



SGSN CDR Field Reference

This chapter provides a reference for CDR fields supported by the system for use in SGSN.

Listed below are the types of CDRs supported by SGSN:

- SGSN CDRs (S-CDRs)
- Mobility CDRs (M-CDRs)
- Mobile originated SMS CDRs (S-SMO-CDRs)
- Mobile terminated SMS CDRs (S-SMT-CDRs)
- Mobile terminated location request CDRs (LCS-MT-CDRs)

The SGSN provides CDRs that are compliant to the specifications identified in this chapter. When necessary and required, modifications to the standardized behavior can be implemented in different dictionaries which can be selected in the configuration file. This provides the flexibility to adapt to a customer's needs, e.g. to a legacy post-processing billing interface, while keeping the standard behavior for other needs.

A complete list and descriptions of supported CDR fields is provided in the *SGSN CDR Field Descriptions* chapter of this reference.



Important

This reference document contains information only on standard GTPP dictionaries. For more information on custom dictionaries, contact your Cisco account representative.

The category column in all tables use keys described in the following table.

Table 1: Dictionary Table Key 6

| Abbreviation | Meaning | Description |
|--------------|-----------------------------------|----------------------------------------------------------------------------------------------|
| M | Mandatory | A field that must be present in the CDR. |
| C | Conditional | A field that must be present in a CDR if certain conditions are met. |
| OM | Operator Provisionable; Mandatory | A field that an operator has provisioned and must be included in the CDR for all conditions. |

| Abbreviation | Meaning | Description |
|--------------|----------------------------------------|---------------------------------------------------------------------------------------------------------|
| OC | Operator Provisionable: Conditional | A field that an operator has provisioned and must be included in the CDR if certain conditions are met. |
| A | Added in Charging Gateway | A field included in the Charging Gateway. |

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- [CDR Fields Supported in S-SMO-CDRs, on page 68](#)
- [CDR Fields Supported in S-SMT-CDRs, on page 70](#)
- [CDR Fields Supported in M-CDR, on page 71](#)
- [CDR Fields Supported in LCS-MT-CDRs, on page 73](#)

CDR Fields Supported in S-CDRs

The tables in this section list the S-CDR fields present in the available GTPP dictionaries.

standard Dictionary

S-CDR fields in this dictionary are based on 3GPP TS 32.215 v 4.5.0 (R4).

| Field | Category | Description |
|-------------------------------|----------|-------------------------------------------------------------------------------------------------|
| Record Type | M | SGSN PDP context record. |
| Network Initiated PDP Context | OC | A flag that is present if this is a network-initiated PDP context. |
| Served IMSI | M | IMSI of the served party. |
| Served IMEI | OC | The IMEI of the ME, if available. |
| SGSN Address | OM | The IP address of the current SGSN. |
| MS Network Capability | OM | The Mobile Station Network Capability. |
| Routing Area Code (RAC) | OM | RAC at the time of "Record Opening Time". |
| Location Area Code (LAC) | OM | LAC at the time of "Record Opening Time". |
| Cell Identifier | OM | Cell identity for GSM or Service Area Code (SAC) for UMTS at the time of "Record Opening Time". |

| Field | Category | Description |
|--------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Charging ID | M | PDP context identifier used to identify this PDP context in different records created by SGSNs. |
| GGSN Address Used | M | The control plane IP address of the GGSN currently used. The GGSN address is always the same for an activated PDP context. |
| Access Point Name Network Identifier | OM | The logical name of the connected access point to the external packet data network (network identifier part of APN). |
| PDP Type | OM | PDP type, i.e. IP, PPP, IHOSS:OSP. |
| Served PDP Address | OC | PDP address of the served IMSI, i.e. IPv4 or IPv6. This parameter shall be present except when both the PDP type is PPP and dynamic PDP address assignment is used. |
| List of Traffic Data Volumes | OM | A list of changes in charging conditions for this PDP context, each change is time stamped. Charging conditions are used to categorise traffic volumes, such as per QoS/tariff period. Initial and subsequently changed QoS and corresponding data volumes are listed. |
| Record Opening Time | M | Time stamp when PDP context is activated in this SGSN or record opening time on subsequent partial records. |
| Duration | M | Duration of this record in the SGSN. |
| SGSN Change | C | Present if this is first record after SGSN change. |
| Cause for Record Closing | M | The reason for closure of the record from this SGSN. |
| Diagnostics | OM | A more detailed reason for the release of the connection. |

| Field | Category | Description |
|-----------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Record Sequence Number | C | Partial record sequence number in this SGSN. Only present in case of partial records. |
| Node ID | OM | Name of the recording entity. |
| Record Extensions | OC | A set of network operator/manufacturer specific extensions to the record. Conditioned upon the existence of an extension. |
| Local Record Sequence Number | OM | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| APN Selection Mode | OM | An index indicating how the APN was selected. |
| Access Point Name Operator Identifier | OM | The Operator Identifier part of the APN. |
| Served MSISDN | OM | The primary MSISDN of the subscriber. |
| Charging Characteristics | M | The Charging Characteristics applied to the PDP context. |
| System Type | OC | Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface. |
| RNC Unsent Downlink Volume | OC | The downlink data volume which the RNC has not sent to MS. This field is present when the RNC has provided unsent downlink volume count at RAB release. |
| Charging Characteristics Selection Mode | OM | Holds information about how Charging Characteristics were selected. |

custom6 Dictionary

S-CDR fields in this dictionary are based on 3GPP TS 32.298 v6.4.1 (R6).



Important In custom6 the IP address is encoded in text format.

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|-------------------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------|-----------|
| Record Type | 0 | M | The field identifies the type of the record. | Integer | 1 | 80 |
| Network initiated PDP context | 1 | O | This field indicates that the PDP context was network initiated. This field is missing in case of mobile activated PDP context. | Boolean | 1 | 81 |
| Served IMSI | 3 | M | This field contains the International Mobile Subscriber Identity (IMSI) of the served party. | BCD encoded octet string. | 3 - 8 | 83 |
| Served IMEI | 4 | O | This field contains the international mobile equipment identity (IMEI) of the equipment served. | BCD encoded octet string. IMEISV will be sent in case if IMEI is not available. | 8 | 84 |
| SGSN Address | 5 | M | This field provides the current SGSN IP Address for the Control Plane. | Choice | 9 - 17 | A5 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| SGSN Text IPv4 Address | 5-0 | M | This field represents the IPv4 text address. | Octet string | 7 - 15 | 82 |
| MS Network Capability | 6 | O | MS Network Capability field contains the MS network capability value of the MS network capability information element of the served MS on PDP context activation or on GPRS attachment as defined in 3GPP TS 24.008. | Octet string | 1 - 8 | 86 |
| Routing Area | 7 | O | This field contains the Routing Area Code (RAC) of the routing area in which the served party is currently located. | Octet string | 1 | 87 |
| Location Area Code | 8 | O | This field contains the Location Area Code (LAC) of the location area in which the served party is currently located. | Octet string | 2 | 88 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------------|------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Cell Identifier | 9 | O | For GSM, the Cell Identifier is defined as the Cell Id, reference 24.008, and for UMTS it is defined as the Service Area Code in TS 25.413. | Octet string | 2 | 89 |
| Charging ID | 10 | M | This field is a charging identifier, which can be used together with the GGSN address to identify all records produced in the GGSN involved in a single PDP context. The Charging ID is generated by the GGSN at PDP context activation and is transferred to the context requesting SGSN. | Octet string | 1 - 5 | 8a |
| GGSN Address | 11 | M | This field provides the current SGSN IP Address for the Control Plane. | Choice | 9 - 17 | AB |
| GGSN Text IPv4 Address | 11-0 | M | This field represents the IPv4 text address. | Octet string | 7 - 15 | 82 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|-----------------------------------------|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Access Point Name Network Identifier | 12 | M | This field contains the Network Identifier part of the Access Point Name (APN). | IA5 string | 1 - 63 | 8c |
| PDP Type | 13 | O | This field defines the PDP type, e.g. IP or PPP | Octet string | 2 | 8d |
| Served PDP Address | 14 | O | This field contains the PDP address of the served IMSI, for which the standard 3GPP TS 32.298 allows a choice of either IP Address or ETSI Address. | Choice | 11 - 19 | ac |
| Served PDP IP Address | 14-0 | M | Only the choice of IP Address is supported by the SGSN for the field described above. | Choice | 9 - 17 | a0 |
| Served PDP IPv4 Text Address | 14-0-0 | M | The octet string included in the field described above includes the IPv4 address assigned to the subscriber by GGSN in text coding. | Octet string | 7 - 15 | 82 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------------------|------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| List of Traffic Volumes | 15 | M | | Sequence | | af |
| Change Of Charging Condition | 15-0 | M | Each traffic volume container contains details related to a charging condition. A new container is usually created for a QoS change and for tariff changes. | Sequence | | 30 |
| QoS Requested | 15-0-1 | O | The Quality of Service Requested field contains the QoS desired by the MS at PDP context activation. | Octet string | 4 - 12 | 81 |
| QoS Negotiated | 15-0-2 | O | QoS Negotiated indicates the applied QoS accepted by the network. | Octet string | 4 - 12 | 82 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|---------------------------------|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-----------|
| Data Volume GPRS Uplink | 15-0-3 | M | 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. | Integer | 1 - 4 | 83 |
| Data volume GPRS Downlink | 15-0-4 | M | 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. | Integer | 1 - 4 | 84 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|-----------|
| Change Condition | 15-0-5 | M | <p>The Change Condition field is part of the ChangeCondition element in the List of Traffic Volumes. It defines the reason for closing the container:</p> <p>Supported values:</p> <ul style="list-style-type: none"> • qoSChange 0 • tariffTime 1 • roadClose 2 | Enumerated integer | 1 | 85 |
| Change time | 15-0-6 | M | Change Time is a time stamp, which defines the moment when the volume container is closed or the CDR is closed. | BCD encoded octet string | 6 | 86 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|-----------|
| Record Opening Time | 16 | M | 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. | BCD encoded octet string | 6 | 90 |
| Duration | 17 | M | This field indicates the call duration. | Integer | 1 - 5 | 91 |
| SGSN Change | 18 | O | This field is present only in the S-CDR to indicate that this is the first record after an inter-SGSN routing area update. | Boolean | 1 | 92 |
| Cause for Record Closing | 19 | M | This field contains a reason for the closure of the CDR. | Integer | 1 | 93 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|-----------|
| DiagnosticsSM | 20 | O | This field contains the system internal reasons for the PDP context deactivation at Session Management Level. | Choice | 3 | B4 |
| gsm0408Cause | 20 - 0 | M | This cause is used in the Diagnostics field. | Integer | 1 | 80 |
| Record Sequence Number | 21 | O | A running sequence number with range 1-4294967295 used to link partial records generated by the SGSN for a specific PDP context (characterized with the same Charging ID and GGSN address). This field is not present if the first record is also the final record. | Integer | 1 - 5 | 95 |
| Node ID | 22 | O | This field contains an identifier string for the node that had generated the CDR. | IA5 string | 5 - 20 | 96 |
| Record Extensions | 23 | O | | Set | 1 - n | 97 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|---------------------------------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------|
| Local Record Sequence Number | 24 | O | 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. This field is only included when the option gtp attribute local-source-number is configured. By configuring gtp single-source-number in the local record sequence number will be incremented for S-CDRs. | | 1 - 5 | 98 |
| APN Selection Mode | 25 | O | This field indicates how the APN was selected. | Enumerated integer | 1 | 99 |
| Access Point Name Operator Identifier | 26 | M | This field contains the Operator Identifier part of the Access Point Name (APN). | IA5 string | 1 - 37 | 9a |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|-----------|
| Served MSISDN | 27 | O | The field tracks the Mobile Station (MS) ISDN number (MSISDN) of the subscriber which is transparently copied from the Create PDP Context Request message. | BCD encoded octet string | 1 - 9 | 9b |
| Charging Characteristics | 28 | M | Lists the charging characteristics applied to the PDP context by the SGSN. | Hex value octet string | 2 | 9c |
| RAT Type | 29 | O | This field indicates the Radio Access Technology (RAT) type currently used by the Mobile Station. | Integer | 1 | 9d |
| camel-info | 30 | O | This field is supported if Ge interface is supported. CLI gtp attribute camel-info needs to be enabled to populate this field. | | 1 - n | be |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|-----------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------|
| SCF Address | 30-0 | O | This identifier refers to the network address (E.164 number) of the subscriber related SCP. Address is defined in HLR as part of CAMEL subscription information. The address is BCD encoded. | Address string | 1 - 11 | 81 |
| Service Key | 30-1 | O | This parameter describes in case of usage of a CAMEL the service key. Service key is defined in HLR as part of CAMEL subscription information. | Integer | 1 - 5 | 82 |
| defaultHandling | 30-2 | O | This field indicates whether or not a CAMEL encountered a default GPRS-handling or SMS-handling. | Enumerated integer | 1 | 83 |
| AVLAsRN | 30-3 | O | | | | 84 |
| AVLAsRN-I | 30-4 | O | | | | 85 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|-----------------------------------------|------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------|
| Number of Ports | 30-5 | O | This field indicates how many armed CAMEL detection points (TDP and EDP) were encountered and complements "Level of CAMEL service" field. | Integer | 1 - 5 | 86 |
| Level Of Camel Service | 30-6 | O | This field describes briefly the complexity of CAMEL invocation. | Bit string | 2 | 87 |
| freeFormatData | 30-7 | O | | | | 88 |
| FDAppIndicator | 30-8 | O | | | | 89 |
| RNC Unsent Volume | 31 | O | This field contains the unsent downlink (from RNC to MS) data volume in bytes. | Integer | 1 - 5 | 9f1f |
| Charging Characteristics Selection Mode | 32 | O | This field specifies how the Charging Characteristics was selected | Enumerated integer | 1 | 9f20 |
| Dynamic Address Flag | 33 | O | This field indicates that the PDP address has been dynamically allocated for that particular PDP context. | Boolean | 1 | 9f21 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|---------------------------------------|------------|----------|----------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| ServedPDP PDN Address Extension | 36 | O | This field contains the IPv4 address allocated for the PDP context/PDN connection when dual-stack IPv4-IPv6 is used. | Octet string | 8 | bf2d |

Notes:

- The field "Served PDP PDN Address Extension"(servedPDPPDNAddressExt) is not part of the 3GPP 32.298 v8.5.0 specification. This field will be available in the CDR only when the CLI command **gtp attribute served-pdp-pdn-address-extension** is configured in the GTP Server Group Configuration Mode. This field is disabled by default. For more information on this command, refer to the *Command Line Interface Reference*.

ASN.1 Definition for Fields in custom6 Dictionary

The following section provides the complete ASN.1 definition of all S-CDR related fields in this dictionary.

```
GPRS-SGSN-Charging-DataTypes-REL6 DEFINITIONS IMPLICIT TAGS ::=
BEGIN
```

```
--ObjectInstance
--FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) version1 (1) protocol (3)}
```

```
-----
--
--      GPRS RECORDS
--
-----
```

```
GPRSRecord ::= CHOICE
--
{
    sgsnPDPRecord[20] SGSNPDPRecord
}
```

```
ManagementExtension ::= SEQUENCE
{
    identifier OBJECT IDENTIFIER,
    significance [1] BOOLEAN DEFAULT FALSE,
    information [2] ANY DEFINED BY identifier
}
```

```
ManagementExtensions ::= SET OF ManagementExtension
```

```
ServiceKey ::= INTEGER (0..2147483647)
```

```
DefaultGPRS-Handling ::= ENUMERATED
```

```

{
    continueTransaction (0),
    releaseTransaction (1)
}

SGSNPDPPRecord ::= SET
{
    recordType [0] RecordType,
    networkInitiation [1] NetworkInitiatedPDPCContext OPTIONAL,
    servedIMSI [3] IMSI,
    servedIMEI [4] IMEI OPTIONAL,
    sgsnAddress [5] GSNAddress OPTIONAL,
    msNetworkCapability [6] MSNetworkCapability OPTIONAL,
    routingArea [7] RoutingAreaCode OPTIONAL,
    locationAreaCode [8] LocationAreaCode OPTIONAL,
    cellIdentifier [9] CellId OPTIONAL,
    chargingID [10] ChargingID,
    ggsnAddressUsed [11] GSNAddress,
    accessPointNameNI [12] AccessPointNameNI OPTIONAL,
    pdpType [13] PDPType OPTIONAL,
    servedPDPAddress [14] PDPAddress OPTIONAL,
    listOfTrafficVolumes [15] SEQUENCE OF ChangeOfCharCondition OPTIONAL,
    recordOpeningTime [16] TimeStamp,
    duration [17] CallDuration,
    sgsnChange [18] SGSNChange OPTIONAL,
    causeForRecClosing [19] CauseForRecClosing,
    diagnostics [20] Diagnostics OPTIONAL,
    recordSequenceNumber [21] INTEGER OPTIONAL,
    nodeID [22] NodeID OPTIONAL,
    recordExtensions [23] ManagementExtensions OPTIONAL,
    localSequenceNumber [24] LocalSequenceNumber OPTIONAL,
    apnSelectionMode [25] APNSelectionMode OPTIONAL,
    accessPointNameOI [26] AccessPointNameOI OPTIONAL,
    servedMSISDN [27] MSISDN OPTIONAL,
    chargingCharacteristics [28] ChargingCharacteristics,
    rATType [29] RATType OPTIONAL,
    cAMELInformationPDP [30] CAMELInformationPDP OPTIONAL,
    rNCUnsentDownlinkVolume [31] DataVolumeGPRS OPTIONAL,
    chChSelectionMode [32] ChChSelectionMode OPTIONAL,
    dynamicAddressFlag [33] DynamicAddressFlag OPTIONAL
}

```

```

-----
--      GPRS DATA TYPES
--
-----
maxAddressLength    INTEGER ::= 20

AccessPointNameNI ::= IA5String (SIZE(1..63))
--
-- Network Identifier part of APN in dot representation.
-- For example, if the complete APN is 'apn1a.apn1b.apn1c.mnc022.mcc111.gprs'
-- NI is 'apn1a.apn1b.apn1c' and is presented in this form in the CDR..
--
AccessPointNameOI ::= IA5String (SIZE(1..37))
--
-- Operator Identifier part of APN in dot representation.
-- In the 'apn1a.apn1b.apn1c.mnc022.mcc111.gprs' example, the OI portion is
'mnc022.mcc111.gprs'
-- and is presented in this form in the CDR.

```

```

--

AddressString ::= OCTET STRING (SIZE (1..maxAddressLength))

APNSSelectionMode ::= ENUMERATED
{
--
-- See Information Elements TS 29.060
--
mSorNetworkProvidedSubscriptionVerified(0),
mSProvidedSubscriptionNotVerified(1),
networkProvidedSubscriptionNotVerified(2)
}

CAMELAccessPointNameNI ::= AccessPointNameNI

CAMELAccessPointNameOI ::= AccessPointNameOI

CAMELInformationPDP ::= SET
{
sCFAddress[1]                               SCFAddress OPTIONAL,
serviceKey[2]                               ServiceKey OPTIONAL,
defaultTransactionHandling[3]              DefaultGPRS-Handling OPTIONAL,
cAMELAccessPointNameNI[4]                  CAMELAccessPointNameNI OPTIONAL,
cAMELAccessPointNameOI[5]                  CAMELAccessPointNameOI OPTIONAL,
numberOfDPENcountered[6]                   NumberOfDPENcountered OPTIONAL,
levelOfCAMELService[7]                     LevelOfCAMELService OPTIONAL,
freeFormatData[8]                          FreeFormatData OPTIONAL,
fFDAppendIndicator[9]                      FFDAppendIndicator OPTIONAL
}

CauseForRecClosing ::= INTEGER
{
--
-- In GGSN the value sGSNChange should be used for partial record
-- generation due to SGSN Address List Overflow
--
-- LCS related causes belong to the MAP error causes acc. TS 29.002
--
-- cause codes 0 to 15 are defined 'CauseForTerm' (cause for termination)
--
normalRelease                               (0),
abnormalRelease                             (4),
cAMELInitCallRelease                         (5),
volumeLimit                                 (16),
timeLimit                                   (17),
sGSNChange                                  (18),
maxChangeCond                               (19),
managementIntervention                      (20),
intraSGSNIntersystemChange                  (21),
rATChange                                   (22),
mTimeZoneChange                             (23),
unauthorizedRequestingNetwork               (52),
unauthorizedLCSCClient                      (53),
positionMethodFailure                       (54),
unknownOrUnreachableLCSCClient             (58),
listofDownstreamNodeChange                  (59)
}

ChangeCondition ::= ENUMERATED
{
--
-- Failure Handling values used in eGCDR only
--

```

```

qoSChange (0),
tariffTime (1),
recordClosure (2),
failureHandlingContinueOngoing (3),
failureHandlingRetryandTerminateOngoing (4),
failureHandlingTerminateOngoing (5)
}

ChangeOfCharCondition ::= SEQUENCE
{
  --
  -- Used in PDP context record only
  -- failureHandlingContinue field used in eGCDR only
  --
  qosRequested[1] QoSInformation OPTIONAL,
  qosNegotiated[2] QoSInformation OPTIONAL,
  dataVolumeGPRSUplink[3] DataVolumeGPRS,
  dataVolumeGPRSDownlink[4] DataVolumeGPRS,
  changeCondition[5] ChangeCondition,
  changeTime[6] TimeStamp
}

ChargingCharacteristics ::= OCTET STRING (SIZE(2))
--
--SIZEBit 0-3: Profile Index
--IndexBit 4-15: For Behavior
--

ChargingID ::= INTEGER (0..4294967295)
--
-- Generated in GGSN, part of PDP context, see TS 23.060
-- 0..4294967295 is equivalent to 0..2**32-1
--

ChChSelectionMode ::= ENUMERATED
{
  sGSNSupplied(0), -- For GGSN only
  subscriptionSpecific(1), -- For SGSN only
  aPNSpecific(2), -- For SGSN only
  homeDefault(3), -- For SGSN and GGSN
  roamingDefault(4), -- For SGSN and GGSN
  visitingDefault(5) -- For SGSN and GGSN
}

DataVolumeGPRS ::= INTEGER
--
-- The volume of data transferred in octets.
--

DynamicAddressFlag ::= BOOLEAN

GSNAddress ::= IPAddress

IA5String ::= [UNIVERSAL 22] IMPLICIT OCTET STRING

IMSI ::= TBCD-STRING (SIZE (3..8))
--
-- from 29.002
-- digits of MCC, MNC, MSIN are concatenated in this order.
--

IMEI ::= TBCD-STRING (SIZE (8))

```

```

--
-- Refers to International Mobile Station Equipment Identity
-- and Software Version Number (SVN) defined in TS 3GPP TS 23.003
-- If the SVN is not present the last octet shall contain the
-- digit 0 and a filler.
-- If present the SVN shall be included in the last octet.
--

ISDN-AddressString ::= OCTET STRING

ETSIAddress ::= AddressString
--
-- First octet for nature of address, and numbering plan indicator (3 for X.121)
-- Other octets TBCD
-- See TS 29.002
--

FFDAppendIndicator ::= BOOLEAN

FreeFormatData ::= OCTET STRING (SIZE(1..160))
--
-- Free formatted data as sent in the FurnishChargingInformationGPRS
-- see TS 29.078
--

MSNetworkCapability ::= OCTET STRING (SIZE(1..8))
-- see TS 24.008

NetworkInitiatedPDPContext ::= BOOLEAN
--
-- Set to true if PDP context was initiated from network side
--

NodeID ::= IA5String (SIZE(1..20))

NumberOfDPEncountered ::= INTEGER

PDPAddress ::= CHOICE
{
  ipAddress[0] IPAddress,
  eTSIAddress [1] ETSIAddress
}

PDPTType ::= OCTET STRING (SIZE(2))
--
-- OCTET 1: PDP Type Organization
-- OCTET 2: PDP Type Number
-- See TS 29.060
--

QoSInformation ::= OCTET STRING (SIZE (4..15))
--
-- This octet string
-- is a 1:1 copy of the contents (i.e. starting with octet 4) of the "Quality of
-- service Profile" information element specified in TS 29.060

RATType ::= INTEGER (0..255)
--
-- This integer is 1:1 copy of the RAT type value as defined in TS 29.060
--

ResultCode ::= INTEGER

```

```

--
-- charging protocol return value, range of 4 byte (0..4294967259)
-- see Result-Code AVP as used in 3GPP 29.210
--

RoutingAreaCode ::= OCTET STRING (SIZE(1))
--
-- See TS 24.008
--

SGSNChange ::= BOOLEAN
--
-- present if first record after inter SGSN routing area update
-- in new SGSN
--

RecordType ::= INTEGER
{
    sgsnPDPRecord(18)
}

Diagnostics ::= CHOICE
{
    gsm0408Cause[0] INTEGER
}

IPAddress ::= CHOICE
{
    iPBinaryAddress IPBinaryAddress,
    iPTextRepresentedAddress IPTextRepresentedAddress
}

IPBinaryAddress ::= CHOICE
{
    iPBinV4Address[0] OCTET STRING (SIZE(4)),
    iPBinV6Address[1] OCTET STRING (SIZE(16))
}

IPTextRepresentedAddress ::= CHOICE
{
    --
    -- IP address in the familiar "dot" notation
    --
    iPTextV4Address[2] IA5String (SIZE(7..15)),
    iPTextV6Address[3] IA5String (SIZE(15..45))
}

LevelOfCAMELService ::= BIT STRING
{
    basic(0),
    callDurationSupervision(1),
    onlineCharging(2)
}

LocalSequenceNumber ::= INTEGER (0..4294967295)
--
-- Sequence number of the record in this node
-- 0.. 4294967295 is equivalent to 0..2**32-1, unsigned integer in four octets

LocationAreaAndCell ::= SEQUENCE
{
    locationAreaCode[0] LocationAreaCode,
    cellId[1] CellId
}

```

```

LocationAreaCode ::= OCTET STRING (SIZE(2))
--
-- See TS 24.008
--
MSISDN ::= ISDN-AddressString

MSTimeZone ::= OCTET STRING (SIZE (2))
--
-- 1.Octet: Time Zone and 2. Octet: Daylight saving time, see TS 29.060

TBCD-STRING ::= OCTET STRING

TimeStamp ::= OCTET STRING (SIZE(9))
--
-- The contents of this field are a compact form of the UTCTime 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. YMMDDhhmmssShhmm
-- 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
--
--
CallDuration ::= INTEGER

CellId ::= OCTET STRING (SIZE(2))
--
-- Coded according to TS 24.008
--

SCFAddress ::= AddressString
--
-- See TS 29.002
--

END

```

custom8 Dictionary

S-CDR fields in this dictionary are based on 3GPP TS 32.298 v7.4.0 specification.

| Field | Category | Description |
|-------------------------------|----------|--------------------------------------------------------------------|
| Record Type | M | SGSN PDP context record. |
| Network Initiated PDP Context | OC | A flag that is present if this is a network-initiated PDP context. |
| Served IMSI | M | IMSI of the served party. |
| Served IMEI | OC | The IMEI of the ME, if available. |

| Field | Category | Description |
|--------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SGSN Address | OM | The IP address of the current SGSN. |
| MS Network Capability | OM | The mobile station Network Capability. |
| Routing Area Code (RAC) | OM | RAC at the time of "Record Opening Time". |
| Location Area Code (LAC) | OM | LAC at the time of "Record Opening Time". |
| Cell Identifier | OM | Cell identity for GSM or Service Area Code (SAC) for UMTS at the time of "Record Opening Time". |
| Charging ID | M | PDP context identifier used to identify this PDP context in different records created by GSNs. |
| GGSN Address Used | M | The control plane IP address of the GGSN currently used. The GGSN address is always the same for an activated PDP context. |
| Access Point Name Network Identifier | OM | The logical name of the connected access point to the external packet data network (network identifier part of APN). |
| PDP Type | OM | PDP type, i.e. IP, PPP, IHOSS:OSP. |
| Served PDP Address | OC | PDP address of the served IMSI, i.e. IPv4 or IPv6. This parameter shall be present except when both the PDP type is PPP and dynamic PDP address assignment is used. |
| List of Traffic Data Volumes | OM | A list of changes in charging conditions for this PDP context, each change is time stamped. Charging conditions are used to categorize traffic volumes, such as per tariff period. Initial and subsequently changed QoS and corresponding data volumes are also listed. |

| Field | Category | Description |
|---------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Record Opening Time | M | Time stamp when PDP context is activated in this SGSN or record opening time on subsequent partial records. |
| Duration | M | Duration of this record in the SGSN. |
| SGSN Change | C | Present if this is first record after SGSN change. |
| Cause for Record Closing | M | The reason for closure of the record from this SGSN. |
| Diagnostics | OM | A more detailed reason for the release of the connection. |
| Record Sequence Number | C | Partial record sequence number in this SGSN. Only present in case of partial records. |
| Node ID | OM | Name of the recording entity. |
| Record Extensions | OC | A set of network operator/manufacturer specific extensions to the record. Conditioned upon the existence of an extension. |
| Local Record Sequence Number | OM | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| APN Selection Mode | OM | An index indicating how the APN was selected. |
| Access Point Name Operator Identifier | OM | The Operator Identifier part of the APN. |
| Served MSISDN | OM | The primary MSISDN of the subscriber. |
| Charging Characteristics | M | The Charging Characteristics applied to the PDP context. |
| RAT Type | OC | This field indicates the Radio Access Technology (RAT) type, e.g. UTRAN or GERAN, currently used by the Mobile Station as defined in TS 29.060. |

| Field | Category | Description |
|-----------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| RNC Unsent Downlink Volume | OC | The downlink data volume, which the RNC has not sent to MS. This field is present when the RNC has provided unsent downlink volume count at RAB release. |
| Charging Characteristics Selection Mode | OM | Holds information about how Charging Characteristics were selected. |
| Dynamic Address Flag | OC | Indicates whether served PDP address is dynamic, which is allocated during PDP context activation. This field is missing if address is static. |

Notes:

- Support for Direct Tunnel triggers.
- All IP addresses in Binary format.

custom13 Dictionary

S-CDR fields in this dictionary are based on 3GPP TS 32.298 v6.4.1 (R6) specification.



Important

In custom13 the IP address is encoded in binary format.

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|-------------------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-----------|
| Record Type | 0 | M | The field identifies the type of the record. | Integer | 1 | 80 |
| Network initiated PDP context | 1 | O | This field indicates that the PDP context was network initiated. This field is missing in case of mobile activated PDP context. | Boolean | 1 | 81 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------|-----------|
| Served IMSI | 3 | M | This field contains the International Mobile Subscriber Identity (IMSI) of the served party. | BCD encoded octet string. | 3 - 8 | 83 |
| Served IMEI | 4 | O | This field contains the international mobile equipment identity (IMEI) of the equipment served. | BCD encoded octet string. IMEISV will be sent in case if IMEI is not available. | 8 | 84 |
| SGSN Address | 5 | M | This field provides the current SGSN IP Address for the Control Plane. | Choice | 9 - 17 | A5 |
| SGSN Binary IPv4 Address | 5-0 | M | This field represents the IPv4 binary address. | Octet string | 7 - 15 | 82 |
| MS Network Capability | 6 | O | MS Network Capability field contains the MS network capability value of the MS network capability information element of the served MS on PDP context activation or on GPRS attachment as defined in 3GPP TS 24.008. | Octet string | 1 - 8 | 86 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Routing Area | 7 | O | This field contains the Routing Area Code (RAC) of the routing area in which the served party is currently located. | Octet string | 1 | 87 |
| Location Area Code | 8 | O | This field contains the Location Area Code (LAC) of the location area in which the served party is currently located. | Octet string | 2 | 88 |
| Cell Identifier | 9 | O | For GSM, the Cell Identifier is defined as the Cell Id, reference 24.008, and for UMTS it is defined as the Service Area Code in TS 25.413. | Octet string | 2 | 89 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------------------|------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Charging ID | 10 | M | This field is a charging identifier, which can be used together with the GGSN address to identify all records produced in the GGSN involved in a single PDP context. The Charging ID is generated by the GGSN at PDP context activation and is transferred to the context requesting SGSN | Octet string | 1 - 5 | 8a |
| GGSN Address | 11 | M | This field provides the current SGSN IP Address for the Control Plane. | Choice | 9 - 17 | AB |
| GGSN Binary IPV4 Address | 11-0 | M | This field represents the IPv4 binary address. | Octet string | 7 - 15 | 82 |
| Access Point Name Network Identifier | 12 | M | This field contains the Network Identifier part of the Access Point Name (APN). | IA5 string | 1 - 63 | 8c |
| PDP Type | 13 | O | This field defines the PDP type, e.g. IP or PPP | Octet string | 2 | 8d |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------------|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Served PDP Address | 14 | O | This field contains the PDP address of the served IMSI, for which the standard 3GPP TS 32.298 allows a choice of either IP Address or ETSI Address. | Choice | 11 - 19 | ae |
| Served PDP IP Address | 14-0 | M | Only the choice of IP Address is supported by the SGSN for the field described above. | Choice | 9 - 17 | a0 |
| Served PDP IPV4 Binary Address | 14-0-0 | M | The octet string included in the field described above includes the IPv4 address assigned to the subscriber by GGSN in binary coding. | Octet string | 7 - 15 | 82 |
| List of Traffic Volumes | 15 | M | | Sequence | | af |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------------------|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Change Of Charging Condition | 15-0 | M | Each traffic volume container contains details related to a charging condition. A new container is usually created for a QoS change and for tariff changes. | Sequence | | 30 |
| QoS Requested | 15-0-1 | O | The Quality of Service Requested field contains the QoS desired by the MS at PDP context activation. | Octet string | 4 - 12 | 81 |
| QoS Negotiated | 15-0-2 | O | QoS Negotiated indicates the applied QoS accepted by the network. | Octet string | 4 - 12 | 82 |
| Data Volume GPRS Uplink | 15-0-3 | M | 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. | Integer | 1 - 4 | 83 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|---------------------------------|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|-----------|
| Data volume GPRS Downlink | 15-0-4 | M | 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. | Integer | 1 - 4 | 84 |
| Change Condition | 15-0-5 | M | The Change Condition field is part of the ChangeCondition element in the List of Traffic Volumes. It defines the reason for closing the container: Supported values: <ul style="list-style-type: none"> • qsChange 0 • tariffTime 1 • readClose 2 | Enumerated integer | 1 | 85 |
| Change time | 15-0-6 | M | Change Time is a time stamp, which defines the moment when the volume container is closed or the CDR is closed. | BCD encoded octet string | 6 | 86 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|-----------|
| Record Opening Time | 16 | M | 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. | BCD encoded octet string | 6 | 90 |
| Record Opening Time | 17 | M | | Integer | 1 - 5 | 91 |
| SGSN Change | 18 | O | This field is present only in the S-CDR to indicate that this is the first record after an inter-SGSN routing area update. | Boolean | 1 | 92 |
| Cause for Record Closing | 19 | M | This field contains a reason for the closure of the CDR. | Integer | 1 | 93 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|-----------|
| DiagnosticsSM | 20 | O | This field contains the system internal reasons for the PDP context deactivation at Session Management Level. | Choice | 3 | B4 |
| gsm0408Cause | 20 - 0 | M | This cause is used in the Diagnostics field. | Integer | 1 | 80 |
| Record Sequence Number | 21 | O | A running sequence number with range 1-4294967295 used to link partial records generated by the SGSN for a specific PDP context (characterized with the same Charging ID and GGSN address). This field is not present if the first record is also the final record. | Integer | 1 - 5 | 95 |
| Node ID | 22 | O | This field contains an identifier string for the node that had generated the CDR. | IA5 string | 5 - 20 | 96 |
| Record Extensions | 23 | O | | Set | 1 - n | 97 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|---------------------------------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------|
| Local Record Sequence Number | 24 | O | 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. This field is only included when the option gtp attribute local-source-number is configured. By configuring gtp single-source-number in the local record sequence number will be incremented for S-CDRs. | | 1 - 5 | 98 |
| APN Selection Mode | 25 | O | This field indicates how the APN was selected. | Enumerated integer | 1 | 99 |
| Access Point Name Operator Identifier | 26 | M | This field contains the Operator Identifier part of the Access Point Name (APN). | IA5 string | 1 - 37 | 9a |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|-----------|
| Served MSISDN | 27 | O | The field tracks the Mobile Station (MS) ISDN number (MSISDN) of the subscriber which is transparently copied from the Create PDP Context Request message. | BCD encoded octet string | 1 - 9 | 9b |
| Charging Characteristics | 28 | M | Lists the charging characteristics applied to the PDP context by the SGSN. | Hex value octet string | 2 | 9c |
| Rat Type | 29 | O | This field indicates the Radio Access Technology (RAT) type currently used by the Mobile Station. | Integer | 1 | 9d |
| camel-info | 30 | O | This field is supported if Ge interface is supported. CLI gtp attribute camel-info needs to be enabled to populate this field. | | 1 - n | be |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------|
| SCF Address | 30-0 | O | This identifier refers to the network address (E.164 number) of the subscriber related SCP. Address is defined in HLR as part of CAMEL subscription information. The address is BCD encoded. | Address string | 1 - 11 | 81 |
| Service Key | 30-1 | O | This parameter describes in case of usage of a CAMEL the service key. Service key is defined in HLR as part of CAMEL subscription information. | Integer | 1 - 5 | 82 |
| Default Handling | 30-2 | O | This field indicates whether or not a CAMEL encountered a default GPRS-handling or SMS-handling. | Enumerated integer | 1 | 83 |
| AVLAsPNC | 30-3 | O | | | | 84 |
| AVLAsPNC | 30-4 | O | | | | 85 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|-----------------------------------------|------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------|
| Number of Ports | 30-5 | O | This field indicates how many armed CAMEL detection points (TDP and EDP) were encountered and complements "Level of CAMEL service" field. | Integer | 1 - 5 | 86 |
| Level Of Camel Service | 30-6 | O | This field describes briefly the complexity of CAMEL invocation. | Bit string | 2 | 87 |
| freeFormatData | 30-7 | O | | | | 88 |
| FDAppIndicator | 30-8 | O | | | | 89 |
| RNC Unsent Volume | 31 | O | This field contains the unsent downlink (from RNC to MS) data volume in bytes. | Integer | 1 - 5 | 9f1f |
| Charging Characteristics Selection Mode | 32 | O | This field specifies how the Charging Characteristics was selected | Enumerated integer | 1 | 9f20 |
| Dynamic Address Flag | 33 | O | This field indicates that the PDP address has been dynamically allocated for that particular PDP context. | Boolean | 1 | 9f21 |

Notes:

- Context deactivation due to Inter-SGSN RAU results in final CDR with cause "SGSN Change" value:18 (decimal).

ASN.1 Definition for Fields in custom13 Dictionary

The following section provides the complete ASN.1 definition of all S-CDR related fields in this dictionary.

```
GPRS-SGSN-Charging-DataTypes-REL6 DEFINITIONS IMPLICIT TAGS ::=
BEGIN

--ObjectInstance
--FROM CMIP-1 (joint-iso-ccitt ms(9) cmip(1) version1 (1) protocol (3))

-----
--
--      GPRS RECORDS
--
-----

GPRSRecord ::= CHOICE
--
{
    sgsnPDPRecord[20] SGSNPDPRecord
}

ManagementExtension ::= SEQUENCE
{
    identifier OBJECT IDENTIFIER,
    significance          [1]          BOOLEAN DEFAULT FALSE,
    information            [2]          ANY DEFINED BY identifier
}

ManagementExtensions ::= SET OF ManagementExtension

ServiceKey ::= INTEGER (0..2147483647)

DefaultGPRS-Handling ::= ENUMERATED
{
    continueTransaction (0) ,
    releaseTransaction (1)
}

SGSNPDPRecord ::= SET
{
    recordType                [0] RecordType,
    networkInitiation         [1] NetworkInitiatedPDPCContext OPTIONAL,
    servedIMSI                [3] IMSI,
    servedIMEI                 [4] IMEI OPTIONAL,
    sgsnAddress                [5] GSNAddress OPTIONAL,
    msNetworkCapability        [6] MSNetworkCapability OPTIONAL,
    routingArea                [7] RoutingAreaCode OPTIONAL,
    locationAreaCode          [8] LocationAreaCode OPTIONAL,
    cellIdentifier             [9] CellId OPTIONAL,
    chargingID                 [10] ChargingID,
    ggsnAddressUsed           [11] GSNAddress,
    accessPointNameNI         [12] AccessPointNameNI OPTIONAL,
    pdpType                    [13] PDPTType OPTIONAL,
    servedPDPAddress          [14] PDPAddress OPTIONAL,
}
```



```

listOfTrafficVolumes          [15] SEQUENCE OF ChangeOfCharCondition OPTIONAL,
recordOpeningTime            [16] TimeStamp,
duration                     [17] CallDuration,
sgsnChange                   [18] SGSNChange OPTIONAL,
causeForRecClosing           [19] CauseForRecClosing,
diagnostics                  [20] Diagnostics OPTIONAL,
recordSequenceNumber         [21] INTEGER OPTIONAL,
nodeID                       [22] NodeID OPTIONAL,
recordExtensions              [23] ManagementExtensions OPTIONAL,
localSequenceNumber          [24] LocalSequenceNumber OPTIONAL,
apnSelectionMode             [25] APNSelectionMode OPTIONAL,
accessPointNameOI            [26] AccessPointNameOI OPTIONAL,
servedMSISDN                 [27] MSISDN OPTIONAL,
chargingCharacteristics      [28] ChargingCharacteristics,
rATType                      [29] RATType OPTIONAL,
cAMELInformationPDP          [30] CAMELInformationPDP OPTIONAL,
rNCUnsentDownlinkVolume     [31] DataVolumeGPRS OPTIONAL,
chChSelectionMode           [32] ChChSelectionMode OPTIONAL,
dynamicAddressFlag           [33] DynamicAddressFlag OPTIONAL
}

```

```

-----
--      GPRS DATA TYPES
--
-----
maxAddressLength      INTEGER ::= 20

AccessPointNameNI ::= IA5String (SIZE(1..63))
--
-- Network Identifier part of APN in dot representation.
-- For example, if the complete APN is 'apn1a.apn1b.apn1c.mnc022.mcc111.gprs'
-- NI is 'apn1a.apn1b.apn1c' and is presented in this form in the CDR..
--
AccessPointNameOI ::= IA5String (SIZE(1..37))
--
-- Operator Identifier part of APN in dot representation.
-- In the 'apn1a.apn1b.apn1c.mnc022.mcc111.gprs' example, the OI portion is
' mnc022.mcc111.gprs '
-- and is presented in this form in the CDR.
--
AddressString ::= OCTET STRING (SIZE (1..maxAddressLength))

APNSelectionMode ::= ENUMERATED
{
--
-- See Information Elements TS 29.060
--
mSorNetworkProvidedSubscriptionVerified(0),
mSProvidedSubscriptionNotVerified(1),
networkProvidedSubscriptionNotVerified(2)
}

CAMELAccessPointNameNI ::= AccessPointNameNI

CAMELAccessPointNameOI ::= AccessPointNameOI

CAMELInformationPDP ::= SET
{
sCFAddress[1]                SCFAddress OPTIONAL,
serviceKey[2]                ServiceKey OPTIONAL,
}

```

ASN.1 Definition for Fields in custom13 Dictionary

```

defaultTransactionHandling[3]      DefaultGPRS-Handling OPTIONAL,
cAMELAccessPointNameNI [4]         CAMELAccessPointNameNI OPTIONAL,
cAMELAccessPointNameOI [5]         CAMELAccessPointNameOI OPTIONAL,
numberOfDPEncountered[6]          NumberOfDPEncountered OPTIONAL,
levelOfCAMELService[7]            LevelOfCAMELService OPTIONAL,
freeFormatData[8]                 FreeFormatData OPTIONAL,
fFDAppendIndicator[9]             FFDAppendIndicator OPTIONAL
}

CauseForRecClosing ::= INTEGER
{
  --
  -- In GGSN the value sGSNChange should be used for partial record
  -- generation due to SGSN Address List Overflow
  --
  -- LCS related causes belong to the MAP error causes acc. TS 29.002
  --
  -- cause codes 0 to 15 are defined 'CauseForTerm' (cause for termination)
  --
  normalRelease                    (0),
  abnormalRelease                  (4),
  cAMELInitCallRelease             (5),
  volumeLimit                      (16),
  timeLimit                       (17),
  sGSNChange                      (18),
  maxChangeCond                   (19),
  managementIntervention           (20),
  intraSGSNIntersystemChange      (21),
  rATChange                        (22),
  mSTimeZoneChange                (23),
  unauthorizedRequestingNetwork   (52),
  unauthorizedLCSCClient           (53),
  positionMethodFailure            (54),
  unknownOrUnreachableLCSCClient  (58),
  listofDownstreamNodeChange      (59)
}

ChangeCondition ::= ENUMERATED
{
  --
  -- Failure Handling values used in eGCDR only
  --
  qosChange                        (0),
  tariffTime                      (1),
  recordClosure                    (2),
  failureHandlingContinueOngoing   (3),
  failureHandlingRetryandTerminateOngoing (4),
  failureHandlingTerminateOngoing  (5)
}

ChangeOfCharCondition ::= SEQUENCE
{
  --
  -- Used in PDP context record only
  -- failureHandlingContinue field used in eGCDR only
  --
  qosRequested[1]                  QoSInformation OPTIONAL,
  qosNegotiated[2]                 QoSInformation OPTIONAL,
  dataVolumeGPRSUpLink[3]          DataVolumeGPRS,
  dataVolumeGPRSDownLink[4]       DataVolumeGPRS,
  changeCondition[5]               ChangeCondition,
  changeTime[6]                    TimeStamp
}

```

```

ChargingCharacteristics ::= OCTET STRING (SIZE(2))
--
--SIZEBit 0-3: Profile Index
--IndexBit 4-15: For Behavior
--

ChargingID ::= INTEGER (0..4294967295)
--
-- Generated in GGSN, part of PDP context, see TS 23.060
-- 0..4294967295 is equivalent to 0..2**32-1
--

ChChSelectionMode ::= ENUMERATED
{
  sGSNSupplied(0),           -- For GGSN only
  subscriptionSpecific(1),   -- For SGSN only
  aPNSpecific(2),           -- For SGSN only
  homeDefault(3),           -- For SGSN and GGSN
  roamingDefault(4),        -- For SGSN and GGSN
  visitingDefault(5)        -- For SGSN and GGSN
}

DataVolumeGPRS ::= INTEGER
--
-- The volume of data transferred in octets.
--

DynamicAddressFlag ::= BOOLEAN

GSNAddress ::= IPAddress

IA5String          ::= [UNIVERSAL 22] IMPLICIT OCTET STRING

IMSI ::= TBCD-STRING (SIZE (3..8))
--
-- from 29.002
-- digits of MCC, MNC, MSIN are concatenated in this order.
--

IMEI ::= TBCD-STRING (SIZE (8))
--
-- Refers to International Mobile Station Equipment Identity
-- and Software Version Number (SVN) defined in TS 3GPP TS 23.003
-- If the SVN is not present the last octet shall contain the
-- digit 0 and a filler.
-- If present the SVN shall be included in the last octet.
--

ISDN-AddressString ::= OCTET STRING

ETSIAddress ::= AddressString
--
-- First octet for nature of address, and numbering plan indicator (3 for X.121)
-- Other octets TBCD
-- See TS 29.002
--

FFDAppendIndicator ::= BOOLEAN

FreeFormatData ::= OCTET STRING (SIZE(1..160))
--
-- Free formatted data as sent in the FurnishChargingInformationGPRS

```

```

-- see TS 29.078
--

MSNetworkCapability ::= OCTET STRING (SIZE(1..8))
-- see TS 24.008

NetworkInitiatedPDPContext ::= BOOLEAN
--
-- Set to true if PDP context was initiated from network side
--

NodeID ::= IA5String (SIZE(1..20))

NumberOfDPSEncountered ::= INTEGER

PDPAddress ::= CHOICE
{
  ipAddress      [0] IPAddress,
  eTSIAddress     [1] ETSIAddress
}

PDPTType ::= OCTET STRING (SIZE(2))
--
-- OCTET 1: PDP Type Organization
-- OCTET 2: PDP Type Number
-- See TS 29.060
--

QoSInformation ::= OCTET STRING (SIZE (4..15))
--
-- This octet string
-- is a 1:1 copy of the contents (i.e. starting with octet 4) of the "Quality of
-- service Profile" information element specified in TS 29.060

RATType ::= INTEGER (0..255)
--
-- This integer is 1:1 copy of the RAT type value as defined in TS 29.060
--

ResultCode ::= INTEGER
--
-- charging protocol return value, range of 4 byte (0..4294967259)
-- see Result-Code AVP as used in 3GPP 29.210
--

RoutingAreaCode ::= OCTET STRING (SIZE(1))
--
-- See TS 24.008
--

SGSNChange ::= BOOLEAN
--
-- present if first record after inter SGSN routing area update
-- in new SGSN
--

RecordType ::= INTEGER
{
  sgsnPDPRecord(18)
}

Diagnostics ::= CHOICE

```

```

{
  gsm0408Cause[0] INTEGER
}

IPAddress ::= CHOICE
{
  iPBinaryAddress IPBinaryAddress,
  iPTextRepresentedAddress IPTextRepresentedAddress
}

IPBinaryAddress ::= CHOICE
{
  iPBinV4Address[0] OCTET STRING (SIZE(4)),
  iPBinV6Address[1] OCTET STRING (SIZE(16))
}

IPTextRepresentedAddress ::= CHOICE
{
  --
  -- IP address in the familiar "dot" notation
  --
  iPTextV4Address[2] IA5String (SIZE(7..15)),
  iPTextV6Address[3] IA5String (SIZE(15..45))
}

LevelOfCAMELService ::= BIT STRING
{
  basic(0),
  callDurationSupervision(1),
  onlineCharging(2)
}

LocalSequenceNumber ::= INTEGER (0..4294967295)
--
-- Sequence number of the record in this node
-- 0.. 4294967295 is equivalent to 0..2**32-1, unsigned integer in four octets

LocationAreaAndCell ::= SEQUENCE
{
  locationAreaCode[0] LocationAreaCode,
  cellId[1] CellId
}

LocationAreaCode ::= OCTET STRING (SIZE(2))
--
-- See TS 24.008
--

MSISDN ::= ISDN-AddressString

MSTimeZone ::= OCTET STRING (SIZE (2))
--
-- 1.Octet: Time Zone and 2. Octet: Daylight saving time, see TS 29.060

TBCD-STRING ::= OCTET STRING

TimeStamp ::= OCTET STRING (SIZE(9))
--
-- The contents of this field are a compact form of the UTCTime 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
--
--

```

```
CallDuration ::= INTEGER
```

```
CellId ::= OCTET STRING (SIZE(2))
--
-- Coded according
```

custom24 Dictionary

Releases prior to 14.0, the S-CDR fields are based on TS 32.215 v4.5.0 (R4). In 14.0 and later releases, the S-CDR fields are based on TS 32.298 v9.6.0 (R9).



Important In custom24 the IP address is encoded in binary format.

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|-------------------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------|-----------|
| Record Type | 0 | M | The field identifies the type of the record. | Integer | 1 | 80 |
| Network initiated PDP context | 1 | O | This field indicates that the PDP context was network initiated. This field is missing in case of mobile activated PDP context. | Boolean | 1 | 81 |
| Served IMSI | 3 | M | This field contains the International Mobile Subscriber Identity (IMSI) of the served party. | BCD encoded octet string. | 3 - 8 | 83 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------|-----------|
| Served IMEI | 4 | O | This field contains the international mobile equipment identity (IMEI) of the equipment served. | BCD encoded octet string. IMEISV will be sent in case if IMEI is not available. | 8 | 84 |
| SGSN Address | 5 | M | This field provides the current SGSN IP Address for the Control Plane. | Choice | 6 | A5 |
| SGSN Binary IPv4 Address | 5-0 | M | This field represents the IPv4 binary address. | Octet string | 4 | 80 |
| MS Network Capability | 6 | O | MS Network Capability field contains the MS network capability value of the MS network capability information element of the served MS on PDP context activation or on GPRS attachment as defined in 3GPP TS 24.008. | Octet string | 1 - 8 | 86 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Routing Area | 7 | O | This field contains the Routing Area Code (RAC) of the routing area in which the served party is currently located. | Octet string | 1 | 87 |
| Location Area Code | 8 | O | This field contains the Location Area Code (LAC) of the location area in which the served party is currently located. | Octet string | 2 | 88 |
| Cell Identifier | 9 | O | For GSM, the Cell Identifier is defined as the Cell Id, reference 24.008, and for UMTS it is defined as the Service Area Code in TS 25.413. | Octet string | 2 | 89 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------------------|------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Charging ID | 10 | M | This field is a charging identifier, which can be used together with the GGSN address to identify all records produced in the GGSN involved in a single PDP context. The Charging ID is generated by the GGSN at PDP context activation and is transferred to the context requesting SGSN | Octet string | 1 - 5 | 8a |
| GGSN Address | 11 | M | This field provides the current SGSN IP Address for the Control Plane. | Choice | 9 - 17 | AB |
| GGSN Binary IPV4 Address | 11-0 | M | This field represents the IPv4 binary address. | Octet string | 7 - 15 | 80 |
| Access Point Name Network Identifier | 12 | M | This field contains the Network Identifier part of the Access Point Name (APN). | IA5 string | 1 - 63 | 8c |
| PDP Type | 13 | O | This field defines the PDP type, e.g. IP or PPP | Octet string | 2 | 8d |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------------|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Served PDP Address | 14 | O | This field contains the PDP address of the served IMSI, for which the standard 3GPP TS 32.298 allows a choice of either IP Address or ETSI Address. | Choice | 11 - 19 | ae |
| Served PDP IP Address | 14-0 | M | Only the choice of IP Address is supported by the SGSN for the field described above. | Choice | 9 - 17 | a0 |
| Served PDP IPV4 Binary Address | 14-0-0 | M | The octet string included in the field described above includes the IPv4 address assigned to the subscriber by GGSN in binary coding. | Octet string | 7 - 15 | 80 |
| List of Traffic Volumes | 15 | M | | Sequence | | af |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------------------|------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Change Of Charging Condition | 15-0 | M | Each traffic volume container contains details related to a charging condition. A new container is usually created for a QoS change and for tariff changes. | Sequence | | 30 |
| QoS Requested | 15-0-1 | O | The Quality of Service Requested field contains the QoS desired by the MS at PDP context activation. In Rel.9, the QoS length is from 4 bytes to 17 bytes. | Octet string | 4 - 17 | 81 |
| QoS Negotiated | 15-0-2 | O | QoS Negotiated indicates the applied QoS accepted by the network. In Rel.9, the QoS length is from 4 bytes to 17 bytes. | Octet string | 4 - 17 | 82 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|----------------------------|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-----------|
| Data Volume GPRS Uplink | 15-0-3 | OC | <p>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.</p> <p>Important This attribute will not be sent for Direct Tunnel (DT) sessions.</p> | Integer | 1 - 4 | 83 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|---------------------------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|-----------|
| Data volume GPRS Downlink | 15-0-4 | OC | <p>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.</p> <p>Important This attribute will not be sent for Direct Tunnel (DT) sessions.</p> | Integer | 1 - 4 | 84 |
| Change Condition | 15-0-5 | M | <p>The Change Condition field is part of the ChangeCondition element in the List of Traffic Volumes. It defines the reason for closing the container:</p> <p>Supported values:</p> <ul style="list-style-type: none"> • qsChange 0 • tariffTime 1 • readClose 2 | Enumerated integer | 1 | 85 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|---------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|-----------|
| Change time | 15-0-6 | M | Change Time is a time stamp, which defines the moment when the volume container is closed or the CDR is closed. | BCD encoded octet string | 6 | 86 |
| Record Opening Time | 16 | M | 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. | BCD encoded octet string | 6 | 90 |
| Duration | 17 | M | | Integer | 1 - 5 | 91 |
| SGSN Change | 18 | O | This field is present only in the S-CDR to indicate that this it is the first record after an inter-SGSN routing area update. | Boolean | 1 | 92 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|--------------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-----------|
| Cause for Record Closing | 19 | M | This field contains a reason for the closure of the CDR. | Integer | 1 | 93 |
| DiagnosticsSM | 20 | O | This field contains the system internal reasons for the PDP context deactivation at Session Management Level. | Choice | 3 | B4 |
| gsm0408Cause | 20 - 0 | M | This cause is used in the Diagnostics field. | Integer | 1 | 80 |
| Record Sequence Number | 21 | O | A running sequence number with range 1-4294967295 used to link partial records generated by the SGSN for a specific PDP context (characterized with the same Charging ID and GGSN address). This field is not present if the first record is also the final record. | Integer | 1 - 5 | 95 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------------------|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------|
| Node ID | 22 | O | This field contains an identifier string for the node that had generated the CDR. | IA5 string | 5 - 20 | 96 |
| Record Extensions | 23 | O | | Set | 1 - n | 97 |
| Local Record Sequence Number | 24 | O | 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. This field is only included when the option gtp attribute local-source-number is configured. By configuring gtp single-source attribute in the local record sequence number will be incremented for S-CDRs. | Octet string | 1 - 5 | 98 |
| APN Selection Mode | 25 | O | This field indicates how the APN was selected. | Enumerated integer | 1 | 99 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|---------------------------------------|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|-----------|
| Access Point Name Operator Identifier | 26 | M | This field contains the Operator Identifier part of the Access Point Name (APN). | IA5 string | 1 - 37 | 9a |
| Served MSISDN | 27 | O | The field tracks the Mobile Station (MS) ISDN number (MSISDN) of the subscriber which is transparently copied from the Create PDP Context Request message. | BCD encoded octet string | 1 - 9 | 9b |
| Charging Characteristics | 28 | M | Lists the charging characteristics applied to the PDP context by the SGSN. | Hex value octet string | 2 | 9c |
| Rat Type | 29 | O | This field indicates the Radio Access Technology (RAT) type currently used by the Mobile Station. | Integer | 1 | 9d |
| AMBR Info PDP | 30 | O | This field is supported if Ge interface is supported. CLI gtp attribute camel-info needs to be enabled to populate this field. | | 1 - n | be |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|-------------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------|-----------|
| SCF Address | 30-0 | O | This identifier refers to the network address (E.164 number) of the subscriber related SCP. Address is defined in HLR as part of CAMEL subscription information. The address is BCD encoded. | Address string | 1 - 11 | 81 |
| Service Key | 30-1 | O | This parameter describes in case of usage of a CAMEL the service key. Service key is defined in HLR as part of CAMEL subscription information. | Integer | 1 - 5 | 82 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|------------------------|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------|
| defaultHandling | 30-2 | O | This field indicates whether or not a CAMEL encountered a default GPRS-handling or SMS-handling. This field will be present only if default call handling has been applied. This parameter is defined in HLR as part of CAMEL subscription information. | Enumerated integer | 1 | 83 |
| AVLAsstN | 30-3 | O | | | | 84 |
| AVLAsstN | 30-4 | O | | | | 85 |
| NumOfArmed | 30-5 | O | This field indicates how many armed CAMEL detection points (TDP and EDP) were encountered and complements "Level of CAMEL service" field. | Integer | 1 - 5 | 86 |
| Level Of Camel Service | 30-6 | O | This field describes briefly the complexity of CAMEL invocation. | Bit string | 2 | 87 |
| freeFormatData | 30-7 | O | | | | 88 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|-----------------------------------------|------------|----------|-----------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------|
| ifDAAppendIndicator | 30-8 | O | | | | 9f89 |
| RNC Unsent Volume | 31 | O | This field contains the unsent downlink (from RNC to MS) data volume in bytes. | Integer | 1 - 5 | 9f1f |
| Charging Characteristics Selection Mode | 32 | O | This field specifies how the Charging Characteristics was selected | Enumerated integer | 1 | 9f20 |
| Dynamic Address Flag | 33 | O | This field indicates that the PDP address has been dynamically allocated for that particular PDP context. | Boolean | 1 | 9f21 |
| MSUnreachFlag | 34 | O | | Null | 0 | 9f22 |
| useCSInformation | 35 | O | | | N/A | 9f23 |

| Field Name | Tag Number | Category | Description | Format | Size in byte | ASN1 code |
|----------------------------------|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------|
| Served PDP PDN Address Extension | 36 | O | This field contains the IPv4 address for the PDP connection (PDP context, IP-CAN bearer) when dual-stack IPv4 IPv6 is used, and the IPv6 address is included in Served PDP Address or Served PDP/PDN Address. This field is missing if the PDP/PDN address is IPv4 or IPv6. | | | bf24 |
| PDP IP Address | 36-0 | M | This field contains the IP address for the PDP context. | Choice | 6 (IPV4) | 0xa0 |
| PDP IPv4 Binary Address | 36-0-0 | M | The octet string included in the field described above includes the IPv4 address assigned to the subscriber by of the GGSN in binary coding. | Octet string | 4 (IPV4) | 0x80 |


Important

The inclusion of the field "Served PDP/PDN Address extension" in the S-CDR is enabled on execution of the command **gtp attribute served-pdp-pdn-address-extension** in the GTP Server Group Configuration Mode. This field is disabled by default.

Notes:

- In custom24 the IP address is encoded in Binary format.
- If the CDR is closed in old SGSN due to Inter SGSN RAU the cause for record closure is "SGSN CHANGE" 18(DECIMAL).
- The fields "Record Extensions", "cAMELAccessPointNameNI", "cAMELAccessPointNameOI", "freeFormatData", "fFDAppendIndicator", "iMSIunauthenticatedFlag", and "userCSGInformation" are not supported.
- Camel fields are supported only if Ge interface is enabled.

ASN.1 Definition for Fields in custom24 Dictionary

The following section provides the complete ASN.1 definition of all S-CDR related fields in this dictionary.

```
GPRS-SGSN-Charging-DataTypes-REL6 DEFINITIONS IMPLICIT TAGS ::=
BEGIN

--ObjectInstance
--FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) version1 (1) protocol (3)}

-----
--
--      GPRS RECORDS
--
-----

GPRSRecord ::= CHOICE
--
{
    sgsnPDPRecord[20] SGSNPDPRecord
}

ManagementExtension ::= SEQUENCE
{
    identifier OBJECT IDENTIFIER,
    significance          [1]          BOOLEAN DEFAULT FALSE,
    information            [2]          ANY DEFINED BY identifier
}

ManagementExtensions ::= SET OF ManagementExtension

ServiceKey ::= INTEGER (0..2147483647)

DefaultGPRS-Handling ::= ENUMERATED
{
    continueTransaction (0) ,
    releaseTransaction (1)
}

SGSNPDPRecord ::= SET
{
    recordType                [0] RecordType,
    networkInitiation         [1] NetworkInitiatedPDPContext OPTIONAL,
    servedIMSI                [3] IMSI,
    servedIMEI                 [4] IMEI OPTIONAL,
    sgsnAddress                [5] GSNAddress OPTIONAL,
    msNetworkCapability        [6] MSNetworkCapability OPTIONAL,
    routingArea                [7] RoutingAreaCode OPTIONAL,
    locationAreaCode          [8] LocationAreaCode OPTIONAL,
}
```

```

cellIdentifier                [9] CellId OPTIONAL,
chargingID                    [10] ChargingID,
ggsnAddressUsed              [11] GSNAddress,
accessPointNameNI            [12] AccessPointNameNI OPTIONAL,
pdpType                       [13] PDPTYPE OPTIONAL,
servedPDPAddress             [14] PDPAddress OPTIONAL,
listOfTrafficVolumes         [15] SEQUENCE OF ChangeOfCharCondition OPTIONAL,

recordOpeningTime            [16] TimeStamp,
duration                      [17] CallDuration,
sgsnChange                    [18] SGSNChange OPTIONAL,
causeForRecClosing           [19] CauseForRecClosing,
diagnostics                   [20] Diagnostics OPTIONAL,
recordSequenceNumber         [21] INTEGER OPTIONAL,
nodeID                        [22] NodeID OPTIONAL,
recordExtensions             [23] ManagementExtensions OPTIONAL,
localSequenceNumber          [24] LocalSequenceNumber OPTIONAL,
apnSelectionMode             [25] APNSelectionMode OPTIONAL,
accessPointNameOI            [26] AccessPointNameOI OPTIONAL,
servedMSISDN                 [27] MSISDN OPTIONAL,
chargingCharacteristics       [28] ChargingCharacteristics,
rATType                       [29] RATType OPTIONAL,
cAMELInformationPDP          [30] CAMELInformationPDP OPTIONAL,
rNCUnsentDownlinkVolume     [31] DataVolumeGPRS OPTIONAL,
chChSelectionMode           [32] ChChSelectionMode OPTIONAL,
dynamicAddressFlag           [33] DynamicAddressFlag OPTIONAL,
servedPDPPDNAddressExt       [36] PDPAddress OPTIONAL
}

```

```

-----
--      GPRS DATA TYPES
--
-----
maxAddressLength      INTEGER ::= 20

AccessPointNameNI ::= IA5String (SIZE(1..63))
--
-- Network Identifier part of APN in dot representation.
-- For example, if the complete APN is 'apn1a.apn1b.apn1c.mnc022.mcc111.gprs'
-- NI is 'apn1a.apn1b.apn1c' and is presented in this form in the CDR.
--

AccessPointNameOI ::= IA5String (SIZE(1..37))
--
-- Operator Identifier part of APN in dot representation.
-- In the 'apn1a.apn1b.apn1c.mnc022.mcc111.gprs' example, the OI portion is
'mnc022.mcc111.gprs'
-- and is presented in this form in the CDR.
--

AddressString ::= OCTET STRING (SIZE (1..maxAddressLength))

APNSelectionMode ::= ENUMERATED
{
--
-- See Information Elements TS 29.060
--
mSorNetworkProvidedSubscriptionVerified(0),
mSProvidedSubscriptionNotVerified(1),
networkProvidedSubscriptionNotVerified(2)
}

```

```

CAMELAccessPointNameNI ::= AccessPointNameNI

CAMELAccessPointNameOI ::= AccessPointNameOI

CAMELInformationPDP ::= SET
{
  sCFAddress[1]                SCFAddress OPTIONAL,
  serviceKey[2]                ServiceKey OPTIONAL,
  defaultTransactionHandling[3] DefaultGPRS-Handling OPTIONAL,
  CAMELAccessPointNameNI[4]    CAMELAccessPointNameNI OPTIONAL,
  CAMELAccessPointNameOI[5]    CAMELAccessPointNameOI OPTIONAL,
  numberOfDPENcountered[6]     NumberOfDPENcountered OPTIONAL,
  levelOfCAMELService[7]       LevelOfCAMELService OPTIONAL,
  freeFormatData[8]            FreeFormatData OPTIONAL,
  fFDAppendIndicator[9]        FFDAppendIndicator OPTIONAL
}

CauseForRecClosing ::= INTEGER
{
  --
  -- In GGSN the value sGSNChange should be used for partial record
  -- generation due to SGSN Address List Overflow
  --
  -- LCS related causes belong to the MAP error causes acc. TS 29.002
  --
  -- cause codes 0 to 15 are defined 'CauseForTerm' (cause for termination)
  --
  normalRelease                (0),
  abnormalRelease              (4),
  CAMELInitCallRelease         (5),
  volumeLimit                  (16),
  timeLimit                    (17),
  sGSNChange                   (18),
  maxChangeCond                (19),
  managementIntervention       (20),
  intraSGSNIntersystemChange   (21),
  rATChange                    (22),
  mSTimeZoneChange             (23),
  unauthorizedRequestingNetwork (52),
  unauthorizedLCSCClient        (53),
  positionMethodFailure         (54),
  unknownOrUnreachableLCSCClient (58),
  listofDownstreamNodeChange    (59)
}

ChangeCondition ::= ENUMERATED
{
  --
  qoSChange                    (0),
  tariffTime                   (1),
  recordClosure                 (2),
  dT-Establishment              (8),
  dT-Removal                    (9),
}

ChangeOfCharCondition ::= SEQUENCE
{
  --
  -- Used in PDP context record only
  -- failureHandlingContinue field used in eGCDR only
  --
  qosRequested[1]              QoSInformation OPTIONAL,
  qosNegotiated[2]             QoSInformation OPTIONAL,
}

```



```

dataVolumeGPRSUplink[3]           DataVolumeGPRS OPTIONAL,
dataVolumeGPRSDownlink[4]       DataVolumeGPRS OPTIONAL,
changeCondition[5]               ChangeCondition,
changeTime[6]                   TimeStamp
}

ChargingCharacteristics ::= OCTET STRING (SIZE(2))
--
--SIZEBit 0-3: Profile Index
--IndexBit 4-15: For Behavior
--

ChargingID ::= INTEGER (0..4294967295)
--
-- Generated in GGSN, part of PDP context, see TS 23.060
-- 0..4294967295 is equivalent to 0..2**32-1
--

ChChSelectionMode ::= ENUMERATED
{
  sGSNSupplied(0),           -- For GGSN only
  subscriptionSpecific(1),  -- For SGSN only
  aPNSpecific(2),           -- For SGSN only
  homeDefault(3),          -- For SGSN and GGSN
  roamingDefault(4),       -- For SGSN and GGSN
  visitingDefault(5)       -- For SGSN and GGSN
}

DataVolumeGPRS ::= INTEGER
--
-- The volume of data transferred in octets.
--

DynamicAddressFlag ::= BOOLEAN

GSNAddress ::= IPAddress

IA5String           ::= [UNIVERSAL 22] IMPLICIT OCTET STRING

IMSI ::= TBCD-STRING (SIZE (3..8))
--
-- from 29.002
-- digits of MCC, MNC, MSIN are concatenated in this order.
--

IMEI ::= TBCD-STRING (SIZE (8))
--
-- Refers to International Mobile Station Equipment Identity
-- and Software Version Number (SVN) defined in TS 3GPP TS 23.003
-- If the SVN is not present the last octet shall contain the
-- digit 0 and a filler.
-- If present the SVN shall be included in the last octet.
--

ISDN-AddressString ::= OCTET STRING

ETSIAddress ::= AddressString
--
-- First octet for nature of address, and numbering plan indicator (3 for X.121)
-- Other octets TBCD
-- See TS 29.002
--

```

```

FFDAppendIndicator ::= BOOLEAN

FreeFormatData ::= OCTET STRING (SIZE(1..160))
--
-- Free formatted data as sent in the FurnishChargingInformationGPRS
-- see TS 29.078
--

MSNetworkCapability ::= OCTET STRING (SIZE(1..8))
-- see TS 24.008

NetworkInitiatedPDPContext ::= BOOLEAN
--
-- Set to true if PDP context was initiated from network side
--

NodeID ::= IA5String (SIZE(1..20))

NumberOfDPSEncountered ::= INTEGER

PDPAddress ::= CHOICE
{
  ipAddress[0] IPAddress,
  eTSIAAddress [1] ETSIAAddress
}

PDPTType ::= OCTET STRING (SIZE(2))
--
-- OCTET 1: PDP Type Organization
-- OCTET 2: PDP Type Number
-- See TS 29.060
--

QoSInformation ::= OCTET STRING (SIZE (4..255))
--
-- This octet string
-- is a 1:1 copy of the contents (i.e. starting with octet 4) of the "Quality of
-- service Profile" information element specified in TS 29.060

RATType ::= INTEGER (0..255)
--
-- This integer is 1:1 copy of the RAT type value as defined in TS 29.060
--

ResultCode ::= INTEGER
--
-- charging protocol return value, range of 4 byte (0...4294967259)
-- see Result-Code AVP as used in 3GPP 29.210
--

RoutingAreaCode ::= OCTET STRING (SIZE(1))
--
-- See TS 24.008
--

SGSNChange ::= BOOLEAN
--
-- present if first record after inter SGSN routing area update
-- in new SGSN
--

```

```

RecordType ::= INTEGER
{
    sgsnPDPRecord(18)
}

Diagnostics ::= CHOICE
{
    gsm0408Cause[0] INTEGER
}

IPAddress ::= CHOICE
{
    iPBinaryAddress IPBinaryAddress,
    iPTextRepresentedAddress IPTextRepresentedAddress
}

IPBinaryAddress ::= CHOICE
{
    iPBinV4Address[0] OCTET STRING (SIZE(4)),
    iPBinV6Address[1] OCTET STRING (SIZE(16))
}

IPTextRepresentedAddress ::= CHOICE
{
    --
    -- IP address in the familiar "dot" notation
    --
    iPTextV4Address[2] IA5String (SIZE(7..15)),
    iPTextV6Address[3] IA5String (SIZE(15..45))
}

LevelOfCAMELService ::= BIT STRING
{
    basic(0),
    callDurationSupervision(1),
    onlineCharging(2)
}

LocalSequenceNumber ::= INTEGER (0..4294967295)
--
-- Sequence number of the record in this node
-- 0.. 4294967295 is equivalent to 0..2**32-1, unsigned integer in four octets

LocationAreaAndCell ::= SEQUENCE
{
    locationAreaCode[0] LocationAreaCode,
    cellId[1] CellId
}

LocationAreaCode ::= OCTET STRING (SIZE(2))
--
-- See TS 24.008
--

MSISDN ::= ISDN-AddressString

MSTimeZone ::= OCTET STRING (SIZE (2))
--
-- 1.Octet: Time Zone and 2. Octet: Daylight saving time, see TS 29.060

TBCD-STRING ::= OCTET STRING

TimeStamp ::= OCTET STRING (SIZE(9))
--
-- The contents of this field are a compact form of the UTCTime 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. YMMDDhhmmssShhmm
-- 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
--
--
--
CallDuration ::= INTEGER

CellId ::= OCTET STRING (SIZE(2))
--
-- Coded according

SCFAddress ::= AddressString
--
-- See TS 29.002
--
END

```

CDR Fields Supported in S-SMO-CDRs

The tables in this section list the S-SMO-CDR fields present in the available GTPP dictionaries.

standard, custom1 – custom42 Dictionaries

For TS 32.215 v4.5.0 (R4) / 32.298 v7.4.0 (R7)

| Field | Category | Description |
|-----------------------|----------|------------------------------------------------|
| Record Type | M | SGSN Mobile Originated SMS. |
| Served IMSI | M | The IMSI of the subscriber. |
| Served IMEI | OC | The IMEI of the ME, if available. |
| Served MSISDN | OM | The primary MSISDN of the subscriber. |
| MS Network Capability | OM | The mobile station network capability. |
| Service Centre | OM | The address (E.164) of the SMS-service centre. |
| Recording Entity | OM | The E.164 number of the SGSN. |

| Field | Category | Description |
|-----------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Location Area Code | OM | The Location Area Code from which the message originated. |
| Routing Area Code | OM | The Routing Area Code from which the message originated. |
| Cell Identifier | OM | The Cell Identity for GSM or Service Area Code (SAC) for UMTS from which the message originated. |
| Message Reference | M | A reference provided by the MS uniquely identifying this message. |
| Event Time Stamp | M | The time at which the message was received by the SGSN from the subscriber. |
| SMS Result | C | The result of the attempted delivery if unsuccessful. |
| Record Extensions | OC | A set of network operator/manufacturer specific extensions to the record. Conditioned upon the existence of an extension. |
| Node ID | OM | Name of the recording entity. |
| Local Record Sequence Number | OM | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| Charging Characteristics | M | The Charging Characteristics flag set used by the SGSN. |
| System Type | OC | Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface. |
| Destination Number | OM | The destination short message subscriber number. |
| Charging Characteristics Selection Mode | OM | Holds information about how Charging Characteristics were selected. |



Important Based on TS 32.215 v4.5.0 (R4) or TS 32.298 v7.4.0 (R7). The only difference is that from R6 onwards the "System Type" field is renamed to "RAT Type".

CDR Fields Supported in S-SMT-CDRs

The tables in this section list the S-SMT-CDR fields present in the available GTPP dictionaries.

standard, custom1 – custom42 Dictionaries

For TS 32.215 v4.5.0 (R4) / TS 32.298 v7.4.0 (R7).

| Field | Category | Description |
|-----------------------|----------|---------------------------------------------------------------------------------------------------|
| Record Type | M | SGSN Mobile Terminated SMS. |
| Served IMSI | M | The IMSI of the subscriber. |
| Served IMEI | OC | The IMEI of the ME, if available. |
| Served MSISDN | OM | The primary MSISDN of the subscriber. |
| MS Network Capability | OM | The mobile station network capability. |
| Service Centre | OM | The address (E.164) of the SMS-service centre. |
| Recording Entity | OM | The E.164 number of the SGSN. |
| Location Area Code | OM | The Location Area Code to which the message was delivered. |
| Routing Area Code | OM | The Routing Area Code to which the message was delivered. |
| Cell Identifier | OM | The Cell Identity for GSM or Service Area Code (SAC) for UMTS to which the message was delivered. |
| Event Time Stamp | M | Delivery time stamp, time at which message was sent to the MS by the SGSN. |
| SMS Result | C | The result of the attempted delivery if unsuccessful. |

| Field | Category | Description |
|-----------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Record Extensions | OC | A set of network operator/manufacturer specific extensions to the record. Conditioned upon the existence of an extension. |
| Node ID | OM | Name of the recording entity. |
| Local Record Sequence Number | OM | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| Charging Characteristics | M | The Charging Characteristics flag set used by the SGSN. |
| System Type | OC | Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface. |
| Charging Characteristics Selection Mode | OM | Holds information about how Charging Characteristics were selected. |

**Important**

Based on TS 32.215 v4.5.0 (R4) / TS 32.298 v7.4.0 (R7). No change in fields from R4 to R7.

CDR Fields Supported in M-CDR

The tables in this section list the M-CDR fields present in the available GTPP dictionaries.

standard, custom1 – custom42 Dictionaries

For TS 32.215 v 4.5.0 (R4).

| Field | Category | Description |
|-------------|----------|-----------------------------------|
| Record Type | M | SGSN mobility management record. |
| Served IMSI | M | IMSI of the MS. |
| Served IMEI | OC | The IMEI of the ME, if available. |

| Field | Category | Description |
|--------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| SGSN Address | OM | The IP address of the current SGSN. |
| MS Network Capability | OM | The mobile station network capability. |
| Routing Area Code | OM | Routing Area at the time of the Record Opening Time. |
| Local Area Code | OM | Location Area Code at the time of Record Opening Time. |
| Cell Identifier | OM | The Cell Identity for GSM or Service Area Code (SAC) for UMTS at the time of the Record Opening Time. |
| Change of Location | OC | A list of changes in Routing Area Code, each with a time stamp. This field is not required if partial records are generated when the location changes. |
| Record Opening Time | M | Timestamp when MS is attached to this SGSN or record opening time on following partial record. |
| Duration | OM | Duration of this record. |
| SGSN Change | C | Present if this is first record after SGSN change. |
| Cause for Record Closing | M | The reason for the closure of the record in this SGSN. |
| Diagnostics | OM | A more detailed reason for the release of the connection. |
| Record Sequence Number | C | Partial record sequence number in this SGSN; only present in case of partial records. |
| Node ID | OM | Name of the recording entity. |
| Record Extensions | OC | A set of network operator/manufacturer specific extensions to the record. Conditioned upon the existence of an extension. |

| Field | Category | Description |
|-----------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Local Record Sequence Number | OM | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| Served MSISDN | OM | The primary MSISDN of the subscriber. |
| Charging Characteristics | M | The Charging Characteristics used by the SGSN. |
| System Type | OC | Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface. |
| Charging Characteristics Selection Mode | OM | Holds information about how Charging Characteristics were selected. |

CDR Fields Supported in LCS-MT-CDRs

The tables in this section list the LCS-MT-CDR fields present in the available GTPP dictionaries.

standard, custom1 – custom42 Dictionaries

For TS 32.298 v8.7.0 (R8) / TS 29.002 v8.7.0 (R8).

| Field | Category | Description |
|---------------------|----------|------------------------------------------------------------------------------|
| Record Type | M | SGSN Mobile Terminated LCS. |
| Recording Entity | M | The E.164 number of the SGSN. |
| LCS Client Type | M | The type of the LCS client that invoked the Location Request (LR). |
| LCS Client Identity | M | This field contains additional identification information of the LCS Client. |
| Served IMSI | M | The IMSI of the subscriber. |
| Served MSISDN | OM | The primary MSISDN of the subscriber. |
| SGSN Address | OM | The IP address of the current SGSN. |

| Field | Category | Description |
|--------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Location Type | M | The type of the estimated location. |
| LCS QoS | C | Quality of Service for a location request. |
| LCS Priority | C | Priority of the location request. |
| MLC Number | M | The ISDN (E.164) number of the requesting GMLC. |
| Event Time stamp | M | The time at which the Perform_Location_Request is sent by the SGSN. |
| Measurement Duration | OM | The duration of processing the location request. |
| Notification To MS User | C | The privacy notification to MS user that was applicable when the LR was invoked. |
| Privacy Override | C | This parameter indicates the override MS privacy by the LCS client. |
| Location | OM | The Location Area Code (LAC) and Cell Identity (CI) when the location request is received. |
| Routing Area Code | OM | The Routing Area Code to which the LCS terminated. |
| Location Estimate | OC | An estimate of a geographic location of the subscriber if the subscriber is contained in a geographic position and the location request is successful. |
| Positioning Data | C | This parameter provides positioning data associated with a successful or unsuccessful location attempt for a target MS. |
| LCS Cause | OC | This parameter provides the reason for an unsuccessful location request. |
| Cause for Record Closing | M | The reason for closure of the record from this SGSN. |
| Node ID | OM | Name of the recording entity. |

| Field | Category | Description |
|-----------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Local Record Sequence Number | OM | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| Charging Characteristics | M | The Charging Characteristics flag set used by the SGSN. |
| Charging Characteristics Selection Mode | OM | Holds information about how Charging Characteristics were selected. |
| RAT Type | OC | This field indicates the Radio Access Technology (RAT) type, for example, UTRAN or GERAN, currently used by the Mobile Station as defined in TS 29.060. |

Notes:

- All the dictionaries follow the ASN encoding and decoding. There is no ASCII implementation done for LCS-MT-CDRs.
- The sub-field "ExtensionContainer" in LCS Client external ID is not supported.
- Enabling or Disabling LCS attributes from GTPP group is currently not supported.
- There is no session recovery or recovery CDR generation for MT-LCS accounting.

