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Technical Specification

Digital cellular telecommunications system (Phase 2+); Call Barring (CB) supplementary services; Stage 3 (GSM 04.88 version 7.0.0 Release 1998)

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Contents

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Foreword

This Technical Specification (TS) has been produced by the Special Mobile Group (SMG).

This specification specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call barring supplementary services within the digital cellular telecommunications system.

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

The contents of this specification is subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of the present document, it will be re-released by SMG with an identifying change of release date and an increase in version number as follows:

Version 7.x.y

where:

- 7 indicates GSM Phase 2+ Release 1998;
- x the second digit is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.;
- y the third digit is incremented when editorial only changes have been incorporated in the specification.

Introduction

The present document includes references to features which are not part of the Phase 2+ Release 96 of the GSM Technical specifications. All subclauses which were changed as a result of these features contain a marker (see table below) relevant to the particular feature. GSM 10.01 defines the correspondence between these features and GSM yearly releases.

The following table lists all features that were introduced after Release 96.

Feature	Designator
CAMEL Phase 2	$(CAMEL2)$

0 Scope

The present document specifies the procedures used at the radio interface (reference point Um as defined in GSM 04.02) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call barring 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 GSM 04.10 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

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

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

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

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

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

- Barring of outgoing calls (clause 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 (clause 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).

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1998 document, references to GSM documents are for Release 1998 versions (version 7.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] GSM 02.04: "Digital cellular telecommunications system (Phase 2+); General on supplementary services".

[3] GSM 03.11: "Digital cellular telecommunications system (Phase 2+); Technical realization of supplementary services".

[4] GSM 04.02: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) access reference configuration".

[5] GSM 04.07: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface signalling layer 3; General aspects".

[6] GSM 04.08: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification".

[7] GSM 04.10: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3; Supplementary services specification; General aspects".

[8] GSM 04.80: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 supplementary services specification; Formats and coding".

0.2 Abbreviations

Abbreviations used in this specification are listed in GSM 01.04.

0.3 Cross phase compatibility

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

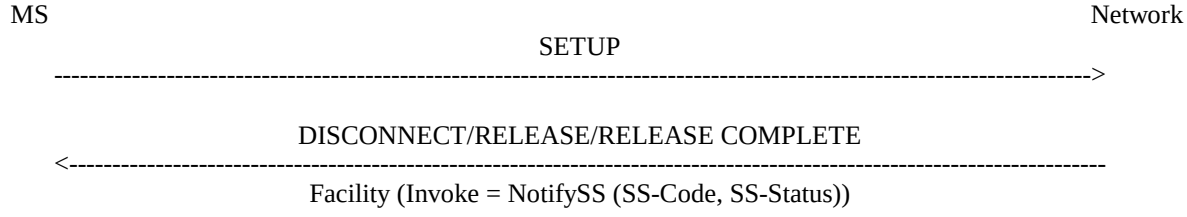
- Barring of outgoing calls;
- Barring of incoming calls.

The main body of this specification assumes that all network entities comply with this version of the service. In each case an additional subclauses 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 in a clearing message (see figure 1.1).



NOTE 1: The SS-Code will be the common code for outgoing barring services.
NOTE 2: $(CAMEL2)$ The DISCONNECT and RELEASE messages were introduced because of CAMEL Phase 2.

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 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:

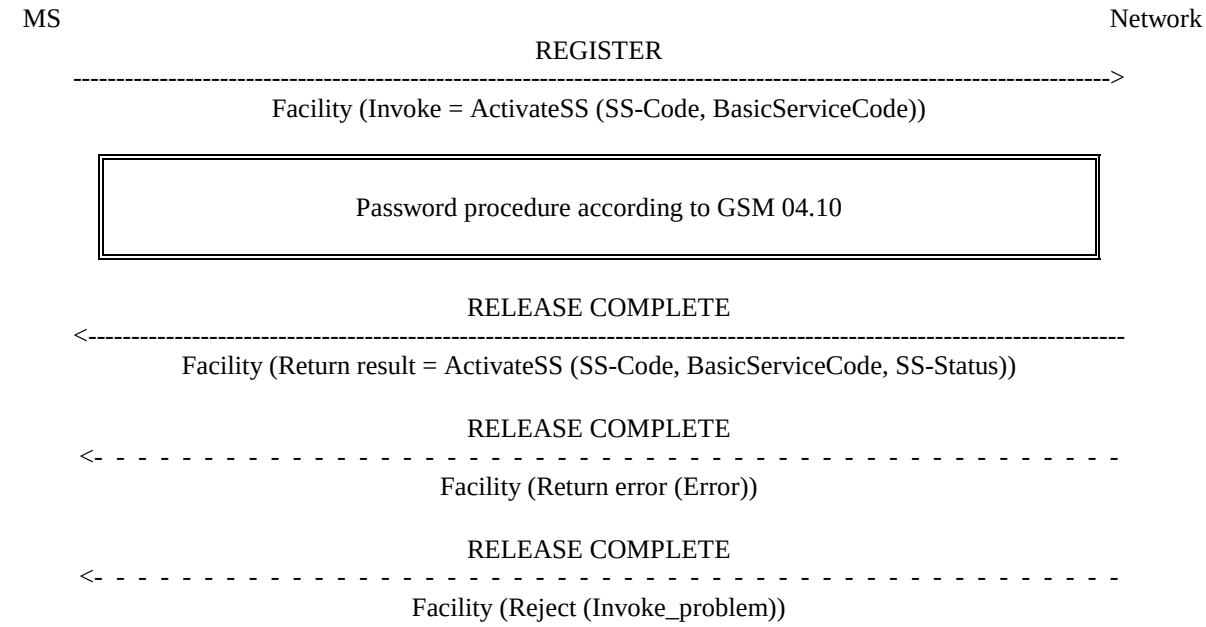
- The result includes the Basic Service group Code(s) to which the service is activated. The result may also contain an SS-Code and SS-Status parameter. If the MS does not send an SS Version Indicator in the invocation request then these parameters shall be presented in the result. If the MS does send 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 GSM 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 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).

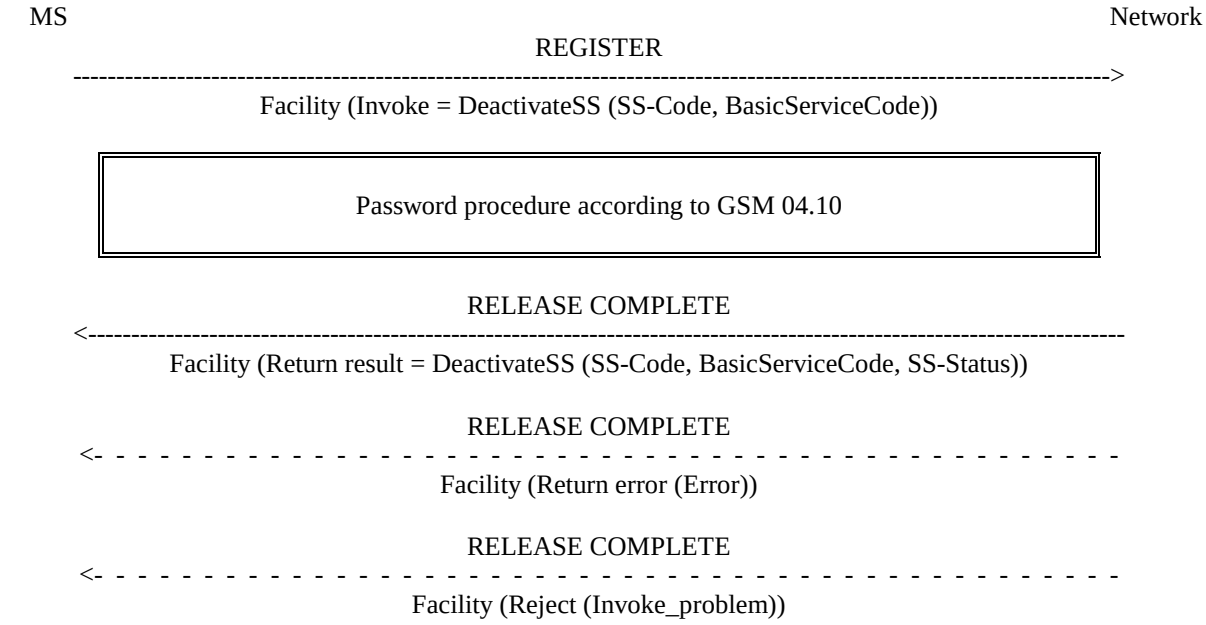
If the deactivation is successful, the service will be deactivated. The network will then send a return result indicating acceptance of the request. The result is formatted according to the options shown below:

- 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 GSM 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 GSM 04.80.



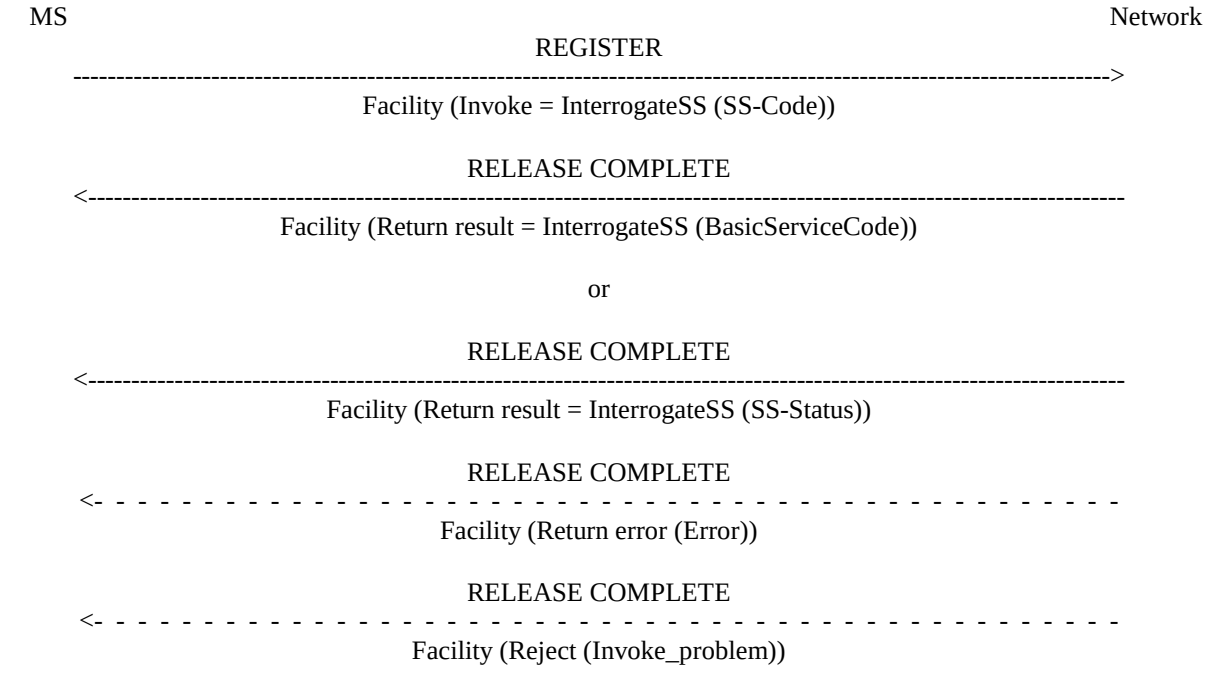
NOTE: The SS-Code may be one of the specific outgoing barring codes, the common code for the outgoing barring services, or the SS-Code for all call barring services. If BasicServiceCode is not included it applies to all basic services. The SS-Code and SS-Status may not be included in the result in all 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 GSM Phase 1 control of SS by the subscriber

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

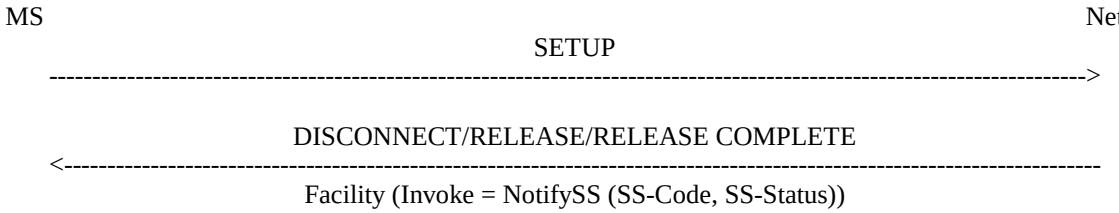
1.7.2 MS only supports protocol version 1 control of SS by the subscriber

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 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:

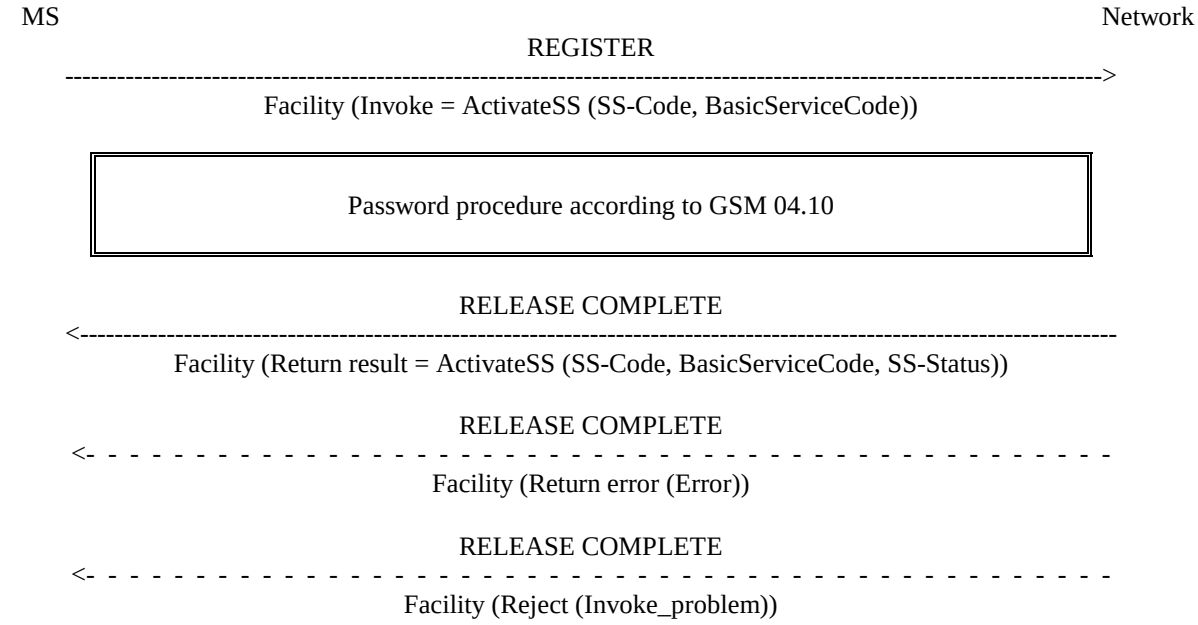
- The result includes the Basic Service group Code(s) to which the service is activated. The result may also contain an SS-Code and SS-Status parameter. If the MS does not send an SS Version Indicator in the invocation request then these parameters shall be presented in the result. If the MS does send 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 GSM 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 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:

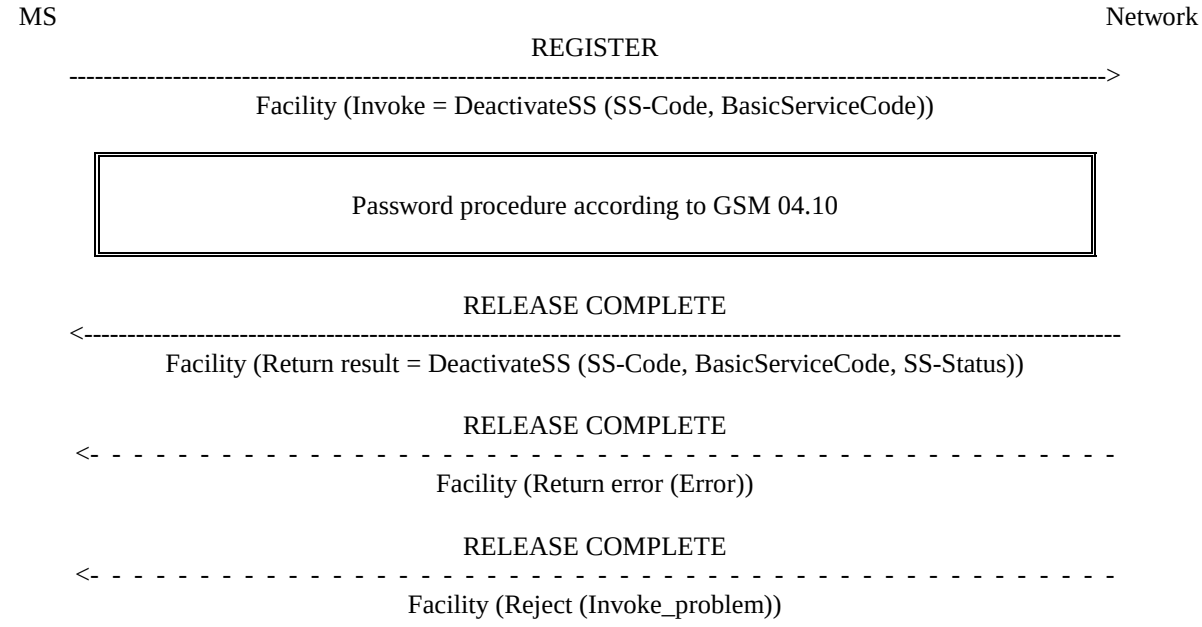
- The result includes the Basic Service group Code(s) to which the service is deactivated. The result may also contain an SS-Code and SS-Status parameter. If the MS does not send an SS Version Indicator in the invocation request then these parameters shall be presented in the result. If the MS does send 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 GSM 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 GSM 04.80.



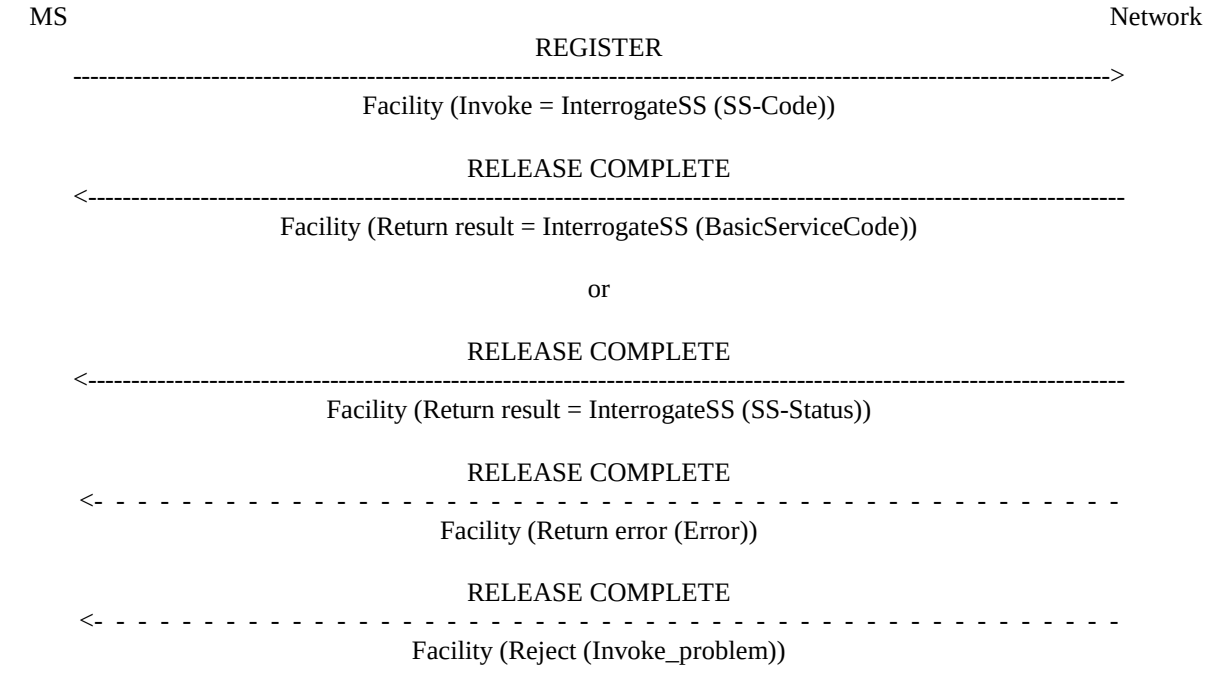
NOTE: The SS-Code may be one of the specific incoming barring codes, the common code for the incoming barring services, or the SS-Code for all call barring services. If BasicServiceCode is not included it applies to all basic services. The SS-Code and SS-Status may not be included in the result in all 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 GSM 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 GSM Phase 1.

Annex A (informative): Status of GSM 04.88

Status of Technical Specification GSM 04.88: stage 3 Call Barring		
Date	**Version**	**Remarks**
Release 92	3.1.3	Last common GSM Phase 1/GSM Phase 2 version (I-ETS 300 029 = version 3.1.1)
June 1991	4.0.0	CR 04.88-15 rev 1 (category D) approved by GSM#31
Jan 1992	4.1.0	CR 04.88-16 (category C) approved by SMG#01
April 1992	4.2.0	CR 04.88-19 rev 2 (category B) approved by SMG#02 CR 04.88-20 (category D)
June 1992	4.3.0	CR 04.88-21 rev 1 (category C) approved by SMG#03
January 1993	4.4.0	CR 04.88-24 rev 1 (category C) approved by SMG#05 CR 04.88-26 rev 1 (category C) CR 04.88-27 (category C)
April 1993	4.5.0	CR 04.88-22 rev 2 (category B) approved by SMG#06 CR 04.88-28 rev 1 (category C) CR 04.88-29 rev 1 (category C) TS frozen for GSM Phase 2 by SMG#06
June 1993	4.6.0	CR 04.88-30 (category D) approved by SMG#07 CR 04.88-31 rev 2 (category F) CR 04.88-32 (category F)
October 1993	4.6.1	TS changed to draft prETS 300 571
October 1994	4.6.2	TS changed to final draft prETS 300 571
January 1995	4.6.3	TS changed to ETS 300 571 first edition
February 1996	4.7.0	CR 04.88-A001 (category F) approved by SMG#17
August 1996	4.7.1	TS changed to ETS 300 571 second edition
December 1996	5.0.0	GTS converted to draft prETS 300 956 for Release 96
May 1997	5.0.1	ETS 300 956 first edition
December 1997	5.1.0	CR 04.88-A004 (category C) approved by SMG#24 (Release 97- CAMEL Phase 2 Section 1.1: the messages DISCONNECT and RELEASE are introduced in figure 1.1 because of CAMEL Phase 2.)
March 1998	6.0.0	TS converted to version 6.0.0 because of Release 97 issue
July 1998	6.0.1	Specification published as TS 100 956
August 1999	7.0.0	Specification version upgrade to Release 1998 version 7.0.0
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