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**Technical realization of
Call offering supplementary services**

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No changes since the previously distributed version.

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Specification

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Technical Realization of
Call Offering Supplementary Services**

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 offering
supplementary services**

Date: 14 June 1991

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6. CALL TRANSFER	<u>(not stable)</u>
7. MOBILE ACCESS HUNTING	<u>(not stable)</u>

Note: call transfer and mobile access hunting are not relevant for ETSI-GSM phase 1 standard, and are therefore for further study.

Number of pages: 79

SECTION 1

CALL OFFERING SUPPLEMENTARY SERVICES

The group of supplementary services CALL OFFERING SUPPLEMENTARY SERVICES is divided into 6 different supplementary services:

- Call forwarding unconditional (section 2);
- Call forwarding on mobile subscriber busy (section 3);
- Call forwarding on no reply (section 4);
- Call forwarding on mobile subscriber not reachable (section 5);
- Call transfer (section 6);
- Mobile access hunting (section 7).

Note: call transfer and mobile access hunting are not relevant for ETSI-GSM phase 1 standard, and are therefore for further study.

SECTION 2

CALL FORWARDING UNCONDITIONAL

2.1 Handling of call forwarding unconditional

2.1.1 Registration

At the beginning of registration subscription to the basic service, provision of the supplementary service and sufficiency of registration information has to be checked (see figure 2.0).

The following information has to be registered in the network:

1. the forwarded-to number;
2. information as to whether all calls or all calls of a specific basic service should be forwarded.

Registration can take place either as a result of provision by the service provider or with an appropriate control procedure by the subscriber.

If the forwarded-to number is a number in the HPLMN country, it may be entered by the served mobile subscriber in three different formats, independent of his actual location, according to the schemes:

1. national (significant) number;
2. (trunk) prefix plus national (significant) number;
3. international prefix, country code, national (significant) number.

In case the number received by the HLR does not contain the country code, the received number has to be converted to an international number before storing it in the HLR (see figure 2.1).

When the mobile subscriber so registers call forwarding unconditional, the service provider will return notification of acceptance or rejection of the request. This notification will include the forwarded-to number to which call forwarding unconditional is registered.

Call forwarding unconditional for all basic services and call forwarding unconditional of a particular basic service cannot be simultaneously registered.

If the system cannot accept a registration request, the served mobile subscriber should receive a notification that call forwarding unconditional registration was not successful. Possible causes related to the verification of the forwarded-to number are:

- forwarded-to number is invalid directory number;
- use of an operator access prefix;
- forwarded-to number is a special service code (e.g. police);
- forwarded-to number is the directory number of the mobile subscriber himself.

The network is not required to validate information related to the forwarded-to number. Verification of the forwarded-to number should be accomplished, if possible, before accepting the call forwarding request (see figure 2.2).

The information flow for registration of call forwarding unconditional is shown in figure 2.3.

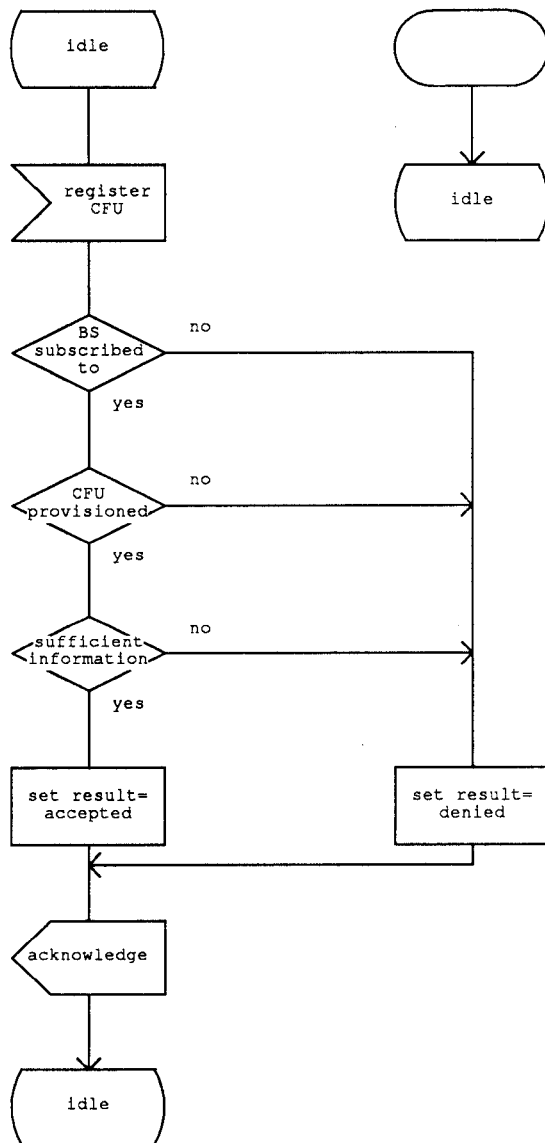


Figure 2.0/GSM 03.82
CFU0
Subscription, provision and information check

PROCESS CFU1

(1)

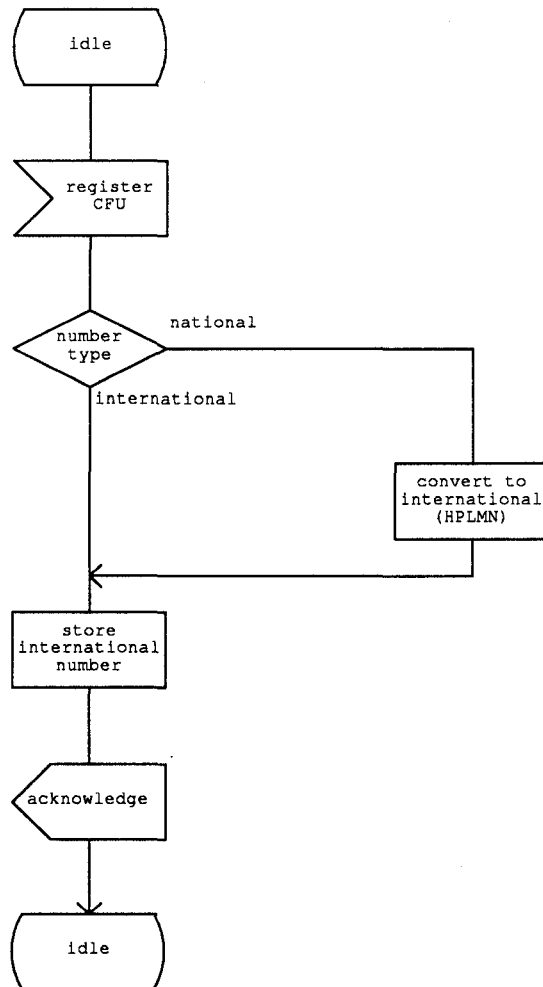


Figure 2.1/GSM 03.82
CFU1
Conversion of a national number into an international number

PROCESS CFU2

(1)

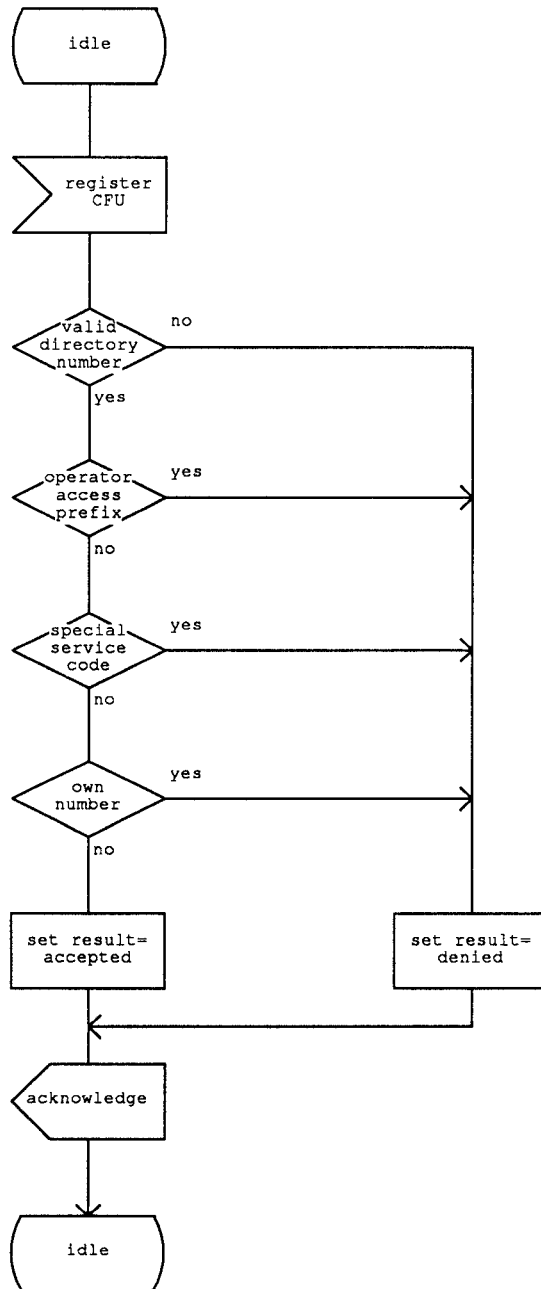


Figure 2.2/GSM 03.82
CFU2
Verification of the forwarded-to number

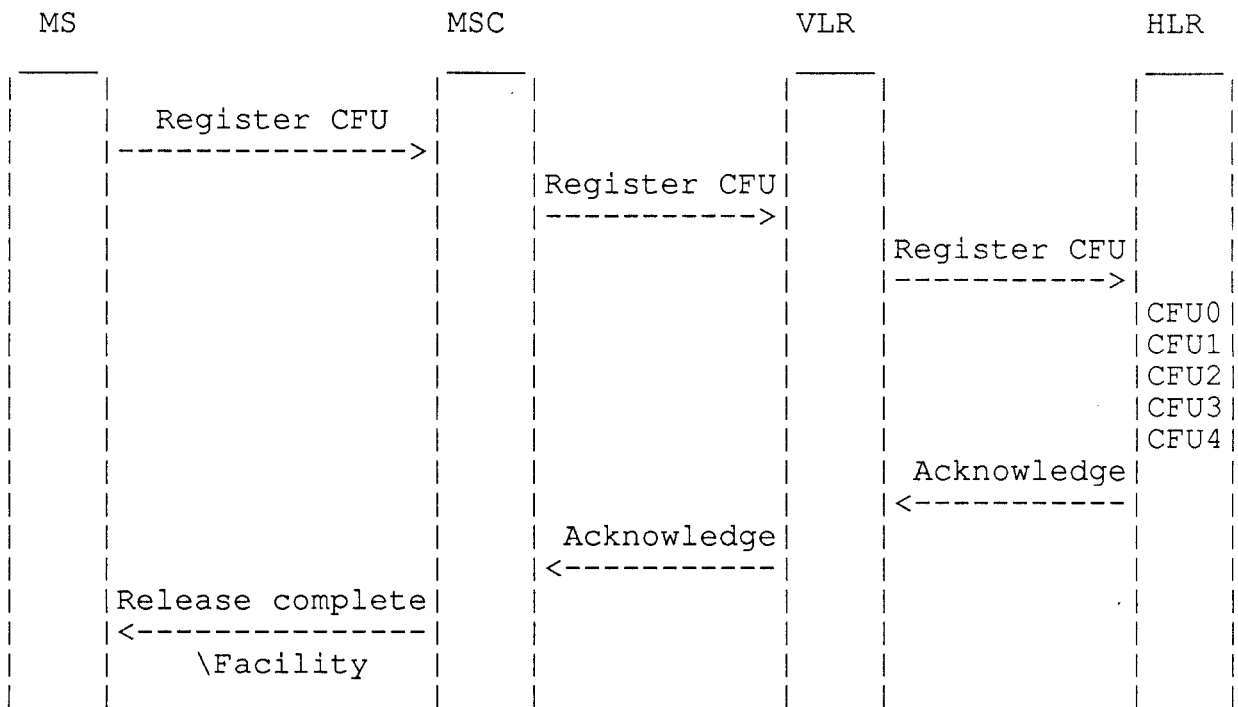


Figure 2.3/GSM 03.82
Registration of call forwarding unconditional

2.1.2 Erasure

A previous registration can be erased in either of the following three ways:

- the subscriber can specifically erase a previous registration (to a basic service group) with an appropriate control procedure,
- the subscriber can register information for call forwarding unconditional (to a basic service group) , thus causing previous registrations of call forwarding unconditional to be overridden,
- all information is erased as a result of withdrawal of the supplementary service (administrative handling).

Only information related to basic services specified within the new registration or erasure is effected.

If the network cannot accept a mobile subscriber's request for erasure an error indication will be returned to the subscriber.

The call forwarding unconditional erasure request may specify the basic service. If the subscriber does not indicate a specific basic service, the erasure applies to all basic services, see figure 2.4.

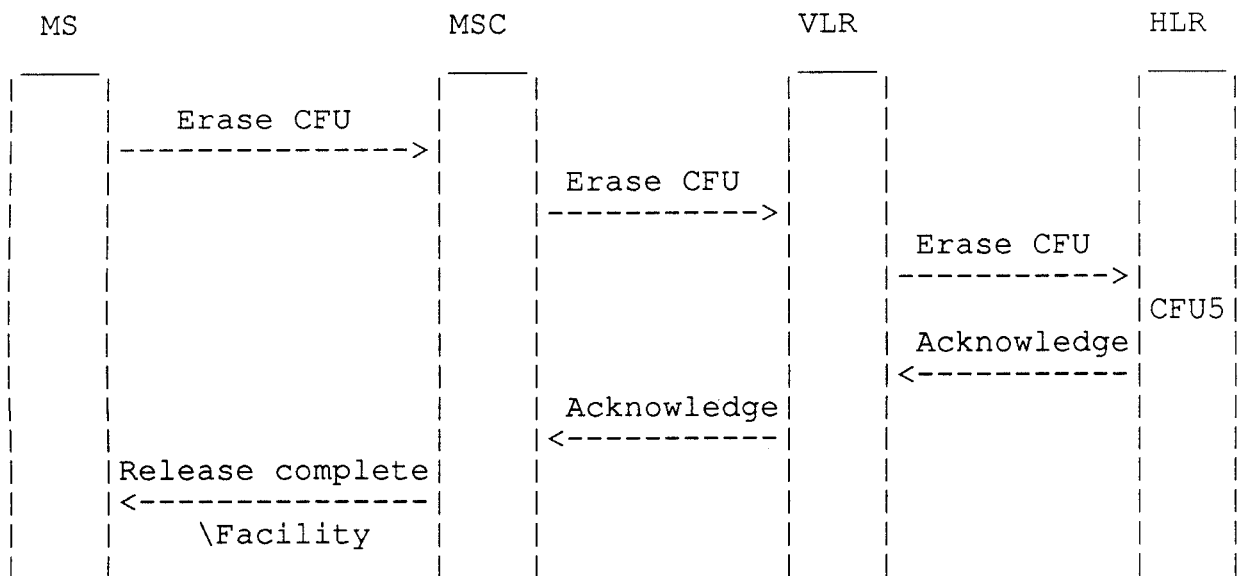


Figure 2.4/GSM 03.82
Erasure of call forwarding unconditional

2.1.3 Interrogation

Data request

The data request procedure enables the mobile subscriber to obtain information about the data stored in the PLMN. After having requested this procedure the network shall return the following information:

- in response to a general data request the served mobile subscriber should be given a list of all basic services to which call forwarding unconditional is active including the forwarded-to numbers;
- in response to a specific request concerning one particular basic service, the served mobile subscriber should be informed whether or not call forwarding unconditional is active for that basic service, and so if, to what forwarded-to number, see figure 2.5.

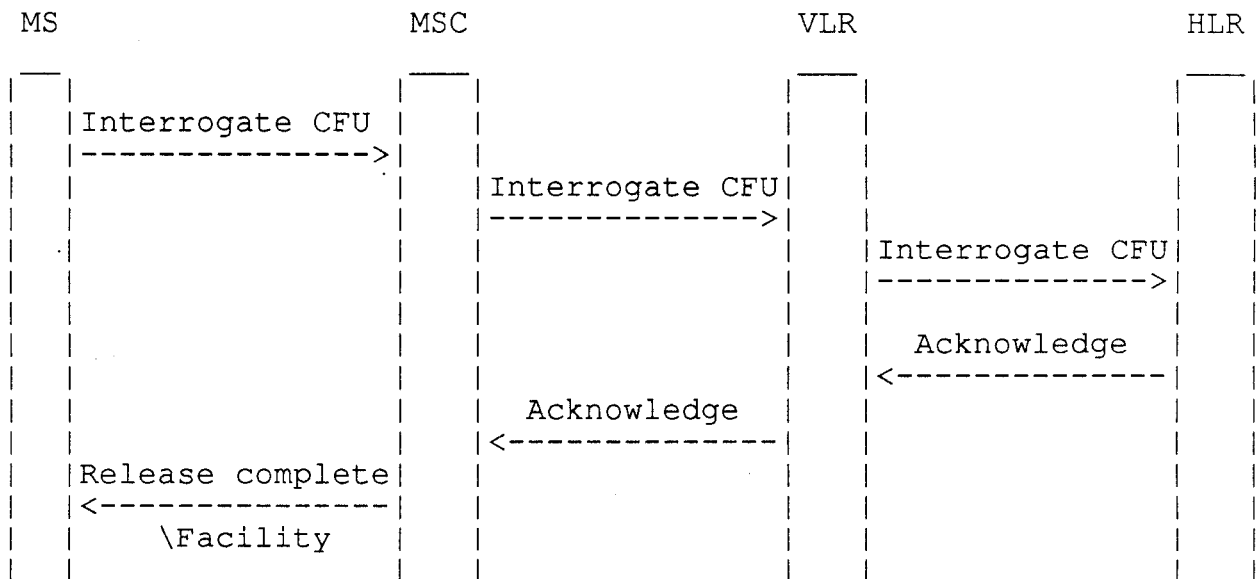


Figure 2.5/GSM 03.82
Interrogation of call forwarding unconditional

2.1.4. Interactions

2.1.4.1 Interactions with call restriction supplementary services

See recommendation GSM 02.82

The SDL diagram in figure 2.6 shows the function to be performed in the HLR in order to deal with the interactions between call forwarding unconditional and the call restriction supplementary services.

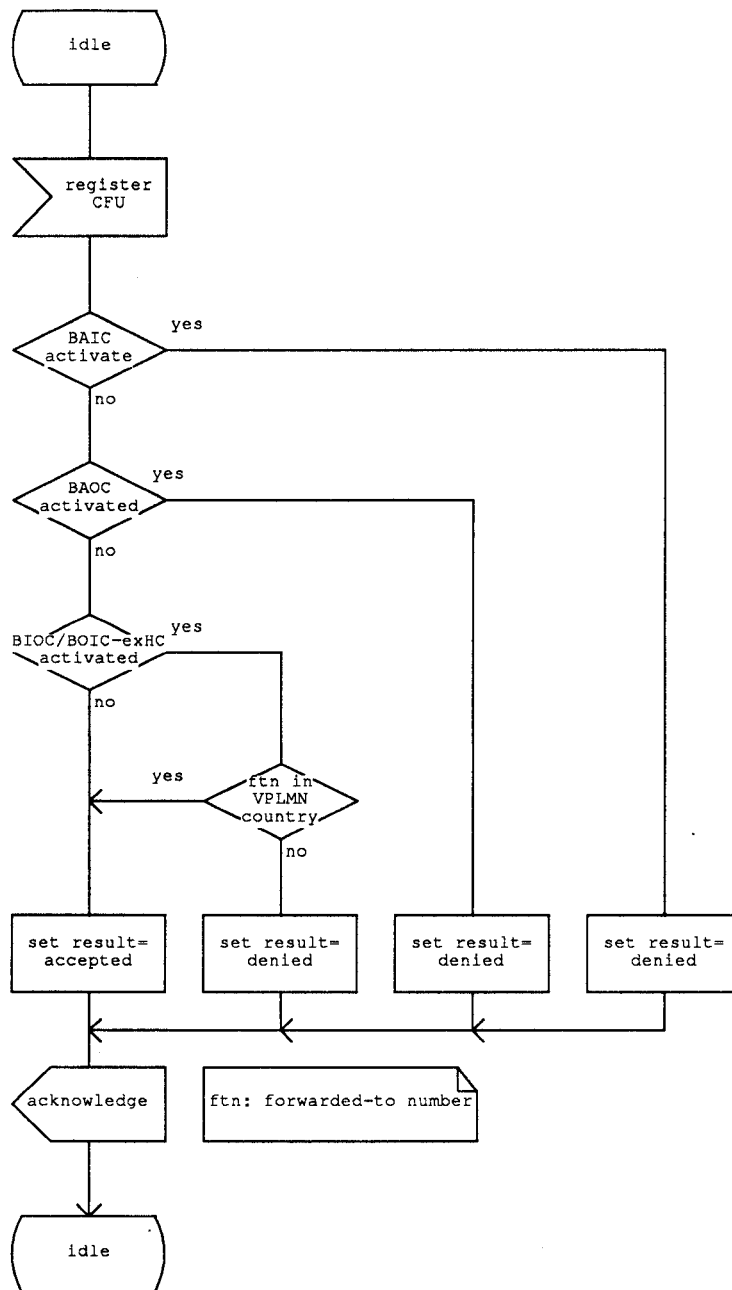


Figure 2.6/GSM 03.82
 CPU3
 Interactions between call forwarding unconditional and the call restriction supplementary services

2.1.4.2 Interactions with other call forwarding supplementary services

See recommendation GSM 02.82

The SDL diagram in figures 2.7 and 2.8 shows the function to be performed in the HLR in order to deal with the interactions between call forwarding unconditional and the conditional call forwarding supplementary services.

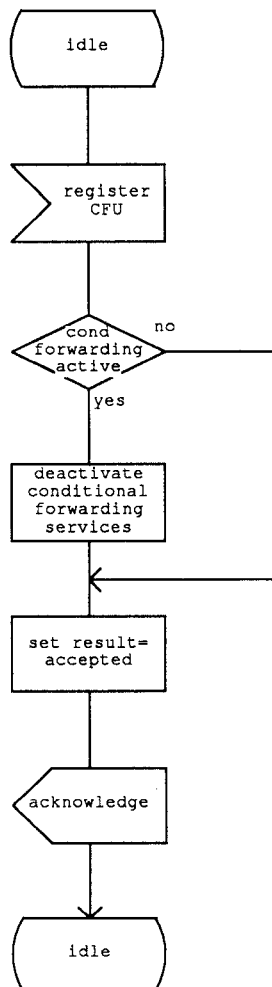


Figure 2.7/GSM 03.82
CFU4
Interactions between call forwarding unconditional
and the conditional call forwarding services

PROCESS CFU5

(1)

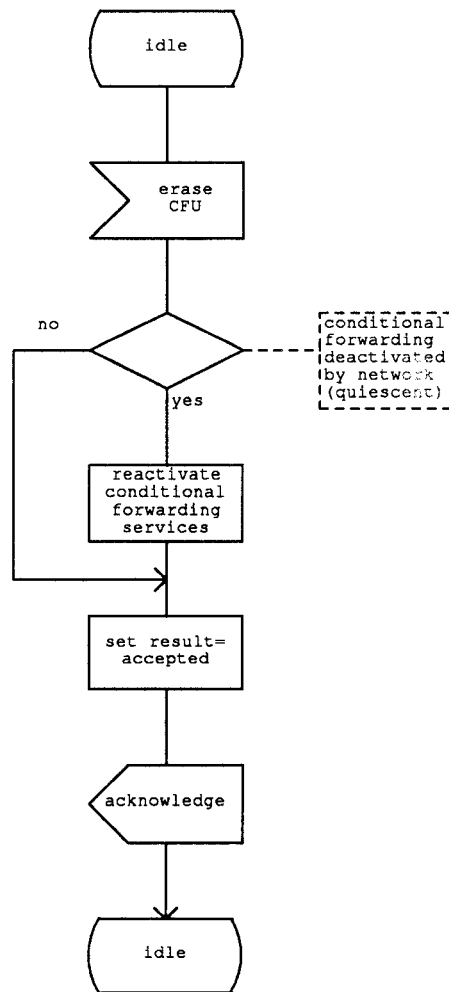


Figure 2.8/GSM 03.82
CFU5
Interactions between call forwarding unconditional
and the conditional call forwarding services

2.2 Functions and information flows

The following function has been identified for the PLMN:

MAF007 Call forwarding unconditional authorisations examination
The ability of a PLMN component to determine the authorisations relating to call forwarding unconditional. See figure 2.9.
Location: HLR

The information flows for call forwarding unconditional if the calling party is a fixed subscriber are shown in figure 2.10; if the calling party is a mobile subscriber they are shown in figure 2.11. In all information flows the forwarding party is a mobile station.

PROCESS cfu-MAF007

(1)

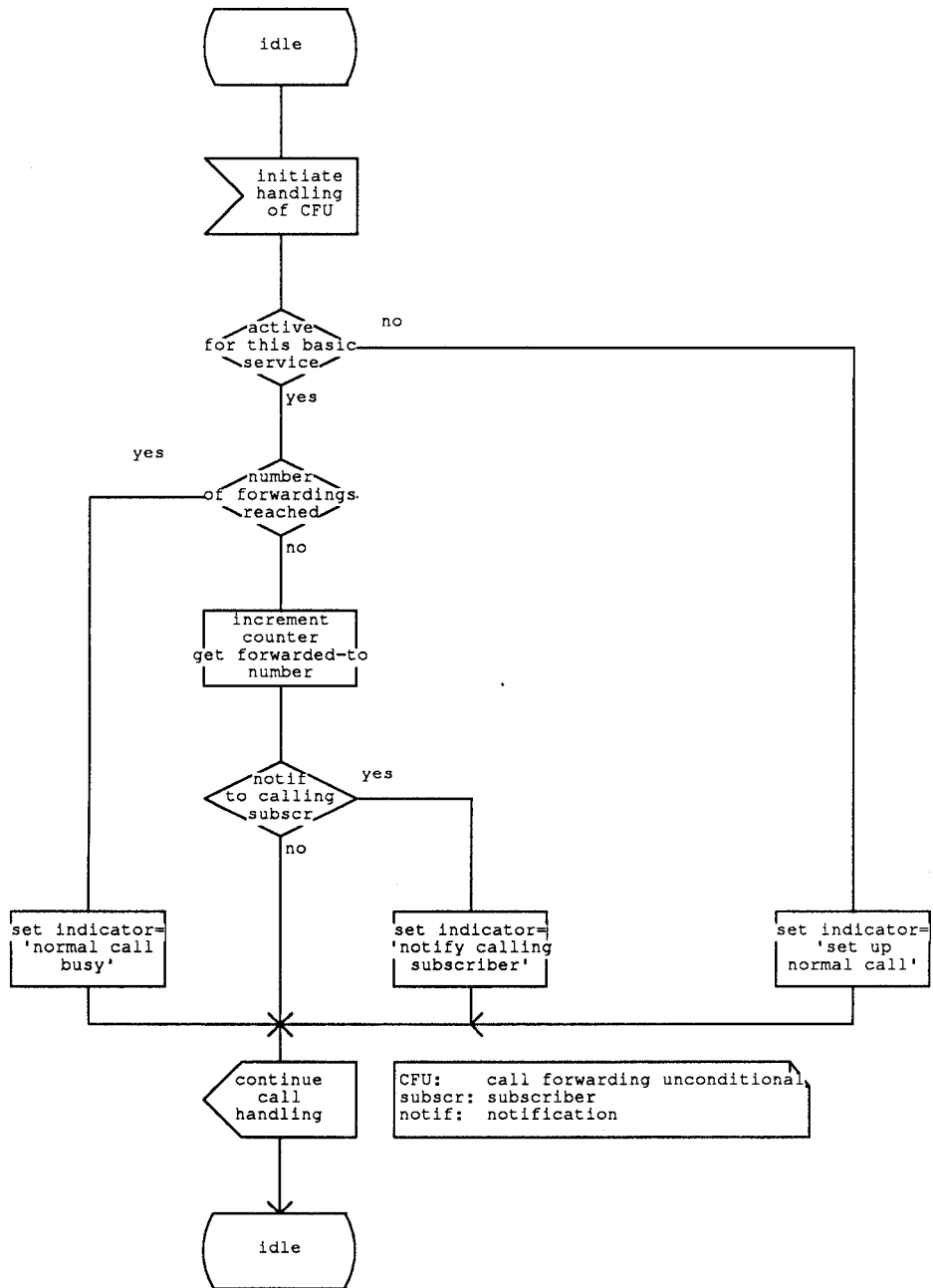


Figure 2.9/GSM 03.82
 MAF007
 Call forwarding unconditional authorisations examination (HLR)

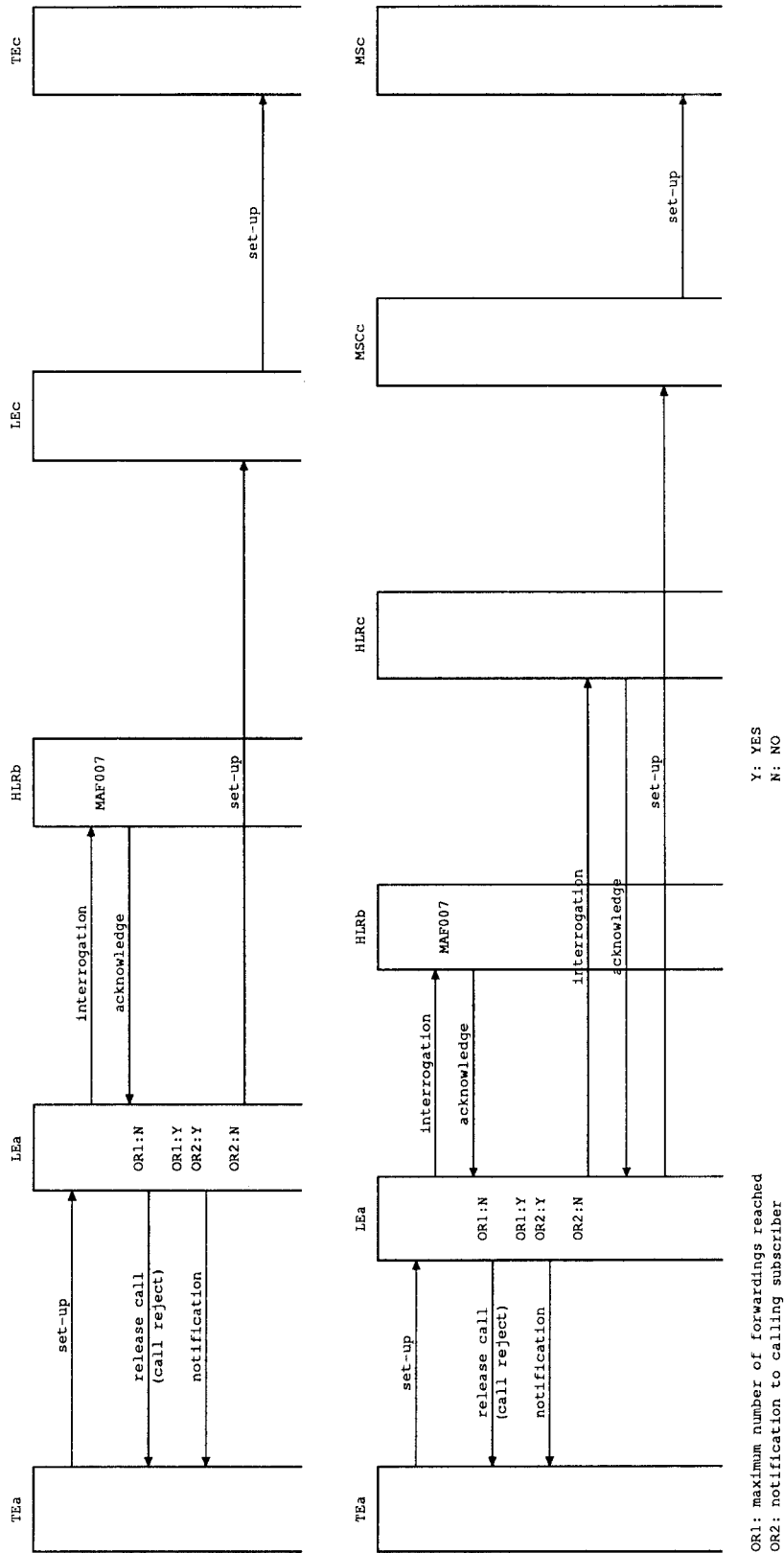


Figure 2.10/GSM 03.82
Information flow for call forwarding unconditional
(calling party is fixed subscriber)

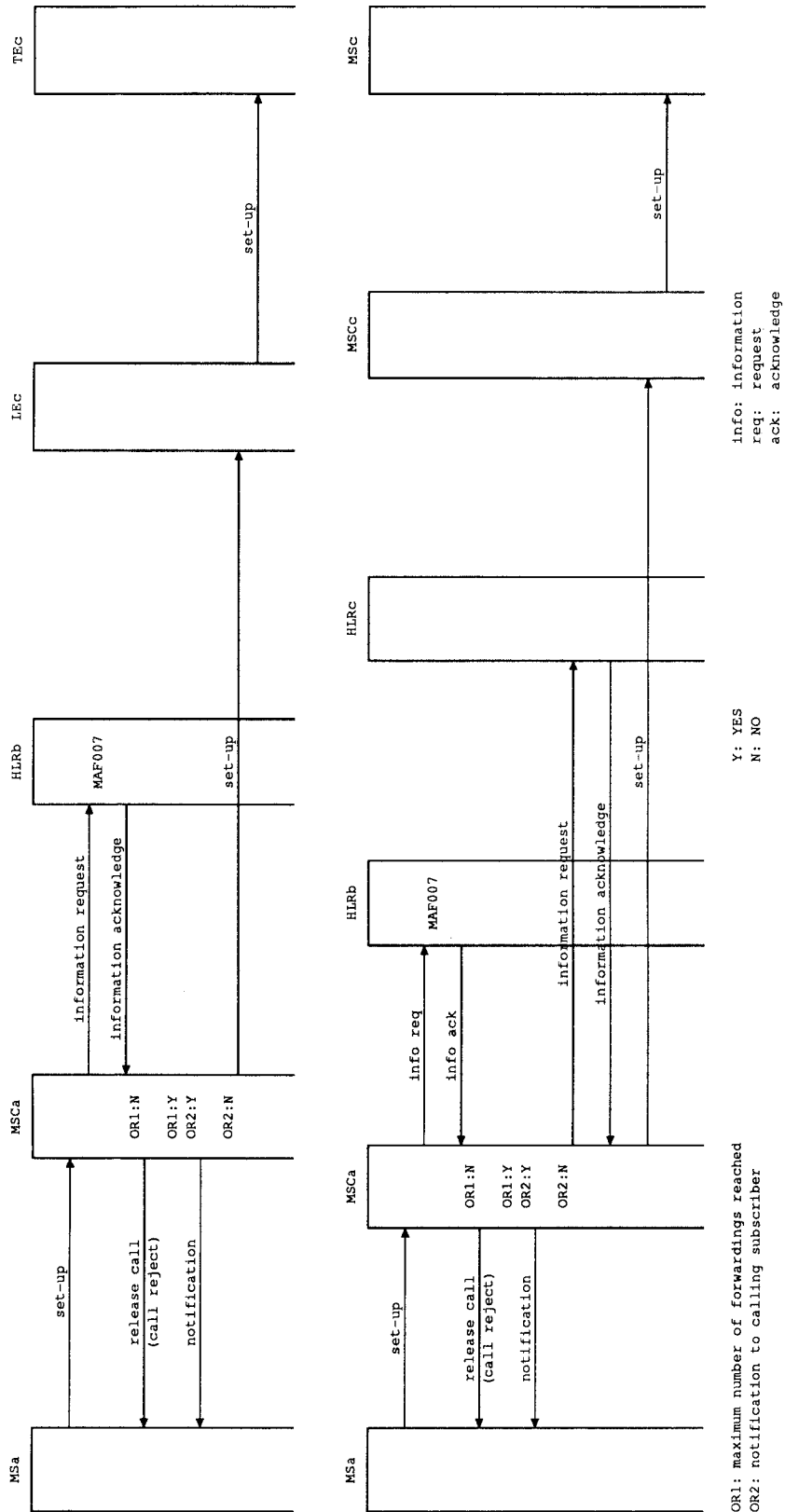


Figure 2.11/GSM 03.82
 Information flow for call forwarding unconditional
 (calling party is mobile subscriber)

2.3 Information stored in HLR

For the supplementary service call forwarding unconditional 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 to which call forwarding unconditional is applicable in the HLR must be stored:

- the subscription option "notification to the calling party"
This subscription option takes one of the following values:
 - no notification;
 - notification.
- the registration parameter "forwarded-to number"
- the registration parameter "registration status"
This parameter takes one of the following values:
 - registered;
 - erased.
- the activation parameter "activation status"
This parameter takes one of the following values:
 - activated;
 - deactivated.

2.4 Information stored in VLR

For each basic service to which call forwarding unconditional is applicable in the VLR will be stored:

- the subscription option "notification to the calling party"
This subscription option takes one of the following values:
 - no notification;
 - notification.
- the registration parameter "forwarded-to number"
- the registration parameter "registration status"
This parameter takes one of the following values:
 - registered;
 - erased.
- the activation parameter "activation status"
This parameter takes one of the following values:
 - activated;
 - deactivated.

2.5 Handover

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

SECTION 3

CALL FORWARDING ON MOBILE SUBSCRIBER BUSY

3.1 Handling of call forwarding on mobile subscriber busy

3.1.1 Registration

At the beginning of registration subscription to the basic service, provision of the supplementary service and sufficiency of registration information has to be checked (see figure 3.0).

The following information has to be registered in the network:

1. the forwarded-to number;
2. information as to whether all calls or all calls of a specific basic service should be forwarded.

Registration can take place either as a result of provision by the service provider or with an appropriate control procedure by the subscriber.

If the forwarded-to number is a number in the HPLMN country, it may be entered by the served mobile subscriber in three different formats, independent of his actual location, according to the schemes:

1. national (significant) number;
2. (trunk) prefix plus national (significant) number;
3. international prefix, country code, national (significant) number.

In case the number received by the HLR does not contain the country code, the received number has to be converted to an international number before storing it in the HLR (see figure 3.1).

When the mobile subscriber so registers call forwarding on mobile subscriber busy, the service provider will return notification of acceptance or rejection of the request. This notification will include the forwarded-to number to which call forwarding on mobile subscriber busy is registered.

Call forwarding on mobile subscriber busy for all basic services and call forwarding on mobile subscriber busy of a particular basic service cannot be simultaneously registered.

If the system cannot accept a registration request, the served mobile subscriber should receive a notification that call forwarding on mobile subscriber busy registration was not successful. Possible causes related to the verification of the forwarded-to number are:

- forwarded-to number is invalid directory number;
- use of an operator access prefix;
- forwarded-to number is a special service code (e.g. police);
- forwarded-to number is the directory number of the mobile subscriber himself.

The network is not required to validate information related to the forwarded-to number. Verification of the forwarded-to number should be accomplished, if possible, before accepting the call forwarding request (see figure 3.2).

The information flow for registration of call forwarding on mobile subscriber busy is shown in figure 3.3.

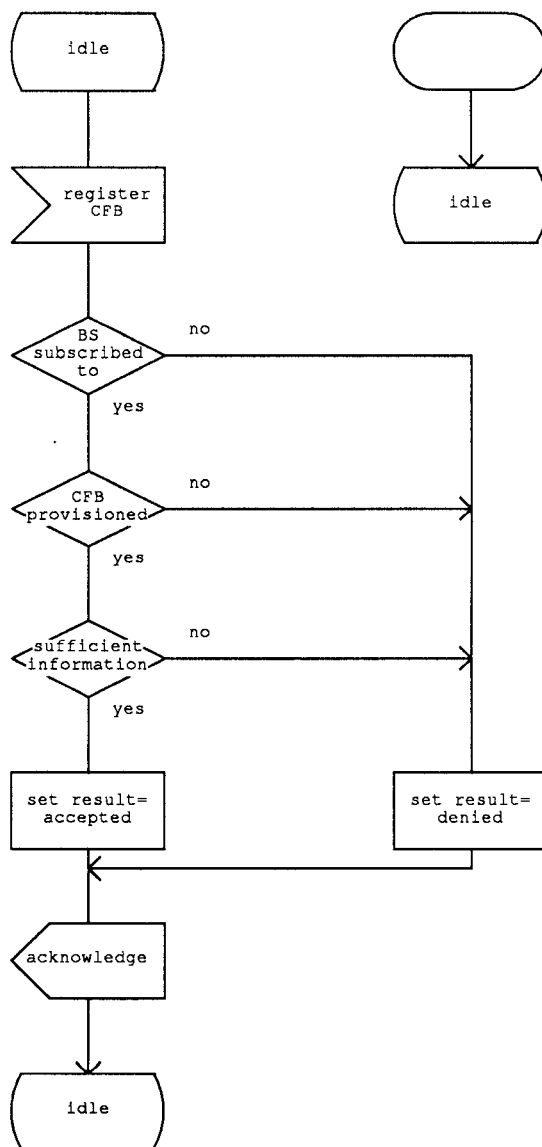


Figure 3.0/GSM 03.82
CFBO
Subscription, provision and information check

PROCESS CFB1

(1)

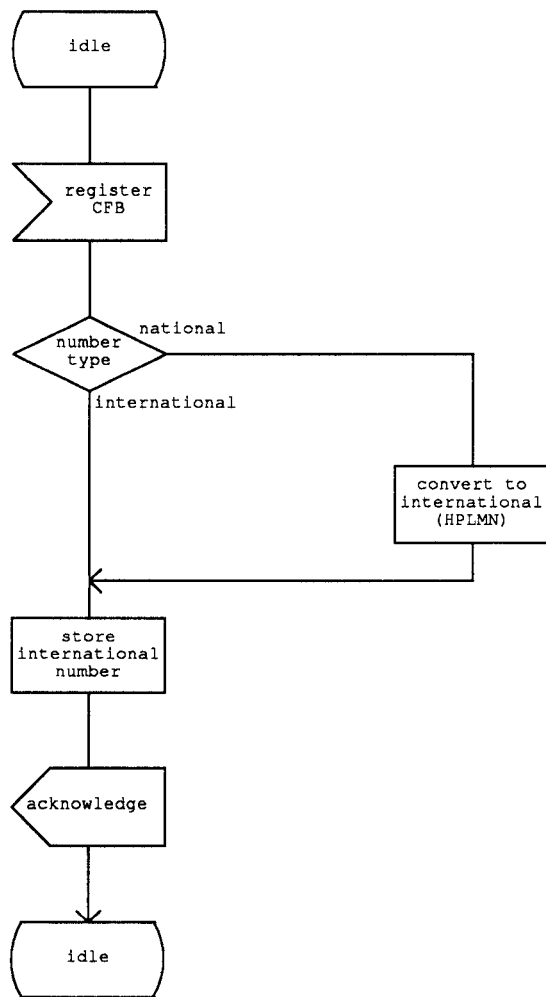


Figure 3.1/GSM 03.82
CFB1
Conversion of a national number into an international number

PROCESS CFB2

(1)

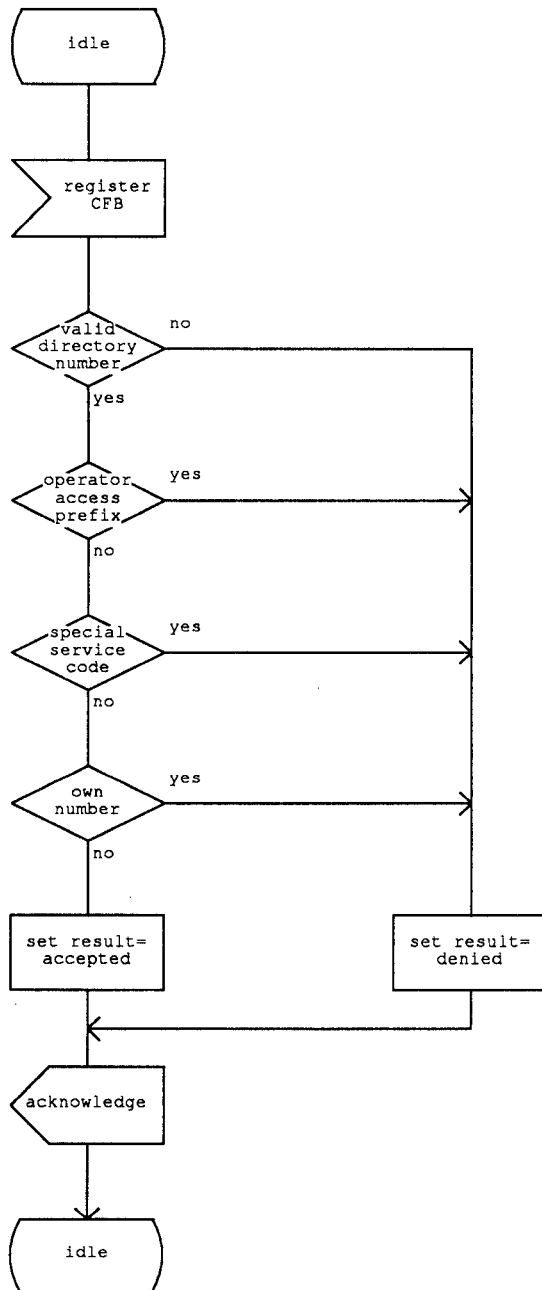


Figure 3.2/GSM 03.82
CFB2
Verification of the forwarded-to number

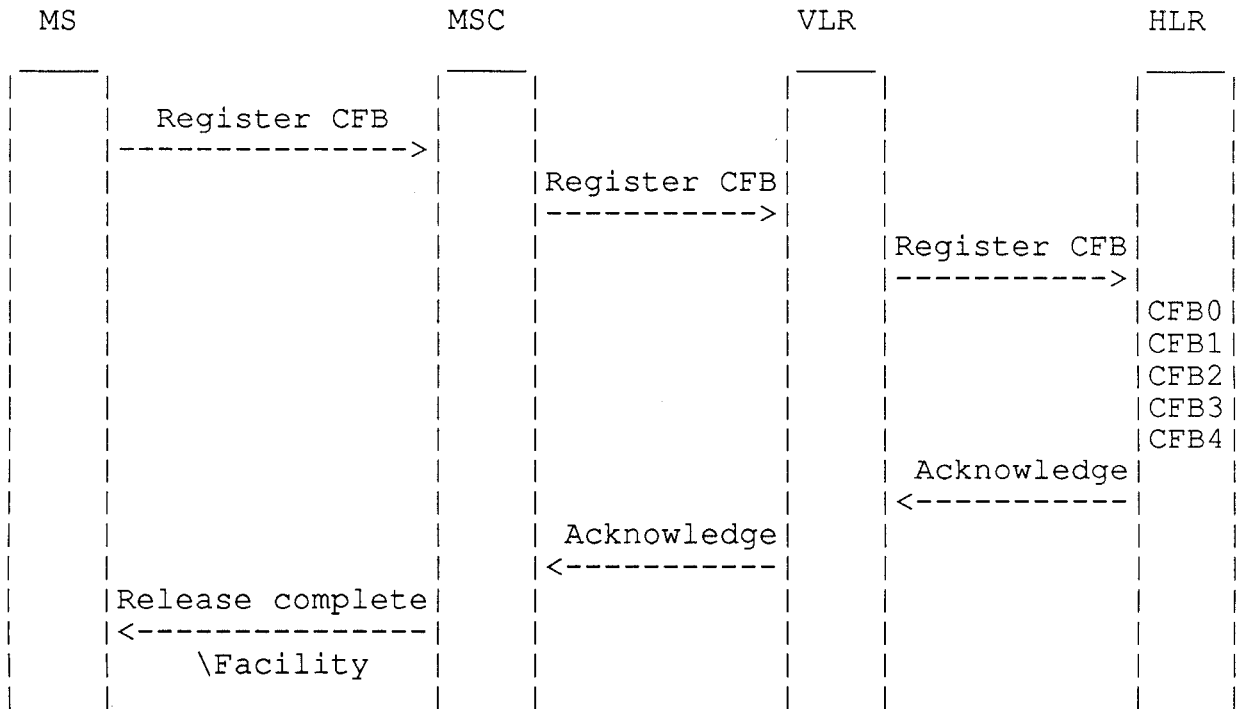


Figure 3.3/GSM 03.82
Registration of call forwarding on mobile subscriber busy

3.1.2 Erasure

A previous registration can be erased in either of the following three ways:

- the subscriber can specifically erase a previous registration (to a basic service group) with an appropriate control procedure,
- the subscriber can register information for call forwarding on mobile subscriber busy (to a basic service group), thus causing previous registrations of call forwarding on mobile subscriber busy to be overridden,
- all information is erased as a result of withdrawal of the supplementary service (administrative handling).

Only information related to basic services specified within the new registration or erasure is effected.

If the network cannot accept a mobile subscriber's request for erasure an error indication will be returned to the subscriber.

The call forwarding on mobile subscriber busy erasure request may specify the basic service. If the subscriber does not indicate a specific basic service, the erasure applies to all basic services, see figure 3.4.

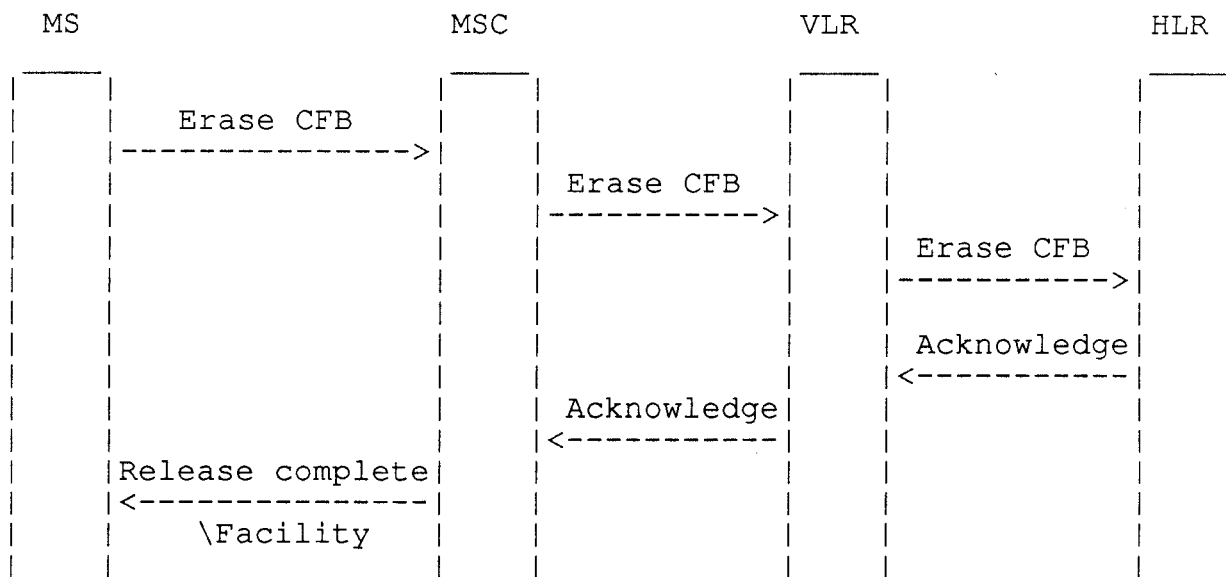


Figure 3.4/GSM 03.82
Erasure of call forwarding on mobile subscriber busy

3.1.3 Interrogation

Data request

The data request procedure enables the mobile subscriber to obtain information about the data stored in the PLMN. After having requested this procedure the network shall return the following information:

- in response to a general data request the served mobile subscriber should be given a list of all basic services to which call forwarding on mobile subscriber busy is active including the forwarded-to numbers;
- in response to a specific request concerning one particular basic service, the served mobile subscriber should be informed whether or not call forwarding on mobile subscriber busy is active for that basic service, and so if, to what forwarded-to number, see figure 3.5.

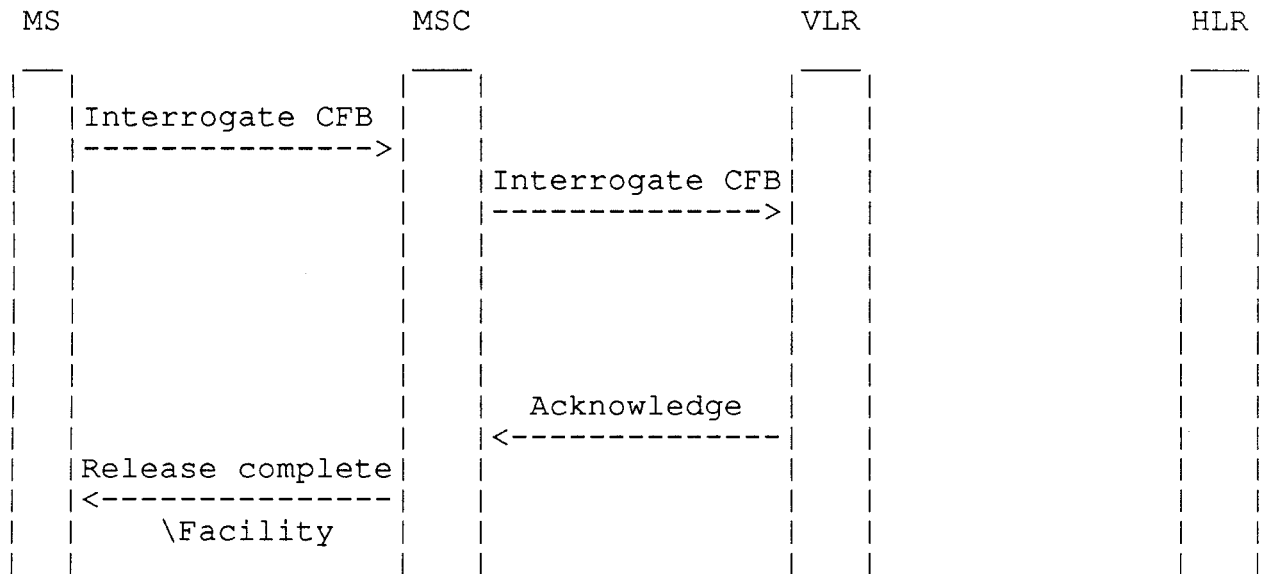


Figure 3.5/GSM 03.82
Interrogation of call forwarding on mobile subscriber busy

3.1.4. Interactions

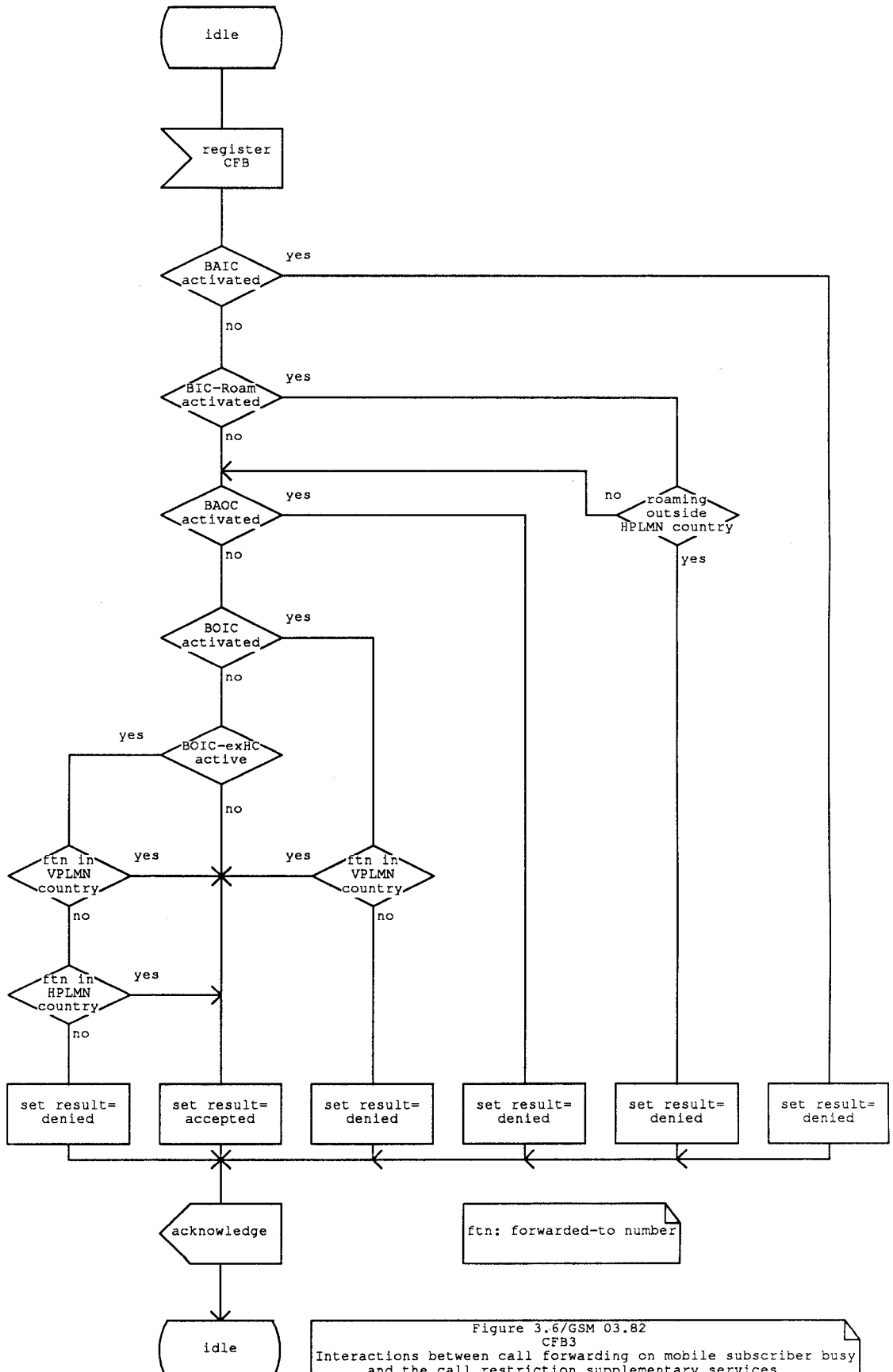
3.1.4.1 Interactions with call restriction supplementary services

See recommendation GSM 02.82

The SDL diagram in figure 3.6 shows the function to be performed in the HLR in order to deal with the interactions between call forwarding on mobile subscriber busy and the call restriction supplementary services.

PROCESS CFB3

(1)



3.1.4.2 Interactions with other call forwarding supplementary services

See recommendation GSM 02.82

The SDL diagram in figure 3.7 shows the function to be performed in the HLR in order to deal with the interactions between call forwarding on mobile subscriber busy and the other call forwarding supplementary services.

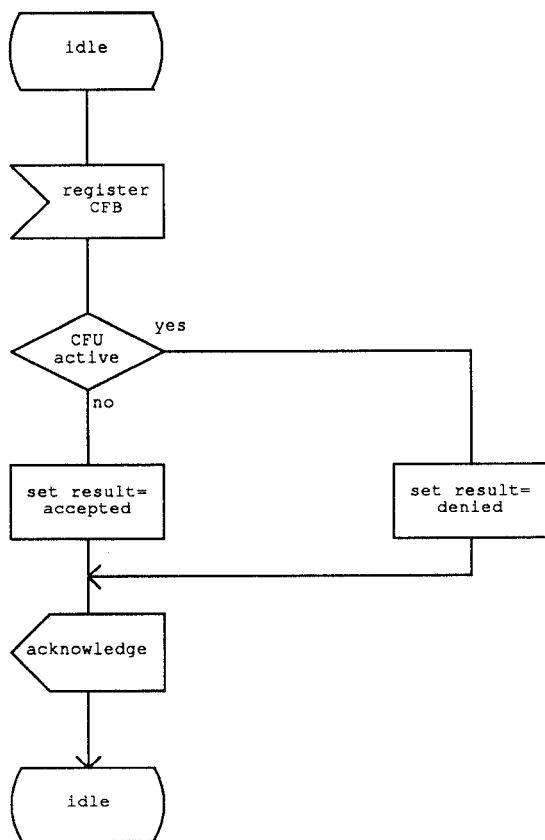


Figure 3.7/GSM 03.82
CFB4
Interactions between call forwarding on mobile subscriber busy and the other call forwarding services

3.2 Functions and information flows

The following function has been identified for the PLMN:

MAF008 Call forwarding on mobile subscriber busy authorisations examination

The ability of a PLMN component to determine the authorisations relating to call forwarding on mobile subscriber busy. See figure 3.8.

Location: VLR

The information flows for fixed terminal to fixed terminal, mobile station to fixed terminal, fixed terminal to mobile station and mobile station to mobile station are shown in figures 3.9, 3.10, 3.11 and 3.12 respectively. In all information flows the forwarding party is a mobile station.

PROCESS cfb-MAF008

(1)

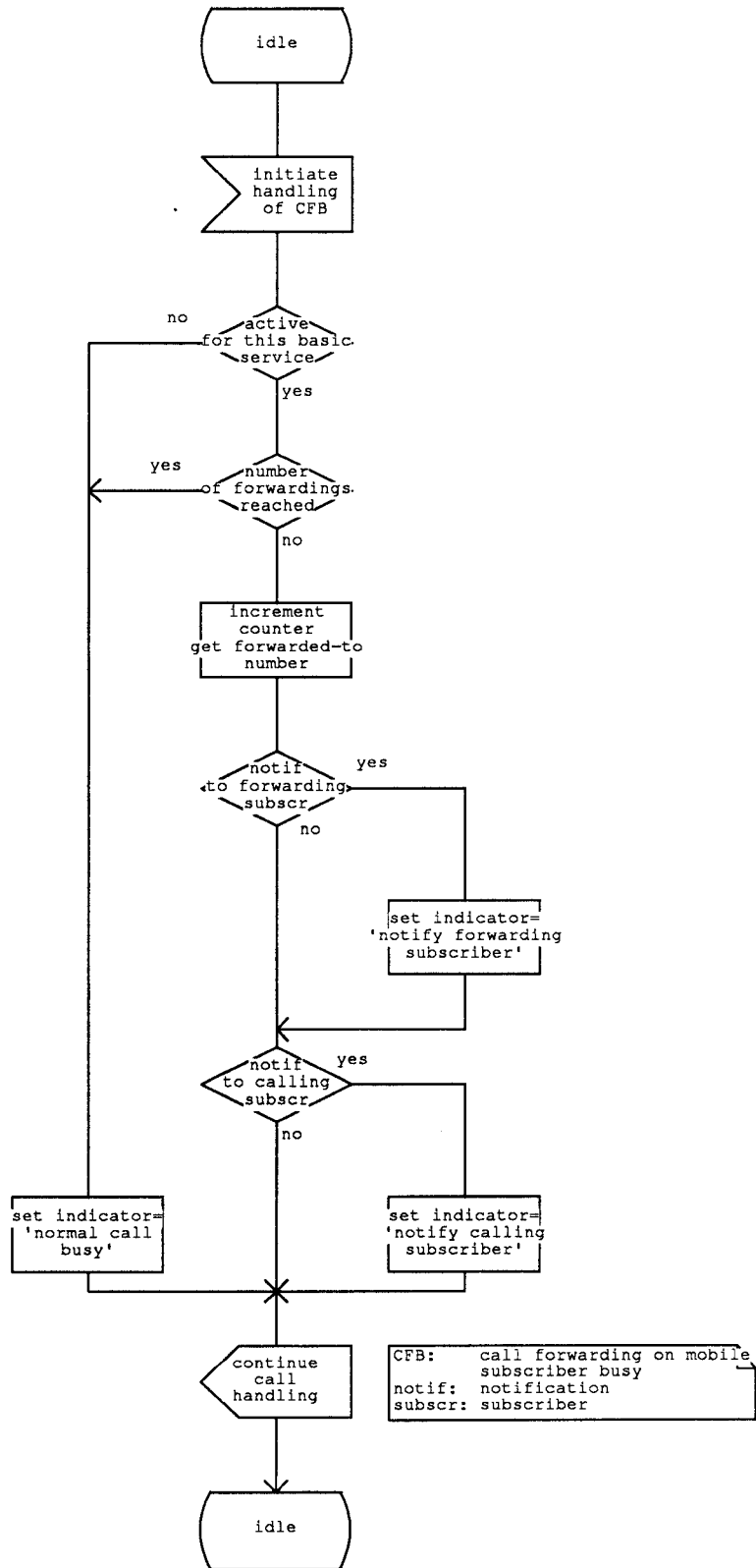


Figure 3.8/GSM 03.82
 MAF008
 Call forwarding on mobile subscriber busy authorisations examination (VLR)

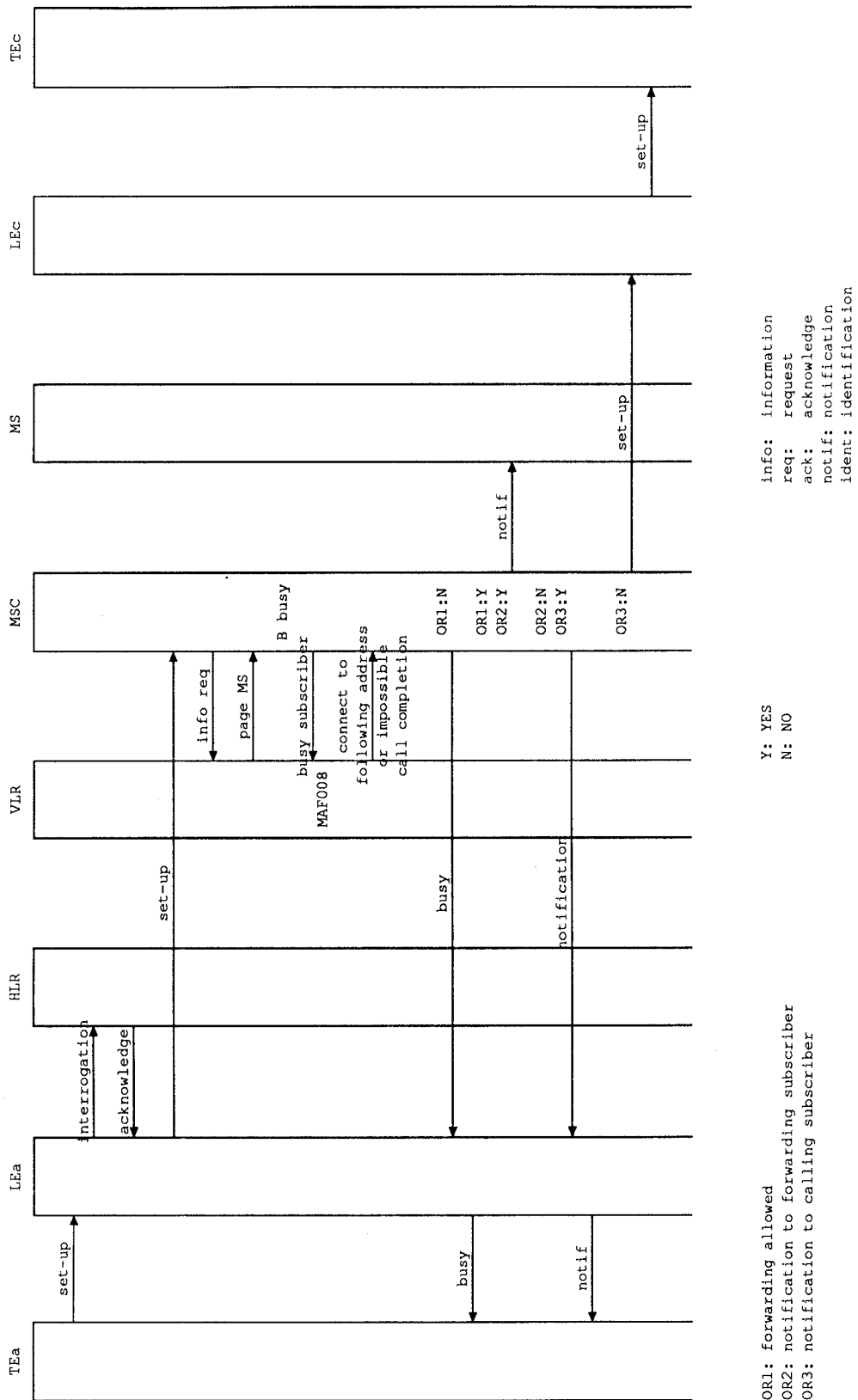


Figure 3.9/GSM 03.82
 Information flow for call forwarding on mobile subscriber busy
 (fixed terminal to fixed terminal)

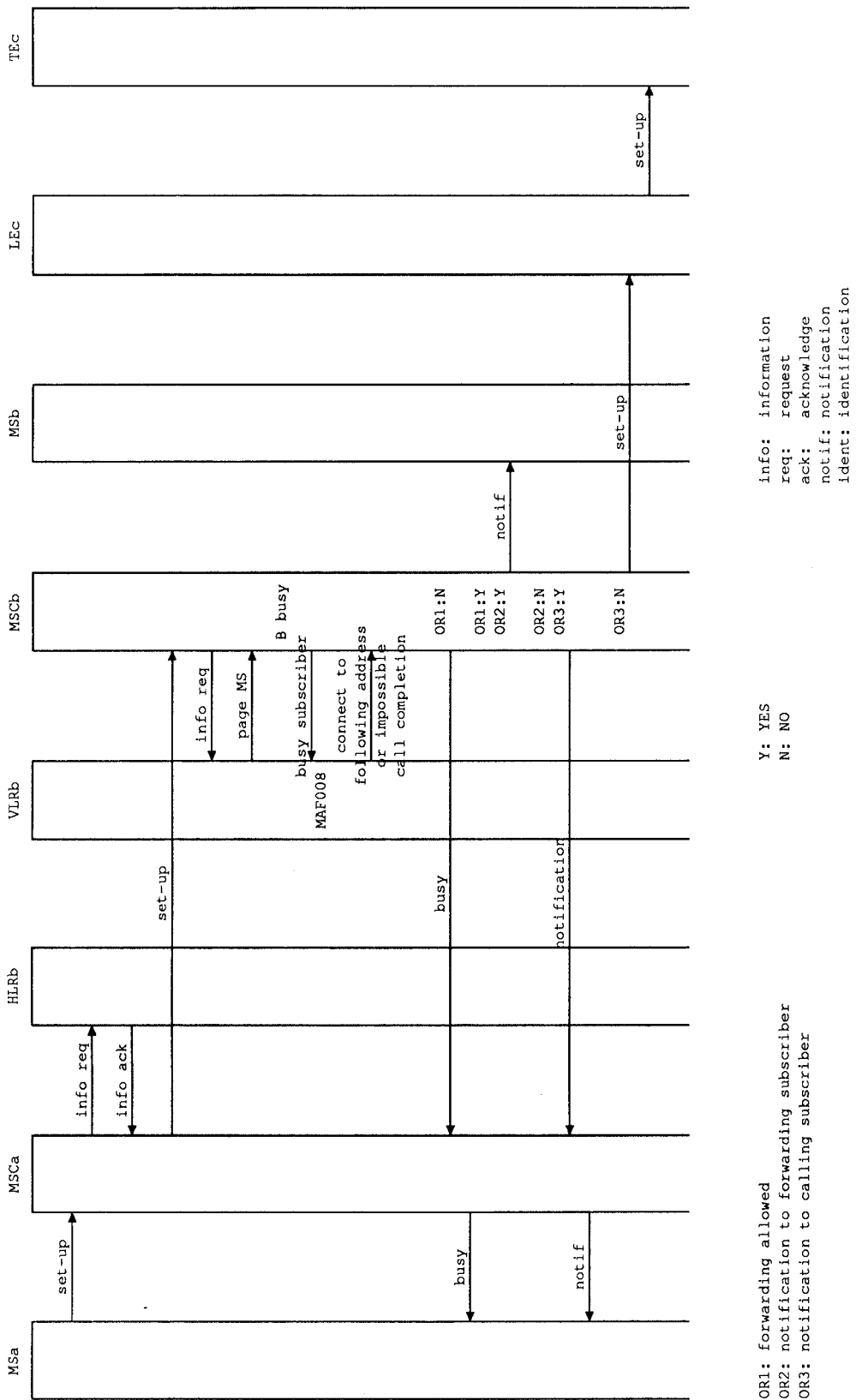


Figure 3.10/GSM 03.82
Information flow for call forwarding on mobile subscriber busy
(mobile station to fixed terminal)

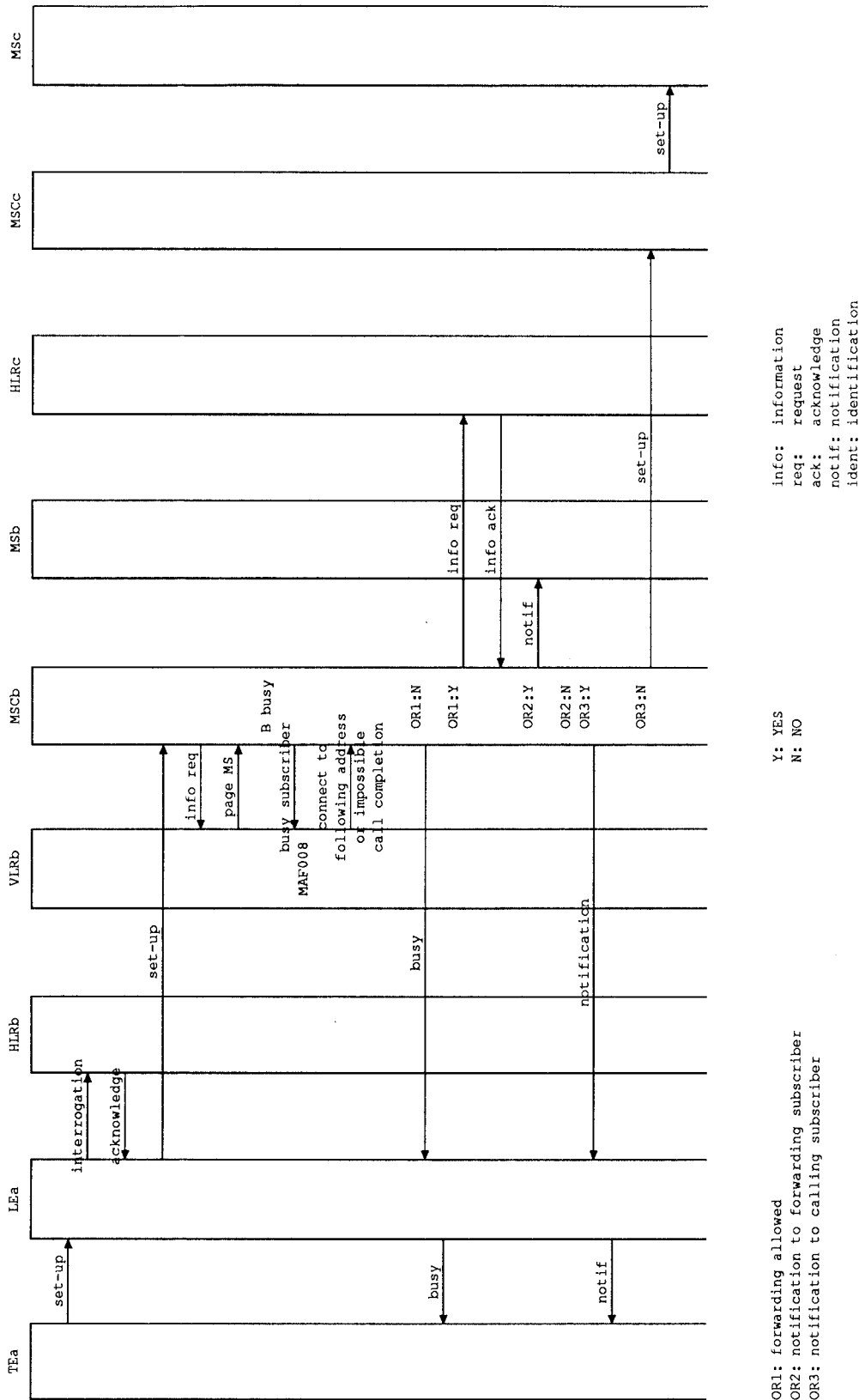


Figure 3.11/GSM 03.82
 Information flow for call forwarding on mobile subscriber busy
 (fixed terminal to mobile station)

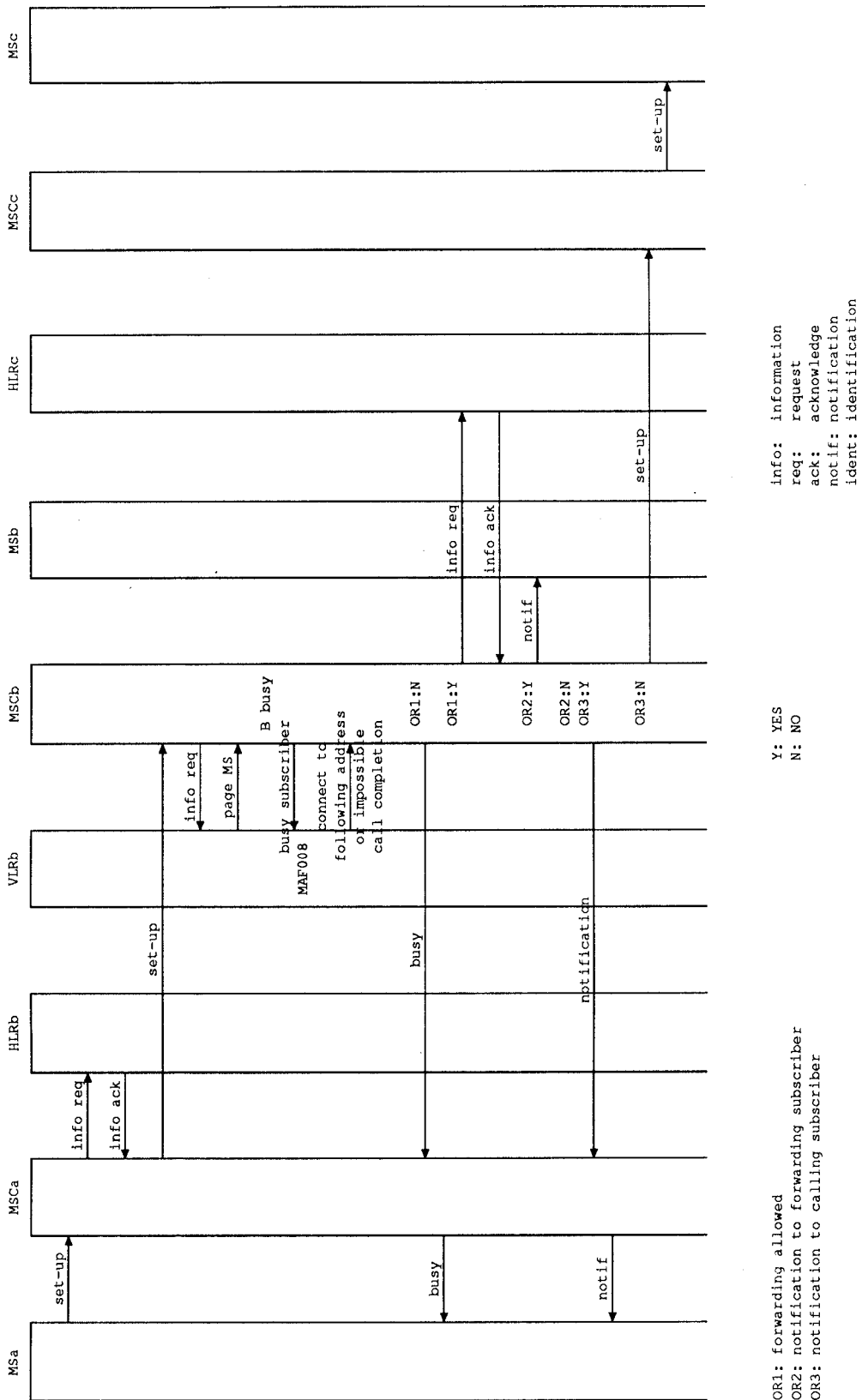


Figure 3.12/GSM 03.82
 Information flow for call forwarding on mobile subscriber busy
 (mobile station to mobile station)

3.3 Information stored in HLR

For the supplementary service call forwarding on mobile subscriber busy 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 to which call forwarding on mobile subscriber busy is applicable in the HLR must be stored:

- the subscription option "notification to the calling party"
This subscription option takes one of the following values:
 - no notification;
 - notification.
- the subscription option "notification to the forwarding party"
This subscription option takes one of the following values:
 - no notification;
 - notification.
- the registration parameter "forwarded-to number"
- the registration parameter "registration status"
This parameter takes one of the following values:
 - registered;
 - erased.
- the activation parameter "activation status"
This parameter takes one of the following values:
 - activated;
 - deactivated by the user;
 - deactivated by the network (active and quiescent).

3.4 Information stored in VLR

For each basic service to which call forwarding on mobile subscriber busy is applicable in the VLR will be stored:

- the subscription option "notification to the calling party"
This subscription option takes one of the following values:
 - no notification;
 - notification.
- the subscription option "notification to the forwarding party"
This subscription option takes one of the following values:
 - no notification;
 - notification.
- the registration parameter "forwarded-to number"
- the registration parameter "registration status"
This parameter takes one of the following values:
 - registered;
 - erased.
- the activation parameter "activation status"
This parameter takes one of the following values:
 - activated;
 - deactivated.

3.5 Handover

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

SECTION 4

CALL FORWARDING ON NO REPLY

4.1 Handling of call forwarding on no reply

4.1.1 Registration

At the beginning of registration subscription to the basic service, provision of the supplementary service and sufficiency of registration information has to be checked (see figure 4.0).

The following information has to be registered in the network:

1. the forwarded-to number;
2. information as to whether all calls or all calls of a specific basic service should be forwarded,
3. the duration of the no reply condition timer.

Registration can take place either as a result of provision by the service provider or with an appropriate control procedure by the subscriber.

If the duration of the no reply condition timer is not registered by the mobile user the previous value set by the mobile user applies.

If the forwarded-to number is a number in the HPLMN country, it may be entered by the served mobile subscriber in three different formats, independent of his actual location, according to the schemes:

1. national (significant) number;
2. (trunk) prefix plus national (significant) number;
3. international prefix, country code, national (significant) number.

In case the number received by the HLR does not contain the country code, the received number has to be converted to an international number before storing it in the HLR (see figure 4.1).

When the mobile subscriber so registers call forwarding on no reply, the service provider will return notification of acceptance or rejection of the request. This notification will include the forwarded-to number to which call forwarding on no reply is registered.

Call forwarding on no reply for all basic services and call forwarding on no reply of a particular basic service cannot be simultaneously registered.

If the system cannot accept a registration request, the served mobile subscriber should receive a notification that call forwarding on no reply registration was not successful. Possible causes related to the verification of the forwarded-to number are:

- forwarded-to number is invalid directory number;
- use of an operator access prefix;

- forwarded-to number is a special service code (e.g. police);
- forwarded-to number is the directory number of the mobile subscriber himself.

The network is not required to validate information related to the forwarded-to number. Verification of the forwarded-to number should be accomplished, if possible, before accepting the call forwarding request (see figure 4.2).

The information flow for registration of call forwarding on no reply is shown in figure 4.3.

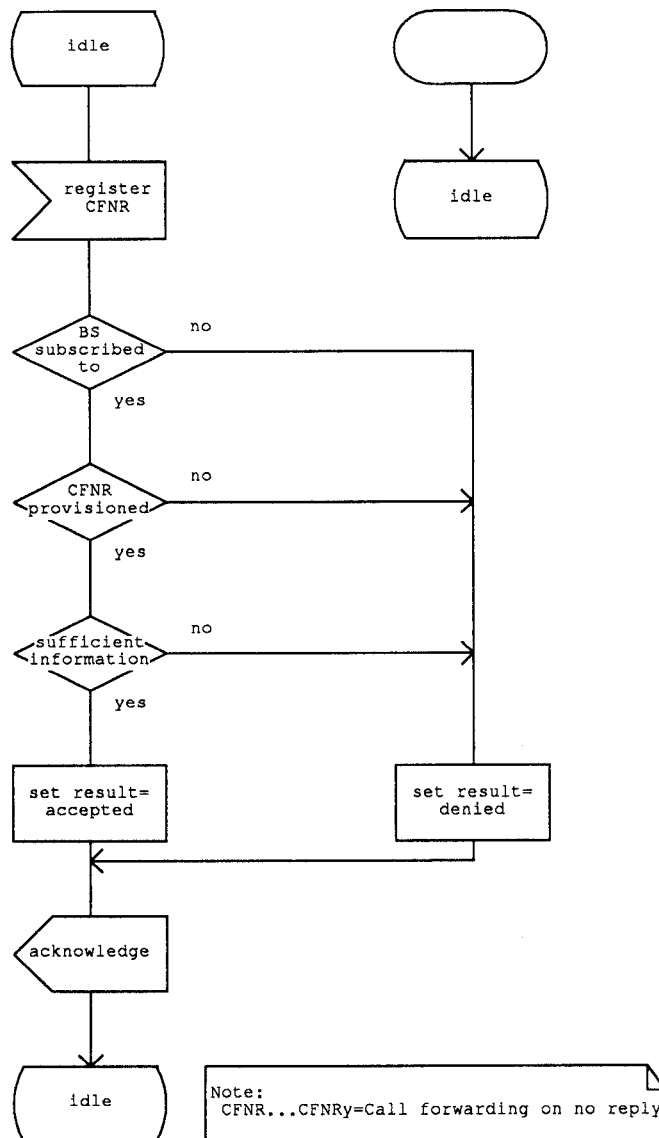


Figure 4.0/GSM 03.82
CFNR0
Subscription, provision and information check

PROCESS CFNR1

(1)

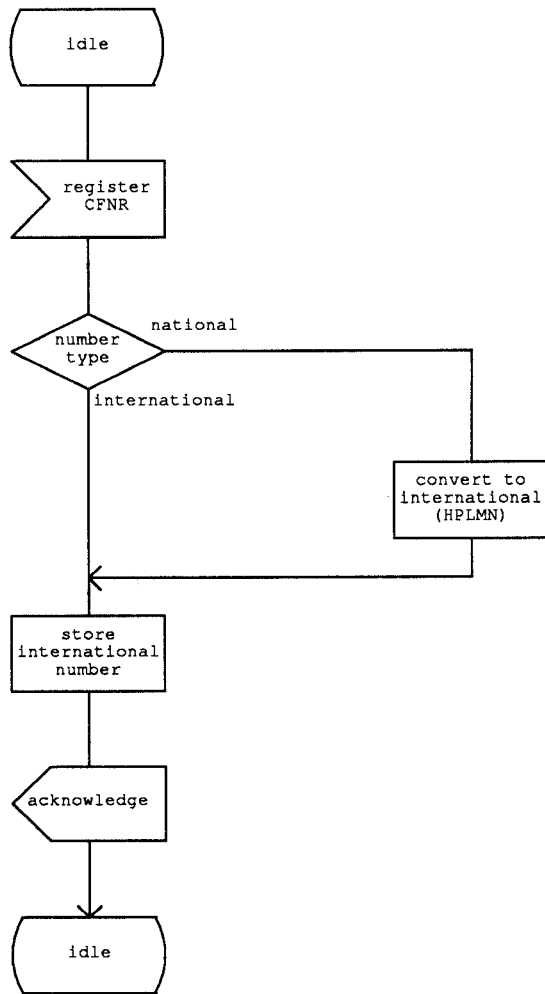


Figure 4.1/GSM 03.82
CFNR1
Conversion of a national number into an international number

PROCESS CFNR2

(1)

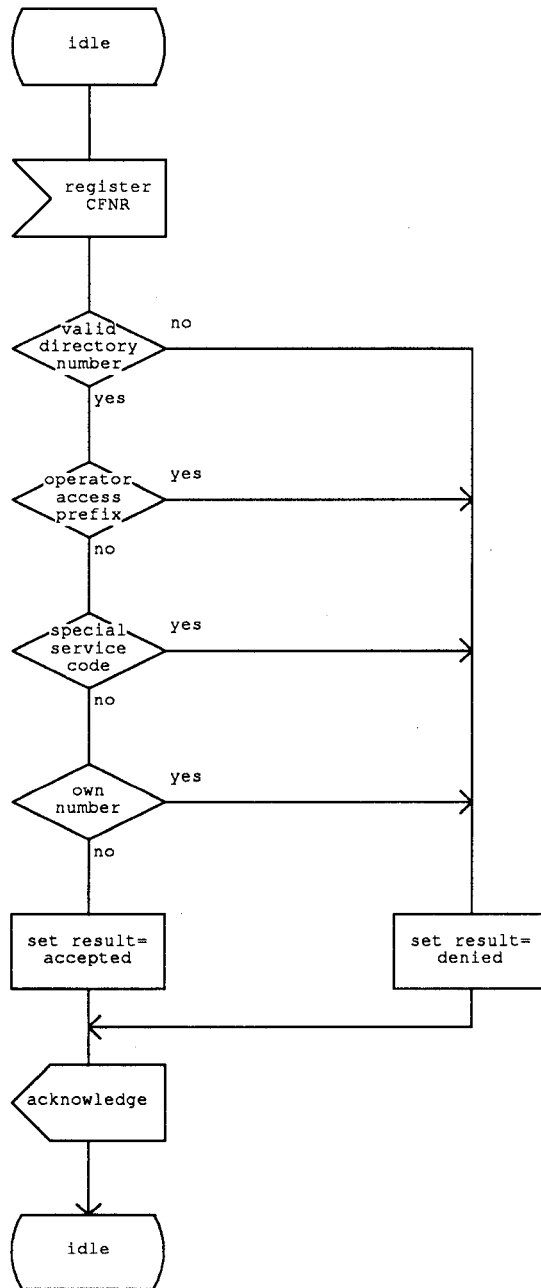


Figure 4.2/GSM 03.82
CFNR2
Verification of the forwarded-to number

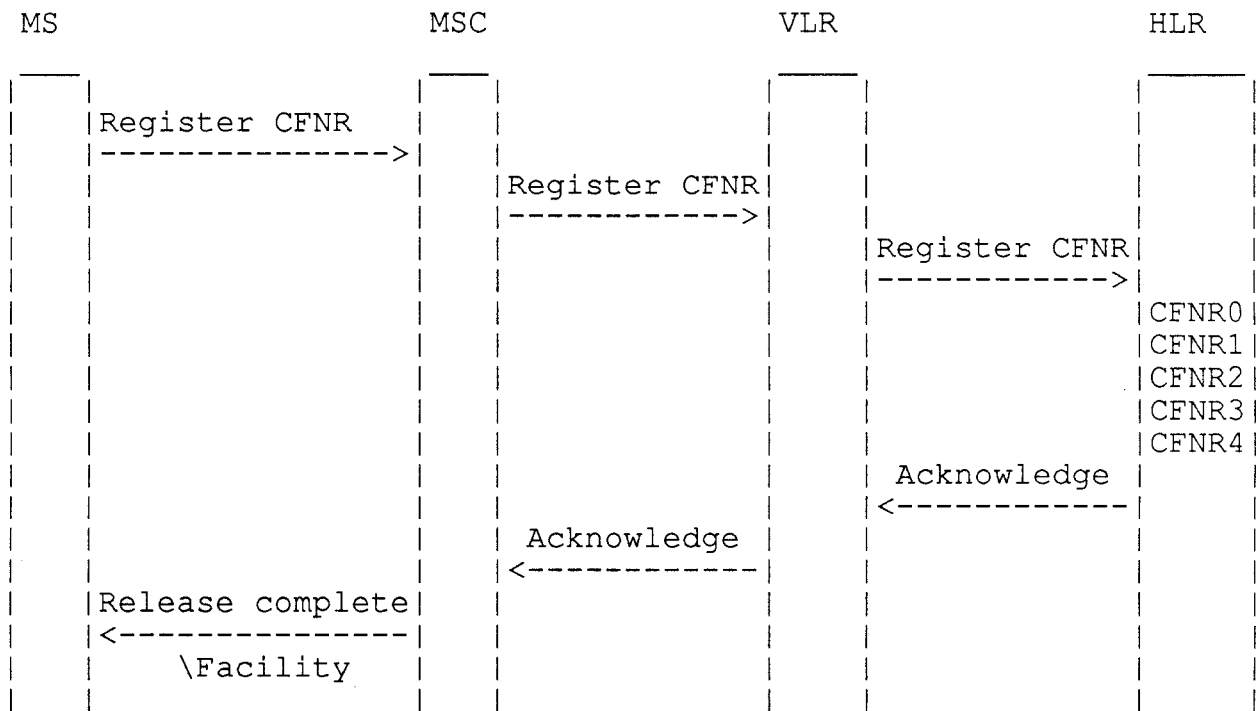


Figure 4.3/GSM 03.82
Registration of call forwarding on no reply

4.1.2 Erasure

- A previous registration can be erased in either of three ways:
- the subscriber can specifically erase a previous registration (to a basic service group) with an appropriate control procedure,
 - the subscriber can register information for call forwarding on no reply (to a basic service group), thus causing previous registrations of call forwarding on no reply to be overridden,
 - all information is erased as a result of withdrawal of the supplementary service (administrative handling).

Only information related to basic services specified within the new registration or erasure is effected.

If the network cannot accept a mobile subscriber's request for erasure an error indication will be returned to the subscriber.

The call forwarding on no reply erasure request may specify the basic service. If the subscriber does not indicate a specific basic service, the erasure applies to all basic services, see figure 4.4.

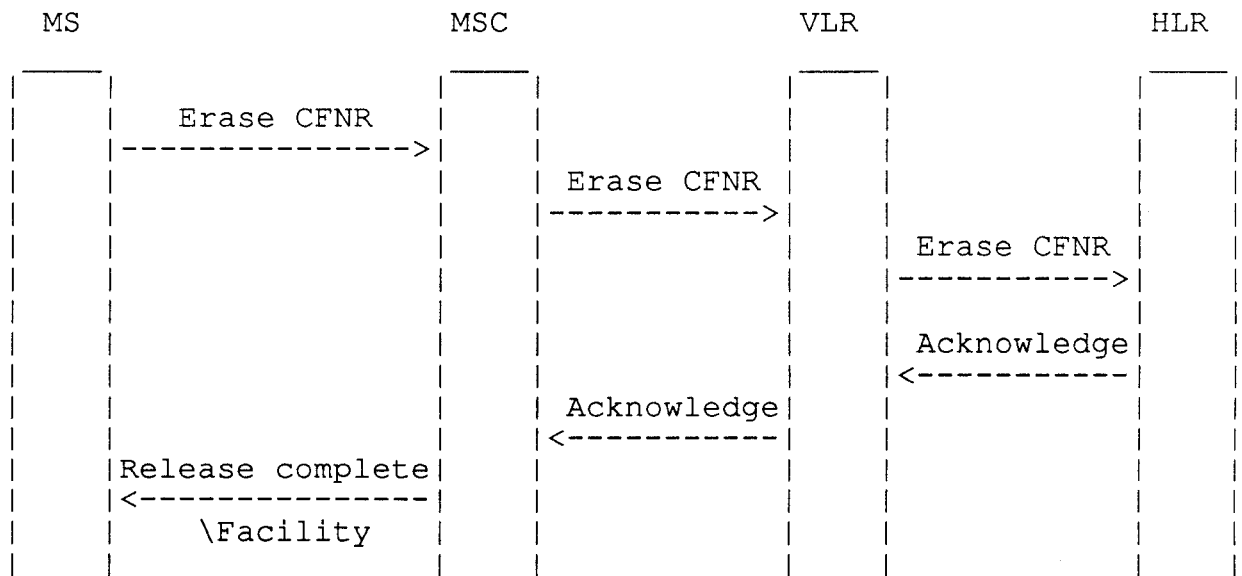


Figure 4.4/GSM 03.82
Erasure of call forwarding on no reply

4.1.3 Interrogation

Data request

The data request procedure enables the mobile subscriber to obtain information about the data stored in the PLMN. After having requested this procedure the network shall return the following information:

- in response to a general data request the served mobile subscriber should be given a list of all basic services to which call forwarding on no reply is active including the forwarded-to numbers and the duration of the no reply condition timer;
- in response to a specific request concerning one particular basic service, the served mobile subscriber should be informed whether or not call forwarding on no reply is active for that basic service, and so if, to what forwarded-to number and the duration of the no reply condition timer, see figure 4.5.

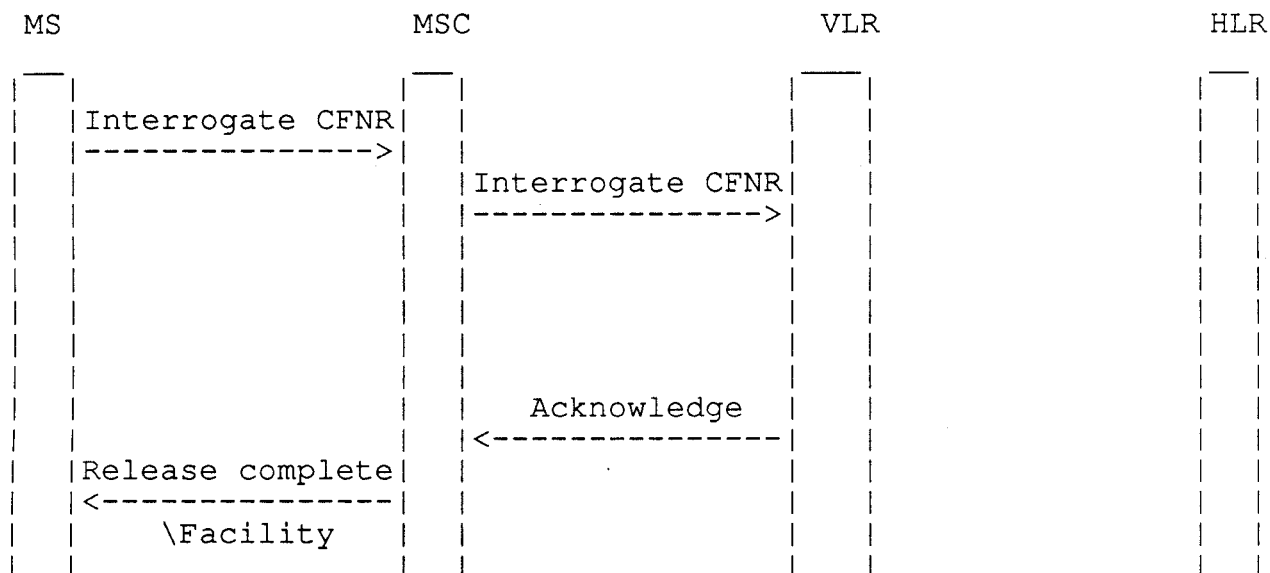


Figure 4.5/GSM 03.82
Interrogation of call forwarding on no reply

4.1.4. Interactions

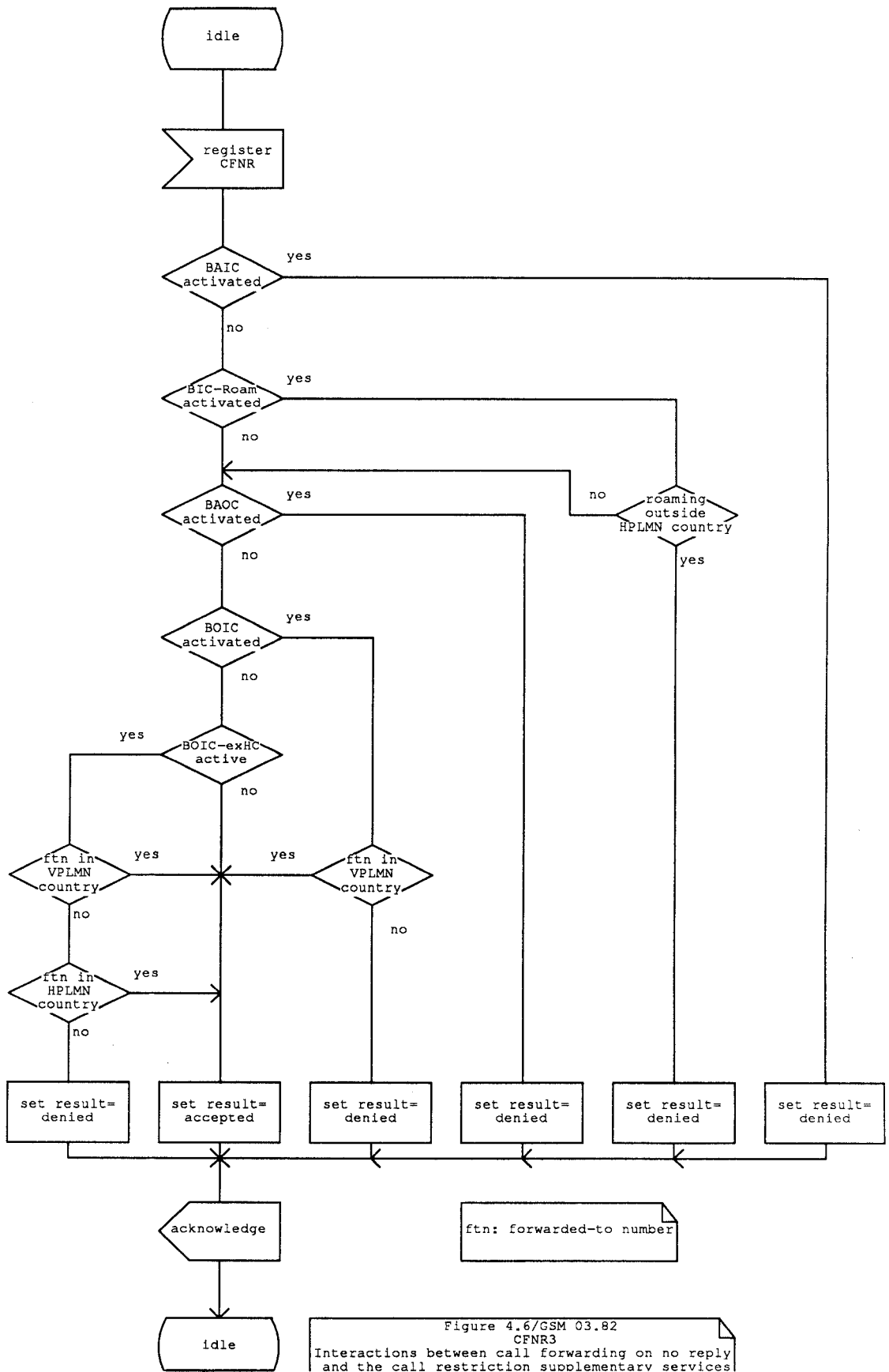
4.1.4.1 Interactions with call restriction supplementary services

See recommendation GSM 02.82

The SDL diagram in figure 4.6 shows the function to be performed in the HLR in order to deal with the interactions between call forwarding on no reply and the call restriction supplementary services.

PROCESS CFNR3

(1)



4.1.4.2 Interactions with other call forwarding supplementary services

See recommendation GSM 02.82

The SDL diagram in figure 4.7 shows the function to be performed in the HLR in order to deal with the interactions between call forwarding on no reply and the other call forwarding supplementary services.

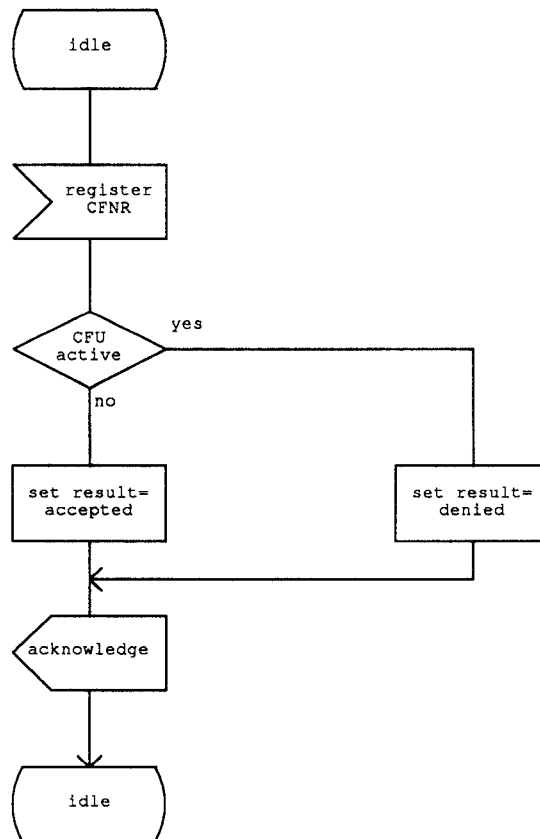


Figure 4.7/GSM 03.82
CFNR4
Interactions between call forwarding on no reply and the other call forwarding services

4.2 Functions and information flows

The following function has been identified for the PLMN:

MAF009 Call forwarding on no reply authorisations examination

The ability of a PLMN component to determine the authorisations relating to call forwarding on no reply. See figure 4.8.

Location: VLR

The information flows for fixed terminal to fixed terminal, mobile station to fixed terminal, fixed terminal to mobile station and mobile station to mobile station are shown in figures 4.9, 4.10, 4.11 and 4.12 respectively. In all information flows the forwarding party is a mobile station.

PROCESS cfnr-MAF009

(1)

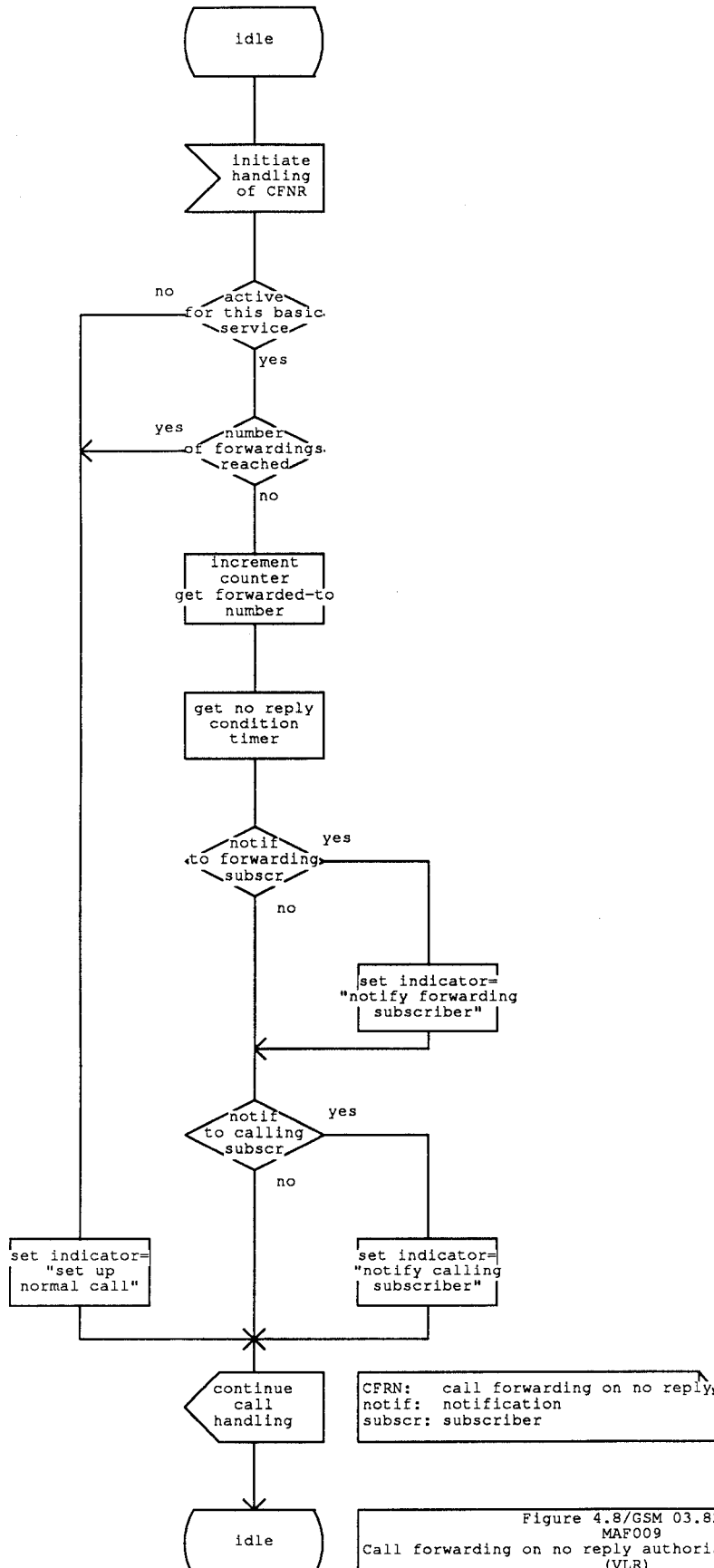


Figure 4.8/GSM 03.82
 MAF009
 Call forwarding on no reply authorisations examination (VLR)

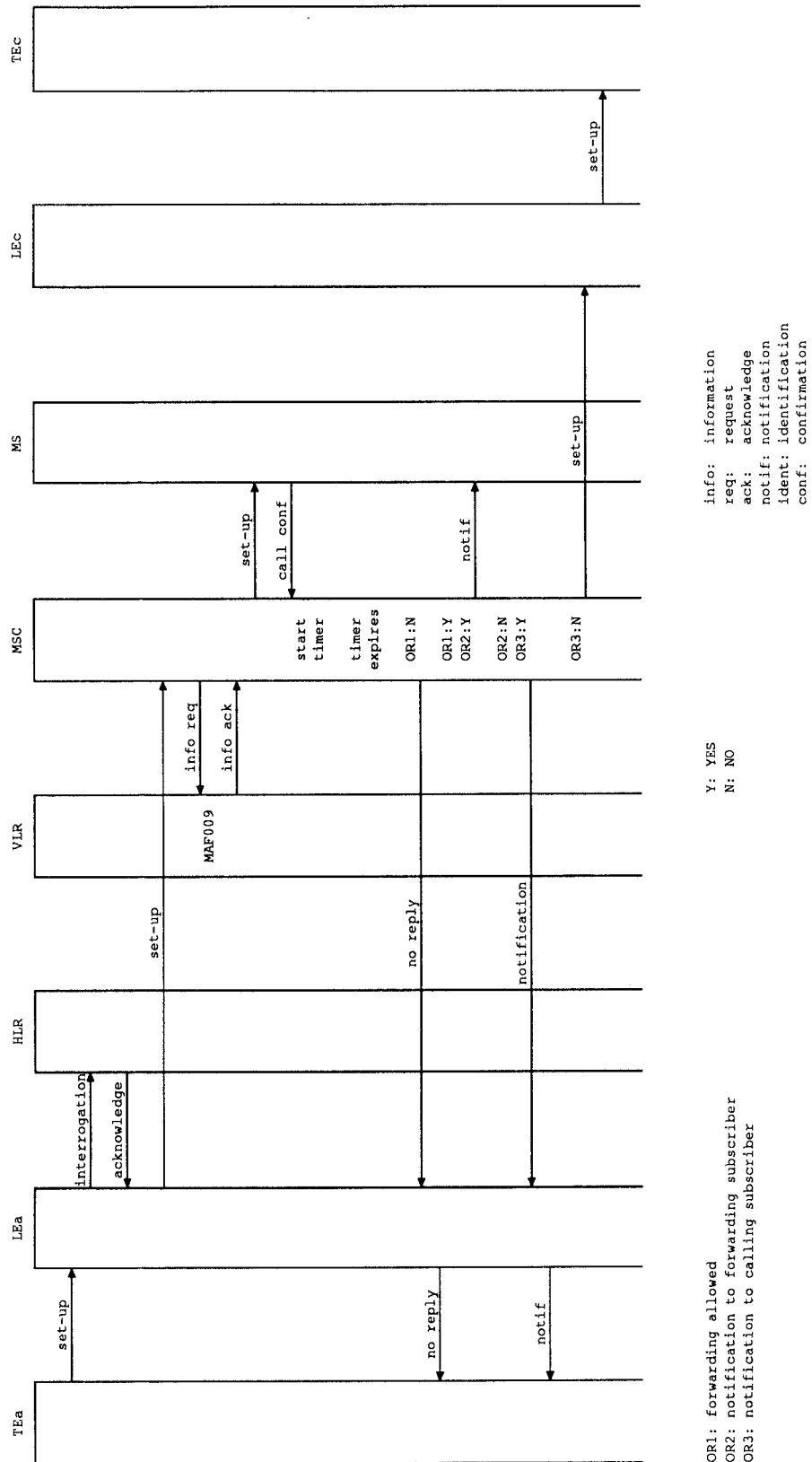


Figure 4.9/GSM 03.83
 Information flow for call forwarding on no reply
 (fixed terminal to fixed terminal)

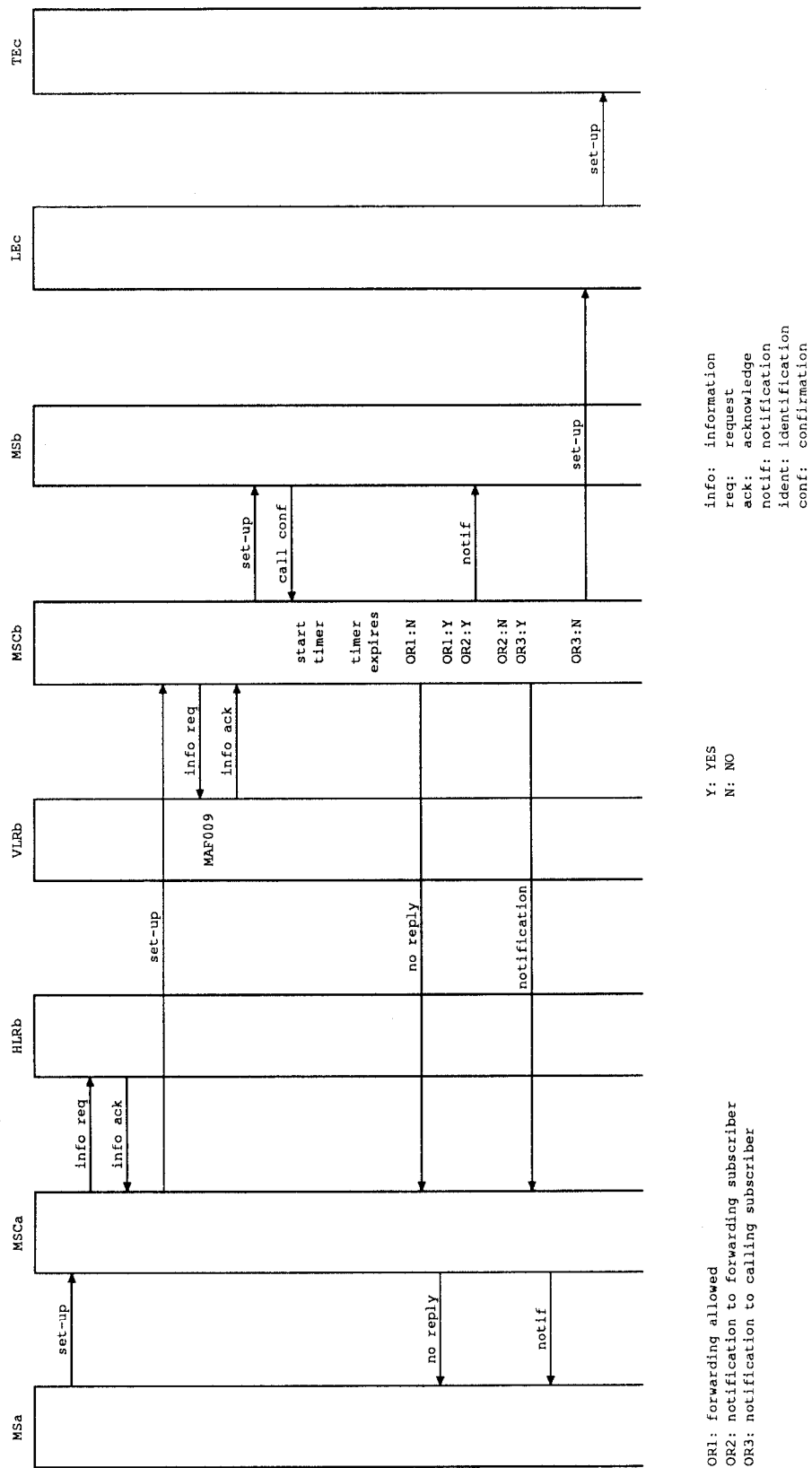


Figure 4.10/GSM 03.82
Information flow for call forwarding on no reply
(mobile station to fixed terminal)

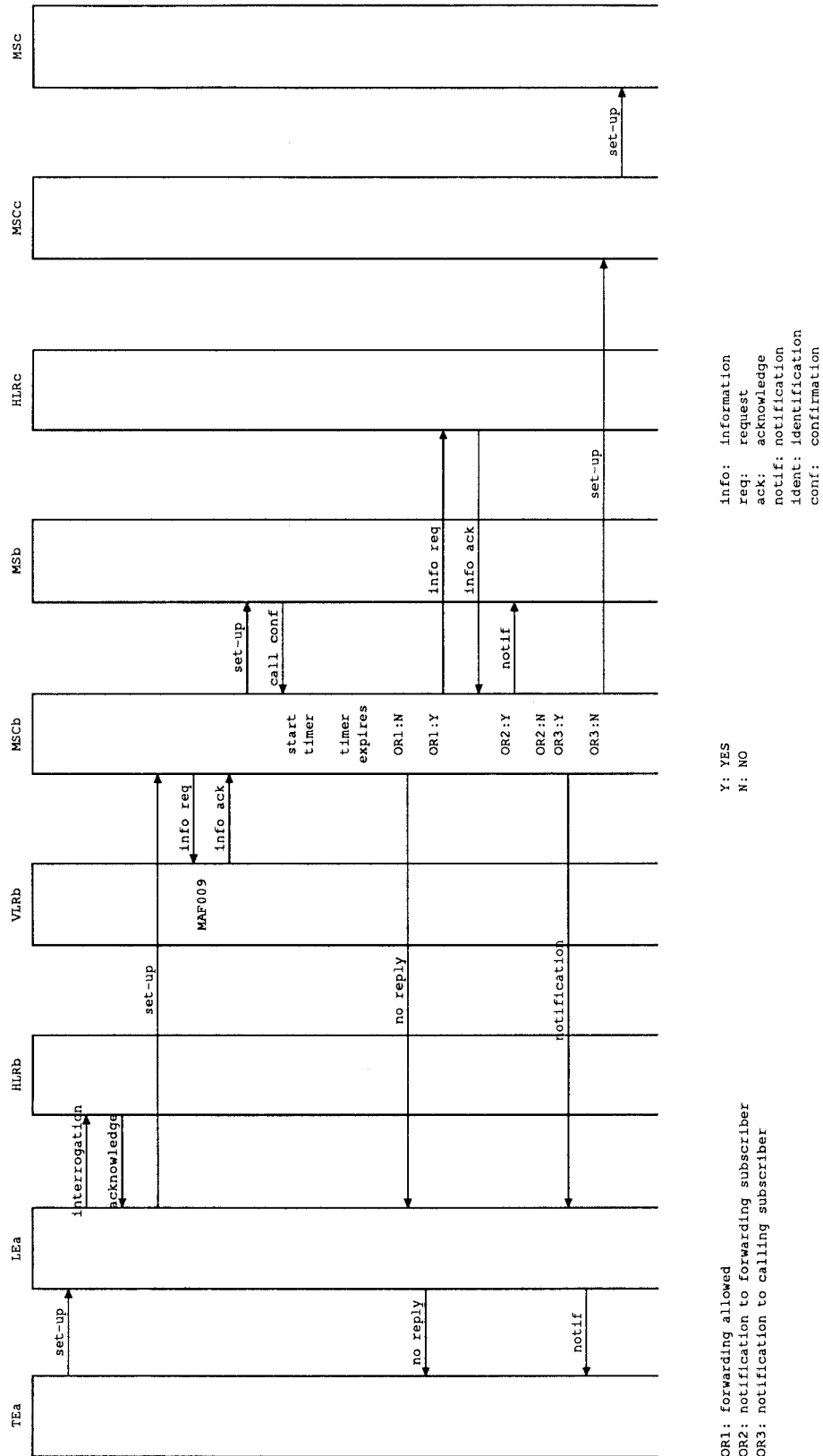


Figure 4.11/GSM 03.82
Information flow for call forwarding on no reply
(fixed terminal to mobile station)

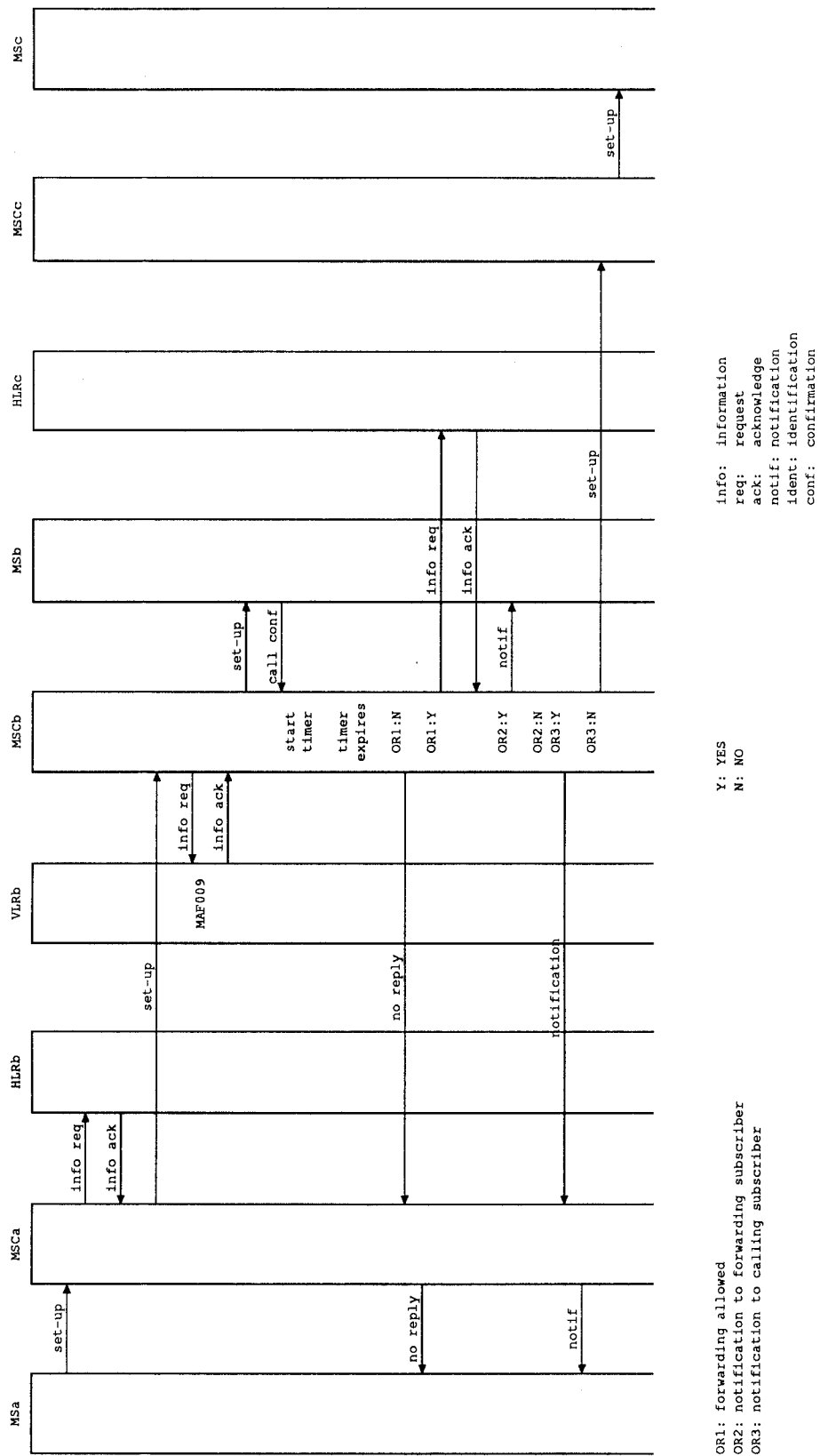


Figure 4.12/GSM 03.82
Information flow for call forwarding on no reply
(mobile station to mobile station)

4.3 Information stored in HLR

For the supplementary service call forwarding on no reply 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 to which call forwarding on no reply is applicable in the HLR must be stored:

- the subscription option "notification to the calling party"
 - This subscription option takes one of the following values:
 - no notification;
 - notification.
- the subscription option "notification to the forwarding party"
 - This subscription option takes one of the following values:
 - no notification;
 - notification.
- the registration parameter "forwarded-to number"
- the registration parameter "registration status"
 - This parameter takes one of the following values:
 - registered;
 - erased.
- the registration parameter "no reply condition timer"
 - This parameter may take values in the range 5 - 30 seconds in steps of 5 seconds.
- the activation parameter "activation status"
 - This parameter takes one of the following values:
 - activated;
 - deactivated by the user;
 - deactivated by the network (active and quiescent).

4.4 Information stored in VLR

For each basic service to which call forwarding on no reply is applicable in the VLR will be stored:

- the subscription option "notification to the calling party"
 - This subscription option takes one of the following values:
 - no notification;
 - notification.
- the subscription option "notification to the forwarding party"
 - This subscription option takes one of the following values:
 - no notification;
 - notification.
- the registration parameter "forwarded-to number"
- the registration parameter "registration status"
 - This parameter takes one of the following values:
 - registered;
 - erased.
- the registration parameter "no reply condition timer"
 - This parameter may take values in the range 5 - 30 seconds in steps of 5 seconds.
- the activation parameter "activation status"
 - This parameter takes one of the following values:
 - activated;
 - deactivated.

4.5 Handover

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

SECTION 5

CALL FORWARDING ON MOBILE SUBSCRIBER NOT REACHABLE

5.1 Handling of call forwarding on mobile subscriber not reachable

5.1.1 Registration

At the beginning of registration subscription to the basic service, provision of the supplementary service and sufficiency of registration information has to be checked (see figure 5.0).

The following information has to be registered in the network:

1. the forwarded-to number;
2. information as to whether all calls or all calls of a specific basic service should be forwarded.

Registration can take place either as a result of provision by the service provider or with an appropriate control procedure by the subscriber.

If the forwarded-to number is a number in the HPLMN country, it may be entered by the served mobile subscriber in three different formats, independent of his actual location, according to the schemes:

1. national (significant) number;
2. (trunk) prefix plus national (significant) number;
3. international prefix, country code, national (significant) number.

In case the number received by the HLR does not contain the country code, the received number has to be converted to an international number before storing it in the HLR (see figure 5.1).

When the mobile subscriber so registers call forwarding on mobile subscriber not reachable, the service provider will return notification of acceptance or rejection of the request. This notification will include the forwarded-to number to which call forwarding on mobile subscriber not reachable is registered.

Call forwarding on mobile subscriber not reachable for all basic services and call forwarding on mobile subscriber not reachable of a particular basic service cannot be simultaneously registered.

If the system cannot accept a registration request, the served mobile subscriber should receive a notification that call forwarding on mobile subscriber not reachable registration was not successful. Possible causes related to the verification of the forwarded-to number are:

- forwarded-to number is invalid directory number;
- use of an operator access prefix;
- forwarded-to number is a special service code (e.g. police);
- forwarded-to number is the directory number of the mobile subscriber himself.

The network is not required to validate information related to the forwarded-to number. Verification of the forwarded-to number should be accomplished, if possible, before accepting the call forwarding request (see figure 5.2).

The information flow for registration of call forwarding on mobile subscriber not reachable is shown in figure 5.3.

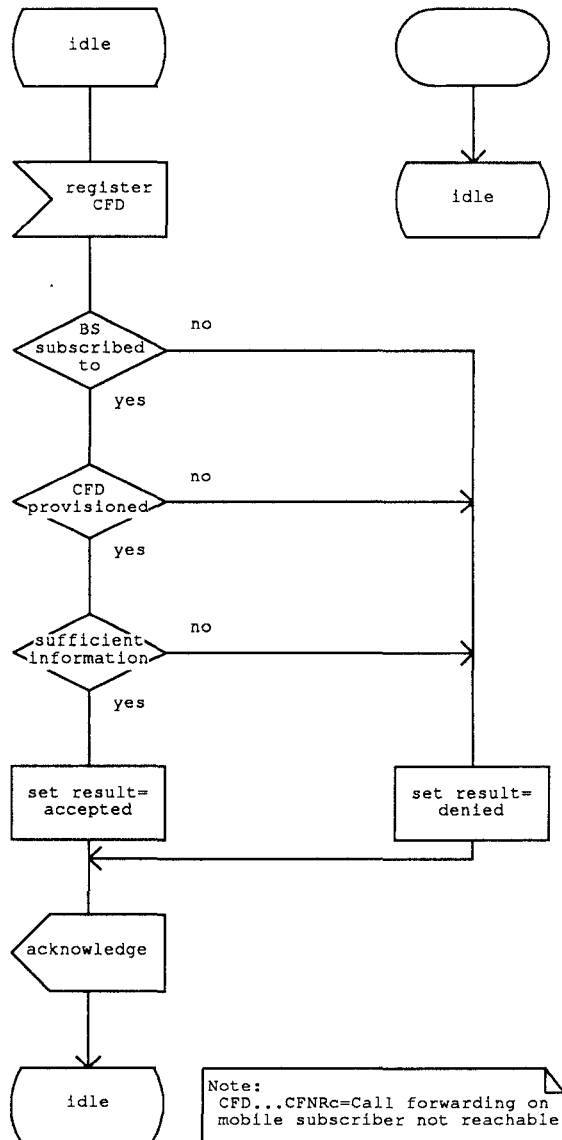


Figure 5.0/GSM 03.82
CFDO
Subscription, provision and information check

PROCESS CFD1

(1)

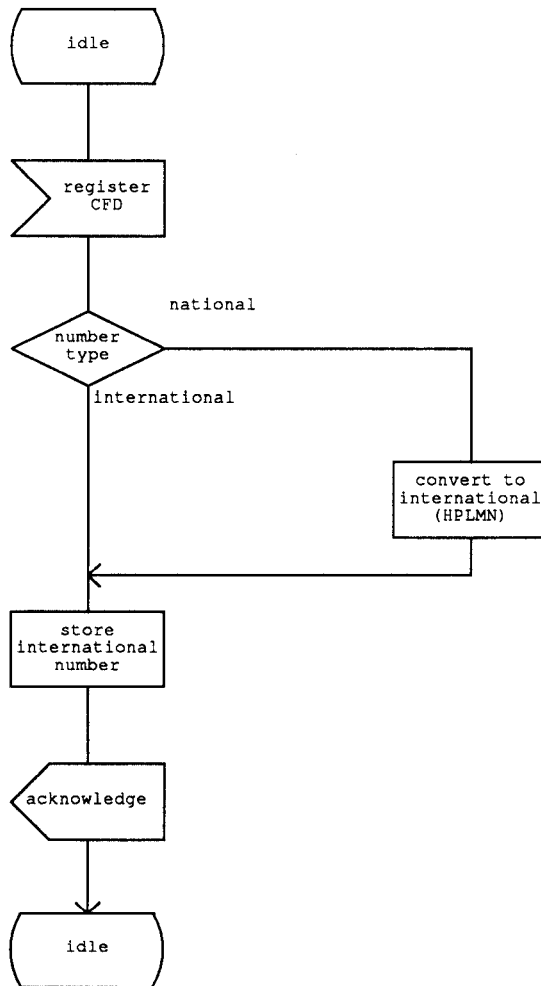


Figure 5.1/GSM 03.82
CFD1
Conversion of a national number into an international number

PROCESS CFD2

(1)

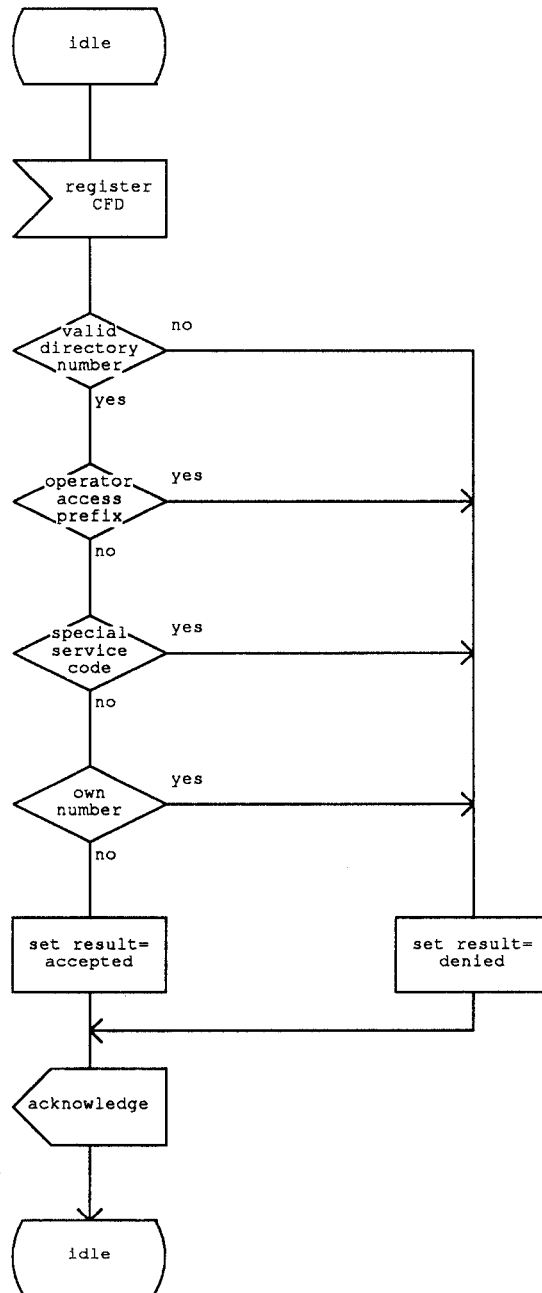


Figure 5.2/GSM 03.82
CFD2
Verification of the forwarded-to number

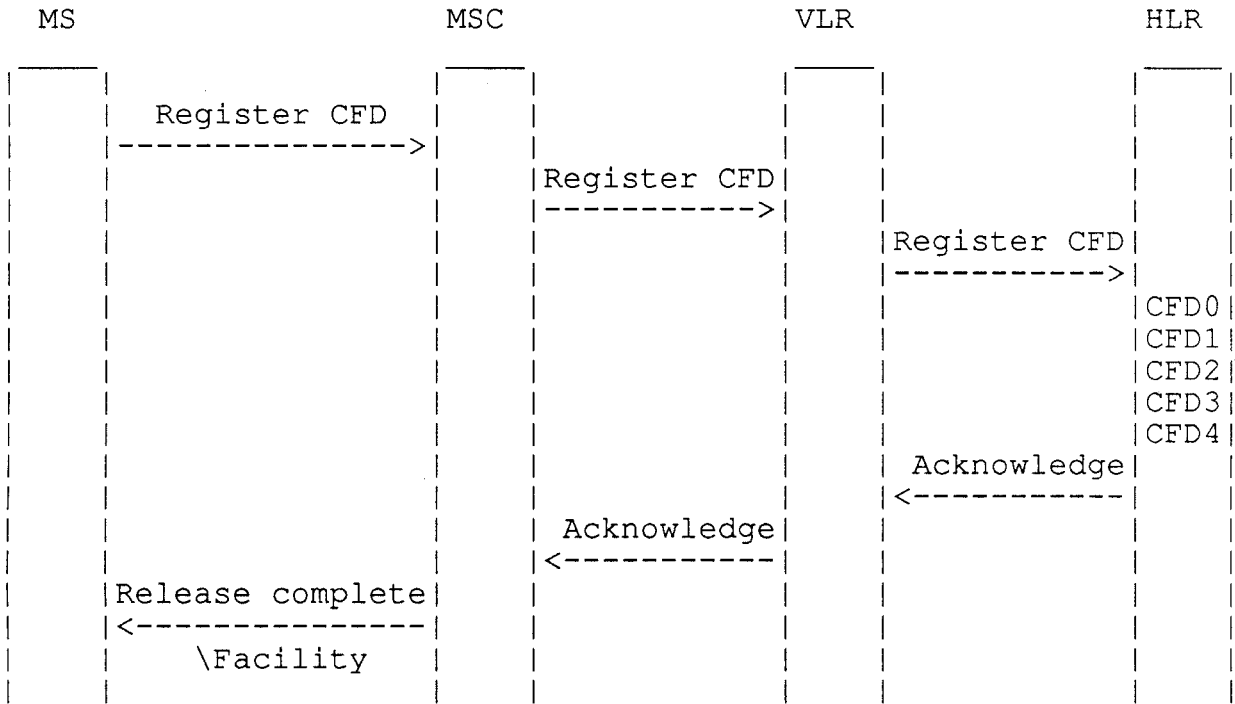


Figure 5.3/GSM 03.82
 Registration of call forwarding on mobile subscriber not
 reachable

5.1.2 Erasure

A previous registration can be erased in either of three ways:

- the subscriber can specifically erase a previous registration (to a basic service group) with an appropriate control procedure,
- the subscriber can register information for call forwarding on mobile subscriber not reachable (to a basic service group), thus causing previous registrations of call forwarding on mobile subscriber not reachable to be overridden,
- all information is erased as a result of withdrawal of the supplementary service (administrative handling).

Only information related to basic services specified within the new registration or erasure is effected.

If the network cannot accept a mobile subscriber's request for erasure an error indication will be returned to the subscriber.

The call forwarding on mobile subscriber not reachable erasure request may specify the basic service. If the subscriber does not indicate a specific basic service, the erasure applies to all basic services, see figure 5.4.

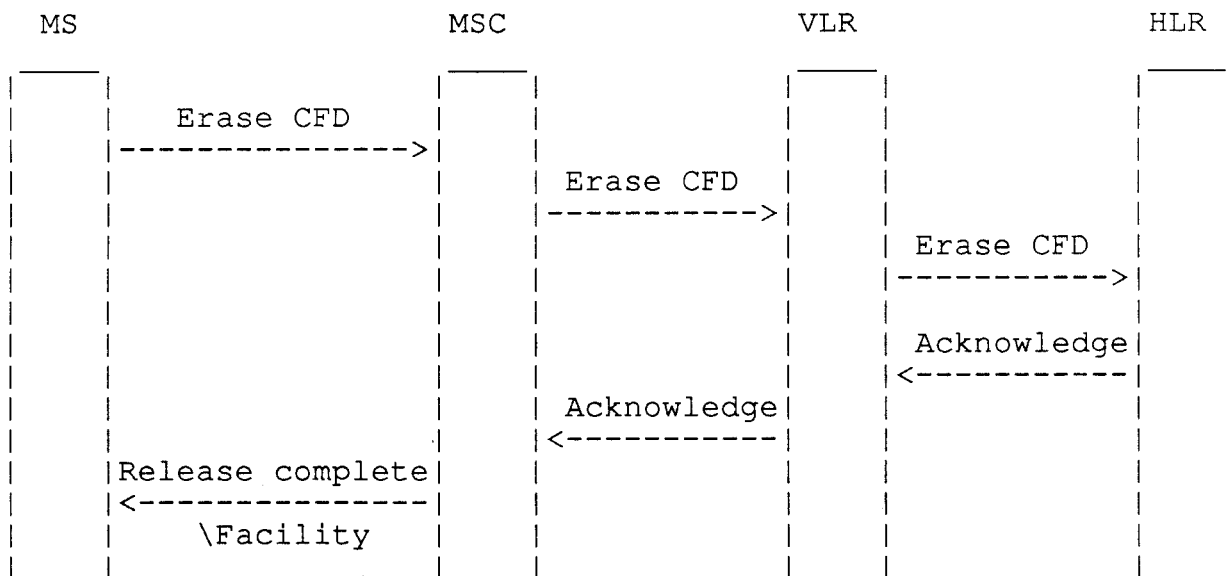


Figure 5.4/GSM 03.82

Erasure of call forwarding on mobile subscriber not reachable

5.1.3 Interrogation

Data request

The data request procedure enables the mobile subscriber to obtain information about the data stored in the PLMN. After having requested this procedure the network shall return the following information:

- in response to a general data request the served mobile subscriber should be given a list of all basic services to which call forwarding on mobile subscriber not reachable is active including the forwarded-to numbers;
- in response to a specific request concerning one particular basic service, the served mobile subscriber should be informed whether or not call forwarding on mobile subscriber not reachable is active for that basic service, and so if, to what forwarded-to number, see figure 5.5.

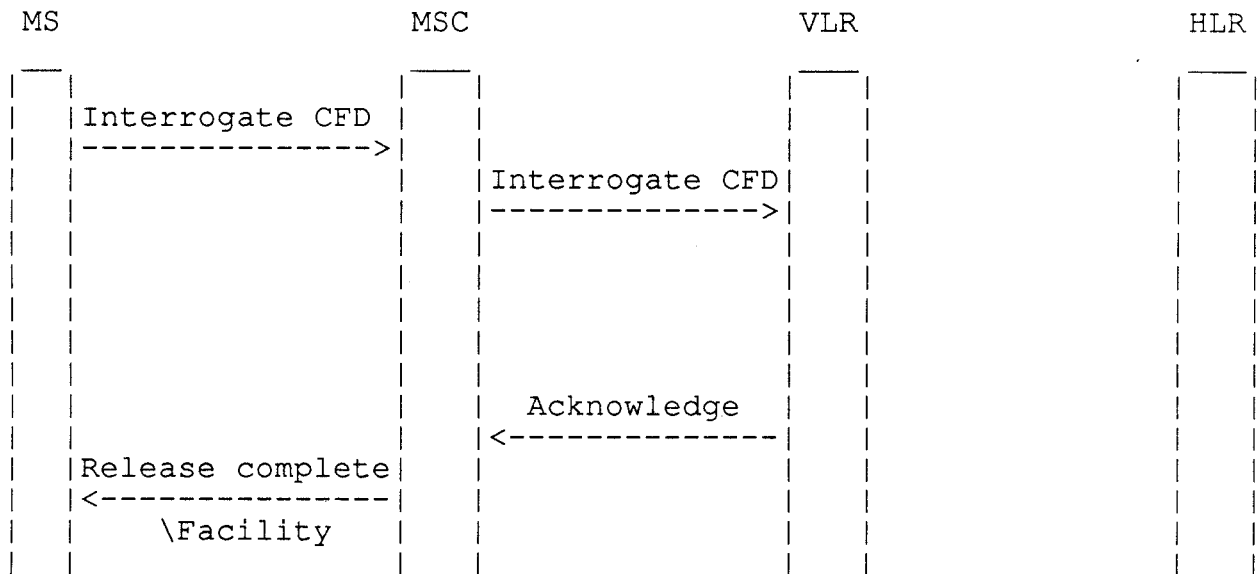


Figure 5.5/GSM 03.82
Interrogation of call forwarding on mobile subscriber not reachable

5.1.4. Interactions

5.1.4.1 Interactions with call restriction supplementary services

See recommendation GSM 02.82

The SDL diagram in figure 5.6 shows the function to be performed in the HLR in order to deal with the interactions between call forwarding on mobile subscriber not reachable and the call restriction supplementary services.

PROCESS CFD3

(1)

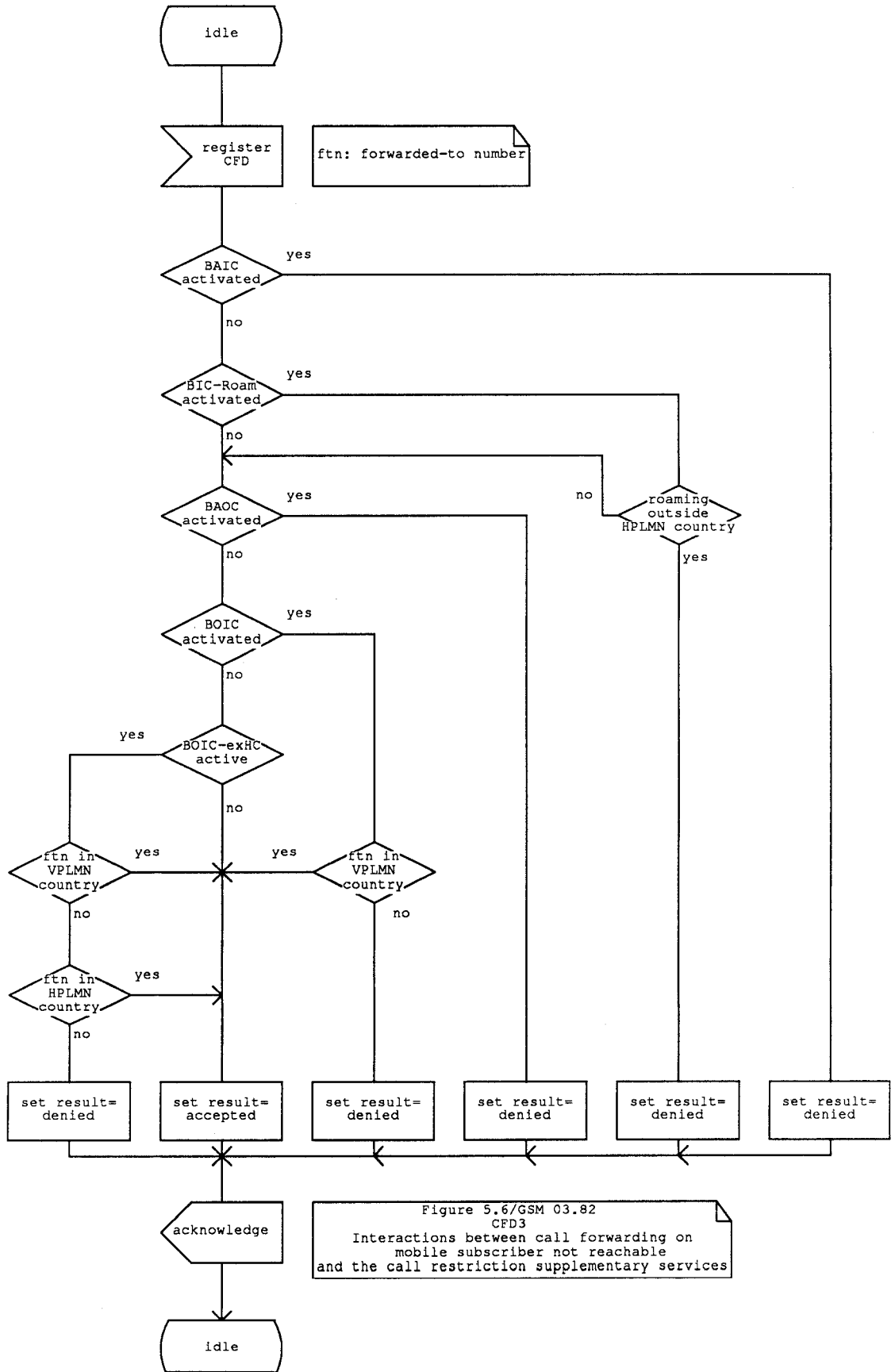


Figure 5.6/GSM 03.82
CFD3
Interactions between call forwarding on mobile subscriber not reachable and the call restriction supplementary services

5.1.4.2 Interactions with other call forwarding supplementary services

See recommendation GSM 02.82

The SDL diagram in figure 5.7 shows the function to be performed in the HLR in order to deal with the interactions between call forwarding on mobile subscriber not reachable and the other call forwarding supplementary services.

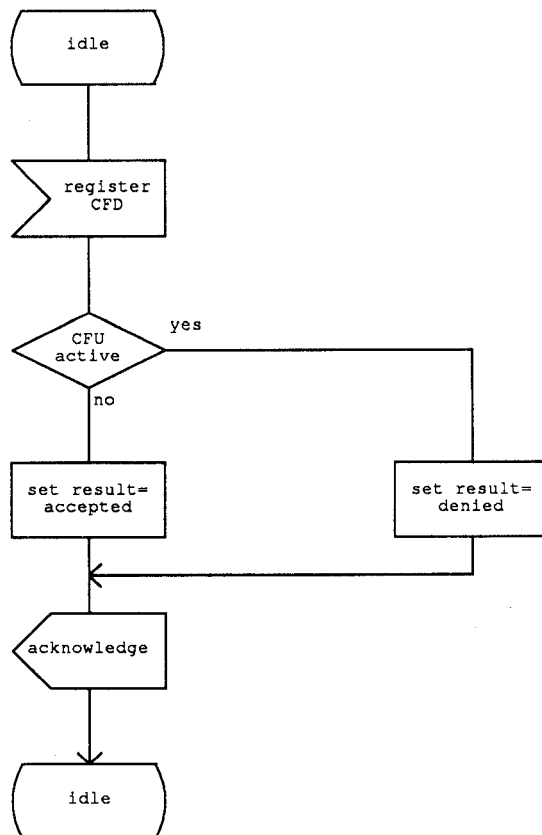


Figure 5.7/GSM 03.82
CFD4
Interactions between call forwarding on mobile subscriber not reachable and the other call forwarding services

5.2 Functions and information flows

5.2.1 Alternative 1

The following two functions have been identified for the PLMN:

- MAF010 First examination of call forwarding on mobile subscriber not reachable authorisations
The ability of a PLMN component to determine the authorisations relating to call forwarding on mobile subscriber not reachable in case the mobile subscriber is not registered. See figure 5.8.
Location: VLR
- MAF011 Second examination of call forwarding on mobile subscriber not reachable authorisations
The ability of a PLMN component to determine the authorisations relating to call forwarding on mobile subscriber not reachable in case of no paging response or radio congestion. See figure 5.9.
Note: This function will only be performed if the mobile subscriber is registered.
Location: VLR

The information flows for fixed terminal to fixed terminal, mobile station to fixed terminal, fixed terminal to mobile station and mobile station to mobile station are shown in figures 5.10, 5.11, 5.12 and 5.13 respectively. These flows represent the case where the mobile subscriber is not registered. Figures 5.14, 5.15, 5.16 and 5.17 show the information flows in case of no paging response. Figures 5.18, 5.19, 5.20 and 5.21 show the information flows in case of radio congestion. In all information flows the forwarding party is a mobile station.

5.2.2 Alternative 2

The following function has been identified for the PLMN:

- MAF010 First examination of call forwarding on mobile subscriber not reachable authorisations
The ability of a PLMN component to determine the authorisations relating to call forwarding on mobile subscriber not reachable in case the mobile subscriber is not registered. See figure 5.8.
Location: HLR

The information flows for fixed terminal to fixed terminal, mobile station to fixed terminal, fixed terminal to mobile station and mobile station to mobile station are shown in figures 5.22, 5.23, 5.24 and 5.25 respectively. These flows represent the case where the mobile subscriber is not registered. In all information flows the forwarding party is a mobile station.

PROCESS cfd-MAF010

(1)

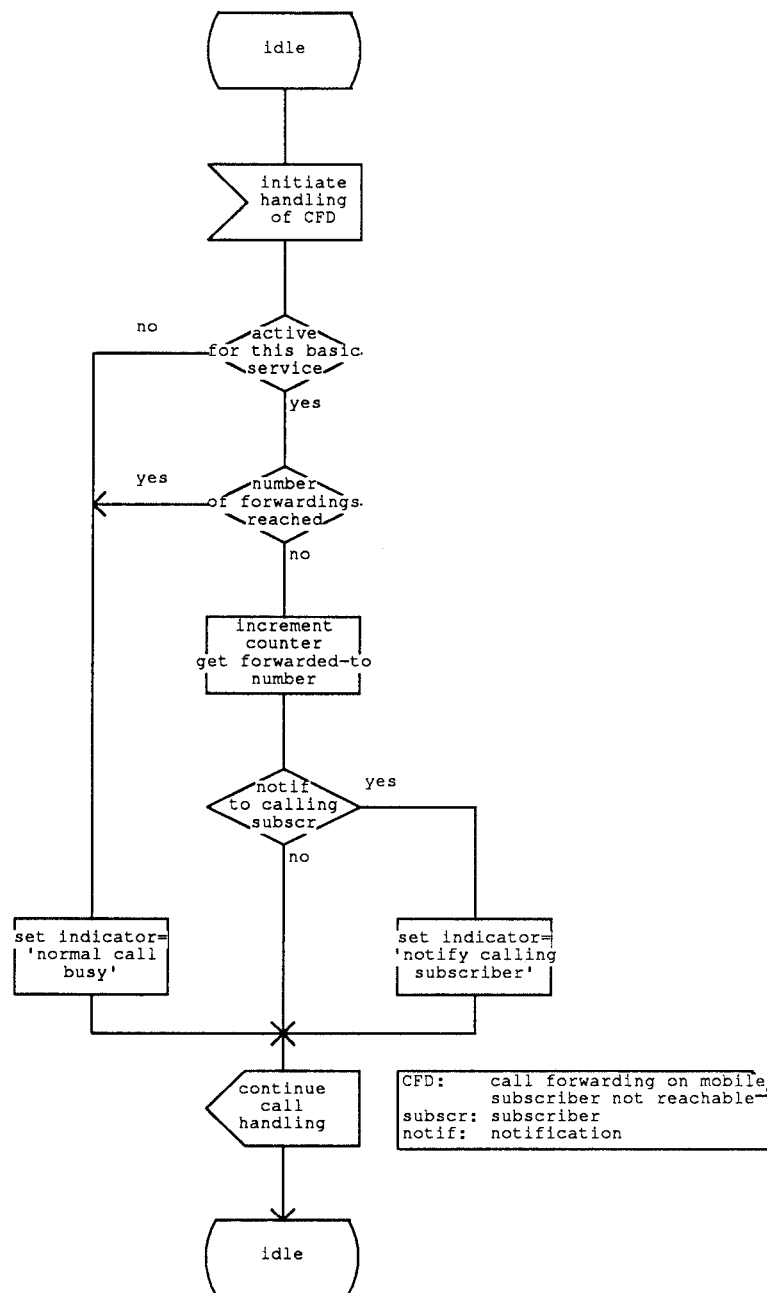


Figure 5.8/GSM 03.82
MAF010
First examination of call forwarding on mobile subscriber not reachable authorisations examination (VLR and HLR)

PROCESS cfd-MAF011

(1)

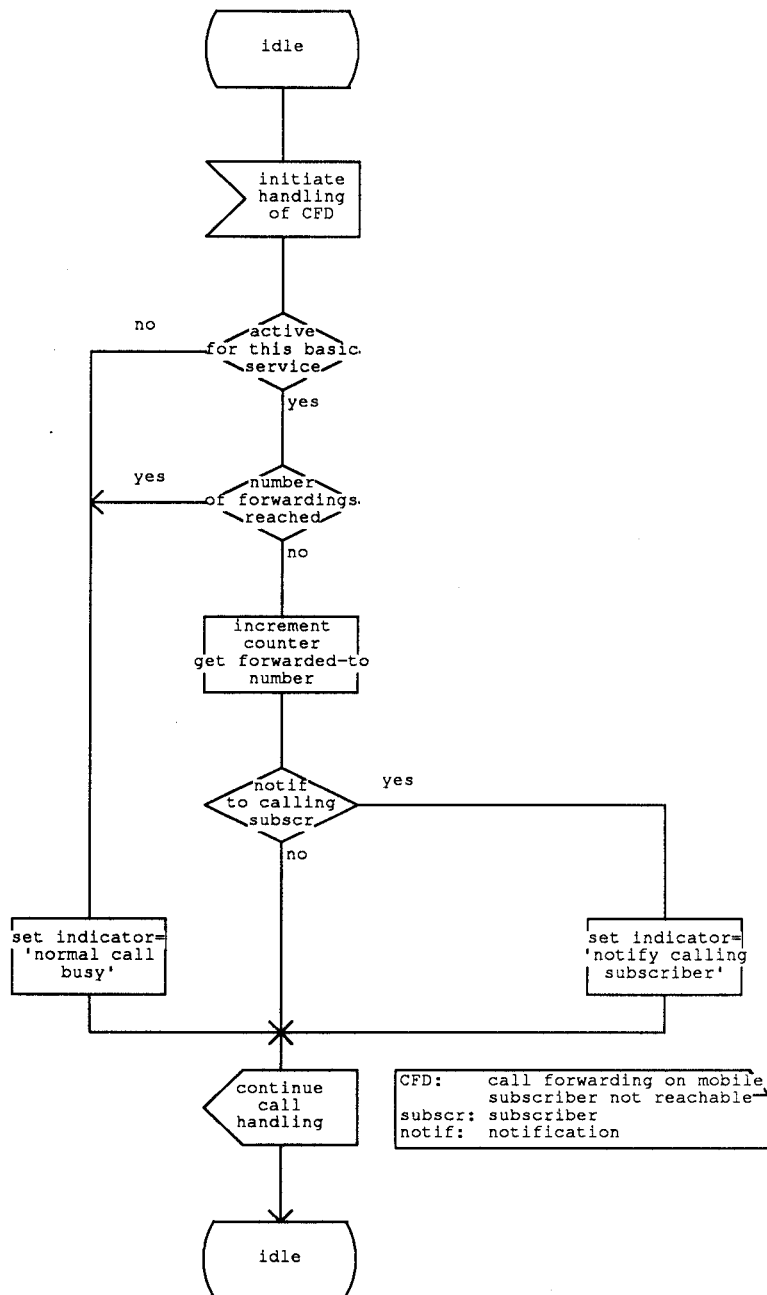


Figure 5.9/GSM 03.82
 MAF011
 Second examination of call forwarding on mobile subscriber not reachable authorisations examination (VLR)

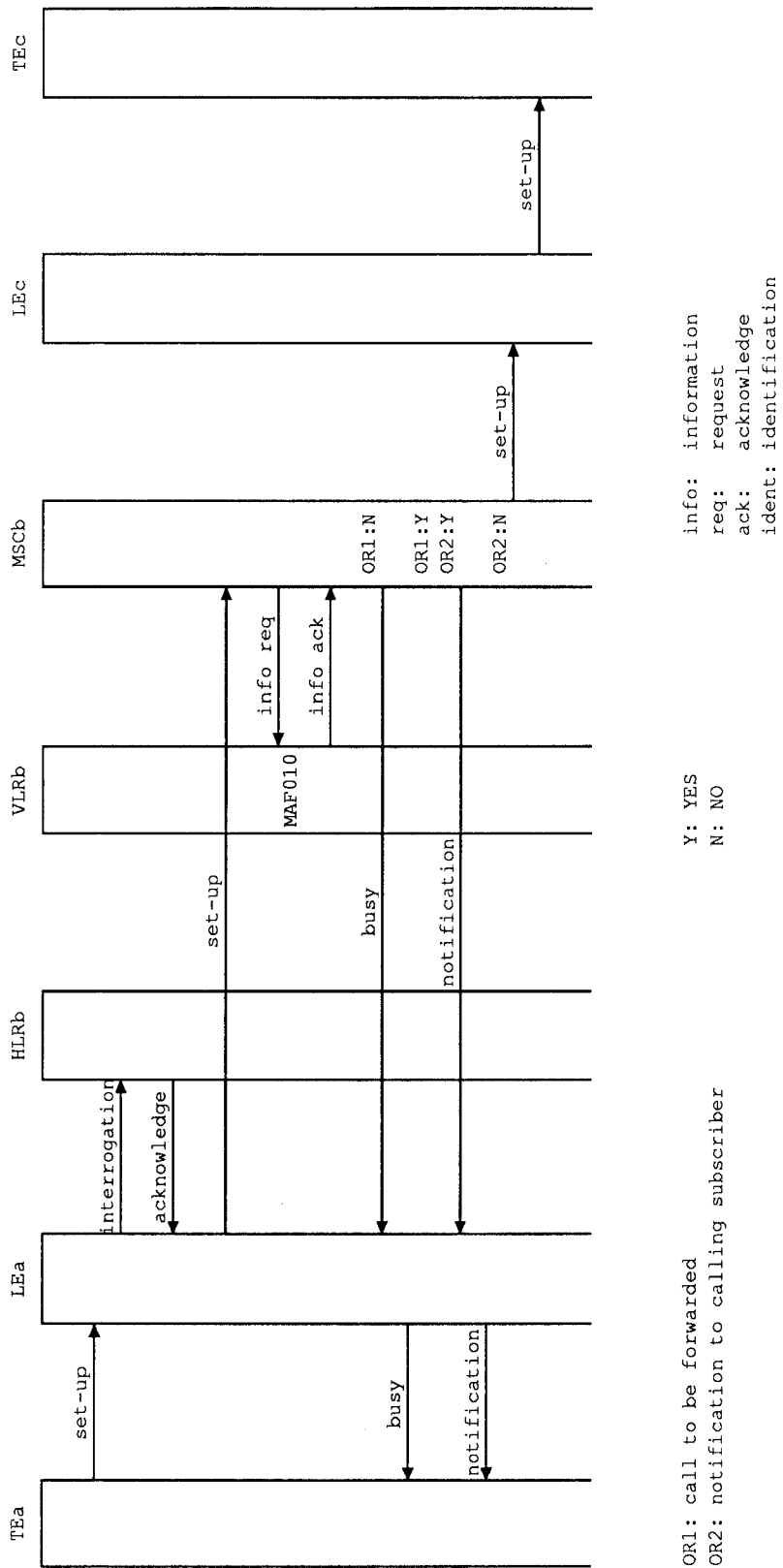


Figure 5.10/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of mobile subscriber not registered (fixed terminal to fixed terminal) (alternative 1)

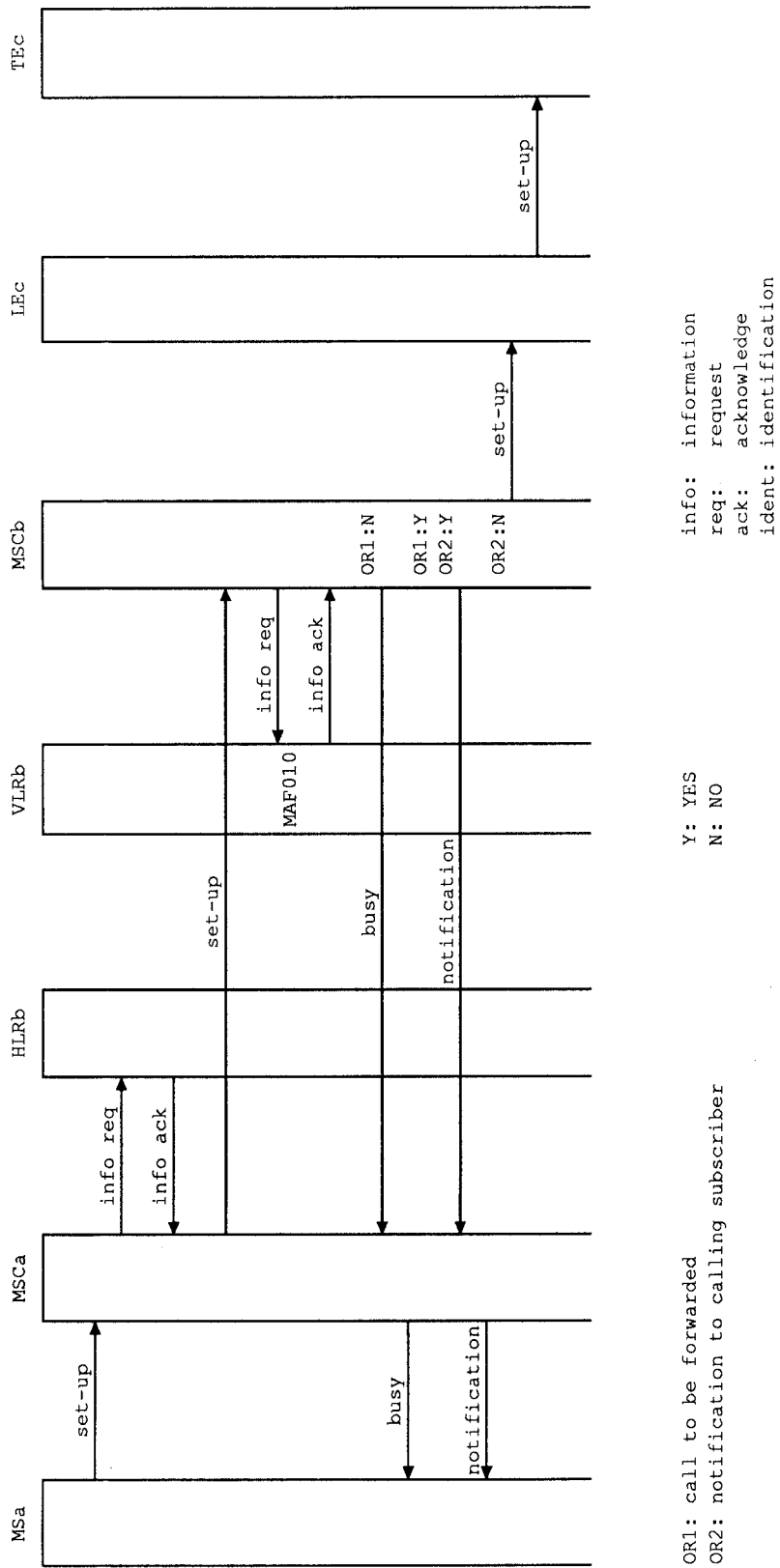
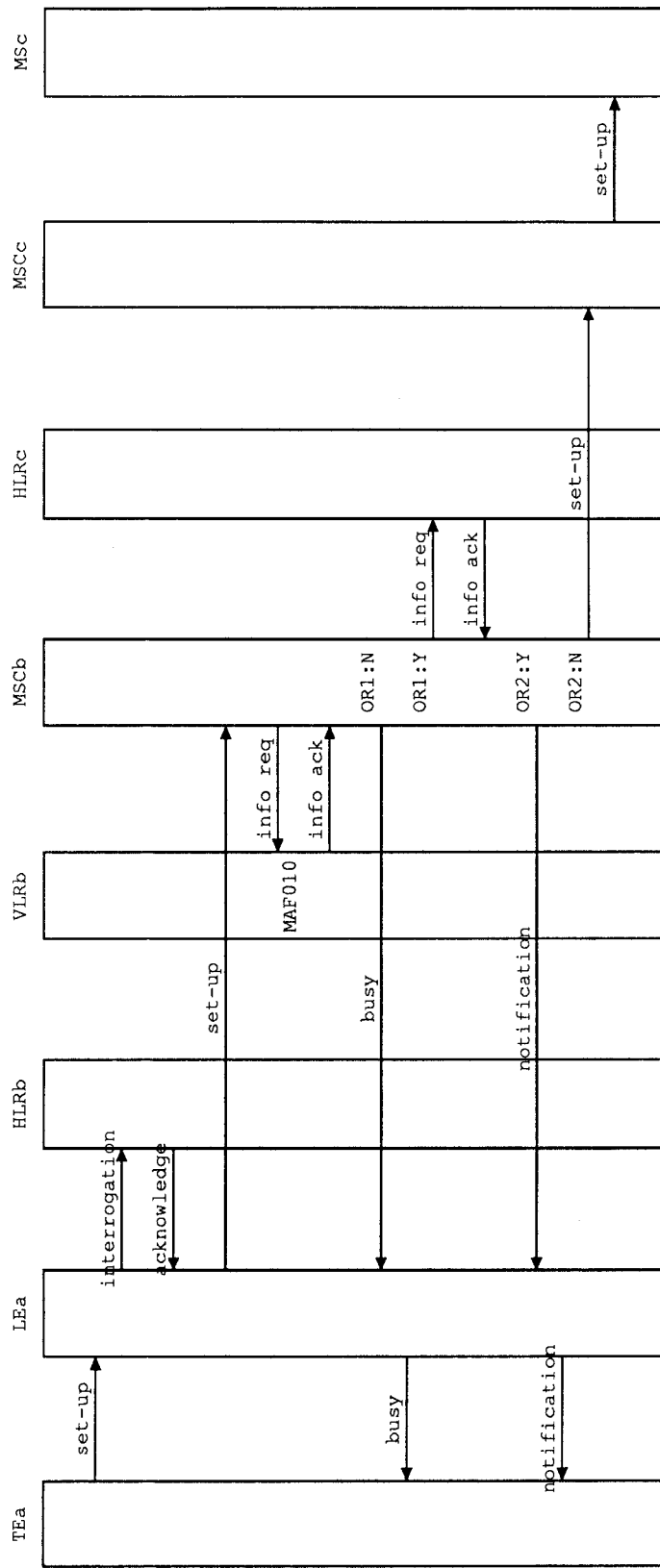


Figure 5.11/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of mobile subscriber not registered (mobile station to fixed terminal) (alternative 1)

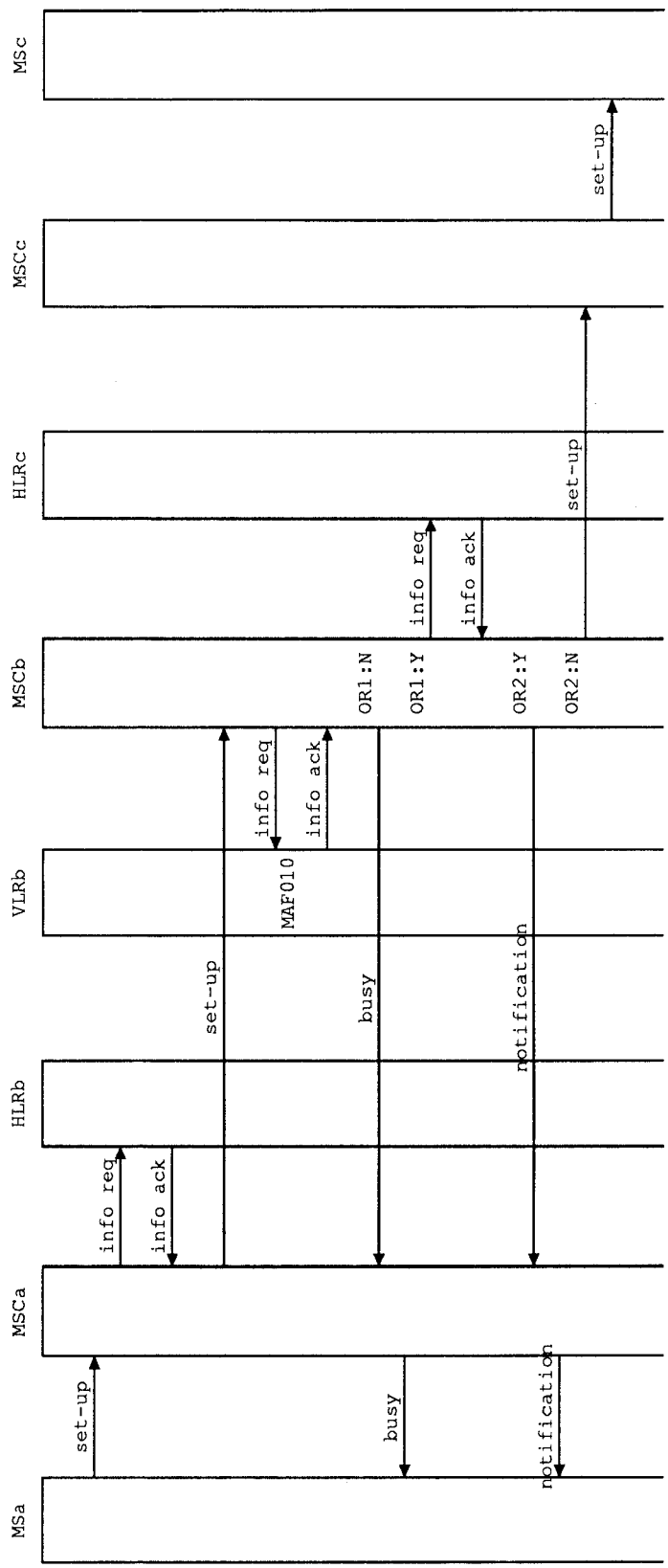


info: information
 req: request
 ack: acknowledge
 ident: identification

Y: YES
 N: NO

OR1: call to be forwarded
 OR2: notification to calling subscriber

Figure 5.12/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of mobile subscriber not registered (fixed terminal to mobile station) (alternative 1)



info: information
 req: request
 ack: acknowledge
 ident: identification

Y: YES
 N: NO

OR1: call to be forwarded
 OR2: notification to calling subscriber

Figure 5.13/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of mobile subscriber not registered (mobile station to mobile station) (alternative 1)

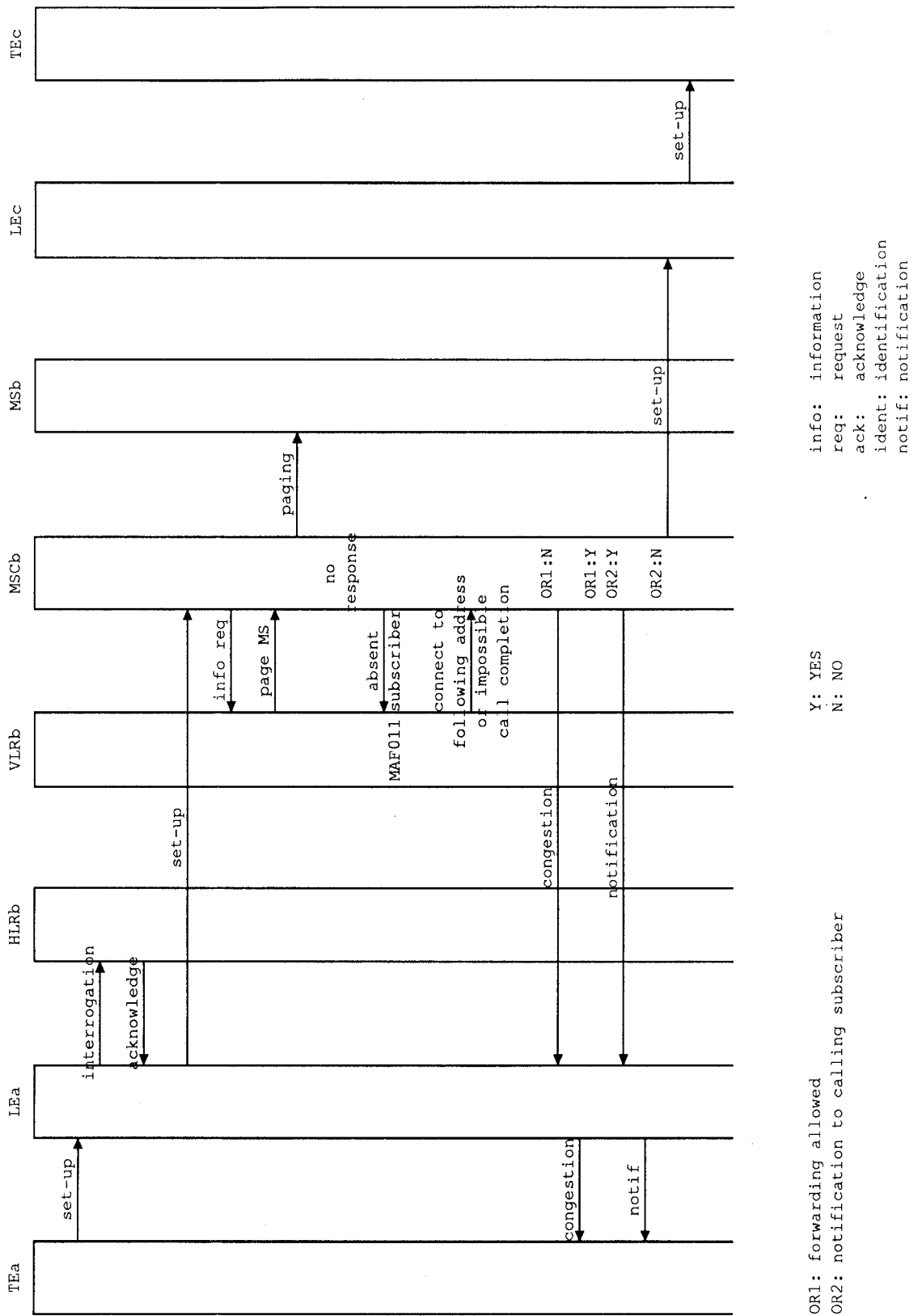


Figure 5.14/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of no paging response (fixed terminal to fixed terminal) (alternative 1)

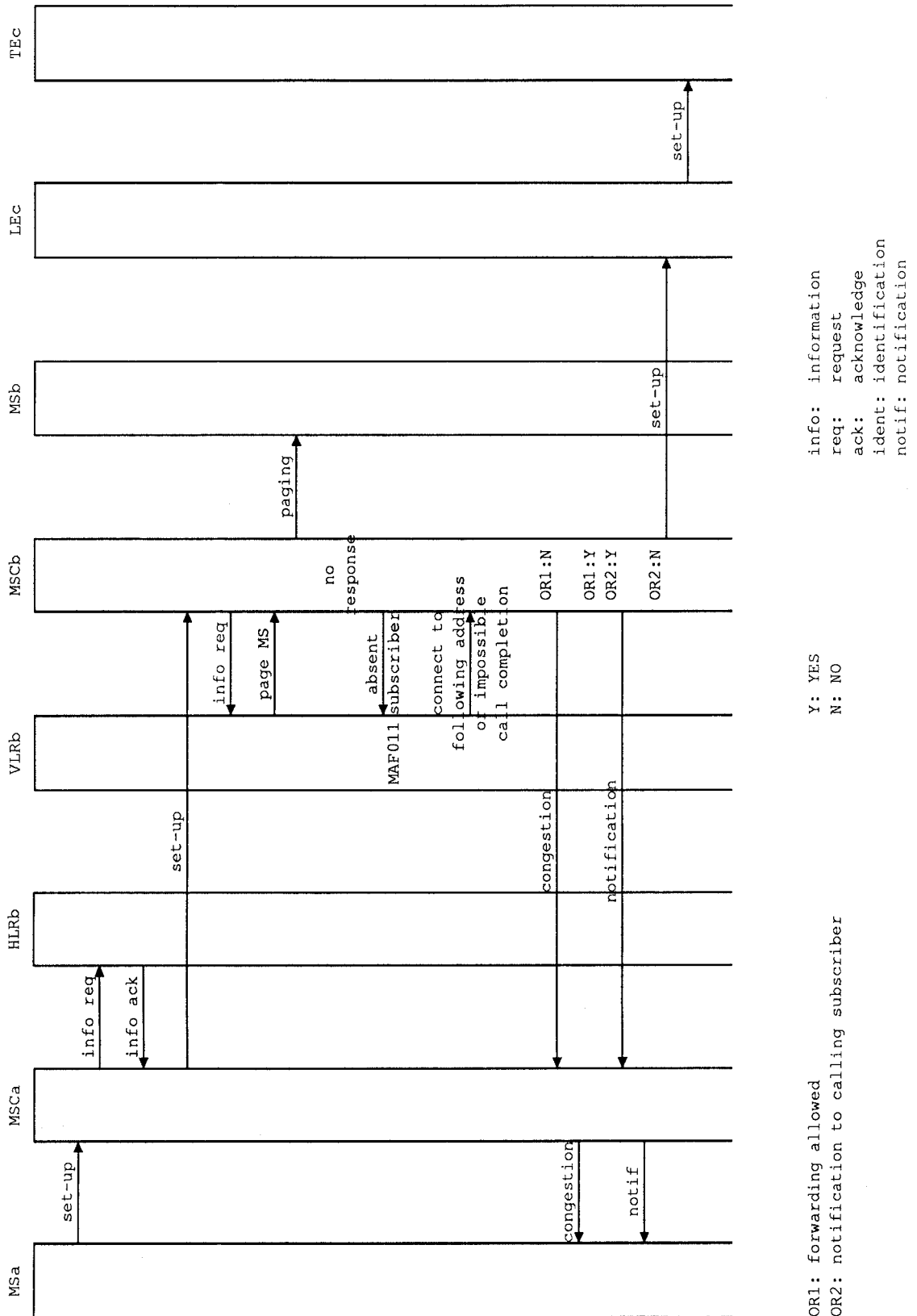


Figure 5.15/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of no paging response (mobile station to fixed terminal) (alternative 1)

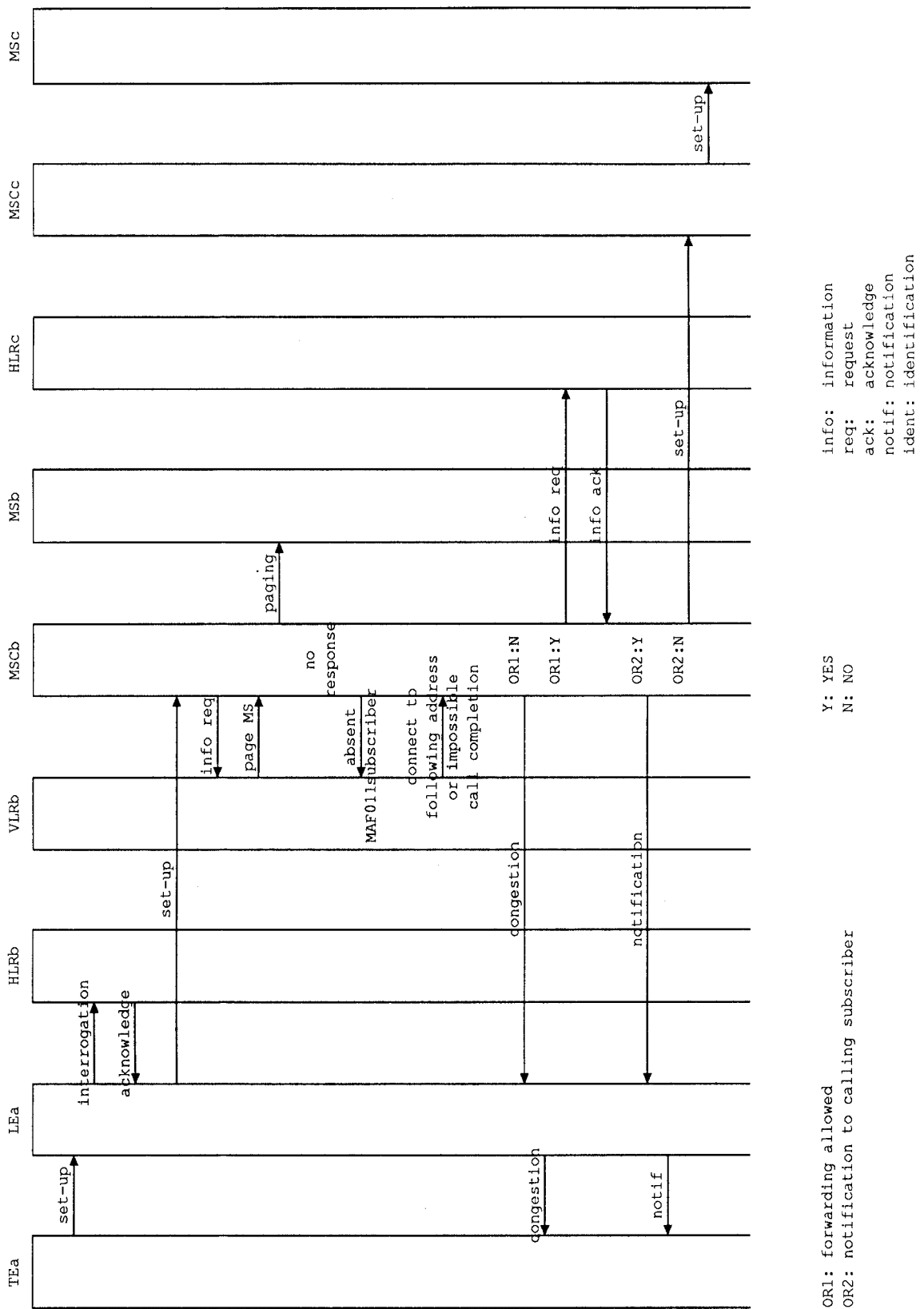


Figure 5.16/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of no paging response (fixed terminal to mobile station) (alternative 1)

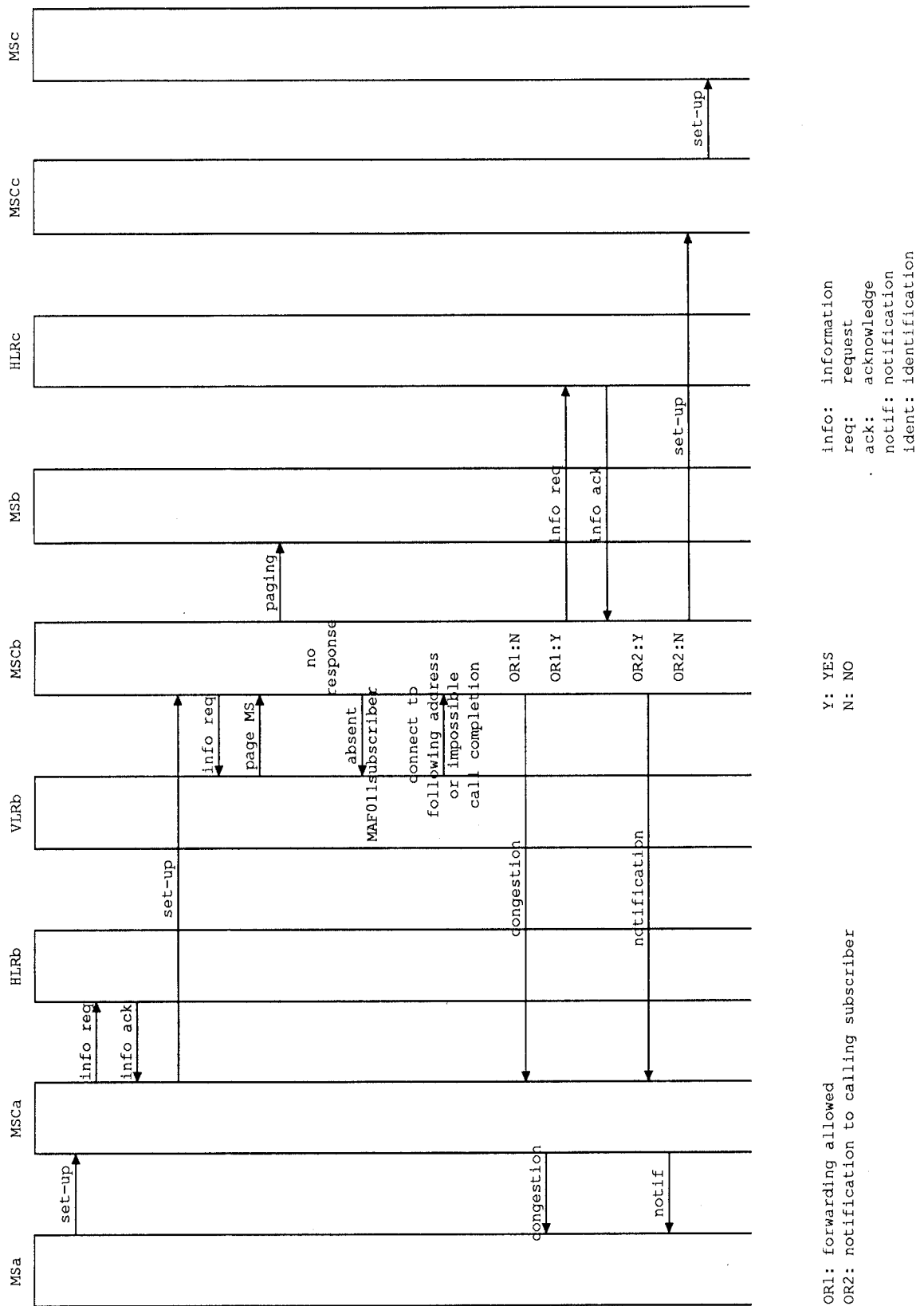


Figure 5.17/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of no paging response (mobile station to mobile station) (alternative 1)

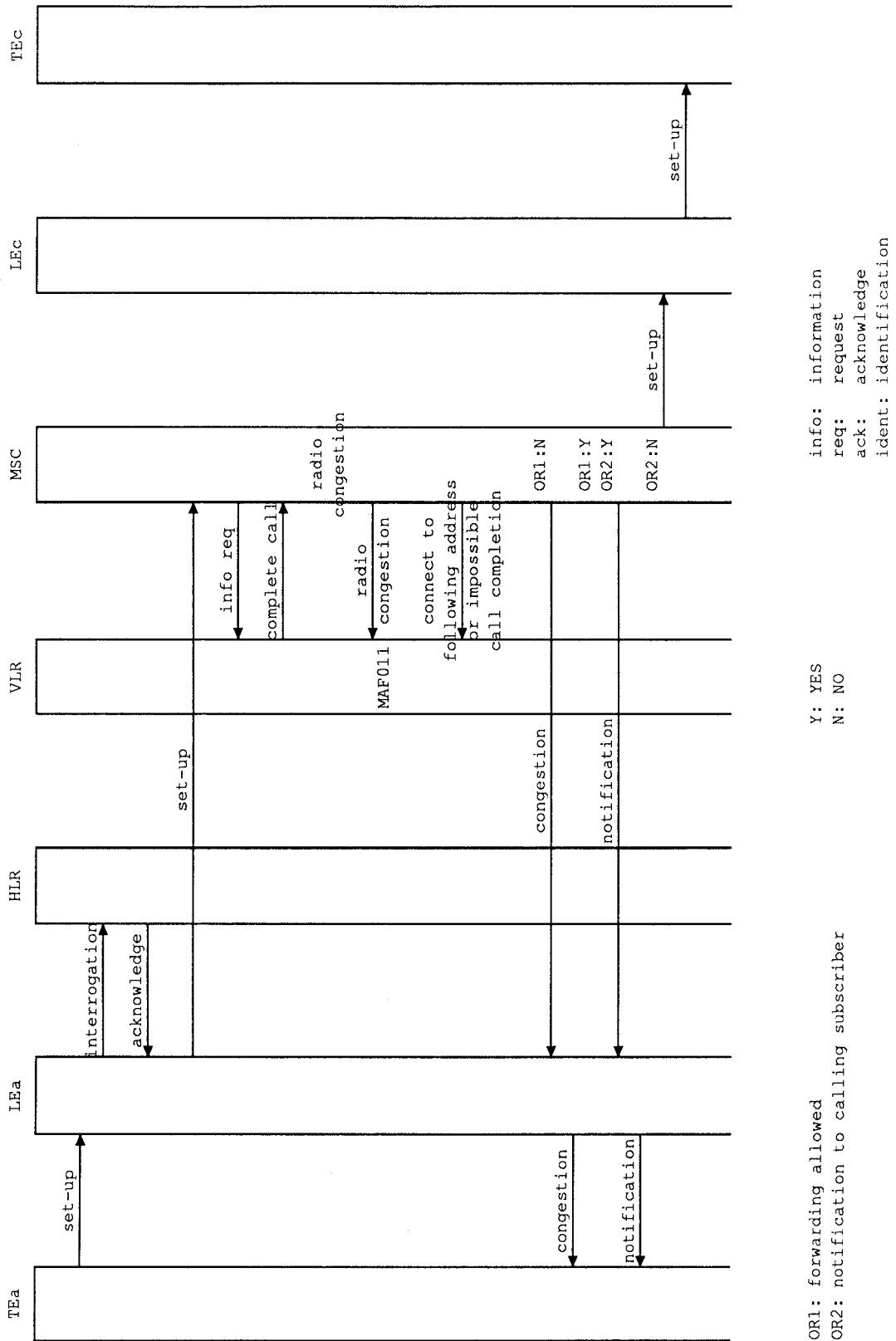


Figure 5.18/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of radio congestion (fixed terminal to fixed terminal) (alternative 1)

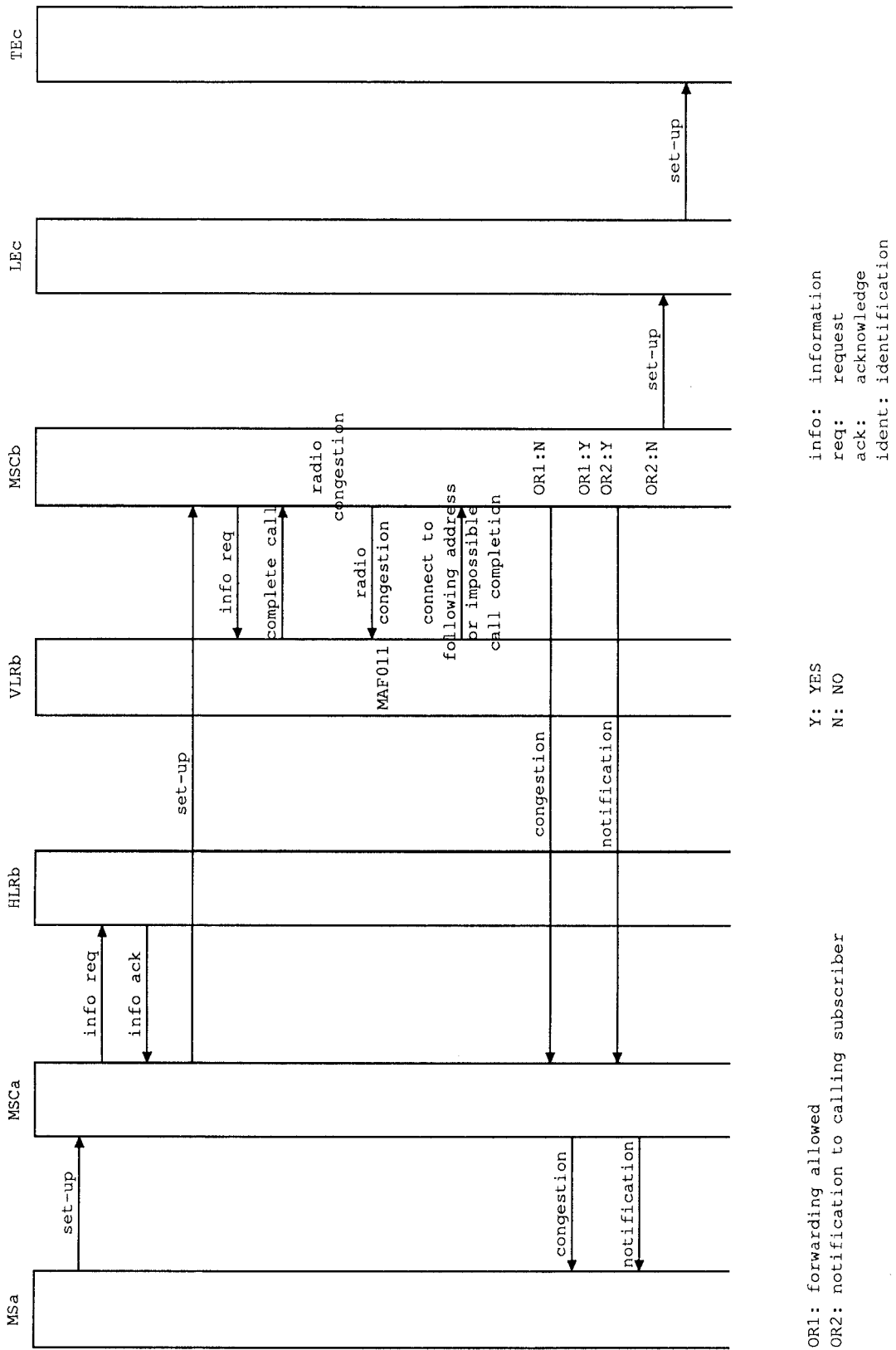


Figure 5.19/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of radio congestion (mobile station to fixed terminal) (alternative 1)

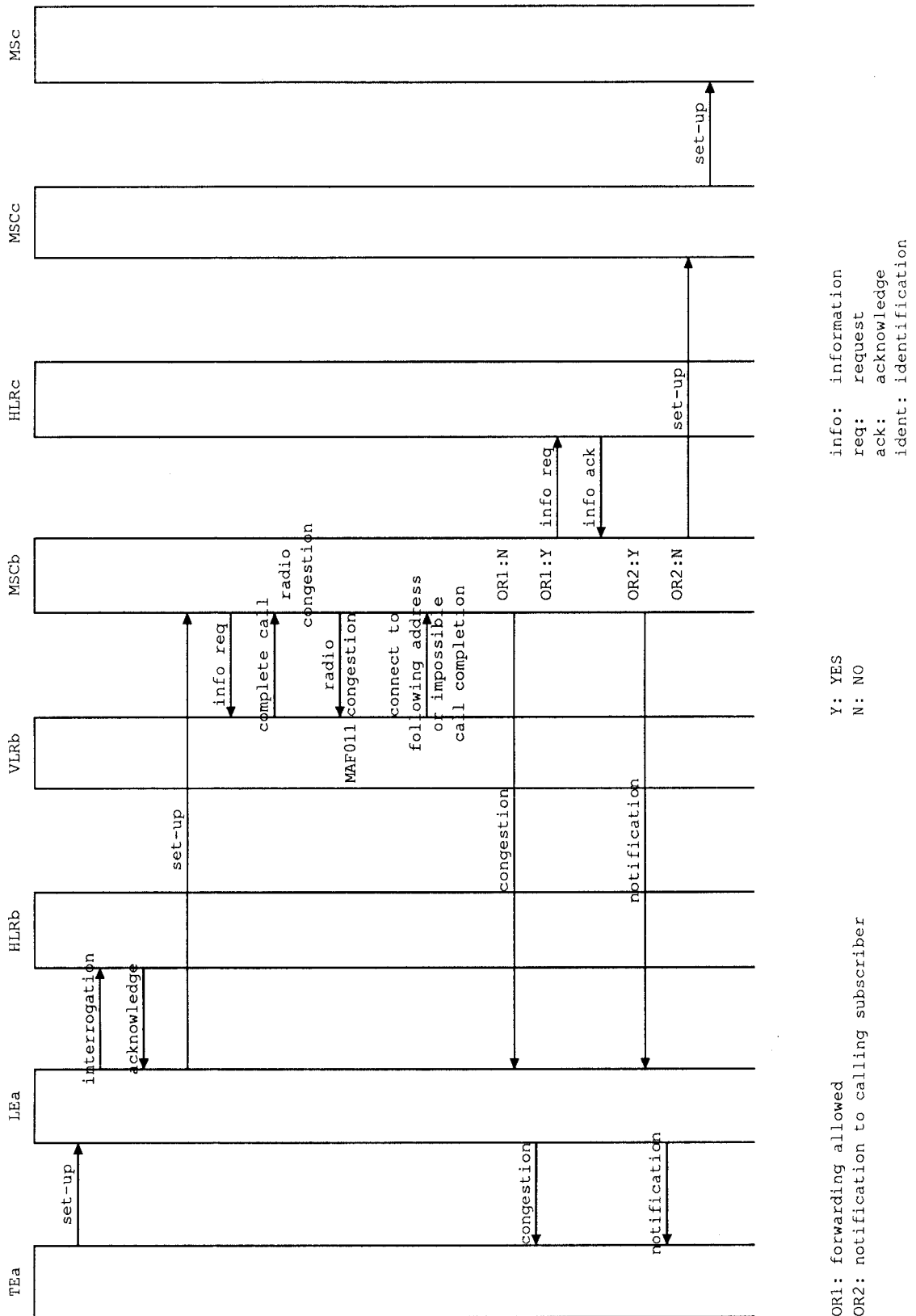


Figure 5.20/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of radio congestion (fixed terminal to mobile station) (alternative 1)

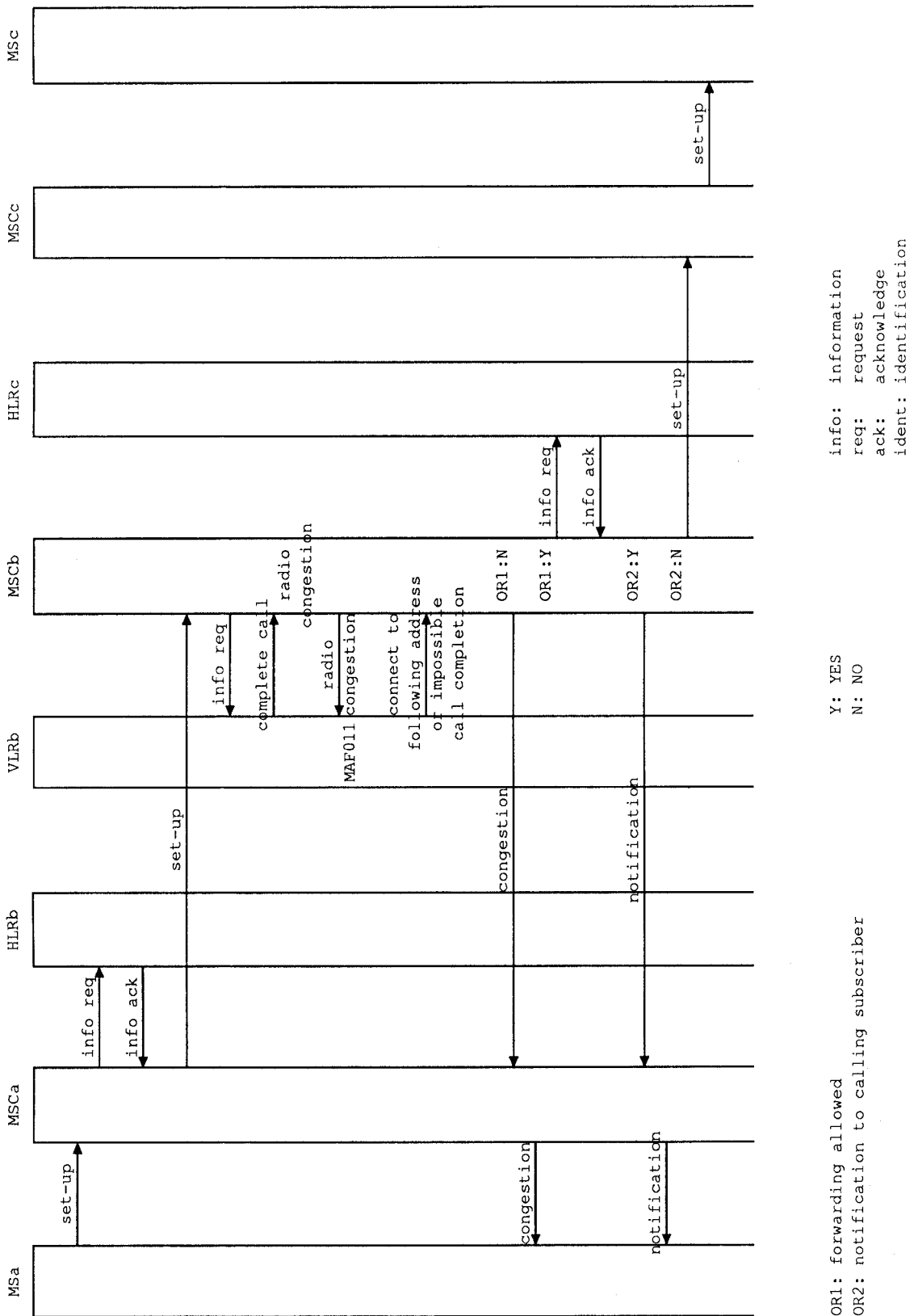


Figure 5.21/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of radio congestion (mobile station to mobile station) (alternative 1)

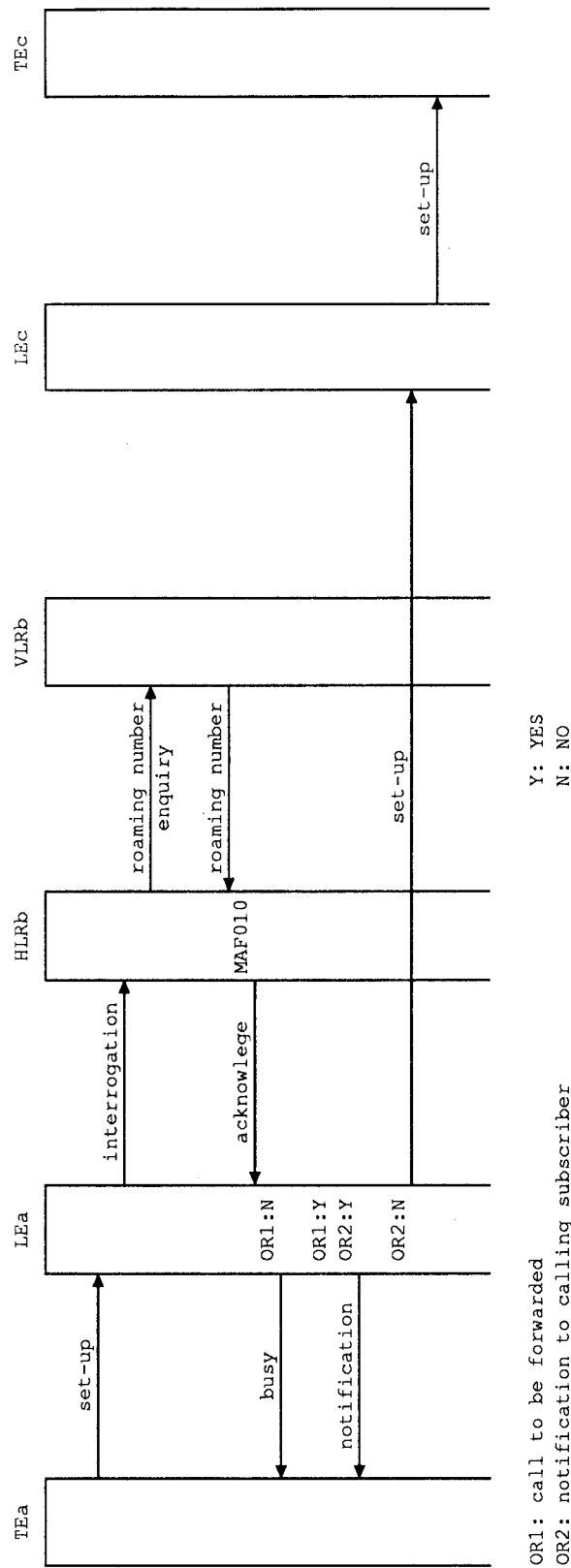


Figure 5.22/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of mobile subscriber not registered (fixed terminal to fixed terminal) (alternative 2)

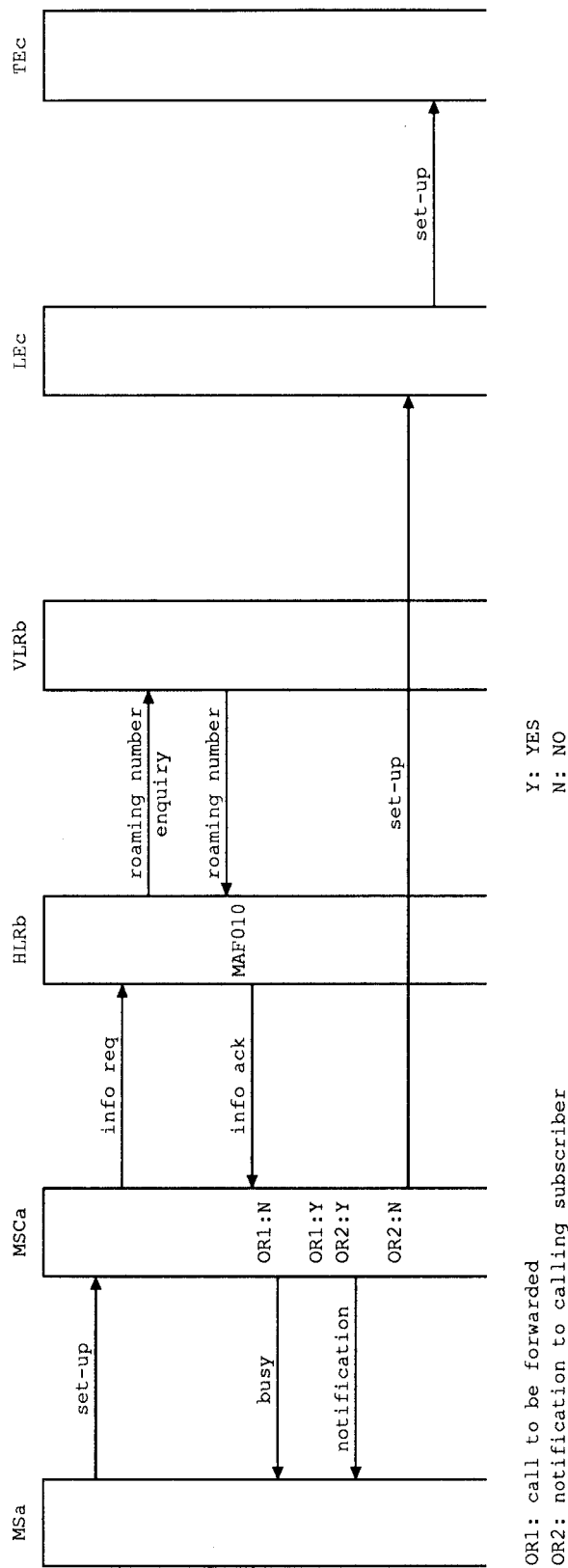


Figure 5.23/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of mobile subscriber not registered (mobile station to fixed terminal) (alternative 2)

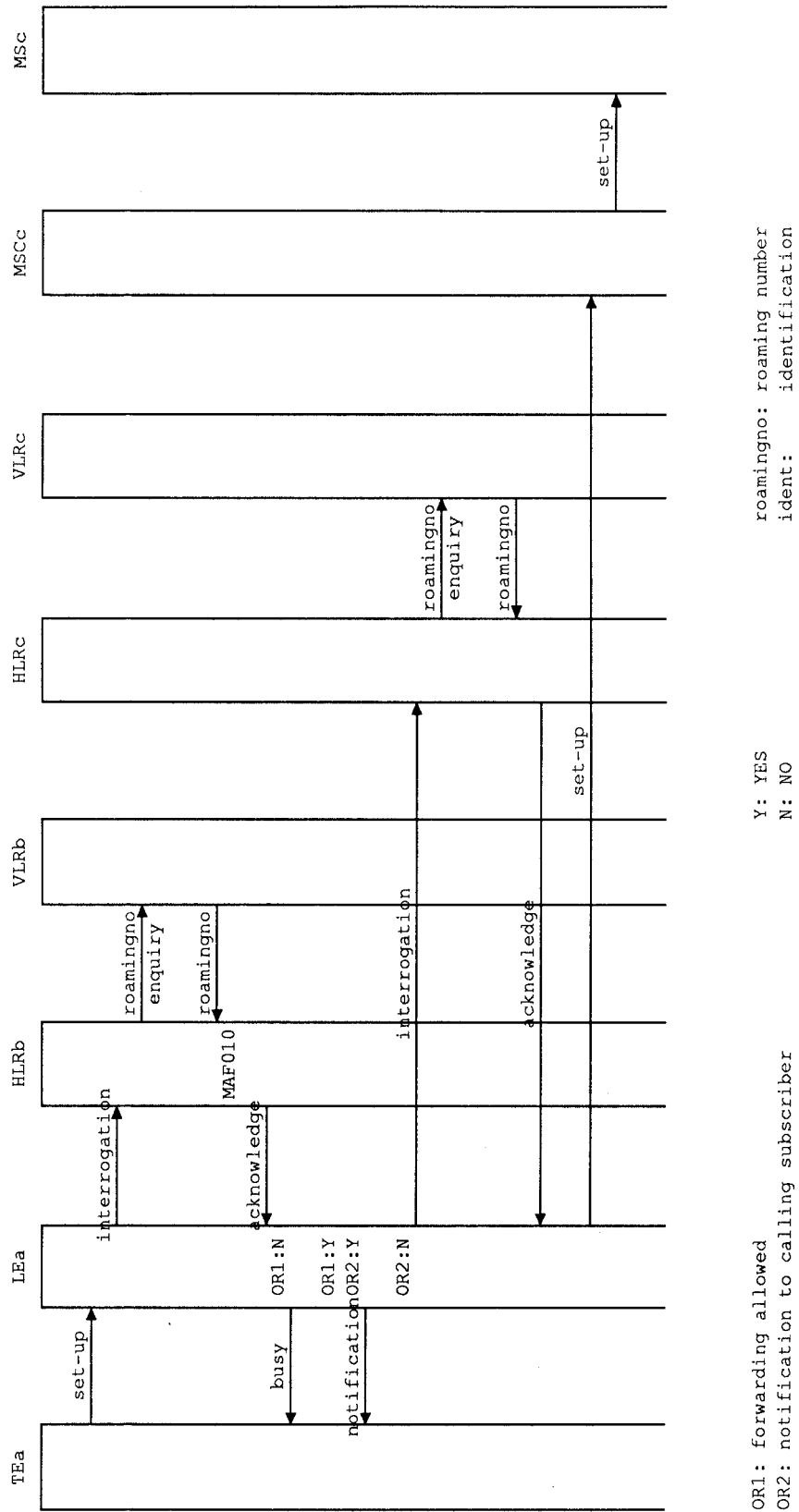


Figure 5.24/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of mobile subscriber not registered (fixed terminal to mobile station) (alternative 2)

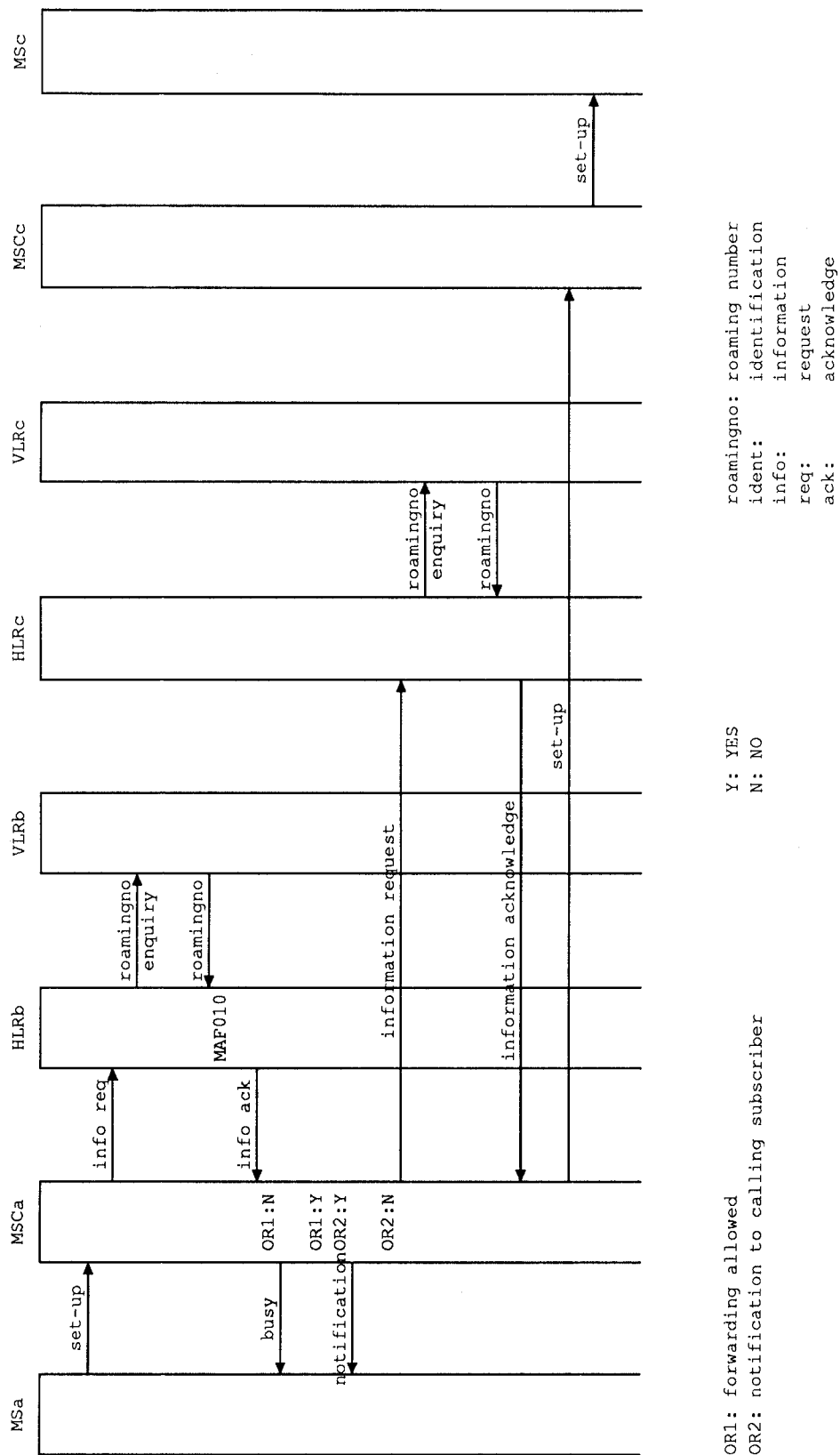


Figure 5.25/GSM 03.82
 Information flow for call forwarding on mobile subscriber not reachable in case of mobile subscriber not registered (mobile station to mobile station) (alternative 2)

5.3 Information stored in HLR

For the supplementary service call forwarding on mobile subscriber not reachable 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 to which call forwarding on mobile subscriber not reachable is applicable in the HLR must be stored:

- the subscription option "notification to the calling party"
This subscription option takes one of the following values:
 - no notification;
 - notification.
- the registration parameter "forwarded-to number"
- the registration parameter "registration status"
This parameter takes one of the following values:
 - registered;
 - erased.
- the activation parameter "activation status"
This parameter takes one of the following values:
 - activated;
 - deactivated by the user;
 - deactivated by the network (active and quiescent).

5.4 Information stored in VLR

For each basic service to which call forwarding on mobile subscriber not reachable is applicable in the VLR will be stored:

- the subscription option "notification to the calling party"
This subscription option takes one of the following values:
 - no notification;
 - notification.
- the registration parameter "forwarded-to number"
- the registration parameter "registration status"
This parameter takes one of the following values:
 - registered;
 - erased.
- the activation parameter "activation status"
This parameter takes one of the following values:
 - activated;
 - deactivated.

5.5 Handover

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