

3GPP TSG CN Plenary Meeting #20
4th – 6th June 2003 Hämeenlinna, FINLAND.

NP-030214

Source: TSG CN WG4
Title: Corrections on TEI R99
Agenda item: 7.11
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	630		N4-030598	R99	Missing SMSs over MSC even if the MS is capable of such sending	F	3.16.0
29.002	631		N4-030599	Rel-4	Missing SMSs over MSC even if the MS is capable of such sending	A	4.11.0
29.002	632		N4-030600	Rel-5	Missing SMSs over MSC even if the MS is capable of such sending	A	5.5.0
29.002	633		N4-030601	Rel-6	Missing SMSs over MSC even if the MS is capable of such sending	A	6.1.0

CHANGE REQUEST

⌘ **29.002 CR 630** ⌘ rev ⌘ Current version: **3.16.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Missing SMSs over MSC even if the MS is capable of such sending		
Source:	⌘ CN4		
Work item code:	⌘ TEI	Date:	⌘ 20/05/2003
Category:	⌘ F	Release:	⌘ R99
	Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use one of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ This is an essential correction
	Some GPRS handsets do not support SMS over SGSN but only support SMS over MSC. The SMS-GMSC could receive both the MSC and SGSN E.164 numbers from the HLR. Since the MS does not support SMS over GPRS, the SGSN returns "SM_DeliveryFailure" with cause "equipmentNotSM-Equipped" in the MTFowardSM Result. This does not trigger a retry of the delivery in the SMSC via MSC. The SMS will not be delivered at all, even though the MS is capable of receiving SMS over MSC.
Summary of change:	⌘ In order to trigger a second try of the delivery in the SMSC via MSC when the mobile has no SM capability over SGSN, the error "SM Delivery Failure with indication: equipment Not SM Equipped" should be added in the appropriate list under clause 23.3.4.
Consequences if not approved:	⌘ The inability of receiving SMSs over MSC via GPRS handsets which do not support SMS over GPRS will remain, preventing the subscribers to use a feature already provided by the operators.

Clauses affected:	⌘ 23.3.4										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications	Y	N	X			X		X	⌘ 23.040	
Y	N										
X											
	X										
	X										
	Test specifications										
	O&M Specifications										

Other comments: ☹

How to create CRs using this form:

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- 1) Fill out the above form. The symbols above marked ☹ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

23.3.4 Procedures in the gateway MSC

The short message handling function of the GMSC will request routing information when a mobile terminated short message is received from a Service Centre. The GMSC sends the MAP_SEND_ROUTING_INFO_FOR_SM request to the HLR containing the subscriber data of the mobile subscriber and the indication that the SMS-GMSC supports the GPRS functionality.

As an outcome of the procedure the MAP_SEND_ROUTING_INFO_FOR_SM confirmation is received indicating:

- an unsuccessful event indication containing an error;

The mapping between the MAP error causes and the RP_ERROR causes is explained in 3GPP TS 23.040[26].

- a successful event indication containing following parameters:

- an IMSI optionally accompanied by an LMSI; and
- routing addresses (servicing MSC, SGSN or both numbers).

The LMSI shall not be used in case the short message is routed towards the SGSN.

The GMSC may also receive a MAP_INFORM_SERVICE_CENTRE indication after the MAP_SEND_ROUTING_INFO_FOR_SM confirmation. The parameter MW Status in the message indicates whether or not the Service Centre address is stored in the Message Waiting Data. It also indicates the status of the MCEF, MNRF and MNRG flags in the HLR.

If the MSISDN-Alert stored in the MWD data is not the same as the one sent to the HLR, the MSISDN-Alert is received in the MAP_INFORM_SERVICE_CENTRE indication. This MSISDN number shall be transferred in a delivery failure report to the SC.

In the abnormal end or in the provider error case the system failure error is provided to the SC.

The forward short message procedure is initiated when the GMSC has obtained the routing information needed to forward a mobile terminated short message to the servicing MSC or SGSN.

If both numbers MSC and SGSN are received from HLR as routing information, the SMS-GMSC may choose which path (SGSN or MSC) first the SMS is to be transferred.

If an LMSI has been provided in the MAP_SEND_ROUTING_INFO_FOR_SM confirmation, it can be included in the sm-RP-DA information field of the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the servicing MSC. In this case, the IMSI must be included in the Destination Reference of the MAP_OPEN request. If the LMSI is not sent by the SMS Gateway MSC, the sm-RP-DA information field in the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the servicing MSC or SGSN shall contain the IMSI and the Destination Reference in the MAP_OPEN request shall not be present. The Service Centre address is sent in the parameter SM_RP_OA. The More Messages To Send flag is set to TRUE or FALSE depending on the information received from the Service Centre.

If the GMSC is the servicing MSC then the MAP service is not initiated. The procedure in the Servicing MSC is described in clause 23.3.1 and in the figure 23.3/4.

If the grouping of MAP_OPEN request and MAP_MT_FORWARD_SHORT_MESSAGE request together would need segmenting, these primitives must not be grouped together. The MAP_OPEN request primitive is sent first without any associated MAP service request primitive and the dialogue confirmation must be received before the MAP_MT_FORWARD_SHORT_MESSAGE request is sent.

As a response to the procedure, the GMSC will receive the MAP_MT_FORWARD_SHORT_MESSAGE confirmation indicating:

- a successful forwarding of the short message. This indication is passed to the SC;
- unsuccessful forwarding of the short message:

In case only one number (MSC or SGSN) was received from HLR as routing information, the mapping of the MAP error causes and the RP_ERROR causes is explained in 3GPP TS 23.040[26]. The appropriate error indication is sent to the SC.

In case both numbers (MSC and SGSN) were received from HLR as routing information, the transfer of SMS is re-attempted towards the second path only when one of the following errors is received from the unsuccessful transfer over the first path:

Facility Not Supported

Unidentified Subscriber

Absent Subscriber with indication: GPRS or IMSI Detach

Unexpected Data Value

System failure

Data Missing

Subscriber Busy for MT SMS: GPRS Connection Suspended

- [SM Delivery Failure with indication: equipment Not SM Equipped](#)

otherwise, the mapping of the MAP error causes and the RP_ERROR causes is performed (see 3GPP TS 23.040[26]) and the appropriate error indication is sent to the SC.

If second forwarding of short message is unsuccessful, the mapping of the MAP error causes and the RP_ERROR causes is explained in 3GPP TS 23.040[26]. The appropriate error indications are sent to the SC.

If second forwarding of short message is successful, the successful indication is passed to the SC.

A provider error is indicated as a system failure error to the SC.

CHANGE REQUEST

⌘ **29.002 CR 631** ⌘ rev ⌘ Current version: **4.11.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Missing SMSs over MSC even if the MS is capable of such sending		
Source:	⌘ Siemens		
Work item code:	⌘ CN4	Date:	⌘ 20/05/2003
Category:	⌘ A	Release:	⌘ Rel-4
	Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use one of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ Some GPRS handsets do not support SMS over SGSN but only support SMS over MSC. The SMS-GMSC could receive both the MSC and SGSN E.164 numbers from the HLR. Since the MS does not support SMS over GPRS, the SGSN returns "SM_DeliveryFailure" with cause "equipmentNotSM-Equipped" in the MTFowardSM Result. This does not trigger a retry of the delivery in the SMSC via MSC. The SMS will not be delivered at all, even though the MS is capable of receiving SMS over MSC.
Summary of change:	⌘ In order to trigger a second try of the delivery in the SMSC via MSC when the mobile has no SM capability over SGSN, the error "SM Delivery Failure with indication: equipment Not SM Equipped" should be added in the appropriate list under clause 23.3.4.
Consequences if not approved:	⌘ The inability of receiving SMSs over MSC via GPRS handsets which do not support SMS over GPRS will remain, preventing the subscribers to use a feature already provided by the operators.

Clauses affected:	⌘ 23.3.4										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications	Y	N	X			X		X	⌘ 23.040	
Y	N										
X											
	X										
	X										
Other comments:	⌘										

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

23.3.4 Procedures in the gateway MSC

The short message handling function of the GMSC will request routing information when a mobile terminated short message is received from a Service Centre. The GMSC sends the MAP_SEND_ROUTING_INFO_FOR_SM request to the HLR containing the subscriber data of the mobile subscriber and the indication that the SMS-GMSC supports the GPRS functionality.

As an outcome of the procedure the MAP_SEND_ROUTING_INFO_FOR_SM confirmation is received indicating:

- an unsuccessful event indication containing an error;

The mapping between the MAP error causes and the RP_ERROR causes is explained in 3GPP TS 23.140.

- a successful event indication containing following parameters:

- an IMSI optionally accompanied by an LMSI; and
- routing addresses (servicing MSC, SGSN or both numbers).

The LMSI shall not be used in case the short message is routed towards the SGSN.

The GMSC may also receive a MAP_INFORM_SERVICE_CENTRE indication after the MAP_SEND_ROUTING_INFO_FOR_SM confirmation. The parameter MW Status in the message indicates whether or not the Service Centre address is stored in the Message Waiting Data. It also indicates the status of the MCEF, MNRf and MNRg flags in the HLR. The message also indicates the value of the MNRR if this is stored in the HLR and one or both of the MNRf and MNRg flags is set in the HLR.

If the MSISDN-Alert stored in the MWD data is not the same as the one sent to the HLR, the MSISDN-Alert is received in the MAP_INFORM_SERVICE_CENTRE indication. This MSISDN number shall be transferred in a delivery failure report to the SC.

In the abnormal end or in the provider error case the system failure error is provided to the SC.

The forward short message procedure is initiated when the GMSC has obtained the routing information needed to forward a mobile terminated short message to the servicing MSC or SGSN.

If both numbers MSC and SGSN are received from HLR as routing information, the SMS-GMSC may choose which path (SGSN or MSC) first the SMS is to be transferred.

If an LMSI has been provided in the MAP_SEND_ROUTING_INFO_FOR_SM confirmation, it can be included in the sm-RP-DA information field of the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the servicing MSC. In this case, the IMSI must be included in the Destination Reference of the MAP_OPEN request. If the LMSI is not sent by the SMS Gateway MSC, the sm-RP-DA information field in the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the servicing MSC or SGSN shall contain the IMSI and the Destination Reference in the MAP_OPEN request shall not be present. The Service Centre address is sent in the parameter SM_RP_OA. The More Messages To Send flag is set to TRUE or FALSE depending on the information received from the Service Centre.

If the GMSC is the servicing MSC then the MAP service is not initiated. The procedure in the Servicing MSC is described in clause 23.3.1 and in the figure 23.3/4.

If the grouping of MAP_OPEN request and MAP_MT_FORWARD_SHORT_MESSAGE request together would need segmenting, these primitives must not be grouped together. The MAP_OPEN request primitive is sent first without any associated MAP service request primitive and the dialogue confirmation must be received before the MAP_MT_FORWARD_SHORT_MESSAGE request is sent.

As a response to the procedure, the GMSC will receive the MAP_MT_FORWARD_SHORT_MESSAGE confirmation indicating:

- a successful forwarding of the short message. This indication is passed to the SC;
- unsuccessful forwarding of the short message:

In case only one number (MSC or SGSN) was received from HLR as routing information, the mapping of the MAP error causes and the RP_ERROR causes is explained in 3GPP TS 23.140. The appropriate error indication is sent to the SC.

In case both numbers (MSC and SGSN) were received from HLR as routing information, the transfer of SMS is re-attempted towards the second path only when one of the following errors is received from the unsuccessful transfer over the first path:

Facility Not Supported

Unidentified Subscriber

Absent Subscriber with indication: GPRS or IMSI Detach

Unexpected Data Value

System failure

Data Missing

Subscriber Busy for MT SMS: GPRS Connection Suspended

- [SM Delivery Failure with indication: equipment Not SM Equipped](#)

otherwise, the mapping of the MAP error causes and the RP_ERROR causes is performed (see 3GPP TS 23.140) and the appropriate error indication is sent to the SC.

If second forwarding of short message is unsuccessful, the mapping of the MAP error causes and the RP_ERROR causes is explained in 3GPP TS 23.140. The appropriate error indications are sent to the SC.

If second forwarding of short message is successful, the successful indication is passed to the SC.

A provider error is indicated as a system failure error to the SC.

CHANGE REQUEST

⌘ **29.002 CR 632** ⌘ rev ⌘ Current version: **5.5.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘	Missing SMSs over MSC even if the MS is capable of such sending		
Source:	⌘	CN4		
Work item code:	⌘	TEI	Date:	⌘ 20/05/2003
Category:	⌘	A	Release:	⌘ Rel-5
		Use one of the following categories:		Use one of the following releases:
		F (correction)	2	(GSM Phase 2)
		A (corresponds to a correction in an earlier release)	R96	(Release 1996)
		B (addition of feature),	R97	(Release 1997)
		C (functional modification of feature)	R98	(Release 1998)
		D (editorial modification)	R99	(Release 1999)
		Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Rel-4	(Release 4)
			Rel-5	(Release 5)
			Rel-6	(Release 6)

Reason for change:	⌘	Some GPRS handsets do not support SMS over SGSN but only support SMS over MSC. The SMS-GMSC could receive both the MSC and SGSN E.164 numbers from the HLR. Since the MS does not support SMS over GPRS, the SGSN returns "SM_DeliveryFailure" with cause "equipmentNotSM-Equipped" in the MTForwardSM Result. This does not trigger a retry of the delivery in the SMSC via MSC. The SMS will not be delivered at all, even though the MS is capable of receiving SMS over MSC.
Summary of change:	⌘	In order to trigger a second try of the delivery in the SMSC via MSC when the mobile has no SM capability over SGSN, the error "SM Delivery Failure with indication: equipment Not SM Equipped" should be added in the appropriate list under clause 23.3.4.
Consequences if not approved:	⌘	The inability of receiving SMSs over MSC via GPRS handsets which do not support SMS over GPRS will remain, preventing the subscribers to use a feature already provided by the operators.

Clauses affected:	⌘	23.3.1										
Other specs affected:	⌘	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"> </td> </tr> <tr> <td style="padding: 2px;"> </td> <td style="padding: 2px;">X</td> </tr> <tr> <td style="padding: 2px;"> </td> <td style="padding: 2px;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ 23.040
		Y	N									
		X										
	X											
	X											
	X	Test specifications										
	X	O&M Specifications										
Other comments:	⌘											

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

23.3.1 Procedure in the SMS-GMSC

Any CAMEL-specific handling described in this subclause is omitted if the SMS-GMSC does not support CAMEL. CAMEL-specific handling is invoked only if the SMS-GMSC is integrated with the VMSC.

The short message handling function of the SMS-GMSC requests routing information when it receives an SC_RP_MT_DATA indication from a Service Centre.

The SMS-GMSC requests a MAP dialogue and sends a MAP_SEND_ROUTING_INFO_FOR_SM request, with an indication of whether the SMS-GMSC supports the delivery of short messages via an SGSN, to the HLR containing the subscriber data of the mobile subscriber.

- if the macro Receive_Open_Cnf takes the "Error" exit, the SMS-GMSC returns an SC_RP_ERROR with error cause "System Failure" and the process returns to the Null state;
- if the macro Receive_Open_Cnf takes the "Vr" exit, the SMS-GMSC handles the dialogue according to the specification for the earlier version of the protocol, and the handling continues as follows:
 - if the HLR did not supply routing information, the SMS-GMSC returns an SC_RP_ERROR with the error cause set according to the user error, and the process returns to the Null state;

NOTE: The mapping between the MAP error causes and the RP_ERROR error causes is given in 3GPP TS 23.040 [26].

- if the HLR supplied routing information, the handling continues as described below under the heading "Short message delivery attempts".
- if the macro Receive_Open_Cnf takes the "OK" exit, the SMS-GMSC waits for routing information from the HLR.

While the SMS-GMSC is waiting for routing information from the HLR:

- if the service centre aborts the dialogue with the SMS-GMSC, the SMS-GMSC aborts the dialogue with the HLR and the process returns to the Null state;
- If the dialogue with the HLR fails, the SMS-GMSC returns an SC_RP_ERROR with error cause "System Failure" and the process returns to the Null state;
- if the SMS-GMSC receives a MAP_SEND_ROUTING_INFO_FOR_SM confirmation, it checks the confirmation.
 - if the confirmation contained a provider error or a data error, the SMS-GMSC returns an SC_RP_ERROR with error cause "System Failure", and the process returns to the Null state;
 - if the confirmation contained a user error, the SMS-GMSC returns an SC_RP_ERROR with the error cause set according to the user error and waits for a possible MAP_INFORM_SERVICE_CENTRE indication from the HLR;

NOTE: The mapping between the MAP error causes and the RP_ERROR error causes is given in 3GPP TS 23.040 [26].

- if the confirmation contained routing information, the SMS-GMSC checks whether the routing information included an LMSI;
 - if the routing information included an LMSI, the SMS-GMSC sets the destination reference to the IMSI of the destination subscriber, and the destination address in the short message relay protocol to the LMSI;
 - if the routing information did not include an LMSI, the SMS-GMSC marks the destination reference as not included, and sets the destination address in the short message relay protocol to the IMSI of the destination subscriber.
- in both cases, the SMS-GMSC then waits for a possible MAP_INFORM_SERVICE_CENTRE indication from the HLR;

While the SMS-GMSC is waiting for a possible MAP_INFORM_SERVICE_CENTRE indication from the HLR:

- if the service centre aborts the dialogue with the SMS-GMSC, the SMS-GMSC aborts the dialogue with the HLR and the process returns to the Null state;
- if the dialogue with the HLR fails, the SMS-GMSC returns an SC_RP_ERROR including the IMSI and the MSISDN of the destination subscriber, and the process returns to the Null state;
- if the HLR closes the dialogue without sending a MAP_INFORM_SERVICE_CENTRE, the SMS-GMSC checks whether routing information was received from the HLR.
 - if the HLR did not supply routing information, the SMS-GMSC returns an SC_RP_ERROR with the error cause set according to the user error, and the process returns to the Null state;

NOTE: The mapping between the MAP error causes and the RP_ERROR error causes is given in 3GPP TS 23.040 [26].

- if the HLR supplied routing information, the handling continues as described below under the heading "Short message delivery attempts".
- if the SMS-GMSC receives a MAP_INFORM_SERVICE_CENTRE indication, it checks the indication.
 - if the indication is badly formed, the SMS-GMSC returns an SC_RP_ERROR including the IMSI and the MSISDN of the destination subscriber, and the process returns to the Null state;
 - if the indication is OK, the SMS-GMSC checks whether the MAP_SEND_ROUTING_INFO_FOR_SM confirmation contained an error.
 - if the MAP_SEND_ROUTING_INFO_FOR_SM confirmation contained an error, the SMS-GMSC returns an SC_RP_ERROR including the IMSI and the MSISDN of the destination subscriber, and the process returns to the Null state;
 - if the MAP_SEND_ROUTING_INFO_FOR_SM confirmation did not contain an error, which implies that it contained routing information, the handling continues as described below under the heading "Short message delivery attempts".

Short message delivery attempts

When the SMS-GMSC has obtained the routing information needed to forward a mobile terminated short message to the serving node (MSC or SGSN) it calls the procedure MT_SM_Delivery_Attempt_GMSC.

If the SMS-GMSC receives both MSC and SGSN numbers from the HLR as routing information, it may choose which serving node to use for the first delivery attempt.

If the first delivery attempt succeeds, or the delivery is aborted, the process returns to the Null state. If the first delivery attempt fails [with a specific error indication](#) and the HLR provided a second routing address, the SMS-GMSC attempts to deliver the short message through the second choice serving node. [See 3GPP TS 23.040 \[26\] for the list of specific error indications which trigger the delivery attempt through the second choice serving node.](#) The process then returns to the Null state.

For each delivery attempt, the SMS-GMSC checks whether the serving node for the delivery attempt is the SMS-GMSC. If the serving node for the delivery attempt is the SMS-GMSC, the handling continues as described under the heading "Serving node is SMS-GMSC"; if the serving node for the delivery attempt is not the SMS-GMSC, the handling continues as described under the heading "Serving node is separate from SMS-GMSC".

Serving node is SMS-GMSC

The SMS-GMSC invokes the macro MT_SM_Transfer_MSC. This macro is described in subclause 23.3.3 and in figure 23.3/8.

If the macro takes the Abort exit, the SMS-GMSC reports the delivery failure to the gsmSCF as described in 3GPP TS 23.078 [98] and the procedure returns a Fail result.

If the macro takes the Error exit, the SMS-GMSC reports the delivery failure to the gsmSCF as described in 3GPP TS 23.078 [98]. If required, the SMS-GMSC reports the outcome of the delivery attempt to the HLR. The SMS-GMSC sends an error report to the service centre and the procedure returns a Fail result.

NOTE: if the macro takes the Error exit, the SMS-GMSC maps the MAP User Error to the corresponding SC_RP error, as defined in 3GPP TS 23.040 [26].

If the macro takes the Release SMS exit, the SMS-GMSC sends an error report to the service centre and the procedure returns a Fail result.

If the macro takes the OK exit, the SMS-GMSC reports the successful delivery to the gsmSCF as described in 3GPP TS 23.078 [98] and checks whether the "More messages to send" indication was set in the request from the service centre.

- If the "More messages to send" indication was not set, the SMS-GMSC reports the successful delivery to the HLR, if necessary, and reports the successful delivery to the service centre. The procedure returns a Pass result.
- If the "More messages to send" indication was set, the SMS-GMSC reports the successful delivery to the service centre and waits for another message delivery request from the service centre. When the request is received, the SMS-GMSC opens a dialogue with the gsmSCF as described in 3GPP TS 23.078 [98].
 - If the gsmSCF bars the delivery of the short message (Release_SMS result) the SMS-GMSC informs the service centre that the multiple message transfer was aborted and the procedure returns an Abort result.
 - If the gsmSCF instructs the SMS-GMSC to continue with the delivery, the SMS-GMSC sends the message over the access interface to the destination MS and waits for a response.
 - If the delivery was successful, the SMS-GMSC reports the successful delivery to the gsmSCF as described in 3GPP TS 23.078 [98] and checks whether the "More messages to send" indication was set in the request from the service centre, as above.
 - If the delivery was unsuccessful, the SMS-GMSC reports the delivery failure to the gsmSCF as described in 3GPP TS 23.078 [98]. If required, the SMS-GMSC reports the outcome of the delivery attempt to the HLR. The SMS-GMSC informs the service centre that the multiple message transfer was aborted and the procedure returns an Abort result.

Serving node is separate from SMS-GMSC

The SMS-GMSC checks whether the MAP_OPEN request and the MAP_MT_FORWARD_SHORT_MESSAGE request can be sent in a single message signal unit through the lower layers of the protocol.

- if the two requests can be grouped in a single TC message, the SMS-GMSC requests a dialogue with the serving node, including the MAP_MT_FORWARD_SHORT_MESSAGE request;
 - if the dialogue opening is successful, the SMS-GMSC waits for the response from the serving node;
 - if the macro Receive_Open_Cnf takes the "Vr" exit, the SMS-GMSC handles the dialogue according to the specification for the earlier version of the protocol.
 - if delivery was successful, the procedure returns a "Pass" result;
 - if delivery failed, the procedure returns a "Fail" result.
- if the two requests can be grouped in a single TC message, the SMS-GMSC requests a dialogue with the serving node, omitting the MAP_MO_FORWARD_SHORT_MESSAGE request;
 - if the dialogue opening is successful, the SMS-GMSC sends a MAP_MO_FORWARD_SHORT_MESSAGE request to the serving node, and waits for the response from the serving node;

- if the macro Receive_Open_Cnf takes the "Vr" exit, the SMS-GMSC handles the dialogue according to the specification for the earlier version of the protocol.
 - if delivery was successful, the procedure returns a "Pass" result;
 - if delivery failed, the procedure returns a "Fail" result.
- if the macro Receive_Open_Cnf takes the "Error" exit, the SMS-GMSC returns an SC_RP_ERROR with cause "System Failure" to the SC and the procedure returns a "Fail" result.

If the MAP_SEND_ROUTING_INFO_FOR_SM confirmation included an LMSI, it can be included in the sm-RP-DA information field of the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the serving MSC. In this case, the IMSI shall be included in the Destination Reference of the MAP_OPEN request. The SMS-GMSC shall not send an LMSI to an SGSN. If the SMS-GMSC does not send an LMSI to the serving node, the sm-RP-DA information field in the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the serving MSC or SGSN shall contain the IMSI, and the Destination Reference in the MAP_OPEN request shall not be present. The parameter SM_RP_OA shall contain the Service Centre address. The More Messages To Send flag is set to TRUE or FALSE according to the information received from the Service Centre.

When the SMS-GMSC receives the response from the serving node, it checks the content of the response.

If the response indicates successful delivery, the SMS-GMSC checks whether the "More messages to send" indication was set in the request from the service centre.

- If the " More messages to send" indication was not set, the SMS-GMSC reports the successful delivery to the HLR, if necessary, and reports the successful delivery to the service centre. The procedure returns a Pass result.
- If the " More messages to send" indication was set, the SMS-GMSC reports the successful delivery to the service centre and waits for another message delivery request from the service centre. When the request is received, the SMS-GMSC sends a MAP_MT_FORWARD_SHORT_MESSAGE request to the serving node and waits for a response.
 - If the delivery was successful, the SMS-GMSC checks whether the "More messages to send" indication was set in the request from the service centre, as above.
 - If the delivery was unsuccessful, the SMS-GMSC reports the outcome of the delivery attempt to the HLR, if required. The SMS-GMSC informs the service centre that the multiple message transfer was aborted and the procedure returns an Abort result.

The SMS-GMSC invokes the procedure MAP_REPORT_SM_DELIVERY_STATUS, if:

- the reason received from the serving node for failure to deliver the message is absent subscriber_SM, unidentified subscriber or SM delivery failure with error cause MS memory capacity exceeded, and the SC address is not yet included in the MWD set, or
- the reason received from the serving node for failure to deliver the message is absent subscriber_SM, unidentified subscriber or SM delivery failure with error cause MS memory capacity exceeded, and the corresponding flag in the HLR (as indicated the information received in the MAP_INFORM_SERVICE_CENTRE) is not set, or
- the reason received from the serving node (MSC or SGSN) for failure to deliver the message is absent subscriber_SM and the absent subscriber diagnostic is different from the absent subscriber diagnostic received in the MAP_INFORM_SERVICE_CENTRE.

If absent subscriber diagnostic information (see 3GPP TS 23.040 [26]) is included with the absent subscriber_SM error indication then the SMS-GMSC relays this information to the HLR using the MAP_REPORT_SM_DELIVERY_STATUS service.

If there was an attempt to deliver the short message through both the MSC and the SGSN, and both delivery attempts failed with causes as described above, the SMS-GMSC reports to the HLR the two unsuccessful SMS delivery outcomes for GPRS and non GPRS.

If there was an attempt to deliver the short message through both the MSC and the SGSN, and the first delivery failed with causes described above but the second delivery succeeded, the SMS-GMSC reports to the HLR the unsuccessful and successful SMS delivery outcomes for GPRS and non GPRS.

The SMS-GMSC may also report successful delivery to the HLR when the first SMS delivery through the MSC was successful, if the MNRF or MCEF or both were set in the HLR.

The SMS-GMSC may also report successful delivery to the HLR when the first SMS delivery through the SGSN was successful, if the MNRG or MCEF or both were set in the HLR.

This procedure is described in detail in clause 23.5.

The SMS-GMSC maps "Unexpected data value" and "System failure" MAP errors from the serving node to a "System failure" error to the SC. Other MAP errors are mapped to appropriate cause values and diagnostic information from the SMS-GMSC to the SC as described in 3GPP TS 23.040 [26] and 3GPP TS 24.011 [37].

The SMS-GMSC maps the "Unidentified subscriber" MAP error to an "Absent subscriber" error with diagnostic information set to "Unidentified subscriber" to the SC as described in 3GPP TS 23.040 [26].

Note that the indication of which number belongs to the SGSN and which to the MSC, received from the HLR in the MAP_SEND_ROUTING_INFO_FOR_SM confirm (see clause 23.3.2) will enable the SMS-GMSC to map the causes received from one or both serving nodes into the appropriate causes for non GPRS, GPRS or both, and send them to the SC and the HLR.

The mobile terminated short message transfer procedure in the SMS-GMSC is shown in figure 23.3/3.

CHANGE REQUEST

⌘ **29.002 CR 633** ⌘ rev ⌘ Current version: **6.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘	Missing SMSs over MSC even if the MS is capable of such sending		
Source:	⌘	Siemens		
Work item code:	⌘	TEI	Date:	⌘ 20/05/2003
Category:	⌘	A	Release:	⌘ Rel-6
		<i>Use one of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘	Some GPRS handsets do not support SMS over SGSN but only support SMS over MSC. The SMS-GMSC could receive both the MSC and SGSN E.164 numbers from the HLR. Since the MS does not support SMS over GPRS, the SGSN returns "SM_DeliveryFailure" with cause "equipmentNotSM-Equipped" in the MTFowardSM Result. This does not trigger a retry of the delivery in the SMSC via MSC. The SMS will not be delivered at all, even though the MS is capable of receiving SMS over MSC.
Summary of change:	⌘	In order to trigger a second try of the delivery in the SMSC via MSC when the mobile has no SM capability over SGSN, the error "SM Delivery Failure with indication: equipment Not SM Equipped" should be added in the appropriate list under clause 23.3.4.
Consequences if not approved:	⌘	The inability of receiving SMSs over MSC via GPRS handsets which do not support SMS over GPRS will remain, preventing the subscribers to use a feature already provided by the operators.

Clauses affected:	⌘	23.3.1									
Other specs affected:	⌘	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications ⌘ 23.040 Test specifications O&M Specifications
		Y	N								
		X									
	X										
	X										
Other comments:		⌘ 									

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ¶ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

23.3.1 Procedure in the SMS-GMSC

Any CAMEL-specific handling described in this subclause is omitted if the SMS-GMSC does not support CAMEL. CAMEL-specific handling is invoked only if the SMS-GMSC is integrated with the VMSC.

The short message handling function of the SMS-GMSC requests routing information when it receives an SC_RP_MT_DATA indication from a Service Centre.

The SMS-GMSC requests a MAP dialogue and sends a MAP_SEND_ROUTING_INFO_FOR_SM request, with an indication of whether the SMS-GMSC supports the delivery of short messages via an SGSN, to the HLR containing the subscriber data of the mobile subscriber.

- if the macro Receive_Open_Cnf takes the "Error" exit, the SMS-GMSC returns an SC_RP_ERROR with error cause "System Failure" and the process returns to the Null state;
- if the macro Receive_Open_Cnf takes the "Vr" exit, the SMS-GMSC handles the dialogue according to the specification for the earlier version of the protocol, and the handling continues as follows:
 - if the HLR did not supply routing information, the SMS-GMSC returns an SC_RP_ERROR with the error cause set according to the user error, and the process returns to the Null state;

NOTE: The mapping between the MAP error causes and the RP_ERROR error causes is given in 3GPP TS 23.040 [26].

- if the HLR supplied routing information, the handling continues as described below under the heading "Short message delivery attempts".
- if the macro Receive_Open_Cnf takes the "OK" exit, the SMS-GMSC waits for routing information from the HLR.

While the SMS-GMSC is waiting for routing information from the HLR:

- if the service centre aborts the dialogue with the SMS-GMSC, the SMS-GMSC aborts the dialogue with the HLR and the process returns to the Null state;
- If the dialogue with the HLR fails, the SMS-GMSC returns an SC_RP_ERROR with error cause "System Failure" and the process returns to the Null state;
- if the SMS-GMSC receives a MAP_SEND_ROUTING_INFO_FOR_SM confirmation, it checks the confirmation.
 - if the confirmation contained a provider error or a data error, the SMS-GMSC returns an SC_RP_ERROR with error cause "System Failure", and the process returns to the Null state;
 - if the confirmation contained a user error, the SMS-GMSC returns an SC_RP_ERROR with the error cause set according to the user error and waits for a possible MAP_INFORM_SERVICE_CENTRE indication from the HLR;

NOTE: The mapping between the MAP error causes and the RP_ERROR error causes is given in 3GPP TS 23.040 [26].

- if the confirmation contained routing information, the SMS-GMSC checks whether the routing information included an LMSI;
 - if the routing information included an LMSI, the SMS-GMSC sets the destination reference to the IMSI of the destination subscriber, and the destination address in the short message relay protocol to the LMSI;
 - if the routing information did not include an LMSI, the SMS-GMSC marks the destination reference as not included, and sets the destination address in the short message relay protocol to the IMSI of the destination subscriber.
- in both cases, the SMS-GMSC then waits for a possible MAP_INFORM_SERVICE_CENTRE indication from the HLR;

While the SMS-GMSC is waiting for a possible MAP_INFORM_SERVICE_CENTRE indication from the HLR:

- if the service centre aborts the dialogue with the SMS-GMSC, the SMS-GMSC aborts the dialogue with the HLR and the process returns to the Null state;
- if the dialogue with the HLR fails, the SMS-GMSC returns an SC_RP_ERROR including the IMSI and the MSISDN of the destination subscriber, and the process returns to the Null state;
- if the HLR closes the dialogue without sending a MAP_INFORM_SERVICE_CENTRE, the SMS-GMSC checks whether routing information was received from the HLR.
 - if the HLR did not supply routing information, the SMS-GMSC returns an SC_RP_ERROR with the error cause set according to the user error, and the process returns to the Null state;

NOTE: The mapping between the MAP error causes and the RP_ERROR error causes is given in 3GPP TS 23.040 [26].

- if the HLR supplied routing information, the handling continues as described below under the heading "Short message delivery attempts".
- if the SMS-GMSC receives a MAP_INFORM_SERVICE_CENTRE indication, it checks the indication.
 - if the indication is badly formed, the SMS-GMSC returns an SC_RP_ERROR including the IMSI and the MSISDN of the destination subscriber, and the process returns to the Null state;
 - if the indication is OK, the SMS-GMSC checks whether the MAP_SEND_ROUTING_INFO_FOR_SM confirmation contained an error.
 - if the MAP_SEND_ROUTING_INFO_FOR_SM confirmation contained an error, the SMS-GMSC returns an SC_RP_ERROR including the IMSI and the MSISDN of the destination subscriber, and the process returns to the Null state;
 - if the MAP_SEND_ROUTING_INFO_FOR_SM confirmation did not contain an error, which implies that it contained routing information, the handling continues as described below under the heading "Short message delivery attempts".

Short message delivery attempts

When the SMS-GMSC has obtained the routing information needed to forward a mobile terminated short message to the serving node (MSC or SGSN) it calls the procedure MT_SM_Delivery_Attempt_GMSC.

If the SMS-GMSC receives both MSC and SGSN numbers from the HLR as routing information, it may choose which serving node to use for the first delivery attempt.

If the first delivery attempt succeeds, or the delivery is aborted, the process returns to the Null state. If the first delivery attempt fails [with a specific error indication](#) and the HLR provided a second routing address, the SMS-GMSC attempts to deliver the short message through the second choice serving node. [See 3GPP TS 23.040 \[26\] for the list of specific error indications which trigger the delivery attempt through the second choice serving node.](#) The process then returns to the Null state.

For each delivery attempt, the SMS-GMSC checks whether the serving node for the delivery attempt is the SMS-GMSC. If the serving node for the delivery attempt is the SMS-GMSC, the handling continues as described under the heading "Serving node is SMS-GMSC"; if the serving node for the delivery attempt is not the SMS-GMSC, the handling continues as described under the heading "Serving node is separate from SMS-GMSC".

Serving node is SMS-GMSC

The SMS-GMSC invokes the macro MT_SM_Transfer_MSC. This macro is described in subclause 23.3.3 and in figure 23.3/8.

If the macro takes the Abort exit, the SMS-GMSC reports the delivery failure to the gsmSCF as described in 3GPP TS 23.078 [98] and the procedure returns a Fail result.

If the macro takes the Error exit, the SMS-GMSC reports the delivery failure to the gsmSCF as described in 3GPP TS 23.078 [98]. If required, the SMS-GMSC reports the outcome of the delivery attempt to the HLR. The SMS-GMSC sends an error report to the service centre and the procedure returns a Fail result.

NOTE: if the macro takes the Error exit, the SMS-GMSC maps the MAP User Error to the corresponding SC_RP error, as defined in 3GPP TS 23.040 [26].

If the macro takes the Release SMS exit, the SMS-GMSC sends an error report to the service centre and the procedure returns a Fail result.

If the macro takes the OK exit, the SMS-GMSC reports the successful delivery to the gsmSCF as described in 3GPP TS 23.078 [98] and checks whether the "More messages to send" indication was set in the request from the service centre.

- If the "More messages to send" indication was not set, the SMS-GMSC reports the successful delivery to the HLR, if necessary, and reports the successful delivery to the service centre. The procedure returns a Pass result.
- If the "More messages to send" indication was set, the SMS-GMSC reports the successful delivery to the service centre and waits for another message delivery request from the service centre. When the request is received, the SMS-GMSC opens a dialogue with the gsmSCF as described in 3GPP TS 23.078 [98].
 - If the gsmSCF bars the delivery of the short message (Release_SMS result) the SMS-GMSC informs the service centre that the multiple message transfer was aborted and the procedure returns an Abort result.
 - If the gsmSCF instructs the SMS-GMSC to continue with the delivery, the SMS-GMSC sends the message over the access interface to the destination MS and waits for a response.
 - If the delivery was successful, the SMS-GMSC reports the successful delivery to the gsmSCF as described in 3GPP TS 23.078 [98] and checks whether the "More messages to send" indication was set in the request from the service centre, as above.
 - If the delivery was unsuccessful, the SMS-GMSC reports the delivery failure to the gsmSCF as described in 3GPP TS 23.078 [98]. If required, the SMS-GMSC reports the outcome of the delivery attempt to the HLR. The SMS-GMSC informs the service centre that the multiple message transfer was aborted and the procedure returns an Abort result.

Serving node is separate from SMS-GMSC

The SMS-GMSC, the SMS-GMSC checks whether the MAP_OPEN request and the MAP_MT_FORWARD_SHORT_MESSAGE request can be sent in a single message signal unit through the lower layers of the protocol.

- if the two requests can be grouped in a single TC message, the SMS-GMSC requests a dialogue with the serving node, including the MAP_MT_FORWARD_SHORT_MESSAGE request;
 - if the dialogue opening is successful, the SMS-GMSC waits for the response from the serving node;
 - if the macro Receive_Open_Cnf takes the "Vr" exit, the SMS-GMSC handles the dialogue according to the specification for the earlier version of the protocol.
 - if delivery was successful, the procedure returns a "Pass" result;
 - if delivery failed, the procedure returns a "Fail" result.
- if the two requests can be grouped in a single TC message, the SMS-GMSC requests a dialogue with the serving node, omitting the MAP_MO_FORWARD_SHORT_MESSAGE request;
 - if the dialogue opening is successful, the SMS-GMSC sends a MAP_MO_FORWARD_SHORT_MESSAGE request to the serving node, and waits for the response from the serving node;

- if the macro Receive_Open_Cnf takes the "Vr" exit, the SMS-GMSC handles the dialogue according to the specification for the earlier version of the protocol.
 - if delivery was successful, the procedure returns a "Pass" result;
 - if delivery failed, the procedure returns a "Fail" result.
- if the macro Receive_Open_Cnf takes the "Error" exit, the SMS-GMSC returns an SC_RP_ERROR with cause "System Failure" to the SC and the procedure returns a "Fail" result.

If the MAP_SEND_ROUTING_INFO_FOR_SM confirmation included an LMSI, it can be included in the sm-RP-DA information field of the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the serving MSC. In this case, the IMSI shall be included in the Destination Reference of the MAP_OPEN request. The SMS-GMSC shall not send an LMSI to an SGSN. If the SMS-GMSC does not send an LMSI to the serving node, the sm-RP-DA information field in the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the serving MSC or SGSN shall contain the IMSI, and the Destination Reference in the MAP_OPEN request shall not be present. The parameter SM_RP_OA shall contain the Service Centre address. The More Messages To Send flag is set to TRUE or FALSE according to the information received from the Service Centre.

When the SMS-GMSC receives the response from the serving node, it checks the content of the response.

If the response indicates successful delivery, the SMS-GMSC checks whether the "More messages to send" indication was set in the request from the service centre.

- If the " More messages to send" indication was not set, the SMS-GMSC reports the successful delivery to the HLR, if necessary, and reports the successful delivery to the service centre. The procedure returns a Pass result.
- If the " More messages to send" indication was set, the SMS-GMSC reports the successful delivery to the service centre and waits for another message delivery request from the service centre. When the request is received, the SMS-GMSC sends a MAP_MT_FORWARD_SHORT_MESSAGE request to the serving node and waits for a response.
 - If the delivery was successful, the SMS-GMSC checks whether the "More messages to send" indication was set in the request from the service centre, as above.
 - If the delivery was unsuccessful, the SMS-GMSC reports the outcome of the delivery attempt to the HLR, if required. The SMS-GMSC informs the service centre that the multiple message transfer was aborted and the procedure returns an Abort result.

The SMS-GMSC invokes the procedure MAP_REPORT_SM_DELIVERY_STATUS, if:

- the reason received from the serving node for failure to deliver the message is absent subscriber_SM, unidentified subscriber or SM delivery failure with error cause MS memory capacity exceeded, and the SC address is not yet included in the MWD set, or
- the reason received from the serving node for failure to deliver the message is absent subscriber_SM, unidentified subscriber or SM delivery failure with error cause MS memory capacity exceeded, and the corresponding flag in the HLR (as indicated the information received in the MAP_INFORM_SERVICE_CENTRE) is not set, or
- the reason received from the serving node (MSC or SGSN) for failure to deliver the message is absent subscriber_SM and the absent subscriber diagnostic is different from the absent subscriber diagnostic received in the MAP_INFORM_SERVICE_CENTRE.

If absent subscriber diagnostic information (see 3GPP TS 23.040 [26]) is included with the absent subscriber_SM error indication then the SMS-GMSC relays this information to the HLR using the MAP_REPORT_SM_DELIVERY_STATUS service.

If there was an attempt to deliver the short message through both the MSC and the SGSN, and both delivery attempts failed with causes as described above, the SMS-GMSC reports to the HLR the two unsuccessful SMS delivery outcomes for GPRS and non GPRS.

If there was an attempt to deliver the short message through both the MSC and the SGSN, and the first delivery failed with causes described above but the second delivery succeeded, the SMS-GMSC reports to the HLR the unsuccessful and successful SMS delivery outcomes for GPRS and non GPRS.

The SMS-GMSC may also report successful delivery to the HLR when the first SMS delivery through the MSC was successful, if the MNRF or MCEF or both were set in the HLR.

The SMS-GMSC may also report successful delivery to the HLR when the first SMS delivery through the SGSN was successful, if the MNRG or MCEF or both were set in the HLR.

This procedure is described in detail in clause 23.5.

The SMS-GMSC maps "Unexpected data value" and "System failure" MAP errors from the serving node to a "System failure" error to the SC. Other MAP errors are mapped to appropriate cause values and diagnostic information from the SMS-GMSC to the SC as described in 3GPP TS 23.040 [26] and 3GPP TS 24.011 [37].

The SMS-GMSC maps the "Unidentified subscriber" MAP error to an "Absent subscriber" error with diagnostic information set to "Unidentified subscriber" to the SC as described in 3GPP TS 23.040 [26].

Note that the indication of which number belongs to the SGSN and which to the MSC, received from the HLR in the MAP_SEND_ROUTING_INFO_FOR_SM confirm (see clause 23.3.2) will enable the SMS-GMSC to map the causes received from one or both serving nodes into the appropriate causes for non GPRS, GPRS or both, and send them to the SC and the HLR.

The mobile terminated short message transfer procedure in the SMS-GMSC is shown in figure 23.3/3.