio interface layer 3 supplementary services specification Formats and coding".

### 0.3 Definitions and abbreviations

Abbreviations used in this specification are listed in GSM 01.04.

### 0.4 Cross phase compatibility

For the following supplementary services, a number of changes exist between this specification and the protocol version 1 specification:

- Barring of outgoing calls;

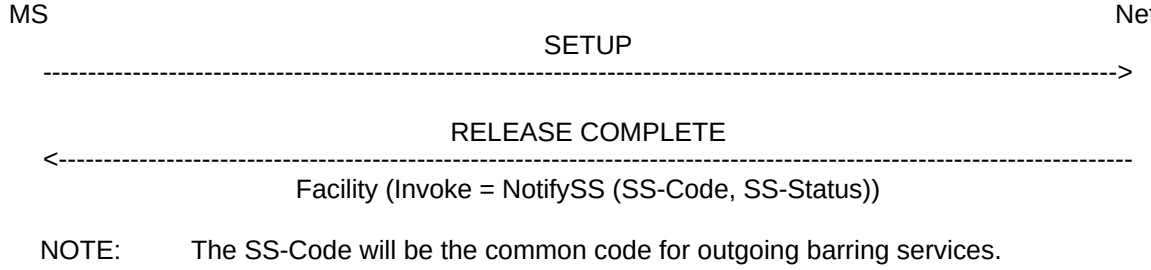
- Barring of incoming calls.

The main body of this specification assumes that all network entities comply with this version of the service. In each case an additional sub-section (sections 1.7 and 2.7) defines the additional requirements for when one or more network entities or the MS complies with the protocol version 1 specifications for the supplementary service procedures.

# 1 Barring of outgoing calls

## 1.1 Normal operation

When a barring program relating to outgoing calls is active and operative for a basic service, each call set up related to that basic service and not allowed by the barring program will be refused by the network. In this case a NotifySS operation containing the SS-Status indicating that a barring program relating to outgoing calls is currently active and operative will be sent to the served mobile subscriber, see figure 1.1.




NOTE: The SS-Code will be the common code for outgoing barring services.

**Figure 1.1: Notification to the served mobile subscriber that barring of outgoing calls is active**

When a barring program is active (operative or quiescent), the ability of the served mobile subscriber to set up emergency calls is not affected, irrespective of the basic service to which the barring program applies.

When a barring program relating to outgoing calls is active (operative or quiescent), the ability of the served mobile subscriber to receive calls is not affected.

## 1.2 Registration

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by subscriber using password", the subscriber has to register a call barring password at provision time. Furthermore the served mobile subscriber can change the call barring password by a registration procedure at any time.

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by service provider", an attempt to register a new call barring password will be denied.

The procedure to register a new password is specified in TS GSM 04.10.

### 1.3 Activation

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by subscriber using password", the supplementary service is activated for a basic service if the subscriber has requested so by means of an activation procedure for that basic service. If the subscriber does not indicate a specific basic service, the activation applies to all basic services. The subscriber may use the call barring password at activation, see figure 1.2.

If the activation is successful, the service will be activated. The network will then send a return result indicating acceptance of the request. The result is formatted according to the options shown below:

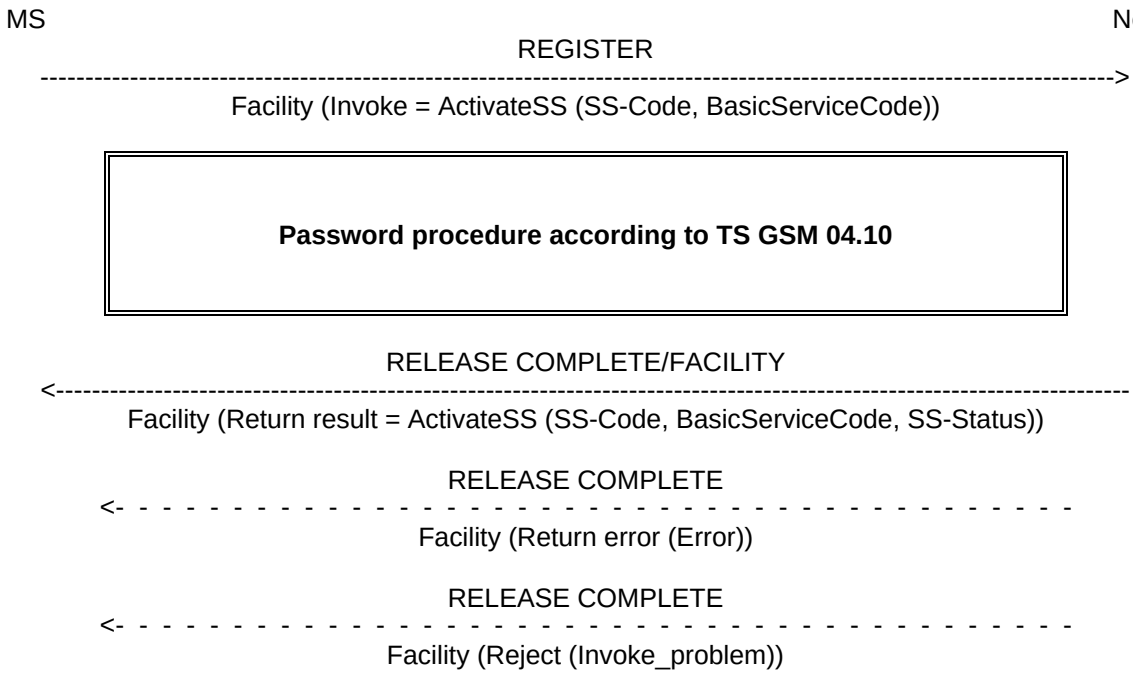
- The result includes the Basic Service group Code(s) to which the service is activated. The result may also contain an SS-Code and SS-Status parameter. If the MS does not send an SS Version Indicator in the invocation request then these parameters shall be presented in the result. If the MS does send an SS Version Indicator in the invocation request then these parameters are optional in the result. If the SS-Status is included the network shall set it to reflect the state of the service. If the SS-Code is included then it shall contain the SS-Code of the service which has been activated. The MS shall ignore the contents of the SS-Code and SS-Status parameters if they are received.

Note that the use of SS-Code and SS-Status is to provide backwards compatibility with phase 1.

- If the request did not include a BasicServiceCode, and the activation was successful for all basic services, the network may send an empty return result to the MS. This option applies whether or not an SS Version Indicator is received from the MS.

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by service provider", an attempt to activate the service will be denied and the served mobile subscriber receives an error indication, see figure 1.3.

Error values are specified in TS GSM 04.80.




NOTE: The SS-Code will be one of the specific outgoing barring codes. If BasicServiceCode is not included it applies to all basic services. The SS-Code and SS-Status may not be included in the result in all cases, see text.

**Figure 1.2: Activation of a barring program**

### 1.4 Deactivation

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by subscriber using password", the supplementary service is deactivated for a basic service if the subscriber has requested deactivation by means of a deactivation procedure for that basic service. The subscriber may use the call barring password at deactivation, see figure 1.3.

The deactivation request of a barring program may specify the basic service. If the subscriber does not indicate a specific basic service, the deactivation applies to all basic services, see figure 1.3.

If the deactivation is successful, the service will be deactivated. The network will then send a return result indicating acceptance of the request. The result is formatted according to the options shown below:

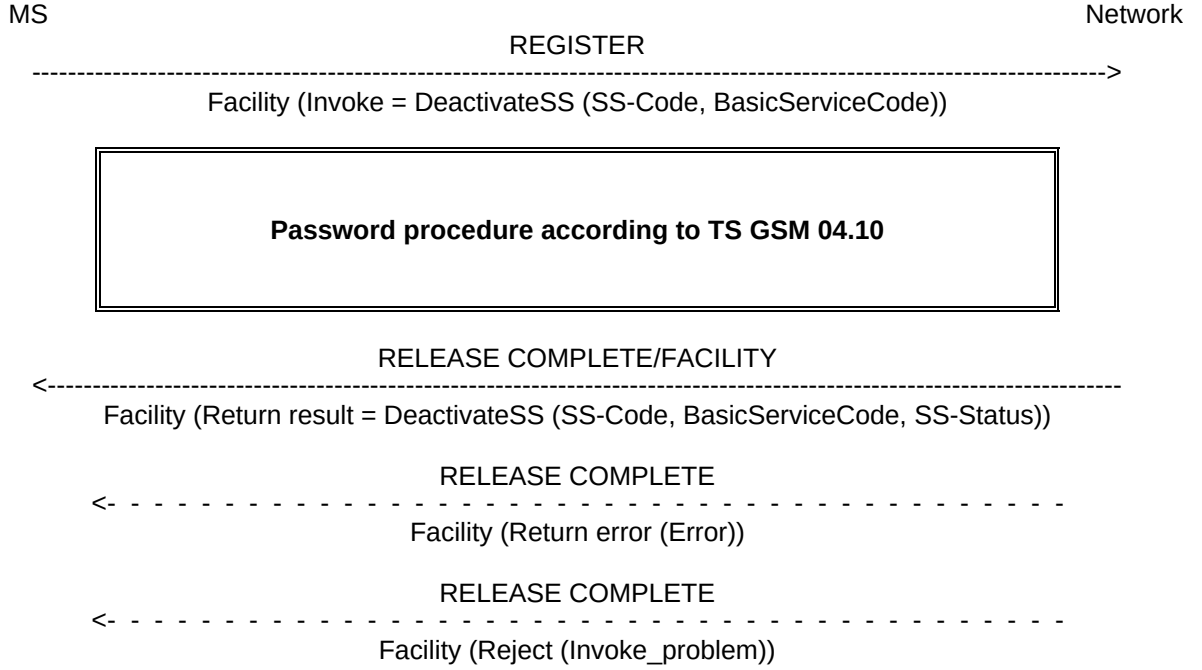
- The result includes the Basic Service group Code(s) to which the service is deactivated. The result may also contain an SS-Code and SS-Status parameter. If the MS does not send an SS Version Indicator in the invocation request then these parameters shall be presented in the result. If the MS does send an SS Version Indicator in the invocation request then these parameters are optional in the result. If the SS-Status is included the network shall set it to reflect the state of the service. If the SS-Code is included then it shall contain the SS-Code of the service which has been deactivated. The MS shall ignore the contents of the SS-Code and SS-Status parameters if they are received.

Note that the use of SS-Code and SS-Status is to provide backwards compatibility with phase 1.

- If the request did not include a BasicServiceCode, and the deactivation was successful for all basic services, the network may send an empty return result to the MS. This option applies whether or not an SS Version Indicator is received from the MS.

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by service provider", an attempt to deactivate the supplementary service will be denied and the served mobile subscriber receives an error indication, see figure 1.3.

Error values are specified in TS GSM 04.80.



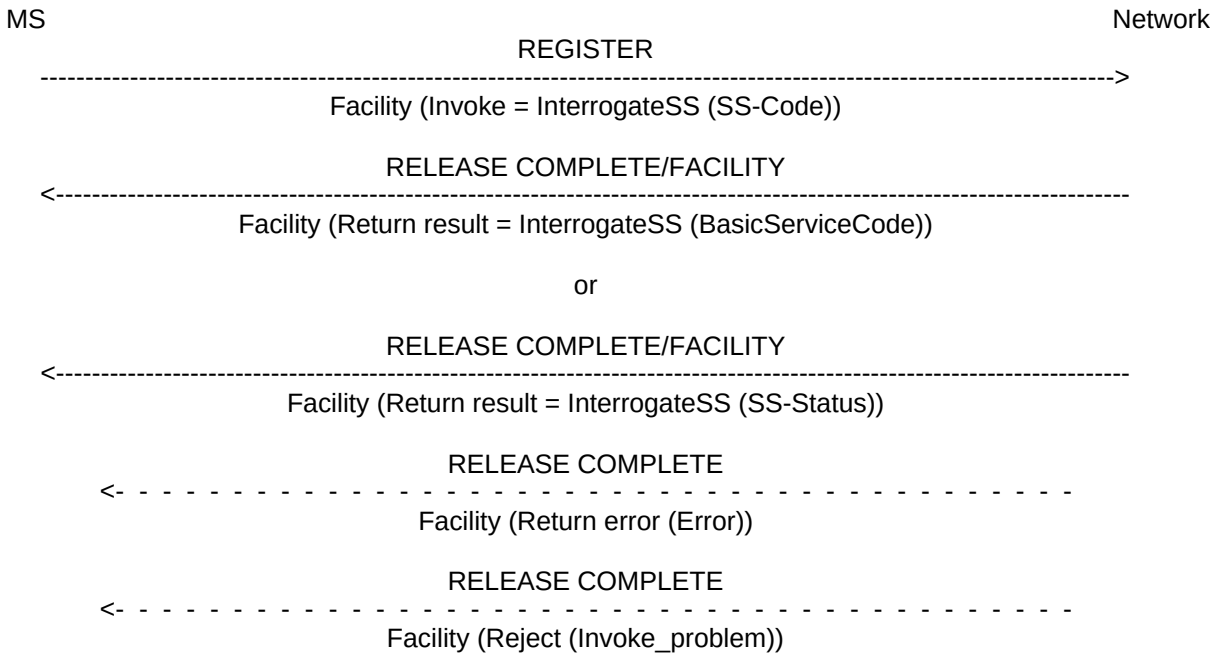

NOTE: The SS-Code may be one of the specific outgoing barring codes, the common code for the outgoing barring services, or the SS-Code for all call barring services. If BasicServiceCode is not included it applies to all basic services. The SS-Code and SS-Status may not be included in the result in all cases, see text.

**Figure 1.3: Deactivation of barring of outgoing calls**

### 1.5 Interrogation

The interrogation procedure enables the mobile subscriber to obtain information about data stored in the PLMN. After having requested this procedure the network shall return a list of all basic service groups for which the service is active, see figure 1.4.

If there is no basic service group for which the service is active, an SS-Status will be returned indicating that the service is "deactivated".




NOTE: The SS-Code may be one of the specific outgoing barring codes.

**Figure 1.4: Interrogation of a barring program**

### 1.6 Invocation and erasure

Invocation and erasure are not applicable to barring programs.

### 1.7 Cross phase compatibility

#### 1.7.1 Network only supports phase 1 control of SS by the subscriber

In this case there is no relevant cross phase compatibility problem.

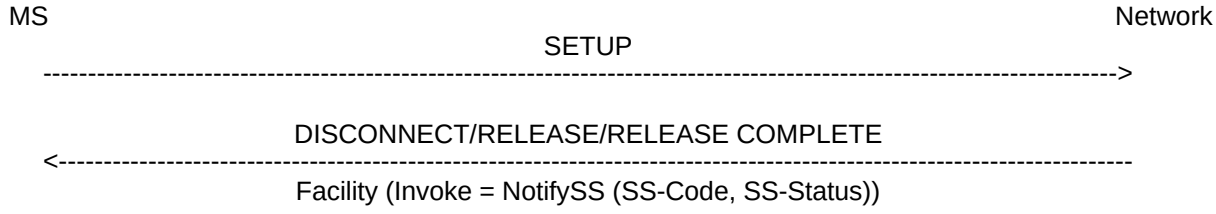
#### 1.7.2 MS only supports protocol version 1 control of SS by the subscriber

In this case there is no relevant cross phase compatibility problem.

# 2 Barring of incoming calls

## 2.1 Normal operation

When a barring program relating to incoming calls is active and operative for a basic service, each incoming call set-up related to that basic service and not allowed by the barring program will be refused by the network. In this case a NotifySS operation containing the SS-Status indicating that a barring program relating to incoming calls is currently active and operative will be sent to the calling mobile subscriber in a clearing message, see figure 2.1.




NOTE: The SS-Code will be the common code for incoming barring services.

**Figure 2.1: Notification to the calling mobile subscriber that at the called subscriber side barring is active**

When barring of incoming calls is active (operative or quiescent), the ability of the served mobile subscriber to originate calls is not affected.

## 2.2 Registration

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by subscriber using password", the subscriber has to register a call barring password at provision time. Furthermore the served mobile subscriber can change the call barring password by a registration procedure at any time.

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by service provider", an attempt to register a new call barring password will be denied.

The procedure to register a new password is specified in TS GSM 04.10.

### 2.3 Activation

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by subscriber using password", the supplementary service is activated for a basic service if the subscriber has requested so by means of an activation procedure for that basic service. If the subscriber does not indicate a specific basic service, the activation applies to all basic services. The subscriber may use the call barring password at activation, see figure 2.2.

If the activation is successful, the service will be activated. The network will then send a return result indicating acceptance of the request. The result is formatted according to the options shown below:

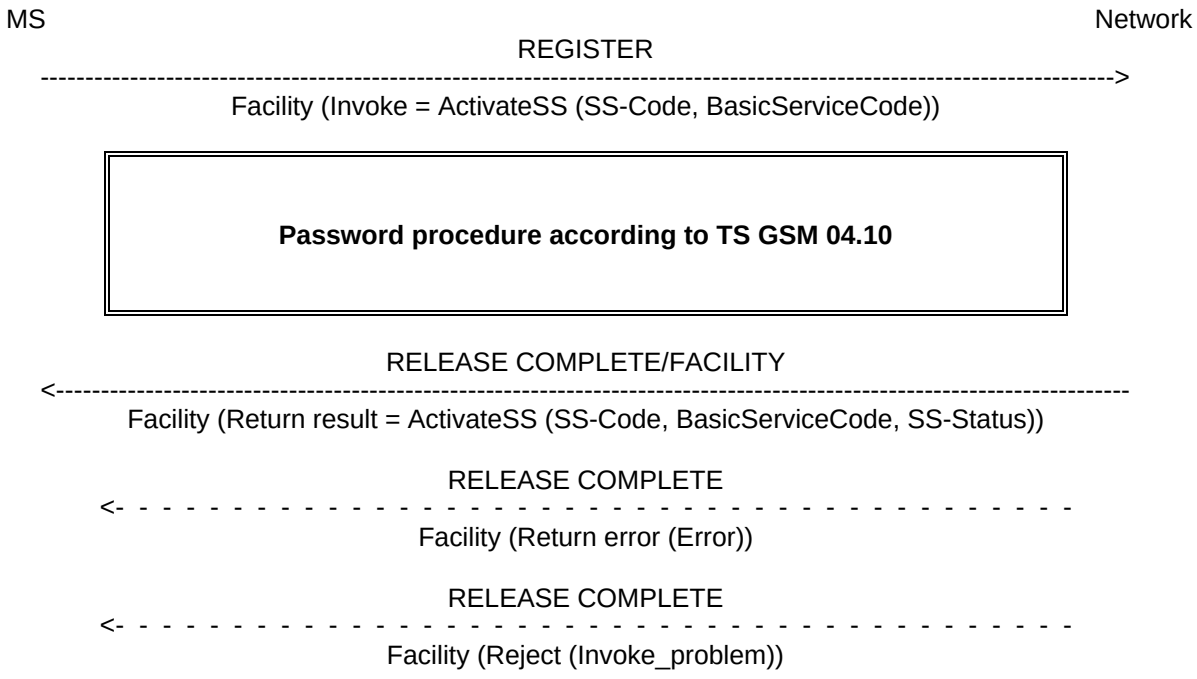
- The result includes the Basic Service group Code(s) to which the service is activated. The result may also contain an SS-Code and SS-Status parameter. If the MS does not send an SS Version Indicator in the invocation request then these parameters shall be presented in the result. If the MS does send an SS Version Indicator in the invocation request then these parameters are optional in the result. If the SS-Status is included the network shall set it to reflect the state of the service. If the SS-Code is included then it shall contain the SS-Code of the service which has been activated. The MS shall ignore the contents of the SS-Code and SS-Status parameters if they are received.

Note that the use of SS-Code and SS-Status is to provide backwards compatibility with phase 1.

- If the request did not include a BasicServiceCode, and the activation was successful for all basic services, the network may send an empty return result to the MS. This option applies whether or not an SS Version Indicator is received from the MS.

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by service provider", an attempt to activate the service will be denied and the served mobile subscriber receives an error indication, see figure 2.2.

Error values are specified in TS GSM 04.80.




NOTE: The SS-Code will be one of the specific incoming barring codes. If BasicServiceCode is not included it applies to all basic services. The SS-Code and SS-Status may not be included in the result in all cases, see text.

**Figure 2.2: Activation of a barring program**

## 2.4 Deactivation

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by subscriber using password", the supplementary service is deactivated for a basic service if the subscriber has requested deactivation by means of a deactivation procedure for that basic service. The subscriber may use the call barring password at deactivation, see figure 2.3.

If the deactivation is successful, the service will be deactivated. The network will then send a return result indicating acceptance of the request. The result is formatted according to the options shown below:

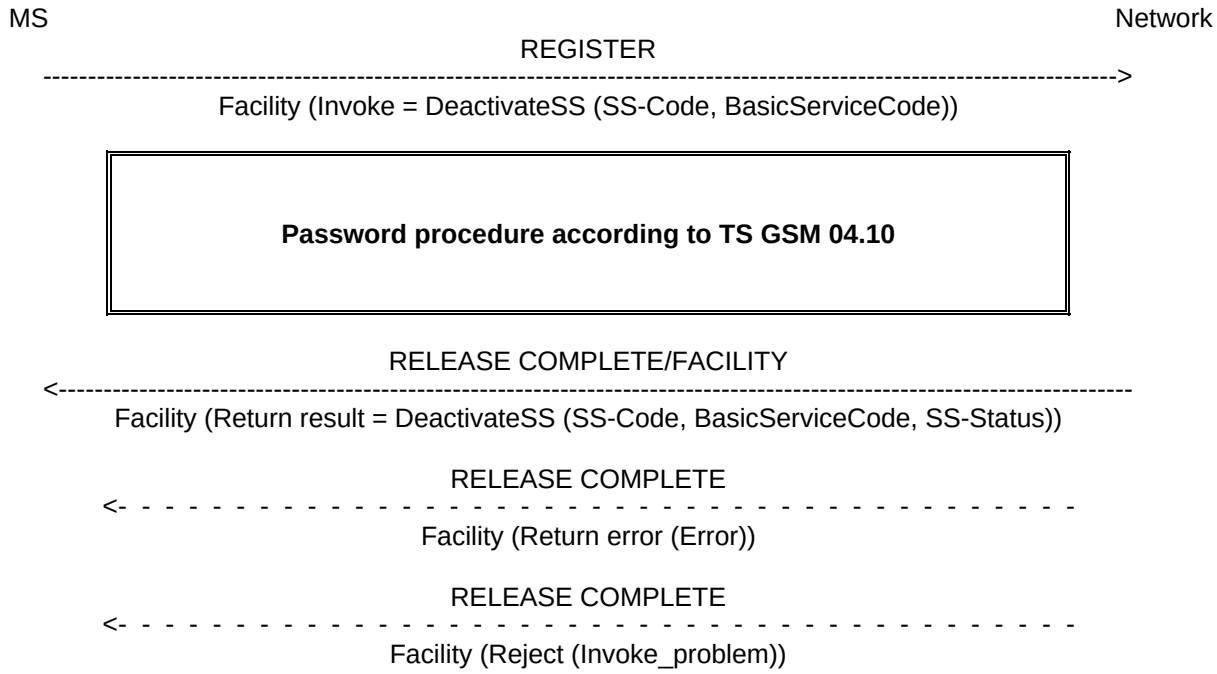
- The result includes the Basic Service group Code(s) to which the service is deactivated. The result may also contain an SS-Code and SS-Status parameter. If the MS does not send an SS Version Indicator in the invocation request then these parameters shall be presented in the result. If the MS does send an SS Version Indicator in the invocation request then these parameters are optional in the result. If the SS-Status is included the network shall set it to reflect the state of the service. If the SS-Code is included then it shall contain the SS-Code of the service which has been deactivated. The MS shall ignore the contents of the SS-Code and SS-Status parameters if they are received.

Note that the use of SS-Code and SS-Status is to provide backwards compatibility with phase 1.

- If the request did not include a BasicServiceCode, and the deactivation was successful for all basic services, the network may send an empty return result to the MS. This option applies whether or not an SS Version Indicator is received from the MS.

If the served mobile subscriber at provision time has selected the subscription option "control of barring service: by service provider", an attempt to deactivate the supplementary service will be denied and the served mobile subscriber receives an error indication, see figure 2.3.

Error values are specified in TS GSM 04.80.



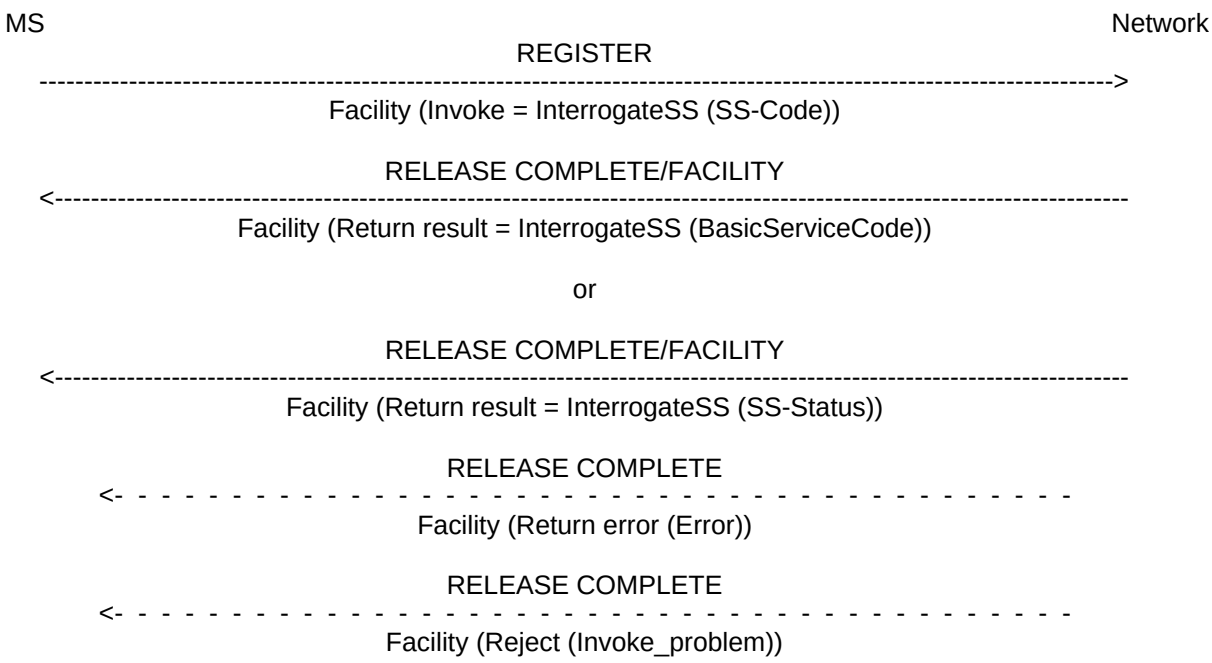

NOTE: The SS-Code may be one of the specific incoming barring codes, the common code for the incoming barring services, or the SS-Code for all call barring services. If BasicServiceCode is not included it applies to all basic services. The SS-Code and SS-Status may not be included in the result in all cases, see text.

**Figure 2.3: Deactivation of barring of incoming calls**

## 2.5 Interrogation

The interrogation procedure enables the mobile subscriber to obtain information about the data stored in the PLMN. After having requested this procedure the network shall return a list of all basic service groups for which the service is active, see figure 2.4.

If there is no basic service group for which the service is active, an SS-Status will be returned indicating that the service is "deactivated".




NOTE: The SS-Code may be one of the specific incoming barring codes.

**Figure 2.4: Interrogation of a barring program**

## 2.6 Invocation and erasure

Invocation and erasure are not applicable to barring programs.

## 2.7 Cross phase compatibility

### 2.7.1 Network only supports phase 1 control of SS by the subscriber

In this case there is no relevant cross phase compatibility problem.

### 2.7.2 MS only supports protocol version 1 control of SS by the subscriber

The NotifySS operation containing the SS-Status indicating that a barring program relating to incoming calls is currently active and operative shall be sent to the calling subscriber only in the RELEASE COMPLETE message, if the MS only supports phase 1.

## History

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