

Source: Ericsson
Title: CRs on R99 and Rel-4 Work Item CAMEL4, Pack 3
Agenda item: 9.5
Document for: APPROVAL

Introduction:

The document contains CR on R99 and mirror CR on Rel-4, Work Item "CAMEL4", that are sent by Ericsson directly to TSG CN Plenary meeting #13 for approval.

These 2 CRs propose the phased introduction of a Reference Number for CAMEL control of Mobile Originated SMS (MO-SMS) and CAMEL control of Mobile Terminated SMS (MT-SMS). CAMEL control of MO-SMS is a R99 feature and CAMEL control of MT-SMS is a Rel-5 feature.

The CAP version used for CAMEL control of MO-SMS (CAP V3) is specified in R99 only. There is no CAP V4 for CAMEL control of MO-SMS in the CAP specification for Rel-5 (CAMEL Phase 4). The parameters related to the SMS Reference Number for MO-SMS are therefore specified as part of CAP V3, in the CAP specification R99 (TS 29.078), but they are marked as "applicable for Rel-5 onwards".

Parameter will not be added in stage 2 for R99 (TS 23.078) what means that it is not a requirement in R99. The functional requirement for these parameters for MO-SMS ("stage 2 definition") will be specified in 23.078 for Rel-5.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.078	200	1	N2-010693	R99	Phased introduction of Reference Number for SMS	F	3.8.0
29.078	201			Rel-4	Phased introduction of Reference Number for SMS	A	4.1.0

CHANGE REQUEST

⌘ 29.078 CR 201 ⌘ rev ⌘ Current version: 4.1.0 ⌘

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title: ⌘ Phased introduction of Reference Number for SMS
Source: ⌘ Ericsson
Work item code: ⌘ CAMEL4 **Date:** ⌘ 13 September 2001
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)

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)

Reason for change: ⌘ The present CR proposes the phased introduction of a Reference Number for CAMEL control of Mobile Originated SMS (MO-SMS) and CAMEL control of Mobile Terminated SMS (MT-SMS).

During the processing of an SMS, the MSC/SGSN may produce a CDR. If that SMS is subject to CAMEL control, the SCP may also produce a CDR for that SMS.

It shall be possible for CDR post processing systems to correlate the SMS CDRs produced by the MSC/SGSN with the SMS CDRs produced by the SCP.

This may be achieved by means of a 'SMS Reference Number'. This Reference Number is produced in the MSC/SGSN at the time of SMS processing. The MSC/SGSN reports this Reference Number to the SCP, together with the MSC Address/SGSN Number.

The MSC/SGSN shall place this SMS Reference Number and the MSC Address/SGSN Number in the CDR for that SMS.

The SMS Reference Number shall be unique within the MSC/SGSN.

The combination of SMS Reference Number and MSC Address/SGSN Number forms a globally unique pair. This uniqueness guarantees that the CDR post processing system can correlate these CDRs.

Phased Introduction

CAMEL control of MO-SMS is a R99 feature and CAMEL control of MT-SMS is a Rel-5 feature. The CAP version used for CAMEL control of MO-SMS (CAP V3) is specified in R99 only. There is no CAP V4 for CAMEL control of MO-SMS in the CAP specification for Rel-5 (CAMEL Phase 4).

	<p>The parameters related to the SMS Reference Number for MO-SMS are therefore specified as part of CAP V3, in the CAP specification R99, but they are marked as “applicable for Rel-5 onwards”.</p> <p>The functional requirement for these parameters for MO-SMS (“stage 2 definition”) is specified in 23.078 for Rel-5.</p>									
Summary of change: ⌘	<p>If a Short Message is subject to CAMEL control, then:</p> <ol style="list-style-type: none"> 1. The MSC/SGSN shall generate an SMS Reference Number. 2. The MSC/SGSN shall report this Reference Number, together with the MSC Address/SGSN Number, to the SCP. 3. The MSC/SGSN shall place this Reference Number and the MSC Address/SGSN Number in the SMS CDR. 									
Consequences if not approved:	<p>⌘ Correlation of SMS CDRs produced by the MSC/SGSN with SMS CDRs produced by the SCP will not be possible.</p>									
Clauses affected:	<p>⌘ 7.1, 11.32</p>									
Other specs affected:	<table border="0"> <tr> <td data-bbox="493 800 532 863">⌘</td> <td data-bbox="532 800 899 863"><input checked="" type="checkbox"/> Other core specifications</td> <td data-bbox="899 800 1409 863">⌘</td> </tr> <tr> <td data-bbox="493 863 532 905">⌘</td> <td data-bbox="532 863 899 905">Test specifications</td> <td data-bbox="899 863 1409 905"></td> </tr> <tr> <td data-bbox="493 905 532 947">⌘</td> <td data-bbox="532 905 899 947">O&M Specifications</td> <td data-bbox="899 905 1409 947"></td> </tr> </table>	⌘	<input checked="" type="checkbox"/> Other core specifications	⌘	⌘	Test specifications		⌘	O&M Specifications	
⌘	<input checked="" type="checkbox"/> Other core specifications	⌘								
⌘	Test specifications									
⌘	O&M Specifications									
Other comments:	<p>⌘</p>									

*** First Change ***

7 MO SMS Control

This clause defines the operations, arguments, packages and application contexts used for CSE control of MO SMS over the gsmSCF – gprsSSF and gsmSCF – gsmSSF interfaces.

7.1 SMS operations and arguments

```
CAP-SMS-ops-args {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-SMS-ops-args(105) version3(2)}
```

```
DEFINITIONS IMPLICIT TAGS ::= BEGIN
```

```
-- This module contains the operations and operation arguments used for the
-- gsmSSF/gprsSSF - gsmSCF interface, for the control of MO-SMS.
```

```
-- The table in section 2.1 lists the specifications that contain the modules
-- that are used by CAP.
```

```
IMPORTS
```

```
...
```

```
< unmodified ASN.1 >
```

```
...
```

```

CallReferenceNumber,
FROM MAP-CH-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-network(1) modules(3) map-CH-DataTypes(13) version6(6)}

```

```
;
```

```
...
```

```
< unmodified ASN.1 >
```

```
...
```

```
initialDPSMS {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      InitialDPSMSArg {bound}
  RETURN RESULT FALSE
  ERRORS        {missingCustomerRecord |
                 missingParameter |
                 parameterOutOfRange |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter}
  CODE          opcode-initialDPSMS
}
```

```
-- Direction: gsmSSF or gprsSSF -> gsmSCF, Timer: Tidpsms
-- This operation is used after a TDP to indicate request for service.
```

```
InitialDPSMSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  serviceKey                [0] ServiceKey,
  destinationSubscriberNumber [1] CalledPartyBCDNumber {bound} OPTIONAL,
  callingPartyNumber        [2] ISDN-AddressString OPTIONAL,
  eventTypeSMS              [3] EventTypeSMS OPTIONAL,
  IMSI                      [4] IMSI OPTIONAL,
  locationInformationMSC     [5] LocationInformation OPTIONAL,
  locationInformationGPRS    [6] LocationInformationGPRS OPTIONAL,
  SMSCAddress               [7] ISDN-AddressString OPTIONAL,
  timeAndTimezone           [8] TimeAndTimezone {bound} OPTIONAL,
  TPShortMessageSubmissionInfo [9] TPShortMessageSubmissionInfo OPTIONAL,
  TPProtocolIdentifier       [10] TPProtocolIdentifier OPTIONAL,
  TPDataCodingScheme        [11] TPDataCodingScheme OPTIONAL,
  TPValidityPeriod          [12] TPValidityPeriod OPTIONAL,
  extensions                 [13] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                               ExtensionField {bound} OPTIONAL,
  ...
  smsReferenceNumber        [14] CallReferenceNumber OPTIONAL,
  mscAddress                [15] ISDN-AddressString OPTIONAL,
  sqsn-Number               [16] ISDN-AddressString OPTIONAL
}
```

```
-- NOTE
```

```
-- The parameters "smsReferenceNumber", "mscAddress" and "sqsn-Number" form part of CAMEL
```

-- Phase 4, which is part of the 3GPP Rel-5 package. The functional requirement of these
 -- parameters will be specified in 3GPP TS 23.078 for 3GPP Rel-5 onwards.

...
 < unmodified ASN.1 >
 ...

***** Next Change *****

11.32 InitialDPSMS procedure

11.32.1 General description

This operation is sent by the gsmSSF or gprsSSF after detection of a TDP-R in the FSM, to request the gsmSCF for instructions to complete the MO SMS submission.

11.32.1.1 Parameters

- destinationSubscriberNumber:
This IE contains a number to identify the Destination short message entity.
- callingPartyNumber:
This parameter carries the MSISDN of the sending MS.
- eventType:
This parameter indicates the armed FSM DP event, resulting in the InitialDPSMS operation.
- iMSI:
IMSI of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3GPP TS 29.002 [13].
- locationInformationInMSC:
This parameter indicates the location of the sending MS when the SM is sent via MSC.
- locationInformationInSGSN:
This parameter indicates the location of the sending MS when the SM is sent via GPRS SGSN.
- serviceKey:
This parameter indicates to the gsmSCF the requested IN service. It is used to address the required application/SLP within the gsmSCF (not for gsmSCF addressing).
- timeAndTimeZone:
This parameter contains the time that the gsmSSF/gprsSSF was triggered, and the time zone that the invoking gsmSSF/gprsSSF resides in.
- tPDataCodingScheme:
This IE indicates the data coding scheme of the TP-User Data element within the TPDU. It may indicate a message class. The message class may indicate e.g. the originator of Short Message.
- tPShortMessageSubmissionInfo:
This IE contains the 1st octet of the TPDU. Refer to 3G TS 23.040 [46] for a description of the various TPDU's.
- tPProtocolIdentifier:
This IE indicates the protocol used above SM-Transfer Layer.
- tPValidityPeriod:
This IE indicates the length of the validity period or the absolute time of the validity period termination.
- sMSCAddress:
This IE defines the address of the SMSC to which the MO short message is intended to be submitted.

- smsReferenceNumber:
This parameter contains the SMS Reference Number assigned to the Short Message by the MSC or SGSN.
- mscAddress:
This parameter contains the E.164 address of the MSC. It shall be present if the SMS processing takes place in the MSC; otherwise shall be absent.
- sgsn-Number:
This parameter contains the Global Title of the SGSN. It shall be present if the SMS processing takes place in the SGSN; otherwise shall be absent.

11.32.2 Invoking entity (gsmSSF or gprsSSF)

11.32.2.1 Normal procedure

gsmSSF/gprsSSF preconditions:

- (1) A MO SMS submission attempt has been initiated.
- (2) An event has been detected at a DP.

gsmSSF/gprsSSF postcondition:

- (1) A control relationship has been established and the gsmSSF/gprsSSF waits for instructions from the gsmSCF.

The address of the gsmSCF the InitialDPSMS operation shall be sent to is fetched from the SMS-CSI. The gsmSSF or gprsSSF provides all available parameters.

A control relationship is established to the gsmSCF. The gsmSSF/gprsSSF application timer T_{SSF} is set when the gsmSSF/gprsSSF sends InitialDPSMS for requesting instructions from the gsmSCF. It is used to prevent from excessive SMS delivery suspension time.

11.32.2.2 Error handling

If the destination gsmSCF is not accessible then the gsmSSF/gprsSSF instructs the MSC/SGSN to handle the SM according to the Default SMS Handling parameter of the SMS-CSI.

On expiration of T_{SSF} before receiving any operation, the gsmSSF/gprsSSF aborts the interaction with the gsmSCF and instructs the VMSC/SGSN to handle the SM according to the Default SMS Handling parameter of the SMS-CSI.

If the sending mobile party abandons after the sending of InitialDPSMS, then the gsmSSF/gprsSSF closes the control relationship after the first answer message from the gsmSCF has been received, and after the SMSC has responded or a timer has expired.

Generic error handling for the operation related errors is described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

***** End of Document *****

CHANGE REQUEST

⌘ 29.078 CR 200 ⌘ rev 1 ⌘ Current version: 3.8.0 ⌘

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Phased introduction of Reference Number for SMS		
Source:	⌘ Ericsson		
Work item code:	⌘ CAMEL4	Date:	⌘ 13 September 2001
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)

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)

Reason for change: ⌘ The present CR proposes the phased introduction of a Reference Number for CAMEL control of Mobile Originated SMS (MO-SMS) and CAMEL control of Mobile Terminated SMS (MT-SMS).

During the processing of an SMS, the MSC/SGSN may produce a CDR. If that SMS is subject to CAMEL control, the SCP may also produce a CDR for that SMS.

It shall be possible for CDR post processing systems to correlate the SMS CDRs produced by the MSC/SGSN with the SMS CDRs produced by the SCP.

This may be achieved by means of a 'SMS Reference Number'. This Reference Number is produced in the MSC/SGSN at the time of SMS processing. The MSC/SGSN reports this Reference Number to the SCP, together with the MSC Address/SGSN Number.

The MSC/SGSN shall place this SMS Reference Number and the MSC Address/SGSN Number in the CDR for that SMS.

The SMS Reference Number shall be unique within the MSC/SGSN.

The combination of SMS Reference Number and MSC Address/SGSN Number forms a globally unique pair. This uniqueness guarantees that the CDR post processing system can correlate these CDRs.

Phased Introduction

CAMEL control of MO-SMS is a R99 feature and CAMEL control of MT-SMS is a Rel-5 feature. The CAP version used for CAMEL control of MO-SMS (CAP V3) is specified in R99 only. There is no CAP V4 for CAMEL control of MO-SMS in the CAP specification for Rel-5 (CAMEL Phase 4).

	<p>The parameters related to the SMS Reference Number for MO-SMS are therefore specified as part of CAP V3, in the CAP specification R99, but they are marked as “applicable for Rel-5 onwards”.</p> <p>The functional requirement for these parameters for MO-SMS (“stage 2 definition”) is specified in 23.078 for Rel-5.</p>
Summary of change:	<p>⌘ If a Short Message is subject to CAMEL control, then:</p> <ol style="list-style-type: none"> 1. The MSC/SGSN shall generate an SMS Reference Number. 2. The MSC/SGSN shall report this Reference Number, together with the MSC Address/SGSN Number, to the SCP. 3. The MSC/SGSN shall place this Reference Number and the MSC Address/SGSN Number in the SMS CDR.
Consequences if not approved:	<p>⌘ Correlation of SMS CDRs produced by the MSC/SGSN with SMS CDRs produced by the SCP will not be possible.</p>
Clauses affected:	<p>⌘ 7.1, 11.32</p>
Other specs affected:	<p>⌘ <input checked="" type="checkbox"/> Other core specifications ⌘</p> <p><input type="checkbox"/> Test specifications</p> <p><input type="checkbox"/> O&M Specifications</p>
Other comments:	<p>⌘</p>

***** First Change *****

7 MO SMS Control

This clause defines the operations, arguments, packages and application contexts used for CSE control of MO SMS over the gsmSCF – gprsSSF and gsmSCF – gsmSSF interfaces.

7.1 SMS operations and arguments

```
CAP-SMS-ops-args {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-SMS-ops-args(105) version3(2)}
```

```
DEFINITIONS IMPLICIT TAGS ::= BEGIN
```

```
-- This module contains the operations and operation arguments used for the
-- gsmSSF/gprsSSF - gsmSCF interface, for the control of MO-SMS.
```

```
-- The table in section 2.1 lists the specifications that contain the modules
-- that are used by CAP.
```

```
IMPORTS
```

```
...
```

```
< unmodified ASN.1 >
```

```
...
```

```

CallReferenceNumber,
FROM MAP-CH-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-network(1) modules(3) map-CH-DataTypes(13) version6(6)}

```

```
;
```

```
...
```

```
< unmodified ASN.1 >
```

```
...
```

```
initialDPSMS {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      InitialDPSMSArg {bound}
  RETURN RESULT FALSE
  ERRORS        {missingCustomerRecord |
                 missingParameter |
                 parameterOutOfRange |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter}
  CODE          opcode-initialDPSMS
}
```

```
-- Direction: gsmSSF or gprsSSF -> gsmSCF, Timer: Tidpsms
-- This operation is used after a TDP to indicate request for service.
```

```
InitialDPSMSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  serviceKey                [0] ServiceKey,
  destinationSubscriberNumber [1] CalledPartyBCDNumber {bound} OPTIONAL,
  callingPartyNumber        [2] ISDN-AddressString OPTIONAL,
  eventTypeSMS               [3] EventTypeSMS OPTIONAL,
  IMSI                      [4] IMSI OPTIONAL,
  locationInformationMSC     [5] LocationInformation OPTIONAL,
  locationInformationGPRS    [6] LocationInformationGPRS OPTIONAL,
  SMSCAddress                [7] ISDN-AddressString OPTIONAL,
  timeAndTimezone           [8] TimeAndTimezone {bound} OPTIONAL,
  TPShortMessageSubmissionInfo [9] TPShortMessageSubmissionInfo OPTIONAL,
  TPProtocolIdentifier       [10] TPProtocolIdentifier OPTIONAL,
  TPDataCodingScheme        [11] TPDataCodingScheme OPTIONAL,
  TPValidityPeriod          [12] TPValidityPeriod OPTIONAL,
  extensions                 [13] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                               ExtensionField {bound} OPTIONAL,
  ...
  smsReferenceNumber        [14] CallReferenceNumber OPTIONAL,
  mscAddress                 [15] ISDN-AddressString OPTIONAL,
  sqsn-Number                [16] ISDN-AddressString OPTIONAL
}
```

```
-- NOTE
```

```
-- The parameters "smsReferenceNumber", "mscAddress" and "sqsn-Number" form part of CAMEL
```

-- Phase 4, which is part of the 3GPP Rel-5 package. The functional requirement of these
 -- parameters will be specified in 3GPP TS 23.078 for 3GPP Rel-5 onwards.

...
 < unmodified ASN.1 >
 ...

***** Next Change *****

11.32 InitialDPSMS procedure

11.32.1 General description

This operation is sent by the gsmSSF or gprsSSF after detection of a TDP-R in the FSM, to request the gsmSCF for instructions to complete the MO SMS submission.

11.32.1.1 Parameters

- destinationSubscriberNumber:
This IE contains a number to identify the Destination short message entity.
- callingPartyNumber:
This parameter carries the MSISDN of the sending MS.
- eventType:
This parameter indicates the armed FSM DP event, resulting in the InitialDPSMS operation.
- iMSI:
IMSI of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3GPP TS 29.002 [13].
- locationInformationInMSC:
This parameter indicates the location of the sending MS when the SM is sent via MSC.
- locationInformationInSGSN:
This parameter indicates the location of the sending MS when the SM is sent via GPRS SGSN.
- serviceKey:
This parameter indicates to the gsmSCF the requested IN service. It is used to address the required application/SLP within the gsmSCF (not for gsmSCF addressing).
- timeAndTimeZone:
This parameter contains the time that the gsmSSF/gprsSSF was triggered, and the time zone that the invoking gsmSSF/gprsSSF resides in.
- tPDataCodingScheme:
This IE indicates the data coding scheme of the TP-User Data element within the TPDU. It may indicate a message class. The message class may indicate e.g. the originator of Short Message.
- tPShortMessageSubmissionInfo:
This IE contains the 1st octet of the TPDU. Refer to 3G TS 23.040 [46] for a description of the various TPDU's.
- tPProtocolIdentifier:
This IE indicates the protocol used above SM-Transfer Layer.
- tPValidityPeriod:
This IE indicates the length of the validity period or the absolute time of the validity period termination.
- sMSCAddress:
This IE defines the address of the SMSC to which the MO short message is intended to be submitted.

- smsReferenceNumber:
This parameter contains the SMS Reference Number assigned to the Short Message by the MSC or SGSN.
- mscAddress:
This parameter contains the E.164 address of the MSC. It shall be present if the SMS processing takes place in the MSC; otherwise shall be absent.
- sgsn-Number:
This parameter contains the Global Title of the SGSN. It shall be present if the SMS processing takes place in the SGSN; otherwise shall be absent.

11.32.2 Invoking entity (gsmSSF or gprsSSF)

11.32.2.1 Normal procedure

gsmSSF/gprsSSF preconditions:

- (1) A MO SMS submission attempt has been initiated.
- (2) An event has been detected at a DP.

gsmSSF/gprsSSF postcondition:

- (1) A control relationship has been established and the gsmSSF/gprsSSF waits for instructions from the gsmSCF.

The address of the gsmSCF the InitialDPSMS operation shall be sent to is fetched from the SMS-CSI. The gsmSSF or gprsSSF provides all available parameters.

A control relationship is established to the gsmSCF. The gsmSSF/gprsSSF application timer T_{SSF} is set when the gsmSSF/gprsSSF sends InitialDPSMS for requesting instructions from the gsmSCF. It is used to prevent from excessive SMS delivery suspension time.

11.32.2.2 Error handling

If the destination gsmSCF is not accessible then the gsmSSF/gprsSSF instructs the MSC/SGSN to handle the SM according to the Default SMS Handling parameter of the SMS-CSI.

On expiration of T_{SSF} before receiving any operation, the gsmSSF/gprsSSF aborts the interaction with the gsmSCF and instructs the VMSC/SGSN to handle the SM according to the Default SMS Handling parameter of the SMS-CSI.

If the sending mobile party abandons after the sending of InitialDPSMS, then the gsmSSF/gprsSSF closes the control relationship after the first answer message from the gsmSCF has been received, and after the SMSC has responded or a timer has expired.

Generic error handling for the operation related errors is described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

***** End of Document *****