

3GPP TSG_CN#7
ETSI SMG3 Plenary Meeting #7,
Madrid, Spain
13th – 15th March 2000

NP-000024

Agenda item: 5.4.3
Source: TSG_N SS ad hoc
Title: CRs to 3G Work Item Call Forwarding Enhancements

Introduction:

This document contains “1” CRs on **Work Item Call Forwarding Enhancements**, that have been agreed by **TSG_N SS ad hoc**, and are forwarded to **TSG_N Plenary meeting #7** for approval.

Tdoc	Spec	CR	Rev	Cat	Rel	Old ver	New ver	Subject
NS-000048	23.082	004	2	B	R99	3.1.0	3.2.0	Addition of Long Forwarded-to Numbers

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.082 CR 004r2

Current Version: **3.1.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **CN#7**
list expected approval meeting # here ↑

for approval
for information

strategic
non-strategic (for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <ftp://ftp.3gpp.org/Information/CR-Form-v2.doc>

Proposed change affects: (U)SIM ME UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: CN WG2 **Date:** 18/02/2000

Subject: Addition of Long Forwarded-to Numbers

Work item: Call Forwarding Enhancements

Category: F Correction **Release:** Phase 2
(only one category shall be marked with an X) A Corresponds to a correction in an earlier release Release 96
B Addition of feature Release 97
C Functional modification of feature Release 98
D Editorial modification Release 99
Release 00

Reason for change: SMG1 agreed a CR to GSM 02.82 (now TS 22.082) to allow the registration of forwarded-to numbers up to 28 digits long. The handling of this enhancement should be dealt with in the Call Forwarding stage 2 specification.

Clauses affected: 0.1, 0.5 (new), 1.9 (new), 1.10 (new), 2.9 (new), 2.10 (new), 3.9 (new), 3.10 (new), 4.9 (new), 4.10 (new).

Other specs affected: Other 3G core specifications → List of CRs: 23.078-093; 29.002-066; 29.078-049.
Other GSM core specifications → List of CRs:
MS test specifications → List of CRs:
BSS test specifications → List of CRs:
O&M specifications → List of CRs:

Other comments:



help.doc

<----- Double-click here for help and instructions on how to create a CR.

*****First Modified Section*****

0.1 References

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

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

- [1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".
- [2] GSM 02.04: "Digital cellular telecommunications system (Phase 2+); General on supplementary services".
- [3] GSM 02.82: "Digital cellular telecommunications system (Phase 2+); Call Forwarding (CF) Supplementary Services - Stage 1".
- [4] GSM 03.11: "Digital cellular telecommunications system (Phase 2+); Technical realization of supplementary services".
- [5] GSM 03.15: "Digital cellular telecommunications system (Phase 2+); Technical realization of operator determined barring".
- [6] 3G TS 23.018: "Basic Call Handling; Technical Realization".
- [7] 3G TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 3 – Stage 2"
- [8] 3G TS 23.079: "Support of Optional Routeing (SOR); Technical realisation".
- [9] 3G TS 29.002: "Mobile Application part (MAP) specification"

*****New Section*****

0.5 Support of Long Forwarded-to Numbers

For the following supplementary services, it shall be possible to register a long forwarded-to number which was not possible in previous versions of the services:

- Call forwarding unconditional;
- Call forwarding on mobile subscriber busy;
- Call forwarding on no reply;
- Call forwarding on mobile subscriber not reachable.

The main body of the present document assumes that all network entities comply with this version of the service. In each case an additional subclause (subclause x.10) defines the additional requirements when one or more network entities and/or the mobile station does not support Long Forwarded-to Numbers.

*****New Section*****

1.9 Contents of Messages

1.9.1 Messages on the C interface (MSC-HLR)

1.9.1.1 Send Routing Info

This message is specified in 3G TS 23.018.

Send Routing Info contains the following IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Long FTN supported</u>	<u>C</u>	<u>Shall be present if the GMSC supports Long Forwarded-to Numbers; otherwise shall be absent.</u>

1.9.1.2 Send Routing Info ack

This message is specified in 3G TS 23.018.

Send Routing Info ack contains the following amendment to the Forwarded-to number IE and an additional IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Forwarded-to number</u>	<u>C</u>	<u>E.164 number of the C subscriber. Shall be present if the HLR has determined that the call is to be forwarded and at least one of the HLR and GMSC does not support Long Forwarded-to Numbers; otherwise shall be absent.</u>
<u>Long forwarded-to number</u>	<u>C</u>	<u>Number of the C subscriber. Shall be present if the HLR has determined that the call is to be forwarded and Long Forwarded-to Numbers are supported by the HLR and the GMSC; otherwise shall be absent.</u>

1.9.2 Messages on the Um, B and D interfaces (MS – network)

1.9.2.1 RegisterSS

This message corresponds to the MAP_REGISTER_SS service specified in 3G TS 29.002.

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Long FTN supported</u>	<u>C</u>	<u>Shall be present if the MS supports Long Forwarded-to Numbers; otherwise shall be absent.</u>

1.9.2.2 ActivateSS

This message corresponds to the MAP_ACTIVATE_SS service specified in 3G TS 29.002.

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Long FTN supported</u>	<u>C</u>	<u>Shall be present if the MS supports Long Forwarded-to Numbers; otherwise shall be absent.</u>

1.9.2.3 InterrogateSS

This message corresponds to the MAP_INTERROGATE_SS service specified in 3G TS 29.002.

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Long FTN supported</u>	<u>C</u>	Shall be present if the MS supports Long Forwarded-to Numbers; otherwise shall be absent.

1.9.3 Information flows on the J interface (HLR – gsmSCF)

1.9.3.1 Any Time Subscription Interrogation

This IF is specified in 3G TS 23.078.

Any Time Subscription Interrogation contains the following IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Long FTN supported</u>	<u>C</u>	Shall be present if the gsmSCF supports Long Forwarded-to Numbers; otherwise shall be absent.

1.9.3.2 Any Time Subscription Interrogation ack

This IF is specified in 3G TS 23.078.

The Call forwarding SS data IE within the Any Time Subscription Interrogation ack IF contains the following amendment to the Forwarded-to number IE and an additional IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Forwarded-to number</u>	<u>C</u>	Shall be present if at least one of the HLR and the gsmSCF does not support Long Forwarded-to Numbers; otherwise shall be absent.
<u>Long forwarded-to number</u>	<u>C</u>	Shall be present if the HLR and the gsmSCF support Long Forwarded-to Numbers; otherwise shall be absent.

1.9.3.3 Any Time Modification

This IF is specified in 3G TS 23.078.

Any Time Modification contains the following IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Long FTN supported</u>	<u>C</u>	Shall be present if the gsmSCF supports Long Forwarded-to Numbers; otherwise shall be absent.

1.9.3.4 Any Time Modification ack

This IF is specified in 3G TS 23.078.

The Call forwarding SS data IE within the Any Time Modification ack IF contains the following amendment to the Forwarded-to number IE and an additional IE specific to Long Forwarded-to Numbers.

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Forwarded-to number</u>	<u>C</u>	Shall be present if at least one of the HLR and the gsmSCF does not support Long Forwarded-to Numbers; otherwise shall be absent.
<u>Long forwarded-to number</u>	<u>C</u>	Shall be present if the HLR and the gsmSCF support Long Forwarded-to Numbers; otherwise shall be absent.

*****New Section*****

1.10 Exceptional Procedures

1.10.1 MS does not support Long Forwarded-to Numbers

The MS shall indicate whether it supports Long Forwarded-to Numbers in the RegisterSS, ActivateSS and InterrogateSS messages.

If the MS does not support Long Forwarded-to Numbers, and a long forwarded-to number is registered, the acknowledgement message shall contain a truncated version of the registered long forwarded-to number (i.e. the leading 15 digits of the registered long forwarded-to number).

1.10.2 HLR does not support Long Forwarded-to Numbers

The HLR shall not allow a subscriber to register a long forwarded-to number.

1.10.3 GMSC does not support Long Forwarded-to Numbers

The HLR can determine from the Send Routing Info message whether the GMSC supports Long Forwarded-to Numbers.

If the GMSC does not support Long Forwarded-to Numbers and the HLR identifies that CFU should be invoked, then:

- If the registered forwarded-to number contains a maximum of 15 digits then the HLR shall populate the Forwarded-to number parameter in the Send Routing Info ack message with the registered forwarded-to number.
- If the registered forwarded-to number contains more than 15 digits then, as a network option, the HLR can:
 - Populate the Forwarded-to number parameter in the Send Routing Info ack message with an alternative forwarded-to number (containing a maximum of 15 digits), or
 - Allow the call to continue without invoking CFU, or
 - Release the call.

******New Section ******

2.9 Contents of messages

The same additions apply for CFB as for CFU, see section 1.9. The following additions are specific to CFB.

2.9.1 Messages on the B interface (MSC-VLR)

2.9.1.1 Send Info For Incoming Call ack

This message is specified in 3G TS 23.018.

Send Info For Incoming Call ack contains the following amendment to the Forwarded-to number IE, specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Forwarded-to number</u>	<u>M</u>	<u>Number of the C subscriber.</u>

2.9.2 Messages on the D interface (VLR-HLR)

2.9.2.1 Insert Subscriber Data

This message corresponds to the MAP-INSERT-SUBSCRIBER-DATA service specified in 3G TS 29.002.

Insert Subscriber Data contains the following IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Long forwarded-to number</u>	<u>C</u>	<u>Shall be present if the subscriber has a long forwarded-to number registered; otherwise shall be absent.</u>

2.9.2.2 Insert Subscriber Data ack

This message corresponds to the MAP-INSERT-SUBSCRIBER-DATA service specified in 3G TS 29.002.

Insert Subscriber Data ack contains the following IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Long FTN supported</u>	<u>C</u>	<u>Shall be present if the VLR supports Long Forwarded-to Numbers; otherwise shall be absent.</u>

C Conditional (The IE shall be sent, if available)

2.9.3 Messages on the E interface (VMSC-GMSC)

2.9.3.1 Resume Call Handling

This message is specified in 3G TS 23.079.

Resume Call Handling contains the following amendment to the Forwarded-to number IE and an additional IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Forwarded-to number</u>	<u>C</u>	<u>E.164 number of the C subscriber. Shall be present if the VMSC does not support Long Forwarded-to Numbers; otherwise shall be absent.</u>
<u>Long forwarded-to number</u>	<u>C</u>	<u>Number of the C subscriber. Shall be present if the VMSC supports Long Forwarded-to Numbers; otherwise shall be absent.</u>

2.9.4 Messages on the MSC internal interface

2.9.4.1 Perform Call Forwarding

This message is specified in 3G TS 23.018.

Perform Call Forwarding contains the following amendment to the Forwarded-to number IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Forwarded-to number</u>	<u>M</u>	<u>Number of the C subscriber.</u>

2.9.4.2 Perform Call Forwarding ack

This message is specified in 3G TS 23.018.

Perform Call Forwarding ack contains the following amendment to the Forwarded-to number IE specific to Long Forwarded-to Numbers:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
<u>Forwarded-to number</u>	<u>M</u>	<u>Number of the C subscriber. Note: this number may be different from the Forwarded-to number received in the Perform Call Forwarding, as a result of CAMEL handling.</u>

*****New Section*****

2.10 Support of Long Forwarded-to Numbers

2.10.1 MS does not support Long Forwarded-to Numbers

The handling for CFB is the same as that for CFU, see section 1.10.1.

2.10.2 HLR does not support Long Forwarded-to Numbers

The handling for CFB is the same as that for CFU, see section 1.10.2.

2.10.3 GMSC does not support Long Forwarded-to Numbers

The handling for CFB is the same as that for CFU, see section 1.10.3.

2.10.4 MSC/VLR does not support Long Forwarded-to Numbers

The VLR shall indicate whether it supports Long Forwarded-to Numbers in the Update Location message to the HLR. If the VLR does not support Long Forwarded-to Numbers, as a network option the HLR may:

- Send an Insert Subscriber Data message containing the Forwarded-to number parameter to the VLR with an alternative forwarded-to number (containing a maximum of 15 digits)
- If the registration state for CFB is "Registered" and the forwarded-to number contains more than 15 digits, the HLR shall send the VLR the following service state information:

(Provisioned, Not Registered, Not Active, Not Induced)

For an MT call, if the following conditions are met then the HLR shall include the Forwarding interrogation required parameter in the first Send Routing Info ack:

- The GMSC supports Optimal Routeing and Long Forwarded-to Numbers
- The MSC/VLR does not support Long Forwarded-to Numbers
- CFB is active and operative
- A long forwarded-to number is registered for CFB

According to the rules of Optimal Routeing, when the GMSC receives a Resume Call Handling message from the MSC/VLR, it shall send a second Send Routing Info message to the HLR allowing the HLR to insert the correct long forwarded-to number.

*****New Section*****

3.9 Contents of messages

The same additions apply for CFNRy as for CFB, see section 2.9.

*****New Section*****

3.10 Support of Long Forwarded-to Numbers

The handling for CFNRy is the same as that for CFB, see section 2.10.

*****New Section*****

4.9 Contents of messages

The same additions apply for CFNRc as for CFB, see section 2.9.

*****New Section*****

4.10 Support of Long Forwarded-to Numbers

The handling for CFNRc is the same as that for CFB, see section 2.10.