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**Source:** SA5 (Telecom Management)  
**Title:** 2 Rel-5 CR 32.205 & 32.215 (CS & PS charging)  
Addition of CAMEL phase 4 extensions in SMS-MT CDRs  
**Document for:** Decision  
**Agenda Item:** 7.5.3

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Doc-1st-Level	Spec	CR	Phase	Subject	Category	Version - Current	Version - New	Doc-2nd-Level	Workitem
SP-020025	32.205	003	Rel-5	Addition of CAMEL phase 4 extensions in SMS-MT CDRs	B	4.1.0	5.0.0	S5-020184	OAM-CH
SP-020025	32.215	006	Rel-5	Addition of CAMEL phase 4 extensions in SMS-MT CDRs	B	4.2.0	5.0.0	S5-020187	OAM-CH

## CHANGE REQUEST

⌘ **32.205 CR 003** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

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

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

<b>Title:</b>	⌘ Addition of CAMEL phase 4 extensions in SMS-MT CDRs		
<b>Source:</b>	⌘ SA5		
<b>Work item code:</b>	⌘ OAM-CH	<b>Date:</b>	⌘ 01/03/2002
<b>Category:</b>	⌘ <b>B</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <u>TR 21.900</u> .		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ Due to the introduction of terminating SMS services in CAMEL Phase 4, CAMEL related information must be introduced in the SMS-MT CDR.
<b>Summary of change:</b>	⌘ CAMEL information is introduced in the SMS-MT CDR. This item is introduced into the CDRs as required by CN2 in accordance with LS N2-010440.
<b>Consequences if not approved:</b>	⌘ Misalignment with CAMEL specifications. Terminating CAMEL SMS services can not be charged since appropriate information is missing from the MT-SMS CDRs.

<b>Clauses affected:</b>	⌘ 4.14, 5.12, 6.1	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications ⌘ <input checked="" type="checkbox"/> O&M Specifications	⌘ Correspondent changes are made in the scope of Rel-5 in TS 32.015.
<b>Other comments:</b>	⌘	

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.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.

## 4.14 Short message service, mobile terminated

If enabled, an SMS-MT record shall be produced, within the terminating MSC, for each short message received by a mobile subscriber.

**Table 14: SMS-MT record**

Field			Description
Record Type	M	M	SMS-Mobile Terminated.
Service Centre	M	M	The E.164 address of the SMS centre.
Served IMSI	M	M	The IMSI of the receiving party.
Served IMEI	O <sub>C</sub>	O <sub>C</sub>	The IMEI of the receiving party, if available.
Served MSISDN	O <sub>M</sub>	O <sub>M</sub>	The MSISDN of the receiving party.
MS Classmark	M	C	The mobile station classmark.
Recording Entity	M	M	The E.164 number of the visited MSC.
Location	O <sub>M</sub>	O <sub>M</sub>	The Location Area Code and Cell Identity /Service Area Code to which the message was delivered.
Event time stamp	M	M	Delivery time: time at which message was sent to the MS by the MSC.
SMS Result	C	C	The result of the attempted delivery if unsuccessful.
Record extensions	O <sub>C</sub>	O <sub>C</sub>	A set of network/ manufacturer specific extensions to the record, when available.
System Type	C	M	This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface
<u>CAMELSMSInformation</u>	<u>C</u>	<u>C</u>	<u>Set of CAMEL information IEs. Each of these IEs contains information related to CAMEL call leg related for the SMS. Shall be present only if CAMEL is applied.</u>

## 5.12 CAMEL SMS Information

This field contains following CAMEL information for mobile originated and terminated SMS:

- Default SMS handling

This field indicates whether or not a CAMEL encounters default SMS handling. This field shall be present only if default SMS handling has been applied.

- Free format data

See clause 5.22.

- Calling Party Number

This field contains Calling Party Number modified by CAMEL service.

- CAMEL modified Service Centre

This field contains SMS-C address modified by CAMEL service.

Note: This field is only applicable for originated SMS.

- CAMELDestination Subscriber Number

This field contains short message Destination Number modified by CAMEL service.

Note: This field is only applicable for originated SMS.

- SMS Reference Number

This field contains the SMS Reference Number assigned to the Short Message by the MSC.

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## 6 Charging Data Record Structure

### 6.1 ASN.1 definitions for CDR information

...

< unmodified ASN.1 >

...

```
MTSMSRecord ::= SET
{
    recordType          [0] CallEventRecordType,
    serviceCentre       [1] AddressString,
    servedIMSI          [2] IMSI,
    servedIMEI          [3] IMEI OPTIONAL,
    servedMSISDN        [4] MSISDN OPTIONAL,
    msClassmark         [5] Classmark,
    recordingEntity     [6] RecordingEntity,
    location             [7] LocationAreaAndCell OPTIONAL,
    deliveryTime        [8] TimeStamp,
    smsResult           [9] SMSResult OPTIONAL,
    recordExtensions    [10] ManagementExtensions OPTIONAL,
    systemType          [11] SystemType OPTIONAL,
    CAMELSMSInformation [12] CAMELSMSInformation OPTIONAL
}
```

## CHANGE REQUEST

⌘ **32.215 CR 006** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

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

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

<b>Title:</b>	⌘ Addition of CAMEL phase 4 extensions in SMS-MT CDRs		
<b>Source:</b>	⌘ SA5		
<b>Work item code:</b>	⌘ OAM-CH	<b>Date:</b>	⌘ 01/03/2002
<b>Category:</b>	⌘ <b>B</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ Due to the introduction of terminating SMS services in CAMEL Phase 4, CAMEL related information must be introduced in the SMS-MT CDR.
<b>Summary of change:</b>	⌘ CAMEL information is introduced in the SMS-MT CDR. This item is introduced into the CDRs as required by CN2 in accordance with LS N2-010440.
<b>Consequences if not approved:</b>	⌘ Misalignment with CAMEL specifications. Terminating CAMEL SMS services can not be charged since appropriate information is missing from the MT-SMS CDRs.

<b>Clauses affected:</b>	⌘ 4.6, 5.3, 6.1	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input checked="" type="checkbox"/> O&M Specifications	⌘ Correspondent changes are made in the scope of Rel-5 in TS 32.005.
<b>Other comments:</b>	⌘	

## 4.6 SMS-MT data in SGSN (S-SMT-CDR)

If enabled, an SGSN Mobile terminated SMS record shall be produced for each short message received by a mobile subscriber via the SGSN. The fields in the record are specified in Table 5. The table provides a brief description of each field. A more elaborate definition of the fields, sorted by the field name in alphabetical order, is provided in Clause 5.

**Table 5: SGSN Mobile terminated SMS record (S-SMT-CDR)**

Field	Category	Description
Record Type	M	SGSN Mobile Terminated SMS.
Served IMSI	M	The IMSI of the subscriber.
Served IMEI	O <sub>C</sub>	The IMEI of the ME, if available.
Served MSISDN	O <sub>M</sub>	The primary MSISDN of the subscriber.
MS Network Capability	O <sub>M</sub>	The mobile station network capability
Service Centre	O <sub>M</sub>	The address (E.164) of the SMS-service centre.
Recording Entity	O <sub>M</sub>	The E.164 number of the SGSN.
Location Area Code	O <sub>M</sub>	The Location Area Code to which the message was delivered.
Routing Area Code	O <sub>M</sub>	The Routing Area Code to which the message was delivered.
Cell Identifier	O <sub>M</sub>	The Cell Identity for GSM or Service Area Code (SAC) for UMTS to which the message was delivered.
Event Time Stamp	M	Delivery time stamp, time at which message was sent to the MS by the SGSN.
SMS Result	C	The result of the attempted delivery if unsuccessful.
Record Extensions	O <sub>C</sub>	A set of network operator/manufacturer specific extensions to the record. Conditioned upon the existence of an extension.
Node ID	O <sub>M</sub>	Name of the recording entity.
Local Record Sequence Number	O <sub>M</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Charging Characteristics	M	The Charging Characteristics flag set used by the SGSN.
System Type	O <sub>C</sub>	Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface.
Charging Characteristics Selection Mode	O <sub>M</sub>	Holds information about how Charging Characteristics were selected.
CAMEL Information	O <sub>C</sub>	Set of CAMEL information related to SMS session. For more information see <a href="#">Description of Record Fields</a> . This field is present if CAMEL service is activated.

## 5.3 CAMEL Information

This field includes following CAMEL information elements for PDP context (S-CDR), Attach/Detach session (M-CDR), and Mobile originated SMS (S-SMO-CDR) and Mobile terminated SMS (S-SMT-CDR) if corresponding CAMEL service is activated.

- CAMEL Access Point Name NI (S-CDR)

This field contains the network identifier part of APN before modification by the CSE.

- CAMEL Access Point Name OI (S-CDR)

This field contains the operator identifier part of APN before modification by the CSE.

- CAMEL Calling Party Number (S-SMO-CDR, S-SMT-CDR)

This field contains the Calling Party Number modified by the CAMEL service.

- CAMEL Destination Subscriber Number (S-SMO-CDR)

This field contains the short message Destination Number modified by the CAMEL service.

Note: This field is only applicable for originated SMS.

- CAMEL SMSC Address (S-SMO-CDR)

This field contains the SMSC address modified by the CAMEL service.

Note: This field is only applicable for originated SMS.

- SCF address (S-CDR, M-CDR, S-SMO-CDR, S-SMT-CDR)

This field identifies the CAMEL server serving the subscriber. Address is defined in HLR as part of CAMEL subscription information.

- Service key (S-CDR, M-CDR, S-SMO-CDR, S-SMT-CDR)

This field identifies the CAMEL service logic applied. Service key is defined in HLR as part of CAMEL subscription information.

- Default Transaction/SMS Handling (S-CDR, M-CDR, S-SMO-CDR, S-SMT-CDR)

This field indicates whether or not a CAMEL encountered default GPRS- or SMS-handling. This field shall be present only if default call handling has been applied. Parameter is defined in HLR as part of CAMEL subscription information.

- Free Format Data (S-CDR, M-CDR, S-SMO-CDR, S-SMT-CDR)

This field contains charging information sent by the gsmSCF in the Furnish Charging Information GPRS messages as defined in 3GPP TS 29.078 [9]. The data can be sent either in one FCI message or several FCI messages with append indicator. This data is transferred transparently in the CAMEL clauses of the relevant call records.

If the FCI is received more than once during one CAMEL call, the append indicator defines whether the FCI information is appended to previous FCI and stored in the relevant record or the information of the last FCI received is stored in the relevant record (the previous FCI information shall be overwritten).

In the event of partial output the currently valid "Free format data" is stored in the partial record.

- FFD Append Indicator (S-CDR, M-CDR)

This field contains an indicator whether CAMEL free format data is to be appended to free format data stored in previous partial CDR. This field is needed in CDR post processing to sort out valid free format data for that call leg from sequence of partial records. Creation of partial records is independent of received FCIs and thus valid free format data may be divided to different partial records.

If field is missing then free format data in this CDR replaces all received free format data in previous CDRs. Append indicator is not needed in the first partial record. In following partial records indicator shall get value true if all FCIs received during that partial record have append indicator. If one or more of the received FCIs for that call leg during the partial record do not have append indicator then this field shall be missing.

- Level of CAMEL services (S-CDR, M-CDR)

This field describes briefly the complexity of CAMEL invocation. Categories are the same as in circuit switched services and measure of resource usage in VPLMN requested by HPLMN.

- "Basic" means that CAMEL feature is invoked during the PDP context activation phase only (e.g. to modify APN\_NI/APN\_OI).

- "Call duration supervision" means that PDP context duration or volume supervision is applied in the gprsSSF of the VPLMN (Apply Charging message is received from the gsmSCF).

- Number of DPs encountered (S-CDR, M-CDR)

This field indicates how many armed CAMEL detection points (TDP and EDP) were encountered and complements "Level of CAMEL service" field.

- smsReferenceNumber (S-SMO-CDR, S-SMT-CDR)

This parameter contains the SMS Reference Number assigned to the Short Message by the SGSN.



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## 6 Charging Data Record Structure

### 6.1 ASN.1 definitions for CDR information

...

< unmodified ASN.1 >

...

```
SGSNSMTRRecord ::= SET
{
    recordType          [0] CallEventRecordType,
    servedIMSI         [1] IMSI,
    servedIMEI         [2] IMEI OPTIONAL,
    servedMSISDN       [3] MSISDN OPTIONAL,
    msNetworkCapability [4] MSNetworkCapability OPTIONAL,
    serviceCentre      [5] AddressString OPTIONAL,
    recordingEntity    [6] RecordingEntity OPTIONAL,
    locationArea       [7] LocationAreaCode OPTIONAL,
    routingArea        [8] RoutingAreaCode OPTIONAL,
    cellIdentifier      [9] CellId OPTIONAL,
    eventTimeStamp     [10] TimeStamp,
    smsResult          [11] SMSResult OPTIONAL,
    recordExtensions   [12] ManagementExtensions OPTIONAL,
    nodeID             [13] NodeID OPTIONAL,
    localSequenceNumber [14] LocalSequenceNumber OPTIONAL,
    chargingCharacteristics [15] ChargingCharacteristics,
    systemType         [16] SystemType OPTIONAL,
    chChSelectionMode [17] ChChSelectionMode OPTIONAL,
    cAMELInformationSMS [18] CAMELInformationSMS OPTIONAL
}
```