S-GW CDR Field Reference

This chapter provides a reference for CDR fields supported by the system for use in SGW-CDRs.

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

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Important	This reference document contains information only on standard GTPP dictionaries. For 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 16

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 C all conditions.
OC	Operator Provisionable: Conditional	A field that an operator has provisioned and must be included in the certain conditions are met.

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CDR Fields Supported in SGW-CDRs

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

custom6 Dictionary

CDR fields are based on 3GPP TS 32.298 v8.7.0, 3GPP TS 32.251 v8.8.0, and 3GPP TS 32.298 v9.6.0.

Field	Category	Description
Record Type	M	S-GW IP CAN bearer record
Served IMSI	M	IMSI of the served party (if Anonymous Access Indicator is FALS not supplied)
Served IMEISV	OC	IMEISV of the ME, if available
S-GW Address used	M	The control plane IP address of the S-GW used.
Charging ID	M	IP CAN bearer identifier used to identify this IP CAN bearer in diff records created by PCNs
PDN Connection Id	OM	The PDN connection (IP-CAN session) identifier to identify diffe records belonging to same PDN connection.
Serving Node Address	M	List of serving node control plane IP addresses (e.g. SGSN, MME, used during this record.
Serving Node Type	M	List of serving node types in control plane. The serving node types l here map to the serving node addresses listed in the field "Serving Address" in sequence.
S-GW Change	OC	Present if this is the first record after S-GW change.
PGW PLMN Identifier	OM	PLMN identifier (MCC MNC) of the P-GW used.
Access Point Name Network Identifier	OM	The logical name of the connected access point to the external pac data network (network identifier part of APN).
PDP/PDN Type	OM	Indicates PDN type (i.e IPv4, IPv6 or IPv4v6).
Served PDP/PDN Address	OC	IP address allocated for the PDP context / PDN connection, i.e. IP IPv6, if available.
Served PDP/PDN Address Extension	OC	This field holds IPv4 address of the served IMSI, if available, wh PDN Type is IPv4v6.
Dynamic Address Flag	OC	Indicates whether served PDP/PDN address is dynamic, which is allocated during IP CAN bearer activation, initial attach (E-UTRA over S2x) and UE requested PDN connectivity. This field is missi address is static.
List of Traffic Data Volumes	OM	A list of changes in charging conditions for this QCI/ARP pair, ea change is time stamped. Charging conditions are used to categoriz traffic volumes, such as per tariff period. Initial and subsequently changed QoS and corresponding data values are also listed. Refer to the List of Data Traffic Volumes table in this chapter.
Record Opening Time	M	Time stamp when IP CAN bearer is activated in this S-GW or rec opening time on subsequent partial records.

Field	Category	Description
MS Time Zone	OC	Contains the MS Time Zone the MS is currently located as de[...] TS 29.060, if available.
Duration	M	Duration of this record in the S-GW.
Cause for Record Closing	M	The reason for the release of record from this S-GW.
Diagnostics	OM	A more detailed reason for the release of the connection.
Record Sequence Number	C	Partial record sequence number, only present in case of partial
Node ID	OM	Name of the recording entity.
Record Extensions	OC	A set of network operator/manufacturer specific extensions to th[...] Conditioned upon the existence of an extension.
Local Record Sequence Number	OM	Consecutive record number created by this node. The number is a[...] sequentially including all CDR types.
APN Selection Mode	OM	An index indicating how the APN was selected.
Served MSISDN	OM	The primary MSISDN of the subscriber.
User Location Information	OC	Contains the User Location Information of the MS as defined [...] 29.060 for GPRS case, and in TS 29.274 for EPC case, if avai[...]
Charging Characteristics	M	The Charging Characteristics applied to the IP CAN bearer.
Charging Characteristics Selection Mode	OM	Information about how Charging Characteristics were selected
IMS Signalling Context	OC	Included if the IM-CN Subsystem Signalling Flag is set. IP CA[...] is used for IMS signalling.
P-GW Address used	OC	The P-GW IP Address for the Control Plane.
Serving Node PLMN Identifier	OC	Serving node PLMN Identifier (MCC and MNC) used during thi[...] if available.
RAT Type	OC	Indicates the Radio Access Technology (RAT) type currently u[...] the Mobile Station, when available. This RAT type is defined [...] 29.060 for GTP case, in TS 29.274 for eGTP case and in TS 29[...] PMIP case.
Start Time	OC	The time when User IP-CAN session starts, available in the C[...] the first bearer in an IP-CAN session.
Stop Time	OC	The time when User IP-CAN session is terminated, available i[...] CDR for the last bearer in an IP-CAN session.

Field	Category	Description
User CSG Information	OC	Contains the User CSG Information (UCI) status of the user acces a CSG cell. It includes CSG ID within the PLMN, access mode, a indication on CSG membership for the user when hybrid access app as defined in TS 29.060 for GPRS case, and in TS 29.274 for EPC

Notes:

- All IP addresses are in ASCII format.

List of Traffic Data Volumes

Traffic Data Volume	Category	Description
Change Of Charging Condition	M	Each traffic volume container contains details related to a chargin condition as described in the following subsections. A new contain usually created for a QoS change and for tariff changes.
Data Volume GPRS Uplink	M	The Data Volume GPRS Uplink field is a part of the ChangeOfCharCondition element in the List of Traffic Volumes. I includes the number of octets received in the uplink direction duri the timeframe specified by the container. For each new container, counter is reset and does not accumulate. The data counted already includes the IP PDP bearer protocols i.e or PPP.
Data volume GPRS Downlink	M	The Data Volume GPRS Downlink field is a part of the ChangeOfCharCondition element in the List of Traffic Volumes. I includes the number of octets transmitted in the downlink directio during the timeframe specified by the container. For each new conta the counter is reset and does not accumulate. The data counted already includes the IP PDP bearer protocols i.e or PPP.
Change Condition	M	The Change Condition field is part of the ChangeOfCharConditio element in the List of Traffic Volumes. It defines the reason for cl the container.
Change time	M	The Change Time field is part of the ChangeOfCharCondition ele in the List of Traffic Volumes. It provides the local time when a ch condition (e.g. record closure) occurred and the container was clo

Traffic Data Volume	Category	Description
User Location Information	OC	This field contains the User Location Information as described 29.274 for eGTP case (e.g. CGI, SAI, RAI TAI and ECGI). The field is provided by the SGSN/MME and transferred to th S-GW/P-GW during the IP-CAN bearer activation/modificatio User Location Information contains the location (e.g. CGI/SA ECGI/TAI or RAI) where the UE is located and used during the of the data volume captured by the container (applicable only SGW-CDR). This is included in the Traffic data container only previous container's change condition is "user location change the user location information in SGW-CDR main level contain location where the UE was when CDR was opened.
EPC Qos Requested	OC	In case of IP-CAN bearer specific container this contains auth QoS for the IP-CAN bearer. First container for each QCI/ARP includes this field. In following containers this field is present if change condition is "QoS change". This field is applicable onl SGW-CDR.

List of Secondary RAT Usage Reports

Traffic Data Volume	Category	Description
List Of RAN Secondary RAT Usage Reports	OC	Includes one or more containers reported from the RAN for a secondary RAT.
RAN Secondary RAT Usage Report	M	Includes one or more containers reported from the RAN for a secondary RAT.
Data Volume Uplink	M	Includes the number of octets transmitted during the use of the packet data services in the uplink direction reported from RAN. The counting and reporting from RAN of uplink data volumes is optional.
Data Volume Downlink	M	Includes the number of octets transmitted during the use of the packet data services in the downlink direction reported from RAN. The counting and reporting from RAN of downlink data volumes is optional.
RAN Start Time	M	Includes the number of octets transmitted during the use of the packet data services in the downlink direction reported from

Traffic Data Volume	Category	Description
		RAN. The counting and reporting from RAN of downlink data volumes is optional.
Secondary RAT Type	OC	This field contains the RAT type for the secondary RAT.

ASN.1 Definition for Fields in custom6

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

```
GPRS-SGW-Charging-DataTypes-REL8 DEFINITIONS IMPLICIT TAGS ::=
BEGIN

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

GPRSRecord::= CHOICE
--
-- Record values 20, 22..27 are specific
-- Record values 76..77 are MBMS specific
-- Record values 78..79 are EPC specific
{
    sGWRecord[78] SGWRecord
}

SGWRecord     ::= SET
{
    recordType                              [0] RecordType,
    servedIMSI                              [3] IMSI,
    s-GWAddress                             [4] GSNAddress,
    chargingID                              [5] ChargingID,
    servingNodeAddress                      [6] SEQUENCE OF GSNAddress,
    accessPointNameNI                       [7] AccessPointNameNI OPTIONAL,
    pdpPDNType                              [8] PDPType OPTIONAL,
    servedPDPPDNAddress                     [9] PDPAddress OPTIONAL,
    dynamicAddressFlag                      [11] DynamicAddressFlag OPTIONAL,
    listOfTrafficVolumes                    [12] SEQUENCE OF ChangeOfCharCondition OPTIONAL,

    recordOpeningTime                       [13] TimeStamp,
    duration                                [14] CallDuration,
    causeForRecClosing                      [15] CauseForRecClosing,
    diagnostics                             [16] Diagnostics OPTIONAL,
    recordSequenceNumber                    [17] INTEGER OPTIONAL,
    nodeID                                  [18] NodeID OPTIONAL,
    recordExtensions                        [19] ManagementExtensions OPTIONAL,
    localSequenceNumber                     [20] LocalSequenceNumber OPTIONAL,
    apnSelectionMode                        [21] APNSelectionMode OPTIONAL,
    servedMSISDN                            [22] MSISDN OPTIONAL,
    chargingCharacteristics                 [23] ChargingCharacteristics,
    chChSelectionMode                       [24] ChChSelectionMode OPTIONAL,
    iMSsignalingContext                     [25] NULL OPTIONAL,
    servingNodePLMNIdentifier               [27] PLMN-Id OPTIONAL,
    servedIMEISV                            [29] IMEI OPTIONAL,
    rATType                                 [30] RATType OPTIONAL,
```

```
        mSTimeZone                                      [31] MSTimeZone OPTIONAL,
        userLocationInformation             [32] OCTET STRING OPTIONAL,
        sGWChange                                       [34] SGWChange OPTIONAL,
        servingNodeType                             [35] SEQUENCE OF ServingNodeType,
        p-GWAddressUsed                             [36] GSNAddress OPTIONAL,
        p-GWPLMNIdentifier                      [37] PLMN-Id OPTIONAL,
        startTime                                       [38] TimeStamp OPTIONAL,
        stopTime                                         [39] TimeStamp OPTIONAL,
        pDNConnectionID                             [40] ChargingID OPTIONAL,
        servedPDPPDNAddressExt              [43] PDPAddress OPTIONAL
listOfRANSecondaryRATUsageReports [64] SEQUENCE OF RANSecondaryRATUsageReport OPTIONAL

}
RANSecondaryRATUsageReport ::= SEQUENCE
                --]
{
                dataVolumeUplink            [1] DataVolumeGPRS,
                dataVolumeDownlink          [2] DataVolumeGPRS,
                rANStartTime                [3] TimeStamp,
                rANEndTime                  [4] TimeStamp,
                secondaryRATType            [5] SecondaryRATType OPTIONAL
}


SecondaryRATType ::= INTEGER
{
                reserved (0),
                nR (1) -- New Radio 5G
}


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.

APNSelectionMode::= ENUMERATED
{
     --
     -- See Information Elements TS 29.060, TS 29.274    or TS 29.275
     --
     mSorNetworkProvidedSubscriptionVerified    (0),
     mSProvidedSubscriptionNotVerified              (1),
     networkProvidedSubscriptionNotVerified     (2)
}


CallDuration::= INTEGER
                --
                -- The call duration is counted in seconds.
                -- For successful calls /sessions / PDP contexts, this is the chargeable
duration.
                -- For call attempts this is the call holding time.
                --


CauseForRecClosing ::= INTEGER
{
     --
     -- In PGW-CDR and SGW-CDR the value servingNodeChange is used for partial record
     -- generation due to Serving Node Address list Overflow
     -- In SGSN servingNodeChange indicates the SGSN change
 --
     -- LCS related causes belong to the MAP error causes acc. TS 29.002
     --
     -- cause codes 0 to 15 are defined 'CauseForTerm' (cause for termination)
```

```
        -- All cause values are not relevent to SGW. Refer the spec to find out the
              -- cause values for SGW.
        normalRelease                           (0),
        abnormalRelease                       (4),
        cAMELInitCallRelease              (5),
        volumeLimit                             (16),
        timeLimit                                (17),
        servingNodeChange                   (18),
        maxChangeCond                         (19),
        managementIntervention         (20),
        intraSGSNIntersystemChange      (21),
        rATChange                               (22),
        mSTimeZoneChange                    (23),
        sGSNPLMNIDChange                    (24),
        unauthorizedRequestingNetwork   (52),
        unauthorizedLCSClient           (53),
        positionMethodFailure           (54),
        unknownOrUnreachableLCSClient   (58),
        listofDownstreamNodeChange      (59)
}


ChangeCondition ::= ENUMERATED
{
        qoSChange                          (0),
        tariffTime                      (1),
        recordClosure                   (2),
        cGI-SAICHange                   (6),    -- bearer modification. CGI-SAI Change
        rAICHange                        (7),    -- bearer modification. RAI Change
        dT-Establishment            (8),
        dT-Removal                       (9),
        eCGIChange                       (10),   -- bearer modification. ECGI Change
        tAIChange                        (11),   -- bearer modification. TAI Change
        apnAmbrChange                 (50)      -- apn-ambr change

}


ChangeOfCharCondition ::= SEQUENCE
{
        --
        -- qosRequested and qosNegotiated are used in S-CDR only
        -- ePCQoSInformation used in SGW-CDR only
        --
        qosRequested                      [1] QoSInformation OPTIONAL,
        qosNegotiated                     [2] QoSInformation OPTIONAL,
        dataVolumeGPRSUplink        [3] DataVolumeGPRS OPTIONAL,
        dataVolumeGPRSDownlink      [4] DataVolumeGPRS OPTIONAL,
        changeCondition                  [5] ChangeCondition,
        changeTime                        [6] TimeStamp,
        userLocationInformation     [8] OCTET STRING OPTIONAL,
        ePCQoSInformation                [9] EPCQoSInformation OPTIONAL
}

ChargingCharacteristics ::= OCTET STRING (SIZE(2))


ChargingID ::= INTEGER (0..4294967295)
 --
 -- Generated in P-GW, part of IP CAN bearer
 -- 0..4294967295 is equivalent to 0..2**32-1
 --

ChChSelectionMode    ::= ENUMERATED
```

```
{
      servingNodeSupplied          (0), -- For S-GW/P-GW
      subscriptionSpecific      (1), -- For SGSN only
      aPNSpecific                        (2), -- For SGSN only
      homeDefault                        (3), -- For SGSN, S-GW and P-GW
      roamingDefault                    (4), -- For SGSN, S-GW and P-GW
      visitingDefault                   (5) -- For SGSN, S-GW and P-GW
}

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

DynamicAddressFlag ::= BOOLEAN


EPCQoSInformation ::= SEQUENCE
{
      --
      -- See TS 29.212 for more information
      --
      qCI                                            [1] INTEGER,
      maxRequestedBandwithUL        [2] INTEGER OPTIONAL,
      maxRequestedBandwithDL        [3] INTEGER OPTIONAL,
      guaranteedBitrateUL              [4] INTEGER OPTIONAL,
      guaranteedBitrateDL              [5] INTEGER OPTIONAL,
      aRP                                            [6] INTEGER OPTIONAL
         apnAmbrUplink        [7] INTEGER OPTIONAL,
         apnAmbrDownlink       [8] INTEGER OPTIONAL
extendedMaxRequestedBWUL        [9] INTEGER OPTIONAL,
extendedMaxRequestedBWDL        [10] INTEGER OPTIONAL,
extendedGBRUL                      [11] INTEGER OPTIONAL,
extendedGBRDL                      [12] INTEGER OPTIONAL,
extendedAPNAMBRUL                  [13] INTEGER OPTIONAL,
extendedAPNAMBRDL                  [14] INTEGER OPTIONAL
}

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

GSNAddress::= IPAddress

IA5String::= OCTET STRING

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 for GTP, TS 29.274 for eGTP and TS 29.275 for PMIP
 --

PLMN-Id     ::= OCTET STRING (SIZE (3))
 --
 -- This is a 1:1 copy from the Routing Area Identity (RAI) IE specified in TS 29.060
 --          as follows:
 -- OCTET 1 of PLMN-Id = OCTET 2 of RAI
 -- OCTET 2 of PLMN-Id = OCTET 3 of RAI
 -- OCTET 3 of PLMN-Id = OCTET 4 of RAI
 --

QoSInformation ::= OCTET STRING (SIZE (4..255))
 --
 -- This    octet string
 -- is a 1:1 copy of the contents (i.e. starting with octet 5) of the "Bearer Quality of
 -- Service" information element specified in TS 29.274
 --

RATType ::= INTEGER (0..255)
 --
 -- This integer is 1:1 copy of the RAT type value as defined in TS 29.060 for GTP,
 -- TS 29.274 for eGTP and TS 29.275 for PMIP.
 --

RecordType     ::= INTEGER
{
    -- Record values 0..17 are CS specific.
    -- The contents are defined in TS 32.250

    sGWRecord          (84)
}

ResultCode ::= INTEGER
 -- charging protocol return value, range of 4 byte (0...4294967259)
 -- see Result-Code AVP as used in 3GPP 32.299
 --


ServingNodeType ::= ENUMERATED
{
    sGSN               (0),
    pMIPSGW            (1),
    gTPSGW             (2),
    ePDG               (3),
    hSGW               (4),
    mME                (5)
}

SGWChange ::= BOOLEAN
 --
 -- present if first record after inter S-GW change
 --

Diagnostics            ::= CHOICE
{
```

```
    gsm0408Cause                                [0] INTEGER,
    -- See TS 24.008
    gsm0902MapErrorValue                  [1] INTEGER,
    -- Note: The value to be stored here corresponds to
    -- the local values defined in the MAP-Errors and
    -- MAP-DialogueInformation modules, for full details
    -- see TS 29.002
            itu-tQ767Cause                  [2] INTEGER,
    -- See ITU-T Q.767
        networkSpecificCause              [3] ManagementExtension,
    -- To be defined by network operator
        manufacturerSpecificCause      [4] ManagementExtension,
 -- To be defined by manufacturer
        positionMethodFailureCause [5] PositionMethodFailure-Diagnostic,
    -- see TS 29.002
        unauthorizedLCSClientCause [6] UnauthorizedLCSClient-Diagnostic
    -- see TS 29.002
}

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))
}

PositionMethodFailure-Diagnostic ::= ENUMERATED
{
            congestion                                              (0),

            insufficientResources                           (1),
            insufficientMeasurementData                 (2),
            inconsistentMeasurementData                 (3),
            locationProcedureNotCompleted           (4),
            locationProcedureNotSupportedByTargetMS   (5),
            qoSNotAttainable                              (6),
            positionMethodNotAvailableInNetwork       (7),
            positionMethodNotAvailableInLocationArea (8)
}

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


ManagementExtension ::= SEQUENCE
{
    identifier OBJECT IDENTIFIER,
    significance        [1]        BOOLEAN DEFAULT FALSE,
```

```
        information          [2]          ANY DEFINED BY identifier
}

ManagementExtensions ::= SET OF ManagementExtension

MSISDN::= ISDN-AddressString
                --
 -- See TS 23.003

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


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
                --

UnauthorizedLCSClient-Diagnostic ::= ENUMERATED
{
                noAdditionalInformation                                        (0),

                clientNotInMSPrivacyExceptionList                    (1),
                callToClientNotSetup
(2),
                privacyOverrideNotApplicable                          (3),
                disallowedByLocalRegulatoryRequirements           (4),
                unauthorizedPrivacyClass                                  (5),
                unauthorizedCallSessionUnrelatedExternalClient (6),
                unauthorizedCallSessionRelatedExternalClient     (7)
}

TBCDSTRING ::= OCTET STRING
ISDN-AddressString ::= OCTET STRING
IMEI ::= TBCDSTRING (SIZE(8))
IMSI ::= TBCDSTRING (SIZE(3..8))
maxAddressLength     INTEGER ::= 20
AddressString ::= OCTET STRING (SIZE (1..maxAddressLength))
END
```

custom24 Dictionary

In releases prior to 16, CDR fields in this dictionary are compliant to 3GPP TS 32.298 v8.7.0 and 3GPP TS 32.251 v8.8.0, and also partially compliant to 3GPP TS 32.298 v10.11.0. In release 16 and later, the CDR fields are fully compliant to 3GPP spec 32.298 v10.11.0.

Field Name	Tag Number	Category	Description
Record Type	0	M	S-GW IP CAN bea
Served IMSI	3	M	IMSI of the served
S-GW Address	4	M	The control plane II used.
S-GW BINARY IPV4 ADDRESS	4-0	M	The octet string inc of the GGSN servic
S-GW BINARY IPV6 ADDRESS	4-0	M	The octet string inc described includes t GGSN service in bi
Charging ID	5	M	IP CAN bearer iden IP CAN bearer in di by PCNs.
List of Serving Node Address	6	M	List of serving node addresses (e.g. SGS this record.
Serving Node BINARY IPV4 ADDRESS	6-0	M	The octet string inc described above inc of the MME.
Serving Node BINARY IPV6 ADDRESS	6-0	M	The octet string inc described above inc of the MME.
Access Point Name Network Identifier	7	M	The logical name o point to the externa (network identifier
PDP/PDN Type	8	M	This field indicates IPv6 or IPv4v6).
Served PDP/PDN Address	9	M	IP address allocated PDN connection, if when PDN Type is PDN Type is IPv6 c
PDP IP Address	9-0	M	This field contains PDP context.
PDP IPV4 Address	9-0-0	M	The octet string inc described above inc assigned to the subs binary coding.

Field Name	Tag Number	Category	Description
PDP IPV6 Address	9-0-0	M	The octet string include described above includ assigned to the subscrib binary coding.
Dynamic Address Flag	11	O	Indicates whether serve address is dynamic, wh during IP CAN bearer a attach (E-UTRAN or o requested PDN connec missing if address is sta
List of Traffic Data Volumes	12	M	A list of changes in cha for this QCI/ARP pair, e stamped. Charging con categorize traffic volun tariff period. Initial and changed QoS and corre values are also listed.
Change of charging condition	12-0	M	Each traffic volume cor details related to a char new container is usually change and for tariff ch
Data Volume GPRS Uplink	12-0-3	M	The Data Volume GPR part of the ChangeOfCl element in the List of T includes the number of the uplink direction dur specified by the contair container, the counter is accumulate.
Data Volume GPRS Downlink	12-0-4	M	The Data Volume GPR is a part of the ChangeC element in the List of T includes the number of in the downlink directic timeframe specified by each new container, the and does not accumula
Change Condition	12-0-5	M	The Change Condition ChangeOfCharConditi List of Traffic Volumes change in user plane to

Field Name	Tag Number	Category	Description
Change Time	12-0-6	M	The Change Time f ChangeOfCharCon List of Traffic Volu local time when a c record closure) occu was closed.
User Location Information	12-0-8	O	This field contains Information.
EPC QoS Information	12-0-9	O	In case of IP-CAN container this conta the IP-CAN bearer. QCI/ARP pair inclu following container if previous change change". This field SGW-CDR.
CP CIoT EPS Optimisation Indicator	12-0-19	O	The cPCIoTEPSOp field indicates wheth EPS optimisation is of the data volume container. This is in data container only change condition is to UE". Note, the C Optimisation indica main level contains optimisation indica SGW-CDR was op
QCI	12-9-1	M	
Uplink MBR	12-9-2	O	
Down link MBR	12-9-3	O	
Uplink GBR	12-9-4	O	
Down link GBR	12-9-5	O	
arp	12-9-6	O	
APN AMBR Uplink	12-9-7	O	
APN AMBR Downlink	12-9-8	O	
Extended Maximum Requested BW UL	12-9-9	O	
Extended Maximum Requested BW DL	12-9-10	O	

Field Name	Tag Number	Category	Description
Extended GBR UL	12-9-11	O	
extendedGBRDL	12-9-12	0	
Extended APN AMBR UL	12-9-13	O	
Extended APN AMBR DL	12-9-14	O	
Record Opening Time	13	M	Time stamp when IP C activated in this S-GW time on subsequent par
Duration	14	M	This field contains the for the record.
Cause for Record Closing	15	M	This field contains a rea of the CDR.
Diagnostics	16	O	This field is included in bearer context is releas option **gtpp attribute** configured.
gsm408cause	16-0	M	
Record Sequence Number	17	O	Partial record sequence present in case of partia
Node ID	18	O	Name of the recording
Record Extensions	19	O	A set of network opera specific extensions to t Conditioned upon the e extension.
Local Record Sequence Number	20	O	Consecutive record nun node. The number is all including all CDR type
APN Selection Mode	21	M	An index indicating ho selected.
Served MSISDN	22	M	The primary MSISDN
Charging Characteristics	23	M	The Charging Characte the IP CAN bearer.
Charging Characteristics Selection Mode	24	O	Holds information abou Characteristics were se
IMS Signaling Context	25	O	Included if the IM-CN Signalling Flag is set, s bearer is used for IMS

Field Name	Tag Number	Category	Description
Serving Node PLMN Identifier	27	O	Serving node PLM MNC) used during t
Served IMEISV	29	O	IMEISV of the ME
RAT Type	30	O	This field indicates Technology (RAT) the Mobile Station,
MS Time Zone	31	O	The "Time Zone" I provide to the S-GV context activation/m
User Location Information	32	O	This field contains Information as desc eGTP case (e.g. CG ECGI). This field is provide and transferred to th the IP-CAN bearer a
S-GW Change	34	O	This field is present to indicate that this an S-GW change. I TRUE ("FF").
Serving Node Type	35	M	These fields contain node types in contr P-GW, which have the record. The serv here map to the serv listed in the field "S in sequence.
Serving Node Type enum	35-1	M	
P-GW Address Used	36	M	This field is the P-G Control Plane.
P-GW Binary IPV4 Address	36-0	M	The octet string inc described above inc assigned to the subs in binary coding.
P-GW Binary IPV6 Address	36-0	M	The octet string inc described above inc assigned to the subs in binary coding.

Field Name	Tag Number	Category	Description
P-GW PLMN Identifier	37	O	
Start Time	38	O	This field holds the tim IP-CAN session starts, CDR for the first beare session.
Stop Time	39	O	This field holds the tim IP-CAN session is term in the CDR for the last IP-CAN session.
PDN Connection ID	40	O	This field holds the PD (IP-CAN session) ident different records belong connection.
iMSIunauthenticatedFlag	41	O	This field indicates the IMSI is not authenticat bearer service situation
userCSGInformation	42	O	This field contains the Information" status of t a CSG cell. It comprise the PLMN, Access mod on CSG membership fo hybrid access applies, a 29.060 for GPRS case, for EPC case.
cSGId	42-0	O	A CSG ID is a unique i scope of PLMN which Subscriber Group (CSC associated with a CSG CSG cells.
cSGAccessMode	42-1	O	cSGAccessMode will b or HYBRID.
cSGMembershipIndication	42-2	O	This field provides an i membership for the use
Served PDP PDN Address Extension	43	O	This field contains the I PDN connection (PDP bearer) when dual-stack and the IPv6 adress is i PDP Address or Served Address.
PDP IP Address	43-0	M	This field contains the PDP context.

Field Name	Tag Number	Category	Description
PDP IPV4 Address	43-0-0	M	The octet string inc described above inc assigned to the subs binary coding.
lowAccessPriorityIndicator	44	O	This field indicates has a low priority, i Communication.
dynamicAddressFlagExt	47	O	This field indicates PDP/PDN address i allocated during IP (initial attach (E-UT UE requested PDN PDP/PDN type IPv missing if IPv4 add
s-GWiPv6Address	48	O	The control plane II IPv4v6 dual stack,
SGW BINARY IPV6 ADDRESS	48-0	O	The octet string in t Gn address of the G coding.
List of Serving Node IPv6Address	49	O	List of serving node addresses, in case o (e.g. S4-SGSN, MM record.
Serving Node BINARY IPV6 ADDRESS	49-0	M	The octet string in t IPV6 address of the
p-GWiPv6AddressUsed	50	O	This field is the P-C case of IPv4v6 dual Plane.
PGW BINARY IPV6 ADDRESS	50-0	O	The octet string in t IPV6 address assig by of the P-GW in l
lastUserLocation Information	55	O	Indicates the UE's l information during session release.
lastMSTimeZone	56	O	Indicates the Latest bearer deactivation

Field Name	Tag Number	Category	Description
CP CIoT EPS Optimisation Indicator	59	O	The cPCIoTEPSOptim field indicates whether C EPS optimisation is use connection during data UE (that is, Control Pla viaS11-U between S-G not (that is, User Plane S-GW and eNB).
UNI PDU CP Only Flag	60	O	The uNIPDUCPOnlyF whether this PDN conn with "Control Plane On transferred using Contro only, when Control Pla Optimisation is enabled flagged when both user plane UNI for PDU tran and S11-U from S-GW) Control Plane CIoT EP enabled.
List of RAN Secondary RAT Usage Reports	64	OC	This field includes one reported from the RAN RAT.
RAN Secondary RAT Usage Report	64-0	M	This field includes one reported from the RAN RAT.
Data Volume Uplink	64-0-1	M	This field includes the transmitted during the u data services in the upl reported from RAN. Th reporting from RAN of volumes is optional.
Data Volume Downlink	64-0-2	M	This field includes the transmitted during the u data services in the dov reported from RAN. Th reporting from RAN of volumes is optional.
RAN Start Time	64-0-3	M	This field is a time stan the moment when the v opened by the RAN.
RAN End Time	64-0-4	M	This field is a time stan the moment when the v closed by the RAN.

Field Name	Tag Number	Category	Description
Secondary RAT Type	64-0-5	OC	This field contains t secondary RAT.
UE Local IP Port Info	253	O	This field includes t port information.
UE Local IP Address	253-0	O	This field includes t address.
UDP Source Port	253-1	O	This field includes t port.

Notes:

- All IP addresses are encoded in binary format.

ASN.1 Definition for Fields in custom24

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

```
GPRS-SGW-Charging-DataTypes-REL8 DEFINITIONS IMPLICIT TAGS ::=
BEGIN


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

GPRSRecord::= CHOICE
--
-- Record values 20, 22..27 are specific
-- Record values 76..77 are MBMS specific
-- Record values 78..79 are EPC specific
{
    sGWRecord[78] SGWRecord
}

SGWRecord     ::= SET
{
    recordType                            [0] RecordType,
    servedIMSI                            [3] IMSI,
    s-GWAddress                           [4] GSNAddress,
    chargingID                            [5] ChargingID,
    servingNodeAddress                    [6] SEQUENCE OF GSNAddress,
    accessPointNameNI                     [7] AccessPointNameNI OPTIONAL,
    pdpPDNType                            [8] PDPType OPTIONAL,
    servedPDPPDNAddress                   [9] PDPAddress OPTIONAL,
    dynamicAddressFlag                    [11] DynamicAddressFlag OPTIONAL,
    listOfTrafficVolumes                  [12] SEQUENCE OF ChangeOfCharCondition
OPTIONAL,
    recordOpeningTime                     [13] TimeStamp,
    duration                              [14] CallDuration,
    causeForRecClosing                    [15] CauseForRecClosing,
    diagnostics                           [16] Diagnostics OPTIONAL,
    recordSequenceNumber                  [17] INTEGER OPTIONAL,
    nodeID                                [18] NodeID OPTIONAL,
    recordExtensions                      [19] ManagementExtensions OPTIONAL,
```

```
        localSequenceNumber                        [20] LocalSequenceNumber OPTIONAL,
        apnSelectionMode                           [21] APNSelectionMode OPTIONAL,
        servedMSISDN                               [22] MSISDN OPTIONAL,
        chargingCharacteristics                    [23] ChargingCharacteristics,
        chChSelectionMode                          [24] ChChSelectionMode OPTIONAL,
        iMSsignalingContext                        [25] NULL OPTIONAL,
        servingNodePLMNIdentifier                  [27] PLMN-Id OPTIONAL,
        servedIMEISV                               [29] IMEI OPTIONAL,
        rATType                                    [30] RATType OPTIONAL,
        mSTimeZone                                 [31] MSTimeZone OPTIONAL,
        userLocationInformation                    [32] OCTET STRING OPTIONAL,
        sGWChange                                  [34] SGWChange OPTIONAL,
        servingNodeType                            [35] SEQUENCE OF ServingNodeType,
        p-GWAddressUsed                            [36] GSNAddress OPTIONAL,
        p-GWPLMNIdentifier                         [37] PLMN-Id OPTIONAL,
        startTime                                  [38] TimeStamp OPTIONAL,
        stopTime                                   [39] TimeStamp OPTIONAL,
        pDNConnectionID                            [40] ChargingID OPTIONAL,
        servedPDPPDNAddressExt                     [43] PDPAddress OPTIONAL,
        lowAccessPriorityIndicator                 [44] NULL OPTIONAL,
        dynamicAddressFlagExt                      [47] DynamicAddressFlag OPTIONAL,
        s-GWiPv6Address                            [48] GSNAddress OPTIONAL,
        servingNodeiPv6Address                     [49] SEQUENCE OF GSNAddress OPTIONAL,
        p-GWiPv6AddressUsed                        [50] GSNAddress OPTIONAL,
        lastUserLocationInformation                [55] OCTET STRING OPTIONAL,
        lastMSTimeZone                             [56] MSTimeZone OPTIONAL,
        cPCIoTEPSOptimisationIndicator             [59] BOOLEAN OPTIONAL,
        uNIPDUCPOnlyFlag                           [60] BOOLEAN OPTIONAL,
        listOfRANSecondaryRATUsageReports          [64] SEQUENCE OF RANSecondaryRATUsageReport
 OPTIONAL,
        uELocalIPAddressPort                       [253] SEQUENCE OF UELocalIPPortInfo OPTIONAL
}


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.

APNSelectionMode::= ENUMERATED
{
 --
 -- See Information Elements TS 29.060, TS 29.274    or TS 29.275
 --
    mSorNetworkProvidedSubscriptionVerified    (0),
    mSProvidedSubscriptionNotVerified          (1),
    networkProvidedSubscriptionNotVerified     (2)
}


CallDuration::= INTEGER
               --
               -- The call duration is counted in seconds.
               -- For successful calls /sessions / PDP contexts, this is the chargeable
duration.
               -- For call attempts this is the call holding time.
               --


CauseForRecClosing ::= INTEGER
{
 --
 -- In PGW-CDR and SGW-CDR the value servingNodeChange is used for partial record
 -- generation due to Serving Node Address list Overflow
```

```
        -- In SGSN servingNodeChange indicates the SGSN change
        --
        -- LCS related causes belong to the MAP error causes acc. TS 29.002
        --
        -- cause codes 0 to 15 are defined 'CauseForTerm' (cause for termination)
        -- All cause values are not relevent to SGW. Refer the spec to find out the
                -- cause values for SGW.
        normalRelease                        (0),
        abnormalRelease                      (4),
        cAMELInitCallRelease                 (5),
        volumeLimit                          (16),
        timeLimit                            (17),
        servingNodeChange                    (18),
        maxChangeCond                        (19),
        managementIntervention               (20),
                intraSGSNIntersystemChange          (21),
        rATChange                            (22),
        mSTimeZoneChange                     (23),
        sGSNPLMNIDChange                     (24),
        unauthorizedRequestingNetwork        (52),
        unauthorizedLCSClient                (53),
        positionMethodFailure                (54),
        unknownOrUnreachableLCSClient        (58),
        listofDownstreamNodeChange           (59)
}


ChangeCondition ::= ENUMERATED
{
        qoSChange                        (0),
        tariffTime                       (1),
        recordClosure                    (2),
        cGI-SAICHange                    (6),    -- bearer modification. CGI-SAI Change
        rAIChange                        (7),    -- bearer modification. RAI Change
        dT-Establishment                 (8),
        dT-Removal                       (9),
        eCGIChange                       (10),   -- bearer modification. ECGI Change
        tAIChange                        (11),   -- bearer modification. TAI Change
        apnAmbrChange                    (50)    -- apn-ambr change

}


ChangeOfCharCondition ::= SEQUENCE
{
        --
        -- qosRequested and qosNegotiated are used in S-CDR only
        -- ePCQoSInformation used in SGW-CDR,PGW-CDR, IPE-CDR, TWAG-CDR and ePDG-CDR only
        -- userLocationInformation is used only in S-CDR, SGW-CDR and PGW-CDR
        -- chargingID used in PGW-CDR only when Charging per IP-CAN session is active
        -- accessAvailabilityChangeReason and relatedChangeOfCharCondition applicable only
 in PGW-CDR
        -- cPCIoTOptimisationIndicator is used in SGW-CDR only
        --
        qosRequested            [1] QoSInformation OPTIONAL,
        qosNegotiated           [2] QoSInformation OPTIONAL,
        dataVolumeGPRSUplink     [3] DataVolumeGPRS OPTIONAL,
        dataVolumeGPRSDownlink   [4] DataVolumeGPRS OPTIONAL,
        changeCondition          [5] ChangeCondition,
        changeTime               [6] TimeStamp,
        userLocationInformation  [8] OCTET STRING OPTIONAL,
        ePCQoSInformation        [9] EPCQoSInformation OPTIONAL,
        chargingID               [10] ChargingID OPTIONAL,
        userCSGInformation       [12] UserCSGInformation OPTIONAL,
```

```
            diagnostics                    [13] Diagnostics OPTIONAL,
            rATType                        [15] RATType OPTIONAL,
            uWANUserLocationInformation    [17] UWANUserLocationInfo OPTIONAL,
            cPCIoTEPSOptimisationIndicator [19] CPCIoTEPSOptimisationIndicator OPTIONAL


}

ChargingCharacteristics ::= OCTET STRING (SIZE(2))


ChargingID ::= INTEGER (0..4294967295)
 --
 -- Generated in P-GW, part of IP CAN bearer
 -- 0..4294967295 is equivalent to 0..2**32-1
 --

ChChSelectionMode     ::= ENUMERATED
{
      servingNodeSupplied        (0), -- For S-GW/P-GW
      subscriptionSpecific       (1), -- For SGSN only
      aPNSpecific                (2), -- For SGSN only
      homeDefault                (3), -- For SGSN, S-GW and P-GW
      roamingDefault             (4), -- For SGSN, S-GW and P-GW
      visitingDefault            (5) -- For SGSN, S-GW and P-GW
}

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

DynamicAddressFlag ::= BOOLEAN


EPCQoSInformation ::= SEQUENCE
{
      --
      -- See TS 29.212 for more information
      --
      qCI                        [1] INTEGER,
      maxRequestedBandwithUL     [2] INTEGER OPTIONAL,
      maxRequestedBandwithDL     [3] INTEGER OPTIONAL,
      guaranteedBitrateUL        [4] INTEGER OPTIONAL,
      guaranteedBitrateDL        [5] INTEGER OPTIONAL,
      aRP                        [6] INTEGER OPTIONAL,
      apnAmbrUplink              [7] INTEGER OPTIONAL,
      apnAmbrDownlink            [8] INTEGER OPTIONAL,
      extendedMaxRequestedBWUL   [9] INTEGER OPTIONAL,
      extendedMaxRequestedBWDL   [10] INTEGER OPTIONAL,
      extendedGBRUL              [11] INTEGER OPTIONAL,
      extendedGBRDL              [12] INTEGER OPTIONAL,
      extendedAPNAMBRUL          [13] INTEGER OPTIONAL ,
      extendedAPNAMBRDL          [14] INTEGER OPTIONAL
}

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

GSNAddress::= IPAddress
```

```
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 for GTP, TS 29.274 for eGTP and TS 29.275 for PMIP
 --

PLMN-Id    ::= OCTET STRING (SIZE (3))
 --
 -- This is a 1:1 copy from the Routing Area Identity (RAI) IE specified in TS 29.060
 --          as follows:
 -- OCTET 1 of PLMN-Id = OCTET 2 of RAI
 -- OCTET 2 of PLMN-Id = OCTET 3 of RAI
 -- OCTET 3 of PLMN-Id = OCTET 4 of RAI
 --

QoSInformation ::= OCTET STRING (SIZE (4..255))
 --
 -- This    octet string
 -- is a 1:1 copy of the contents (i.e. starting with octet 5) of the "Bearer Quality of
 -- Service" information element specified in TS 29.274
 --

RANSecondaryRATUsageReport ::= SEQUENCE
              -- ]
{
              dataVolumeUplink            [1] DataVolumeGPRS,
              dataVolumeDownlink          [2] DataVolumeGPRS,
              rANStartTime                [3] TimeStamp,
              rANEndTime                  [4] TimeStamp,
              secondaryRATType            [5] SecondaryRATType OPTIONAL
}

SecondaryRATType ::= INTEGER
{
              reserved (0),
              nR (1) -- New Radio 5G
}

RATType ::= INTEGER (0..255)
 --
 -- This integer is 1:1 copy of the RAT type value as defined in TS 29.060 for GTP,
 -- TS 29.274 for eGTP and TS 29.275 for PMIP.
```

```
     --

UWANUserLocationInfo ::= SEQUENCE
{
     uELocalIPAddress    [0] IPAddress,
     uDPSourcePort       [1] OCTET STRING (SIZE(2)) OPTIONAL,
     sSID                [2] OCTET STRING OPTIONAL,    -- see format in IEEE Std 802.11-2012
 [408]
     bSSID               [3] OCTET STRING OPTIONAL     -- see format in IEEE Std 802.11-2012
 [408]
}

RecordType    ::= INTEGER
{
    -- Record values 0..17 are CS specific.
    -- The contents are defined in TS 32.250

    sGWRecord         (84)
}

ResultCode ::= INTEGER
 -- charging protocol return value, range of 4 byte (0...4294967259)
 -- see Result-Code AVP as used in 3GPP 32.299
 --


ServingNodeType ::= ENUMERATED
{
     sGSN               (0),
     pMIPSGW            (1),
     gTPSGW             (2),
     ePDG               (3),
     hSGW               (4),
     mME                (5)
}

SGWChange ::= BOOLEAN
 --
 -- present if first record after inter S-GW change
 --

Diagnostics           ::= CHOICE
{
     gsm0408Cause                            [0] INTEGER,
     -- See TS 24.008
     gsm0902MapErrorValue               [1] INTEGER,
     -- Note: The value to be stored here corresponds to
     -- the local values defined in the MAP-Errors and
     -- MAP-DialogueInformation modules, for full details
     -- see TS 29.002
            itu-tQ767Cause                 [2] INTEGER,
     -- See ITU-T Q.767
          networkSpecificCause           [3] ManagementExtension,
     -- To be defined by network operator
          manufacturerSpecificCause     [4] ManagementExtension,
 -- To be defined by manufacturer
          positionMethodFailureCause [5] PositionMethodFailure-Diagnostic,
     -- see TS 29.002
          unauthorizedLCSClientCause [6] UnauthorizedLCSClient-Diagnostic
     -- see TS 29.002
}

IPAddress::= CHOICE
{
```

```
     iPBinaryAddress                          IPBinaryAddress,
     iPTextRepresentedAddress     IPTextRepresentedAddress
}


CPCIoTEPSOptimisationIndicator ::= BOOLEAN


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))
}


PositionMethodFailure-Diagnostic ::= ENUMERATED
{
                congestion                               (0),
                insufficientResources                    (1),
                insufficientMeasurementData              (2),
                inconsistentMeasurementData              (3),
                locationProcedureNotCompleted            (4),
                locationProcedureNotSupportedByTargetMS  (5),
                qoSNotAttainable                         (6),
                positionMethodNotAvailableInNetwork      (7),
                positionMethodNotAvailableInLocationArea (8)
}


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



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


ManagementExtensions ::= SET OF ManagementExtension

MSISDN::= ISDN-AddressString
              --
 -- See TS 23.003

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


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
                    --

UELocalIPPortInfo   ::= SEQUENCE
{
    --
    -- The S2b user Local IP Port Information
    --
    uELocalIPAddress                           [0] IPAddress OPTIONAL,
    uDPSourcePort                               [1] INTEGER OPTIONAL
}

UELocalIPAddress::= IPAddress
UDPSourcePort           ::= INTEGER


UnauthorizedLCSClient-Diagnostic ::= ENUMERATED
{
                noAdditionalInformation                                (0),
                clientNotInMSPrivacyExceptionList                      (1),
                callToClientNotSetup                                   (2),
                privacyOverrideNotApplicable                           (3),
                disallowedByLocalRegulatoryRequirements                (4),
                unauthorizedPrivacyClass                               (5),
                unauthorizedCallSessionUnrelatedExternalClient         (6),
                unauthorizedCallSessionRelatedExternalClient           (7)
}


CSGAccessMode ::= ENUMERATED
{
                closedMode  (0),
                hybridMode  (1)
}
CSGId        ::= OCTET STRING (SIZE(4))
                --
                -- Defined in 23.003. Coded according to TS 29.060 for GTP, and in TS
29.274
                -- for eGTP.
                -- 24.008
                --
UserCSGInformation        ::= SEQUENCE
{
                cSGId                              [0] CSGId,
                cSGAccessMode                      [1] CSGAccessMode,
                cSGMembershipIndication            [2] NULL OPTIONAL
}
TBCDSTRING ::= OCTET STRING
ISDN-AddressString ::= OCTET STRING
IMEI ::= TBCDSTRING (SIZE(8))
IMSI ::= TBCDSTRING (SIZE(3..8))
maxAddressLength    INTEGER ::= 20
AddressString ::= OCTET STRING (SIZE (1..maxAddressLength))
END
```