P-GW CDR Field Reference

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

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

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 4

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.

custom24 Dictionary

In releases prior to 15, PGW-CDR fields are based on 3GPP TS 32.298 V8.5.0. In release 15 and later, PGW-CDR fields are fully compliant to 3GPP spec 32.298 V9.6.0 and partially compliant to Release 11 spec of 3GPP TS 32.298.

Field	Tag Number	Category
Record Type	0	M

Field	Tag Number	Category
Served IMSI	3	M
P-GW Address	4	M
Charging ID	5	M
Serving Node Address	6	M
Access Point Name Network Identifier	7	OM
PDP/PDN Type	8	OM
Served PDP/PDN Address	9	OC
Dynamic Address Flag	11	OC
Record Opening Time	13	M
Duration	14	M
Cause for Record Closing	15	M
Diagnostics	16	OC
Record Sequence Number	17	C
Node ID	18	OM
Local Sequence Number	20	OM
APN Selection Mode	21	OM

Field	Tag Number	Category
Served MSISDN	22	OM
Charging Characteristics	23	M
Charging Characteristics Selection Mode	24	OM
Serving Node PLMN Identifier	27	OM
PS Furnish Charging Information	28	OC
PS Free Format Data	28-0-1	OC
PS Free Format Append Indicator	28-0-2	OC
Served IMEISV	29	OC
RAT Type	30	OC
MS Time Zone	31	OC
User Location Information	32	OC

Field	Tag Number	Category
List of Service Data	34	OM
Data Service Volume Block	34-0	OM
Rating Group	34-0-1	OM
Charging Rulebase Name	34-0-2	OC
Result Code	34-0-3	OC
Local Sequence Number (LOSD)	34-0-4	OC
Time of First Usage	34-0-5	OC
Time of Last Usage	34-0-6	OC
Time Usage	34-0-7	OC
Service Condition Change	34-0-8	OC
QoS Information Negotiated	34-0-9	OC
QCI	34-9-1	O
Maximum Requested Bandwith UL	34-9-2	O
Maximum Requested Bandwith DL	34-9-3	O
Guaranteed Bitrate UL	34-9-4	O
Guaranteed Bitrate DL	34-9-5	O
ARP	34-9-6	O
APN Aggregate Maximum Bitrate UL	34-9-7	O
APN Aggregate Maximum Bitrate DL	34-9-8	O

Field	Tag Number	Category
Extended Maximum Requested BW UL	34-9-9	O
Extended Maximum RequestedBW DL	34-9-10	O
Extended GBR UL	34-9-11	O
Extended GBR DL	34-9-12	O
Extended APN AMBR UL	34-9-13	O
Extended APN AMBR DL	34-9-14	O
Serving Node Address (LOSD)	34-0-10	OC
Data Volume FBC Uplink	34-0-12	OC
Data Volume FBC Downlink	34-0-13	OC
Time of Report	34-0-14	OM
Failure Handling Continue	34-0-16	OC
Service Identifier	34-0-17	OC
PS Furnish Charging Information	34-0-18	OC
User Location Information (LOSD)	34-0-20	OC
Serving node Type	35	M
Served MNNAI	36	OC
P-GW PLMN Identifier	37	OC

Field	Tag Number	Category
Start Time	38	OC
Stop Time	39	OC
PDN Connection Id	41	OM
Served PDP PDN Address Extension	45	OC
List of RAN Secondary RAT Usage Reports	73	OC
RAN Secondary RAT Usage Report	73-0	M
Data Volume Uplink	73-0-1	M
Data Volume Downlink	73-0-2	M
RAN Start Time	73-0-3	M
RAN End Time	73-0-4	M
Secondary RAT Type	73-0-5	OC
UE Local IP Port Info	253	O
uELocalIPAddress	253-0	O
uDPSourcePort	253-1	O

Field	Tag Number	Category
AF recordinformation	19	O
AF chargingIdentifier	19-1	O

Notes:

- Variable size vary depending on the **charging id** value sent by the PCRF.
- 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*.
- The PGW-CDR field "PS Furnish Charging Information" is available in the custom24 GTPP dictionary only when the CLI command **gtpp attribute furnish-charging-information** is configured in the GTPP Server Group Configuration mode.

  This field is also available in all 3GPP Rel.7 and Rel.8 dictionaries.
- In releases prior to 14.0, for a non-GBR bearer, MBR and GBR values were populated in PGW-CDR. In 14.0 and later releases, as per the standard specification for a non-GBR bearer, MBR and GBR values should be set to 0. Only for custom24 GTPP dictionary if "**gtpp attribute apn-ambr**" CLI command is configured then APN AMBR values are populated in MBR fields of PGW-CDR.
- In releases prior to 14.0, the CGISAIChange service condition is present in LOSDV of PGW-CDR even if ULI Change trigger is disabled. In 14.0 and later releases, if the ULI Change trigger is disabled and if the ULI is changed, the CGISAIChange service condition is not present in LOSDV of PGW-CDR.
- Rulebase change triggered from any external interface e.g. OCS/PCRF, will generate CDR with closure reason "Management Intervention". This change is applicable to all standard dictionaries except for custom42 GTPP dictionary as it is customized to suppress interim CDR.
- In releases prior to 15.0, when a call is cleared from the chassis, the field "causeForRecordClosing" in a PGW-CDR shows "Normal Release". In 15.0 and later releases, the behavior has been changed to comply with 3GPP specifications. That is, the default "causeForRecordClosing" in PGW-CDR will be "Management Intervention". To support this, new keywords have been added to the CLI command "**gtpp egcdr**" to control the value of "causeForRecordClosing" of PGW-CDR when a call is cleared from the chassis.

Important This behavioral change is limited to PGW-CDR Release 8 dictionaries only.

- In releases prior to 16, if there was a LOSDV bucket created between the packet arrival time and service-idle-out expiry time, no data counts were reported. So, a zero-volume LOSDV was generated for service idle timeout scenario. In 16 and later releases, if there are no data counts available for a service

flow, the LOSDV for service idle timeout will not be created. The service-idle timeout will be started only when the next data packet arrives.

This behavior change is applicable to eG-CDRs and PGW-CDRs for all GTPP dictionaries except custom5 and custom40 dictionaries.

- In StarOS release 21.16.7 and in later releases, the **aFChargingIdentifier** field is not part of the 3GPP 32.298 Release 6 and 7 specifications. This field is an Release15 attribute and it can be present in Release 8 dictionary if enabled through the **gtpp attribute af-record-info** CLI command. This attribute is available only for the dictionaries custom35, custom24, custom44, custom48, custom50,custom52,custom53, and custom34 when the CLI command **gtpp attribute af-record-info** is configured.

ASN.1 Definition for Fields in custom24 Dictionary

The following section provides a complete ASN.1 definition of PGW-CDR. It is based on the ASN.1 definition in 3GPP TS 32.298.

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

-------------------------------------------------------------------------------
--
--    GPRS RECORDS
--
-- 3GPP 32.298V8.7.0 AND 3GPP 32.251V8.8.0
-------------------------------------------------------------------------------

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

PGWRecord                ::= SET
{
    recordType                                  [0] RecordType,
    servedIMSI                                  [3] IMSI,
    p-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,
    recordOpeningTime                           [13] TimeStamp,
    duration                                    [14] CallDuration,
    causeForRecClosing                          [15] CauseForRecClosing,
    diagnostics                                 [16] Diagnostics OPTIONAL,
    recordSequenceNumber                        [17] INTEGER OPTIONAL,
    nodeID                                      [18] NodeID OPTIONAL,
    localSequenceNumber                         [20] LocalSequenceNumber OPTIONAL,
    apnSelectionMode                            [21] APNSelectionMode OPTIONAL,
    servedMSISDN                                [22] MSISDN OPTIONAL,
    chargingCharacteristics                     [23] ChargingCharacteristics,
    chChSelectionMode                           [24] ChChSelectionMode OPTIONAL,
    servingNodePLMNIdentifier                   [27] PLMN-Id OPTIONAL,
```

```
    pSFurnishChargingInformation                    [28] PSFurnishChargingInformation
OPTIONAL,
    servedIMEISV                                    [29] IMEI OPTIONAL,
    rATType                                         [30] RATType OPTIONAL,
    mSTimeZone                                      [31] MSTimeZone OPTIONAL,
    userLocationInformation                         [32] OCTET STRING OPTIONAL,
   listOfServiceData                               [34] SEQUENCE OF ChangeOfServiceCondition
 OPTIONAL,
    servingNodeType                                 [35] SEQUENCE OF ServingNodeType,
    servedMNNAI                                     [36] SubscriptionID OPTIONAL,
    p-GWPLMNIdentifier                              [37] PLMN-Id OPTIONAL,
    startTime                                       [38] TimeStamp OPTIONAL,
    stopTime                                        [39] TimeStamp OPTIONAL,
    pDNConnectionID                                 [41] ChargingID OPTIONAL,
    servedPDPPDNAddressExt                          [45] PDPAddress OPTIONAL,
    listOfRANSecondaryRATUsageReports               [73] SEQUENCE OF
RANSecondaryRATUsageReport OPTIONAL,
    uELocalIPAddressPort                            [253] 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 [60]
                --
                -- 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)
}

ChangeOfServiceCondition                ::= SEQUENCE
{
                --
                -- Used for Flow based Charging service data container
                --
                ratingGroup                                      [1] RatingGroupId,
                chargingRuleBaseName                             [2] ChargingRuleBaseName
OPTIONAL,
                resultCode                                       [3] ResultCode OPTIONAL,
                localSequenceNumber                              [4] LocalSequenceNumber
OPTIONAL,
                timeOfFirstUsage                                 [5] TimeStamp OPTIONAL,
                timeOfLastUsage                                  [6] TimeStamp OPTIONAL,
                timeUsage                                        [7] CallDuration OPTIONAL,
                serviceConditionChange                           [8] ServiceConditionChange,
               qoSInformationNeg                               [9] EPCQoSInformation OPTIONAL,

                servingNodeAddress                               [10] GSNAddress OPTIONAL,
               datavolumeFBCUplink                             [12] DataVolumeGPRS OPTIONAL,

                datavolumeFBCDownlink                           [13] DataVolumeGPRS OPTIONAL,

                timeOfReport                                     [14] TimeStamp,
                failureHandlingContinue                          [16] FailureHandlingContinue
 OPTIONAL,
              serviceIdentifier                               [17] ServiceIdentifier OPTIONAL,

                pSFurnishChargingInformation                     [18]
PSFurnishChargingInformation OPTIONAL,
                aFRecordInformation                              [19] SEQUENCE OF
AFRecordInformation OPTIONAL,
                userLocationInformation                          [20] OCTET STRING OPTIONAL,
               datapacketsFBCUplink                            [254] DataPacketGPRS OPTIONAL,

                datapacketsFBCDownlink                          [255] DataPacketGPRS OPTIONAL

                   }
AFChargingIdentifier            ::= OCTET STRING
AFRecordInformation               ::= SEQUENCE
{
      aFChargingIdentifier             [1] AFChargingIdentifier
}
   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"
               userLocationChange              (12)                -- bearer modification.
 "User Location Change"
}


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

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

ChargingRuleBaseName               ::= IA5String (SIZE(1..63))
               --
               -- identifier for the group of charging rules
               -- see Charging-Rule-Base-Name AVP as defined in TS 29.212
               --

ChChSelectionMode                                  ::= ENUMERATED
{
               servingNodeSupplied             (0),                -- For S-GW/P-GW
               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.
               --

DataPacketGPRS               ::= INTEGER
               --
               -- The packets counts of data transferred.
               --

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,
```

```
     aPNAggregateMaxBitrateUL                  [7] INTEGER OPTIONAL,
     aPNAggregateMaxBitrateDL                  [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
}
FailureHandlingContinue    ::= BOOLEAN
                --
-- This parameter is included when the failure handling procedure has been executed and new

-- containers are opened. This parameter shall be included in the first and subsequent
-- containers opened after the failure handling execution.
                --

FFDAppendIndicator         ::= BOOLEAN

FreeFormatData             ::= OCTET STRING (SIZE(1..160))
                --
--
-- Free formatted data as sent in the FurnishChargingInformationGPRS
-- see TS 29.078 [217]
                --
GSNAddress::= IPAddress

--IA5String::= OCTET STRING

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

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



PDPAddress                ::= CHOICE
{
                iPAddress                 [0] IPAddress
                --
        -- eTSIAddress as specified in 32.298 is not supported
        --
}

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
                --

PSFurnishChargingInformation          ::= SEQUENCE
```

```
{
                pSFreeFormatData                [1] FreeFormatData,
                pSFFDAppendIndicator            [2] FFDAppendIndicator OPTIONAL
}

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

UELocalIPAddress        ::= IPAddress
UDPSourcePort           ::= INTEGER

RatingGroupId           ::= INTEGER

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 [92].
--

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.
                --

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

    pGWRecord         (85)
}

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


ServiceConditionChange               ::= BIT STRING
```

```
{
    qoSChange                                           (0),        -- bearer modification
    sGSNChange                                          (1),        -- bearer modification
    sGSNPLMNIDChange                                    (2),        -- bearer modification
    tariffTimeSwitch                                    (3),        -- tariff time change
    pDPContextRelease                                   (4),        -- bearer release
    rATChange                                           (5),        -- bearer modification
    serviceIdledOut                                    (6),        -- IP flow idle out, DCCA
 QHT expiry
    reserved1                                           (7),        -- old: QCTexpiry is no
report event
    configurationChange                                 (8),        -- configuration change
    serviceStop                                         (9),        -- IP flow termination
    dCCATimeThresholdReached                            (10),       -- DCCA quota
reauthorization
    dCCAVolumeThresholdReached                          (11),       -- DCCA quota
reauthorization
    dCCAServiceSpecificUnitThresholdReached             (12),       -- DCCA quota
reauthorization
    dCCATimeExhausted                                   (13),       -- DCCA quota
reauthorization
    dCCAVolumeExhausted                                 (14),       -- DCCA quota
reauthorization
    dCCAValidityTimeout                                 (15),       -- DCCA quota validity
time (QVT expiry)
    reserved2                                          (16),       -- reserved due to no use
 case,
                -- old: return Requested is covered by (17),(18)
    dCCAReauthorisationRequest                          (17),       -- DCCA quota
reauthorization request by OCS
    dCCAContinueOngoingSession                          (18),       -- DCCA failure handling
 (CCFH), continue IP flow
    dCCARetryAndTerminateOngoingSession                 (19),       -- DCCA failure handling
 (CCFH), terminate IP flow after DCCA retry
    dCCATerminateOngoingSession                        (20),       -- DCCA failure handling,
 terminate IP flow
    cGI-SAIChange                                       (21),       -- bearer modification
    rAIChange                                           (22),       -- bearer modification
    dCCAServiceSpecificUnitExhausted                    (23),       -- DCCA quota
reauthorization
    recordClosure                                       (24),       -- PGW-CDR closure
    timeLimit                                          (25),       -- intermediate recording

    volumeLimit                                        (26),       -- intermediate recording

    serviceSpecificUnitLimit                           (27),       -- intermediate recording

    envelopeClosure                                     (28),
    eCGIChange                                          (29),       -- bearer modification.
"ECGI Change"
    tAIChange                                           (30),       -- bearer modification.
"TAI Change"
    userLocationChange                                  (31)        -- bearer modification.
"User Location Change"
}

ServiceIdentifier ::= INTEGER (0..4294967295)
        --
        -- The service identifier is used to identify the service or the
        -- service component the service data flow relates to. See
        -- Service-Identifier AVP as defined in 3GPP TS 29.212

ServingNodeType                ::= ENUMERATED
{
```

```
     sGSN                (0),
     pMIPSGW             (1),
     gTPSGW              (2),
     ePDG                (3),
     hSGW                (4),
     mME                 (5)
}


SubscriptionID               ::= SET
{
                subscriptionIDType              [0]           SubscriptionIDType,
                subscriptionIDData              [1]           UTF8String
}
SubscriptionIDType               ::= ENUMERATED
{
                eND-USER-E164                   (0),
                eND-USER-IMSI                   (1),
                eND-USER-SIP-URI                (2),
                eND-USER-NAI                    (3),
                eND-USER-PRIVATE                (4)
}

Diagnostics
                 ::= CHOICE
{
        -- Only the option gsm0408Cause is used for this field
        --
        gsm0408Cause [0] INTEGER
}

IPAddress::= CHOICE
{
                iPBinaryAddress                                  IPBinaryAddress

        --Currently only IPBinaryAddress is supported in PGWCDR
}

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



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


MSISDN::= ISDN-AddressString
                --
                -- See TS 23.003
maxISDN-AddressLength INTEGER ::= 9
maxAddressLength INTEGER ::= 20


MSTimeZone::= OCTET STRING (SIZE (2))
                --
                -- 1.Octet: Time Zone and 2. Octet: Daylight saving time, see TS 29.060
[75]
```

```
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
                --

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