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)
- Mobile originated location request CDRs (LCS-MO-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.

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 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 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	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 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	The Change Condition field is part of the ChangeOfCharCondition element in the List of Traffic Volumes. It defines the reason for closing the container: Supported values: • qoSChange 0 • tariffTime 1 • recordClosure 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 it 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 gtpp attribute local-record-sequence-number is configured. By configuring **gtpp single-source** command, 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
cAMELInformationPDP	30	O	This field is supported if Ge interface is supported. CLI **gtpp 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
defaultTransactionHandling	30-2	O	This field indicates whether or not a CAMEL encountered a default GPRS-handling or SMS-handling.	Enumerated integer	1	83
cAMELAccessPointNameNI	30-3	O				84
cAMELAccessPointNameOI	30-4	O				85

Field Name	Tag Number	Category	Description	Format	Size in byte	ASN1 code
NumberOfDPEncountered	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
FFDAppendIndicator	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 **gtpp attribute served-pdp-pdn-address-extension** is configured in the GTPP 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)
}


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
}


-------------------------------------------------------------------------------

--    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),
 unauthorizedLCSClient                   (53),
 positionMethodFailure                   (54),
 unknownOrUnreachableLCSClient    (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
}

PDPType::= 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 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 ChangeOfCharCondition element in the List of Traffic Volumes. It defines the reason for closing the container: Supported values: • qoSChange 0 • tariffTime 1 • recordClosure 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 it 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 gtpp attribute local-record-sequence-number is configured. By configuring **gtpp single-source** command, 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
cAMELInformationPDP	30	O	This field is supported if Ge interface is supported. CLI **gtpp 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
defaultTransactionHandling	30-2	O	This field indicates whether or not a CAMEL encountered a default GPRS-handling or SMS-handling.	Enumerated integer	1	83
cAMELAccessPointNameNI	30-3	O				84
cAMELAccessPointNameOI	30-4	O				85

Field Name	Tag Number	Category	Description	Format	Size in byte	ASN1 code
NumberOfDPEncountered	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
FFDAppendIndicator	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] 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
}


-------------------------------------------------------------------------------

--    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),
 unauthorizedLCSClient                    (53),
 positionMethodFailure                    (54),
 unknownOrUnreachableLCSClient    (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
}

PDPType::= 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	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. **Important** This attribute will not be sent for Direct Tunnel (DT) sessions.	Integer	1 - 4	83

Field Name	Tag Number	Category	Description	Format	Size in byte	ASN1 code
Data volume GPRS Downlink	15-0-4	OC	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. **Important** This attribute will not be sent for Direct Tunnel (DT) sessions.	Integer	1 - 4	84
Change Condition	15-0-5	M	The Change Condition field is part of the ChangeOfCharCondition element in the List of Traffic Volumes. It defines the reason for closing the container: Supported values: • qoSChange 0 • tariffTime 1 • recordClosure 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 gtpp attribute local-record-sequence-number is configured. By configuring **gtpp single-source central-database-connection** 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
cAMELInformationPDP	30	O	This field is supported if Ge interface is supported. CLI **gtpp 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
defaultGPRSHandling	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
cAMELAccessPointNameNI	30-3	O				84
cAMELAccessPointNameOI	30-4	O				85
NumberOfDPEncountered	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
ffDAppendIndicator	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
MSUnauthenticatedFlag	34	O		Null	0	9f22
userCSGInformation	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 adress 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

Field Name	Tag Number	Category	Description	Format	Size in byte	ASN1 code
Low Access Priority Indicator	37	O	This field indicates if the PDN connection has a low priority, i.e. for Machine Type Communication.	Null	0	9f25

Important The inclusion of the field "Served PDP/PDN Address extension" in the S-CDR is enabled on execution of the command **gtpp attribute served-pdp-pdn-address-extension** in the GTPP 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.
- The field "Low Access Priority Indicator" is currently available only in custom24 GTPP dictionary for SGSN-CDRs when the CLI command "**gtpp attribute lapi**" is configured in GTPP Server Group Configuration mode.

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,
    lowAccessPriorityIndicator             [37] NULL 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),
 unauthorizedLCSClient                    (53),
 positionMethodFailure                    (54),
 unknownOrUnreachableLCSClient    (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))

NumberOfDPEncountered    ::= INTEGER

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

PDPType::= 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. 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

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.
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.

Field	Category	Description
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.

Field	Category	Description
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.
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.
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.

Field	Category	Description
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.
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.

Field	Category	Description
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.
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.

Field	Category	Description
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.
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.

CDR Fields Supported in LCS-MO-CDRs

The tables in this section list the LCS-MO-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 Originated LCS.
Recording Entity	M	The E.164 number of the SGSN.
LCS Client Type	C	The type of the LCS client that invoked the Location Request (LR).
LCS Client Identity	C	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.
Location Method	M	The type of the location request.
LCS QoS	C	Quality of Service for a location request.
LCS Priority	OC	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.
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 originated.

Field	Category	Description
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.
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.
System Type	OC	This field indicates the type of air interface used. 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.

Notes:

- All the dictionaries follow the ASN encoding and decoding. There is no ASCII implementation done for LCS-MO-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 MO-LCS accounting.