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**Technical realization of  
Call restriction supplementary services**

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Only page numbering/layout has been changed since the previously distributed version.



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**ETSI**

European Telecommunications Standards Institute

**ETSI Secretariat:** B.P.152 . F - 06561 Valbonne Cedex . France

TP. + 33 92 94 42 00 TF. + 33 93 65 47 16 Tx. 47 00 40 F

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## **PREFATORY NOTE**

ETSI has constituted stable and consistent documents which give specifications for the implementation of the European Cellular Telecommunications System. Historically, these documents have been identified as "GSM recommendations".

Some of these recommendations may subsequently become Interim European Telecommunications Standards (I-ETTs) or European Telecommunications Standards (ETTs), whilst some continue with the status of ETSI-GSM Technical Specifications. These ETSI-GSM Technical Specifications are for editorial reasons still referred to as GSM recommendations in some current GSM documents.

The numbering and version control system is the same for ETSI-GSM Technical Specifications as for "GSM recommendations".

**Technical realization of call restriction  
supplementary services**

Date: February 1992

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## SECTION 1

### CALL RESTRICTION SUPPLEMENTARY SERVICES

The possibility for a mobile subscriber to have certain categories of calls barred originated from or terminated at his access:

**Barring of outgoing calls** (section 2):

- all outgoing calls;
- outgoing international calls;
- outgoing international calls except those directed to the home PLMN country.

**Barring of incoming calls** (section 3):

- all incoming calls;
- incoming calls when roaming outside the home PLMN country.

Note: The call barring program "incoming calls when roaming outside the home PLMN country" (section 3) is only relevant if as a general rule the called mobile subscriber pays the charges for the forwarded part of the call from his home PLMN country to any other country.

## SECTION 2

### BARRING OF OUTGOING CALLS

#### 2.1 Handling of barring of outgoing calls

##### 2.1.1 Registration

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", he has to register a password at provision time. Furthermore the served mobile subscriber can change the password by an appropriate control procedure at any time. The control procedure consists of three steps: first, the old password has to be provided. Secondly, the new password has to be given, after which it has to be verified by providing it once more, see figure 2.1.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by the service provider" an attempt to register a password will be denied and the served mobile subscriber should receive a notification.

The subscriber can register a new password, thus causing the previous registration to be overridden, see figure 2.1.

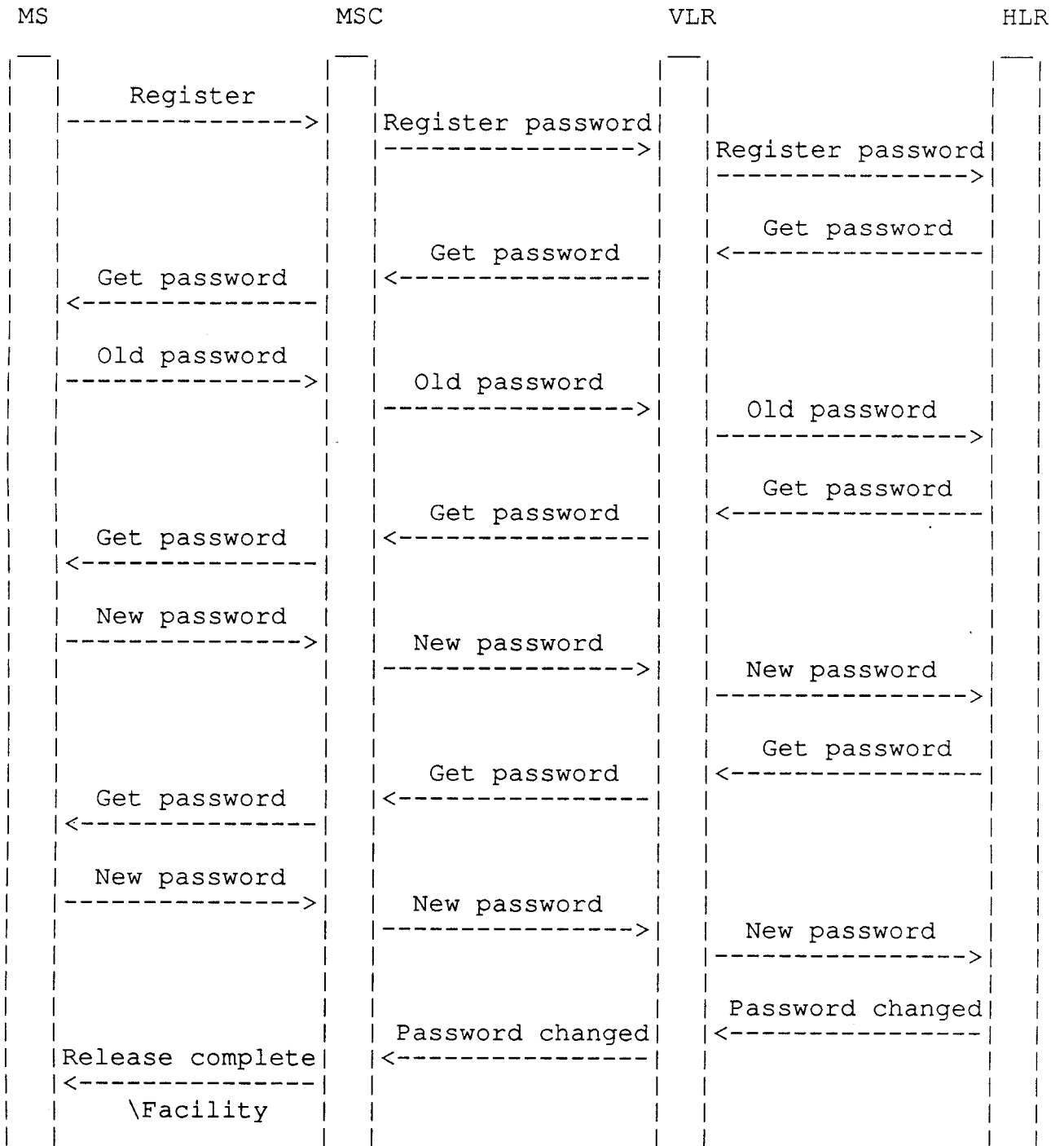


Figure 2.1/GSM 03.88  
Registration of a new password

## 2.1.2 Activation

### 2.1.2.1 General

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber



using password" the supplementary service is activated if the subscriber provides the following information to the network:

1. password;
2. information as to whether the activation applies to all basic services or a specific basic service.

Activation can take place with an appropriate control procedure by the subscriber.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by the service provider", the supplementary service cannot be activated by the subscriber. The activation has to be performed by the service provider. An attempt to activate the service will be denied and the served mobile subscriber should receive a notification.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", and if a wrong password is entered to activate the service the supplementary service will not be activated and the served mobile subscriber is notified.

The information flow for activation of barring of outgoing calls is shown in figure 2.5.

#### **2.1.2.2 Interactions between barring of outgoing call programs**

In case the served mobile subscriber activates barring of outgoing international calls except those directed to the home PLMN country and this service is not supported by the PLMN in which the served mobile subscriber currently roams, the VPLMN will activate barring of outgoing international calls instead. The SDL diagram in figure 2.2 shows the function to be performed in the VLR in order to deal with this interaction. This function is performed upon receiving the "insert subscriber data" message from the HLR.

In case the mobile subscriber activates one of the call barring programs and another call barring program was already activated, this program will be deactivated and the requested call barring program will be activated. The SDL diagram in figure 2.3 shows the function to be performed in the HLR in order to deal with this interaction between call barring programs.

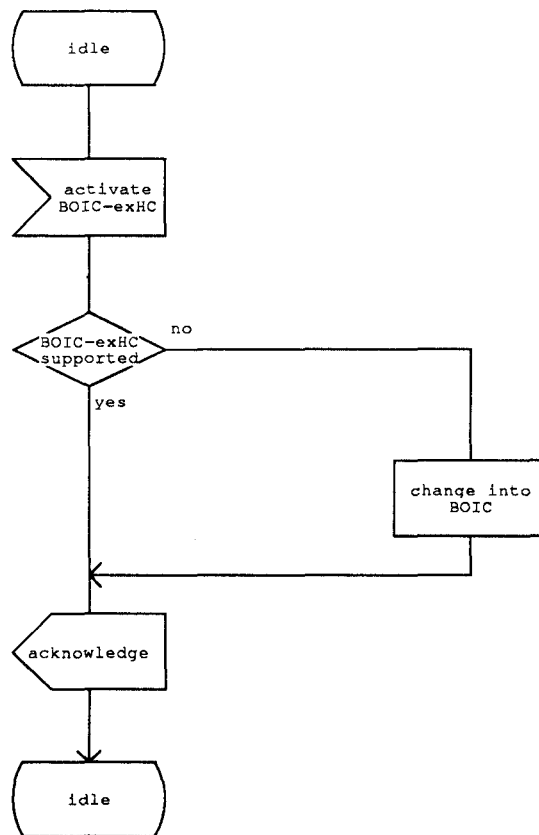
#### **2.1.2.3 Interactions with call forwarding supplementary services**

For interactions with call forwarding supplementary services see recommendation GSM 02.82.

The SDL diagram in figure 2.4 shows the function to be performed in the HLR in order to deal with the interactions with call forwarding supplementary services.

PROCESS BX1

(1)



BOIC-exHC: barring of outgoing international calls except those directed to the home PLMN country  
 BOIC: barring of outgoing international calls

Figure 2.2/GSM 03.88  
 BX1  
 Possible change of barring of outgoing international calls except those directed to the home PLMN country into barring of outgoing international calls

PROCESS BX2

(1)

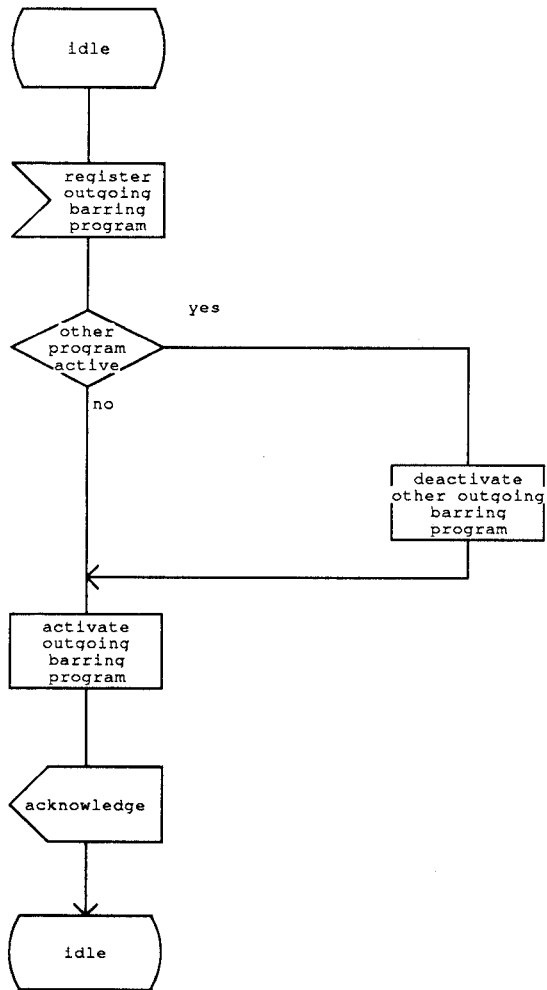


Figure 2.3/GSM 03.88  
BX2  
Interaction between call barring programs

PROCESS BX3

(1)

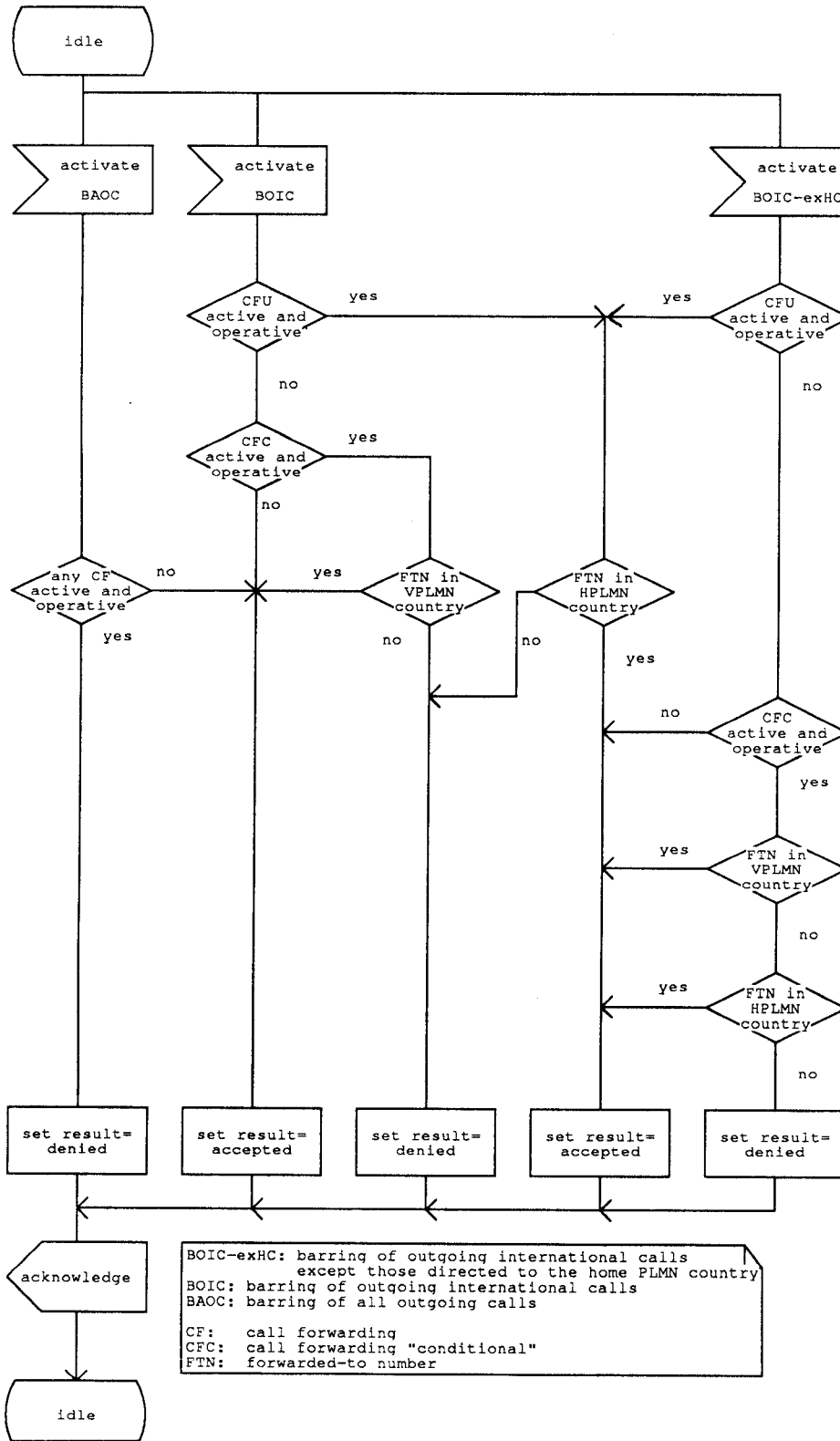
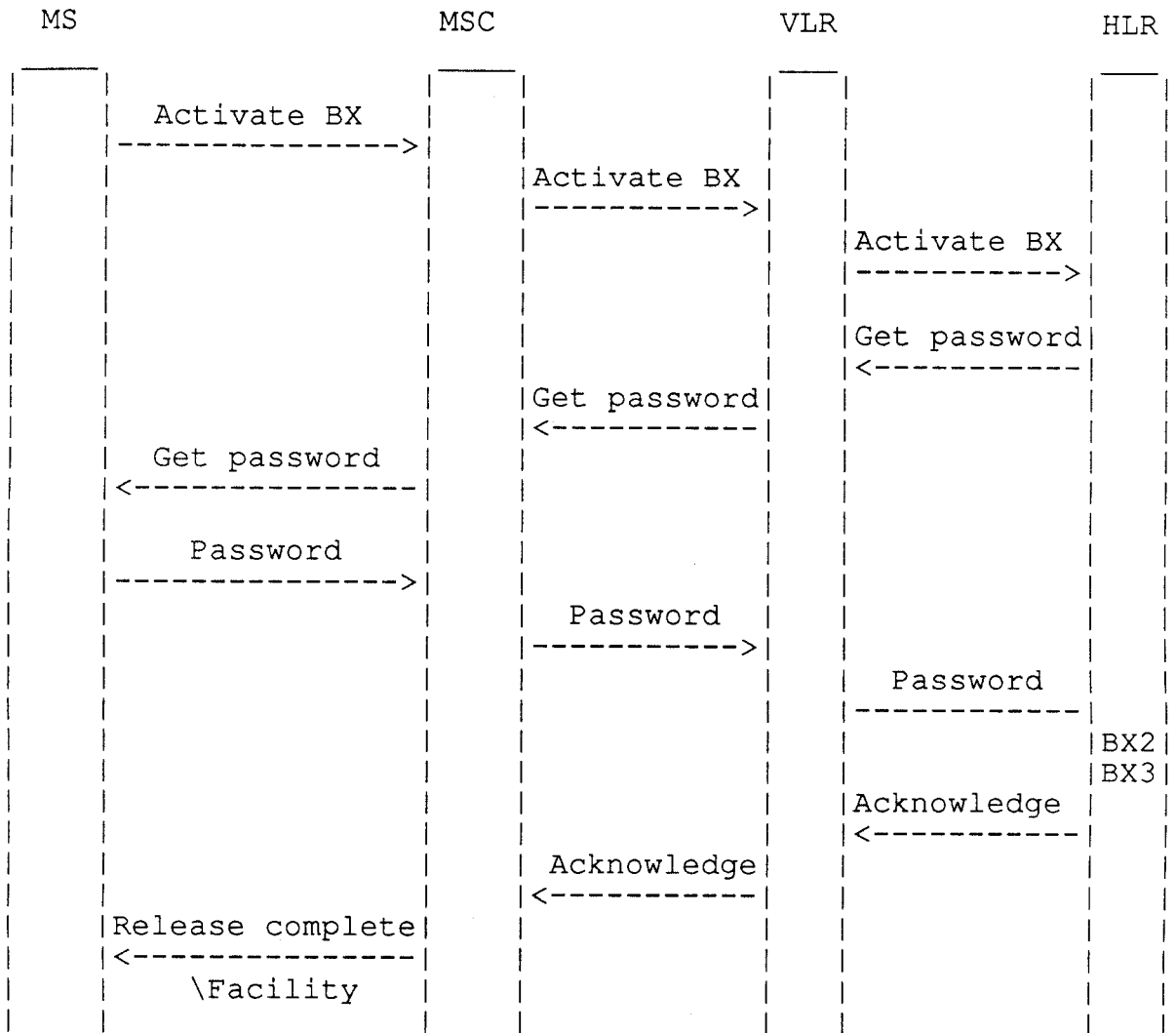


Figure 2.4/GSM 03.88  
 BX3  
 Interactions between call forwarding supplementary services and barring of outgoing calls programs



Note: BX indicates any of the programs.

Figure 2.5/GSM 03.88  
Activation of barring of outgoing calls

### 2.1.3 Deactivation

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", the supplementary service is deactivated if the subscriber provides the following information to the network:

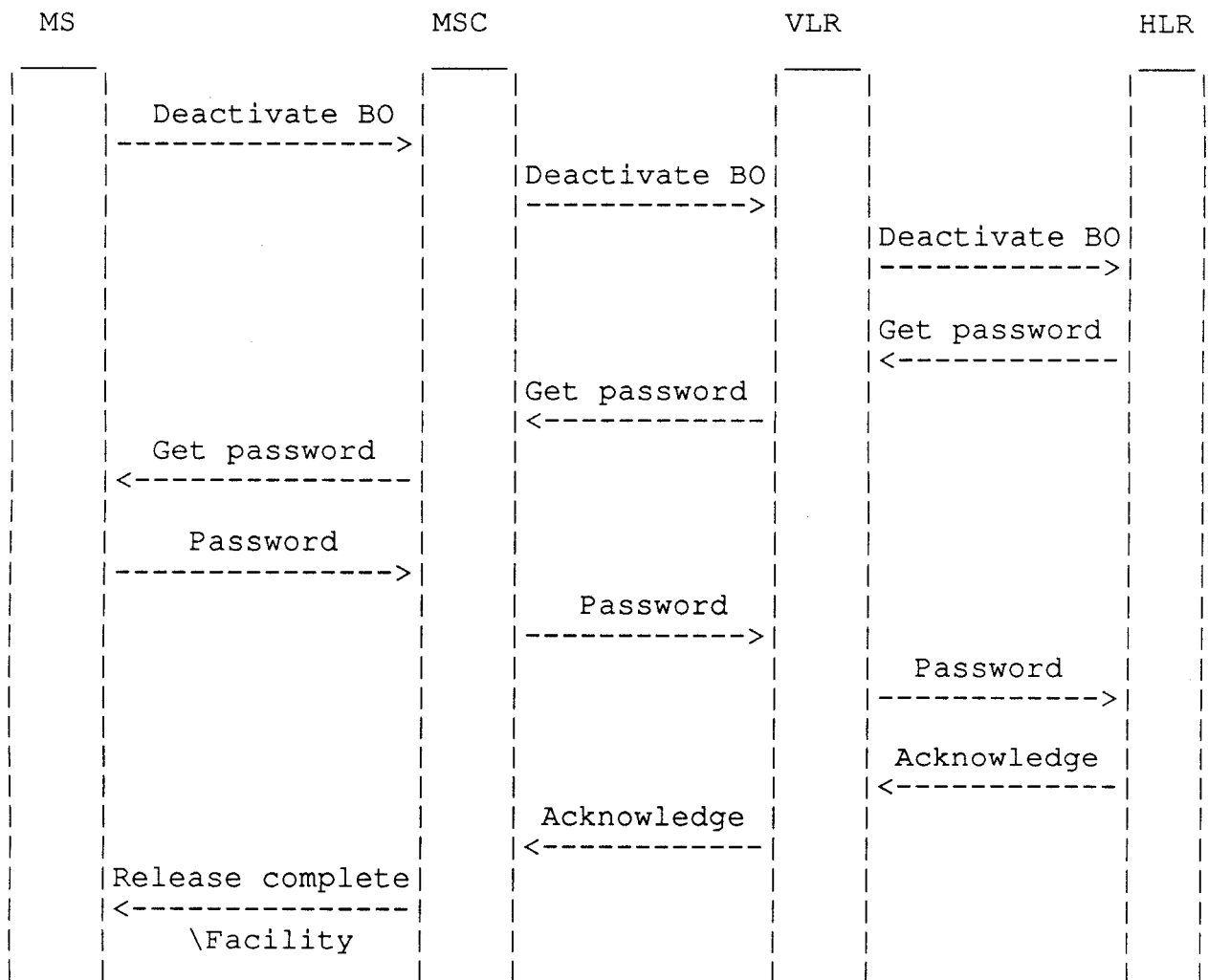
1. password;
2. information as to whether the deactivation applies to all basic services or a specific basic service.

Deactivation takes place with an appropriate control procedure by the subscriber.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by the service provider", the supplementary service cannot be deactivated by the subscriber. The deactivation has to be performed by the service provider. An attempt to deactivate the service will be denied and the served mobile subscriber should receive a notification.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", and if a wrong password is entered to deactivate the program the supplementary service will not be deactivated and the served mobile subscriber is notified.

The information flow for deactivation of barring of outgoing calls is shown in figure 2.6.



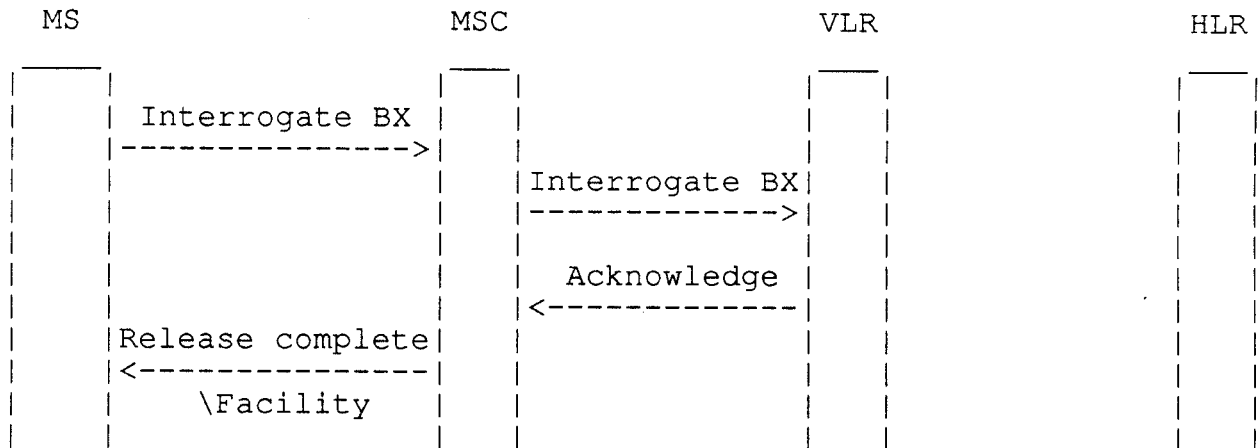
Note: BO indicates the general code for barring of outgoing calls.

Figure 2.6/GSM 03.88  
Deactivation of barring of outgoing calls

### 2.1.4 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 services to which the given barring program is active.

The information flow for interrogation of barring of outgoing calls is shown in figure 2.7.



Note: BX indicates any of the programs.

Figure 2.7/GSM 03.88  
Interrogation of barring of outgoing calls

### 2.2 Functions and information flows

The following functions have been identified:

MAF017 Barring of all outgoing calls related authorisations examination

The ability of a PLMN component to determine the authorisations relating to barring of all outgoing calls. See figure 2.8.  
Location: VLR

MAF018 Barring of outgoing international calls related authorisations examination

The ability of a PLMN component to determine the authorisations relating to barring of outgoing international calls. See figure 2.9.

Location: VLR

MAF020 Barring of outgoing international calls except those directed to the home PLMN country related authorisations examination

The ability of a PLMN component to determine the authorisations relating to barring of outgoing international calls except those directed to the home PLMN country. See figure 2.10.

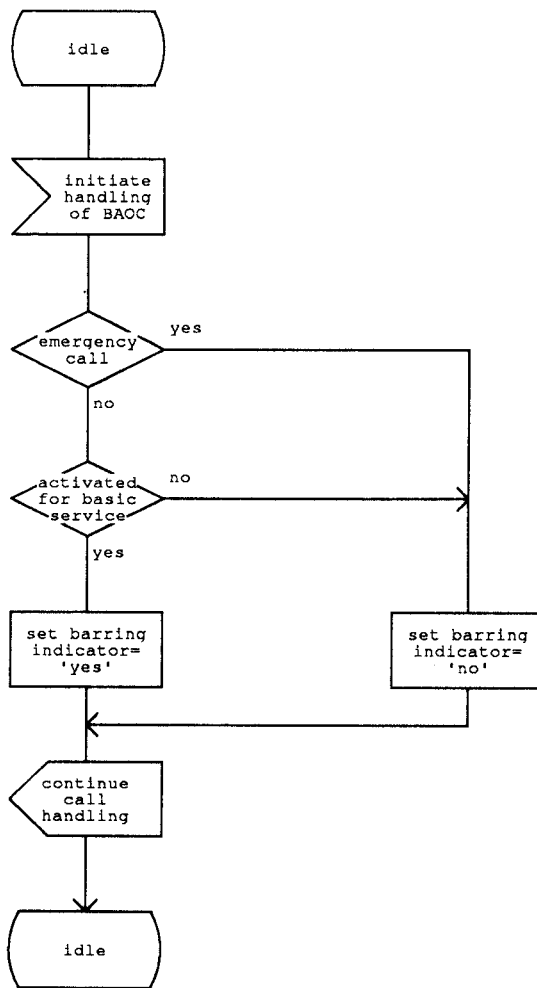
Location: VLR

The information flow for barring of outgoing calls is shown in figure 2.11.



PROCESS maf017

(1)

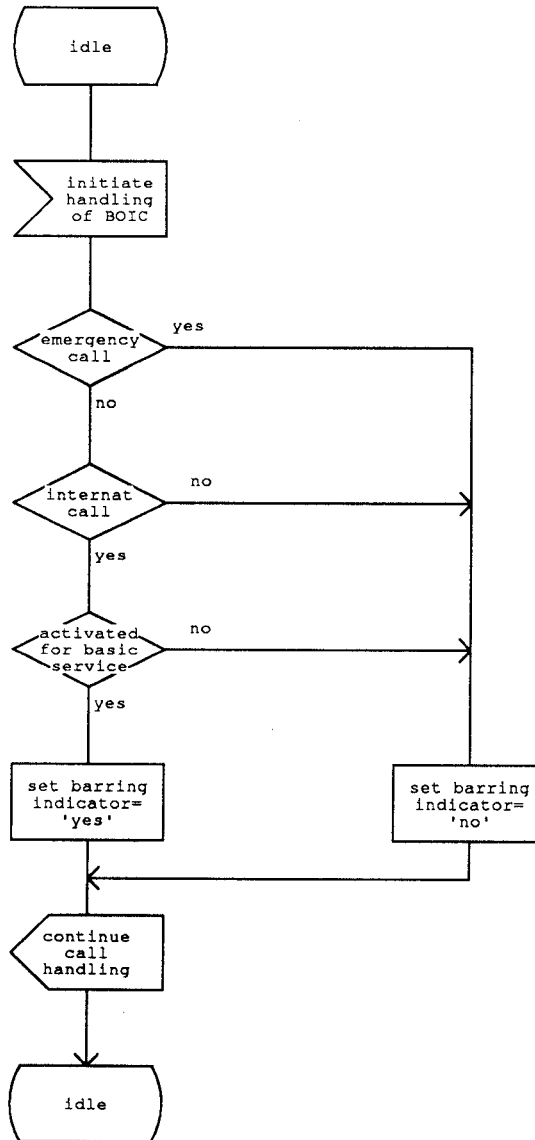


BAOC: barring of all outgoing calls

Figure 2.8/GSM 03.88  
MAF017  
Barring of all outgoing calls related authorizations examination (VLR)

PROCESS maf018

(1)

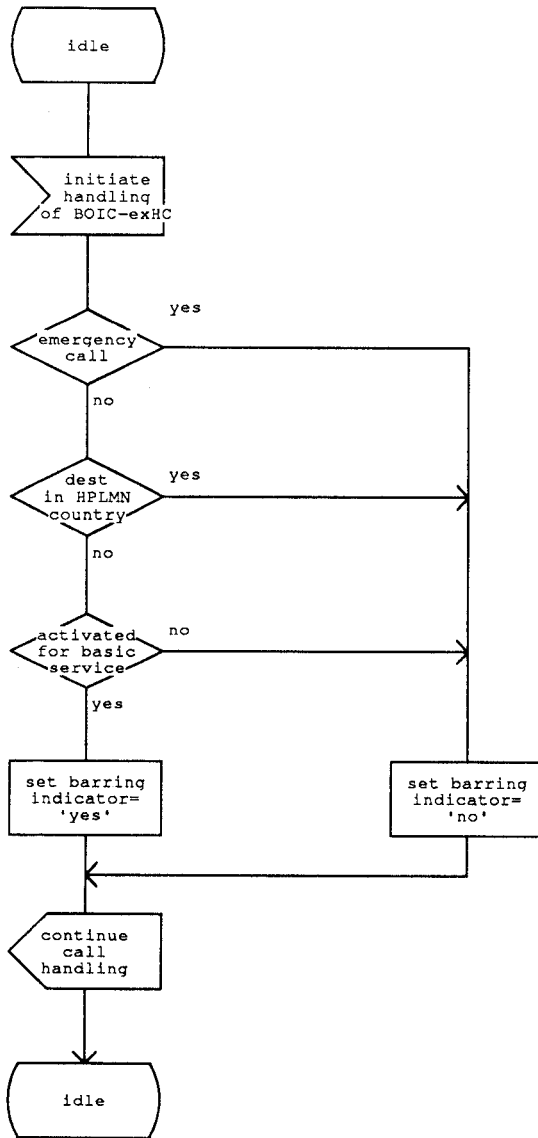


BOIC: barring of outgoing international calls  
internat: international

Figure 2.9/GSM 03.88  
MAF018  
Barring of outgoing international calls related  
authorizations examination (VLR)

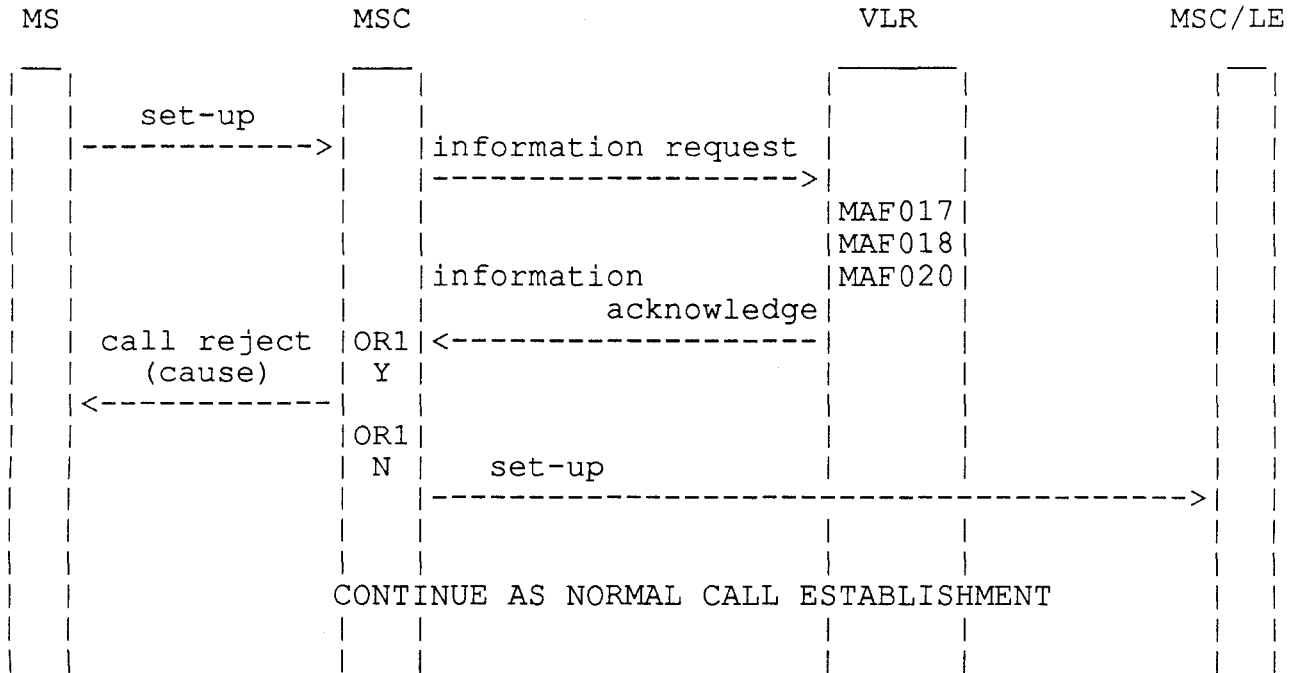
PROCESS maf020

(1)



BOIC-exHC: barring of outgoing international calls except those directed to the home PLMN country  
 dest: destination

Figure 2.10/GSM 03.88  
 MAF020  
 Barring of outgoing international calls except those directed to the home PLMN country related authorizations examination (VLR)



OR1: call barred                  Y: yes  
    N: no

Figure 2.11/GSM 03.88  
 Information flow for barring of outgoing calls

### 2.3 Information stored in HLR

For the supplementary services barring of outgoing calls in the HLR must be stored:

- the subscription option "control of barring services"
  - This subscription option takes one of the following values:
    - by subscriber using password;
    - by the service provider.

For each barring program in the HLR must be stored:

- the parameter "provision of supplementary service"
  - This parameter takes one of the following values:
    - provisioned;
    - not provisioned.

For each basic service and for each barring program in the HLR must be stored:

- the activation parameter "activation status"
  - This parameter takes one of the following values:
    - activated (only one barring program active per basic service at the same time);
    - deactivated.

If the subscription option "control of barring services" has been set to "by subscriber using password" then in the HLR must be stored:

- the registration parameter "registration status"
  - This parameter takes one of the following values:
    - registered;
    - erased.

If the subscription option "control of barring services" has been set to "by subscriber using password" for barring of outgoing calls in the HLR must be stored:

- the registration parameter "call barring password"
  - The password is valid for all basic services to which barring of outgoing calls applies.

### 2.4 Information stored in VLR

For each basic service and for each barring program in the HLR must be stored:

- the activation parameter "activation status"
  - This parameter takes one of the following values:
    - activated (only one barring program active per basic service at the same time);
    - deactivated.

### 2.5 Handover

Handover will have no impact on the control procedures and the operation of the service.

## SECTION 3

### BARRING OF INCOMING CALLS

#### 3.1 Handling of barring of incoming calls

##### 3.1.1 Registration

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", he has to register a password at provision time. Furthermore the served mobile subscriber can change the password by an appropriate control procedure at any time. The control procedure consists of three steps: first, the old password has to be provided. Secondly, the new password has to be given, after which it has to be verified by providing it once more, see figure 3.1.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by the service provider" an attempt to register a password will be denied and the served mobile subscriber should receive a notification.

The subscriber can register a new password, thus causing the previous registration to be overridden, see figure 3.1.

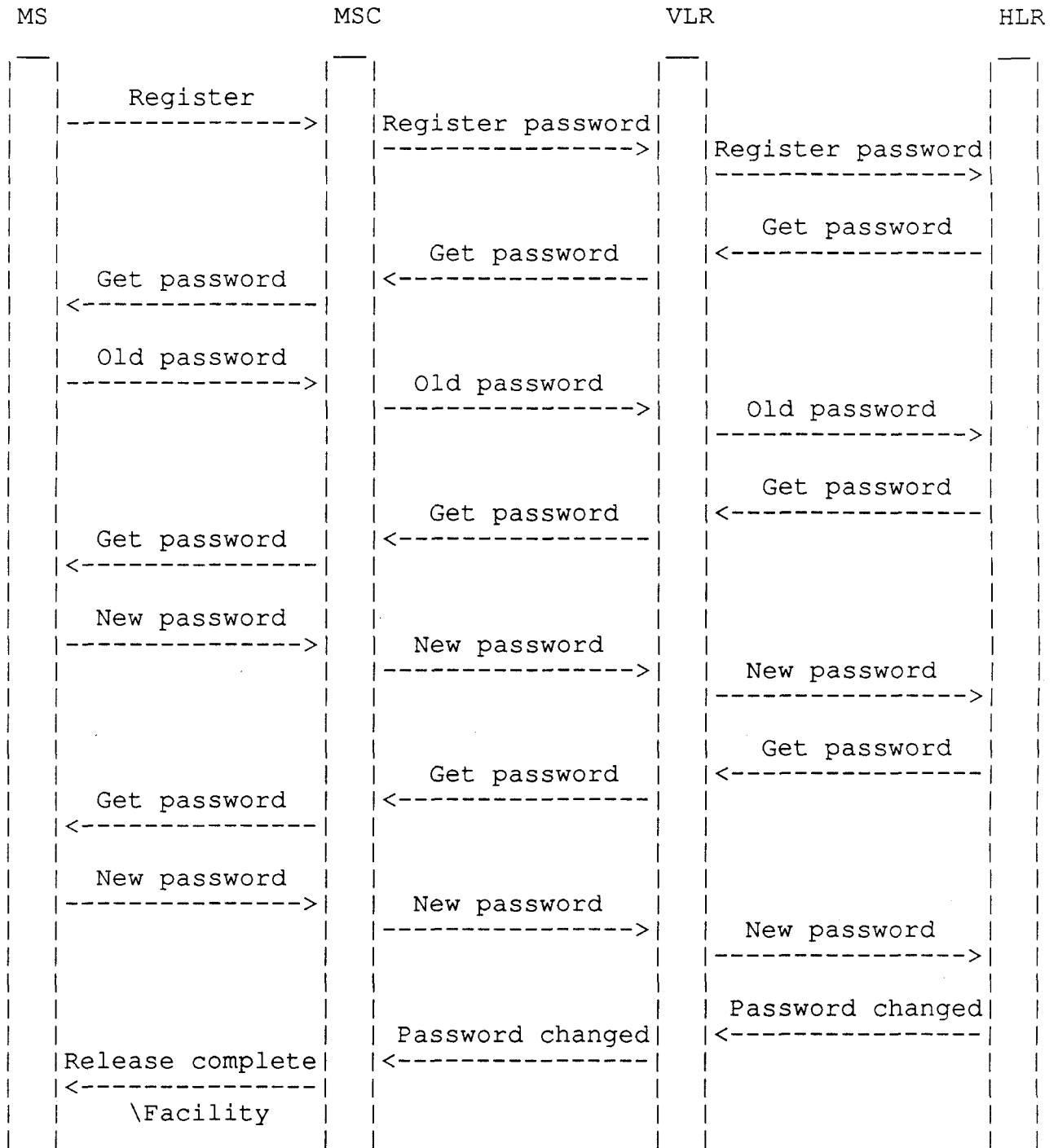


Figure 3.1/GSM 03.88  
Registration of a new password

### 3.1.2 Activation

#### 3.1.2.1 General

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber

using password" the supplementary service is activated if the subscriber provides the following information to the network:

1. password;
2. information as to whether the activation applies to all basic services or a specific basic service.

Activation can take place with an appropriate control procedure by the subscriber.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by the service provider", the supplementary service cannot be activated by the subscriber. The activation has to be performed by the service provider. An attempt to activate the service will be denied and the served mobile subscriber should receive a notification.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", and if a wrong password is entered to activate the service the supplementary service will not be activated and the served mobile subscriber is notified.

The information flow for activation of barring of incoming calls is shown in figure 3.4.

#### **3.1.2.2 Interactions between barring of incoming call programs**

In case the mobile subscriber activates barring of all incoming calls and barring of incoming calls when roaming outside the home PLMN country was already activated, barring of incoming calls when roaming outside the home PLMN country will be deactivated and barring of all incoming calls will be activated.

The SDL diagram in figure 3.2 shows the function to be performed in the HLR in order to deal with this interaction between call barring services.

#### **3.1.2.3 Interactions with call forwarding supplementary services**

For interactions with call forwarding supplementary services see recommendation GSM 02.82

The SDL diagram in figure 3.3 shows the function to be performed in the HLR in order to deal with the interactions with call forwarding services.



PROCESS BX1

(1)

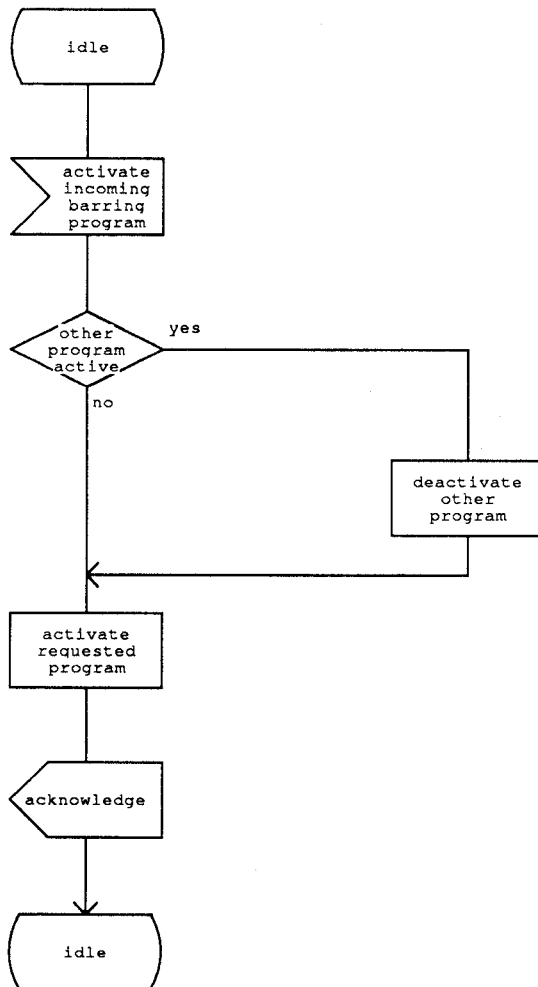


Figure 3.2/GSM 03.88  
BX1  
Interaction between call barring programs

PROCESS BX2

(1)

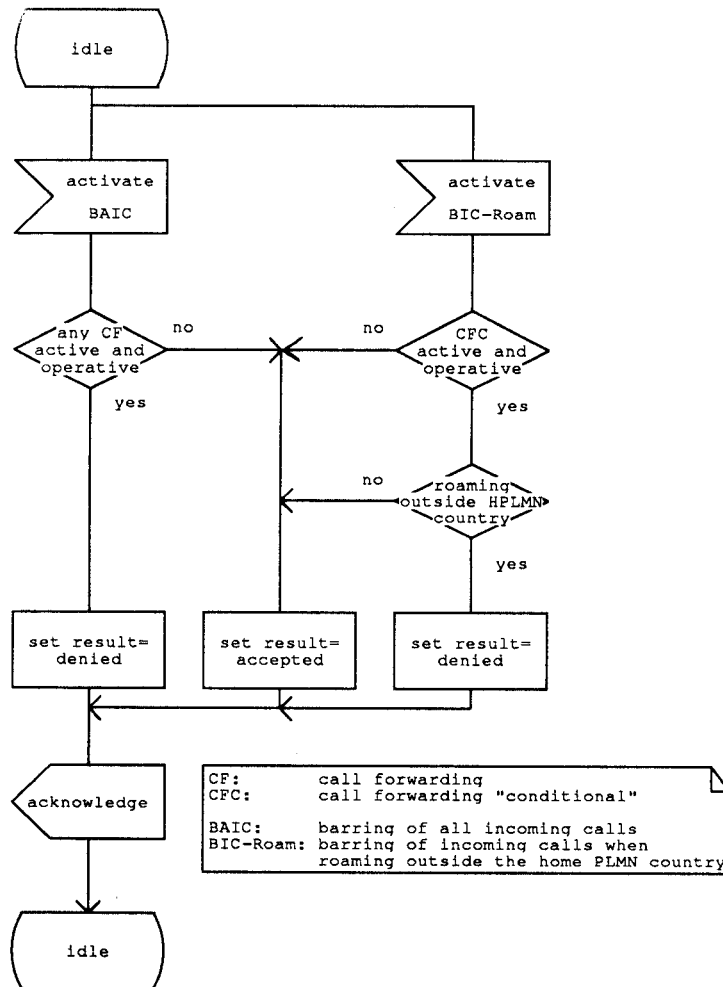
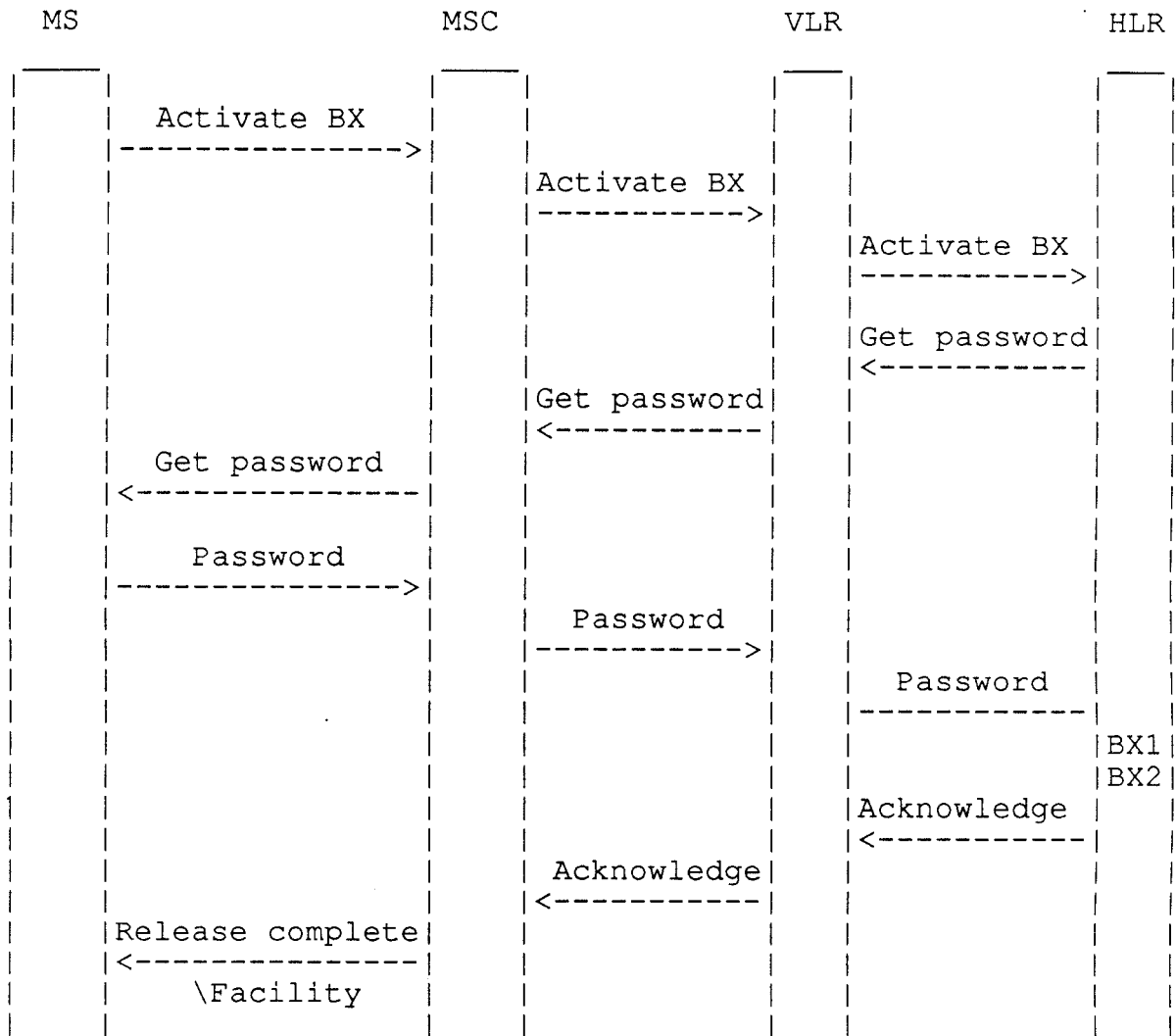


Figure 3.3/GSM 03.88  
 BX2  
 Interactions between call forwarding supplementary services and barring of incoming calls programs



Note: BX indicates any of the programs.

Figure 3.4/GSM 03.88  
Activation of barring of incoming calls

### 3.1.3 Deactivation

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", the supplementary service is deactivated if the subscriber provides the following information to the network:

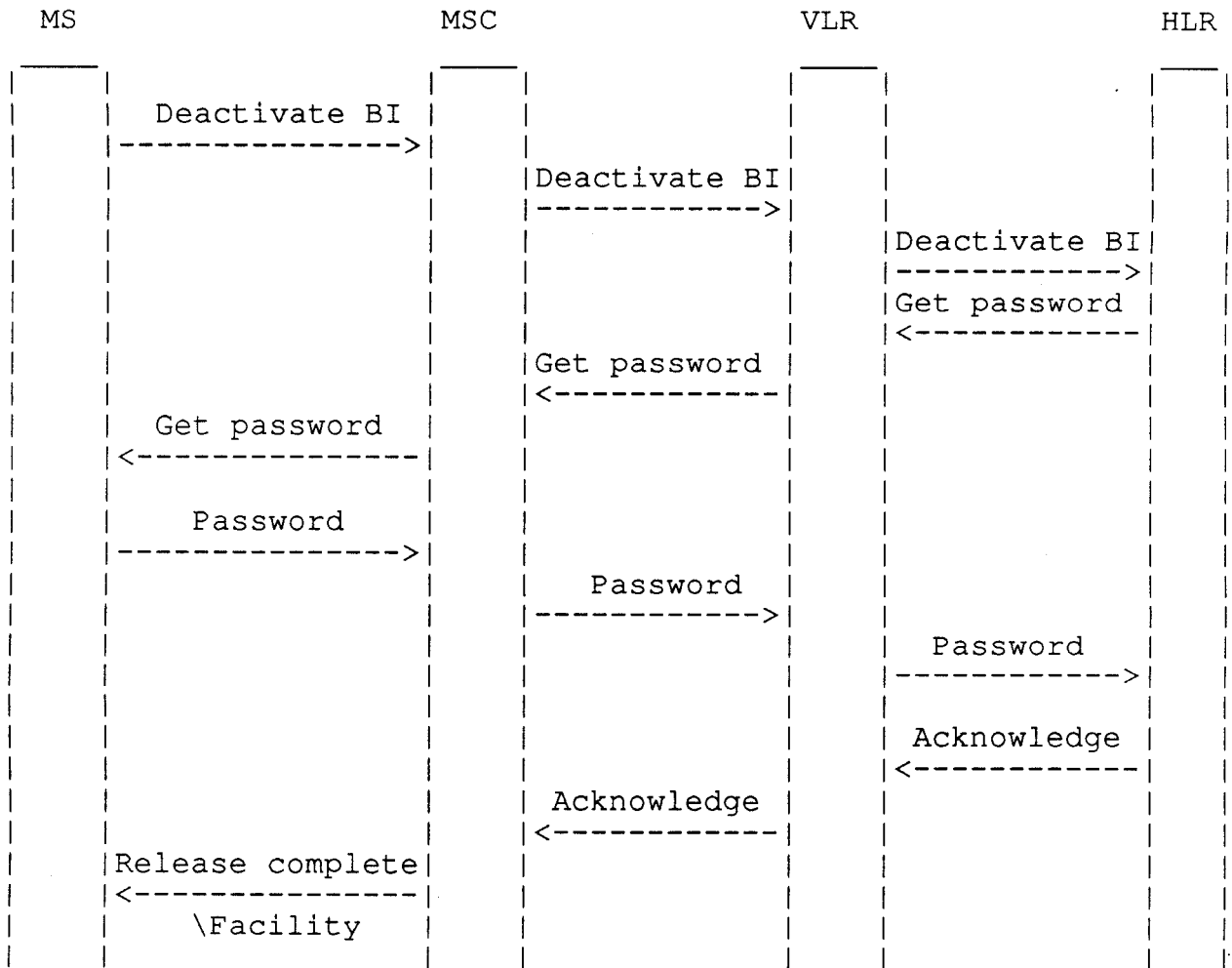
1. password;
2. information as to whether the deactivation applies to all basic services or a specific basic service.

Deactivation takes place with an appropriate control procedure by the subscriber.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by the service provider", the supplementary service cannot be deactivated by the subscriber. The deactivation has to be performed by the service provider. An attempt to deactivate the service will be denied and the served mobile subscriber should receive a notification.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", and if a wrong password is entered to deactivate the program the supplementary service will not be deactivated and the served mobile subscriber is notified.

The information flow for deactivation of barring of incoming calls is shown in figure 3.4.



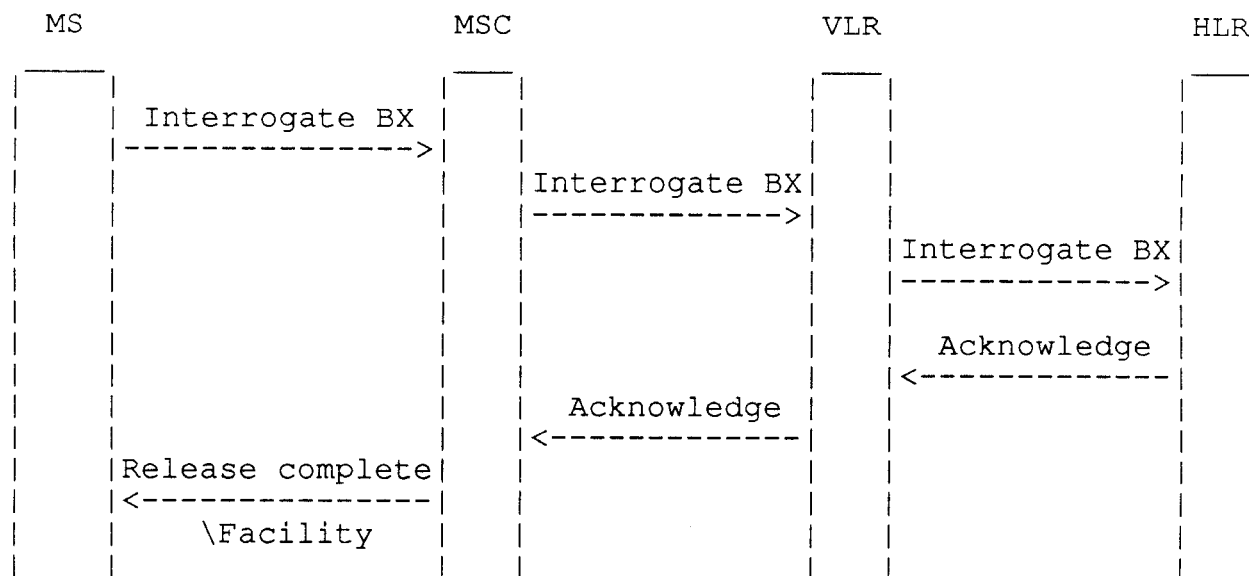
Note: BI indicates the general code for barring of incoming calls.

Figure 3.5/GSM 03.88  
Deactivation of barring of incoming calls

### 3.1.4 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 services to which the given program is active.

The information flow for interrogation of barring of incoming calls is shown in figure 3.6.



Note: BX indicates any of the programs.

Figure 3.6/GSM 03.88  
Interrogation of barring of incoming calls

### 3.2 Functions and information flows

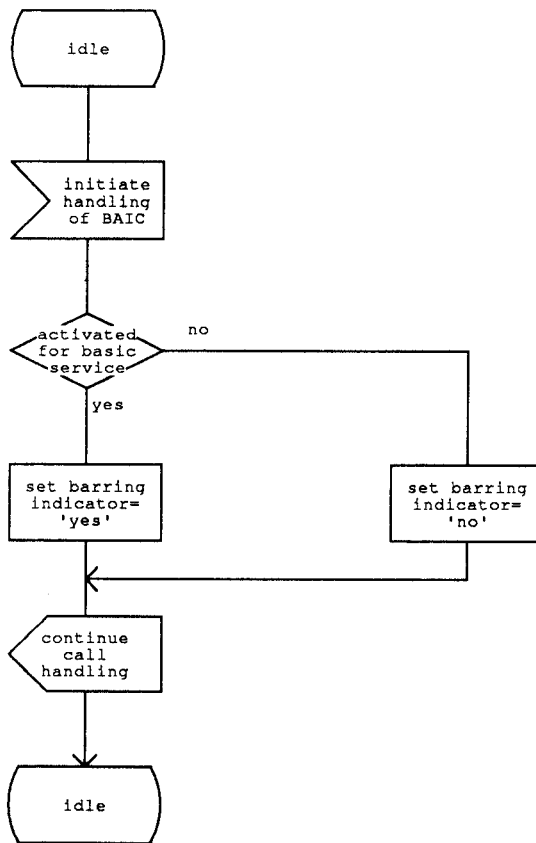
The following functions have been identified:

- MAF022 Barring of all incoming calls related authorisations examination  
The ability of a PLMN component to determine the authorisations relating to barring of incoming calls. See figure 3.7.  
Location: HLR
- MAF023 Barring of incoming calls when roaming outside the home PLMN country related authorisations examination  
The ability of a PLMN component to determine the authorisations relating to barring of incoming calls when roaming outside the home PLMN country. See figure 3.8.  
Location: HLR

The information flow for barring of incoming calls is shown in figure 3.9.

PROCESS maf022

(1)

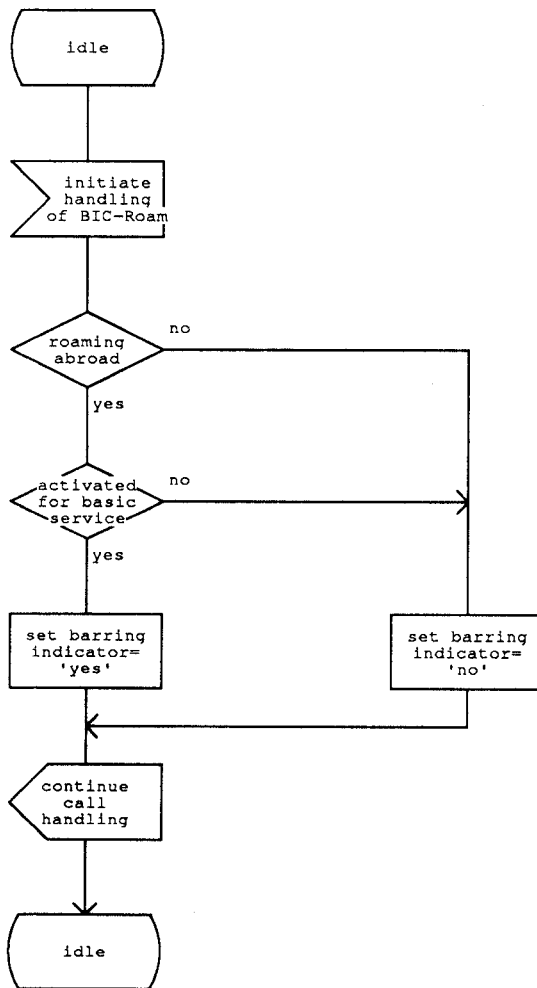


BAIC: barring of all incoming calls

Figure 3.7/GSM 03.88  
MAF022  
Barring of all incoming calls related authorizations examination  
(HLR)

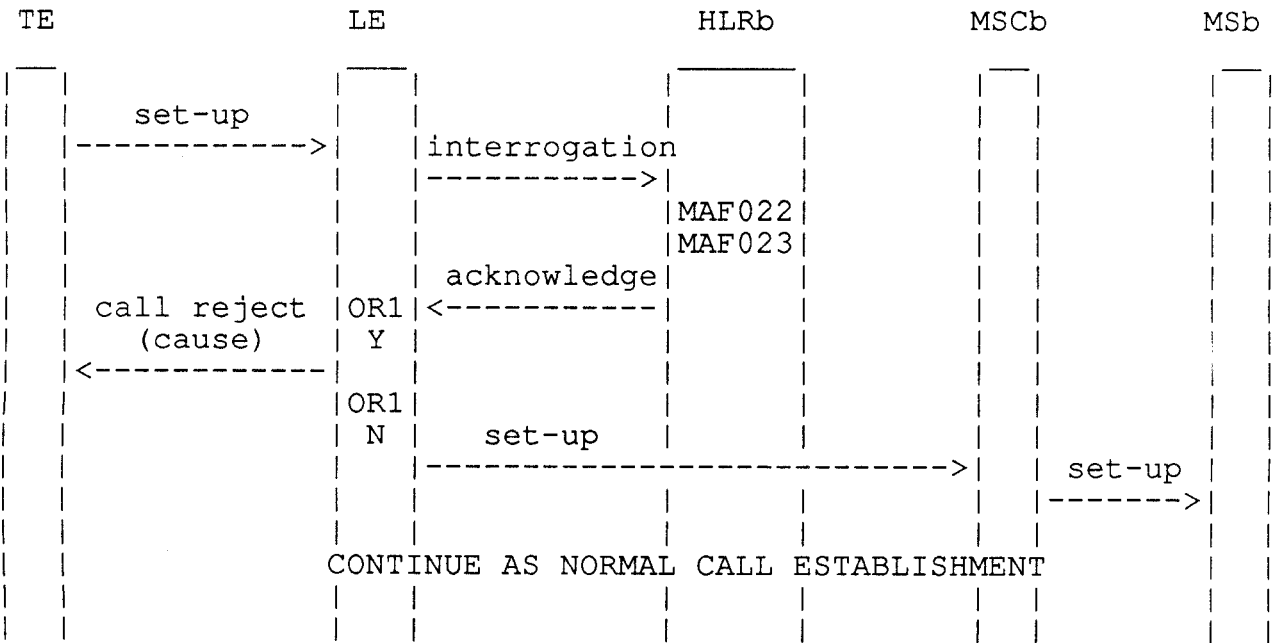
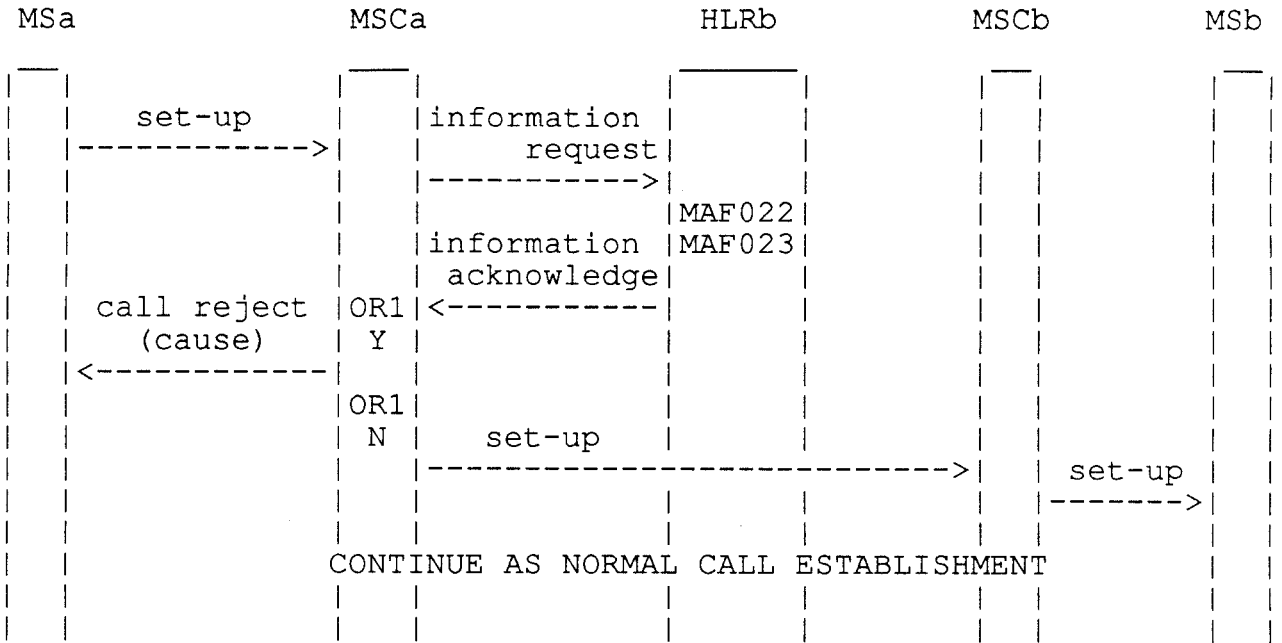
PROCESS maf023

(1)



BIC-Roam: barring of incoming calls when roaming outside the home PLMN country

Figure 3.8/GSM 03.88  
MAF023  
Barring of incoming calls when roaming outside the home PLMN country related authorizations examination (HLR)



OR1: call barred                    Y: yes  
    N: no

Figure 3.9/GSM 03.88  
 Information flow for barring of incoming calls



### 3.3 Information stored in HLR

For the supplementary services barring of incoming calls in the HLR must be stored:

- the subscription option "control of barring services"  
This subscription option takes one of the following values:
  - by subscriber using password;
  - by the service provider.

For each barring program in the HLR must be stored:

- the parameter "provision of supplementary service"  
This parameter takes one of the following values:
  - provisioned;
  - not provisioned.

For each basic service and for each barring program in the HLR must be stored:

- the activation parameter "activation status"  
This parameter takes one of the following values:
  - activated (only one barring program active per basic service at the same time);
  - deactivated.

If the subscription option "control of barring services" has been set to "by subscriber using password" then in the HLR must be stored:

- the registration parameter "registration status"  
This parameter takes one of the following values:
  - registered;
  - erased.

If the subscription option "control of barring services" has been set to "by subscriber using password" for barring of incoming calls in the HLR must be stored:

- the registration parameter "call barring password"  
The password is valid for all basic services to which barring of incoming calls applies.

### 3.4 Information stored in VLR

For each basic service and for each barring program in the HLR must be stored:

- the activation parameter "activation status"  
This parameter takes one of the following values:
  - activated (only one barring program active per basic service at the same time);
  - deactivated.

### 3.5 Handover

Handover will have no impact on the control procedures and the operation of the service.