

CDR Field Description M14.5

DN00161464

Issue 10-0

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Non-observance of these conditions and the safety instructions can result in personal injury or in property damage.

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The same text in German:

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1 Changes in the document

Changes made between issues 10-0 and 9-0

The bit structure table in section *FACILITY_USAGE* has been updated.

A note has been added to the descriptions of the following fields:

IN_CIRCUIT_GROUP, IN_CIRCUIT_GROUP_NAME, IN_CIRCUIT,
OUT_CIRCUIT_GROUP, OUT_CIRCUIT_GROUP_NAME, and OUT_CIRCUIT.

Changes made between issues 9-0 and 8-1

The following new CDR fields have been added to section *Charging data fields*:

- ADDR_COMPLETE_DURATION_TEN_MS
- BILLED_ITEM
- BILLED_ITEM_1
- BILLED_ITEM_2
- BILLED_ITEM_3
- CALL_TYPE_STATUS
- CALLED_ACCESS_INFO
- CALLED_TERMINAL_IP
- CALLING_ACCESS_INFO
- CALLING_NUMBER_UNCOMPL_STATUS
- CALLING_TERMINAL_IP
- CAUSE_FOR_TERMINATION_LOCATION
- CHARGING_END_TIME_TEN_MS
- CHARGING_START_TIME_TEN_MS
- DATA_CODING_SCHEME
- DEF_CALL_HANDL_CONT
- DESTINATION_NUMBER_INN
- DIALOGUE_TYPE
- DIRECTORY_NUMBER
- IDLE_DURATION_TEN_MS
- IN_MGW_NAME
- IN_MODIFICATION
- IN_MODIFY_PARAMETERS
- IN_SERVICE_KEY
- INAT_INDICATOR
- LEVEL_OF_IN_SERVICE
- MGW_NAME
- MSS_SPC
- NUMBER_INDICATOR
- OUT_MGW_NAME
- REDIR_NUMBER_UNCOMPL_STATUS
- SCI_DATA
- SEQUENCE_REFERENCE
- SERVED_PARTY_IDENTITY
- SERVED_PARTY_TYPE
- SERVICE_INDICATOR

- SERVICE_TARIFF_CLASS
- SETUP_DURATION_TEN_MS
- SM_TEXT_LENGTH
- TRANSPARENT_DATA
- TRIG_BCSM_TYPE
- UI_TYPE
- UNCOMPL_STATUS
- USSD_STRING

The following CDR field descriptions have been modified in section *Charging data fields*:

- IN_LEG_ID
- TRIG_LEG_CALL_REFERENCE
- NUMBER
- TON
- NPI
- BASIC_SERVICE_CODE
- BASIC_SERVICE_TYPE
- BNC_CONNECTION_TYPE
- CALL_REFERENCE_TIME
- CALL_TYPE
- CAMEL_CALL_REFERENCE
- CAMEL_EXCHANGE_ID
- CATEGORY
- CAUSE_FOR_TERMINATION
- CHRG_TYPE
- CONTROL_PLANE_INDEX
- DEFAULT_CALL_HANDLING
- DIALLED_DIGITS
- DISCONNECTING_PARTY
- DURATION_TEN_MS
- FACILITY_USAGE
- GLOBAL_CALL_REFERENCE
- IMEI
- IMEISV
- IMSI
- IN_CIRCUIT_GROUP
- IN_CIRCUIT_GROUP_NAME
- INTERMEDIATE_CHRG_CAUSE
- INTERMEDIATE_RECORD_NUMBER
- INTERMEDIATE_CHARGING_IND
- LEG_CALL_REFERENCE
- MSC_TYPE
- OUT_CIRCUIT_GROUP
- OUT_CIRCUIT_GROUP_NAME
- SCF_ADDRESS
- TARIFF_CLASS
- USER_PLANE_INDEX

- CAMEL_SERVICE_KEY

The following CDR field description has been moved in section *Charging data fields*:

- CALLING_NUMBER has been moved below the heading NUMBER

Changes made between issues 8-1 and 8-0

The document has been restructured.

Changes made between issues 8-0 and 7-2

New CDR Field CALLING_NUMBER has been added.

The descriptions of fields ICID, ICID_LENGTH, ICID_OVERFLOW have been modified.

The description of field NUMBER has been modified.

Changes made between issues 7-2 and 7-1

The values of the CDR fields VIRTUAL_MSC_ID and DESTINATION_NUMBER have been corrected in section *Coding of charging record fields*.

Changes made between issues 7-1 and 7-0

Error corrections have been made to CUG_INTERLOCK in section: *Charging data fields*.

Error corrections have been made to IN_CIRCUIT_GROUP_NAME in section: *Charging data fields*.

Error corrections have been made to OUT_CIRCUIT_GROUP_NAME in section: *Charging data fields*.

Error corrections have been made to IN_CIRCUIT_GROUP_NAME in section: *Charging data fields*.

Error corrections have been made to SUBS_OLD_EX_ID in section: *Charging data fields*.

Error corrections have been made to SUBS_NEW_EX_ID in section: *Charging data fields*.

Error corrections have been made to section: *Coding of charging record fields*.

A new description, 1-20 ASCII HEX bytes, has been added to section *Coding of charging record fields*.

Changes made between issues 7-0 and 6-2

The MOC CDR has been removed from the REDIRECTING_NUMBER CDR field in Section: *Charging data fields*.

The MOC CDR has been removed from the REDIRECTING_NUMBER_TON CDR field in Section: *Charging data fields*.

2 Field description

2.1 Introduction

This document presents field descriptions for all fields in the CDRs. The document describes those changes in charging that affect the Mobile Services Switching Centre (DX MSC)/Home Location Register (HLR) - Billing Centre (BC) interface when the software release is updated to M14.1 release. General changes are caused by software restructuring or software development. These changes can, for example, be changes to field values. In this document, the references to the MSC also apply to the MSS and the GCS unless otherwise mentioned.

The document also describes possible changes to charging formats that are defined according to call types, events, and features in the operator's network. These changes are optional and are negotiated separately with each operator. It is essential that all relevant information is actively exchanged between the operator, the billing centre manufacturer, and Nokia Siemens Networks personnel, because optional changes affect the charging format.

Generally, software upgrades do not change the format of the charging records. The reason for this is to ensure that the billing system interface functions properly after the software upgrade. The operator-specific formats of the charging records can only be delivered if optional features and other possible changes to general fields are known.

If the required changes are approved, Nokia Siemens Networks reserves two months to implement, test, and document these changes. It is possible, however, that the changes are implemented immediately after the software update. In this case, a specific schedule is set, ensuring that the operator can utilise the charging effects of the new features right after the update.

2.2 Interface modifications

The CDR types and the possible fields in each of them are presented in *MSC/HLR-BC Universal M14, Interface Specification*.



The new values of the old fields come into effect after the SW update or the feature activation, depending on the case.

2.2.1 Charging data fields

The following new fields have been added:

- ADDR_COMPLETE_DURATION_TEN_MS
- BILLED_ITEM
- BILLED_ITEM_1
- BILLED_ITEM_2
- BILLED_ITEM_3
- CALL_TYPE_STATUS
- CALLED_ACCESS_INFO
- CALLED_TERMINAL_IP
- CALLING_ACCESS_INFO
- CALLING_NUMBER_UNCOMPL_STATUS

-
- CALLING_TERMINAL_IP
 - CAUSE_FOR_TERMINATION_LOCATION
 - CHARGING_END_TIME_TEN_MS
 - CHARGING_START_TIME_TEN_MS
 - DATA_CODING_SCHEME
 - DEF_CALL_HANDL_CONT
 - DESTINATION_NUMBER_INN
 - DIALOGUE_TYPE
 - DIRECTORY_NUMBER
 - IDLE_DURATION_TEN_MS
 - IN_MGW_NAME
 - IN_MODIFICATION
 - IN_MODIFY_PARAMETERS
 - IN_SERVICE_KEY
 - INAT_INDICATOR
 - LEVEL_OF_IN_SERVICE
 - MGW_NAME
 - MSS_SPC
 - NUMBER_INDICATOR
 - OUT_MGW_NAME
 - REDIR_NUMBER_UNCOMPL_STATUS
 - SCI_DATA
 - SEQUENCE_REFERENCE
 - SERVED_PARTY_IDENTITY
 - SERVED_PARTY_TYPE
 - SERVICE_INDICATOR
 - SERVICE_TARIFF_CLASS
 - SETUP_DURATION_TEN_MS
 - SM_TEXT_LENGTH
 - TRANSPARENT_DATA
 - TRIG_BCSM_TYPE
 - UI_TYPE
 - UNCOMPL_STATUS
 - USSD_STRING

The following fields are now available in the MOC CDR:

- SETUP_DURATION_TEN_MS
- CT_THIRD_PARTY_NUMBER_TON
- CT_THIRD_PARTY_NUMBER_NPI
- CT_THIRD_PARTY_NUMBER
- IN_MGW_NAME
- OUT_MGW_NAME

The following fields are now available in the MTC CDR:

- SETUP_DURATION_TEN_MS
- CT_THIRD_PARTY_NUMBER_TON
- CT_THIRD_PARTY_NUMBER_NPI

- CT_THIRD_PARTY_NUMBER
- IN_MGW_NAME
- OUT_MGW_NAME
- INAT_INDICATOR
- MSC_TYPE

The following fields are now available in the FORW CDR:

- SETUP_DURATION_TEN_MS
- IN_MGW_NAME
- OUT_MGW_NAME
- INAT_INDICATOR
- MSC_TYPE

The following fields are now available in the ROAM CDR:

- SETUP_DURATION_TEN_MS
- CT_THIRD_PARTY_NUMBER_TON
- CT_THIRD_PARTY_NUMBER_NPI
- CT_THIRD_PARTY_NUMBER
- IN_MGW_NAME
- OUT_MGW_NAME
- INAT_INDICATOR

The following fields are now available in the INSU CDR:

- BASIC_SERVICE_CODE
- BASIC_SERVICE_TYPE
- CALL_REFERENCE_TIME
- CAMEL_CALL_REFERENCE
- CAMEL_EXCHANGE_ID
- CAUSE_FOR_TERMINATION
- CHRG_TYPE
- DIALLED_DIGITS
- SERVED_IMEI
- SERVED_IMEISV
- SERVED_IMSI
- IN_CIRCUIT_GROUP
- IN_CIRCUIT_GROUP_NAME
- INTERMEDIATE_RECORD_NUMBER
- LEG_CALL_REFERENCE
- CALLING_NUMBER_NPI
- CALLED_NUMBER_NPI
- DIALLED_DIGITS_NPI
- SERVED_NUMBER_NPI
- REDIRECTING_NUMBER_NPI
- DESTINATION_NUMBER_NPI
- CALLED_NUMBER
- SERVED_NUMBER
- REDIRECTING_NUMBER
- DESTINATION_NUMBER

-
- OUT_CIRCUIT_GROUP
 - OUT_CIRCUIT_GROUP_NAME
 - CALLING_NUMBER_TON
 - CALLED_NUMBER_TON
 - DIALLED_DIGITS_TON
 - SERVED_NUMBER_TON
 - REDIRECTING_NUMBER_TON
 - DESTINATION_NUMBER_TON
 - CAMEL_EXCHANGE_ID_TON
 - GLOBAL_CALL_REFERENCE
 - INTERMEDIATE_CHARGING_IND
 - INTERMEDIATE_CHRG_CAUSE
 - SEQUENCE_REFERENCE
 - TRIG_LEG_CALL_REFERENCE
 - IN_SERVICE_KEY
 - IN_LEG_ID
 - TRIG_BCSM_TYPE
 - UI_TYPE
 - SERVED_PARTY_IDENTITY
 - SERVED_PARTY_TYPE
 - TRANSPARENT_DATA
 - BILLED_ITEM_1
 - BILLED_ITEM_2
 - BILLED_ITEM_3
 - CALL_TYPE_STATUS
 - SERVICE_INDICATOR
 - CALLING_NUMBER
 - MSS_SPC
 - CAUSE_FOR_TERMINATION_LOCATION
 - CHARGING_START_TIME_TEN_MS
 - CHARGING_END_TIME_TEN_MS
 - SETUP_DURATION_TEN_MS
 - IDLE_DURATION_TEN_MS
 - DURATION_TEN_MS
 - TARIFF_CLASS
 - SERVICE_TARIFF_CLASS
 - CALLING_NUMBER_INDICATOR
 - CALLING_NUMBER_UNCOMPL_STATUS
 - REDIR_NUMBER_INDICATOR
 - REDIR_NUMBER_UNCOMPL_STATUS
 - DESTINATION_NUMBER_INN

The following fields are now available in the INUC CDR:

- CALL_REFERENCE_TIME
- CAMEL_CALL_REFERENCE
- CAMEL_EXCHANGE_ID
- DEFAULT_CALL_HANDLING

- GLOBAL_CALL_REFERENCE
- LEG_CALL_REFERENCE
- DESTINATION_NUMBER_NPI
- SCF_ADDRESS
- DESTINATION_NUMBER_TON
- SCF_ADDRESS_TON
- CAMEL_EXCHANGE_ID_TON
- INTERMEDIATE_CHRG_CAUSE
- INTERMEDIATE_CHARGING_IND
- INTERMEDIATE_RECORD_NUMBER
- TRIG_BCSM_TYPE
- LEVEL_OF_IN_SERVICE
- DESTINATION_NUMBER
- IN_MODIFICATION
- IN_SERVICE_KEY
- IN_LEG_ID
- SCI_DATA
- IN_MODIFY_PARAMETERS
- DEF_CALL_HANDL_CONT
- DIALOGUE_TYPE

The following fields are now available in the PBXO CDR:

- IN_BNC_CONNECTION_TYPE
- INSIDE_CONTROL_PLANE_INDEX
- DISCONNECTING_PARTY
- GLOBAL_CALL_REFERENCE
- INSIDE_USER_PLANE_INDEX
- SETUP_DURATION_TEN_MS
- OUT_CIRCUIT_GROUP_NAME
- IN_CIRCUIT_GROUP_NAME
- CALLING_CATEGORY
- IN_MGW_NAME
- OUT_MGW_NAME
- CALLING_SA_NUMBER
- DIRECTORY_NUMBER

The following fields are now available in the PBXT CDR:

- OUT_BNC_CONNECTION_TYPE
- OUTSIDE_CONTROL_PLANE_INDEX
- DISCONNECTING_PARTY
- OUTSIDE_USER_PLANE_INDEX
- INAT_INDICATOR
- SETUP_DURATION_TEN_MS
- OUT_CIRCUIT_GROUP_NAME
- IN_CIRCUIT_GROUP_NAME
- IN_MGW_NAME
- OUT_MGW_NAME

- CALLED_SA_NUMBER
- DIRECTORY_NUMBER

The following fields are now available in the SMMO CDR:

- LOCATION_NUMBER_NPI
- LOCATION_NUMBER
- SCF_ADDRESS_TON
- LOCATION_NUMBER_TON
- DATA_CODING_SCHEME
- SM_TEXT_LENGTH

The following fields are now available in the SMMT CDR:

- LOCATION_NUMBER_NPI
- LOCATION_NUMBER
- SCF_ADDRESS_TON
- LOCATION_NUMBER_TON
- DATA_CODING_SCHEME
- SM_TEXT_LENGTH

The following fields are now available in the SUPS CDR:

- LOCATION_NUMBER_NPI
- LOCATION_NUMBER
- LOCATION_NUMBER_TON

The following fields are now available in the USSD CDR:

- LOCATION_NUMBER_NPI
- LOCATION_NUMBER
- LOCATION_NUMBER_TON
- USSD_STRING

The following fields are now available in the IN1 CDR:

- IN1_IN_SERVICE_KEY

The following fields are now available in the IN2 CDR:

- IN2_IN_SERVICE_KEY

The following fields are now available in the IN3 CDR:

- IN3_IN_SERVICE_KEY

The following fields are now available in the IN4 CDR:

- IN4_SCF_ADDRESS
- IN4_CAMEL_SERVICE_KEY
- IN4_DIALOGUE_TYPE
- IN4_SCF_ADDRESS_TON

The following fields are now available in the IN5 CDR:

- IN5_SCF_ADDRESS
- IN5_CAMEL_SERVICE_KEY
- IN5_DIALOGUE_TYPE
- IN5_SCF_ADDRESS_TON

The following fields are now available in the SOM CDR:

- CALLING_TERMINAL_IP
- CALLING_ACCESS_INFO

The following fields are now available in the STM CDR:

- CALLING_TERMINAL_IP
- CALLING_ACCESS_INFO

The following fields are now available in the POC CDR:

- INAT_INDICATOR
- IDLE_DURATION_TEN_MS
- ADDR_COMPLETE_DURATION_TEN_MS
- SETUP_DURATION_TEN_MS
- IN_MGW_NAME
- OUT_MGW_NAME

The following fields are now available in the PTC CDR:

- INAT_INDICATOR
- IDLE_DURATION_TEN_MS
- ADDR_COMPLETE_DURATION_TEN_MS
- SETUP_DURATION_TEN_MS
- IN_MGW_NAME
- OUT_MGW_NAME

The following fields are now available in the UCA CDR:

- SETUP_DURATION_TEN_MS

The following fields are now available in the COC CDR:

- DIALOGUE_TYPE

The following fields are now available in the CTC CDR:

- DIALOGUE_TYPE

The following fields are now available in the SOC CDR:

- CALLING_TERMINAL_IP
- CALLING_ACCESS_INFO

The following fields are now available in the STC CDR:

- CALLING_TERMINAL_IP
- CALLING_ACCESS_INFO

2.2.2 Coding of charging record files

1-20 ASCII HEX bytes are used in circuit group and MGW names.

2.3 Charging data fields

If the information of the charging data field is not available, the field is filled with 'F's by default. The billing system has to be implemented so that it processes the CDR fields filled with 'F's.

2.3.1 ACCEPTABLE_CHANNEL_CODINGS

This field indicates which channel codings are supported by the MS. The field is available in the MOC, MTC, and UCA CDRs.

The field can have the following values:

0 = not acceptable

1 = acceptable

LSB	
bit 1:	4,8 kbit/s
bit 2:	9,6 kbit/s
bit 3:	14,4 kbit/s
bit 4:	Spare
bit 5:	28,8 kbit/s
bit 6:	32,0 kbit/s
bit 7:	43,2 kbit/s
bit 8:	Spare
MSB	

Format: 1 HEX byte

2.3.2 ACM_DURATION

This field contains the duration of the user interaction from the ISUP ACM or CPG until the user interaction is over. If neither of those is received, then the duration from the ANM message until the end of the interaction. The field is available in the DOC CDR.

Format: 4 BCD bytes, in 10 milliseconds

2.3.3 ACTION

The action field is performed on a supplementary service. The field is available in the SUPS, and USSD CDRs.

The field can have the following values:

00H	Registration
01H	Erasure
02H	Activation
03H	Deactivation
04H	Interrogation
05H	Invocation
06H	Password registration
07H	Phase 1 process unstructured ss data
08H	Phase 2 process unstructured ss data request

09H	Phase 2 process unstructured ss data notify
-----	---------------------------------------------

Format: 1 HEX byte

2.3.4 ADD_ROUTING_CATEGORY

This field contains the routing category according to subscriber information from the HLR. The values range from 1 to 65534. When the ADD_ROUTING_CATEGORY field is removed or not created at all for a subscriber, it receives the value 'NOT_USED' (=0). The field is available in the MOC, MTC, FORW, ROAM, SUPS, SMMO, SMMT, SMMF, SOC, STC, SOM, and STM CDRs.

Format: 1 HEX word

2.3.5 ADDR_COMPLETE_DURATION_TEN_MS

This field indicates the duration of the call before 'address complete'. The measurement of this value begins when call control and signalling resources have been seized for the call leg in question and ends when the address complete message is received. It is generated in the MSC by updating a duration counter once in every 10 milliseconds. This means that it is not calculated from the start and end times. The possible changes in the exchange wall clock time do not affect this field. This field is available in the POC and PTC CDRs.

Format: 4 BCD bytes, in 10 milliseconds.

2.3.6 AGE_OF_ESTIMATE

The age of the location information in minutes. With this field it is possible to verify the age of the last known location information. If the location estimate is over 32767 minutes old (approximately three weeks), the time is 32767 minutes. The field is available in the LCS CDR.

Format: 1 HEX word

2.3.7 ANSWER_TIME

This field contains the timestamp when the ANM (Answer Message) is received. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, RCC, SOC, and STC CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 10 11 98 19

time 12:15:40

day 10.11.1998

2.3.8 AOC_INDICATOR


This field indicates if Advice of Charge (AoC) is associated with this subscriber. The field is available in the MOC, MTC, and FORW CDRs.

The field can have the following values:

0 = no AoC

1 = AoC

Format: 1 HEX byte

 The same information can also be found in the FACILITY_USAGE field.

2.3.9 APPLICATION_INFO

This field indicates the application information of the short message. The field is available in the SMMO, SMMT, SMMF, SOM, and STM CDRs.

The field can have the following values:

00H	Normal short message
01H	Picture message
FFH	Not known

Format: 1 HEX byte

2.3.10 B_IDLE_TIME

This field contains the timestamp when the ACM (Address Complete Message) is received. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, and PBXT CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 10 11 98 19

time 12:15:40

day 10.11.1998

2.3.11 BASIC_CALL_STATE_MODEL

This field indicates which basic call state model has been used. The field is available in the SUPS, COC, CTC, IN4, and IN5 CDRs.

The field can have the following values for the call-related parts:

00H	Type of basic call state model not defined
01H	Basic call state model for originating side
02H	Basic call state model for terminating side
04H	Basic call state model for terminating gateway MSC
05H	Originating basic call state model for call forwarding
06H	Originating side for COBI call
07H	Terminating side for COBI call
08H	Basic call state model for ICA call
FFH	Unknown

The field can have the following values for the call-unrelated parts:

00H	Type of basic call state model not defined
03H	Originating SMS state model
FFH	Unknown

Format: 1 HEX byte

2.3.12 BASIC_SERVICE_CODE

The primary service for which the subscriber is to be charged. This could be either a teleservice or a bearer service code. See BASIC_SERVICE_TYPE field to sort out the service type. The field is available in the MOC, MTC, FORW, ROAM, SUPS, SMMO, SMMT, POC, PTC, PBXO, PBXT, HW, UCA, RCC, SMMF, SOM, STM and INSU CDRs.

In the MTC CDR, generated in the target MSC for the handover call case, this field is filled with the value '00' (all teleservices/all bearer services).

In the POC/PTC CDR, the field could be filled in three different ways (handled by the C0PARA file):

- Filled according to the incoming signalling; if the information is not available, the field is filled with 'FF' (default).
- Filled always as teleservice T11 (= telephony)
- Filled according to the incoming signalling; if the information is not available, the field is filled with teleservice T11.

The TeleServiceCodes can have the following values:

00H	All teleservices
10H	Speech transmission
11H	Telephony
12H	Emergency calls
20H	Short messages services
21H	Short message MT/PP
22H	Short message MO/PP
30H	Data MHS
31H	Advanced MHS access
40H	Videotex access services
41H	Videotex access profile 1
42H	Videotex access profile 2
43H	Videotex access profile 3
50H	Teletex service
51H	Teletex CS
52H	Teletex PS
60H	Facsimile

61H	Facsimile Group 3 and alter speech
62H	Automatic facsimile Group 3
D1H	Dual numbering (alternate line service)

The BearerServiceCode can have the following values:

bits 8...5	bits 7...4 of BearerServiceCode
Bit 4	0
Bits 3...1	Rate

The BASIC_SERVICE_CODE field can have the following values:

00H	All bearer services
10H	3.1 kHz group
11H	3.1 kHz ex PLMN
12H	alternate/speech
13H	speech followed by 3.1 kHz
20H	Data c.d.a
21H	Data c.d.a 300 b/s
22H	Data c.d.a 1200 b/s
23H	Data c.d.a 1200-75 b/s
24H	Data c.d.a 2400 b/s
25H	Data c.d.a 4800 b/s
26H	Data c.d.a 9600 b/s
27H	Data c.d.a general
30H	Data c.d.s
32H	Data c.d.s 1200 b/s
34H	Data c.d.s 2400 b/s
35H	Data c.d.s 4800 b/s
36H	Data c.d.s 9600 b/s
37H	Data c.d.s general
40H	PAD access c.d.a
41H	PAD access c.d.a 300 b/s
42H	PAD access c.d.a 1200 b/s
43H	PAD access c.d.a 1200-75 b/s
44H	PAD access c.d.a 2400 b/s
45H	PAD access c.d.a 4800 b/s
46H	PAD access c.d.a 9600 b/s

47H	PAD access c.d.a general
50H	Data p.d.s
54H	Data p.d.s 2400 b/s
55H	Data p.d.s 4800 b/s
56H	Data p.d.s 9600 b/s
57H	Data p.d.s general
60H	Alternate speech/data c.d.a
70H	Alternate speech/ data c.d.s
80H	Speech followed by data c.d.a
90H	Speech followed by data c.d.s
FFH	Service not used

Format: 1 HEX byte

i In the case of supplementary service handling, the field is only filled if the operation is related to the individual supplementary service. In any other supplementary service handlings the field is filled with 'F'.

2.3.13 BASIC_SERVICE_TYPE

This field defines whether the BASIC_SERVICE_CODE is a bearer service/teleservice code. In the POC/PTC CDR the field is filled according to the C0PARA file definition (the same way as the BASIC_SERVICE_CODE field). The field is available in the MOC, MTC, FORW, ROAM, SUPS, SMMO, SMMT, POC, PTC, PBXO, PBXT, HW, UCA, RCC, SMMF, SOM, STM and INSU CDRs.

The field can have the following values:

00H	Teleservice
01H	Bearer service
FFH	Not used

Format: 1 HEX byte

2.3.14 BATCH_SEQ_NUMBER

This field contains the sequential number of the charging data batch (value from 1 to 65535). All blocks in one disk file have the same BATCH_SEQ_NUMBER. The field is available in the HEA CDR.

Format: 1 BCD dword

2.3.15 BCSM_INDICATOR

This field indicates which basic call state models have triggered CAMEL services related to this call leg. The field is available in the FORW CDRs.

The field can have the following values:

0 = not used

1 = used

LSB	
bit 1:	Basic call state model for originating side
bit 2:	Basic call state model for terminating side
bit 3:	Basic call state model for originating gateway
bit 4:	Basic call state model for terminating gateway
bit 5:	Originating basic call state model for call forwarding
bit 6:	Originating side for COBI call
bit 7:	Terminating side for COBI call
bit 8:	Basic call state model for ICA call
MSB	

Format: 1 HEX word

2.3.16 BILLED_ITEM

The information for this field comes directly from the SCP. The first byte contains the field length and last three bytes billed item information. The coding of first billed item byte in SCP is as follows, other two bytes are reserved for future use:

00H	Default value
01H	Real B-party
02H	Real B-party, rerouting on no answer
03H	Real B-party, rerouting on busy
04H	Real B-party, rerouting on no answer and busy
05H	IN specific announcement
06H	Customer specific announcement
07H	Announcement providing the charge
0AH	Menu
0BH	Voice mail
0CH	International automatic call back

Format: 4 HEX bytes

2.3.17 BILLED_ITEM_1

The field is available in the INSU CDR. See BILLED_ITEM.

2.3.18 BILLED_ITEM_2

The field is available in the INSU CDR. See BILLED_ITEM.

2.3.19 BILLED_ITEM_3

The field is available in the INSU CDR. See BILLED_ITEM.

2.3.20 BLOCK_SEQ_NUMBER

This field contains the sequential number of the block. The number runs from 0 to 9999 and over again, over a batch. The field is available in the HEA CDR.

Format: 1 BCD word

2.3.21 BILLED_ITEM_1

The field is available in the INSU CDR. See BILLED_ITEM.

2.3.22 BNC_CONNECTION_TYPE

This field contains the type of the backbone network connection.

The field can have the following values:

00H	No connection
01H	ATM Adaptation Layer 1 (AAL1)
02H	ATM Adaptation Layer 2 (AAL2)
04H	Internet Protocol (IP)
05H	Structured AAL1
08H	Time Division Multiplex (TDM)
10H	Internet Protocol version 4 (IPv4)
20H	Internet Protocol version 6 (IPv6)
40H	Not active
80H	Not registered
FFH	Not defined

Format: 1 HEX byte

- **IN_BNC_CONNECTION_TYPE**

This field contains the type of incoming backbone network connection. The field is available in the MTC, FORW, ROAM, POC, UCA, RCC, PBXO, PBXT, and SOC CDRs.

- **OUT_BNC_CONNECTION_TYPE**

This field contains the type of outgoing backbone network connection. The field is available in the MOC, FORW, ROAM, PTC, RCC, PBXO, PBXT and STC CDRs.

2.3.23 CALL_MEDIA

This field contains the type of SIP call. The field is available in the SOC, and STC CDRs.

The field can have the following values:

00H	Doesn't exist
-----	---------------

01H	Speech
02H	Multimedia

Format: 1 HEX byte

Digits not in use are filled with 'F'.

2.3.24 CALL_REFERENCE


Each call has a unique call reference that the MSC assigns at the beginning of the call. All CDRs produced from one call in the same network element have the same value in the CALL_REFERENCE field. This is the call reference of the first leg of the call.

The format of the field is: Call control computer ID, the ID of the hand process controlling the call, and the focus number (the 'lives' of the hand process numbered). The field is available in the MOC, MTC, FORW, ROAM, SUPS, HLRI, LOCA, SMMO, SMMT, POC, PTC, PBXO, PBXT, HW, IN1, IN2, IN3, UCA, DOC, RCC, SMMF, COC, CTC, IN4, IN5, LCS, USSD, SOC, STC, SOM, STM, and SIPR CDRs.

LEG: |—LEG_1—| |—LEG_2—| |—LEG_3—|
CALL CASE: MS(A) → MS(B) cf → MS(C) cf → MS(D)
TICKET:
-LEG CALL_REFERENCE: |leg_call_reference_1| |leg_call_reference_2| |leg_call_reference_3|
-CALL_REFERENCE: |leg_call_reference_1| |leg_call_reference_1| |leg_call_reference_1|

In CDRs unrelated to any call, for example, in the 'activating a supplementary service', the call reference is filled with 'F's, except in the LOCA and SMS CDRs, where the value of the field consists of the sending process family ID plus the slave ID.

Format: 5 HEX bytes, word + word + byte.

 This call reference is unique only for a very limited period of time. To make it really unique, it must be qualified with, for example, the CALL_REFERENCE_TIME field.

2.3.25 CALL_REFERENCE_TIME

This field contains the time when the call index is reserved. The value in this field remains the same throughout the call within one switch. It can be used, for example, to qualify the call reference to make it unique. Together with the CALL_REFERENCE field, this field can be used to connect the IN CDR and the call/event CDR together. The field is available in the MOC, MTC, FORW, ROAM, SUPS, LOCA, SMMO, SMMT, POC, PTC, PBXO, PBXT, HW, IN1, UCA, IN2, IN3, DOC, RCC, SMMF, COC, CTC, IN4, IN5, SOC, STC, SOM, STM, and SIPR, INSU and INUC CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 20 10 06 01 20
time 20:15:40
day 10.06.2001

2.3.26 CALL_STATE

This field contains the state of the call when the call attempt is found unsuccessful. The field is available in the UCA CDR.

The field can have the following values:

00H	Setup
01H	A seized
02H	B seized
03H	Signalling phase completed

Format: 1 HEX byte

2.3.27 CALL_TYPE

This field contains the type of the call. The field is available in the MOC, MTC, FORW, ROAM, SMMO, SMMT, POC, PTC, PBXO, PBXT, DOC, RCC, SMMF, SOC, STC, SOM, and STM CDRs.

The field can have the following values:

00H	Incoming
01H	Forwarded
02H	Re-routed
03H	Outgoing
04H	Handover
05H	Ported-out
06H	Follow-on
07H	CDR generated by CAMEL/IN
10H	Terminated to the announcement machine (re-routed directly from digit analysis)
11H	ISUP tunneling of SIP tunneling
20H	International A-subscriber (if information available)

The CDRs can have the following values:

MOC	: 03, 10
MTC	: 00, 02, 04, 06, 07, 10, 20
POC	: 00, 10, 11, 20
PTC	: 03, 11
PBXO	: 00, 10
PBXT	: 03
FORW	: 00, 01, 03, 10
ROAM	: 03, 05, 07
RCC	: 03
SMMO	: 03

SMMT	: 00
SMMF	: 01
DOC	: 03
SOC	: 03
STC	: 00
SOM	: 03
STM	: 00

Format: 1 HEX byte

2.3.28 CALL_TYPE_STATUS

Comes directly from the SCP. Using this parameter the SCP can classify successful IN calls (for example: VPN call types). For calls which are released due to IN specific circumstances it is used to provide the reason. In the case of a successful connection the field contains the call type and in the case of an unsuccessful connection the release cause. The field is available in the INSU CDR.

Format: 1 HEX word

2.3.29 CALLED_ACCESS_INFO

This field contains the access-information of the called party. This information is derived from the proprietary "P-com.Siemens.Access-Information" SIP header, which is provided by a compatible SBC. This field is available in the STC and STM CDRs.

Format: 1 HEX byte

Value	Meaning	Description
0x00	"Token"	The SIP header contains an unrecognized token
0x01	"Direct"	The user agent is connected directly to the network
0x02	"PDGW"	The user agent is connected through Packed Data Gateway
0x03	"GGSN"	The user agent is connected through Gateway GPRS Support Node
0x04	"xDSL"	The user agent is connected through Digital Subscriber Line
0x05	"Cable"	The user agent is connected through cable network provider
0x06	"IP-PBX-UNI"	
0x07	"MSC"	
0xFF	Does not exist	Initial value, data are not available

Table 1 Possible values

2.3.30 CALLED_TERMINAL_IP

This field contains the IP address of the called party's user agent, which can be either an IPv4 or IPv6 address. The IP version is also included in this field. This information is derived from the proprietary "P-com.Siemens.Terminal-IP" SIP header. If the IP address is not available, the initial value of 0xFFs is used. This field is available in the STC and STM CDRs.

Format: 17 HEX bytes

First byte: Shows the IP version

Remaining 16 bytes: IP address in hexadecimal format, without separators (dots or colons are omitted). In case of IPv4 the IP address is aligned to the left, and the remaining bytes are filled with 0xFFs.

0x00	IPv4 address format
0x01	IPv6 address format
0x02	Either IPv6 or IPv4 address format
0xFF	IP address is not defined

Table 2 Possible values for the IP version

2.3.31 CALLING_ACCESS_INFO

This field contains the access-information of the calling party. This information is derived from the proprietary "P-com.Siemens.Access-Information" SIP header, which is provided by a compatible SBC. If the CALLING_TERMINAL_IP field is derived from the "Via" SIP header, this field is set to "direct". This field is available in the SOC and SOM CDRs.

Format: 1 HEX byte

Value	Meaning	Description
0x00	"Token"	The SIP header contains an unrecognized token
0x01	"Direct"	The user agent is connected directly to the network
0x02	"PDGW"	The user agent is connected through Packed Data Gateway
0x03	"GGSN"	The user agent is connected through Gateway GPRS Support Node
0x04	"xDSL"	The user agent is connected through Digital Subscriber Line
0x05	"Cable"	The user agent is connected through cable network provider
0x06	"IP-PBX-UNI"	
0x07	"MSC"	
0xFF	Does not exist	Initial value, data are not available

Table 3 Possible values

2.3.32 CALLING_NUMBER_UNCOMPL_STATUS

This field contains the uncomplete status of the calling number. The field is available in the INSU CDR. See the UNCOMPL_STATUS field.

2.3.33 CALLING_PSTN_CATEGORY

This field indicates the calling subscriber category in PSTN-originated calls conveyed by signalling and mapped by the MSC into Nokia Siemens Networks-specific values. The field is available in the MTC, FORW, ROAM, and POC CDRs.

For example, DTUP can have the following values:

TUP 10	14H
TUP 12	19H
TUP 14	00H
TUP 18	18H
TUP 19	04H

Format: 1 HEX byte

2.3.34 CALLING_TERMINAL_IP

This field contains the IP address of the calling party's user agent, which can be either an IPv4 or IPv6 address. The IP version is also included in this field. This information is derived from either the proprietary "P-com.Siemens.Terminal-IP" SIP header or the "received" parameter of the top-most "Via" SIP header. If the IP address is derived from the "Via" header, the CALLING_ACCESS_INFO field is set to "direct". If the IP address is not available, the initial value of 0xFFs is used. This field is available in the SOC and SOM CDRs.

Format: 17 HEX bytes

First byte: Shows the IP version

Remaining 16 bytes: IP address in hexadecimal format, without separators (dots or colons are omitted). In case of IPv4 the IP address is aligned to the left, and the remaining bytes are filled with 0xFFs.

0x00	IPv4 address format
0x01	IPv6 address format
0x02	Either IPv6 or IPv4 address format
0xFF	IP address is not defined

Table 4 Possible values for the IP version

2.3.35 CAMEL_CALL_REFERENCE

Each CAMEL call has a unique call identifier assigned by the MSC at the beginning of the call. For mobile-originated calls, the call reference is set by the MSC and included in the MOC CDR. For mobile-terminated calls, the call reference is generated by the

GMSC and included in the ROAM CDR in the GMSC and in the MTC CDR in the terminating MSC. For call forwarding, the call reference is set by the GMSC/VMSC and included in the FORW CDR in the GMSC/VMSC. For mobile-originated and mobile-terminated short messages, the call reference is set by the VMSC.

Along with the CAMEL_EXCHANGE_ID field, it is possible to combine the CDRs from the MSC/GMSC/VMSC with a network optional CDR from the SCP. The field is available in the MOC, MTC, FORW, ROAM, SUPS, SMMO, SMMT, POC, PBXO, UCA, DOC, COC, CTC, IN4, IN5, SOC, STC, SOM, and STM, INSU and INUC CDRs.

Format: 8 HEX bytes

2.3.36 CAMEL_EXCHANGE_ID

This field contains the MSC address of the exchange. For mobile-originated calls, the MSC address is set by the MSC and included in the MOC CDR. For mobile-terminated calls, the MSC address is set by the GMSC and included in the ROAM CDR in the GMSC and in the MTC CDR in the terminating MSC. For call forwarding, the MSC address is set by the GMSC/VMSC and included in the FORW CDR in the GMSC/VMSC. For mobile-originated and mobile-terminated short messages, the MSC address is set by the VMSC. The field is available in the MOC, MTC, FORW, ROAM, SUPS, SMMO, SMMT, POC, PBXO, UCA, DOC, COC, CTC, IN4, IN5, SOC, STC, SOM, STM, INSU and INUC CDRs.

Format: 9 BCD bytes

Digits not in use are filled with 'F's.

2.3.37 CAMEL_MODIFY_PARAMETERS

This field contains the call-related parameters modified by the CAMEL service. This is a set of parameters (e1 - e7) containing elements that together define time dependence, data dependence, and unit increments, as well as the rate at which the call is to be charged (for AoC purposes). If there are no modifications, the field is filled with zeros. The field is available in the COC and CTC CDRs.

The field can have the following values:

e1	Units per interval (repeated pulse train). This element defines the number of units incremented per repeated time interval.
e2	Seconds per repeated time interval (charge rate). This element defines the time interval for unitisation.
e3	Scaling factor. This element defines the scaling factor for the conversions between the LPLMN units and the HPLMN units.
e4	Unit increment (pulse train at the beginning of the call). This element defines the number of units to be incremented on receipt of the message containing the AoC e-parameters.
e5	Units per data interval. This element is used for connection to the PSPDN via the dedicated PAD (not supported).
e6	Segments per data interval. This element is used for connection to the PSPDN via the dedicated PAD (not supported).

e7	Initial seconds per time interval (free time). This element defines the initial time interval for unitisation.
----	----------------------------------------------------------------------------------------------------------------

Format: 7 words HEX

2.3.38 CAMEL_MODIFICATION

This field indicates which CAMEL service has been modified. The field is available in the COC and CTC CDRs.

The field can have the following values:

0 = not modified

1 = modified

LSB	
bit 1:	Calling category
bit 2:	Original called number
bit 3:	Additional Calling line identity
bit 4:	Redirecting number
bit 5:	Redirection counter
bit 6:	Carrier information
bit 7:	Originating line information
bit 8:	Charge number
bit 9:	Forward conference
bit 10:	Call diversion
bit 11:	Calling party restriction
bit 12:	Backward conference
bit 13:	Connected number
bit 14:	Hold
bit 15:	Call wait
bit 16:	Explicit call transfer
bit 17:	Call completion
bit 18:	CUG interlock code
bit 19:	CUG outgoing access
bit 20:	Non CUG-call
bit 21:	Destination routing number
bits 22..32:	Spare
MSB	

Format: HEX dword

2.3.39 CAMEL_SERVICE_KEY

This field contains the service identifier. The values are described in the SCF. The field is available in the MOC, MTC, FORW, ROAM, SMMO, SMMT, POC, COC, CTC, SOC, STC, IN4 and IN5 CDRs.

The field can have the following values:

0H...7FFFFFFFH	Possible values
80000000H...FFFFFFEH	Not used

Format: HEX dword

2.3.40 CAMEL_SMS_MODIFICATION

This field indicates the way the CAMEL service has been modified. The field is available in the SMMO, SMMT, SOM, and STM CDRs.

The field can have the following values:

0 = not modified

1 = modified

LSB	
bit 1:	Calling party number is modified
bit 2:	Called party number is modified
bit 3:	SMSC address is modified
bits 4...16:	Spare
MSB	

Format: 1 HEX word

2.3.41 CARRIER_SELECTION

This field indicates an ANSI ISUP parameter that conveys the information on how the long distance carrier was selected. The selected carrier may be presubscribed or non-presubscribed. The carrier selection also indicates whether or not the carrier was an input (that is, dialling). The Carrier Selection (CS) is related to the CIP. If the CIP is empty, the CS is also empty in the same CDR.

The field is available in the MOC, FORW, ROAM, PTC, PBXO, UCA, RCC, and SOC CDRs.

The field can have the following values:

00H	SS did not find the field from the network signalling, or CC tells SS not to put it there.
02H	Field value unknown to SS (and to DX)
04H	No indication

05H	Selected carrier identification presubscribed and not input by calling party
06H	Selected carrier identification presubscribed and input by calling party
07H	Selected carrier identification presubscribed, input by calling party undetermined
08H	Selected carrier identification not presubscribed and input by calling party

Format: 1 HEX byte

2.3.42 CATEGORY

This field defines the mobile subscriber category from the HLR. These categories are for mobile calls. If the category data is sent from the trunk circuit, the value of this field is as it is received.

The field can have the following values:

00H	Ordinary
02H	Ordinary_no_charge
05H	Pay phone
08H	Priority
0BH	Priority_no_charge
10H	Test equipment
45H	Private number service (option)
F0H	Not exist
FFH	Unknown

Format: 1 HEX byte

- **CALLING_CATEGORY**
This field defines the calling subscriber category from the subscriber information located in the HLR/VLR. The field is available in the MOC, SMMO, RCC, SOC, SOM and PBXO CDRs. See the CATEGORY field.
In the RCC CDR, the CALLING_CATEGORY field includes the value of the category received from the signalling. This category is related to the mobile subscriber making the call. In this case it is possible for the value to be changed by the signalling system.
- **CALLED_CATEGORY**
This field defines the called subscriber category from the subscriber information located in the HLR/VLR. The field is available in the MOC, MTC, ROAM, SMMT, RCC, SMMF, SOC, STC, and STM CDRs. See the CATEGORY field.
- **FORWARDING_CATEGORY**
This field defines the forwarding subscriber category from the subscriber information located in the HLR/VLR. The field is available in the FORW CDR. See the CATEGORY field.

- **FORWARDED_TO_CATEGORY**
Defines the forwarded-to subscriber category from the subscriber information located in the HLR/VLR. The field is available in the FORW CDR. See the CATEGORY field.

2.3.43 CAUSE_FOR_FORWARDING

This field contains the actual reason for forwarding the call. The field is available in the FORW CDR.

The field can have the following values:

21H	Unconditional
29H	Called party busy
2AH	No reply
2BH	Called party not reachable <ul style="list-style-type: none"> • no_page_response • radio_congestion • IMSI_detached
2DH	Night service
31H	Call transfer
3AH	Call deflection, alerting
3BH	Call deflection, immediate
F5H	SCP initiated

Format: 1 HEX byte

2.3.44 CAUSE_FOR_TERMINATION

The actual reason for a call termination. In the MSC, the values are as defined in *Clear Code List, References*. In the HLR, values are as defined in *3GPP TS 29.002: Mobile Application Part (MAP) specification*. The CAUSE_FOR_TERMINATION field does not affect the chargeability of calls.

The operator should decide independently on how to handle the CDRs where this field is different from 'zero'. For example, if the cause for termination is 'calling subscriber onhook wait for answer phase', it is possible that the call is free of charge. This cause for termination is possible when the calling subscriber hangs up at the same time the called subscriber answers. In this case the MSC hurries to start the charging before releasing the call. In such cases the duration of the call is very short (0 – 1 seconds). The field is available in the MOC, MTC, FORW, ROAM, SUPS, HLRI, SMMO, SMMT, POC, PTC, PBXO, PBXT, HW, UCA, DOC, RCC, SMMF, LCS, USSD, SOC, STC, SOM, STM, STC and INSU CDRs.

Format: HEX dword

2.3.45 CAUSE_FOR_TERMINATION_LOCATION

Indicates where the release was generated. The field is available in the INSU CDR.

The field can have the following values:

01H	Not allowed
00H	Does not exist
02H	Unknown
03H	Reserved
04H	Own system
05H	Network
06H	Network with sp
07H	User

Format: 1 HEX byte

2.3.46 CELL_BAND

This field contains the band information of the first cell in question.

The field can have the following values:

00H	Not defined
01H	GSM
02H	DCS
03H	WCDMA
FFH	Does not exist

Format: 1 HEX byte

- **CALLING_CELL_BAND**
This field contains the calling subscriber band information of the cell. The field is available in the MOC and UCA CDRs. See the CELL_BAND field.
- **CALLED_CELL_BAND**
This field contains the called subscriber band information of the cell. The field is available in the MTC CDR. See the CELL_BAND field.
- **FORWARDING_CELL_BAND**
This field contains the forwarding subscriber band information of the cell. The field is available in the FORW CDR. See the CELL_BAND field.
- **SERVED_CELL_BAND**
This field contains the served subscriber band information of the cell. The field is available in the SUPS CDR. See the CELL_BAND field.

2.3.47 CDB_INDICATOR

This field indicates the usage of call drop back. The field is available in the MOC, MTC, SOC, and STC CDRs.

The field can have the following values:

0 = call drop back not used

1 = call drop back used

Format: 1 HEX byte

i If Feature 401: Orange Call Drop Back (CDB) Enhancements v2 is used, it is possible to get operator-specific values in this field.

2.3.48 CF_INFORMATION

This indicator describes whether or not the incoming call has already been forwarded (redirected). The field is available in the MTC, FORW, ROAM, POC, PBXO, and RCC CDRs.

The field can have the following values:

00H	Call has not been forwarded
01H	Call has been forwarded

Format: 1 HEX byte

2.3.49 CHANGE_DIRECTION

The field defines which way the charge of a call is changed. This field is used if the SCP controls charging. See also the CHANGE_PERCENT field.

The field can have the following values:

00H	The charge of call is increased
01H	The charge of call is decreased

Format: 1 HEX byte

- **ORIG_MCZ_CHANGE_DIRECTION**
This field contains the direction of the SCP charging change to the originating mode automaton, started with the main charging zone. The field is available in the MOC, POC, PBXO, DOC, RCC, and SOC CDRs. See the CHANGE_DIRECTION field.
- **TERM_MCZ_CHANGE_DIRECTION**
This field contains the direction of the direction of the SCP charging change to the terminating mode automaton started with the main charging zone. The field is available in the MTC, PTC, PBXT, and STC CDRs. See the CHANGE_DIRECTION field.
- **FORW_MCZ_CHANGE_DIRECTION**
This field contains the direction of the direction of the SCP charging change to the originating mode automaton started with the main charging zone. The field is available in the FORW CDR. See the CHANGE_DIRECTION field.
- **ROAM_MCZ_CHANGE_DIRECTION**
This field contains the direction of the direction of the SCP charging change to the roaming mode automaton started with the main charging zone. The field is available in the ROAM CDR. See the CHANGE_DIRECTION field.
- **IAZ_CHANGE_DIRECTION**
This field contains the direction of the direction of the SCP charging change to the incoming mode automaton started with the incoming accounting zone. The field is available in the POC and PBXO CDRs. See the CHANGE_DIRECTION field.

- **OAZ_CHANGE_DIRECTION**
This field contains the direction of the direction of the SCP charging change to the outgoing mode automaton started with outgoing accounting zone. The field is available in the PTC and PBXT CDRs. See the CHANGE_DIRECTION field.
- **CHAR_BAND_CHANGE_DIRECTION**
This field contains the direction of the direction of the SCP charging change to the charge band mode automaton started with charge band accounting zone. The field is available in the MOC, FORW, ROAM, POC, PTC, PBXO, and RCC CDRs. See the CHANGE_DIRECTION field.

2.3.50 CHANGE_PERCENT

The field defines the percent with which the charge of a call is decreased or increased. This field is used if the SCP controls charging. See also the CHANGE_DIRECTION field.

The field can have the following values:

00H	No change
01H...64H	Valid (if the charge of the call is decreased)
01H...FEH	Valid (if the charge of the call is increased)
FFH	Unused

Format: 1 HEX byte

- **ORIG_MCZ_CHANGE_PERCENT**
This field contains the percent information of the SCP charging change to the originating mode automaton, started with the main charging zone. The field is available in the MOC, POC, PBXO, DOC, RCC, and SOC CDRs. See the CHANGE_PERCENT field.
- **TERM_MCZ_CHANGE_PERCENT**
This field contains the percent information of the SCP charging change to the terminating mode automaton, started with the main charging zone. The field is available in the MTC, PTC, PBX,T and STC CDRs. See the CHANGE_PERCENT field.
- **FORW_MCZ_CHANGE_PERCENT**
This field contains the percent information of the SCP charging change to the originating mode automaton, started with the main charging zone. The field is available in the FORW CDR. See the CHANGE_PERCENT field.
- **ROAM_MCZ_CHANGE_PERCENT**
This field contains the percent information of the SCP charging change to the roaming mode automaton, started with the main charging zone. The field is available in the ROAM CDR. See the CHANGE_PERCENT field.
- **IAZ_CHANGE_PERCENT**
This field contains the percent information of the SCP charging change to the incoming mode automaton, started with the incoming accounting zone. The field is available in the POC and PBXO CDRs. See the CHANGE_PERCENT field.
- **OAZ_CHANGE_PERCENT**
This field contains the percent information of the SCP charging change to the outgoing mode automaton, started with the outgoing accounting zone. The field is available in the PTC and PBXT CDRs. See the CHANGE_PERCENT field.

- **CHAR_BAND_CHANGE_PERCENT**

This field contains the percent information of the SCP charging change to the charge band mode automaton, started with the charge band accounting zone. The field is available in the MOC, FORW, ROAM, POC, PTC, PBXO, and RCC CDRs. See the CHANGE_PERCENT field.

2.3.51 CHANNEL_RATE_INDICATOR

This field indicates the requested- and used channel rates. In the handover MTC CDR, the requested channel rate information is not available, so in this case the type of the requested channel is always 'F' (not used). The field is available in the MOC, MTC, and FORW CDRs.

High 4 BITS type of the channel requested.

Low 4 BITS type of the channel used.

The field can have the following values:

high 4 BITS:	
	0 half rate
	1 full rate
	2 dual rate half rate preferred
	3 dual rate full rate preferred
	F not used
low 4 BITS:	
	0 not exist
	1 sdcch
	8 full rate
	9 half rate
	F not used

Format: 1 HEX byte



See also the SPEECH_VERSION field.

2.3.52 CHARGE_NATURE

This field contains information about the nature of the address, in other words the calling/called party indicator of the Charge Number (CN) parameter. The field is available in the MOC, MTC, FORW, ROAM, SUPS, POC, PTC, PBXO, PBXT, UCA, RCC, SOC, and STC CDRs.

The field can have the following values:

00H	SS did not find the field from the network signal or CC tells SS not to put it there.
-----	---------------------------------------------------------------------------------------

02H	Field value unknown to SS (and to DX)
04H	Automatic Number Identification (ANI) not available or not provided
05H	ANI of the calling party
06H	ANI of the called party
07H	Originating Line Information (OLI) and CPN (Calling Party Number) received, CN not received

Format: 1 HEX byte

2.3.53 CHARGING_AREA

This field contains the charging area of the subscriber.

The field can have the following values:

0000H	Does not exist
0001H...2710H	Valid
2711H...FFFEH	Spare
FFFFH	Unused

Format: 1 HEX word

- **CALLING_CHARGING_AREA**
This field contains the calling subscriber charging area. The field is available in the MOC, MTC, ROAM, and RCC CDRs. See the CHARGING_AREA field.
- **CALLED_CHARGING_AREA**
This field contains the called subscriber charging area. The field is available in the MOC, MTC, ROAM, and RCC CDRs. See the CHARGING_AREA field.
- **FORWARDING_CHARGING_AREA**
This field contains the called subscriber charging area. The field is available in the FORW CDR. See the CHARGING_AREA field.
- **FORWARDED_TO_CHARGING_AREA**
This field contains the forwarded-to subscriber charging area. The field is available in the FORW CDR. See the CHARGING_AREA field.

2.3.54 CHARGING_BLOCK_SIZE

This field defines the block size of the data written on the disks at one time. The field is available in the HEA CDR.

The field can have the following values:

00H	2 kB
01H	8 kB
02H	16 kB
04H	32 kB

08H	64 kB
-----	-------

Format: 1 HEX byte

2.3.55 CHARGING_END_TIME

This field contains the 'wall clock' time in the exchange. The charging ends when one of the subscribers hangs up. In the COC and CTC CDRs, the field is filled with 'F's if there are no CAMEL e-parameters available or if the charging period has not been in use. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, HW, DOC, RCC, COC, CTC, SOC, and STC CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 25 12 10 11 98 19
time 12:25:40
day 10.11.1998

2.3.56 CHARGING_END_TIME_TEN_MS

This field contains the 'wall clock' time in the exchange. The charging ends when one of the subscribers hangs up. The field is available in the INSU CDR.

Format: 6 BCD bytes + 1 BCD word: mmSSMMHH DDMMYYYY
(time = 4 bytes, day = 2 bytes + word)

Example of coding:
56 40 15 12 16 11 08 20
time 12:15:40:56
day 16.11.2008

2.3.57 CHARGING_START_TIME

This field contains the 'wall clock' time in the exchange. The charging starts when subscriber B answers or some other message of the accountability is received by the MSC. In the COC and CTC CDRs, the field is filled with 'F's if there are no CAMEL e-parameters available and the charging period has not been in use. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, HW, DOC, RCC, COC, CTC, SOC, and STC CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 16 11 98 19
time 12:15:40
day 16.11.1998

2.3.58 CHARGING_START_TIME_TEN_MS

This field contains the 'wall clock' time in the exchange. The charging starts when subscriber B answers or some other message about the accountability is received by the MSC. The field is available in the INSU CDR.

Format: 6 BCD bytes + 1 BCD word: mmSSMMHH DDMMYYYY

(time = 4 bytes, day = 2 bytes + word)

Example of coding:

```
56 40 15 12 16 11 08 20
time 12:15:40:56
day 16.11.2008
```

2.3.59 CHARGING_TIME

This field contains the 'wall clock' time in the exchange. This is the 'service start time' so, for example, if the call is forwarded, CHARGING_TIME is the time of forwarding. The field is available in the SUPS, HLRI, LOCA, and SIPR CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY

(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 10 11 98 19

time 12:15:40

day 10.11.1998

2.3.60 CHECK_SUM

Each record has a checksum. This is calculated when the record is in the final format, which is used in file transfer. The field is available in all the CDRs except in the HEA, and the TRA.

Format: 1 HEX word

i To avoid inclusion of the checksum field in the checksum, only the fields after the checksum field are included in the calculation. It means that it begins from byte 10 in each record. The checksum is the HEXadecimal sum of the bytes truncated to a word.

2.3.61 CHRГ_TYPE

This field indicates whether the call is chargeable or free of charge.

The field can have the following values:

00H Chargeable call

0 not used

1 used

LSB

bit 1 Indicates the unsuccessful call attempt

bit 2 Charging is free based on the zone sent in the SCI

bit 3 Setup phase will be charged

bit 4	Free of charge from analysis
bit 5	Free of charge from address complete
bit 6	Free of charge from answer
bit 7	Free of charge from call progress message
bit 8	Free of charge from CDB

MSB

Format: 1 HEX byte

- **CHRG_TYPE**
This field contains the free of charge information according to the SCP charging zone. The field is available in the INSU CDR. See the CHRG_TYPE field
- **ORIG_MCZ_CHRG_TYPE**
This field contains the free of charge information according to the originating mode automaton, started with the main charging zone. The field is available in the MOC, POC, PBXO, DOC, RCC, and SOC CDRs. See the CHRG_TYPE field.
- **TERM_MCZ_CHRG_TYPE**
This field contains the free of charge information according to the terminating mode automaton started with the main charging zone. The field is available in the MTC, PTC, PBXT, and STC CDRs. See the CHRG_TYPE field.
- **FORW_MCZ_CHRG_TYPE**
This field contains the free of charge information according to the originating mode automaton started with the main charging zone. The field is available in the FORW CDR. See the CHRG_TYPE field.
- **ROAM_MCZ_CHRG_TYPE**
This field contains the free of charge information according to the roaming mode automaton started with the main charging zone. The field is available in the ROAM CDR. See the CHRG_TYPE field.
- **IAZ_CHRG_TYPE**
This field contains the free of charge information according to the incoming mode automaton started with the incoming accounting zone. The field is available in the POC and PBXO CDRs. See the CHRG_TYPE field.
- **OAZ_CHRG_TYPE**
This field contains the free of charge information according to the outgoing mode automaton started with the outgoing accounting zone. The field is available in the PTC and PBXT CDRs. See the CHRG_TYPE field.
- **CHAR_BAND_CHRG_TYPE**
This field contains the free of charge information according to the charge band mode automaton started with the charge band accounting zone. The field is available in the MOC, FORW, ROAM, POC, PTC, PBXO, and RCC CDRs. See the CHRG_TYPE field.

2.3.62 CI

This field contains the location cell ID information of the subscriber. In the UMTS radio networks this field includes the service area code (SAC) information. The 'first' and 'last' location fields are used only in connection with a call. The other fields are used in connection with other chargeable events, for example, a short message service.

Format: 1 HEX word

- **CALLING_SUBS_CI**
These fields are filled with 'F's if the subscriber in question is a PSTN subscriber, or if the subscriber is located in another MSC area. The field is available in the SMMO, UCA, and SOM CDRs. See the CI field.
- **CALLED_SUBS_CI**
This field is filled with 'F's if the subscriber in question is a PSTN subscriber, or if the subscriber is located in another MSC area. The field is available in the SMMT and STM CDRs. See the CI field.
- **SERVED_SUBS_CI**
This field is filled with 'F's if the subscriber in question is a PSTN subscriber, or if the subscriber is located in another MSC area. The field is available in the SUPS, LCS, USSD, and STM CDRs. See the CI field.
- **CALLING_SUBS_FIRST_CI**
The field is available in the MOC CDR. See the CI field.
- **CALLED_SUBS_FIRST_CI**
These fields are filled with 'F's if the subscriber in question is a PSTN subscriber, or if the subscriber is located in another MSC area. The field is available in the MOC and MTC CDRs. See the CI field.
- **FORWARDING_FIRST_CI**
The field is only filled in the case of a call forwarding on no reply (CFNA). The field is available in the FORW CDR. See the CI field.
- **FORWARDED_TO_FIRST_CI**
In the case of a multiple call forwarding, in the same MSC the last leg is filled as usual, but intermediate legs are only filled if the forwarded-to subscriber has CFNA. These fields are filled with 'F's if the subscriber in question is a PSTN subscriber, or if the subscriber is located in another MSC area. The field is available in the FORW CDR. See the CI field.
- **CALLING_SUBS_LAST_CI**
The field is available in the MOC CDR. See the CI field.
- **CALLED_SUBS_LAST_CI**
These fields are filled with 'F's if the subscriber in question is a PSTN subscriber, or if the subscriber is located in another MSC area. The field is available in the MOC and MTC CDRs. See the CI field.
- **FORWARDING_LAST_CI**
The field is only filled in the case of a CFNA. The field is available in the FORW CDR. See the CI field.
- **FORWARDED_TO_LAST_CI**
These fields are filled with 'F's if the subscriber in question is a PSTN subscriber, or if the subscriber is located in another MSC area. In a multiple call forwarding case, in the same MSC the last leg is filled as usual, but intermediate legs are only filled if the forwarded-to subscriber has CFNA. The field is available in the FORW CDR. See the CI field.

2.3.63 CIP_CARRIER_CODE

This field contains an ISUP parameter in the setup message, conveying the Carrier Identification Code (CIC). Basically the TNS and the CIP both convey the same information. The field is available in the MOC, FORW, ROAM, PTC, PBXO, UCA, RCC, and SOC CDRs.

Format: 2 HEX bytes

2.3.64 CLIENT_EXTERNAL_ID

This field contains the client external number to which the subscriber report is sent. The field is available in the LCS CDR.

The field can have the following values: 0...9, A...E

Dial	Record
0-9	0-9
*	B
#	C
A	A
B	D
C	E

Format: The length of the field is customer-specific (maximum 19 bytes).

The default is 12 HEX bytes.

Digits not in use are filled with 'F's.

2.3.65 COMMAND_TYPE

If the mobile-originated short message type is SMS-COMMAND, this field includes the type of command carried inside the SMS data. If the message type is not SMS-COMMAND, this field is filled with 'F's. The field is available in the SMMO and SOM CDRs.

The field can have the following values:

00H	Enquiry relating to previously submitted short message
01H	Cancel status report request relating to previously submitted short message
02H	Delete previously submitted short message
03H	Enable status report request relating to previously submitted short message
04H...1FH	Reserved unspecified
20H...DFH	Not used
E0H...FFH	Values specific for each SMSC

Format: 1 HEX byte

2.3.66 CONCATENATED_RECORD_NUMBER

The sequence number of the current short message. This field contains the sequence number of a particular short message within the concatenated short message. In the

case of a non-concatenated short message the field value is '01'. The field is available in the SMMO, SMMT, SMMF, SOM, and STM CDRs.

Format: 1 HEX byte

2.3.67 CONCATENATED_SMS_REFERENCE

This field contains the concatenated short message reference number. The reference number is set by the internal counter (1 - FFFF). This reference number is the same for every particular concatenated short message. In the case a of non-concatenated short message the field value is '0' (0000H). The field is available in the SMMO, SMMT, SMMF, SOM, and STM CDRs.

Format: 1 HEX word

2.3.68 CONTROL_PLANE_INDEX

This field contains the identifier for control plane destination (User Plane Destination Reference with no bearer). This parameter element could be used as the indirect link with the control plane and the user plane. If the information of this field is not available, then the field value is 'FFFFH'.

Format: 1 BCD word

- **INSIDE_CONTROL_PLANE_INDEX**
This field contains the incoming side identifier for control plane destination (User Plane Destination Reference with no bearer). The value for this field is originated from the incoming circuit group. The field is available in the MTC, FORW, ROAM, POC, UCA, RCC, PBXO, PBXT, and SOC CDRs.
- **OUTSIDE_CONTROL_PLANE_INDEX**
This field contains the outgoing side identifier for control plane destination (User Plane Destination Reference with no bearer). The value for this field is originated from the outgoing route data. The field is available in the MOC, FORW, ROAM, PTC, RCC, PBXO, PBXT and STC CDRs.

2.3.69 CUG_INFORMATION

This field indicates whether the subscribers of this leg are members of the same closed user group. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, and RCC CDRs.

The field can have the following values:

00H	Not supported or available
01H	Subscribers belong to same group
02H	Subscribers do not belong to same group
03H	Subscribers may belong to same group; this is not known in the originating side because of the outgoing access capability of the calling subscriber of this leg.

Format: 1 HEX byte

2.3.70 CUG_INTERLOCK

This field contains a code composed of the network indicator and the CUG code used between different networks to identify the CUG group of the subscriber. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, and RCC CDRs.

HEX dump: 03 44 64 00
network code: 0344
cug interlock: 100 (64h)
Format: 2 bytes BCD + 1 HEX word

2.3.71 CUG_OUTGOING_ACCESS

This field contains an indicator that tells if a member of a CUG is allowed to call outside the CUG. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, and RCC CDRs.

The field can have the following values:

00H	SS did not find the field from network signal or CC tells to SS not put in there
02H	Field value unknown to SS (and to DX)
04H	Ordinary call
05H	Outgoing access allowed
06H	Outgoing access not allowed

Format: 1 HEX byte

2.3.72 DATA_CODING_SCHEME

This field contains the information of the coding scheme of the short message or USSD data. The actual values of the field can be read from ETSI Technical Specification 23.038, Alphabets and language-specific information. The field is available in the USSD, SMMO and SMMT CDRs.

Format: 1 HEX byte

2.3.73 DATA_LENGTH_IN_BLOCK

This field contains the amount of data in one charging block in bytes. Used for internal purposes. The field is available in the HEA CDR.

Format: 1 HEX word

2.3.74 DATA_VOLUME

This field is not applicable at the moment. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, and PBXT CDRs.

The default value is 0000 at the moment.

Format: 1 BCD word

2.3.75 DEF_CALL_HANDL_CONT

Every CSI contains an information element 'DefaultCallHandling' for each service key. This parameter influences the MSC behavior, when an IN dialogue cannot be established or fails. If the default call handling is set to 'continueCall', then the MSC can perform the call as basic call without IN and also when failures occur in the IN communication. On the other hand, if the value is 'releaseCall' then the MSC must release the call in the case of failures of the IN dialogue. The field is available in the COC, CTC, and INUC CDRs.

The field can have the following values:

01H Call is CONTINUED if IN dialogue failed

00H Call is RELEASED if IN dialogue failed

Format: 1 HEX byte

2.3.76 DEFAULT_CALL_HANDLING

This field indicates the SCP connection status. It indicates whether or not CAMEL has encountered default call handling. The field is available in the MOC, MTC, FORW, ROAM, POC, PBXO, UCA, COC, CTC and INUC CDRs.

The field can have the following values:

00H	Default call handling is not used
01H	Default call handling is used
FFH	Not used

Format: 1 HEX byte

2.3.77 DEFAULT_SMS_HANDLING

This field indicates the SCP connection status. It indicates whether or not CAMEL has encountered default SMS handling. The field is available in the SMMO, SMMT, SOM, and STM CDRs.

The field can have the following values:

00H	Default SMS handling is not used
01H	Default SMS handling is used
FFH	Not available

Format: 1 HEX byte

2.3.78 DELIVERY_TIME

In an originating short message, this field contains the time when an acknowledgement for a short message to the SMSC is received from the SMSC. In a terminating short message, this field contains the time when an acknowledgement for a short message to the MS is received from the MS. The field is available in the SMMO, SMMT, SMMF, SOM, and STM CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 10 11 98 19

time 12:15:40

day 10.11.1998

2.3.79 DESTINATION_NUMBER_INN

This field contains the internal network indicator of the destination number to whom the call is routed to if changed by a SINAP dialogue. The field is available in the INSU CDR.

The field can have following values:

00H	Information is not available
02H	Field value unknown to SS (and to DX)
04H	Routing to internal number is allowed
05H	Routing to internal number is not allowed
FFH	Does not exist

Format: 1 HEX byte

2.3.80 DEVICE_IDENTIFIER

This field contains an identifier of the device which generates the Device-originated Call. The field is available in the DOC CDR.

The field can have the following values:

00H	Unknown device identifier
01H	SCF initiated
02H	Online call monitoring
03H	External IP
06H	Parallel Ringing group
07H	External ringtone server
08H	CAMEL external user interaction
09H	CAMEL internal user interaction
FFH	Device identifier not used

Format: 1 HEX byte

2.3.81 DIALLED_DIGITS

This field contains information as received from the MS or another network element. The field is available in the MOC, SMMO, POC, PBXO, UCA, RCC, SOM, SOC, MTC, ROAM and INSU CDRs.

The field can have the following values: 0...9, A...E

Dial	Record
0-9	0-9
*	B
#	C
A	A
B	D
C	E

Format: The length of field is customer-specific (maximum 16 bytes).
The default is 12 HEX bytes.
Digits not in use are filled with 'F's.

2.3.82 DIALOGUE_TYPE

Type of the dialogue according to the Camel Subscription info or Assisting SSF Overlay or SCP initialized dialogue. The field is available in the COC, CTC, IN4, IN5 and INUC CDRs.

The field can have following values:

00H	Does not exist
01H	O CSI
02H	T CSI
03H	VT CSI
04H	D CSI
05H	H CSI
06H	SCP initialized dialogue
07H	Assisting dialogue
08H	Overlay dialogue
09H	MO SMS CSI
0AH	MT SMS CSI
0BH	MM CSI
0CH	SS CSI
0DH	INAP
FFH	Undefined

Format: 1 HEX byte

2.3.83 DIRECTORY_NUMBER

This field includes flexible PBX numbering solution in the Nokia Siemens Networks MSSs. In this flexible solution there can be several base PBX numbers (still having only one operator number) and there can be several gaps in the extension range, and one base number can have several extension ranges attached. The gaps can be assigned to another PBX. This field is available in the PBXO and PBXT CDRs.

Format: 7 HEX bytes

2.3.84 DISCONNECTING_PARTY

This field contains indicates who has released the call. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO and PBXT CDRs.

The field can have the following values:

00H	Release direction is unknown
01H	Released from incoming side
02H	Released from outgoing side
03H	Released inside of own system
04H	Release initiated from map
05H	Release initiated from SCP

Format: 1 HEX byte

2.3.85 DTMF_INDICATOR

This field contains the dual tone multifrequency indicator. It indicates if the DTMF is used subsequent to call setup. The field is available in the MOC, MTC, FORW, and RCC CDRs.

The field can have the following values:

0	off
1	on

Format: 1 HEX byte

2.3.86 DURATION

This field contains the time from the 'B answer' to 'disconnect' or 'release'. It is generated in the MSC by updating a duration counter once in every 10 milliseconds. This means that it is not calculated from the start and end times. The possible changes in the exchange wall clock time do not affect this field. Intermediate CDRs contain the time covered by this record. The final value for the chargeable duration is rounded off using mathematical laws according to the following principle: 0.00 ... 0.49 -> 0; 0.50 ... 0.99 -> 1.

The terms originated, terminated, roaming, incoming, and outgoing durations are related to automations used.

When Feature 1792: CDRs for IN User Interaction is activated and the above mentioned DEVICE_IDENTIFIER field value is either 08H or 09H duration is exceptionally shown in the accuracy of 10 ms. This presentation is available only in the DOC CDR. See the format description for DURATION_TEN_MS.

Format: 3 BCD bytes, in seconds

- **ORIG_MCZ_DURATION**
This field contains the duration according to the originating mode automaton started with the main charging zone. The field is available in the MOC, POC, PBXO, DOC, RCC, and SOC CDRs. See the DURATION field.
- **TERM_MCZ_DURATION**
This field contains the duration according to the terminating mode automaton started with the main charging zone. The field is available in the MTC, PTC, PBXT, and STC CDRs. See the DURATION field.
- **FORW_MCZ_DURATION**
This field contains the duration according to the originating mode automaton started with the main charging zone. The field is available in the FORW CDR. See the DURATION field.
- **ROAM_MCZ_DURATION**
This field contains the duration according to the roaming mode automaton started with the main charging zone. The field is available in the ROAM CDR. See the DURATION field.
- **IAZ_DURATION**
This field contains the duration according to the incoming mode automaton started with the incoming accounting zone. The field is available in the POC and PBXO CDRs. See the DURATION field.
- **OAZ_DURATION**
This field contains the duration according to the outgoing mode automaton started with the outgoing accounting zone. The field is available in the PTC and PBXT CDRs. See the DURATION field.
- **CHARGEABLE_DURATION**
In the HW CDR, this field is available for future use and it is filled with 'F's for the present. In the COC and CTC CDRs, this field contains the time in seconds between the call start or last tariff change to the time when the CDR is generated (only if CAMEL E-parameters has been in use). The field is available in the HW, COC, and CTC CDRs. See the DURATION field.
- **CHAR_BAND_DURATION**
This field contains the duration according to the charge band mode automaton started with the charge band accounting zone. The field is available in the MOC, FORW, ROAM, POC, PTC, PBXO, and RCC CDRs. See the DURATION field.

2.3.87 DURATION_BEFORE_ANSWER

This field contains the time in seconds between releasing the call and answering the new call in a 'follow-on' call. Generated in the MSC by updating a duration counter once in every 10 ms. This means that it is not calculated from the start and end times. Possible changes in the exchange wall clock time do not affect this field. The final value for the chargeable duration is rounded off using the following mathematical principle: 0.00 ... 0.49 -> 0; 0.50 ... 0.99 -> 1. The field is available in the COC and CTC CDRs.

Format: 3 BCD bytes, in seconds

2.3.88 DURATION_BEFORE_ANSWER_TEN_MS

This field contains the time in milliseconds between releasing the old call and answering the new call in a 'follow-on' call. Generated in the MSC by updating a duration counter once in every 10 ms. This means that it is not calculated from start and end times.

Possible changes in the exchange wall clock time do not affect this field. The field is available in the COC and CTC CDRs.

Format: 4 BCD bytes, in 10 milliseconds

2.3.89 DURATION_TEN_MS

This field contains the time from the 'B answer' to 'disconnect' or 'release'. It is generated in the MSC by updating a duration counter once in every 10 ms. This means that it is not calculated from start and end times. The possible changes in the exchange wall clock time do not affect this field. Intermediate CDRs contain the time covered by this record.

Format: 4 BCD bytes, in 10 milliseconds

- **DURATION_TEN_MS**
In the case of the INSU CDR it is the interval between the time when the involved connection becomes active and the time when the connection is released. If the connection is released, or partial INSU CDR has to be generated before the connection becomes active, then the field is filled with zeros. If partial INSU CDR has to be generated when the charging connection is active then the duration is calculated until the partial event and the counting of the DURATION of the subsequent INSU-CDR is restarted (from zero). The field is available in the INSU CDR.
- **ORIG_MCZ_DURATION_TEN_MS**
This field contains the duration according to the originating mode automaton started with the main charging zone. The field is available in the MOC, POC, PBXO, DOC, RCC, and SOC CDRs. See the DURATION_TEN_MS field.
- **TERM_MCZ_DURATION_TEN_MS**
This field contains the duration according to the terminating mode automaton started with the main charging zone. The field is available in the MTC, PTC, PBXT, and STC CDRs. See the DURATION_TEN_MS field.
- **FORW_MCZ_DURATION_TEN_MS**
This field contains the duration according to the originating mode automaton started with the main charging zone. The field is available in the FORW CDR. See the DURATION_TEN_MS field.
- **ROAM_MCZ_DURATION_TEN_MS**
This field contains the duration according to the roaming mode automaton started with the main charging zone. The field is available in the ROAM CDR. See the DURATION_TEN_MS field.
- **IAZ_DURATION_TEN_MS**
This field contains the duration according to the incoming mode automaton started with the incoming accounting zone. The field is available in the POC and PBXO CDRs. See the DURATION_TEN_MS field.
- **OAZ_DURATION_TEN_MS**
This field contains the duration according to the outgoing mode automaton started with the outgoing accounting zone. The field is available in the PTC and PBXT CDRs. See the DURATION_TEN_MS field.
- **CHARGEABLE_DURATION_TEN_MS**
In the HW CDR, the field is available for future use and it is filled with 'FF' for the present. In the COC and CTC CDRs, the field contains the time in milliseconds between the call start or last tariff change to the time when the CDR is generated (only if CAMEL E-parameters have been in use). The field is available in the HW, COC, and CTC CDRs. See the DURATION_TEN_MS field.

- **CHAR_BAND_DURATION_TEN_MS**

This field contains the duration according to the charge band mode automaton started with the charge band accounting zone. The field is available in the MOC, FORW, ROAM, POC, PTC, PBXO, and RCC CDRs. See the DURATION_TEN_MS field.

2.3.90 EMERGENCY_CALL_CATEGORY

This field indicates the type of emergency call. The type of emergency is indicated as defined in *3GPP TS 24.008: Mobile radio interface Layer 3 specification; Core network protocols; Stage 3*. The emergency call category is set by the MS, and multiple bits could be set as 'used' at the same time. The field is available in the MOC CDR.

The field can have the following values:

0 = not used

1 = used

LSB	
bit 1:	Police
bit 2:	Ambulance
bit 3:	Fire Brigade
bit 4:	Marine Guard
bit 5:	Mountain Rescue
bits 6-8:	Spare
MSB	

Format: 1 HEX byte

2.3.91 END_TIME

This field contains the end time and date of the event.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 10 11 02 00

time 12:15:40

day 10.11.2002

- **END_TIME (USSD)**

This field contains the release date and time of the USSD connection. The field is available in the USSD CDR. See the END_TIME field.

- **END_TIME (TRA)**

This field contains the date and time of the generation of the last CDR in the block. The field is available in the TRA CDR. See the END_TIME field.

2.3.92 EQUIPMENT_TYPE

This field indicates for each equipment if it has been used. The field is available in the HW CDR.

The field can have the following value:

01H	Conference equipment
-----	----------------------

Format: 1 HEX byte

2.3.93 EQUIPMENT_ID

This field is defined for future use. Digits that are not used are filled with 'FF'. The field is available in the HW CDR.

Format: 10 HEX bytes

2.3.94 EXCHANGE_ID

This field contains the ISDN number of the exchange in question. The field is available in the all CDRs.

Format: 10 BCD bytes

Digits not in use are filled with 'F's.

2.3.95 EXIT_MSG_TIME

In mobile-originated long distance calls through the Access Tandem (AT) to the Inter Exchange Carrier (IXC), the AT sends an Initial Address Message (IAM) to the IXC, and at same time the AT sends an exit message (EXM) back to the MSC. The EXIT_MSG_TIME field indicates the time when the IAM is sent from AT. The field is available in the PTC CDR.

Format: 7 BCD bytes

2.3.96 EXIT_MSG_TRUNK_GROUP

This field indicates the outgoing trunk group number which the Access Tandem (AT) sends in an Initial Address Message (IAM) to the Inter Exchange Carrier (IXC). The field is available in the PTC CDR.

Format: 4 HEX bytes

2.3.97 FACILITY_USAGE

This field indicates for each service if it has been used. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, UCA, RCC, SOC, and STC CDRs.

The field can have the following values:

0 = not used

1 = used

LSB	
-----	--

bit 1:	aoc - charging
bit 2:	aoc - charging information at the end of the call
bit 3:	aoc - information
bit 4:	calling line identification presentation
bit 5:	calling line identification restriction
bit 6:	call hold
bit 7:	call wait
bit 8:	multiparty
bit 9:	intelligent network
bit 10:	call transfer
bit 11:	call transfer recall
bit 12:	call drop back
bit 13:	forwarding
bit 14:	call-forwarding overdrive
bit 15:	spare
bit 16:	spare
bit 17:	completion of calls to busy subscribers
bit 18:	camel
bit 19:	ported in
bit 20:	connected line identification presentation
bit 21:	connected line identification restriction
bit 22:	uus1 - origination/release of call
bit 23:	uus2 - ringing phase
bit 24:	uus3 - during connection
bit 25:	aoc - during the call
bit 26:	multicall
bit 27:	eMLPP
bit 28:	TTY
bit 29:	SINAP
bit 30:	calling name presentation (CNAP)
bits 31 - 32:	spare
MSB	

Format: 1 HEX dword

i See also SS_RECORD_NUMBER field. In the MOC CDR the bit 9 (intelligent network) is only set if the connect service has been used.

2.3.98 FCI_DATA

This field contains the transparent IN-service information. The content of FCI_DATA field is defined by the SCP. The field contains latest FCI data sent by the SCP. The field is available in MOC, MTC, FORW, and ROAM CDRs.

TRANSPARENT DATA (bytes 10 - 40)

Format: 40 bytes

2.3.99 FIRST_RECORD_NUMBER

This field contains the first record number contained in the charging block. The field is available in the HEA CDR.

Format: 1 BCD dword

2.3.100 FIXED_NW_USER_RATE

This field indicates the data rate between MSC interworking function (IWF) and the PSTN/ISDN.

The field can have the following values:

00H	Not applicable; No meaning is associated with this value
01H	User rate 9,6 kbit/s
02H	User rate 14,4 kbit/s
03H	User rate 19,2 kbit/s
04H	User rate 28,8 kbit/s
05H	User rate 38,4 kbit/s
06H	User rate 48,0 kbit/s
07H	User rate 56,0 kbit/s
08H	User rate 64,0 kbit/s
09H	User rate 33,6 kbit/s
0AH	User rate 32,0 kbit/s

Format: 1 HEX byte

- **REQ_FIXED_NW_USER_RATE**
This field contains the requested data rate. The field is available in the MOC, MTC, and UCA CDRs. See the FIXED_NW_USER_RATE field.
- **USED_FIXED_NW_USER_RATE**
This field contains the used data rate. The field is available in the MOC, MTC, and UCA CDRs. See the FIXED_NW_USER_RATE field.

2.3.101 FORMAT_VERSION

This field contains the version number of the Y00FIL charging data format file. The value of this field changes in an SW upgrade and also in every CDR change. The field is available in the HEA CDR.

1 HEX word = customer (internal customer code in ASCII code)

3 bytes version of y00cusxx (version.edition-repair)

1 bytes = FF

For example, the general format version 3.1-0 of y00cusmx -> format_version = 4D 58 03 01 00 FF

Format: 1 HEX word + 4 BCD bytes

2.3.102 FORWARDED_TO_SMSC

This field contains the address of the short message centre to which the short message is forwarded. The field is available in the SMMF CDR.

Format: 12 BCD bytes

Digits not in use are filled with 'F'.

2.3.103 GLOBAL_CALL_REFERENCE

Each call has a unique call reference that the MSC assigns at the beginning of the call. The first network element involved in a call generates the global session reference ID and it is transferred between network elements by using the network messages of different signalling (Nokia Siemens Networks proprietary signalling). In case of call transfer, call transfer recall, multiparty, or multicall, all 'calls' have their own

GLOBAL_CALL_REFERENCE. The field includes the network identity (exchange id) part and the call ID (free integer) part. With this field, all CDRs produced from one call could be connected to each other. The field is available in the MOC, MTC, FORW, ROAM, SUPS, POC, PTC, PBXO, PBXT, IN1, IN2, IN3, UCA, DOC, RCC, IN4, IN5, COC, CTC, SOC, and STC, INSU and INUC CDRs.

The following types of GLOBAL_CALL_REFERENCE are supported in the CDRs:

- Nokia proprietary Global Call Reference:
The field includes the network identity (exchange ID) part and the call ID (free integer) part. HEX digits not in use in the network identity part are filled with 'F's.
Format: 16 BCD bytes + 5 HEX bytes
- Siemens proprietary Global Call Reference (DRCCALLID):
The field includes the Signalling Point Code (3 byte) of the MSC in which the ID is generated. The SPC is followed by a 4-byte integer.
Format: 7 HEX bytes

2.3.104 GMLC_ADDRESS

This field contains the address of the Gateway Mobile Location Centre (GMLC) that sent the location request. The field is available in the LCS CDR.

Format: 9 BCD bytes

Digits not in use are filled with 'F's.

2.3.105 GMSC_ADDRESS

This field contains the address of the requesting MSC (GMSC) that performs the HLR inquiry. The field is available in the HLRI CDR.

Format: 9 BCD bytes

Digits not in use are filled with 'F's.

2.3.106 GPS_DATA

This field contains the assistance data that can be used to compute its location according to *Location Services (LCS); Base Station System Application Part LCS Extension (BSSAP-LE) (GSM 09.31)*. The field is available in the LCS CDR.

Format: 38 HEX bytes

Digits not in use are filled with 'F's.

2.3.107 GPS_DATA_LENGTH

This field contains the actual length of data in the GPS_DATA field. The field is available in the LCS CDR.

Format: 1 HEX byte

2.3.108 HORIZONTAL_ACCURACY

This field indicates the required horizontal accuracy of the location estimate. The field is used to present the quality of the service. The field values are according to *3GPP TS 29.002: Mobile Application Part (MAP) specification*. If the information is not available, the field is filled with 'FF'. The field is available in the LCS CDR.

Format: 1 HEX byte

2.3.109 HOT_BILLING_RECORD_NUMBER

The hot billing records are numbered sequentially from 1 to 99,999,999. If the subscriber is not a hot billing subscriber, the field is filled with 'F's. The field is available in the MOC, MTC, FORW, ROAM, SUPS, SMMO, SMMT, HW, UCA, SOM, and STM CDRs.

Format: BCD dword

 The field is mandatory if the Feature 161: Hot Billing is in use.

2.3.110 ICID

This field contains the IMS charging identity. It is a globally unique identifier that is used to connect together CDRs that are made in NVS or MGCF server that are related to same call as CDRs made in other IMS network elements belonging to the same call. Because Nokia Siemens Networks solution handles ICIDs equal or shorter than 32 HEX bytes, ICID longer than that needs to be truncated by removing the characters from the beginning of the ICID string. If ICID is truncated, ICID_OVERFLOW field has an indication of this. The ICID field is available in the POC, PTC, SOC, STC, SOM, and STM CDRs.

Format: 32 HEX bytes

2.3.111 ICID_LENGTH

This field contains the length of the ICID information. The field is available in the POC, PTC, SOC, STC, SOM and STM CDRs.

Format: 1 HEX byte

2.3.112 ICID_OVERFLOW

This field indicates if the ICID information received is too long and the info is truncated in the ICID field. The field is available in the POC, PTC, SOC, STC, SOM, and STM CDRs.

The field can have the following values:

00H	No ICID overflow
01H	ICID overflow

Format: 1 HEX byte

2.3.113 IDLE_DURATION_TEN_MS

This field indicates the duration of the call between the 'address complete' and 'B answer' messages. It is generated in the MSC by updating a duration counter once in every 10 milliseconds. This means that it is not calculated from the timestamps. The possible changes in the exchange wall clock time do not affect this field. In the case of the INSU CDR it is the interval between the end time of the previous active connection and the time when the involved connection becomes active. If the connection is released before the connection becomes active then the duration between the two releases is saved. If partial INSU CDR has to be generated before the connection becomes active then the duration between the end time of the previous active connection and the time of the partial event is saved. If partial INSU CDR has to be generated when the connection is already active then the subsequent INSU CDR (right after the partial event) contains IDLE_DURATION zero. If there is no previous active connection - or no INSU is generated at the end of the previous active connection - then idle-duration should be left empty. This field is available in the INSU, POC and PTC CDRs.

Format: 4 BCD bytes, in 10 milliseconds.

2.3.114 IMEI

The IMEI (International Mobile Equipment Identity) can be registered in a call record if the system supports the obtaining of the IMEI. In the short message CDRs, the field is updated only if the IMEI check is used.

Format: 8 BCD bytes

- **CALLING_IMEI**

This field contains the calling subscriber's IMEI. The field is available in the MOC, SMMO, UCA, and SOM CDRs. In the SMMO CDR the field is updated only if the IMEI check is used. See the IMEI field.

- **CALLED_IMEI**

This field contains the called subscriber's IMEI. The field CALLED_IMEI is filled with 'F's in the MOC CDR if the called subscriber is located in the area of another MSC.

The field is filled with 'F's if the called subscriber is a PSTN subscriber. The field is available in the MOC, MTC, SMMT, RCC, SMMF, and STM CDRs. In the SMMT and SMMF CDRs, the field is updated only if the IMEI check is used. See the IMEI field.

- **FORWARDING_IMEI**
This field contains the forwarding subscriber's IMEI. The field is available in the FORW CDR. See the IMEI field.
- **FORWARDED_TO_IMEI**
This field contains the forwarded-to subscriber's IMEI. The field **FORWARDED_TO_IMEI** is filled with 'F's in the FORW CDR if the forwarded-to subscriber is located in the area of another MSC. The field is filled with 'F's if the forwarded-to subscriber is a PSTN subscriber. The field is available in the FORW CDR. See the IMEI field.
- **SERVED_IMEI**
This field contains the served subscriber's IMEI. The field is available in the SUPS, LCS, USSD and INSU CDRs. See the IMEI field.

2.3.115 IMEISV

This field contains the IMEI with software version information. IMEISV can be registered in a call record if the system supports the obtaining of the IMEISV. In short message CDRs, the field is updated only if the IMEISV check is used.

Format: 8 BCD bytes

- **CALLING_IMEISV**
This field contains the calling subscriber's IMEISV. The field is available in the MOC, SMMO, and UCA CDRs. In the SMMO CDR the field is updated only if the IMEISV check is used. See the IMEISV field.
- **CALLED_IMEISV**
This field contains the called subscriber's IMEISV. The field **CALLED_IMEISV** is filled with 'F's in the MOC CDR if the called subscriber is located in the area of another MSC. The field is filled with 'F's if the called subscriber is a PSTN subscriber. The field is available in the MOC, MTC, SMMT, RCC, and SMMF CDRs. In the SMMT and SMMF CDRs the field is updated only if the IMEISV check is used. See the IMEISV field.
- **FORWARDING_IMEISV**
This field contains the forwarding subscriber's IMEISV. The field is available in the FORW CDR. See the IMEISV field.
- **FORWARDED_TO_IMEISV**
This field contains the forwarded-to subscriber's IMEISV. The field **FORWARDED_TO_IMEISV** is filled with 'F's in the FORW CDR if the forwarded-to subscriber is located in the area of another MSC. The field is filled with 'F's if the forwarded-to subscriber is a PSTN subscriber. The field is available in the FORW CDR. See the IMEISV field.
- **SERVED_IMEISV**
This field contains the served subscriber's IMEISV. The field is available in the SUPS, LCS, USSD and INSU CDRs. See the IMEISV field.

2.3.116 IMSI

This field contains the IMSI (International Mobile Subscriber Identity) of the subscriber in question.

Format: 8 BCD bytes

- **CALLING_IMSI**
This field contains the calling subscriber's IMSI. The contents of this field -in the SMMO CDRs that are made in the IW MSC-, is related to the SMSC and the PRFILE parameters. The field is available in the MOC, SMMO, UCA, COC, IN4, IN5, SOC, SOM, and PBXT CDRs. See the IMSI field.
- **CALLED_IMSI**
This field contains the called subscriber's IMSI. The field is available in the MOC, MTC, ROAM, HLRI, SMMT, UCA, RCC, SMMF, CTC, IN4, IN5, STC, SOM, STM, and PBXO CDRs. See the IMSI field.
- **FORWARDING_IMSI**
This field contains the forwarding subscriber's IMSI. The field is available in the FORW CDRs. See the IMSI field.
- **FORWARDED_TO_IMSI**
This field contains the forwarded-to subscriber's IMSI. The field is available in the FORW CDRs. See the IMSI field.
- **SERVED_IMSI**
This field contains the served subscriber's IMSI. The field is available in the SUPS, LOCA, HW, LCS, USSD, SIPR and INSU CDRs. See the IMSI field.

2.3.117 IN_CATEGORY_KEY

This field contains the IN category key of the mobile subscriber as defined in the HLR. The field is available in the MOC, SOC, and SOM CDRs.

Format: 2 HEX bytes

Digits not in use are filled with 'F's.

2.3.118 IN_CHANNEL_ALLOCATED_TIME

This field contains the time of the allocation of the first traffic channel to the calling mobile or incoming trunk circuit. The value in this field remains the same throughout the call within one switch. When the event is activated, the field is filled with 'F's. The field is available in the MOC, MTC, FORW, ROAM, SUPS, POC, PTC, PBXO, PBXT, HW, IN1, UCA, IN2, IN3, DOC, RCC, COC, CTC, IN4, IN5, SOC, and STC CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY

(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 20 10 11 98 19

time 20:15:40

day 10.11.1998



In earlier releases, this field has been used together with the CALL_REFERENCE field to connect the IN CDR and call/event CDR. However, in earlier releases, if the IN CDR is generated at such an early call phase that the channel has not been reserved yet, this connection had not been made properly. Therefore it is preferable

that this field is not used for this purpose anymore and the CALL_REFERENCE_TIME field is used instead.

2.3.119 IN_CIRCUIT_GROUP

This field contains the number of the incoming circuit group. This field is always filled with the first circuit group towards the calling subscriber (A). The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, UCA, RCC, CTC, IN4, IN5 and INSU CDRs.

Format: 1 BCD word

i By default in the case of BICC and SIP trunk signaling this field only contains the default value. With optional features the data is available also for the former signaling types.

2.3.120 IN_CIRCUIT_GROUP_NAME

This field contains the name of the incoming circuit group. This field is always filled with the first circuit group towards the calling subscriber (A). The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, UCA and INSU CDRs.

Format: 8 ASCII HEX bytes

i By default in the case of BICC and SIP trunk signaling this field only contains the default value. With optional features the data is available also for the former signaling types.

2.3.121 IN_CIRCUIT

This field contains the number of the incoming circuit. This field is always filled with the first circuit towards the calling subscriber (A). The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, UCA, and RCC CDRs.

Format: 1 BCD word

i This field always contains the default value in the case of SIP trunk. By default, in the case of BICC trunk signaling this field only contains the default value. With an optional feature the data is available also for BICC signaling.

2.3.122 IN_DATA

This field contains the transparent IN-service information. The content of IN_DATA field is defined by SCP. The field length could be defined according to customer wishes, except in the IN4 (40 bytes) and the IN5 (160 bytes). The field is available in the IN1, IN2, IN3, IN4, and IN5 CDRs.

TRANSPARENT DATA (bytes 10 - 310)

Format: maximum 310 bytes

2.3.123 IN_DATA_SPARE

This field is filled with 00 as default. The field is available in the IN1, IN2, and IN3 CDRs.

Format: 1 HEX byte

2.3.124 IN_DATA_LENGTH

This field tells the length of the actual data excluding 3 control bytes. The field is available in the IN1, IN2, IN3, IN4, and IN5 CDRs.

Format: 1 HEX word

2.3.125 IN_DATA_LENGTH2

The same as IN_DATA_LENGTH field. The field should be removed from the CDR format. The field is available in the IN1, IN2, and IN3 CDRs.

Format: 1 HEX word

2.3.126 IN_LEG_ID

This field contains the leg ID known by the IN-connections of one call. The field is available in the COC, CTC, INSU and INUC CDRs.

The field can have the following values:

00H	Does not exist
01H	Incoming
02H	First outgoing
EFH	Collect call
F0H	Both (incoming and outgoing)

Format: 1 HEX byte

2.3.127 IN_MGW_NAME

This field contains the incoming MGW name (virtual MGW name in the MSS) of certain call legs. This field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO and PBXT CDRs.

2.3.128 IN_MODIFICATION

This field indicates the modifications to the call by the IN service. The field is available in the INUC CDR.

The field can have the following values:

0 not modified
1 modified

LSB	
bit 1	calling category
bit 2	original called number

Table 5 Bit structure

bit 3	additional calling line identity
bit 4	redirecting number
bit 5	redirection counter
bit 6	carrier information
bit 7	originating line information
bit 8	charge number
bit 9	forward conference
bit 10	call diversion
bit 11	calling party restriction
bit 12	backward conference
bit 13	connected number
bit 14	hold
bit 15	call wait
bit 16	explicit call transfer
bit 17	call completion
bit 18	CUG interlock code
bit 19	CUG outgoing access
bit 20	non CUG call
bit 21	destination routing number
bit 22...32	spare
MSB	

Table 5 Bit structure (Cont.)

Format: 1 HEX dword

2.3.129 IN_MODIFY_PARAMETERS

This field contains the call-related parameters modified by the IN service. This is a set of parameters (e1 - e7) containing elements that together define time dependence, data dependence, and unit increments, as well as the rate at which the call is to be charged (for AoC purposes). If there are no modifications, the field is filled with zeros. The field is available in the INUC CDR.

The field can have the following values:

- e1 Units per interval (repeated pulse train). This element defines the number of units incremented per repeated time interval.
- e2 Seconds per repeated time interval (charge rate). This element defines the time interval for unitization.
- e3 Scaling factor. This element defines the scaling factor for the conversions between the LPLMN units and the HPLMN units.

- e4 Unit increment (pulse train at the beginning of the call). This element defines the number of units to be incremented on receipt of the message containing the AoC e-parameters.
- e5 Units per data interval. This element is used for connection to the PSPDN via the dedicated PAD (not supported).
- e6 Segments per data interval. This element is used for connection to the PSPDN via the dedicated PAD (not supported).
- e7 Initial seconds per time interval (free time). This element defines the initial time interval for unitization.

Format: 7 HEX words

2.3.130 IN_SERVICE_KEY

The identifier of IN service in the SSP/SCP. The field is available in the IN1, IN2, IN3, INSU and INUC CDRs.

The field can have the following values:

0H...7FFFFFFFH Possible values

FFFFFFFHH Not used

Format: 1 HEX dword

2.3.131 IN_SERVICES

This field includes the IN-services used during the call and the success indicator for each service. The IN-services used (a maximum of 10) are in starting order. One service is indicated by five (5) bytes. The first four (4) bytes indicate the identifier of the IN service in the SSP/SCP and the fifth byte indicates the status of the IN-service. The field is available in the RCC CDR.

Every five-byte set indicates:

4 bytes = service key, the values are defined in the SCP

1 byte = status of this service

The status byte can have the following values:

00H	Service was failed
01H	Service was successful
FFH	Not available

Format: 50 HEX bytes (4 bytes + 1 byte in 10 times)

2.3.132 INAT_INDICATOR

This field contains the national/international call indicator conveyed in the ISUP parameter Forward Call Indicator (bit A), as defined in ITU-T specifications Q.763. This field is available in MTC, FORW, ROAM, POC, PTC and PBXT CDRs. In POC CDR, the same information is visible in the field CALL_TYPE.

The field can have the following values:

00H national call

01H international call
 FFH Information is not available
 Format: 1 HEX byte

2.3.133 INCOMING_TIME

This field contains the time when the MSC receives a short message. The field is available in the SMMO, SMMT, SMMF, SOM, and STM CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
 (time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 10 11 02 00
 time 12:15:40
 day 10.11.2002

2.3.134 INITIATOR

This field contains the source of the unstructured supplementary service operation. The field is available in the USSD CDR.

The field can have the following values:

01H	Action by network (SCP)
02H	Action by user (mobile station)
FFH	Not available

Format: 1 HEX byte

2.3.135 IN_RECORD_NUMBER

The IN records for one leg of the call are numbered. In case the IN record is not related to the call, this field is filled with '01' by default (only one IN CDR can be generated per one event). The field is available in the IN1, IN2, IN3, IN4, and IN5 CDRs.

Format: 1 BCD byte

2.3.136 INTERMEDIATE_CHARGING_IND

This field indicates whether or not this is an intermediate CDR. In the UCA CDR, this field is filled with FF. In the COC and CTC CDRs, this field has the value 'partial' or 'last partial'. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, HW, UCA, DOC, RCC, COC, CTC, SOC, STC, INSU and INUC CDRs.

The field can have the following values:

00H	normal
01H	intermediate (partial)
02H	last partial
FFH	not used

Format: 1 HEX byte

2.3.137 INTERMEDIATE_CHRG_CAUSE

This field contains the indicators for the actual reason for intermediate charging. In the COC and CTC CDRs, this field always have the value 'tariff change' in the intermediate CDRs during the service, but in the last partial CDR of the service and the last partial (dummy) CDR, the field is filled as usual ('value at the end of call'). The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, HW, DOC, RCC, COC, CTC, SOC, STC, INSU and INUC CDRs.

The field can have the following values:

not used = 0;

used = 1;

LSB	
bit 1:	Value at the end of the call
bit 2:	Intermediate charging because time limit has been reached.
bit 3:	Intermediate charging because pulse limit has been reached.
bit 4:	The change of the used data rate in user plane
bit 5:	Call re-establishment
bit 6:	Chargeable IN user interaction ended and charging has ended.
bit 7:	Handover has changed the channel-related parameters.
bit 8:	Handover has changed the band of air interface (Not used).
bit 9:	Tariff change
bit 10:	SCP originating the charging change by means of the SCI information.
bit 11:	Inter-MSR handover
bit 12:	Follow on call
bit 13:	Changing of localised service identity
bit 14:	Call drop back
bit 15:	Inter-PLMN handover
bit 16:	Inter-system handover
bit 17:	Disconnect leg A
bit 18:	Disconnect leg B
bit 19:	End of Camel user interaction
bit 20:	Call type of SIP (speech/multimedia)
bit 21:	Codec change*
bit 22	Explicit call transfer

bit 23	Through connection cut by SCP
bits 24-32:	Spare
MSB	

Format: 1 HEX dword

2.3.138 INTERMEDIATE_RECORD_NUMBER

This field contains the intermediate CDRs are numbered within the range of 0 and 99. If the INTERMEDIATE_CHARGING_IND is '0', then the INTERMEDIATE_RECORD_NUMBER is '0' as well. If the INTERMEDIATE_CHARGING_IND is '1' or '2', the value for the INTERMEDIATE_RECORD_NUMBER is equal to the running number of the record. In a UCA CDR, this field is filled with 'FF'. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, HW, UCA, DOC, RCC, COC, CTC, SOC, STC, INSU and INUC CDRs.

- The first 99 intermediate CDRs are numbered 1–99
- The next hundred are numbered 0–99
- The next 56 are numbered 0–55
- The next hundred are numbered 0–99
- The next hundred are numbered 0–99
- The next 56 are numbered 0–55
- The next hundred are numbered 0–99, and so on.

Format: 1 BCD byte

2.3.139 INTERNAL_UI_ID1

The first byte shows if there is either tone ID or announcement ID in the second part. The second part shows the actual tone ID or announcement ID. The field is available in the DOC CDR.

0x00H	Not used
0x01H	Announcement is played
0x02	Tone is played

Format: 1 HEX byte + 5 HEX bytes

2.3.140 INTERNAL_UI_ID2

The first byte shows if there is either tone ID or announcement ID in the second part. The second part shows the actual tone ID or announcement ID. The field is available in the DOC CDR.

0x00H	Not used
0x01H	Announcement is played
0x02	Tone is played

Format: 1 HEX byte + 5 HEX bytes

2.3.141 INTERNAL_UI_ID3

The first byte shows if there is either tone ID or announcement ID in the second part. The second part shows the actual tone ID or announcement ID. The field is available in the DOC CDR.

0x00H	Not used
0x01H	Announcement is played
0x02	Tone is played

Format: 1 HEX byte + 5 HEX bytes

2.3.142 INTERNAL_UI_ID4

The first byte shows if there is either tone ID or announcement ID in the second part. The second part shows the actual tone ID or announcement ID. The field is available in the DOC CDR.

0x00H	Not used
0x01H	Announcement is played
0x02	Tone is played

Format: 1 HEX byte + 5 HEX bytes

2.3.143 INTERNAL_UI_ID5

The first byte shows if there is either tone ID or announcement ID in the second part. The second part shows the actual tone ID or announcement ID. The field is available in the DOC CDR.

0x00H	Not used
0x01H	Announcement is played
0x02	Tone is played

Format: 1 HEX byte + 5 HEX bytes

2.3.144 JIP

This field contains the first 6 digits of the originating MSC ID. The field is available in the MOC, MTC, FORW, ROAM, POC, and PTC CDRs.

Format: 3 HEX bytes

2.3.145 LAC

This field contains the location area information of the subscriber. The 'first' and 'last' location fields are only used in connection with a call. The other fields are used in connection with other chargeable events, for example, short message service.

Format: 1 HEX word

- **CALLING_SUBS_LAC**
This field contains the calling subscriber's location area code. The field is available in the SMMO, UCA, and SOM CDRs. See the LAC field.
- **CALLING_SUBS_FIRST_LAC**
This field contains the calling subscriber's first location area code. The field is available in the MOC CDR. See the LAC field.
- **CALLING_SUBS_LAST_LAC**
This field contains the calling subscriber's last location area code. The field is available in the MOC CDR. See the LAC field.
- **CALLED_SUBS_LAC**
This field contains the called subscriber's location area code. The field is available in the SMMT and STM CDRs. See the LAC field.
- **CALLED_SUBS_FIRST_LAC**
This field contains the called subscriber's first location area code. This field is filled with 'F's in the MOC CDR if the called subscriber is a PSTN subscriber or the subscriber is located in the area of another MSC. The field is available in the MOC and MTC CDRs. See the LAC field.
- **CALLED_SUBS_LAST_LAC**
This field contains the called subscriber's last location area code. This field is filled with 'F's in the MOC CDR if the called subscriber is a PSTN subscriber or the subscriber is located in the area of another MSC. The field is available in the MOC and MTC CDRs. See the LAC field.
- **SUBS_NEW_LAC**
This field contains the subscriber's new location area code. The 'new' location fields are used in connection with a location update. If the new location area information is unknown, the field is filled with 'F's. The field is available in the LOCA CDR. See the LAC field.
- **SUBS_OLD_LAC**
This field contains the subscriber's old location area code. The 'old' location fields are used in connection with a location update. If the old location area information is unknown, the field is filled with 'F's. The field is available in the LOCA CDR. See the LAC field.
- **FORWARDING_FIRST_LAC**
This field contains the forwarding subscriber's first location area code. This field is only filled in case of a CFNA. The field is available in the FORW CDR. See the LAC field.
- **FORWARDING_LAST_LAC**
This field contains the forwarding subscriber's last location area code. This field is only filled in the case of a CFNA. The field is available in the FORW CDR. See the LAC field.
- **FORWARDED_TO_FIRST_LAC**
This field contains the forwarded-to subscriber's first location area code. This field is filled with 'F's if the forwarded-to subscriber is a PSTN subscriber or the subscriber is located in the area of another MSC. In a multiple call forwarding case, in the same

MSC the last leg is filled, but intermediate legs are only filled if the forwarded-to subscriber has a CFNA. The field is available in the FORW CDR. See the LAC field.

- **FORWARDED_TO_LAST_LAC**

This field contains the forwarded-to subscriber's last location area code. This field is filled with 'F's if the forwarded-to subscriber is a PSTN subscriber or the subscriber is located in the area of another MSC. In a multiple call forwarding case, in the same MSC the last leg is filled, but intermediate legs are only filled if the forwarded-to subscriber has a CFNA. The field is available in the FORW CDR. See the LAC field.

- **SERVED_SUBS_LAC**

This field contains the served subscriber's location area code. The field is available in the SUPS, the LCS, and USSD CDRs. See the LAC field.

2.3.146 LAST_EX_ID

The ISDN number of the exchange in which area the mobile subscriber is in at the end of the call or at the time of intermediate charging.

Format: 10 BCD bytes

Digits not in use are filled with 'F's.

- **CALLING_SUBS_LAST_EX_ID**

This field contains the calling subscriber's last exchange ISDN number. The field is available in the MOC CDR. See the LAST_EX_ID field.

- **CALLED_SUBS_LAST_EX_ID**

This field contains the called subscriber's last exchange ISDN number. This field is filled with 'F's in the MOC CDR if the called subscriber is a PSTN subscriber or the subscriber is located in the area of another MSC at the beginning of the call. The field is available in the MOC and MTC CDRs. See the LAST_EX_ID field.

- **FORWARDING_LAST_EX_ID**

This field contains the forwarding subscriber's last exchange ISDN number. The field is only filled in the case of a CFNA. The field is available in the FORW CDR. See the LAST_EX_ID field.

- **FORWARDED_TO_LAST_EX_ID**

This field contains the forwarded-to subscriber's last exchange ISDN number. This field is filled with 'F's if the forwarded-to subscriber is a PSTN subscriber or the subscriber is located in the area of another MSC at the beginning of the call. The field is available in the FORW CDR. See the LAST_EX_ID field.

2.3.147 LAST_RECORD_NUMBER

This field contains the last record number contained in the charging block. The field is available in the TRA CDR.

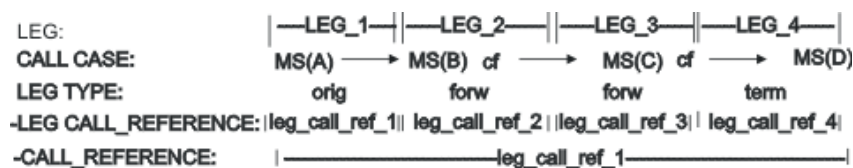
Format: 1 BCD dword

2.3.148 LEG_CALL_REFERENCE

Each leg of a call has its own call reference in call control. All CDRs produced from one call in the same network element have a different value in the LEG_CALL_REFERENCE field.

The format of the field is: Call control computer ID, ID of the hand process controlling the call, focus number (the 'lives' of the hand process numbered). The field is available

in the MOC, MTC, FORW, ROAM, SUPS, POC, PTC, PBXO, PBXT, HW, IN1, IN2, IN3, DOC, RCC, COC, CTC, IN4, IN5, SOC, STC, INSU and INUC CDRs.



In CDRs not related to any call, for example, activating a supplementary service, the leg call reference is filled with 'F's.

Format: 5 HEX bytes, word + word + byte

i This leg call reference is unique only for a very limited period of time. To make it really unique, it must be qualified with, for example, an `CALL_REFERENCE_TIME` field.

2.3.149 LEVEL OF CAMEL SERVICE

This field indicates the complexity of CAMEL service used. The field is available in the CQC and CTC CDRs.

The field can have the following values:

0 = not used

1 = used

LSB	
bit 1:	Basic camel
bit 2:	On line charging
bit 3:	Call duration control
bit 4:	Spare
bit 5:	Spare
bit 6:	Spare
bit 7:	Spare
bit 8:	Spare
MSB	

Format: 1 HEX byte

2.3.150 LEVEL OF IN SERVICE

This field indicates the complexity of the IN service used. The field is available in the INUC CDR.

The field can have the following values:

0 not used

1 used

LSB

bit 1 Basic CAMEL

bit 2	On line charging
bit 3	Call duration control
bit 4	Call party handling
bit 5	Spare
bit 6	Spare
bit 7	Spare
bit 8	Spare
MSB	

2.3.151 LOC_UP_INDICATOR

This field indicates the type of location update. The field is available in the LOCA and SIPR CDRs.

The field can have the following values:

00H	Location updating
01H	GPRS location update

Format: 1 HEX byte

2.3.152 LOCATION_ESTIMATE

This field contains geographical information in MAP interface. This parameter gives an estimate of the location of an MS in universal coordinates and the accuracy of the estimate. The relationship between the field value and the location can be found in *3GPP TS 29.002: Mobile Application Part (MAP) specification*. The field is available in the LCS CDR.

Format: 20 HEX bytes

2.3.153 LOCATION_REQUEST_TYPE

This field contains the type of the location request. The field is available in the LCS CDR.

The field can have the following values:

00H	Concurrent
01H	Mobile-terminated, call-unrelated
02H	Mobile-originated for location estimate
03H	Network-initiated emergency (request)
04H	Network-initiated emergency (release)
05H	Network-initiated
06H	Mobile-terminated for PLMN operator
07H	Mobile-originated for assistance data
08H	Mobile-originated for deciphering keys

09H	Mobile-terminated, call-related
10H	Deferred mobile-terminated
FFH	Not known

Format: 1 HEX byte

2.3.154 MCC

This field contains the mobile country code information of the subscriber. The 'first' and 'last' fields are only used in connection with a call. The other fields are used in connection with other chargeable events, for example, short message service.

Format: 2 HEX bytes

Digits not in use are filled with 'F's.

i The field is coded in the same way as in Section *Coding of CDR fields, 8 - 12 bcd/HEX bytes*.

- **CALLING_SUBS_MCC**
This field contains the mobile country code information of the calling subscriber. The field is available in the UCA CDR. See the MCC field.
- **CALLING_SUBS_FIRST_MCC**
This field contains the mobile country code information of the calling subscriber. The field indicates the location at the beginning of the call. The field is available in the MOC CDR. See the MCC field.
- **CALLING_SUBS_LAST_MCC**
This field contains the mobile country code information of the calling subscriber. The field indicates the location at the end of the call. The field is available in the MOC CDR. See the MCC field.
- **CALLED_SUBS_FIRST_MCC**
This field contains the mobile country code information of the called subscriber. The field indicates the location at the beginning of the call. These fields are filled with 'F's if the subscriber in question is a PSTN subscriber or the subscriber is located in another MSC area. The field is available in the MOC and MTC CDRs. See the MCC field.
- **CALLED_SUBS_LAST_MCC**
This field contains the mobile country code information of the called subscriber. The field indicates the location at the end of the call. These fields are filled with 'F's if the subscriber in question is a PSTN subscriber or the subscriber is located in another MSC area. The field is available in the MOC and MTC CDRs. See the MCC field.
- **FORWARDING_FIRST_MCC**
This field contains the mobile country code information of the forwarding subscriber at the beginning of the call. The field is only filled in case of a call forwarding on no reply (CFNA). The field is available in the FORW CDR. See the MCC field.
- **FORWARDING_LAST_MCC**
This field contains the mobile country code information from the forwarding subscriber at the end of the call. The field is only filled in case of a call forwarding on no reply (CFNA). The field is available in the FORW CDR. See the MCC field.
- **FORWARDED_TO_LAST_MCC**
This field contains the mobile country code information of the forwarding subscriber at the end of the call. In the case of a multiple call forwarding, the last leg is filled as

usual in the same MSC, but intermediate legs are only filled if the forwarded-to subscriber has a CFNA. These fields are filled with 'F's if the subscriber in question is a PSTN subscriber or the subscriber is located in another MSC area. The field is available in the FORW CDR. See the MCC field.

- **SERVED_SUBS_MCC**

This field contains the mobile country code information of the served subscriber. The field is available in the SUPS, SMMO, SMMT, LCS, USSD, SOM, and STM CDRs. See the MCC field.

2.3.155 MESSAGE_REFERENCE

This field contains a reference number of the SMS-SUBMIT, SMS-COMMAND, and SMS-STATUS-REPORT. The field is available in the SMMO and SOM CDRs.

Format: 1 HEX byte

2.3.156 MESSAGE_SIZE

In cases where instant message is converted to short message, the MESSAGE_SIZE field contains the size of the original instant message. Otherwise the field contains the actual size of the message. The field is available in the SOM and STM CDRs.

Format: 1 HEX dword

2.3.157 MGW_NAME

This field contains the multimedia gateway name (virtual MGW name in the MSC Server) of certain call legs.

Format: 20 ASCII HEX bytes

2.3.158 MNC

This field contains the mobile network code information of the subscriber. The 'first' and 'last' fields are used only in connection with a call. The other fields are used in connection with other chargeable events, for example, short message service.

Format: 2 HEX bytes

Digits not in use are filled with 'F'.



The field is coded in the same way as in Section *Coding of charging record fields, 8 - 12 bcd/HEX bytes*.

- **CALLING_SUBS_MNC**

This field contains the mobile network code information of the calling subscriber, available in the UCA CDR. See the MNC field.

- **CALLING_SUBS_FIRST_MNC**

This field contains the mobile network code information of the calling subscriber, indicating the location at the beginning of the call. The field is available in the MOC CDR. See the MNC field.

- **CALLING_SUBS_LAST_MNC**

This field contains the mobile network code information of the calling subscriber, indicating the location at the end of the call. The field is available in the MOC CDR. See the MNC field.

- **CALLED_SUBS_FIRST_MNC**
This field contains the mobile network code information of the called subscriber, indicating the location at the beginning of the call. These fields are filled with 'F's if the subscriber in question is a PSTN subscriber or the subscriber is located in another MSC area. The field is available in the MOC and MTC CDRs. See the MNC field.
- **CALLED_SUBS_LAST_MNC**
This field contains the mobile network code information of the called subscriber, indicating the location at the end of the call. These fields are filled with 'F's if the subscriber in question is a PSTN subscriber or the subscriber is located in another MSC area. The field is available in the MOC and MTC CDRs. See the MNC field.
- **FORWARDING_FIRST_MNC**
This field contains the mobile network code information of the forwarding subscriber at the beginning of the call. The field is only filled in the case of a call forwarding on no reply (CFNA). The field is available in the FORW CDR. See the MNC field.
- **FORWARDING_LAST_MNC**
This field contains the mobile network code information of the forwarding subscriber at the end of the call. The field is only filled in case of a call forwarding on no reply (CFNA). The field is available in the FORW CDR. See the MNC field.
- **FORWARDED_TO_LAST_MNC**
This field contains the mobile network code information of the forwarded-to subscriber at the end of the call. In a multiple call forwarding case in the same MSC the last leg is filled, but intermediate legs are only filled if the forwarded-to subscriber has CFNA. These fields are filled with 'F's if the subscriber in question is a PSTN subscriber or the subscriber is located in another MSC area. The field is available in the FORW CDR. See the MNC field.
- **SERVED_SUBS_MNC**
This field contains the mobile network code information of the served subscriber. The field is available in the SUPS, SMMO, SMMT, LCS, USSD, SOM, and STM CDRs. See the MNC field.

2.3.159 MODIFY_DIRECTION

This field defines towards which direction the charging parameters are changed. The field is only related to modifications in charging analyses. The field is available in the MOC, MTC, SOC, and STC CDRs. See the MODIFY_PERCENT field.

The field can have the following values:

00H	The charge of call is increased
01H	The charge of call is decreased

Format: 1 HEX word

- **ORIG_MCZ_MODIFY_DIRECTION**
This field contains the direction of the charging analysis modification to the originating mode automaton, started with main charging zone. The field is available in the MOC and SOC CDRs. See the MODIFY_DIRECTION field.
- **TERM_MCZ_MODIFY_DIRECTION**
This field contains the direction of the charging analysis modification to the terminating mode automaton, started with main charging zone. The field is available in the MTC and STC CDRs. See the MODIFY_DIRECTION field.

2.3.160 MODIFY_PARAMETERS

This field contains call-related parameters modified by the charging analyses and/or the SCP. This is a set of parameters (e1 - e7) containing elements that together define time dependence, data dependence, and unit increments and also the rate at which the call is to be charged (for AoC purposes). If there are no modifications, the field is filled with zeros.

e1	Units per interval (repeated pulse train). This element defines the number of units incremented per repeated time interval.
e2	Seconds per repeated time interval (charge rate). This element defines the time interval for unitisation.
e3	Scaling factor. This element defines the scaling factor for the conversions between the LPLMN units and the HPLMN units.
e4	Unit increment (pulse train at the beginning of the call). This element defines the number of units to be incremented on receipt of the message containing the AoC e-parameters.
e5	Units per data interval. This element is used for connection to the PSPDN via the dedicated PAD (not supported).
e6	Segments per data interval. This element is used for connection to the PSPDN via the dedicated PAD (not supported).
e7	Initial seconds per time interval (free time). This element defines the initial time interval for unitisation.

Format: 7 HEX words

- **CALLING_MODIFY_PARAMETERS**
This field contains the calling subscriber's modified parameters. The field is available in the MOC and SOC CDRs. See the MODIFY_PARAMETERS field.
- **CALLED_MODIFY_PARAMETERS**
This field contains the called subscriber's modified parameters. The field is available in the MTC and STC CDR. See the MODIFY_PARAMETERS field.

2.3.161 MODIFY_PERCENT

This field defines the percent the charging parameters are decreased or increased. The field is only related to modifications in charging analyses. The field is available in the MOC, MTC, SOC, and STC CDRs. See the MODIFY_DIRECTION field.

The values are:

00H	No change
01H...64H	Valid (if the charge of the call is decreased)
01H...FFEH	Valid (if the charge of the call is increased)
FFH	Unused

Format: 1 HEX word

- **ORIG_MCZ_MODIFY_PERCENT**
This field contains the percent information of the charging analysis modification to the originating mode automaton, started with main charging zone. The field is available in the MOC and SOC CDRs. See the MODIFY_PERCENT field.
- **TERM_MCZ_MODIFY_PERCENT**
This field contains the percent information of the charging analysis modification to the terminating mode automaton, started with main charging zone. The field is available in the MTC and STC CDRs. See the MODIFY_PERCENT field.

2.3.162 MSC_TYPE

This field contains the defined switch types. The name indicates the stage of the transaction at which the switch operates. The field is available in the MTC, FORW, SMMO and SMMT CDRs.

The field can have the following values:

00H	Interworking (only in SMMO and SMMT)
01H	Visited
02H	Gateway
03H	Transit (only in SMMO and SMMT)
04H	Gateway-Visited (only in MTC)

Format: 1 HEX byte

2.3.163 MSRN

This field contains the MSRN (Mobile Station Roaming Number) of the subscriber in question.

The field can have the following values: 0...9, A...E

Dial	Record
0-9	0-9
*	B
#	C
A	A
B	D
C	E

Format: The length of the field is customer-specific (maximum 16 bytes).

The default is 12 HEX bytes.

Digits not in use are filled with 'F'.

- **CALLED_MSRLN**
This field contains the called subscriber's MSRN number. The field is available in the MOC, ROAM, POC, PTC, PBXO, RCC, UCA, and SOC CDRs. See the MSRN field.
- **FORWARDED_TO_MSRLN**
This field contains the forwarded-to subscriber's MSRN number. The field is available in the FORW CDR. See the MSRN field.

- FORWARDING_MSРН

This field contains the forwarding subscriber's MSRN number. The field is available in the FORW CDR. See the MSRN field.

2.3.164 MS_CLASSMARK3

This field contains the classmark 3 information of the Mobile Station (MS) in question. The field is available in the MOC, MTC, FORW, SUPS, and UCA CDRs.

The field can have the following values:

00H	not exist
01H	single band
02H	dual band
10H	UMTS
11H	UMTS + single band
12H	UMTS + dual band

Format: 1 HEX byte

2.3.165 MS_CLASSMARK

This field contains the mobile station classmark. The information is received from the Mobile Station (MS) so that it is possible for some MSs to use the values from '05H' to 'FFH' as well.

The field can have the following values:

00H	Class 1, vehicle and portable
01H	Class 2, portable
02H	Class 3, handheld
03H	Class 4, handheld
04H	Class 5, handheld
05H...06H	Unknown values
07H	UMTS
08H...FEH	Unknown values
FFH	Value not available

Format: 1 HEX byte

- CALLING_MS_CLASSMARK

This field contains the calling subscriber's mobile station classmark. The field is available in the MOC, SMMO, UCA, and SOM CDRs. See the MS_CLASSMARK field.

- CALLED_MS_CLASSMARK

This field contains the called subscriber's mobile station classmark. The field is filled with 'F's in the MOC and RCC CDRs if the called subscriber is a PSTN subscriber

or the subscriber is located in the area of another MSC. This can also include the 'F's when the value is not available from the IWMSC (SMMO) and the GMSC (SMMT) for the SMHPRB. The field is available in the MOC, MTC, SMMT, RCC, and STM CDRs. See the MS_CLASSMARK field.

- **FORWARDING_MS_CLASSMARK**
This field contains the forwarding subscriber's mobile station classmark. The field is filled with 'F's if the cause for forwarding is CFU, CFNR, or CFB. The field is available in the FORW CDR. See the MS_CLASSMARK field.
- **FORWARDED_TO_MS_CLASSMARK**
This field contains the forwarded-to subscriber's mobile station classmark. The field is filled with 'F's if the forwarded-to subscriber is a PSTN subscriber or the subscriber is located in the area of another MSC. The field is available in the FORW CDR. See the MS_CLASSMARK field.
- **SERVED_MS_CLASSMARK**
This field contains the served subscriber's mobile station classmark. The field is available in the SUPS CDR. See the MS_CLASSMARK field.

2.3.166 MSS_SPC

This field contains the signaling point code of the MSC Server. The field is available in the INSU CDR.

Format: 4 HEX bytes

2.3.167 NBR_OF_ORIG_CAP_IN_RECS

This field contains the number of CAMEL IN4/IN5 records related to the originating service of the call attempt if CAMEL services were used for that subscriber during the call. The field is available in the MOC, FORW, POC, PBXO, and UCA CDRs.

Format: 1 BCD byte

2.3.168 NBR_OF_TERM_CAP_IN_RECS

This field contains the number of CAMEL IN4/IN5 records related to the terminating service of the call attempt if CAMEL services were used for that subscriber during the call. The field is available in the MTC, FORW, and ROAM CDRs.

Format: 1 BCD byte

2.3.169 NON_TRANSPARENCY_INDICATOR

This field indicates if the service is non-transparent. If the call in question is a speech call, the value of this field is insignificant. The field is available in the MOC, MTC, and FORW CDRs. The field is also available in the POC and PTC CDRs, but the value of this field in these CDRs is insignificant for the present.

The field can have the following values:

00H	transparent
01H	nontransparent
02H	transparent, no IWF

FFH	not used
-----	----------

Format: 1 HEX byte

2.3.170 NPDB_QUERY_STATUS

This field indicates the Number Portability (NP) query status performed by this MSC. The field is available in the MOC, FORW, POC, PTC, PBXO, and UCA CDRs.

The field can have the following values:

00H	Information is not available.
01H	Query is not done.
02H	Query is done and number is not ported.
03H	Query is done and number is ported.
04H	Query is done and failed.
05H	Indicator is set to done, but query has not been performed.
06H	Query is done, not known to be ported.
07H	Query is done, ported out.
08H	Query is done, ported between foreign national network.
09H	Query is done, unknown.
10H	Query is done, subsequent query allowed.
0BH	Query is done, subsequent query denied.

Format: 1 HEX byte

2.3.171 NPI

This field contains information about numbering (numbering plan). Constants belong to the internal coding standard of the DX used in the CC and the CCIF interfaces (inter-working layer).

The field can have the following values:

00H	Information not available
02H	Field value unknown to SS (and to DX)
04H	Unknown network dialling plan
05H	ISDN telephony
06H	Data
07H	Telex
08H	National standard
09H	Private
0AH	Network service access point (NSAP)

Format: 1 HEX byte

- CT_THIRD_PARTY_NUMBER_NPI
This field contains the numbering plan indicator of the third party subscriber number in a call transfer call scenario. The field is available in the MOC, MTC and ROAM CDRs. See the NPI field.
- INITIAL_ORIG_CALLED_NUMBER_NPI
This field contains the numbering plan information of the initial original called subscriber number. The field is available in the POC CDR. See the NPI field.
- ORIG_REDIRECTING_NUMBER_NPI
This field contains the numbering plan information of the original redirecting subscriber's number. The field is available in the POC CDR. See the NPI field.
- CALLING_NUMBER_NPI
This field contains the numbering plan information of the calling subscriber number. The field is available in the MOC, MTC, ROAM, SMMO, SMMT, POC, PTC, PBXO, PBXT, UCA, DOC, RCC, SMMF, SOC, STC, SOM, STM and INSU CDRs. See the NPI field.
- CALLED_NUMBER_NPI
This field contains the numbering plan information of the called subscriber number. The field is available in the MOC, MTC, ROAM, SUPS, SMMO, SMMT, POC, PTC, PBXO, PBXT, UCA, DOC, RCC, SMMF, SOC, STC, SOM, STM and INSU CDRs. See the NPI field.
- CLIENT_EXTERNAL_ID_NPI
This field contains the numbering plan indicator of the external client number to which the subscriber report is sent. The field is available in the LCS CDR. See the NPI field.
- DIALLED_DIGITS_NPI
This field contains the numbering plan information of the dialled digits. The field is available in the MOC, SMMO, POC, PBXO, UCA, RCC, SOM, SOC, MTC, ROAM and INSU CDRs. See the NPI field.
- ORIG_CALLING_NUMBER_NPI
This field contains the numbering plan information of the original calling subscriber number. The field is available in the MTC, FORW, and ROAM CDRs. See the NPI field.
- ORIG_CALLED_NUMBER_NPI
This field contains the numbering plan information of the original called subscriber number. The field is available in the FORW CDR. See the NPI field.
- FORWARDING_NUMBER_NPI
This field contains the numbering plan information of the forwarding subscriber number. The field is available in the FORW CDR. See the NPI field.
- FORWARDING_MSRN_NPI
This field contains the numbering plan information of the forwarding mobile subscriber roaming number. The field is available in the FORW CDR. See the NPI field.
- FORWARDED_TO_NUMBER_NPI
This field contains the numbering plan information of the forwarded-to subscriber number. The field is available in the FORW, UCA, and SMMF CDRs. See the NPI field.

- **CONNECTED_TO_NUMBER_NPI**
This field contains the numbering plan information of the connected to subscriber number. The field is available in the MOC, FORW, and RCC CDRs. See the NPI field.
- **SERVED_NUMBER_NPI**
This field contains the numbering plan information of the served subscriber number. The field is available in the SUPS, LOCA, HW, LCS, USSD, SIPR and INSU CDRs. See the NPI field.
- **CALLED_MSRN_NPI**
This field contains the numbering plan information of the called roaming subscriber number. The field is available in the MOC, ROAM, POC, PTC, PBXO RCC, UCA, and SOC CDRs. See the NPI field.
- **FORWARDED_TO_MSRN_NPI**
This field contains the numbering plan information of the forwarded-to roaming subscriber number. The field is available in the FORW CDR. See the NPI field.
- **CHARGE_NUMBER_NPI**
This field contains the numbering plan information of the chargeable subscriber number. This field is only used with Feature 818: World Zone 1 Equal Access and Numbering Plan. The field is available in the MOC, MTC, FORW, ROAM, SUPS, POC, PTC, PBXO, PBXT, UCA, and RCC CDRs. See the NPI field.
- **OUTPUTSED_NUMBER_NPI**
This field contains the numbering plan information of the outputsed number. The outputsed number is the number the MSC sends to the network. The field is available in the MOC, PTC, PBXT, UCA, and ROAM CDRs. See the NPI field.
- **REDIRECTING_NUMBER_NPI**
This field contains the numbering plan information of the redirecting subscriber number. The field is available in the MTC, ROAM, POC, PTC, PBXO, PBXT, FORW, RCC, SOC, STC and INSU CDRs. See the NPI field.
- **DESTINATION_NUMBER_NPI**
This field contains the numbering plan information of the destination number to whom the call is routed, if it is changed by a CAMEL or SINAP dialogue. The field is available in the COC, CTC, INSU and INUC CDRs. See the NPI field.
- **VIRTUAL_MSC_ID_NPI**
This field contains the numbering plan information of the virtual MSC address of the exchange. The field is available in the MOC, MTC, and FORW CDRs. See the NPI field.
- **LOCATION_NUMBER_NPI**
This field contains the numbering plan information of the virtual MSC address of the exchange. The field is available in the MOC, MTC, POC, PTC, ROAM, FORW, SMMO, SMMT, SUPS and USSD CDRs. See the NPI field.
- **EXTERNAL_IP_ADDRESS_NPI**
This field contains the numbering plan information of the IP address number of the external server which provides announcement service. The default field length in the DOC CDR is 10 bytes. See the NPI field.

2.3.172 NUM_OF_CONCATENATED_SMS

This field contains the maximum number of short messages in the concatenated SM. This field contains a value in the range of 0 to 255, indicating the total number of short messages within the concatenated short message. In case of non-concatenated short

message, the field value is '01'. The field is available in the SMMO, SMMT, SMMF, SOM, and STM CDRs.

Format: 1 HEX byte

2.3.173 NUMBER

This field contains the ISDN number of the subscriber in question. Within Feature 1541: Same CLI for Multiple Subscribers the field can have the group ISDN number.

The field can have the following values: 0...9, A...E

Dial	Record
0-9	0-9
*	B
#	C
A	A
B	D
C	E

Format: The length of field is customer-specific (maximum 16 bytes).

The default is 12 HEX bytes.

Digits not in use are filled with 'F'.

The maximum number length in the event CDRs (SUPS management, HLRI, LOCA) is 9 bytes, even though the field length is 12 bytes. In the SMS CDRs, the field length could be 11 bytes if Feature 1165: Short Message Service GSM Phase 2+ Enhancements is used (ASCII-values could be used).

- **CALLED_NUMBER**

This field contains the called subscriber's ISDN number. The value for the called number in a supplementary service CDR is the other party of the leg. The default field length in the HLRI CDR is 10 bytes. The field is available in the MOC, MTC, ROAM, SUPS, HLRI, SMMO, SMMT, POC, PTC, PBXO, PBXT, UCA, DOC, RCC, SMMF, SOC, STC, SOM, STM and INSU CDRs. See the NUMBER field.

- **CALLING_NUMBER**

This field contains the calling subscriber's ISDN number. The field is available in the MOC, MTC, ROAM, SMMO, SMMT, POC, PTC, PBXO, PBXT, UCA, DOC, RCC, SMMF, SOC, STC, SOM, STM and INSU CDRs. The maximum number length in the event CDRs is 9 bytes even though the field length is 10 bytes. The SMS event CDR is an exception, there the field length could be 11 bytes if Feature 1165: Short Message Service GSM Phase 2+ Enhancements is used (the ASCII-values could be used). The field length in the POC, PTC, PBXO, and PBXT CDRs is 12 bytes. See the NUMBER field.

- **CALLED_SA_NUMBER**

This field contains the called party extension identifying a subaddress of the called party of the call. Called party extension number is generated by Private Branch Exchange (PBX). As this is part of the called subscriber's ISDN number the TON and NPI indicators are the ones related to the called party. This field is available in the PBXT CDR. See the NUMBER field.

-
- **CALLING_NUMBER**
This field contains the calling subscriber's ISDN number. See the CALLING_NUMBER field.
 - **CALLING_SA_NUMBER**
This field contains the calling party extension identifying a subaddress associated with the origin of a call. Calling party extension number is generated by the Private Branch Exchange (PBX). As this is part of the calling subscriber's ISDN number the TON and NPI indicators are the ones related to the calling party. This field is available in the PBXO CDR. See the NUMBER field.
 - **CT_THIRD_PARTY_NUMBER**
This field contains the third party subscriber's ISDN number in a call transfer call scenario. The field is available in the MOC, MTC and ROAM CDRs. See the NUMBER field.
 - **ORIG_CALLED_NUMBER**
This field contains the original called subscriber's ISDN number. The field is available in the FORW and POC CDR. See the NUMBER field.
 - **ORIG_CALLING_NUMBER**
This field contains the original calling subscriber's ISDN number. The field is available in the MTC, FORW, POC and ROAM CDRs. See the NUMBER field.
 - **ORIG_REDIRECTING_NUMBER**
This field contains the original redirecting subscriber's ISDN number. The field is available in the POC CDR. See the NUMBER field.
 - **INITIAL_ORIG_CALLED_NUMBER**
This field contains the initial original called subscriber's ISDN number. The field is available in the POC CDR. See the NUMBER field.
 - **FORWARDING_NUMBER**
This field contains the forwarding subscriber's ISDN number. The field is available in the FORW CDR. See the NUMBER field.
 - **FORWARDED_TO_NUMBER**
This field contains the forwarded-to subscriber's ISDN number. The field is available in the FORW, UCA, and SMMF CDRs. See the NUMBER field.
 - **CHARGE_NUMBER**
This field contains the chargeable subscriber's ISDN number. This field is only used with Feature 818: World Zone 1 Equal Access and Numbering Plan. The field is available in the MOC, MTC, FORW, ROAM, SUPS, POC, PTC, PBXO, PBXT, UCA, and RCC CDRs. See the NUMBER field.
 - **CONNECTED_TO_NUMBER**
This field contains the connected-to subscriber's ISDN number. The field is available in the MOC, FORW, and RCC CDRs. See the NUMBER field.
 - **SERVED_NUMBER**
This field contains the served subscriber's ISDN number. The default field length in the SUPS, LCS, and USSD CDRs is 10 bytes. The length of this field in the SIPR CDR is 9 bytes. The field is available in the SUPS, LOCA, HW, LCS, USSD, SIPR and INSU CDRs. See the NUMBER field.
 - **OUTPUTSED_NUMBER**
This field contains the outputsed number to the network of the called subscriber. The outputsed number is the number the MSC sends to the network. The field is available in the MOC, PTC, PBXT, UCA, and ROAM CDRs. See the NUMBER field.

- **REDIRECTING_NUMBER**
If the incoming call has already been forwarded (redirected), this field contains the ISDN number of the redirecting subscriber if the information is available. The field is available in the MTC, ROAM, POC, PTC, PBXO, PBXT, FORW, RCC, SOC, STC and INSU CDRs. See the NUMBER field.
- **LOC_ROUTING_NUMBER**
This field contains the location routing number of the recipient network. The field is available in the MOC, MTC, FORW, POC, PTC, PBXO, and UCA CDRs. See the NUMBER field.
- **DESTINATION_NUMBER**
This field contains the destination number to whom the call is routed, if changed by a CAMEL or SINAP dialogue. The field is available in the COC, CTC, INSU and INUC CDRs. See the NUMBER field.
- **LOCATION_NUMBER**
A number which identifies the geographical area of the origin of a call. The number is passed between MSS's and is also sent to the terminating end of the call. The field is available in the MOC, MTC, POC, PTC, FORW, ROAM, SMMO, SMMT, SUPS and USSD CDRs. See the NUMBER field.
- **EXTERNAL_ID_ADDRESS_NUMBER**
This field contains the IP address number of the external server which provides announcement service. The field is available in the DOC CDR. See the NUMBER field.

2.3.174 NUMBER_INDICATOR

- **Number Presentation Status, low 4 bits**
Address Presentation Restriction Indicator indicates that the address information is not to be presented to a public network user, but can be passed to another public network. It may also be used to indicate that the address cannot be ascertained.
The field can have the following values:

00H	Does not exist
02H	Unknown
04H	Presentation allowed
05H	Presentation restricted
08H	Presentation restricted set by the network
- **Number Screening Status, high 4 bits**
Screening Indicator indicates whether the address/location information was provided by the user or network.
The field can have the following values:

00H	Does not exist
02H	Unknown
04H	User provided, not screened
05H	User provided, verified and passed
06H	User provided, verified and failed
07H	Network provided

Format: 1 HEX byte

- **CALLING_NUMBER_INDICATOR**
This field contains the indicators of the CALLING_NUMBER. The field is available in the INSU CDR. See the NUMBER_INDICATOR field.

- **REDIR_NUMBER_INDICATOR**

This field contains the indicators of the REDIRECTING_NUMBER. The field is available in the INSU CDR.

Format: 1 HEX byte

2.3.175 NUMBER_OF_FORWARDINGS

This field contains the number of call forwardings. If extra call forwarding of the Nokia Siemens Networks proprietary Feature 319: Support for Multiple Call Forwarding is in use in the MSC the value of this field is decreased by one. The field is available in the HLRI CDR.

The field can have the following values:


00H	The call has not been forwarded.
01H...05H	Possible values (number of forwardings)
FFH	The information is not available.

Format: 1 HEX byte

2.3.176 NUMBER_OF_ALL_IN_RECORDS

This field contains the number of intelligent network records related to the call. The field includes the number of the Core INAP and CAMEL IN records if both services were used during the call. Intermediate charging does not affect the value of the NUMBER_OF_ALL_IN_RECORDS field. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, UCA, RCC, SOC, and STC CDRs.

Format: 1 BCD byte

 Depending on the call case or call state model, it is possible that all CDRs for this call do not have the same information for the generated IN CDRs.

2.3.177 NUMBER_OF_IN_ANNOUNCEMENTS

This field contains the number of last partial DOC CDRs related to IN announcements triggered by this call leg. The field is available in the MOC, MTC, FORW, ROAM, POC, PBXO, DOC, and UCA CDRs.

Format: 1 BCD byte

2.3.178 NUMBER_OF_IN_RECORDS

This field contains the number of intelligent network records related either to this leg of the call, the location update, or to a short message. The exceptions are the COC and CTC CDRs, where the information is related to the call state model. This field includes the number of the Core INAP IN records, except in the COC and CTC CDRs where the field value indicates the number of the CAMEL IN records. In the SMS CDRs, the field indicates the number of the Core INAP or the CAMEL IN records (the maximum value is 1). Intermediate charging does not affect the value of the NUMBER_OF_IN_RECORDS field. The field is available in the MOC, MTC, FORW, ROAM, LOCA, SMMO, SMMT, POC, PTC, PBXO, PBXT, UCA, RCC, SMMF, COC, CTC, SOC, STC, SIPR, SOM, and STM CDRs.

Format: 1 BCD byte

2.3.179 NUMBER_OF_SS_RECORDS

This field contains the number of supplementary service records related to this call. Intermediate charging does not affect the value of the NUMBER_OF_SS_RECORDS field and the field is not updated in intermediate CDRs. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, UCA, DOC, RCC, SOC, and STC CDRs.

Format: 1 BCD byte

2.3.180 NUMBER_OF_TRANSACTIONS

This field contains the number of subsequent USSD transactions. The field is available in the USSD CDR.

Format: 1 HEX byte

2.3.181 OLI

The Originating Line Information (OLI) is strictly related to the Charge Number (CN). When the Charge Number in the ticket is the originating party number (received from network/calling party/redirecting party), the OLI contains the originating party OLI (received from network/calling party/redirecting party). Correspondingly, if the Charge Number is the terminating party number (the called mobile), the OLI is the terminating party's OLI.

The field is available in the MOC, MTC, FORW, ROAM, SUPS, POC, PTC, PBXO, PBXT, UCA, RCC, SOC, and STC CDRs.

The field can have the following values:

00H	Information is not available.
02H	Field value unknown to SS (and to DX)
04H	Plain Old Telephone Service (POTS)
05H	Multiparty line (more than 2)
06H	Automatic Number Identification (ANI) failure (unavailable)
07H	Station Level Rating (Hotel/Motel, without room identification)
08H	Special operator handling required
09H	Automatic Identified Outward Dialling (AIOD) listed DN sent
0AH	Coin or non-coin on-calls using database access
0BH	800 service call
0CH	Coin
0DH	Prison/inmate service
0EH	Intercept (blank)
0FH	Intercept (trouble)

10H	Intercept (regular)
11H	Telco operator handled call
12H	OUTward Wide Area Telecommunications Service (OUT-WATS)
13H	TRS (unrestricted line)
14H	Cellular service (type 1) -Cellular Carrier identified
15H	Cellular service (type 2) -Mobile DN identified
16H	Cellular service (roaming)
17H	TRS (Hotel/Motel)
18H	TRS (restricted)
19H	Private paystations
1AH	Access for private virtual network type of services
1BH	Inter LATA restricted
1CH	Inter LATA restricted (hotel/motel)
1DH	Inter LATA restricted (coin)

Format: 1 HEX byte

2.3.182 OPTIMAL_ROUTING_INDICATOR

This field indicates if the optimization has been performed during the call forwarding. The field is available in MOC, MTC, FORW, ROAM, HLRI, and UCA CDRs.

The field can have the following values:

00H	Optimal routing has not happened.
01H	Optimal routing has happened.
FFH	Not used

Format: 1 HEX byte

2.3.183 ORIG_DIALLING_CLASS

With this field, it is possible to classify calls by the Original Dialling Class (ODC). The values are defined by the operator. The values range from 0 to 65536 (0H - FFFFH). The field is available in the MOC, FORW, POC, and PBXO CDRs.

Format: 1 HEX word

2.3.184 OTHER_MODEM_TYPE

This field contains the modem type for a General Bearer Service (GBS) multi-slot call. The field can have the following values:

00H	Does not exist.
-----	-----------------

01H	V.32bis modem is requested.
02H	V.34 modem is requested.

Format: 1 HEX byte

- **REQ_OTHER_MODEM_TYPE**
This field contains the requested modem type. The field is available in the MOC, MTC, and UCA CDRs. See the OTHER_MODEM_TYPE field.
- **USED_OTHER_MODEM_TYPE**
This field contains the used modem type. The field is available in the MOC, MTC, and UCA CDRs. See the OTHER_MODEM_TYPE field.

2.3.185 OUT_CHANNEL_ALLOCATED_TIME

This field contains the time of the allocation of the traffic channel to the called mobile or outgoing trunk circuit. The value in this field remains the same throughout the call within one switch. When the event is activated, the field is filled with 'F's. The field is available in the MTC, ROAM, PTC, PBXT, and UCA CDRs.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 21 10 11 98 19

time 21:15:40

day 10.11.1998

2.3.186 OUT_CIRCUIT_GROUP

This field contains the number of the outgoing circuit group. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, UCA, RCC, COC, IN4, IN5 and INSU CDRs.

Format: 1 BCD word

i This field is filled only in the CFNA call forwardings, with the channel group towards the forwarding subscriber ('B') in the MOC CDR and the 'forwarded-to' subscriber ('C') in the FORW CDR. In other call forwardings this field is filled with 'F's in the MOC and FORW CDRs, except for the FORW CDR of the last leg which is filled usual with the circuit group towards the 'forwarded-to' subscriber.

i By default in the case of BICC and SIP trunk signaling this field only contains the default value. With optional features the data is available also for the former signaling types.

2.3.187 OUT_CIRCUIT_GROUP_NAME

This field contains the name of the outgoing circuit group. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, UCA and INSU CDRs.

Format: 8 ASCII HEX bytes

i This field is filled only in the CFNA call forwardings, with the channel group towards the forwarding subscriber ('B') in the MOC CDR and the 'forwarded-to' subscriber ('C') in the FORW CDR. In other call forwardings this field is filled with 'F's in the

MOC and FORW CDRs, except for the FORW CDR of the last leg, which is filled usual with the circuit group towards the 'forwarded-to' subscriber.

- i** By default in the case of BICC and SIP trunk signaling this field only contains the default value. With optional features the data is available also for the former signaling types.

2.3.188 OUT_CIRCUIT

This field contains the number of the outgoing circuit. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXT, UCA, and RCC CDRs.

Format: 1 BCD word

- i** This field is filled only in the CFNA call forwardings, with the channel group towards the forwarding subscriber ('B') in the MOC CDR and the 'forwarded-to' subscriber ('C') in the FORW CDR. In other call forwardings this field is filled with 'F's in the MOC and FORW CDRs, except for the FORW CDR of the last leg which is filled with the circuit group towards the 'forwarded-to' subscriber.

- i** This field always contains the default value in the case of SIP trunk. By default, in the case of BICC trunk signaling this field only contains the default value. With an optional feature the data is available also for BICC signaling.

2.3.189 OUT_MGW_NAME

This field contains the outgoing MGW name (virtual MGW name in the MSS) of certain call legs. This field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXT and PBXT CDRs.

2.3.190 PARAMETERS

This field contains parameters associated with a supplementary service.

- In the Supplementary Service (SUPS) CDR for call forwarding. This field contains the ISDN of the forwarded-to subscriber.
- In the SUPS CDR for call wait, call transfer, or MPTY, this field contains the other call reference.
- In SUPS CDR for call hold, this field is filled with 'F's.
- In the SUPS CDR for AoC, the field contains the e-parameters (parameter data may contain 'F's).
- In the SUPS CDR for activation of call forwarding, the ISDN number of C-subscriber is presented in this field.
- In the SUPS CDR for USSD, this field contains information on the source of the operation, either the SCP or the mobile station, number of the USSD subsequent transactions, the end time of the transaction and the USSD service code.
- In the SUPS CDR for UUS, this field contains the number of UUS messages and the number of transferred octets.
- In the SUPS CDR for any other case, this field is filled with 'F's.

The field is available in the SUPS CDR.

AOC:		
------	--	--

Format:	HEX, 7 word (e1 — e7).	
ISDN:		
Format:	16 BCD bytes. See subscriber_number page.	
Call reference:		
Format:	5 HEX bytes, word + word + byte. See call_reference page.	
UUS:		
Format:	6 HEX bytes	
USSD:		
Format:	19 HEX bytes, byte + byte + timestamp + 10 bytes. time-stamp format is (5 BCD bytes + 1 BCD word: SSMMHH DDM-MYYYY, time = 3 bytes, day = 2 bytes + word)	Source of the operation: 01H = ss action by network 02H = ss action by user USSD service code: Analysed digits (ASCII-coded) from the beginning of the subscriber typed USSD string.

Format: 30 HEX bytes; actual data length is defined in the PARAMETERS_LENGTH field.

2.3.191 PARAMETERS_LENGTH

This field contains the length of PARAMETERS in bytes. The length is 19 for USSD (even if the USSD service code has fewer digits), 16 for ISDN (even if the ISDN has fewer digits), 14 for e-parameters, 6 for User-to-user Signalling (UUS) and 5 for other call CALL_REFERENCE. The field is available in the SUPS CDR.

Values: 0...30. The default is 0.

Format: 1 HEX byte

2.3.192 PARTY_TO_CHARGE

This field contains the leg ID provided by the SCP. The field is available in the IN4 and IN5 CDRs.

The field can have the following values:

00H	Does not exist
01H	Incoming
02H	First outgoing
03H...FEH	Other outgoing defined by SCP

Format: 1 HEX byte

2.3.193 PIC

The subscriber has the Preferred Interexchange Carrier (PIC) stored in the subscriber database (HLR), which is normally used. The calling mobile's PIC is stored into the MOC CDR. In roaming cases, the PIC may differ from the TNS field and/or the CIP field used. The PIC is stored only in long distance calls. In call forwardings, the forwarding party PIC is stored into the FORW CDR. The home network's subscriber PIC is stored into the ROAM CDR in the gateway MSC.

The field is available in the MOC, FORW, ROAM, PBXO, UCA, RCC, SOC, and MTC CDRs.


Format: 2 HEX bytes

2.3.194 PNI

This field contains the Private Numbering Index (PNI) of the group. The field is filled only when the call is made inside the PNI group. The field is available in the MOC, MTC, FORW, SUPS, SMMO, PBXO, PBXT, RCC, SOC, STC, and SOM CDRs.

Format: 3 BCD bytes; FFs if not used

Only 5 digits used; digits not in use are filled with 'F's.

 The field is coded in the same way as in Section *Coding of charging record fields, 8 - 12 bcd/HEX bytes*.

2.3.195 PORTED_IN

This indicator informs that the terminating subscriber number was brought into the MSC from another network. The field is available in the MTC and POC CDRs.

The field can have the following values:

00H	Not ported
01H	Ported
FFH	Not used

Format: 1 HEX byte

2.3.196 PROTOCOL_IDENTIFICATION

This field identifies the protocol of the dialog that has been performed. The field is available in the IN1, IN2, IN3, IN4, IN5, COC, and CTC CDRs.

The field can have the following values:

00H	Not used
01H	Mobile application part
02H	CORE INAP - CS1
03H	CAMEL application part
04H	Completion of calls to the busy subscriber
05H	Calling name presentation - TCAP query

06H	Number portability - TCAP query
07H	The follow on call process
08H	Cx application part
09H	Direct collect call dialling
0AH	SSP routing based on IN categories
0BH	Sequential hunting
0CH	Selective ring back tone
0DH	Parallel hunting

Format: 1 HEX byte

2.3.197 PULSES

This field contains the pulses received from another network element and/or generated in the MSC for this call.

Format: 1 BCD word

- **ORIG_M CZ_PULSES**
This field contains the originated main charging zone pulses. The pulses generated for IN charging (SCI, O-BCSM) plus the received pulses multiplied by a change percentage (SCI, O-BCSM). The field is available in the MOC, POC, PBXO, DOC, RCC, and SOC CDRs.
- **TERM_M CZ_PULSES**
This field contains the terminated main charging zone pulses. The pulses generated for IN charging (SCI, AC, T-BCSM). The field is available in the MTC, PTC, PBXT, and STC CDRs.
- **ROAM_M CZ_PULSES**
This field contains the roaming main charging zone pulses. These include the pulses generated for IN charging (SCI, G-BCSM) and the ones received from the roaming leg multiplied by the percentage change (SCI, G-BCSM). The field is available in the ROAM CDR.
- **FORW_M CZ_PULSES**
This field contains the forwarding main charging zone pulses. The field is available in the FORW CDR.
- **IAZ_PULSES**
This field contains the incoming accounting zone pulses. These include incoming accounting pulses generated with the IAZ and pulses transferred to the incoming circuit in a transit exchange (or in a PBX-originated call). The field is available in the POC and PBXO CDRs.
- **OAZ_PULSES**
This field contains the outgoing accounting zone pulses. These include outgoing accounting pulses generated with the OAZ and the pulses received. The field is available in the PTC and PBXT CDRs.
- **CHAR_BAND_PULSES**
This field contains the char band zone pulses. These include charging pulses generated with the charge band zone according to network parameters. The field is available in the MOC, FORW, ROAM, POC, PTC, PBXO, and RCC CDRs.

2.3.198 RADIO_NETWORK_TYPE

This field contains the type of the radio network where the subscriber is located. The field is available in the MOC, MTC, FORW, SUPS, SMMO, SMMT, UCA, LCS, USSD, POC, PTC, PBXO, and PBXT CDRs.

The field can have the following values:

01H	GSM
02H	UMTS
03H	SIP
04H	UMA
FFH	not used

Format: 1 HEX byte

2.3.199 RATE_ADAPTION

This field contains the bearer capability information of the used rate adaption. The field is available in the MOC, MTC, FORW, ROAM, POC, and PTC CDRs.

The field can have the following values:

00H	No rate adaption
01H	V.110, X.30 rate adaptation
02H	ITU-T X.31 flag stuffing
03H	V.120 rate adaption
13H	H.223 & H.245 (multimedia)
FFH	Information is not available.

Format: 1 HEX byte

2.3.200 RECORD_LENGTH

The size of the CDR in bytes. The field is available in all the CDRs.

Format: 1 HEX word

2.3.201 RECORD_NUMBER

This field contains the records are numbered sequentially from 1 to 99,999,999. The field is available in all the CDRs.

Format: 1 BCD dword

2.3.202 RECORD_STATUS

This field contains the status of the CDR. The field is available in all the CDRs, except the HEA and the TRA.

The field can have the following values:

00H	normal ok
01H	synchronising error
02H	different contents

Format: 1 HEX byte

2.3.203 RECORD_TYPE

This field contains the identification of the record type in question. The field is available in all the CDRs.

The field can have the following values:

00	Header record
01	Mobile-originated call
02	Mobile-terminated call
03	Forwarded call
04	Call to a roaming subscriber
05	Supplementary service
06	HLR interrogation
07	Location update
08	Short message service (point-to-point), mobile-originated
09	Short message service (point-to-point), mobile-terminated
10	Trailer record
11	PSTN-originated call
12	PSTN-terminated call
13	PBX-originated call
14	PBX-terminated call
15	Use of hardware
16	Intelligent network data 1
17	Unsuccessful call attempt
18	Intelligent network data 2
19	Intelligent network data 3
20	Device-originated call
22	Remote charging control
23	IN-forwarded short message service
24	Camel-originated call
25	Camel-terminated call
26	Intelligent network data 4

27	Location service
28	Intelligent network data 5
29	Unstructured supplementary service data
30	SIP-originated call
31	SIP-terminated call
32	SIP-originating message
33	SIP-terminating message
35	SIP CDR for registration

Format: 1 BCD byte

2.3.204 REDIR_NUMBER_UNCOMPL_STATUS

This field contains the uncomplete status of the redirecting number. The field is available in the INSU CDR. See the UNCOMPL_STATUS field.

2.3.205 REDIRECTED_INDICATOR

This field contains the indicator that tells if the call is redirected. The field is available in the MOC, POC, PTC, PBXO, and PBXT CDRs.

The field can have the following values:

00	not used
01	used

Format: 1 HEX byte

 This field is used with Feature 203: Automatic Redirection of Calls.

2.3.206 REGIONAL_SUBS_INDICATOR

This field contains the charging class of a mobile subscriber indicating whether the subscriber has access to charging based on the home area. The field is available in the MOC CDR.

The field can have the following values:

00	no home area charging
01	home area charging

Format: 1 HEX byte

2.3.207 REGIONAL_SUBS_LOCATION_TYPE

This field defines the MS location with regards to the home area at the beginning of the call. The field is available in the MOC CDR.

The field can have the following values:

00H	The calling subscriber's location is unknown, since the call originates from a trunk circuit or from a PBX.
FFH	The subscriber is not a regional one or no charging area was found for the originating cell.
01H	The call was initiated from inside the calling party's home area.
02H	The call was initiated from outside the calling party's home area.

Format: 1 HEX byte

2.3.208 RELEASE_TIME

This field contains the time at which the unsuccessful call attempt was released. The field is available in the UCA CDR.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 10 11 98 19

time 12:15:40

day 10.11.1998

2.3.209 REQ_AIR_INTERFACE_USER_RATE

This field indicates the user data rate between the MS and the IWF requested by the MS. The data rate is offered as a sum of the net rates used in each traffic channel by the call. The field is available in the MOC, MTC, and UCA CDRs.

The field can have the following values:

00H	Not applicable; No meaning is associated with this value.
01H	User rate 9,6 kbit/s
02H	User rate 14,4 kbit/s
03H	User rate 19,2 kbit/s
04H	User rate 21,6 kbit/s
05H	User rate 28,8 kbit/s
06H	User rate 38,4 kbit/s
07H	User rate 43,2 kbit/s
08H	User rate 57,6 kbit/s

Format: 1 HEX byte

2.3.210 REQ_NUMBER_OF_CHANNELS

This field indicates the maximum number of traffic channels requested by the MS. The field is available in the MOC, MTC, and UCA CDRs.

The field can have the following values:

00H	One traffic channel
01H	Two traffic channels
02H	Three traffic channels
03H	Four traffic channels
04H	Five traffic channels
05H	Six traffic channels
06H	Seven traffic channels
07H	Eight traffic channels

Format: 1 HEX byte

2.3.211 REQ_USER_INITIATED_MOD_IND

The MS requests a modification of the maximum number of traffic channels during the call. The field contains the maximum value for the request. The field is available in the MOC, MTC, and UCA CDRs.

The field can have the following values:

00H	Not required
01H	Up to one traffic channel may be requested
02H	Up to two traffic channels may be requested
03H	Up to three traffic channels may be requested
04H	Up to four traffic channels may be requested

Format: 1 HEX byte

2.3.212 RESPONSE_TIME

This field is used to indicate the delay of the response. The field is available in the LCS CDR.

The field can have the following values:

00H	Low delay
01H	Delay in tolerance
FFH	Not known

Format: 1 HEX byte

2.3.213 RESULT_INDICATOR

The exact values used are Nokia Siemens Networks-specific and differ from those described in *3GPP TS 32.205: Telecommunication management; Charging management; Charging data description for the Packet Switched (PS) domain*. The field is available in the SUPS CDR.

The field can have the following values at the moment:

0000H	operation legal and succeeded
FFFFH	operation failed

Format: 1 HEX word

2.3.214 ROUTING_CATEGORY

The values of this field range from 1 to 254. When the ROUTING_CATEGORY is removed or not at all created for a subscriber, it receives the value NOT_USED (=0). The field is available in the MOC, MTC, FORW, ROAM, SUPS, SMMO, SMMT, UCA, SMMF, SOC, STC, SOM, and STM CDRs.

Format: 1 HEX byte

2.3.215 ROUTING_INFO

This field contains the routing information of an unsuccessful call attempt. The field consists of a bit structure that is two bytes long, as described below. The most valuable information is found in the bits 3–0 of the most significant byte containing the originating party of the call attempt. The field is available in the UCA CDR.

The most significant byte is:

MSB							LSB
7	6	5	4	3	2	1	0
outgoing side	incoming side						

The meaning of the bits in the most significant byte:

bits 7...4	outgoing side information (see the values below)
bits 3...0	incoming side information (see the values below)

The outgoing/incoming side information can have the following values:

01H	Own mobile station
02H	Visitor mobile station
03H	Network (trunk signalling)
04H	PBX

05H	Voice processing system
06H	PDN (PAD network)
07H	DOC (Device-originated Call)
08H	Announcement
09H	IP (Internet Protocol)
0BH	SIP originated call

The least significant byte is:

MSB							LSB
7	6	5	4	3	2	1	0
internal _use	rcc_inf o	B _anno	A _anno	inter _msc _ho	roam_i nfo		

The meaning of bits in the least significant byte:

bit 7	Internal use (both values possible)
bit 6...5	Remote charging control information (see the values below)
bit 4	Announcement for called ('B') subscriber
bit 3	Announcement for calling ('A') subscriber
bit 2	Inter-MSC handover (result of analyses in MSC-B)
bits 1...0	Roaming info (see the values below)

The roaming information can have the following values:

01H	MS (called party) is roaming in own PLMN.
02H	MS (called party) is roaming in visitor PLMN.
03H	Information from IN charging operation in the GMSC call model

The remote charging control information can have the following values:

01H	Disabled
02H	Additional charging
03H	Replace charging

Format: 1 HEX word

2.3.216 ROUTING_NUMBER

This field contains the roaming or the call forwarding number of the subscriber in question. It is used when the forwarding number is given. The field is available in the HLRI CDR.

The field can have the following values: 0...9, A...E

Dial	Record
0-9	0-9
*	B
#	C
A	A
B	D
C	E

Format: The length of field is customer-specific (maximum 16 bytes)
 The default is 12 HEX bytes.
 Digits not in use are filled with 'F'.

2.3.217 SCF_ADDRESS

This field contains the number of the SCF serving the subscriber. The field is available in the MOC, MTC, FORW, ROAM, SMMO, SMMT, POC, COC, CTC, IN4, IN5 and INUC CDRs.

Format: 9 BCD bytes
 Digits not in use are filled with 'F'.

2.3.218 SCI_DATA

This field contains the transparent IN service information. The content of the field is defined by the SCP. The first two bytes contain the data length. The field is available in INUC CDR.

Format: word + 40 HEX bytes

2.3.219 SCP_CONNECTION

This field includes the information of the SCP dialog. The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, PBXO, PBXT, RCC, SOC, and STC CDRs.

The field can have the following values:

00H	IN service connection failed
01H	IN service connection successful
FFH	Not used

Format: 1 HEX byte

2.3.220 SELECTED_CODEC

The usage of voice codecs are recorded in CDRs. The field is available in MOC, MTC, ROAM, POC, PTC, SOC, and STC CDRs. The field can have the following values:

00H	Full rate codec for gsm
01H	Half rate codec for gsm
02H	Enhanced full rate codec for gsm
03H	Narrowband full rate AMR codec for GSM
04H	Narrowband half rate AMR codec for GSM
05H	Narrowband AMR codec for UMTS with 20 ms Codec Mode Adaptation period
06H	Narrowband AMR codec for UMTS with 40 ms Codec Mode Adaptation period for the uplink radio channel
0AH	Wideband AMR codec for UMTS
0EH	Spare
0FH	Spare
10H	64 kbps PCM coding with A-law
11H	64 kbps PCM coding with U-law
12H	ITU-T specified dual-rate speech codec used for speech or other audio communication over IP at 5.3 and 6.3 kbit/s speed rate
13H	ITU-T dual-rate speech codec used for speech or other audio communication over IP at 5.3 and 6.3 kbit/s speed rate, including the silence compression system for the G.723.1 speech coder
14H	ITU-T specified widely in existing terminal implementations used 8 kbit/s codec
15H	ITU-T specified widely in existing terminal implementations used 8 kbit/s codec, including the silence compression system for the G.729A coder
16H	Internet low bit-rate codec
17H	Comfort noise
FCH	Real-time Transport Protocol
FDH	Clearmode

Format: 1 HEX byte

2.3.221 SEQUENCE_REFERENCE

Sequence reference of INSU CDR. The same value is used for all records from the same sequence. This parameter is used for indicating subsequent FCI operations which belong to the same call and the same charged party/leg. When the INSU CDR is gen-

erated in single-mode, then each INSU has unique SEQUENCE_REFERENCE. The field is available in INSU CDR.

Format: 1 BCD byte

2.3.222 SERVED_PARTY_IDENTITY

This field represents the party to be charged. This field includes the data as it is received from the SCP within the FCI operation. Two different codings from the SCF point of view are possible: characters or digits. The field is available in the INSU CDR.

Format: 16 HEX byte

2.3.223 SERVED_PARTY_TYPE

This type characterizes the type of the party to be charged, which may be evaluated by postprocessing. This field includes the data received directly from the FCI operation. The field is available in the INSU CDR.

Format: 1 HEX byte

2.3.224 SERVICE_CODE

This field contains the USSD service code. Analysed digits (ASCII-coded) from the beginning of the subscriber typed USSD message. The field is available in the USSD CDR.

Format: 10 HEX bytes

2.3.225 SERVICE_IDENTIFIER

This field contains the identifier of the service. The field is defined for future use. The field is available in the DOC CDR.

The field can have the following values:

00H	Unknown service identifier
FFH	Service identifier not used

Format: 1 HEX byte


2.3.226 SERVICE_INDICATOR

Comes directly from the SCP. This parameter can be used to inform the post processing about the requested service and sub service (for example, VPN: on-net-off-net). This field is available in the INSU CDR.

Format: 1 HEX word

2.3.227 SERVICE_TARIFF_CLASS

Comes directly from the SCP. The received value is saved transparently.

 the interworking between SINAP services and interworking between network elements are not supported.

The field is available in the INSU CDR.

Format: 3 BCD bytes

2.3.228 SERVICE_TIME

This field contains the 'wall clock' time in the exchange. The timestamp at which the service is completed. The field is available in the LCS CDR.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY

(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 10 11 98 19

time 12:15:40

day 10.11.1998

2.3.229 SETUP_DURATION_TEN_MS

This field indicates the duration of the call before the called party has answered. The measurement of this value begins when the call control and signaling resources have been seized for the call leg in question and ends when the ANM signaling message is received. It is generated in the MSC by updating a duration counter once in every 10 milliseconds. This means that it is not calculated from the timestamps. The possible changes in the exchange wall clock time do not affect this field.

In case of an INSU CDR this is the interval between the reception of the FCI and the time when the involved connection becomes active. If the connection is released before the connection becomes active then the duration between the FCI and the release is saved. If a partial INSU CDR has to be generated when there is no active charging connection then the duration between the reception of the request-FCI and the time of the partial event is saved. If a partial INSU CDR has to be generated when there is active charging connection then the subsequent INSU CDR (right after the partial event) contains zero in the SETUP_DURATION_TEN_MS. If the first FCI of the connection is received when the charging connection is already active then it is filled with zeros.

The field is available in the MOC, MTC, FORW, ROAM, POC, PTC, INSU, UCA, PBXO and PBXT CDRs.

Format: 4 BCD bytes, in 10 milliseconds

2.3.230 SHORTENED_IN_SERVICES

This field contains service keys and statuses of the two last used IN services. The field is available in POC and UCA CDRs.

Format: 10 HEX bytes

2.3.231 SIP_SIG_MODE

This field contains the mode of SIP call. The field is available in the SOC and STC CDRs.

The field can have the following values:

00H	Unknown
01H	SIP ISUP tunnelling: SIP-I, SIP-T

02H	Media gateway control function (MGCF)
03H	SIP Access interface of MSS
04H	SIP Trunk interface of MSS
05H	ISC Interface of NVS for originating services
06H	ISC Interface of NVS for terminating services

Format: 1 HEX byte

2.3.232 SM_TEXT_LENGTH

In a regular short message with 7-bit GSM alphabet this field contains the number of characters (septets) in the message. In case of Unicode character coding, the field contains the number of Unicode characters. If the short message contains 8-bit data, this field contains the number of octets. This field is available in SMMO and SMMT CDRs.

Format: 1 HEX byte

2.3.233 SMS_CENTRE

This field contains the short message centre address. The field is available in the SMMO, SMMT, SMMF, SOM, and STM CDRs.

Format: 10 BCD bytes

Digits not in use are filled with 'F'.

2.3.234 SMS_LENGTH

This field contains the length of short message service user data including addresses, types, and short message text. The field is available in the SMMO, SMMT, and SMMF CDRs.

Format: 1 HEX byte

2.3.235 SMS_TYPE

This field contains the type of short message. The field is available in the SMMO, SMMT, SMMF, SOM, and STM CDRs.

The field can have the following values:

00H	Mobile originated short message
01H	Mobile originated command short message
02H	Mobile terminated short message
03H	Mobile terminated status report
05H	Forwarded short message
0BH	Direct delivery short message
0CH	SIP originated message

0DH	SIP terminated message
0EH	SIP forwarded message
0FH	SIP direct message delivery
47H	Mobile-originated short message with status report request

Format: 1 HEX byte

2.3.236 SPEECH_VERSION

This field indicates the used speech version. The field is available in the MOC, MTC, and FORW CDRs.

The SPEECH_VERSION field value is '00' in the case of the data channel or if the speech version is not known.

When the HR is used, the SPEECH_VERSION field is version 1 (value '01') and the CHANNEL_RATE_INDICATOR field is HALF_RATE.

When the FR is used, the SPEECH_VERSION field is version 1 (value '01') and the CHANNEL_RATE_INDICATOR field is FULL_RATE.

When the EFR is used, the SPEECH_VERSION field is version 2 (value '02') and the CHANNEL_RATE_INDICATOR field is FULL_RATE.

When the Adaptive Multi-Rate Speech Codec is used, the SPEECH_VERSION field is version 3 (value '03').

Format: 1 HEX byte

 See also the CHANNEL_RATE_INDICATOR field.

2.3.237 START_TIME

This field contains the action start time and day.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 12 10 11 98 19

time 12:15:40

day 10.11.1998

- **START_TIME (UCA)**
This field contains the date and time of setting up a call. The field is available in the UCA CDR. See the START_TIME field.
- **START_TIME (USSD)**
This field contains the date and time of setting up an USSD event. The field is available in the USSD CDR. See the START_TIME field.
- **START_TIME (HEA)**
This field contains the date and time of the generation of the first CDR in the block. The field is available in the HEA CDR. See the START_TIME field.
- **SET_UP_START_TIME**
This field contains the date and time when the exchange starts setting up a call. For incoming calls, the circuit seizure time is used. The field is available in the MOC, MTC, FORW, and ROAM CDRs. See the START_TIME field.

2.3.238 SS_RECORD_NUMBER

This field contains the supplementary service records for one call are numbered. This field shows the number of SUPS records per call. The FACILITY_USAGE field shows the supplementary services the subscriber in question has used. In case the supplementary service record is not related to any call, this field is filled with 'F's. The field is available in the SUPS CDR.

Format: 1 BCD byte

2.3.239 STREAM_IDENTIFIER

This field contains the stream identifier information at the beginning of the call related to this CDR. The field is used to indicate that co-existent CDRs are created by the multicall. The field is available in the MOC and MTC CDRs.

The field can have the following values:

00H	No bearer
01H	Only one ongoing call
02H - FFH	Multicall

Format: 1 HEX byte

2.3.240 SUBS_OLD_EX_ID

This field contains the ISDN number of the exchange in which area the mobile subscriber is before a location update. In GPRS location updates, this field has a value of the old Serving GPRS support node (SGSN). The field is available in the LOCA CDR and SIPR CDRs. Default field length in the SIPR CDR is 9 BCD bytes.

Format: 9 BCD bytes

Digits not in use are filled with 'F's.

2.3.241 SUBS_NEW_EX_ID

This field contains the ISDN number of the exchange in which area the mobile subscriber is after a location update. In GPRS location updates, this field has a value of the new Serving GPRS support node (SGSN). The field is available in the LOCA CDR and SIPR CDRs. Default field length in the SIPR CDR is 9 BCD bytes.

Format: 9 BCD bytes

Digits not in use are filled with 'F's.

2.3.242 SUBS_ROAMING_STATUS

This field indicates where the roaming subscriber is situated related to his/her home country or network. The field is available in the LCS CDR.

The field can have the following values:

31H	Home country and network
32H	Home country and other network

42H	Other country and network
FFH	Not known

Format: 1 HEX byte

2.3.243 SUPPLEMENTARY_SERVICE_CODE

This field contains the supplementary service identification. The field is available in the SUPS CDR.

The field can have the following values:

00H	All supplementary services
10H	All number identification services
11H	Calling number identification presentation
12H	Calling number identification restriction
13H	Called number identification presentation
14H	Called number identification restriction
15H	Malicious call identification
20H	Call forwarding services
21H	Call forwarding unconditional
28H	all conditional forwarding services
29H	Call forwarding on mobile subscriber busy
2AH	Call forwarding on no reply
2BH	Call forwarding on mobile subscriber not reachable
2CH	Operator controlled call forwarding (not defined in GSM 09.02)
2DH	Night_service (not defined in GSM 09.02)
30H	All call offering services
31H	call transfer
32H	mobile access hunting
3AH	Call deflection, alerting
3BH	Call deflection, immediate
40H	All call completion services
41H	Call waiting
42H	Call hold
43H	Completion of calls to busy subscribers
45H	Multicall
4AH	Completion of calls to not reachable subscribers
50H	All multiparty service

51H	Multiparty service
60H	All community of interest services
61H	Closed user group
70H	All charging services
71H	AoC-I
72H	AoC-C
73H	Reverse charging
80H	All additional information transfer services
81H	User to user signalling 1 (origination/release)
82H	User to user signalling 2 (ringing)
83H	User to user signalling 3 (connection)
90H	All call restriction services
91H	Barring of outgoing calls
92H	Barring of all outgoing calls
93H	Barring of all outgoing international calls
94H	Barring of all outgoing international non-HPLMN directed calls
95H	Barring of all outgoing calls when outside HPLMN (not defined in GSM 09.02)
99H	Barring of incoming calls
9AH	Barring of all incoming calls
9BH	Barring of all incoming calls when outside HPLMN
EEH	AoC-D
EFH	AoC-E
F1H	Call transfer recall (not defined in GSM 09.02)
F2H	USSD (not defined in GSM 09.02)
F5H	IN service (not defined in GSM 09.02)
FFH	Not used

Format: 1 HEX byte

2.3.244 TAPE_BLOCK_TYPE

This field is used to separate different blocks on tape (charging, traffic measurement, and such). The field is available in the HEA CDR.

The value for charging is '01'.

Format: 2 HEX bytes

2.3.245 TARIFF_CHANGE_CNT

This field indicates how many times the tariff has changed during the period covered by the CDR. The field is related to the automaton used. The field is updated only if the charge rate is changed.

Format: 1 BCD byte

- **ORIG_MCZ_TARIFF_CHANGE_CNT**
This field contains the number of the originated main charging zone tariff change. The field is available in the MOC, POC, PBXO, DOC, RCC, and SOC CDRs. See the TARIFF_CHANGE_CNT field.
- **TERM_MCZ_TARIFF_CHANGE_CNT**
This field contains the number of the terminated main charging zone tariff change. The field is available in the MTC, PTC, PBXT, and STC CDRs. See the TARIFF_CHANGE_CNT field.
- **FORW_MCZ_TARIFF_CHANGE_CNT**
This field contains the number of the forwarding main charging zone tariff change. The field is available in the FORW CDR. See the TARIFF_CHANGE_CNT field.
- **ROAM_MCZ_TARIFF_CHANGE_CNT**
This field contains the number of the roaming main charging zone tariff change. The field is available in the ROAM CDR. See the TARIFF_CHANGE_CNT field.
- **IAZ_TARIFF_CHANGE_CNT**
This field contains the number of the incoming accounting zone tariff change. The field is available in the POC and PBXO CDRs. See the TARIFF_CHANGE_CNT field.
- **OAZ_TARIFF_CHANGE_CNT**
This field contains the number of the outgoing accounting zone tariff change. The field is available in the PTC and PBXT CDRs. See the TARIFF_CHANGE_CNT field.
- **CHAR_BAND_TARIFF_CHANGE_CNT**
This field contains the number of the charge band zone tariff change. The field is available in the MOC, FORW, ROAM, POC, PTC, PBXO, and RCC CDRs. See the TARIFF_CHANGE_CNT field.

2.3.246 TARIFF_CLASS

This field contains the tariff class used for this leg of the call is defined at the call setup phase. The zone is either derived from the result of the analysis (the 'charging zone' in the DX terminology) or sent by the SCP. If, however, the SCP sends e-parameters, the tariff class is a default zone. Only one of the tariffs defined for a tariff class is active at any time, depending on the day of week and time of day, as defined by the operator.

Format: 3 BCD bytes

- **TARIFF_CLASS**
The field is available in the INSU CDR. See the TARIFF_CLASS field.
- **ORIG_MCZ_TARIFF_CLASS**
This field contains the tariff class according to the originated main charging zone. The field is available in the MOC, POC, PBXO, DOC, RCC, and SOC CDRs. See the TARIFF_CLASS field.

- **TERM_MCZ_TARIFF_CLASS**
This field contains the tariff class according to the terminated main charging zone. The field is available in the MTC, PTC, PBXT, and STC CDRs. See the TARIFF_CLASS field.
- **ROAM_MCZ_TARIFF_CLASS**
This field contains the tariff class according to the roaming main charging zone. The field is available in the ROAM CDR. See the TARIFF_CLASS field.
- **FORW_MCZ_TARIFF_CLASS**
This field contains the tariff class according to the forwarding main charging zone. The field is available in the FORW CDR. See the TARIFF_CLASS field.
- **IAZ_TARIFF_CLASS**
This field contains the tariff class according to the incoming accounting zone. The field is available in the POC and PBXO CDRs. See the TARIFF_CLASS field.
- **OAZ_TARIFF_CLASS**
This field contains the tariff class according to the outgoing accounting zone. The field is available in the PTC and PBXT CDRs. See the TARIFF_CLASS field.
- **CHAR_BAND_TARIFF_CLASS**
This field contains the tariff class according to the charge band zone. The field is available in the MOC, FORW, ROAM, POC, PTC, PBXO, and RCC CDRs. See the TARIFF_CLASS field.

2.3.247 TARIFF_CLASS (SMS)

The tariff class of an originating short message service is available only if the PID (Process Identifier)/prefix analysis is created. The tariff class of a terminating short message service is available only in the GMSC. The field is available in the SMMO, SMMT, SOM, and STM CDRs.

Format: 3 BCD bytes

2.3.248 TERMINATING_CAMEL_SERVICE_KEY

This field contains the terminating service identifier. The values are described in the SCF. The field is available in FORW CDR.

The field can have the following values:

0H...7FFFFFFFFH	Possible values
80000000H...FFFFFFFFEH	Not used

Format: 1 HEX dword

2.3.249 TERMINATING_FCI_DATA

This field contains the transparent IN-service information. The content of the field is defined by SCP. The field is available in the FORW CDR.

TRANSPARENT DATA (bytes 10-40)

Format: 40 bytes

2.3.250 TICKET_TYPE

This field indicates the type of CDR used. The field is available in the POC and PTC CDRs.

The field can have the following values:

00H	POC/PTC
01H	VPSO/VPST
02H	Handover POC/PTC
03H	IP trunk
04H	CMN

Format: 1 HEX byte

2.3.251 TNS_CARRIER_CODE

This field contains an ISUP parameter in the setup message, which conveys the Carrier Identification Code (CIC). This parameter is used with or instead of the CIP. Basically, the TNS and the CIP both convey the same information. The field is available in the MOC, FORW, ROAM, PTC, PBXO, UCA, RCC, and SOC CDRs.

Format: 2 HEX bytes

2.3.252 TNS_CIRCUIT_CODE

This field contains the circuit code indicator of the ANSI ISUP parameter Transit Network Selection (TNS). The field is available in the MOC, FORW, ROAM, PTC, PBXO, UCA, RCC, and SOC CDRs.

The field can have the following values:

00H	Unspecified
01H	International call, no operator requested
02H	International call, operator requested
03H	Network-specific value
04H	Network-specific value
05H	Network-specific value
06H	Network-specific value
07H	Network-specific value
08H	Network-specific value
09H	Network-specific value
0AH	Network-specific value

Format: 1 HEX byte

2.3.253 TON

This information type deals with the presentation of the subscriber's number. Constants belong to the internal coding standard of the DX used in the CC and the CCIF interfaces (interworking layer).

The field can have the following values:

00H	Information is not available.
01H	Value is not allowed to use.
02H	Field value unknown to SS (and to DX)
04H	Unknown number from destination exchange to user
05H	International
06H	National
07H	Network specified
08H	Subscriber
09H	Abbreviated
0AH	Dedicated PAD Access
0BH	Undefined Carrier Access Code
0CH	Carrier Access Code of national operator
0DH	Carrier Access Code of operator
0EH	International number, operator requested
0FH	National number, operator requested
10H	Level 2 regional number
11H	Level 1 regional number
12H	Level 0 regional number
13H	PISN-specific number
14H	National network routing number
15H	Network-specific network routing number
16H	Concatenated network routing number
17H	Ported number
18H	Ascii
FEH	Dialled with Escape code (option, only dialled_digits_ton-field)
FFH	Does not exist

Format: 1 HEX byte

- **CALLING_NUMBER_TON**

This field contains the type of the calling subscriber's number. The field is available in the MOC, MTC, ROAM, SMMO, SMMT, POC, PTC, PBXO, PBXT, UCA, DOC, RCC, SMMF, SOC, STC, SOM, STM and INSU CDRs. See the TON field.

-
- **CALLED_NUMBER_TON**
This field contains the type of the called subscriber's number. The field is available in the MOC, MTC, ROAM, SUPS, SMMO, SMMT, POC, PTC, PBXO, PBXT, UCA, DOC, RCC, SMMF, SOC, STC, SOM, STM and INSU CDRs. See the TON field.
 - **CT_THIRD_PARTY_NUMBER_TON**
This field contains the type of the third party subscriber number in a call transfer call scenario. The field is available in the MOC, MTC and ROAM CDRs. See the TON field.
 - **DIALLED_DIGITS_TON**
This field contains the type of the dialled digits. The field is available in the MOC, SMMO, POC, PBXO, UCA, RCC, SOM, SOC, MTC, ROAM and INSU CDRs. See the TON field.
 - **INITIAL_ORIG_CALLED_NUMBER_TON**
This field contains the type of the initial original called subscriber's number. The field is available in the POC CDR. See the TON field.
 - **ORIG_CALLING_NUMBER_TON**
This field contains the type of the original calling subscriber's number. The field is available in the MTC, FORW, and ROAM CDRs. See the TON field.
 - **ORIG_CALLED_NUMBER_TON**
This field contains the type of the calling subscriber's number. The field is available in the FORW CDR. See TON field.
 - **FORWARDING_NUMBER_TON**
This field contains the type of the forwarding subscriber's number. The field is available in the FORW CDR. See the TON field.
 - **FORWARDING_MSRLN_TON**
This field contains the type of the forwarding mobile subscriber roaming number. The field is available in the FORW CDR. See the TON field.
 - **FORWARDED_TO_NUMBER_TON**
This field contains the type of the forwarded-to subscriber's number. The field is available in the FORW, UCA, and SMMF CDRs. See the TON field.
 - **CONNECTED_TO_NUMBER_TON**
This field contains the type of the connected-to subscriber's number. The field is available in the MOC, FORW, and RCC CDRs. See the TON field.
 - **SERVED_NUMBER_TON**
This field contains the type of the served subscriber's number. The field is available in the SUPS, LOCA, HW, LCS, USSD, SIPR and INSU CDRs. See the TON field.
 - **CALLED_MSRLN_TON**
This field contains the type of the called roaming subscriber's number. The field is available in the MOC, ROAM, POC, PTC, PBXO, RCC, UCA, and SOC CDRs. See the TON field.
 - **FORWARDED_TO_MSRLN_TON**
This field contains the type of the forwarded-to roaming subscriber's number. The field is available in the FORW CDR. See the TON field.
 - **CHARGE_NUMBER_TON**
This field contains the type of the chargeable subscriber number. This field is only used with Feature 818: World Zone 1 Equal Access and Numbering Plan. The field is available in the MTC, FORW, ROAM, SUPS, POC, PTC, PBXO, PBXT, UCA, and RCC CDRs. See the TON field.

- **OUTPULSED_NUMBER_TON**
This field contains the type of the outpulsed number. The outpulsed number is the number which the MSC sends to the network. The field is available in the MOC, PTC, PBXT, UCA, and ROAM CDRs. See the TON field.
- **REDIRECTING_NUMBER_TON**
This field contains the type of the redirecting subscriber number. The field is available in the MTC, ROAM, POC, PTC, PBXO, PBXT, FORW, RCC, SOC, STC and INSU CDRs. See the TON field.
- **ORIG_REDIRECTING_NUMBER_TON**
This field contains the type of the original redirecting subscriber number. The field is available in the POC CDR. See the TON field.
- **DESTINATION_NUMBER_TON**
This field contains the type of the destination number to whom the call is routed to if changed by a CAMEL or SINAP dialogue. The field is available in the COC, CTC, INSU and INUC CDRs. See the TON field.
- **LOC_ROUTING_NUMBER_TON**
This field contains the type of location routing number of the recipient network. The field is available in the MOC, MTC, FORW, POC, PTC, PBXO, and UCA CDRs. See the TON field.
- **SCF_ADDRESS_TON**
This field contains the type of the SCF number, which is serving the subscriber. The field is available in COC, CTC, SMMO, SMMT and INUC CDRs. See the TON field.
- **CLIENT_EXTERNAL_ID_TON**
This field contains the type of the client external number to which the subscriber report is sent. The field is available in the LCS CDR. See the TON field.
- **CAMEL_EXCHANGE_ID_TON**
This field contains the type of the MSC address in question. The field is available in MOC, MTC, FORW, ROAM, SUPS, SMMO, SMMT, POC, PBXO, UCA, COC, CTC, IN4, INJ5, SOC, STC, SOM, STM, INSU and INUC CDRs. See the TON field.
- **CALLING_SUBS_LAST_EX_ID_TON**
This field contains the type of the calling subscriber's last MSC address. The field is available in the MOC CDR. See the TON field.
- **CALLED_SUBS_LAST_EX_ID_TON**
This field contains the type of the called subscriber's last MSC address. The field is available in the MOC and MTC CDRs. See the TON field.
- **FORWARDING_LAST_EX_ID_TON**
This field contains the type of the forwarding subscriber's last MSC address. The field is available in the FORW CDR. See the TON field.
- **FORWARDED_TO_LAST_EX_ID_TON**
This field contains the type of the forwarded to subscriber's last MSC address. The field is available in the FORW CDR. See the TON field.
- **VIRTUAL_MSC_ID_TON**
This field contains the type of the virtual MSC address. The field is available in the MOC, MTC, and FORW CDR. See the TON field.
- **LOCATION_NUMBER_TON**
This field contains the type of the virtual MSC address. The field is available in the MOC, MTC, POC, PTC, FORW, ROAM, SMMO, SMMT, SUPS and USSD CDRs. See the TON field.

- **EXTERNAL_ID_ADDRESS_TON**

This field contains the type of the IP address number of the external server which provides announcement service. The field is available in the DOC CDR. See the TON field.

2.3.254 **TRANSPARENT_DATA**

This field contains the transparent IN-service information. The content of the field is defined by the SCP. The first byte contains the data length. The field is available in INSU CDR.

Format: 1 + 100 HEX bytes

2.3.255 **TRIG_BCSM_TYPE**

This field indicates which basic call state model has triggered the service. The field can be found in the INSU and INUC CDRs.

The field can have the following values:

00H	Type of basic call state model not defined
01H	Basic call state model for originating side
02H	Basic call state model for terminating side
04H	Basic call state model for terminating gateway MSCi
05H	Originating basic call state model for call forwarding
06H	Originating side for COBI call
07H	Terminating side for COBI call
08H	Basic call state model for ICA call
09H	Mobile originating basic call state model (visible in INSU CDR only)
0AH	Trunk originating basic call state model (visible in INSU CDR only)
0BH	SIP-access originating basic call state model (visible in INSU CDR only)
0CH	PBX-originating basic call state model (visible in INSU CDR only)
FFH	Unknown

2.3.256 **TRIG_CALL_REFERENCE**

This field contains a unique call reference of the call where an announcement is played. The field is available in the DOC CDR. See the CALL_REFERENCE field.

Format: 5 HEX bytes, word + word + byte.

2.3.257 **TRIG_CALL_REFERENCE_TIME**

This field contains the time when the call index is reserved for the call where an announcement is played. The field is available in the DOC CDR. See the CALL_REFERENCE_TIME.

Format: 5 BCD bytes + 1 BCD word: SSMMHH DDMMYYYY
(time = 3 bytes, day = 2 bytes + word)

Example of coding: 40 15 20 10 06 01 20

time 20:15:40

day 10.06.2001

2.3.258 TRIG_LEG_CALL_REFERENCE

This field contains the leg call reference of the call leg where the triggering of the used service happened. The field is available in the INSU CDR. See the LEG_CALL_REFERENCE field for more information.

Format: 5 HEX bytes, word + word + byte

2.3.259 UI_TYPE

This field indicates the type of user interaction, which can be either internal or external, based on the location of the Intelligent Peripheral. Filled only in case of the CDR is generated for a UI-connection, otherwise it has initial value This field is available in the INSU CDR.

The field can have the following values:

01H Internal user interaction
02H External user interaction
FFH Information is not available

Format: 1 HEX byte

2.3.260 USED_AIR_INTERFACE_USER_RATE

This field contains the used data rate of the UMTS-based interface between a third generation radio network and an ATM Module. The field is available in the MOC, MTC, and UCA CDRs.

The field can have the following values:

00H	Not used
01H	14,4 kbit/s
02H	28,8 kbit/s
03H	32,0 kbit/s
04H	57,6 kbit/s
05H	64,0 kbit/s

Format: 1 HEX byte

2.3.261 USED_CHANNEL_CODING

This field indicates the channel coding used. The field is available in the MOC, MTC, and UCA CDRs.

The field can have the following values:

01H	28,8 kbit/s (The radio interface rate is 29,0 kbit/s)
-----	-------------------------------------------------------

02H	32,0 kbit/s (The radio interface rate is 32,0 kbit/s)
03H	43,2 kbit/s (The radio interface rate is 43,5 kbit/s)
0BH	9,6 kbit/s (The radio interface rate is 12,0 kbit/s)
0CH	4,8 kbit/s (The radio interface rate is 6,0 kbit/s)
0EH	14,4 kbit/s (The radio interface rate is 14,5 kbit/s)

Format: 1 HEX byte

2.3.262 USED_NUMBER_OF_CHANNELS

This field indicates the maximum number of traffic channels used by the network. The field is available in the MOC, MTC, and UCA CDRs.

The field can have the following values:

00H	None
01H	Stand Alone Dedicated Control Channel (SDCCH)
04H	Eight full rate traffic channels
08H	One full rate traffic channel
09H	One half rate traffic channel
0AH	Two full rate traffic channels
0BH	Three full rate traffic channels
0CH	Four full rate traffic channels
0DH	Five full rate traffic channels
0EH	Six full rate traffic channels
0FH	Seven full rate traffic channels

Format: 1 HEX byte

2.3.263 USED_POSITION_METHOD

This field indicates the type of positioning method used. The field consists of a bit structure that is one byte long, as described below. Every byte tells its own positioning method and if it is used. If the information of the all position methods are not available, the not used bytes are filled with 'FF'. The field is available in the LCS CDR.

Description of one byte:

MSB							LSB
7	6	5	4	3	2	1	0
posi- tioning method	use of posi- tioning method						

The meaning of the bits:

bits 7...3	Positioning method (see values below)
bits 2...0	Use of positioning method (see values below)

The positioning method can have the following values:

00H	Timing advance
01H	Time of arrival
02H	Angle of arrival
03H	Mobile-assisted enhanced observed time difference
04H	Mobile-based enhanced observed time difference
05H	Mobile-assisted global positioning system
06H	Mobile-based global positioning system
07H	Conventional global positioning system
08H	Mobile-based observed time difference of arrival
09H	Mobile-assisted observed time difference of arrival

The use of positioning method can have the following values:

00H	Unsuccessful
01H	Not used
02H	Used to verify but not generate location
03H	Used to generate location
04H	Undetermined

Format: 8 HEX bytes

Digits not in use are filled with 'F'.

2.3.264 USED_UTRAN_POS_METHOD

This field indicates the type of the used positioning method if the user is using UTRAN. The field consists of a bit structure that is one byte long as described below. Every byte tells its own positioning method and whether it is used or not. If the information all positioning methods are not available the not used bytes are filled with 'FF'. The field is available in the LCS charging record.

Description of one byte:

MSB							LSB
7	6	5	4	3	2	1	0

posi- tioning method	use of posi- tioning method						
----------------------------	--------------------------------------	--	--	--	--	--	--

The meaning of the bits:

bits 7...3	Positioning method (see the values below)
bits 2...0	Use of positioning method (see the values below)

The values for the UTRAN positioning method are:

05H	Mobile assisted GPS
06H	Mobile based GPS
07H	Conventional GPS
09H	OTDOA
0AH	IPDL
0BH	RTT
0CH	Cell ID

The values for the UTRAN positioning method are:

00H	Unsuccessful
01H	Not used
02H	Used to verify but not generate location
03H	Used to generate location
04H	Undetermined

Format: 8 HEX bytes
Digits not in use are filled with 'F'.

2.3.265 USER_PLANE_INDEX

This field contains the identifier for User Plane Destination. The field indicates the connection to MGWs controlled by one MSS. User Plane Destination is used as input for user plane routing to decide the MGW for optimal routing of the user plane.

Format: 1 BCD word

- **INSIDE_USER_PLANE_INDEX**

This field contains the incoming side identifier for User Plane Destination. The field is available in the MTC, FORW, ROAM, POC, UCA, RCC, SOC, PBXO and PBXT CDRs. See the USER_PLANE_INDEX field.

- **OUTSIDE_USER_PLANE_INDEX**

This field contains the outgoing side identifier for User Plane Destination. The field is available in the MOC, FORW, ROAM, PTC, RCC, STC, PBXO and PBXT CDRs. See the USER_PLANE_INDEX field.

2.3.266 USSD_STRING

This field contains the first 30 characters of the USSD string which is sent by the subscriber in a mobile initiated USSD. The coding scheme of the USSD STRING is 8-bit ASCII. This field is available in the USSD CDR.

2.3.267 VERTICAL_ACCURACY

This field indicates the required vertical accuracy of the location estimate. The field is used to present the quality of the service. The field values according to *3GPP TS 29.002: Mobile Application Part (MAP) specification*. If the information is not available, the field is filled with 'FF'. The field is available in the LCS CDR.


Format: 1 HEX byte

2.3.268 VIRTUAL_MSC_ID

This field contains the virtual MSC address of the exchange. The field is available in the MOC, MTC, and FORW CDRs.

Format: 16 HEX bytes

Digits not in use are filled with 'F's.

 In CFU and CFNR cases, the field is filled with physical GMSC (VOMSC) address in trunk originated call case in this same MSC and with virtual MSC address corresponding to the location area where the originating subscriber started the first call in mobile originated call case in this same MSC. In CFNR with late call forwarding case, the field is filled with virtual MSC address based on the location of the forwarding subscriber (if not available, the field is empty). In CFNA and CFB call cases, the field is filled with the virtual MSC address based on the location area of the last successful location update.

2.3.269 VMSC_NUMBER

This field contains the number of the visited MSC. If the short message is sent via the GPRS network, this field has the address of the SGSN.

Format: 10 BCD bytes

- **CALLING_VMSC_NUMBER**

This field contains the calling subscriber's visited MSC number. The filling of this field, in the SMMO CDRs made in the IWMSC, is related to the SMSC and the PRFILE parameters. The calling subscriber VMSC number of a terminating short message service is available only in the GMSC. The field is available in the SMMO, SMMT, SOM, and STM CDRs. See the VMSC_NUMBER field.

- **CALLED_VMSC_NUMBER**

This field contains the called subscriber's visited MSC number. The field is used in the SMMT, SMMF, and STM CDRs. See the VMSC_NUMBER field.

2.4 Coding of charging record fields

The coding of different types used in call records:

HEX byte

The numerical value in HEXadecimal form.

values:	00H - FFH	
coding example:		
	bin:	high 0001\$0010 low
	HEX:	h 12H I
	dec:	18
HEX dump:	12	

2 HEX bytes

The numerical value in HEXadecimal form.

values:	0000H - FFFFH	
coding example:		
	bin:	high 0001\$0010\$0011\$0100 low
	HEX:	h 1234H I
	dec:	4660
HEX dump:	21 43	

HEX word

The numerical value in HEXadecimal form.

values:	0000H - FFFFH	
coding example:		
	bin:	high 0100\$0011\$0010\$0001 low
	HEX:	h 4321I
	dec:	17185
HEX dump:	21 43	

HEX dword

The numerical value in HEXadecimal form.

values:	00000000H - FFFFFFFFH	
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coding example:		
	bin:	high 0010\$0000\$0000\$1010\$0000 low
	HEX:	h 000200A0 l
	dec:	131232
HEX dump:	A0 00 02 00	

Bcd byte

The numerical value in bcd form.

values:	00 - 99	
coding example:		
	dec:	12
	bin:	high 0001\$0010 low
	HEX:	h 12H l
HEX dump:	12	

Bcd word

The numerical value in bcd form.

values:	0000 - 9999	
coding example:		
	dec:	1234
	bin:	high 0001\$0010\$0011\$0100 low
	HEX:	h 1234H l
HEX dump:	34 12	

Bcd dword

The numerical value in bcd form.

values:	00000000 - 99999999	
coding example:		
	dec:	12345678
	bin:	high 0001\$0010\$0011\$0100\$0101\$0110\$0111 \$1000 low
	HEX:	h 12345678 l

HEX dump:	78 56 34 12	
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3/4 bcd bytes (except PNI)

The numerical value in bcd form.

values:	000000 - 999999	
coding example:		
	dec:	123456
	bin:	high 0001\$0010\$0011\$0100\$0101\$0110 low
	HEX:	h 123456 l
HEX dump:	56 34 12	

i The types described above use leading zeros.

For example:

bcd dword:		
	dec:	123
	bin:	high 0000\$0000\$0000\$0000\$0000\$0001\$001 0\$0011 low
	HEX:	h 00000123 l
HEX dump:	23 01 00 00	

8 - 16 bcd/HEX bytes (and also PNI)

Used in IMSI, IMEI, subscriber numbers, and exchange ID.

coding example:		
	imsi	244051111
	bin:	high 1111\$0001\$0001\$0001\$0001\$1001\$0000 \$0100\$0100\$0010 low
	HEX:	h FFFFFFFF111150442H l
HEX dump:	42 04 15 11 F1 FF FF FF	

i Digits not in use are filled with 'F's.

1-20 ASCII HEX bytes

Used in circuit group and MGW names.

coding example:		
	mgw_name	Nokia Siemens Networks Fi
	bin:	high 0100\$1110\$0110\$1111\$0110\$1011\$0110 \$1001\$0110\$0001\$0010\$0000\$0100\$011 0\$0110\$1001\$0000\$...\$0000\$ low
	HEX:	h 4E6F6B69612046690000000000000000 0000000 I
HEX dump:	4E 6F 6B 69 61 20 46 69 00 00 00 00 00 00 00 00 00 00 00 00	

Timestamp

5 bcd bytes + bcd word.

coding example:		
	time:	sec:46 min:58 hour:15 day:09 month:04 year:1996
	bin:	high 0001\$1001\$1001\$0110\$0000\$0100\$0000 \$1001\$0001\$0101\$0101\$1000\$0100\$011 0 low
	HEX:	h 19960409155846H I
HEX dump:	46 58 15 09 04 96 19	

For example, the HEX-dump of a call record looks like this, here 26H is the first byte and it is 100110B in binary form:

User data:

```

26 02 01 03 00 00 00 00 FF 62 31 41 24 00 00 94
71 37 78 FF FF FF FF FF FF 00 00 00 62 02 03 F6
FF FF FF FF 11 11 11 77 84 70 00 0F 94 71 37 11
60 FF FF FF FF FF 00 00 62 02 03 F7 FF FF FF FF
22 22 22 77 84 70 01 0F 06 71 37 11 70 FF FF FF
FF FF FF FF FF 00 01 04 10 77 13 01 F7 FF FF FF
FF FF FF FF 03 00 00 11 94 71 37 78 FF FF FF FF
FF FF 03 00 00 11 0A 00 0A 00 94 71 37 78 FF FF
FF FF FF FF 0A 00 0A 00 00 05 04 00 00 11 A0 00
02 00 FF 18 22 05 09 16 05 02 20 22 05 09 16 05
02 20 25 05 09 16 05 02 20 28 05 09 16 05 02 20
39 05 09 16 05 02 20 00 00 00 00 00 00 03 00 00
00 00 F1 00 00 00 12 00 00 51 11 00 00 01 10 00
34 12 0A 01 06 71 07 03 F0 FF FF FF FF FF FF FF
FF 10 00 10 00 05 05 05 05 05 06 05 71 37 11 70
FF FF FF FF FF FF FF FF 03 44 6F 00 05 01 00 00
00 00 01 01 31 41 24 00 00 28 05 09 16 05 02 20
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
05 94 71 37 11 60 FF FF FF FF FF FF FF 01 02 03
04 05 06 07 FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF FF 07 15 03 20 87 20 87 05 20 87 00
01 01 01 FF FF FF FF FF FF 00 FF FF FF 01 00 00
00 02 00 00 40 04 41 31 00 40 00 00 05 94 71 37
78 FF FF FF FF FF 00 FF 14 00 0A 00 00 00 64 00
00 00 00 00 00 00 06 00 01 12 00 03 FF FF FF FF
FF FF FF FF FF FF FF FF FF 00 FF 00 11 05 05 62
F2 30 FF 62 F2 30 FF 62 F2 30 FF 62 F2 30 FF 01
00 00 22 05 09 16 05 02 20 01 00 40 07 02 00 03
17 70 00 94 71 37 78 FF FF FF FF FF FF FF FF FF
FF FF FF 04 18 00 00 00 94 71 57 71 FF FF FF FF
FF FF FF FF FF FF FF FF 05 94 71 07 00 00 42 FF
FF FF 04 05 10 77 14 07 00 F1 FF FF FF FF FF FF
FF FF FF FF 06 05 71 37 11 70 FF FF FF FF FF FF
FF FF FF FF FF FF 01 11 11 11 77 84 70 00 12 22
22 22 77 84 70 01 12 47 45 4D 53 43 20 20 20 00
05 09 00 02 00 47 45 4E 31 20 20 20 20 02 06
05 94 71 37 11 60 FF FF FF FF FF FF FF
01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
11 12 FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF FF FF FF FF FF 0A 00 00 01

```

The fields are as described below:

record_length	26 02 1 HEX word 0226H = 550 decimal
record_type	01 1 BCD byte 01 mobile-originated call
record_number	03 00 00 00 1 BCD dword 00000003

record_status	00 1 HEX byte ok
check_sum	FF 62 1 HEX word C8E6
call_reference	31 41 24 00 00 word + word + byte comp:4131 process:0024 focus:00
exchange_id	94 71 37 78 FF FF FF FF FF 10 BCD bytes 49177387
intermediate_record_number	00 1 BCD byte 00
intermediate_charging_ind	00 1 HEX byte normal record
number_of_ss_records	00 1 BCD byte no SUPS records
calling_imsi	62 02 03 F6 FF FF FF FF 8 BCD bytes 2620306
calling_imei	11 11 11 77 84 70 00 0F 8 BCD bytes as calling_imsi
calling_number	94 71 37 11 60 FF FF FF FF FF 10 HEX bytes 4917731106
calling_category	00 1 HEX byte 00 Ordinary 1
calling_ms_classmark	00 1 HEX byte class 1, vehicle, and portable
called_imsi	62 02 03 F7 FF FF FF FF as calling_imsi

called_imei	22 22 22 77 84 70 01 0F as calling_imei
called_number_ton	06 HEX byte 06 national
called_number	71 37 11 70 FF FF FF FF FF FF FF 12 HEX bytes 17731107
called_category	00 1 HEX byte 00 Ordinary 1
called_ms_classmark	01 1 HEX byte class 1, vehicle, and portable
dialled_digits_ton	04 1 HEX byte 04 unknown
dialled_digits	10 77 13 01 F7 FF FF FF FF FF FF 12 HEX bytes 017731107
calling_subscriber_first_lac	03 00 1 HEX word 0003
calling_subscriber_first_ci	00 11 1 HEX word 1100
calling_subscriber_last_exchange_id	94 71 37 78 FF FF FF FF FF FF as exchange id
calling_subscriber_last_lac	03 00 1 HEX word 0003
calling_subscriber_last_ci	00 11 1 HEX word 1100
called_subscriber_first_lac	0A 00 as calling_subscriber
called_subscriber_first_ci	0A 00 as calling_subscriber

called_subscriber_last_ex_id	94 71 37 78 FF FF FF FF FF FF as calling_subscriber
called_subscriber_last_lac	0A 00 as calling_subscriber
called_subscriber_last_ci	0A 00 as calling_subscriber
out_circuit_group	00 05 1 BCD word 0500
out_circuit	04 00 1 BCD word 0004
basic_service_type	00 1 HEX byte 00 teleservice
basic_service_code	11 1 HEX byte 11 telephony
facility_usage	A0 00 02 00 1 HEX dword 000200A0HEX 0000\$0000\$0000\$0010\$0000\$ 0000\$1010\$0000 hold, mpty, camel
non_transparency_indicator	FF 1 HEX byte transparent
channel_rate_indicator	18 1 HEX byte 1: full rate, wanted 8: full rate, used
set_up_start_time	22 05 09 16 05 02 20 5 BCD bytes + BCD word (timestamp) s:22 m:05 h:09 d:16 m:05 y:2002
in_channel_allocated_time	22 05 09 16 05 02 20 as set_up_start_time
b_idle_time	25 05 09 16 05 02 20 as set_up_start_time

charging_start_time	28 05 09 16 05 02 20 as set_up_start_time
charging_end_time	39 05 09 16 05 02 20 as set_up_start_time
cause_for_termination	00 00 00 00 1 HEX dword 00000000 normal end of call
data_volume	00 00 1 BCD word not used yet
call_type	03 1 HEX byte 03 outgoing
dtmf_indicator	00 1 HEX byte dtmf not used
aoc_indicator	00 1 HEX byte aoc not used
pni	00 00 F1 3 BCD bytes (only 5 digits used) 00001
redirected_indicator	00 1 HEX byte 00 redirected not used
cdb_indicator	00 1 HEX byte 00 cdb not used
orig_mcz_chrg_type	00 1 HEX byte 00 chargeable call
orig_mcz_duration	12 00 00 3 BCD bytes 12 sec
orig_mcz_duration_ten_ms	51 11 00 00 4 BCD bytes 11 sec 51 ten ms

orig_mcz_tariff_class	01 10 00 3 BCD bytes 001001
orig_mcz_pulses	34 12 1 BCD word 1234
orig_mcz_change_percent	0A 1 HEX byte 0A = 10 %
orig_mcz_change_direction	01 1 HEX byte 01, decrease
called_msrn_ton	06 1 HEX byte 06 national
called_msrn	71 07 03 F0 FF FF FF FF FF FF FF 12 HEX bytes 1770300
calling_charging_area	10 00 1 HEX word 0010
called_charging_area	10 00 1 HEX word 0010
called_msrn_npi	05 1 HEX byte 05 isdn_teleph
calling_number_ton	05 1 HEX byte 05 international
calling_number_npi	05 1 HEX byte 05 isdn_teleph
called_number_npi	05 1 HEX byte 05 isdn_teleph

dialled_digits_npi	05 1 HEX byte 05 isdn_teleph
connected_to_number_ton	06 1 HEX byte 06 national
connected_to_number_npi	05 1 HEX byte 05 isdn_teleph
connected_to_number	71 37 11 70 FF FF FF FF FF FF FF 12 HEX bytes 17731107
cug_interlock	03 44 6F 00 2 bytes BCD + HEX word network indicator: 0344 CUG code: 111 (6Fh)
cug_outgoing_access	05 1 HEX byte 05 outgoing access allowed
hot_billing_record_number	01 00 00 00 1 BCD dword 00000001
number_of_in_records	00 1 HEX byte 00 no IN records
regional_subs_indicator	01 1 HEX byte 01 home area charging
regional_subs_location_type	01 1 HEX byte 01 in home area
leg_call_reference	31 41 24 00 00 as call_reference
answer time	28 05 09 16 05 02 20 as set_up_start_time
char_band_chrg_type	FF 1 HEX byte automaton not defined

char_band_duration	FF FF FF 3 BCD bytes not defined
char_band_duration_ten_ms	FF FF FF FF 4 BCD bytes not defined
char_band_tariff_class	FF FF FF 3 BCD bytes not defined
charg_band_pulses	FF FF 1 BCD word not defined
char_band_change_percent	FF 1 HEX byte not defined
char_band_change_direction	FF 1 HEX byte not defined
charge_number_ton	05 1 HEX byte 05 national
charge_number_npi	05 1 HEX byte 05 isdn teleph
charge_number	94 71 37 11 60 FF FF FF FF FF FF FF 12 HEX bytes 4917731106
charge_nature	07 1 HEX byte OLI and CPN received
oli	15 1 HEX byte 15 cellular service –mobile dn
tns_circuit_code	03 1 HEX byte 03 network-specific

tns_carrier_code	20 87 2 HEX bytes 0278
cip_carrier_code	20 87 2 HEX bytes as tns_carrier_code
carrier_selection	05 1 HEX byte 05 international
pic	20 87 2 HEX bytes 0278
routing_category	00 1 HEX byte not used
speech_version	01 1 HEX byte speech version 1
ms_classmark3	01 1 HEX byte single band
calling_cell_band	01 1 HEX byte GSM
req_fixed_network_user_rate	FF 1 HEX byte not used, filled only in data calls
req_other_modem_type	FF 1 HEX byte not used, filled only in data calls
acceptable_channel_codings	FF 1 HEX byte not used, filled only in data calls
req_number_of_channels	FF 1 HEX byte not used, filled only in data calls

req_air_interface_user_rate	FF 1 HEX byte not used, filled only in data calls
req_user_initiated_mod_ind	FF 1 HEX byte not used, filled only in data calls
used_number_of_channels	00 1 HEX byte not used, filled only in data calls
used_other_modem_type	FF 1 HEX byte not used, filled only in data calls
used_fixed_nw_user_rate	FF 1 HEX byte not used, filled only in data calls
used_channel_coding	FF 1 HEX byte not used, filled only in data calls
intermediate_chrg_cause	01 00 00 00 1 HEX dword 00000001H 0000\$0000\$0000\$0001\$ value at the end of call
cug_information	02 1 HEX byte 02 different CUG
in_category_key	00 00 2 HEX bytes like pic
camel_call_reference	40 04 41 31 00 40 00 00 8 HEX bytes 4004413100400000
camel_exchange_id_ton	05 1 HEX byte 05 international
camel_exchange_id	94 71 37 78 FF FF FF FF FF 9 HEX bytes 49177387

orig_mcz_tariff_change_cnt	00 1 BCD byte no charge rate changes
char_band_tariff_change_cnt	FF 1 BCD byte not defined
calling_modify_parameters	14 00 0A 00 00 00 64 00 00 00 00 00 00 00 7 HEX word e1= 14, e2 = A, e3= 0, e4=64, e7 = 0
orig_mcz_modify_percent	06 00 1 HEX word 0006 = 6 %
orig_mcz_modify_direction	01 1 HEX byte 01 decrease
orig_dialling_class	12 00 1 HEX word 0012
npdb_query_status	03 1 HEX byte 03 Query is done and number is ported
loc_routing_number	FF FF FF FF FF FF FF FF FF FF FF FF as called_number
scp_connection	FF 1 HEX byte not used
number_of_all_in_records	00 1 HEX byte no IN records
loc_routing_number_ton	FF 1 HEX byte not exist
add_routing_category	00 11 1 HEX word 1100
calling_subs_last_ex_id_ton	05 1 HEX byte 05 international

called_subscriber_last_ex_id_ton	05 1 HEX byte 05 international
calling_subscriber_first_mcc	62 F2 2 HEX bytes 262
calling_subscriber_first_mnc	30 FF 2 HEX bytes 03
calling_subscriber_last_mcc	62 F2 as calling_subscriber_first_mcc
calling_subscriber_last_mnc	30 FF as calling_subscriber_first_mnc
called_subscriber_first_mcc	62 F2 as calling_subscriber_first_mcc
called_subscriber_first_mnc	30 FF as calling_subscriber_first_mnc
called_subscriber_last_mcc	62 F2 as calling_subscriber_first_mcc
called_subscriber_last_mnc	30 FF as calling_subscriber_first_mnc
radio_network_type	01 1 HEX byte 01 GSM
used_air_interface_user_rate	00 1 HEX byte not used, filled only in data calls
stream_identifier	00 1 HEX byte no bearer
call_reference_time	22 05 09 16 05 02 20 as set_up_start_time
outside_user_plane_index	01 00 1 BCD word 0001
outside_control_plane_index	40 07 1 BCD word 740

out_bnc_connection_type	02 1 HEX byte 02, AAL2
emergency_call_category	00 1 HEX byte 00H not used 0000\$0000\$0000\$0000\$
rate_adaption	03 1 HEX byte 03, V.120 rate adaption
jip	17 70 00 3 HEX bytes 71 07 00
global_call_reference	94 71 37 78 FF FF FF FF FF FF FF FF FF FF 04 18 00 00 00 16 BCD bytes + 5 HEX bytes 94 71 37 78 FF FF FF FF FF FF FF FF FF FF 04 18 00 00 00
virtual_msc_id	49 17 75 17 FF FF FF FF FF FF FF FF FF FF 16 HEX bytes 94 71 57 71 FF FF FF FF FF FF FF FF FF FF
scf_address_ton	05 1 HEX byte 05 international
scf_address	94 71 07 00 00 42 FF FF FF 9 BCD bytes 491770000024
destination_number_ton	04 1 HEX byte 04, unknown number from destination exchange to user
destination_number_npi	05 1 HEX byte 05, international
destination_number	10 77 14 07 00 F1 FF FF FF FF FF FF 12 HEX bytes 01 77 41 70 00 1F FF FF FF FF FF FF

outpulsed_number_ton	06 1 HEX byte 06 national
outpulsed_number_npi	05 1 HEX byte 05 ISDN telephony
outpulsed_number	71 37 11 70 FF FF FF FF FF FF FF FF FF FF FF FF 16 HEX bytes 17 73 11 07 FF FF FF FF FF FF FF FF FF FF FF FF
optimal_routing_indicator	01 HEX byte 01 optimal routing has happened
calling_imeisv	11 11 11 77 84 70 00 12 8 BCD bytes 1111117748070021
called_imeisv	22 22 22 77 84 70 01 12 8 BCD bytes as calling_imeisv
out_circuit_group_name	47 45 4D 53 43 20 20 20 8 HEX bytes 47454D5343202020 BEMSC
in_circuit_group	00 05 1 BCD word 0500
in_circuit	09 00 1 BCD word 0009
virtual_msc_id_ton	02 1 HEX byte 02 field value unknown to SS (and to DX)
virtual_msc_id_npi	00 1 HEX byte 00, information not available
in_circuit_group_name	47 45 4E 31 20 20 20 20 8 HEX bytes 47454E3120202020 GEN1

disconnecting_party	02 1 HEX byte 02 released from outgoing side
location_number_ton	06 1 HEX byte 06 national
location_number_npi	05 1 HEX byte 06 ISDN teleph
location_number	94 71 37 11 60 FF FF FF FF FF FF FF 12 HEX bytes 4917731106
fci_data	01 02 03 04 05 06 07 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0 - 40 bytes 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 11 12 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
selected_codec	0A 1 HEX byte 0AH wideband AMR coded for UMTS
number_of_in_announcements	00 1 BCD byte 00
nbr_of_orig_cap_in_recs	00 1 BCD byte 00
default_call_handling	01 1 BCD byte 01 default SMS handling is used

2.5 References

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- 3GPP TS 23.003: Numbering, addressing and identification
- 3GPP TS 23.008: Organization of subscriber data
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- 3GPP TS 23.018: Basic Call Handling; Technical realization
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- 3GPP TS 24.008: Mobile radio interface Layer 3 specification; Core network protocols; Stage 3
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- Feature 319: Support for Multiple Call Forwarding, Feature Description
- Feature 401: Orange Call Drop Back (CDB) Enhancements, Feature Description
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- Features 1196 and 1197: CAMEL Phase 4, Feature Description
- Feature 1335: TrFO and TFO, Interface Specification
- Feature 1541: Same CLI for Multiple Subscribers, Feature Description
- Feature 1569: Support of Optimal Routing for Basic Call Cases, Feature Description
- Feature 1615: Call Based TTY Support in MSS
- Feature 1630: Fax & CS data call detection in MSC Server, Interface Specification
- Feature 1665: Support of IMEISV
- Feature 1683: Indirect Access Validation Services, Feature Activation Manual
- Feature 1703: NVS Charging, Feature Description
- Feature 1070: Location Services in MSC&HLR, Interface Specification
- Feature 1740: Virtual MSC and VLR Addresses, Feature Description
- Feature 1805: CAMEL Roaming Originating Service, Feature Activation Manual
- Feature 1792: CDRs for IN User Interaction, Implementation Specification
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- Feature 1690: Support for Wideband AMR codec in NOKIA MSC Server, Feature Description
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- Feature 1750: Camel Charging Enhancement, PDC 5606 Functionality Description
 - Feature 1833: Charging Modifications, Implementation Specification
 - Feature 1820: Siemens INAP, Feature Description