S-GW CDR Field Descriptions

This chapter describes the CDR fields supported by the system for use in SGW-CDRs.

The following information is provided for each field:

- **Description:** The field's description.
- **Format:** The field's data format.
- **Length:** The field's size, in bytes.

All SGW-CDRs are encoded using the ASN.1 format and are sent to the charging gateway function (CGF) using the GPRS Tunneling Protocol Prime (GTPP) as defined in the following standards:

- 3GPP TS 29.060
- 3GPP TS 32.015
- 3GPP TS 32.215
- 3GPP TS 32.251 (v 8.5.0, v 8.6.0, v 8.8.0)
- 3GPP TS 32.298 (v 8.4.0, v 8.5.0, v 8.7.0) (SGW-CDRs)

Also see the *S-GW CDR Field Reference* chapter for information on CDR fields supported in SGW-CDRs.

Important The behavior for several of the fields supported in CDRs can be modified. For more information, refer to the **gtpp attributes** command in the *Command Line Interface Reference*.

- CDR Fields, on page 1

CDR Fields

Access Point Name Network Identifier

This field contain the Network Identifier part of the Access Point Name (APN). This APN is sent to the S-GW by the MME and is relayed to the P-GW in the Create PDP Context Request message. The APN string consists of alphabetic characters ("A..Z", "a..z"), digits ("0..9") and the dash "-".

Format

IA5string

Length

1-63 bytes

APN Selection Mode

An index indicating how the APN was selected.

The following APN selection mode indexes are possible:

0: MS or network provided APN, subscribed verified

1: MS provided APN, subscription not verified

2: Network provided APN, subscription not verified

Format

Enumerated

Length

1 byte

Cause for Record Closing

This field contains a reason for the closure of the CDR.

Supported values:

- normalRelease (0)
- abnormalRelease (4)
- volumeLimit (16)
- timeLimit (17)
- servingNodeChange (18)
- maxChangeCond (19)
- managementIntervention (20)
- rATChange (22)
- mSTimeZoneChange (23)
- LTEServingNodeChange (25)

Format

Integer

Length

1 byte

Charging Characteristics

Lists the charging characteristics applied to the PDP context by the S-GW. The S-GW accepts the charging characteristics from the MME or use its own configured values.

Format

Octet string

Length

2 bytes

Charging Characteristics Selection Mode

This field specifies how the Charging Characteristics was selected.

Supported values:

- servingNodeSupplied (0)
- homeDefault (3)
- roamingDefault (4)
- visitingDefault (5)

Format

Enumerated

Length

1 byte

Charging ID

This field is a charging identifier, which can be used together with the P-GW address to identify all records involved in a single bearer context. The Charging ID is generated by the P-GW during bearer context activation and is transferred to the context requesting S-GW.

Format

Integer

Length

1-5 bytes

Diagnostics

This field is included in the CDR when the bearer context is released and when the option "**gtpp attribute diagnostics**" is configured. Only the choice of "gsm0408Value" is used.

Format

Choice (gsm0408 only)

Choice (networkSpecificCause only for GTPP custom34 and custom35 dictionaries)

Length

3 bytes

gsm0408Cause

This field is always present when the optional Diagnostics field is included. For more information, refer to the 3GPP TS 24.008 specification.

Some examples:

- 36: If the MME sends Delete Session Request
- 38: If S-GW deletes the PDN context request due to echo timeout with P-GW
- 26: If the S-GW deletes the PDN context request for any other reason

Format

Integer

Length

1 byte

networkSpecificCause (only for GTPP custom34 and custom35 Dictionaries)

This field is used to report the NAS cause code in the Delete Session message request sent to the S-GW. A maximum of three network operator-defined cause codes are reported.

Format

Set of Management Extensions

Length

N/A

Duration

This field contains the duration in seconds for the record. For partial records, only the interval described by the "recordOpeningTime" and the "last ChangeTime" in the "ListOfTrafficVolumes" is counted. The value is reset for each new partial CDR. This value is converted from the internal representation in milliseconds to an integer value representing only seconds. The mechanism for this conversion (ceiling, floor, round-off) can be configured.

Format

Integer

Length

1-5 bytes

Dynamic Address Flag

This field indicates that PDN address has been dynamically allocated for that particular IP CAN bearer (PDN connection). This field is missing if address is static. Dynamic address allocation might be relevant for charging e.g. as one resource offered and possibly owned by network operator. The presence of this field indicates that the **Served PDP Address** was dynamically assigned during context activation.

Format

Boolean

Length

1 byte

List of Traffic Data Volumes

This list includes one or more Traffic Volume containers related to a "Change of Charging Condition". The maximum number of containers is configurable.

Format

Sequence

Length

Variable

Change Of Charging Condition

Each traffic volume container contains details related to a charging condition as described in the following subsections. A new container is usually created for a QoS change and for tariff changes.

Format

Sequence

Length

Variable

GPRS Uplink data volume

The Data Volume GPRS Uplink field is a part of the "ChangeOfCharCondition" element in the List of Traffic Volumes. It includes the number of octets received in the uplink direction during the timeframe specified by the container. For each new container, the counter is reset and does not accumulate.

The data counted already includes the IP PDP bearer protocols i.e. IP or PPP.

Important In the CDRs, the data volume usage field is defined with a maximum size of 4 bytes. If the volume triggers are disabled and the volume usage goes beyond 4GB, then the CDRs will not be generated and the data stats will be reset to zero after the max usage.

Format

Integer

Length

1-5 bytes

GPRS Downlink data volume

The Data Volume GPRS Downlink field is a part of the "ChangeOfCharCondition" element in the List of Traffic Volumes. It includes the number of octets transmitted in the downlink direction during the timeframe specified by the container. For each new container, the counter is reset and does not accumulate.

The data counted already includes the IP PDP bearer protocols i.e. IP or PPP.

Important In the CDRs, the data volume usage field is defined with a maximum size of 4 bytes. If the volume triggers are disabled and the volume usage goes beyond 4GB, then the CDRs will not be generated and the data stats will be reset to zero after the max usage.

Format

Integer

Length

1-5 bytes

Change Condition

The Change Condition field is part of the "ChangeOfCharCondition" element in the List of Traffic Volumes. It defines the reason for closing the container.

Supported values:

```
ChangeCondition    ::=    ENUMERATED
{
        qoSChange              (0),
        tariffTime            (1),
        recordClosure       (2),
        cGI-SAICHange       (6),          -- bearer modification. "CHI SAI Change"
        rAIChange               (7),          -- bearer modification. "RAI Change"
        eCGIChange            (10),        -- bearer modification. "ECGI Change"
        tAIChange              (11),        -- bearer modification. "TAI Change"
       userLocationChange      (12),        -- bearer modification. "User Location Change"

        apnAmbrChange              (50),        -- apn-ambr change
}
```

1. The change condition is based on the current ULI type and not on new ULI. i.e if the ULI type is ECGI during CSRequest and while changing the ULI, whatever be the ULI type in MBRequest, the "changeCondition" should be ECGI change.
2. If the initial ULI has one or more ULI Types (i.e. ECGI, TAI, RAI, CGI), then the change condition the priority will be as follows:
   a. CGI-SAI Change
   b. RAI Change
   c. TAI Change
   d. ECGI Change
3. If the current ULI type is not present (optional) in CSRequest the change condition is based on the new ULI contents. That is, if new ULI has ECGI, then it will be considered as ECGI change.
4. The ULI in main CDR part indicates the ULI at the time of record opening time. i.e. If CSReq comes with ULI U1 and then the ULI is changed to U2, U3 and if a CDR is generated the main ULI in CDR contains ULI as U1, but the next CDR generated contains the ULI as U3 and so on.
5. In container the ULI is present in next container if the previous change condition is either RAI Change, CGI-SAI Change, TAI Change, ECGI Change.

Important apnAmbrChange (50) -- This value is not defined in any 3GPP spec as of yet and therefore a non-standard value is used.

Format

Enumerated

Length

1 byte

Change time

The Change Time field is part of the "ChangeOfCharCondition". element in the List of Traffic Volumes. It provides the local time when a change condition (e.g. record closure) occurred and the container was closed.

The format is shown below.

TimeStamp ::= OCTET STRING (SIZE(6))

The contents of this field are a compact form of the UTC Time format containing local time plus an offset to universal time. Binary coded decimal encoding is employed for the digits to reduce the storage and transmission overhead.

-- e.g. YYMMDDhhmmssShhmm

-- where

-- YY = Year 00 to 99 BCD encoded

-- MM = Month 01 to 12 BCD encoded

-- DD = Day 01 to 31 BCD encoded

-- hh = hour 00 to 23 BCD encoded

-- mm = minute 00 to 59 BCD encoded

-- ss = second 00 to 59 BCD encoded

-- S = Sign 0 = "+", "-" ASCII encoded

-- hh = hour 00 to 23 BCD encoded

-- mm = minute 00 to 59 BCD encoded

Format

BCD encoded octet string

Length

9 bytes

User Location Information

This field contains the User Location Information as described in TS 29.274 for eGTP cases (e.g. CGI, SAI, RAI, TAI and ECGI).

The field is provided by the SGSN/MME and transferred to the S-GW/P-GW during the IP-CAN bearer activation/modification.

User Location Information contains the location (e.g. CGI/SAI, ECGI/TAI or RAI) where the UE is located and used during the transfer of the data volume captured by the container (applicable only to the SGW-CDR). This is included in the Traffic data container only if previous container's change condition is "user location change". Note the user location information in SGW-CDR main level contains the location where the UE was when CDR was opened.

In the below example there are five containers. In the third container the CGI/SAI is changed. So as per the definition above since the CGI/SAI is changed, the next container should have ULI information. The fourth container has the ULI information.

QoS Negotiated = QoS1 Data Volume Uplink = 1 Data Volume Downlink = 2 Change Condition = QoS change Time Stamp = TIME1	QoS Negotiated = QoS2 Data Volume Uplink = 5 Data Volume Downlink = 6 Change Condition = Tariff change Time Stamp = TIME2	Data Volume Uplink = 10 Data Volume Downlink = 3 Change Condition = CGI/SAI Change Time Stamp = TIME3	Data Volume Uplink = 3 Data Volume Downlink = 4 User Location Info = CGI2 Change Condition = Tariff Time Change Time Stamp = TIME4	Change Condition = Record closed Time Stamp = TIME5

In the above example, assume that when CDR is opened the subscriber is in CGI1. The first container is closed because of QOS change and second container is closed because of Tariff Time. Now the ULI is changed to CGI2. Third container includes the indication of location change (ULI change to CGI2) and corresponding volume counts before the location change and after the tariff time change. Now these three containers does not have the "User Location Info" because none of the containers are closed with CGI/SAI change or RAI change. Now if the fourth container is closed it should have a User Location Info as CGI2. This is because

the previous change condition was CGI/SAI change and hence the next container should have new ULIs (CGI2).

Format

Octet string

Length

6 -34 bytes

Note that the length varies depending on the type of identity.

QoS Negotiated (only for GTPP custom34 and custom35 Dictionaries)

QoS Information: For an IP-CAN bearer-specific container, this contains the authorized QoS for the IP-CAN bearer. This field is null-terminated.

Format

Structure of the following type:

QoSNegotiated ::= qoSInformation

Length

23 bytes

EPC QoS Requested (only for custom24 Dictionary)

EPC QoS Information: In case of IP-CAN bearer specific container, this contains authorized QoS for the IP-CAN bearer. First container for each QCI/ARP pair includes this field. In the following containers, this field is present if previous change condition is "QoS change". This field is applicable only in SGW-CDR.

Format

```
EPCQoSInformation    ::= SEQUENCE
{
        --
        -- See TS 29.212 for more information
        --
        qCI                                             [1] INTEGER,
        maxRequestedBandwithUL        [2] INTEGER OPTIONAL,
        maxRequestedBandwithDL        [3] INTEGER OPTIONAL,
        guaranteedBitrateUL              [4] INTEGER OPTIONAL,
        guaranteedBitrateDL              [5] INTEGER OPTIONAL,
        aRP                                             [6] INTEGER OPTIONAL
        aPNAggregateMaxBitrateUL       [7] INTEGER OPTIONAL
        aPNAggregateMaxBitrateDL       [8] INTEGER OPTIONAL




,


}
```

Length

Variable length format (will vary based on the values).

iMSsignalingContext

Indicates if the IP-CAN bearer is used for IMS signaling. It is only present if the IP-CAN bearer is an IMS signaling bearer. A IP-CAN bearer for IMS signaling is determined via the "IM CN Subsystem Signaling Flag" conveyed via the "Activate PDP context request" message from the MS to the network (refer to TS 24.008).

Format

Null

Length

Zero

List of Served Node Addresses

This field contains 1-16 Serving Node control plane IP used during this record (max of 15 Serving Node Changes). This is a list of IP addresses. If the PLMN-ID of the MME is same after Handover to new MME, one more IP address is added to the list. If the list is overflowed, with configured number of IP addresses, a CDR with "serving node Change" as cause for record closure will be generated. The serving node addresses, listed here map to the serving node types listed in the field "Serving node Types" in sequence.

Format

Octet String containing list of IPv4 or IPv6 addresses

Length

The length can vary based on whether the encoded IP address is IPv4 or IPv6.

Served Node IPv4 Binary Address

The octet string included in the field "List of Served Node Addresses" includes the IPv4 address of the MME.

Format

Octet String

Length

4 bytes

Served Node IPv6 Binary Address

The octet string included in the field "List of Served Node Addresses" includes the IPv6 address of the MME.

Format

Octet String

Length

16 bytes

Local Record Sequence Number

This field contains a unique sequence number associated with the NodeId field and independent of the bearer context. For each Node ID, this number with range 1..4294967295 is allocated sequentially for each CDR. This along with a Node ID uniquely identifies a CDR. For SGW-CDRs, this field is included only when the command **gtpp attribute local-record-sequence-number** is configured.

Format

Octet String

Length

1-5 bytes

MS Time Zone

The "Time Zone" IE that the MME may provide to the S-GW during the PDN context activation/modification procedure.

Format

Octet String

Length

2 bytes

Node ID

This field contains an identifier string for the node that had generated the CDR.

The NodeID field is a printable string of the ndddSTRING format:

n: The first digit is the Sessmgr restart counter having a value between 0 and 7.

ddd: The number of the sessmgr instance generating the CDR.

STRING: This is a configured Node-ID-Suffix having any string from 1 to 16 characters, defined using the **gtpp attribute node-id** command.

If this node-id-suffix is not configured, the S-GW uses the GTPP context name as the Node-id-suffix (truncated to 16 characters).

This field is included only when the command **gtpp attribute local-record-sequence-number** is configured.

Format

IA5string

Length

5-20 bytes

PDN Connection Id

This field defines the PDN connection (IP-CAN session) identifier to identify different records belonging to same PDN connection. This field includes Charging Id of first IP-CAN bearer activated within the PDN connection. Together with P-GW address this uniquely identifies the PDN connection.

Format

Integer

Length

1-5 bytes

PDP PDN Type

This field indicates PDN type (i.e. IPv4, IPv6 or IPv4v6).

For custom24 Dictionary:

-- OCTET 1: PDP Type Organization

```
Spare '1111'          PDP Type Organization Value
```

PDP Type Organization	Value
ETSI	0
IETF	1

NOTE: In LTE, only IETF is supported.

-- OCTET 2: PDP/PDN Type Number

```
Bits
3    2    1
0    0    1        IPv4
0    1    0        IPv6
0    1    1        IPv4/IPv6
Bits 8-4 of octet are spare and are coded as zero.
```

For custom34 and custom35 Dictionaries:

-- OCTET 1: PDP Type Organization

```
Always 0x01
```

-- OCTET 2: PDP/PDN Type Number

```
IPV4 0x21
IPV6 0x57
IPV4/IPV6 0x8D
```

Format

Octet string

Length

2 bytes

PGW Address used

This field is the serving P-GW IP address for the Control Plane. If both an IPv4 and an IPv6 address of the P-GW is available, the P-GW includes the IPv4 address in the CDR. This is a choice attribute and the CDR can contain the binary format or the ASCII format in the CDR.

Format

Octet string

Length

The length can vary based on whether the encoded IP address is IPv4 or IPv6.

PGW IPv4 Binary Address

The octet string included in the field "PGW Address used" includes the IPv4 address of the P-GW in binary coding.

Format

Octet string

Length

4 bytes

PGW IPv6 Binary Address

The octet string included in the field "PGW Address used" includes the IPv6 address of the P-GW in binary coding.

Format

Octet string

Length

16 bytes

RAT Type

Holds the value of RAT Type, as provided to S-GW and P-GW, described in TS 29.274 for eGTP case.

RAT Types	Values (Decimal)
<reserved>	0
UTRAN	1
GERAN	2
WLAN	3
GAN	4
HSPA Evolution	5
EUTRAN	6
<spare>	7-255

This field is provided by the SGSN/MME and transferred to the S-GW/P-GW during the IP-CAN bearer activation/modification.

Format

Integer

Length

1 byte

Record Extensions

A set of network operator/manufacturer specific extensions to the record.

This field is used to report a maximum of three RAN cause codes and packet counts.

Important This field is operator-defined and is not encoded in any S-GW CDR dictionary until release v14.0.

Format

Sequence

Length

Variable Length Format

Record Opening Time

This field contains the time stamp when a PDP context is activated in SGSN or when a subsequent record is opened after a partial record.

The timestamp is determined based on the internal timer which has an accuracy of 10ms. Depending on the configured mechanism (ceiling, floor, round-off), this is translated into the timestamp which only shows the full seconds.

The format is shown below.

TimeStamp ::= OCTET STRING (SIZE(6))

The contents of this field are a compact form of the UTC Time format containing local time plus an offset to universal time. Binary coded decimal encoding is employed for the digits to reduce the storage and transmission overhead.

-- e.g. YYMMDDhhmmssShhmm

-- where

-- YY = Year 00 to 99 BCD encoded

-- MM = Month 01 to 12 BCD encoded

-- DD = Day 01 to 31 BCD encoded

-- hh = hour 00 to 23 BCD encoded

-- mm = minute 00 to 59 BCD encoded

-- ss = second 00 to 59 BCD encoded

-- S = Sign 0 = "+", "-" ASCII encoded

-- hh = hour 00 to 23 BCD encoded

-- mm = minute 00 to 59 BCD encoded

Format

BCD encoded octet string

Length

9 bytes

Record Sequence Number

A running sequence number with range 1.. 4294967296 used to link partial records generated by the S-GW for a specific IP-CAN bearer context (characterized with the same Charging ID and P-GW address). This field is not present if the first record is also the final record.

Format

Integer

Length

1-5 bytes

Record Type

This field identifies the type of the record.

SGW-CDR (sgwPDPRecord) 84 (0x54)

Format

Integer

Length

1 byte

Served IMEISV

This fields contains the International Mobile Equipment Identity (IMEISV) of the equipment served, if available.

The structure of the IMEI is defined in TS 23.003.

The IMEI is composed of the following elements:

- Type Allocation Code (TAC). Its length is 8 digits;
- Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC. Its length is 6 digits;
- Software Version Number (SVN) identifies the software version number of the mobile equipment. Its length is 2 digits.

If SV is not available, a filler digit "f" is added after the spare digit to fill up the last byte. Spare digit: this digit is zero, when transmitted by the MS.

Format

BCD encoded octet string

Length

8 bytes

Served IMSI

This field contains the International Mobile Subscriber Identity (IMSI) of the served party. The IMSI is formatted in accordance with 3GPP TS 23.003.

Example for Coding: (Set by SGSN)

```
3GPP TS 23.003 (CCITT Rec. E 212)
ServedIMSI ::= OCTET STRING (SIZE(1..8))
-- subscriber identification IMSI
-- octet 1..8: <= 15 digits TBCD-String (twisted)
-- substructure (without spares or fillers):
-- 3 digits - mobile country code (MCC)
-- 2 digits - mobile network code (MNC)
-- <= 10 digits - mobile subscriber identification number (MSIN)
-- first and intermediate octet = 2 digits
-- last octet = 2 digits or 1 digit + 1 fill digit H'F
--

-- example:
-- IMSI: '262025600010020'
-- filled: '262025600010020F'
-- encoded: H'62 02 52 06 00 01 20 F0
```

Format

BCD encoded octet string

Length

3-8 bytes

Served MSISDN

This field tracks the Mobile Station (MS) ISDN number (MSISDN) of the subscriber which is transparently copied from the Create Session Request message.

The MSISDN is TBCD encoded as shown in the example below:

3GPP TS 23.003 (CCITT Rec. E 213)

ServedMSISDN ::= OCTET STRING (SIZE(1..9))

MSISDN in CDR is 1:1 copy of the MSISDN sent in GTP-V2 message. MSISDN value contains only the actual MSISDN number (does not contain the "nature of address indicator" octet, which indicates "international number" as in 3GPP TS 29.002) and is encoded as TBCD digits (i.e. digits from 0 through 9 are encoded "0000" to "1001"). When there is an odd number of digits, bits 8 to 5 of the last octet are encoded with the filler "1111".

Example:

encoded: 00H' 94 71 02 04 30 50

Format

BCD encoded octet string

Length

1-9 bytes

Served PDP PDN Address

This field contains the IP address for the PDN connection (PDP context, IP-CAN bearer) if available. This is a network layer address of type IP version 4 (PDN Type is IPv4) or IP version 6 (PDN Type is IPv6 or IPv4v6). The address for each bearer type is allocated either temporarily or permanently (see "Dynamic Address Flag"). This parameter is present except when both the bearer type is PPP and dynamic address assignment is used.

NOTE: IP address allocated for the PDP context / PDN connection, if available, i.e. IPv4 when PDN Type is IPv4 or IPv6 when PDN Type is IPv6 or IPv4v6.

Format

Octet string

Length

The length can vary based on whether the encoded IP address is IPv4 or IPv6.

PDP IP Address

This field contains the IP address for the PDP context.

Format

IP address

Length

The length can vary based on whether the encoded IP address is IPv4 or IPv6.

PDP IPv4 Binary Address

The octet string included in the field "PDP IP Address" includes the IPv4 address of the P-GW in binary coding.

Format

Octet string

Length

4 bytes

PDP IPv6 Binary Address

The octet string included in the field "PDP IP Address" includes the IPv6 address of the P-GW in binary coding.

Format

Octet string

Length

16 bytes

Served PDP PDN Address Extension

This field contains the IPv4 address for the PDN connection (PDP context, IP-CAN bearer) when dual-stack IPv4v6 is used, and the IPv6 address is included in Served PDP Address or Served PDP PDN Address.

This field is not included if the PDP/PDN address is IPv4 or IPv6. By default, this field is not sent, even if the PDP Type is IPv4v6; this field must be enabled using the **gtpp attribute served-pdp-pdn-address-extension** CLI command.

Important Note that this field is not part of the 3GPP 32.298 Release 6 and 7 specifications. This field is an Rel.9 attribute and it can be present in Rel.7 or Rel.8 dictionary if enabled through the **gtpp attribute served-pdp-pdn-address-extension** CLI command.

Format

Octet string

Length

8 bytes

PDP IP Address

This field contains the IP address for the PDP context.

Format

IP address

Length

The length can vary based on whether the encoded IP address is IPv4 or IPv6.

PDP IPv4 Binary Address

The octet string included in the field described above includes the IPv4 address of the P-GW in binary coding.

Format

Octet string

Length

4 bytes

Serving Node PLMN Identifier

This field denotes the PLMN identifier (MCC and MNC) of the P-GW used. This field is present in CDRs if the P-GW PLMN-ID is available in the CSR message from Serving Node (MME).

The MCC and MNC are coded as described for "Routing Area Identity" in TS 29.060.

Format

Octet string

Serving Node Type

This field contains one or several serving node types in control plane of S-GW or P-GW, which have been connected during the record. The serving node types listed here map to the serving node addresses listed in the field "Serving node Address" in sequence.

The possible values are:

```
ServingNodeType    ::= ENUMERATED
{
                sGSN            (0),
                pMIPSGW      (1),
```

```
                gTPSGW        (2),
                ePDG            (3),
                hSGW            (4),
                mME              (5)
}
```

NOTE: In the SGW-CDR, the possible values are SGSN(0) and MME(5).

Format

Sequence of serving Node Type

Length

Variable length format (Based on number of nodes connected during this period).

SGW Address Used

This field is the serving S-GW IP address for the Control Plane. If both an IPv4 and an IPv6 address of the S-GW is available, the S-GW includes the IPv4 address in the CDR. This is a choice attribute and the CDR can contain the binary format or the ASCII format in the CDR.

Format

Octet string

Length

The length can vary based on whether the encoded IP address is IPv4 or IPv6.

SGW IPv4 Binary Address

This field is the serving control plane S-GW IPv4 address on the S5 interface.

Format

Octet string

Length

4 bytes

SGW IPv6 Binary Address

This field is the serving control plane S-GW IPv6 address on the S5 interface.

Format

Octet string

Length

16 bytes

SGW Change

This field is present only in the SGW-CDR to indicate that this is the first record after an S-GW change. In this case, it is set to TRUE ("FF")

Format

Boolean

Length

1 byte

Start Time

This field contains the time when the IP-CAN session starts at the S-GW/P-GW, available in the CDR for the first bearer in an IP-CAN session.

The timestamp is determined based on the internal timer which has an accuracy of 10ms. Depending on the configured mechanism this is translated into the timestamp which only shows the full seconds.

The format is shown below.

TimeStamp ::= OCTET STRING (SIZE(6))

The contents of this field are a compact form of the UTC Time format containing local time plus an offset to universal time. Binary coded decimal encoding is employed for the digits to reduce the storage and transmission overhead

-- e.g. YYMMDDhhmmssShhmm

-- where

-- YY = Year 00 to 99 BCD encoded

-- MM = Month 01 to 12 BCD encoded

-- DD = Day 01 to 31 BCD encoded

-- hh = hour 00 to 23 BCD encoded

-- mm = minute 00 to 59 BCD encoded

-- ss = second 00 to 59 BCD encoded

-- S = Sign 0 = "+", "-" ASCII encoded

-- hh = hour 00 to 23 BCD encoded

-- mm = minute 00 to 59 BCD encoded

Format

BCD encoded octet string

Length

9 bytes

Stop Time

This field contains the time when the IP-CAN session is terminated at the S-GW/P-GW, available in the CDR for the last bearer in an IP-CAN session.

The timestamp is determined based on the internal timer which has an accuracy of 10ms. Depending on the configured mechanism (ceiling, floor, round-off) this is translated into the timestamp which only shows the full seconds.

The format is shown below.

TimeStamp ::= OCTET STRING (SIZE(6))

The contents of this field are a compact form of the UTC Time format containing local time plus an offset to universal time. Binary coded decimal encoding is employed for the digits to reduce the storage and transmission overhead

-- e.g. YYMMDDhhmmssShhmm

-- where

-- YY = Year 00 to 99 BCD encoded

-- MM = Month 01 to 12 BCD encoded

-- DD = Day 01 to 31 BCD encoded

-- hh = hour 00 to 23 BCD encoded

-- mm = minute 00 to 59 BCD encoded

-- ss = second 00 to 59 BCD encoded

-- S = Sign 0 = "+", "-" ASCII encoded

-- hh = hour 00 to 23 BCD encoded

-- mm = minute 00 to 59 BCD encoded

Format

BCD encoded octet string

Length

9 bytes

User CSG Information

This field contains the User CSG Information (UCI) status of the user accessing a CSG cell. Closed Subscriber Group identifies a group of subscribers who are permitted to access one or more CSG cells of the PLMN as a member of the CSG.

Length

Varies

CSG ID

This field is a unique identifier within the scope of PLMN which identifies a Closed Subscriber Group (CSG) in the PLMN associated with a CSG cell or group of CSG cells. The value of CSG ID will be printed as the hexadecimal value received in AAA.

Format

Octet string

Length

4 bytes

CSG Access Mode

This field is the CGI access mode of the user accessing a CSG cell.

Possible access modes are:

- Closed
- Hybrid

Format

Enumerated integer

Length

1 byte

CSG Membership Indication

This field indicates CSG membership for the user when hybrid access applies, as defined in TS 29.060 for GPRS case, and in TS 29.274 for EPC case.

Format

Null

Length

Zero

User Location Information

This field contains the User Location Information as described in TS 29.274 for eGTP case (e.g. CGI, SAI, RAI, TAI and ECGI).

The field is provided by the SGSN/MME and transferred to the S-GW/P-GW during the IP-CAN bearer activation/modification.

User Location Information contains the location (e.g. CGI/SAI, ECGI/TAI or RAI) where the UE is located and used during the transfer of the data volume captured by the container (applicable only to the SGW-CDR). This is included in the Traffic data container only if previous container's change condition is "user location

change". Note the user location information in SGW-CDR main level contains the location where the UE was when PGW-CDR was opened.

The flags ECGI, TAI, RAI, SAI and CGI in octet 1 indicate if the corresponding fields are present in the IE or not. If one of these flags is set to "0", the corresponding field is not present at all. The respective identities are defined in 3GPP TS 23.003.

The following subclauses specify the coding of the different identities. For each identity, if an Administration decides to include only two digits in the MNC, then bits 5 to 8 of octet 7 are coded as "1111".

CGI field:

The Location Area Code (LAC) consists of 2 octets. Bit 8 of Octet 9 is the most significant bit and bit 1 of Octet 10 the least significant bit. The coding of the location area code is the responsibility of each administration. Coding using full hexadecimal representation is used.

The Cell Identity (CI) consists of 2 octets. Bit 8 of Octet 11 is the most significant bit and bit 1 of Octet 12 the least significant bit. The coding of the cell identity is the responsibility of each administration. Coding using full hexadecimal representation is used.

SAI field:

The Location Area Code (LAC) consists of 2 octets. Bit 8 of Octet 9 is the most significant bit and bit 1 of Octet 10 the least significant bit. The coding of the location area code is the responsibility of each administration. Coding using full hexadecimal representation is used.

The Service Area Code (SAC) consists of 2 octets. Bit 8 of Octet 11 is the most significant bit and bit 1 of Octet 12 the least significant bit. The SAC is defined by the operator.

RAI field:

The Location Area Code (LAC) consists of 2 octets. Bit 8 of Octet 9 is the most significant bit and bit 1 of Octet 10 the least significant bit. The coding of the location area code is the responsibility of each administration. Coding using full hexadecimal representation is used.

The Routing Area Code (RAC) consists of 2 octets. Only Octet 11 contains the RAC. Octet 12 is coded as all 1's (11111111). The RAC is defined by the operator.

TAI field:

The Tracking Area Code (TAC) consists of 2 octets. Bit 8 of Octet 9 is the most significant bit and bit 1 of Octet 10 the least significant bit. The coding of the tracking area code is the responsibility of each administration. Coding using full hexadecimal representation is used.

ECGI field:

The E-UTRAN Cell Identifier (ECI) consists of 28 bits. Bit 4 of octet 10 is the most significant bit and bit 1 of Octet 11 is the least significant bit. The coding of the E-UTRAN cell identifier is the responsibility of each administration. Coding using full hexadecimal representation is used.

Format

Octet string

Length

6 -34 bytes

Note that the length varies depending on the type of identity.