ETSI TC SMG

Released by : ETSI PT12

Release date: February 1992

#### RELEASE NOTE

#### Recommendation GSM 04.82

Mobile radio interface layer 3
Call offering supplementary services
Specification

Previously distributed version: 3.1.3 (updated release 1/90) New released version Febr 1992: 3.1.3 (release 92, phase 1)

# 1. Reason for changes

No changes since the previously distributed version.

ETSI-GSM
Technical
Specification

**GSM 04.82** 

Version 3.1.3

UDC: 621.396.21

Key words: European Digital Cellular Telecommunications System, Global System for Mobile

Communications (GSM)

# European digital cellular telecommunication system (phase 1);

Mobile Radio Interface Layer 3
Call Offering Supplementary Services
Specification

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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-ETSs) or European Telecommunications Standards (ETSs), 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".

# Recommendation GSM 04.82

# Version: 3.1.3

# Mobile radio interface layer 3 Call offering supplementary services Specification

Date: 21 January 1991

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#### SECTION 0

#### GENERAL

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

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

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

Definitions and descriptions of supplementary services are given in recommendations GSM 02.04 and GSM 02.81 to GSM 02.88. Recommendation GSM 02.82 is related specially to call offering supplementary services.

Technical realization of supplementary services is described in recommendations GSM 03.11 and GSM 03.81 to GSM 03.88. Recommendation GSM 03.82 is related specially to call offering supplementary services.

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

The following supplementary services belong to the call offering supplementary services and are described in this recommendation:

- Call forwarding unconditional (section 1);
- Call forwarding on mobile subscriber busy (section 2);
- Call forwarding on no reply (section 3);
- Call forwarding on mobile subscriber not reachable (section 4);
- Call transfer;
- Mobile access hunting.

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

#### SECTION 1

#### CALL FORWARDING UNCONDITIONAL (CFU)

# 1.1 Normal operation

# 1.1.1 Served mobile subscriber side

When call forwarding unconditional is active, all incoming calls for the specified basic service(s) will be forwarded without being offered to the served mobile subscriber.

When call forwarding unconditional is active, the ability of the served mobile subscriber to originate calls is not affected. However, an indication that the call forwarding service is currently active and operative on a number will be given to the forwarding party each time an outgoing call is made, see figure 1.1.

MS		Network
	SET UP	
	· · · · · · · · · · · · · · · · · · ·	>
	e.g. ALERTING	
Facilit		
(I	<pre>Invoke = NotifySS           (CFU, Activation indicator))</pre>	· · · · · · · · · · · · · · · · · · ·

Figure 1.1/GSM 04.82
Notification to the served mobile subscriber that call forwarding is active

# 1.1.2 Forwarded-to mobile subscriber side

The forwarded-to mobile subscriber will receive a notification that the call has been forwarded with the reason. The reason, when available, will be the appropriate forwarding condition, see figure 1.2.

When multiple forwarding occurs the reason for forwarding given to the forwarded-to mobile subscriber should relate to the last forwarding subscriber in the chain.

MS

SET UP

<----Facility

(Invoke = NotifySS

(CFU, CallIsForwarded indication))

Note: In case the specific call forwarding service is not known the common SS code for Call forwarding will be used.

Figure 1.2/GSM 04.82
Notification to the forwarded-to mobile subscriber that the call is a forwarded call

# 1.1.3 Calling mobile subscriber side

As a subscription option, the served mobile subscriber can request that the calling mobile subscriber receives a notification that the call has been forwarded, see figure 1.3.

MS		Network
	SET UP	
		>
	FACILITY	
Facility		
(Invo	oke = NotifySS (CFU,CallIsForwarded_indication))	

Note: In case the specific call forwarding service is not known the common SS code for Call forwarding will be used.

Figure 1.3/GSM 04.82 Notification to the calling mobile subscriber that the call is forwarded by the called user

#### 1.2 Registration

The following information has to be registered in the network:

- the forwarded-to number which may be accompanied by a forwarded-to sub-address;
- information as to whether all calls or all calls of a specific basic service should be forwarded.

When the mobile subscriber registers call forwarding unconditional, the network will send a return result indication of acceptance of the request. This result indication will include the forwarded-to number to which call forwarding unconditional is registered, see figure 1.4.

Call forwarding unconditional for all basic services and call forwarding unconditional of a particular basic service cannot be simultaneously registered. If the subscriber does not indicate a specific basic service the registration applies to all basic services, see figure 1.4.

Registration is in fact an implicit activation of the service.

If the system cannot accept a registration request, an error indication is returned to the served mobile subscriber that call forwarding unconditional registration was not successful. Error values are specified in recommendation GSM 04.80.

MS		Network
	REGISTER	>
Faci	<pre>llity (Invoke = RegisterSS</pre>	·
	RELEASE COMPLETE/FACILITY	
Faci	llity (Return result = RegisterSS (ForwardedToNumber,BasicServiceCode))	
< Faci	RELEASE COMPLETE  ility (Return error (Error))	
_	RELEASE COMPLETE	
Faci	ility (Reject (Invoke_problem))	

Figure 1.4/GSM 04.82
Registration of call forwarding unconditional

Note: If BasicServiceCode is not included it applies to all

The forwarded-to number may be accompanied by a

basic services.

forwarded-to sub-address.

#### 1.3 Erasure

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

- the subscriber can specifically erase a previous registration with an appropriate control procedure,

- the subscriber can register information for call forwarding unconditional for the specific basic service to another directory number, thus causing the previous registration of call forwarding unconditional to be overridden,
- all information is erased as a result of withdrawal of the supplementary service (administrative handling).

If the network cannot accept a mobile subscriber's request for erasure an error indication will be returned to the subscriber. Error values are specified in recommendation GSM 04.80.

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 1.5.

Erasure is in fact an implicit deactivation of the service.

MS	PROTORED.	Network
	REGISTER	>
Faci	<pre>ility   (Invoke = EraseSS           (CFU, BasicServiceCode))</pre>	
	RELEASE COMPLETE/FACILITY	
Faci	ility (Return result = EraseSS (BasicServiceCode))	
	RELEASE COMPLETE	
< Faci	ility (Return error (Error))	
<i>1</i>	RELEASE COMPLETE	
Faci	ility (Reject (Invoke_problem))	

Note: If BasicServiceCode is not included it applies to all basic services.

Figure 1.5/GSM 04.82 Erasure of call forwarding unconditional

If the network erases call forwarding unconditional without the mobile subscriber having requested erasure (see recommendation GSM 02.82), the served mobile subscriber may receive notification along with the reason, see figure 1.6.

MS

FACILITY

C----
Facility

(Invoke = NotifySS

(CFU, Erasure\_indicator, BasicServiceCode))

Figure 1.6/GSM 04.82

Notification to the served mobile subscriber of erasing by the network of call forwarding unconditional

#### 1.4 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 which may be accompanied by forwarded-to sub-addresses, see figure 1.7

MS	Netwo
	REGISTER
Faci	lity (Invoke = InterrogateSS (CFU))
	RELEASE COMPLETE/FACILITY
Faci	lity (Return result = InterrogateSS (ForwardedToNumber(s),BasicServiceCode(s)))
	RELEASE COMPLETE
< Faci	lity (Return error (Error))
	RELEASE COMPLETE
< Faci	lity (Reject (Invoke_problem))

Note: The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 1.7/GSM 04.82
Interrogation of call forwarding unconditional active for all basic services

- 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 if so, to what forwardedto number which may be accompanied by a forwarded-to subaddress, see figure 1.8.

MS	REGISTER	Network
Faci	lity (Invoke = InterrogateSS (CFU,BasicServiceCode))	
_	RELEASE COMPLETE/FACILITY	
Faci	lity (Return result = InterrogateSS (ForwardedToNumber,BasicServiceCode))	
	RELEASE COMPLETE	
< Faci	.lity (Return error (Error))	
_	RELEASE COMPLETE	
Faci	lity (Reject (Invoke_problem))	

Note: The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 1.8/GSM 04.82
Interrogation of call forwarding unconditional active for one particular basic service

# 1.5 Activation, deactivation and invocation

Activation, deactivation and invocation are not applicable to the supplementary service call forwarding unconditional.

#### SECTION 2

#### CALL FORWARDING ON MOBILE SUBSCRIBER BUSY (CFB)

#### 2.1 Normal operation

# 2.1.1 Served mobile subscriber side

When call forwarding on mobile subscriber busy is active, all incoming calls for the specified basic service(s) that meet mobile subscriber busy will be forwarded without being offered to the served mobile subscriber.

When an incoming call is forwarded on mobile subscriber busy the served mobile subscriber can, as a subscription option, receive notification (but will not be able to answer the incoming call), see figure 2.1.

MS

FACILITY

<----Facility

(Invoke = NotifySS

(CFB, IncomingCallIsForwarded indication))

Figure 2.1/GSM 04.82
Notification to the served mobile subscriber
that the call is forwarded on mobile subscriber busy

When call forwarding on mobile subscriber busy is active, the ability of the served mobile subscriber to originate calls is not affected. However, a general indication that a call forwarding service is currently active and operative on a number will be given to the forwarding party each time an outgoing call is made, see figure 2.2.

MS		Network	
<b>**</b>	SET UP		
		>	
	e.g. ALLERTING		
Facility			
(Invoke = No	otifySS		
(SS_Cod	de, Activation_indicator))		

Note: The SS code will be the common SS code for all conditional call forwarding services.

Figure 2.2/GSM 04.82
Notification to the served mobile subscriber that call forwarding is active

# 2.1.2 Forwarded-to mobile subscriber side

The forwarded-to mobile subscriber will receive a notification that the call has been forwarded with the reason. The reason, when available, will be the appropriate forwarding condition, see figure 2.3.

When multiple forwarding occurs the reason for forwarding given to the forwarded-to mobile subscriber should relate to the last forwarding subscriber in the chain.

MS

SET UP

<----Facility

(Invoke = NotifySS

(CFB, CallIsForwarded indication))

Note: In case the specific call forwarding service is not known the common SS code for Call forwarding will be used.

Figure 2.3/GSM 04.82
Notification to the forwarded-to mobile subscriber that the call is a forwarded call

#### 2.1.3 Calling mobile subscriber side

As a subscription option, the served mobile subscriber can request that the calling mobile subscriber receives a notification that the call has been forwarded, see figure 2.4.

MS		Network
	SET UP	
		>
	FACILITY	
Facility		
(Invoke =	NotifySS	
(CFB	,CallIsForwarded_indicatio	n))

Note: In case the specific call forwarding service is not known the common SS code for Call forwarding will be used.

Figure 2.4/GSM 04.82 Notification to the calling mobile subscriber that the call is forwarded by the called user

#### 2.2 Registration

The following information has to be registered in the network:

- the forwarded-to number which may be accompanied by a forwarded-to sub-address;
- information as to whether all calls or all calls of a specific basic service should be forwarded.

When the mobile subscriber registers call forwarding on mobile subscriber busy, the network will send a return result indication of acceptance of the request. This result indication will include the forwarded-to number to which call forwarding on mobile subscriber busy is registered, see figure 2.5.

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 subscriber does not indicate a specific basic service the registration applies to all basic services, see figure 2.5.

Registration is in fact an implicit activation of the service.

If the system cannot accept a registration request, an error indication is returned to the served mobile subscriber that call forwarding on mobile subscriber busy registration was not successful. Error values are specified in recommendation GSM 04.80.

MS	Network
REGISTER	>
<pre>Facility (Invoke = RegisterSS</pre>	
RELEASE COMPLETE/FACILITY	
Facility  (Return result = RegisterSS  (ForwardedToNumber, BasicServiceCode))	
RELEASE COMPLETE <	
RELEASE COMPLETE	
Facility (Reject (Invoke_problem))	
. If BasicSarvicaCodo is not included it applies to	\ all

Note: If BasicServiceCode is not included it applies to all basic services.

The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 2.5/GSM 04.82
Registration of call forwarding on mobile subscriber busy

#### 2.3 Erasure

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

- the subscriber can specifically erase a previous registration with an appropriate control procedure,
- the subscriber can register information for call forwarding on mobile subscriber busy for the specific basic service to another directory number, thus causing the previous registration 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).

If the network cannot accept a mobile subscriber's request for erasure an error indication will be returned to the subscriber. Error values are specified in recommendation GSM 04.80.

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 2.6.

Erasure is in fact an implicit deactivation of the service.

Network MS REGISTER \_\_\_\_\_> Facility (Invoke = EraseSS (CFB, BasicServiceCode)) RELEASE COMPLETE/FACILITY Facility (Return result = EraseSS (BasicServiceCode)) RELEASE COMPLETE Facility (Return error (Error)) RELEASE COMPLETE Facility (Reject (Invoke problem)) Note: If BasicServiceCode is not included it applies to all basic services. Figure 2.6/GSM 04.82 Erasure of call forwarding on mobile subscriber busy

If the network erases call forwarding on mobile subscriber busy without the mobile subscriber having requested erasure (see recommendation GSM 02.82), the served mobile subscriber may receive notification along with the reason, see figure 2.7.

MS

FACILITY

C----
Facility

(Invoke = NotifySS

(CFB, Erasure\_indicator, BasicServiceCode))

Figure 2.7/GSM 04.82
Notification to the served mobile subscriber of erasing by the network of call forwarding on mobile subscriber busy

#### 2.4 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 which may be accompanied by forwarded-to sub-addresses, see figure 2.8.

MS		Network
	REGISTER	
Facil	lity (Invoke = InterrogateSS (CFB))	
	RELEASE COMPLETE/FACILITY	
Faci	lity (Return result = InterrogateSS (ForwardedToNumber(s),BasicServiceCode(s))	)
	RELEASE COMPLETE	
< Faci	lity (Return error (Error))	
	RELEASE COMPLETE	
< Faci	lity (Reject (Invoke_problem))	

Note: The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 2.8/GSM 04.82
Interrogation of call forwarding on mobile subscriber busy active for all basic services

- 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 if so, to what forwarded-to number which may be accompanied by a forwardedto sub-address, see figure 2.9.

MS		Network
	REGISTER	>
Faci		
	<pre>(Invoke = InterrogateSS      (CFB, BasicServiceCode))</pre>	
	RELEASE COMPLETE/FACILITY	
Faci		
	<pre>(Return result = InterrogateSS      (ForwardedToNumber, BasicServiceCode))</pre>	
	RELEASE COMPLETE	
< Faci	lity (Return error (Error))	
	RELEASE COMPLETE	
< Faci	<del>-</del>	
	(Reject (Invoke_problem))	

Note: The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 2.9/GSM 04.82
Interrogation of call forwarding on mobile subscriber busy active for one particular basic service

#### 2.5 Activation, deactivation and invocation

Activation, deactivation and invocation are not applicable to the supplementary service call forwarding on mobile subscriber busy.

#### SECTION 3

# CALL FORWARDING ON NO REPLY (CFNREP)

#### 3.1 Normal operation

#### 3.1.1 Served mobile subscriber side

When call forwarding on no reply is active, all incoming calls for the specified basic service(s) that are not answered within the period defined by the no reply condition timer, will be forwarded.

When an incoming call is forwarded on no reply the served mobile subscriber can, as a subscription option, receive notification, see figure 3.1.

MS Network

FACILITY

Facility

Figure 3.1/GSM 04.82
Notification to the served mobile subscriber that the call is forwarded on no reply

When call forwarding on no reply is active, the ability of the served mobile subscriber to originate calls is not affected. However, a general indication that a call forwarding service is currently active and operative on a number will be given to the forwarding party each time an outgoing call is made, see figure 3.2.

MS		Network
	SET UP	
		>
	e.g. ALERTING	
<		
Faci	lity	
	(Invoke = NotifySS	
	(SS Code, Activation indicator))	

Note: The SS code will be the common SS code for all conditional call forwarding services.

Figure 3.2/GSM 04.82
Notification to the served mobile subscriber that call forwarding is active

# 3.1.2 Forwarded-to mobile subscriber side

The forwarded-to mobile subscriber will receive a notification that the call has been forwarded with the reason. The reason, when available, will be the appropriate forwarding condition, see figure 3.3.

When multiple forwarding occurs the reason for forwarding given to the forwarded-to mobile subscriber should relate to the last forwarding subscriber in the chain.

MS

SET UP

<----Facility

(Invoke = NotifySS

(CFNREP, CallIsForwarded indication))

Note: In case the specific call forwarding service is not known the common SS code for Call forwarding will be used.

Figure 3.3/GSM 04.82
Notification to the forwarded-to mobile subscriber that the call is a forwarded call

#### 3.1.3 Calling mobile subscriber side

As a subscription option, the served mobile subscriber can request that the calling mobile subscriber receives a notification that the call has been forwarded, see figure 3.4.

MS		Network
	SET UP	
		>
	FACILITY	
<		
Facility		
(Invok	ce = NotifySS	
	(CFNREP.CallIsForwarded indication)	)

Note: In case the specific call forwarding service is not known the common SS code for Call forwarding will be used.

Figure 3.4/GSM 04.82 Notification to the calling mobile subscriber that the call is forwarded by the called user

#### 3.2 Registration

The following information has to be registered in the network:

- the forwarded-to number, which may be accompanied by a forwarded-to sub-address,
- information as to whether all calls or all calls of a specific basic service should be forwarded,
- the duration of the no reply condition timer.

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

When the mobile subscriber registers call forwarding on no reply, the network will send a return result indication of acceptance of the request. This result indication will include the forwarded-to number to which call forwarding on no reply is registered and the duration of the no reply condition timer, see figure 3.5.

Registration is in fact an implicit activation of the service.

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 subscriber does not indicate a specific basic service the registration applies to all basic services, see figure 3.5.

If the system cannot accept a registration request, an error indication is returned to the served mobile subscriber that call forwarding on no reply registration was not successful. Error values are specified in recommendation GSM 04.80.

	MS Network
	REGISTER
(CFN	Facility (Invoke = RegisterSS IREP, ForwardedToNumber, NoReplyConditionTime, BasicServiceCode)
	RELEASE COMPLETE/FACILITY
	Facility  (Return result = RegisterSS  (ForwardedToNumber, NoReplyConditionTime, BasicServiceCode))
	RELEASE COMPLETE < Facility (Return error (Error))
	RELEASE COMPLETE
	Facility (Reject (Invoke_problem))

Note: If BasicServiceCode is not included it applies to all basic services.

The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 3.5/GSM 04.82
Registration of call forwarding on no reply

#### 3.3 Erasure

A previous registration can be erased in one of three ways:
- the subscriber can specifically erase a previous

registration with an appropriate control procedure,

- the subscriber can register information for call forwarding on no reply for the specific basic service to another directory number, thus causing the previous registration of call forwarding on no reply to be overridden,

- all information is erased as a result of withdrawal of the supplementary service (administrative handling).

If the network cannot accept a mobile subscriber's request for erasure an error indication will be returned to the subscriber. Error values are specified in recommendation GSM 04.80.

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 3.6.

Erasure is in fact an implicit deactivation of the service.

Network MS REGISTER Facility (Invoke = EraseSS (CFNREP, BasicServiceCode)) RELEASE COMPLETE/FACILITY Facility (Return result = EraseSS (BasicServiceCode)) RELEASE COMPLETE Facility (Return error (Error)) RELEASE COMPLETE <---------Facility (Reject (Invoke problem))

Note: If BasicServiceCode is not included it applies to all basic services.

Figure 3.6/GSM 04.82 Erasure of call forwarding on no reply

If the network erases call forwarding on no reply without the mobile subscriber having requested erasure (see recommendation GSM 02.82), the served mobile subscriber may receive notification along with the reason, see figure 3.7.

MS

FACILITY

C----
Facility

(Invoke = NotifySS

(CFNREP, Erasure\_indicator, BasicServiceCode))

Figure 3.7/GSM 04.82
Notification to the served mobile subscriber of erasing by the network of call forwarding on no reply

# 3.4 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 which may be accompanied by forwarded-to sub-addresses and the duration of the no reply condition timer, see figure 3.8.

MS		Network
	REGISTER	>
Faci	lity (Invoke = InterrogateSS (CFNREP))	
_	RELEASE COMPLETE/FACILITY	
Faci	<pre>lity   (Return result = InterrogateSS</pre>	e(s),
	RELEASE COMPLETE	
< Faci	lity (Return error (Error))	
	RELEASE COMPLETE	
< Faci	lity (Reject (Invoke_problem))	

Note: The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 3.8/GSM 04.82
Interrogation of call forwarding on no reply active for all basic services

- 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 if so, to what forwarded-to number which may be accompanied by a forwardedto sub-address and the duration of the no reply condition timer, see figure 3.9.

MS	REG	ISTER	Network
Facility (Invoke = Int (CFNREP,		SS viceCode))	
REL	EASE COME	PLETE/FACILITY	
Facility (Return resul (ForwardedToNumber		rogateSS ConditionTime,BasicServic	eCode))
<		COMPLETE	
<	RELEASE	COMPLETE	

Note: The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 3.9/GSM 04.82
Interrogation of call forwarding on no reply active for one particular basic service

#### 3.5 Activation, deactivation and invocation

Activation, deactivation and invocation are not applicable to the supplementary service call forwarding on no reply.

#### SECTION 4

#### CALL FORWARDING ON MOBILE SUBSCRIBER NOT REACHABLE (CFNREA)

# 4.1 Normal operation

#### 4.1.1 Served mobile subscriber side

When call forwarding on mobile subscriber not reachable, all incoming calls for the specified basic service(s) when the mobile subscriber is not reachable, will be forwarded without being offered to the served mobile subscriber.

When call forwarding on mobile subscriber not reachable is active, the ability of the served mobile subscriber to originate calls is not affected. However, a general indication that a call forwarding service is currently active and operative on a number will be given to the forwarding party each time an outgoing call is made, see figure 4.1.

MS		Network
	SET UP	
		>
	e.g. ALERTING	
<		
Facility		
(Invoke	e = NotifySS	
(S	SS Code, Activation_indicator))	
	<del></del>	

Note: The SS code will be the common SS code for all conditional call forwarding services.

Figure 4.1/GSM 04.82
Notification to the served mobile subscriber that call forwarding is active

# 4.1.2 Forwarded-to mobile subscriber side

The forwarded-to mobile subscriber will receive a notification that the call has been forwarded with the reason. The reason, when available, will be the appropriate forwarding condition, see figure 4.2.

When multiple forwarding occurs the reason for forwarding given to the forwarded-to mobile subscriber should relate to the last forwarding subscriber in the chain.

MS

SET UP

<----Facility
(Invoke = NotifySS
(CFNREA, CallIsForwarded\_indication))

Note: In case the specific call forwarding service is not known the common SS code for Call forwarding will be used.

Figure 4.2/GSM 04.82
Notification to the forwarded-to mobile subscriber that the call is a forwarded call

#### 4.1.3 Calling mobile subscriber side

As a subscription option, the served mobile subscriber can request that the calling mobile subscriber receives a notification that the call has been forwarded, see figure 4.3.

MS		Network
	SET UP	
		>
	FACILITY	
<		
Facility		
(Inv	oke = NotifySS	
	(CFNREA.CallIsForwarded indication))	

Note: In case the specific call forwarding service is not known the common SS code for Call forwarding will be used.

Figure 4.3/GSM 04.82 Notification to the calling mobile subscriber that the call is forwarded by the called user

# 4.2 Registration

The following information has to be registered in the network:

- the forwarded-to number which may be accompanied by a forwarded-to sub-address,
- information as to whether all calls or all calls of a specific basic service should be forwarded.

When the mobile subscriber registers call forwarding on mobile subscriber not reachable, the network will send a return result indication of acceptance of the request. This result indication will include the forwarded-to number to which call forwarding on mobile subscriber not reachable is registered, see figure 4.4.

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 subscriber does not indicate a specific basic service the registration applies to all basic services, see figure 4.4.

Registration is in fact an implicit activation of the service.

If the system cannot accept a registration request, an error indication is returned to the served mobile subscriber that call forwarding on mobile subscriber not reachable registration was not successful.

Error values are specified in recommendation GSM 04.80.

MS	Network
	REGISTER
Fac	ility (Invoke = RegisterSS (CFNREA,ForwardedToNumber,BasicServiceCode))
	RELEASE COMPLETE/FACILITY
Fac	ility (Return result = RegisterSS (ForwardedToNumber,BasicServiceCode))
	RELEASE COMPLETE
<- Fac	ility (Return error (Error))
	RELEASE COMPLETE
<- Fac	ility (Reject (Invoke_problem))
: I	f BasicServiceCode is not included it applies to all

Figure 4.4/GSM 04.82 Registration of call forwarding on mobile subscriber not reachable

The forwarded-to number may be accompanied by a

forwarded-to sub-address.

Note

#### 4.3 Erasure

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

- the subscriber can specifically erase a previous registration with an appropriate control procedure,
- the subscriber can register information for call forwarding on mobile subscriber not reachable for the specific basic service to another directory number, thus causing the previous registration 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).

If the network cannot accept a mobile subscriber's request for erasure an error indication will be returned to the subscriber. Error values are specified in recommendation GSM 04.80.

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 4.5.

Erasure is in fact an implicit deactivation of the service.

REGISTER \_\_\_\_\_ Facility (Invoke = EraseSS (CFNREA, BasicServiceCode)) RELEASE COMPLETE/FACILITY Facility (Return result = EraseSS (BasicServiceCode)) RELEASE COMPLETE <-----Facility (Return error (Error)) RELEASE COMPLETE <------Facility (Reject (Invoke problem))

Note: If BasicServiceCode is not included it applies to all basic services.

Figure 4.5/GSM 04.82 Erasure of call forwarding on mobile subscriber not reachable

If the network erases call forwarding on mobile subscriber not reachable without the mobile subscriber having requested erasure (see recommendation GSM 02.82), the served mobile subscriber may receive notification along with the reason, see figure 4.6.

MS FACILITY

<----Facility
(Invoke = NotifySS
(CFNREA, Erasure\_indicator, BasicServiceCode))

Figure 4.6/GSM 04.82 Notification to the served mobile subscriber of erasing by the network of call forwarding on mobile subscriber not reachable

# 4.4 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 which may be accompanied by forwarded-to sub-addresses, see figure 4.7.

MS	Nets	work
	REGISTER	>
Faci	lity (Invoke = InterrogateSS (CFNREA))	·
	RELEASE COMPLETE/FACILITY	
Faci	(Return result = InterrogateSS  (ForwardedToNumber(s),BasicServiceCode(s)))	
	RELEASE COMPLETE	
< Faci	ility (Return error (Error))	
	RELEASE COMPLETE	
< Faci	ility (Reject (Invoke_problem))	- <b>-</b>

Note: The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 4.7/GSM 04.82
Interrogation of call forwarding on mobile subscriber not reachable active for all basic services

- 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 if so, to what forwarded-to number which may be accompanied by a forwarded-to sub-address, see figure 4.8.

MS		Network
	REGISTER	>
Facil		
	<pre>(Invoke = InterrogateSS</pre>	
_	RELEASE COMPLETE/FACILITY	
Faci	lity (Return result = InterrogateSS (ForwardedToNumber,BasicServiceCode))	
	RELEASE COMPLETE	
< Facil	lity (Return error (Error))	
	RELEASE COMPLETE	
< Faci	lity (Reject (Invoke problem))	- <b></b>

Note: The forwarded-to number may be accompanied by a forwarded-to sub-address.

Figure 4.8/GSM 04.82 Interrogation of call forwarding on mobile subscriber not reachable active for one particular basic service

#### 4.5 Activation, deactivation and invocation

Activation, deactivation and invocation are not spplicable to the supplementary service call forwarding on mobile subscriber not reachable.