

Oracle® Communications Offline Mediation Controller Output Specification



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Preface

This document provides overview information and samples of the Offline Mediation Controller 12.0 distribution cartridge (DC) output files in the supported formats.

Audience

This document is intended for network operators and system engineers.

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1

Overview

This chapter provides overview information on the distribution cartridge (DC) output formats for the Wireless GGSN/SGSN node chain in Offline Mediation Controller.

Supported devices

Table 1-1 displays the devices supported for the Wireless service solution.

Table 1-1 Supported devices for Wireless

Vendor	Device	Hardware	Version	Format of data generated by device
Nortel	GGSN	Shasta	3.0	3GPP 32.015 v3.2 and v3.6 ASN.1 over GTP'
Nortel	SGSN or Wireless Gateway (WG)	Passport 15K	SGSN GPRS 5.0 and SGSN UMTS 3.0	3GPP 32.015 v3.2 and v3.6 ASN.1 over GTP'

Supported output formats

The Offline Mediation Controller Wireless service solution supports the following distribution cartridge (DC) output formats for the GGSN/SGSN node chain:

- ASCII Delimited
- IPDR
- XML
- 3GPP 32.015 ASN.1

The section that follows provides some general information about the Wireless DC output formats.

Descriptions

The available Wireless distribution cartridge (DC) output file formats include:

ASCII Delimited

This file contains strings of ASCII data. Standard ASCII delimited files contain data separated by a delimiter — either a comma or a semi-colon. The general format is a header line followed by one or more lines of data. The header line is a string of parameter names separated by a delimiter. The data lines that follow the header line have a one-to-one order association with the parameter names in the header line.

IPDR

This file is in XML format.

XML

This file is in XML format. The general format of this file is a group of data lines for each count. Each data line contains an attribute tag, the associated value, and an ending tag.

3GPP 32.015 ASN.1

This file contains syntax and basic encoding rules for messages that are sent and received in the network. The syntax rules describe the message content by data type and content sequence or structure. The encoding rules describe how each data item is encoded.

2

Wireless Output Formats

This chapter contains call detail record (CDR) field descriptions and sample Wireless distribution cartridge (DC) output formats for the GGSN/SGSN node chain in Offline Mediation Controller.

CDR fields

The following sections show all call detail record (CDR) fields that can be contained in a DC output file produced by Offline Mediation Controller for the Wireless service solution, following the 3GPP Technical Specification 32.015 v3.2.0 requirements.

ASN.1 record fields for 3GPP 32.015 v3.2.0

This section shows ASN.1 record fields for 3GPP 32.015 v3.2.0.

GGSN CDR

This section shows the GGSN record output in ASN.1 format for both Shasta™ and Contivity^R GGSNs.

```
GGSNPDPRecord      : := SET
{
  recordType
  networkInitiation
  servedIMSI
  ggsnAddress
  chargingID
  sgsnAddress
  accessPointNameI
  pdpType
  servedPDPAddress
  dynamicAddressFlag
  listOfTrafficVolumes
  recordOpeningTime
  duration
  causeForRecClosing
  diagnostics
  recordSequenceNumber
  nodeID
  recordExtensions
  localSequenceNumber
  apnSelectionMode
  servedMSISDN
  ChargingCharacteristics
}
```

Table 2-1 ASN.1 Record Fields

Field	Description
recordType	[0] CallEventRecordType,
networkInitiation	[1] NetworkInitiatedPDPCContext OPTIONAL
servedIMSI	[3] IMSI,
ggsnAddress	[4] SNAAddress,
chargingID	[5] ChargingID,
sgsnAddress	[6] SEQUENCE OF GSNAddress,
accessPointNameNI	[7] AccessPointNameNI,
pdpType	[8] PDPTType,
servedPDPAddress	[9] PDPAddress,
dynamicAddressFlag	[11] DynamicAddressFlag OPTIONAL,
listOfTrafficVolumes	[12] SEQUENCE OF ChangeOfCharCondition,
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,
servedMSISDN	[22] MSISDN OPTIONAL,
ChargingCharacteristics	[23] ChargingCharacteristics OPTIONAL,

SGSN CDR outputs

This section shows the SGSN record outputs in ASN.1 format.

S-CDR

Following is the format of the S-CDR with the appropriate ASN.1 types.

```

SGSNPDPCRecord ::= SET
{
  recordType
  networkInitiation
  servedIMSI
  servedIMEI
  sgsnAddress
  msNetworkCapability
  routingArea
  locationAreaCode
  cellIdentity
  chargingID

```

```

ggsnAddressUsed
accessPointNameNI
pdpType
servedPDPAddress
listOfTrafficVolumes
recordOpeningTime
duration
sgsnChange
causeForRecClosing
diagnostics
recordSequenceNumber
nodeID
recordExtensions
localSequenceNumber
apnSelectionMode
accessPointNameOI
servedMSISDN
ChargingCharacteristics
systemType
cAMELInformationPDP
rNCUnsentDownlinkVolume
}

```

Table 2-2 SGSN Record Outputs Fields

Field	Description
recordType	[0] CallEventRecordType,
networkInitiation	[1] NetworkInitiatedPDPCContext OPTIONAL
servedIMSI	[3] IMSI,
servedIMEI	[4] IMEI OPTIONAL,
sgsnAddress	[5] GSNAddress,
msNetworkCapability	[6] MSNetworkCapability OPTIONAL,
routingArea	[7] RoutingAreaCode OPTIONAL,
locationAreaCode	[8] LocationAreaCode OPTIONAL,
cellIdentity	[9] CellId OPTIONAL,
chargingID	[10] ChargingID,
ggsnAddressUsed	[11] GSNAddress,
accessPointNameNI	[12] AccessPointNameNI,
pdpType	[13] PDPTType
servedPDPAddress	[14] PDPAddress,
listOfTrafficVolumes	[15] SEQUENCE OF ChangeOfCharCondition,
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,

Table 2-2 (Cont.) SGSN Record Outputs Fields

Field	Description
recordExtensions	[23] ManagementExtensions OPTIONAL,
localSequenceNumber	[24] LocalSequenceNumber OPTIONAL,
apnSelectionMode	[25] APNSelectionMode OPTIONAL,
accessPointNameOI	[26] AccessPointNameOI,
servedMSISDN	[27] MSISDN OPTIONAL,
ChargingCharacteristics	[28] ChargingCharacteristics OPTIONAL,
systemType	[29] SystemType OPTIONAL,
cAMELInformationPDP	[30] CAMELInformationPDP OPTIONAL,
rNCUnsentDownlinkVolume	[31] DataVolumeGPRS OPTIONAL,

The G-CDR/S-CDR change of location container contains the following fields:

```
ChangeOfCharCondition ::= SEQUENCE
{
  qosRequested
  qosNegotiated
  dataVolumeGPRSuplink
  dataVolumeGPRSDownlink
  changeCondition
  changeTime
}
```

Table 2-3 G-CDR/S-CDR Fields

Field	Description
qosRequested	[1] QoSInformation OPTIONAL
qosNegotiated	[2] QoSInformation OPTIONAL,
dataVolumeGPRSuplink	[3] DataVolumeGPRS,
dataVolumeGPRSDownlink	[4] DataVolumeGPRS,
changeCondition	[5] ChangeCondition,
changeTime	[6] TimeStamp

M-CDR

Following is the format of the M-CDR with the appropriate ASN.1 types:

```
SGSNMMRecord ::= SET
{
  recordType
  servedIMSI
  servedIMEI
  sgsnAddress
  msNetworkCapability
  routingArea
  locationAreaCode
  cellIdentity
}
```

```

changeLocation
recordOpeningTime
duration
sgsnChange
causeForRecClosing
diagnostics
recordSequenceNumber
nodeID
recordExtensions
localSequenceNumber
servedMSISDN
chargingCharacteristics
cAMELInformationPDP
}

```

Table 2-4 M-CDR Fields

Field	Description
recordType	[0] CallEventRecordType,
servedIMSI	[1] IMSI,
servedIMEI	[2] IMEI OPTIONAL,
sgsnAddress	[3] GSNAddress,
msNetworkCapability	[4] MSNetworkCapability OPTIONAL,
routingArea	[5] RoutingAreaCode OPTIONAL,
locationAreaCode	[6] LocationAreaCode OPTIONAL,
cellIdentity	[7] CellId OPTIONAL,
changeLocation	[8] SEQUENCE OF ChangeLocation OPTIONAL,
recordOpeningTime	[9] TimeStamp
duration	[10] CallDuration OPTIONAL,
sgsnChange	[11] SGSNChange OPTIONAL,
causeForRecClosing	[12] CauseForRecClosing,
diagnostics	[13] Diagnostics OPTIONAL,
recordSequenceNumber	[14] INTEGER OPTIONAL,
nodeID	[15] NodeID OPTIONAL,
recordExtensions	[16] ManagementExtensions OPTIONAL,
localSequenceNumber	[17] LocalSequenceNumber OPTIONAL,
servedMSISDN	[18] MSISDN OPTIONAL,
chargingCharacteristics	[19] ChargingCharacteristics OPTIONAL,
cAMELInformationPDP	[20] CAMELInformationPDP OPTIONAL,

The M-CDR change of location container contains the following fields:

```

ChangeLocation  :: = SEQUENCE
--
-- used in SGSNMMRecord only
--
{
  locationAreaCode
  routingAreaCode
}

```

```

cellId
changeTime
}

```

Table 2-5 M-CDR Container Fields

Field	Description
locationAreaCode	[0] LocationAreaCode,
routingAreaCode	[1] RoutingAreaCode,
cellId	[2] CellID OPTIONAL,
changeTime	[3] TimeStamp

S-SMO-CDR

Following is the format of the S-SMO-CDR with the appropriate ASN.1 types:

```

SGSNMRecord ::= SET
{
  recordType
  servedIMSI
  servedIMEI
  servedMSISDN
  msNetworkCapability
  serviceCentre
  recordingEntity
  locationArea
  routingArea
  cellIdentity
  messageReference
  originationTime
  smsResult
  recordExtensions
  nodeID
  localSequenceNumber
  chargingCharacteristics
  systemType
  destinationNumber
  CAMELInformationSMS
}

```

Table 2-6 S-SMO-CDR Fields

Field	Description
recordType	[0] CallEventRecordType,
servedIMSI	[1] IMSI,
servedIMEI	[2] IMEI OPTIONAL,
servedMSISDN	MSISDN OPTIONAL,
msNetworkCapability	[4] MSNetworkCapability OPTIONAL,
serviceCentre	AddressString,
recordingEntity	RecordingEntity,
locationArea	[6] LocationAreaCode OPTIONAL,

Table 2-6 (Cont.) S-SMO-CDR Fields

Field	Description
routingArea	RoutingAreaCode OPTIONAL,
cellIdentity	[7] CellId OPTIONAL,
messageReference	Message Reference,
originationTime	TimeStamp,
smsResult	SMSResult OPTIONAL,
recordExtensions	[16] ManagementExtensions OPTIONAL,
nodeID	[15] NodeID OPTIONAL,
localSequenceNumber	[17] LocalSequenceNumber OPTIONAL,
chargingCharacteristics	[19] ChargingCharacteristics OPTIONAL,
systemType	SystemType OPTIONAL,
destinationNumber	CalledNumber OPTIONAL,
cAMELInformationSMS	[20] CAMELInformationSMS OPTIONAL,

S-SMT-CDR

The following is the format of the S-SMT-CDR with the appropriate ASN.1 types:

```

SGSNMTRcord      : := SET
{
  recordType
  servedIMSI
  servedIMEI
  servedMSISDN
  msNetworkCapability
  serviceCentre
  recordingEntity
  locationArea
  routingArea
  cellIdentity
  originationTime
  smsResult
  recordExtensions
  nodeID
  localSequenceNumber
  chargingCharacteristics
  systemType
}

```

Table 2-7 S-SMT-CDR Fields

Field	Description
recordType	[0] CallEventRecordType,
servedIMSI	[1] IMSI,
servedIMEI	[2] IMEI OPTIONAL,
servedMSISDN	MSISDN OPTIONAL,

Table 2-7 (Cont.) S-SMT-CDR Fields

Field	Description
msNetworkCapability	[4] MSNetworkCapability OPTIONAL,
serviceCentre	AddressString,
recordingEntity	RecordingEntity,
locationArea	[6] LocationAreaCode OPTIONAL,
routingArea	RoutingAreaCode OPTIONAL,
cellIdentity	[7] CellId OPTIONAL,
originationTime	TimeStamp,
smsResult	SMSResult OPTIONAL,
recordExtensions	[16] ManagementExtensions OPTIONAL,
nodeID	[15] NodeID OPTIONAL,
localSequenceNumber	[17] LocalSequenceNumber OPTIONAL,
chargingCharacteristics	[19] ChargingCharacteristics OPTIONAL,
systemType	SystemType OPTIONAL,

CDR field changes for 3GPP 32.015 v3.6.0

This section identifies changes to call detail record (CDR) fields between the 3GPP Technical Specification 32.015 version 3.2.0 and version 3.6.0.

For the ASN.1 DC output, the record field "Cell Identity" from v3.2.0 changes to "Cell Identifier" in v3.6.0. The Cell Identifier field is either the cell identity or the Service Area Code (SAC) at the time of record creation.

The v3.6.0 Cell Identifier (SAC) field applies to the following CDRs:

- S-CDR (SGSN record)
- M-CDR (SGSN mobile station mobility management record)
- S-SMO-CDR (SGSN mobile originated SMS record)
- S-SMT-CDR (SGSN mobile terminated SMS record)

For the XML, ASCII and IPDR DC output, the v3.2.0 record field, "Cell Identity" will retain the same name in v3.6.0 output.

The "Charging Characteristics" field in v3.6.0 is two bytes. This change applies to the following records: S-CDR, G-CDR, M-CDR, S-SMO-CDR and S-SMT-CDR.

The "umtsQosInformation" field in v3.6.0 is an octet string.

For example, in v3.2.0, the "umtsQosInformation" field definition is:

```
QoSInformation ::= CHOICE
{
  gsmQoSInformation [0] GSMQoSInformation,
  umtsQoSInformation [1] UMTSQoSInformation
}
```

```
UMTSQoSInformation ::= SEQUENCE
```

```

{
  trafficClass [0] QoSTrafficClass,
  maxBitRateUplink [1] QoSMaxBitRate,
  maxBitRateDownlink [2] QoSMaxBitRate,
  DeliveryOrder [3] QoSDeliveryOrder,
  maxSDUsize [4] QoSMaxSDUsize,
  sduErrorRatio [6] QoSSEUErrorRatio,
  residualBER [7] QoSResidualBER,
  erroneousSDUs [8] QoSErroneousSDUs,
  transferDelay [9] QoSTransferDelay,
  handlingPriority [10] QoSHandlingPriority,
  allocRetenPriority [11] QoSAllocRetenPriority
}

```

In v3.6.0, the “umtsQosInformation” field definition is:

```

QoSInformation ::= CHOICE
{
  gsmQosInformation [0] GSMQoSInformation,
  umtsQosInformation [1] OCTET STRING (SIZE (12))
}

```

ASN.1 CDR types

Following are the ASN.1 call detail record (CDR) types which are common to both GGSN and SGSN output records for 3GPP 32.015 v3.2.0 and v3.6.0:

```

CallEventRecordType ::= INTEGER
{
  moCallRecord(0),
  mtCallRecord(1),
  roamingRecord(2),
  incGatewayRecord(3),
  outGatewayRecord(4),
  transitCallRecord(5),
  moSMSRecord(6),
  mtSMSRecord(7),
  moSMSIWRecord(8),
  mtSMSGWRecord(9),
  ssActionRecord(10),
  hlrIntRecord(11),
  locUpdateHLRRecord(12),
  locUpdateVLRRecord(13),
  commonEquipRecord(14),
  moTraceRecord(15),
  mtTraceRecord(16),
  termCAMELIntRecord(17),
  sgsnPDPRecord(18),
  ggsnPDPRecord(19),
  sgsnMMRecord(20),
  sgsnSMORRecord(21),
  sgsnSMTRRecord(22)
}

AccessPointNameNI ::= IA5String (SIZE(1..63))
--
-- Network Identifier part of APN in "dot" representation
-- see TS 23.003
--

```

```
AccessPointNameOI ::= IA5String (SIZE(1..37))
--
-- Operator Identifier part of APN in dot representation
-- see TS 23.003
--

APNSelectionMode ::= ENUMERATED
{
--
-- See Information Elements TS 29.060
--
MSorNetworkProvidedSubscriptionVerified(0),
MSProvidedSubscriptionNotVerified(1),
NetworkProvidedSubscriptionNotVerified(2)
}

BCDDirectoryNumber ::= OCTET STRING

CAMELAccessPointNameNI ::= AccessPointNameNI

CAMELAccessPointNameOI ::= AccessPointNameOI

CAMELInformationMM ::= SET
{
SCFAddress [1] SCFAddress OPTIONAL,
serviceKey [2] ServiceKey OPTIONAL,
defaultTransactionHandling [3] DefaultGPRS-Handling OPTIONAL,
numberOfDPENcountered [4] NumberOfDPENcountered OPTIONAL,
levelOfCAMELService [5] LevelOfCAMELService OPTIONAL,
freeFormatData [6] FreeFormatData OPTIONAL,
FFDAppendIndicator [7] FFDAppendIndicator OPTIONAL
}
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
}

CAMELInformationSMS ::= SET
{
SCFAddress [1] SCFAddress OPTIONAL,
serviceKey [2] ServiceKey OPTIONAL,
defaultSMShandling [3] DefaultSMS-Handling OPTIONAL,
CAMELCallingPartyNumber [4] CallingNumber OPTIONAL,
CAMELDestinationSubscriberNumber [5] CalledNumber OPTIONAL,
CAMELSMSCAddress [6] AddressString OPTIONAL,
freeFormatData [7] FreeFormatData OPTIONAL
}

CalledNumber ::= BCDDirectoryNumber

CallingNumber ::= BCDDirectoryNumber
```

```

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

CauseForRecClosing ::= INTEGER
{
--
-- in GGSN the value sGSNChange should be used for partial record
-- generation due to SGSN Address List Overflow
--
-- cause codes 0 to 15 are defined in GSM12.05 as 'CauseForTerm' (cause for
termination)
--
normalRelease (0),
abnormalRelease (4),
CAMELInitCallRelease (5),
volumeLimit (16),
timeLimit (17),
sGSNChange (18),
maxChangeCond (19),
managementIntervention (20)
}

ChangeCondition ::= ENUMERATED
{
qoSChange (0),
tariffTime (1),
recordClosure (2)
}

ChangeOfCharCondition ::= SEQUENCE
--
-- used in PDP context record only
--
{
qoSRequested [1] QoSInformation OPTIONAL,
qoSNegotiated [2] QoSInformation OPTIONAL,
dataVolumeGPRSUplink [3] DataVolumeGPRS,
dataVolumeGPRSDownlink [4] DataVolumeGPRS,
changeCondition [5] ChangeCondition,
changeTime [6] TimeStamp
}

ChangeLocation ::= SEQUENCE
--
-- used in SGSNMMRecord only
--
{
locationAreaCode [0] LocationAreaCode,
routingAreaCode [1] RoutingAreaCode,
cellId [2] CellId OPTIONAL,
changeTime [3] TimeStamp
}

ChargingCharacteristics ::= OCTET STRING (SIZE(1))
--
-- Descriptions for the bits of the flag set:
--
-- Bit 1: H (Hot billing) := '00000001'B
-- Bit 2: F (Flat rate) := '00000010'B
-- Bit 3: P (Prepaid service) := '00000100'B

```

```
-- Bit 4: N (Normal billing) := '00001000'B
-- Bit 5: - (Reserved, set to 0) := '00010000'B
-- Bit 6: - (Reserved, set to 0) := '00100000'B
-- Bit 7: - (Reserved, set to 0) := '01000000'B
-- Bit 8: - (Reserved, set to 0) := '10000000'B
--

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

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

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

Diagnostics ::= CHOICE
{
gsm0408Cause [0] INTEGER,
-- See TS GSM 04.08
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 GSM 09.02.
ccittQ767Cause [2] INTEGER,
-- See CCITT Q.767
networkSpecificCause [3] ManagementExtension,
-- To be defined by network operator
manufacturerSpecificCause [4] ManagementExtension
-- To be defined by manufacturer
}
Duration ::= INTEGER

DynamicAddressFlag ::= BOOLEAN

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 29.002
--

GSNAddress ::= IPAddress

GSMQoSInformation ::= SEQUENCE
{
```

```

reliability [0] QoSReliability,
delay [1] QoSDelay,
precedence [2] QoSPrecedence,
peakThroughput [3] QoSPeakThroughput,
meanThroughput [4] QoSMeanThroughput
}

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)
}

LocationAreaCode ::= OCTET STRING (SIZE(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

MSNetworkCapability ::= OCTET STRING (SIZE(1))

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

NodeID ::= IA5 string (SIZE(1..20))

NumberOfDPSEncountered ::= INTEGER

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

PDPTType ::= OCTET STRING (SIZE(2))
--
--OCTET 1: PDP Type Organization

```

```
--OCTET 2: PDP Type Number
-- See TS 29.060
--
QoSAllocRetenPriority ::= ENUMERATED
{
--
-- See Quality of service TS 24.008
--

priorityLevel 1 (1),
priorityLevel 2 (2),
priorityLevel 3 (3)
}

QoSDelay ::= ENUMERATED
{
--
-- See Quality of service TS 24.008
--
delayClass1 (1),
delayClass2 (2),
delayClass3 (3),
delayClass4 (4)
}

QoSDeliveryOrder ::= ENUMERATED
{
--
-- See Quality of service TS 24.008
--

withDeliveryOrder (1),
withoutDeliveryOrder (2)
}

QoSErroneousSDUs ::= ENUMERATED
{
--
-- See Quality of service TS 24.008
--

noDetect (1),
delivered (2),
notDelivered (3)
}

QoSHandlingPriority ::= ENUMERATED
{
--
-- See Quality of service TS 24.008
--

priorityLevel 1 (1),
priorityLevel 2 (2),
priorityLevel 3 (3)
}

QoSInformation ::= CHOICE
{
gsmQoSInformation [0] GSMQoSInformation,
umtsQoSInformation [1] UMTSQoSInformation
}
```

```

}

QoSMaxBitRate ::= OCTET STRING (SIZE(1))
--
-- See Quality of service TS 24.008--
--
-- In MS to network direction:
-- 0 0 0 0 0 0 0 0 Subscribed maximum bit rate for uplink
-- In network to MS direction:
-- 0 0 0 0 0 0 0 0 Reserved
-- In MS to network direction and in network to MS direction :
-- 0 0 0 0 0 0 0 1 The max bit rate is binary coded in 8 bits, using a
granularity of 1 kbps
-- 0 0 1 1 1 1 1 1 giving a range of values from 1 kbps to 63 kbps in 1 kbps
increments.
-- 0 1 0 0 0 0 0 0 MBR is 64 kbps+((the binary coded value in 8 bits
-01000000)*8 kbps)
-- 0 1 1 1 1 1 1 1 giving a range of values from 64 kbps to 564 kbps in 8 kbps
increments.
-- 1 0 0 0 0 0 0 0 MBR is 576 kbps + ((the binary coded value in 8 bits
-10000000) * 64 kbps
-- 1 1 1 1 1 1 1 0 giving a range of values from 576 kbps to 8640 kbps in 64
kbps increments.
-- 1 1 1 1 1 1 1 1 Reserved

QoSMaxSDUsize ::= OCTET STRING (SIZE(1))
--
-- See Quality of service TS 24.008
--
-- The Maximum SDU size value is binary coded in 8 bits, using a granularity of
10 octets.
-- In MS to network direction:
-- 00000000 Subscribed maximum SDU size
-- 11111111 Reserved
-- In network to MS direction:
-- 00000000 Reserved
-- 11111111 Reserved
-- In MS to network direction and in network to MS direction :
-- For values in the range 00000001 to 10010110 the Maximum SDU size value is
binary coded in 8
-- bits,using a granularity of 10 octets, giving a range of values from 10
octets to 1500 octets.
-- Values above 10010110 are as below:
-- 10010111 1502 octets
-- 10011000 1510 octets
-- 10011001 1520 octets

QoSMeanThroughput ::= ENUMERATED
{
--
-- See Quality of service TS 24.008
--
bestEffort (0),
mean100octetPh (1),
mean200octetPh (2),
mean500octetPh (3),
mean1000octetPh (4),
mean2000octetPh (5),
mean5000octetPh (6),
mean10000octetPh (7),
mean20000octetPh (8),

```

```
mean50000octetPh (9),
mean100000octetPh (10),
mean200000octetPh (11),
mean500000octetPh (12),
mean1000000octetPh (13),
mean2000000octetPh (14),
mean5000000octetPh (15),
mean10000000octetPh (16),
mean20000000octetPh (17),
mean50000000octetPh (18)
}
```

```
QoSPeakThroughput ::= ENUMERATED
{
  --
  -- See Quality of service TS 24.008
  --
  unspecified (0),
  upTo1000octetPs (1),
  upTo2000octetPs (2),
  upTo4000octetPs (3),
  upTo8000octetPs (4),
  upTo16000octetPs (5),
  upTo32000octetPs (6),
  upTo64000octetPs (7),
  upTo128000octetPs (8),
  upTo256000octetPs (9)
}
```

```
QoSPrecedence ::= ENUMERATED
{
  --
  -- See Quality of service TS 24.008
  --
  unspecified (0),
  highPriority (1),
  normalPriority (2),
  lowPriority (3)
}
```

```
QoSReliability ::= ENUMERATED
{
  --
  -- See Quality of service TS 24.008
  --
  unspecifiedReliability (0),
  acknowledgedGTP (1),
  unackGTPAcknowLLC (2),
  unackGTPLLCAcknowRLC (3),
  unackGTPLLCRLC (4),
  unacknowUnprotectedData (5)
}
```

```
QoSResidualBER ::= ENUMERATED
{
  --
  -- See Quality of service TS 24.008
  --
  -- The Residual BER value consists of 4 bits. The ranges from 5*10-2 to 6*10-8.
  4.
  5*10power2 (1),
  1*10power2 (2),
```

```
5*10power3 (3),
4*10power3 (4),
1*10power3 (5),
1*10power4 (6),
1*10power5 (7),
1*10power6 (8),
6*10power8 (9)
}
QoSSDUErrorRatio ::= ENUMERATED
{
--
-- See Quality of service TS 24.00
--

1*10power2 (1),
7*10power3 (2),
1*10power3 (3),
1*10power4 (4),
1*10power5 (5),
1*10power6 (6)
}

QoSTrafficClass ::= ENUMERATED
{
--
-- See Quality of service TS 24.008
--
Subscribed (0),
Conversational (1),
Streaming (2),
Interactive (3),
Background (4)
}

QoSTransferDelay ::= OCTET STRING (SIZE(1))
{
--
-- See Quality of service TS 24.008
--
-- In MS to network direction:
-- 0 0 0 0 0 0 Subscribed transfer delay
-- sIn network to MS direction:
-- 0 0 0 0 0 0 Reserved
-- In MS to network direction and in network to MS direction :
-- 0 0 0 0 0 1 The Transfer delay is binary coded in 6 bits, using a
granularity of 10 ms
-- 0 0 1 1 1 1 giving a range of values from 10 ms to 150 ms in 10 ms increments
-- 0 1 0 0 0 0 transfer delay is 200 ms + ((the binary coded value in 6 bits -
010000)*50 ms)
-- 0 1 1 1 1 1 giving a range of values from 200 ms to 950 ms in 50ms increments
-- 1 0 0 0 0 0 transfer delay is 1000 ms + ((the binary coded value in 6 bits -
100000)*100 ms)
-- 1 1 1 1 1 0 giving a range of values from 1000 ms to 4100 ms in 100ms
increments
-- 1 1 1 1 1 1 Reserved
}

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

```
SCFAddress ::= AddressString
--
-- See TS 29.002 ---
--
ServiceKey ::= INTEGER (0..2147483647)

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

SystemType ::= ENUMERATED
{

    umtsRel99 (1)
}
AddressString ::= OCTET STRING (SIZE (1..maxAddressLength))
-- This type is used to represent a number for addressing
-- purposes. It is composed of
-- a) one octet for nature of address, and numbering plan
-- indicator.
-- b) digits of an address encoded as TBCD-String.

-- a) The first octet includes a one bit extension indicator, a
-- 3 bits nature of address indicator and a 4 bits numbering
-- plan indicator, encoded as follows:

-- bit 8: 1 (no extension)

-- bits 765: nature of address indicator
-- 000 unknown
-- 001 international number
-- 010 national significant number
-- 011 network specific number
-- 100 subscriber number
-- 101 reserved
-- 110 abbreviated number
-- 111 reserved for extension

-- bits 4321: numbering plan indicator
-- 0000 unknown
-- 0001 ISDN/Telephony Numbering Plan (Rec CCITT E.164)
-- 0010 spare
-- 0011 data numbering plan (CCITT Rec X.121)
-- 0100 telex numbering plan (CCITT Rec F.69)
-- 0101 spare
-- 0110 land mobile numbering plan (CCITT Rec E.212)
-- 0111 spare
-- 1000 national numbering plan
-- 1001 private numbering plan
-- 1111 reserved for extension

-- all other values are reserved.

-- b) The following octets representing digits of an address
-- encoded as a TBCD-STRING.

maxAddressLength INTEGER ::= 20
```

```

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
--

UMTSQoSInformation ::= SEQUENCE
{
    trafficClass [0] QoSTrafficClass,
    maxBitRateUplink [1] QoSMaxBitRate,
    maxBitRateDownlink [2] QoSMaxBitRate,
    DeliveryOrder [3] QoSDeliveryOrder,
    maxSDUsize [4] QoSMaxSDUsize,
    sduErrorRatio [6] QoSSEUErrorRatio,
    residualBER [7] QoSResidualBER,
    erroneousSDUs [8] QOSErroneousSDUs,
    transferDelay [9] QoSTransferDelay,
    handlingPriority [10] QoSHandlingPriority,
    allocRetenPriority [11] QoSAllocRetenPriority
}

ISDN-AddressString ::=
    AddressString (SIZE (1..maxISDN-AddressLength))
-- This type is used to represent ISDN numbers.

maxISDN-AddressLength INTEGER ::= 9

MSISDN ::= ISDN-AddressString

TBCD-STRING ::= OCTET STRING
-- This type (Telephony Binary Coded Decimal String) is used to
-- represent several digits from 0 through 9, *, #, a, b, c, two
-- digits per octet, each digit encoded 0000 to 1001 (0 to 9),
-- 1010 (*), 1011 (#), 1100 (a), 1101 (b) or 1110 (c); 1111 used
-- as filler when there is an odd number of digits.

-- bits 8765 of octet n encoding digit 2n
-- bits 4321 of octet n encoding digit 2(n-1) +1

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

```

Sample Wireless DC output formats

This section contains sample distribution cartridge (DC) output formats for the GGSN/SGSN node chain, as follows:

- [ASCII DC sample data for GPRS](#)
- [GGSN/SGSN DC output formats](#)

ASCII DC sample data for GPRS

The following section displays ASCII DC record samples for GPRS releases 2.0, 3.0 and 4.0. For GPRS 5.0 sample data, see "[ASCII delimited DC output format](#)". You can configure the delimiter and separator through the Offline Mediation Controller Administration GUI.

GPRS 2.0 ASCII record sample

The following is a sample of a record in ASCII delimited file format for GPRS 2.0.

```
Charging-ID,Access-Point-Name-Network-Identifier,Record-Opening-
Time,Duration,Record-Sequence-Number,Call-Event-Record-Type,Served-PDP-
Address,Cause-For-Record-Closing,APN-Selection-Mode,SGSN-Address,APN-Operator-
Identifier,ServiceCentre,Recording-Entity,Origination-Time,List-Of-Traffic-
Volumes,PDP-Type,MS-Network-Capability,Message-Reference,Network-
Initiation,Remote-PDP-Address,Dynamic-Address-Flag,Node-ID,Local-Record-Sequence-
Number,Served-IMEI,Routing-Area,Location-Area-Code,Cell-Identity,Change-
Location,SGSN-Change,Served-MSISDN,Record-Extensions,Diagnostics,SMS-
Result,Served-IMSI,GGSN-Address-Used,Inbound-Roamer-Flag,System-Type,RNC-Unsent-
Downlink-Volume,Charging-Characteristics,Destination-Number,CAMEL-Information-
PDP,CAMEL-Information-SMS,CAMEL-Information-
MM,appId,msid,mdn,billGroup,callBillId,reqHorAccuracy,reqAltAccuracy,errorCode,rep
HorAccuracy,repAltAccuracy,lat,long,alt,src,conf,heading,speed,climb,cellLoc,time
eDate,lerSource,connId,RecordIdentifier,ContextId,OperationType,BearerId,Operatio
nTime,UserId,AccessType,PrePaidFlag,DialedNumber,Url,InbandBillingHeader,MetaProf
ileId,ProfileId,IncomingPortNumber,OutgoingPortNumber,BytesIncoming,BytesOutgoing
,FragmentsIncoming,FragmentsOutgoing,CookiesIncoming,CookiesOutgoing,ConnectTime,
TariffCode,Credits,ServiceCategory,FaultCode,NasIP,RemoteIP,LocalIP,NumberOfCredi
tsUsed,Wtlsclass,WtlsssecLevel,WtliskeyRefreshRate,WtliskeyExchangeSuite,WtlsmacAlgo
rithm,WtlsbulkAlgorithm,UniqueId,Language,Bears,CellId,Alias,UserPasswd,CookieBeh
aviour,Tag,Ports,Qos,AllowCookies,FreeBrowsing,TotalCredits,FreeUrls,FreeUrlsCred
its,Location,Confirmed,ServiceDescription,WsbNode,MobileType,TetraIP,CdpdIP,MimeT
ype,DeliveryBeforeTimeStamp,DeliveryAfterTimeStamp,SourceReference,PpgNotifyTo,Pr
ogressNotesRequested,QosPriority,QosDeliveryMethod,QosNetwork,QosNetworkRequired,
QosBearer,QosBearerRequested,TargetAddress,RoamingFlag,MobileNetworkID,MobileNetw
orkDescription,GlobalRoamingAddress,Imsi,SecureConnectionRequired,Operation,UserA
gentHeader,Status,SourceAddress,SourcePort,BearerType,DestAddress,DestPort,Reason
Code,ServerPushID,URI,EventLinkageId,EventId,SourceModuleId,DateTime,GeneratingEn
tity,ContentLength,NumShortMessages,MSISDN,BillHTTPHeader,BillHTTPValue,ClientId,
ClassOfInterface,ClientAddress,CallBackAddress,CallBackProtocol,StoreDate,Forward
Date,PreferredBearer,ResultOfPush,PDUSize,ClassOfService,SessionTime,InputOctets,0
utputOctets,StartTime,Transaction,RASAttributes,PushInitiatorId,PushType,ProxyNAV
Result,SE:AppSrvID,SE:AppSrvVer,UE:NGS_ID,UE:Charge_ID,UE:GGSN_Ip,UE:App_ID,UE:Me
thod,UE:Param,UE:Dev_Ip,UE:MSISDN,SC:Requestor,UE:User_ID,UE:Source_UserID,UE:Des
t_UserID,UE:QoS,UE:Time,UE:Descr,UE:Status,UE:FR,UE:Unit_T,UE:N_Units,UE:Amount,U
E:Currency,UE:Merchant_ID,UE:Add_Info,UE:NE_Ip,UE:URL,UE:APN,IPDRRec:startTime,UE
:Service_ID,UE:N_Success,UE:NE_Usage,UE:Attributes,UE:Action,UE:Balance,UE:Criter
ia,UE:Dest_Address,UE:Expiry,UE:Keyword,UE:Media_Type,UE:PID,UE:Size,UE:Transacti
on_ID,UE:Options,UE:Volume,UE:Points_Awarded,UE:Charging_Parameters
'36000301','wapcmg','02 06 04 11 20 16 + 02 00
','4336','2','18','IPAddress=IPTextV4Address=10.11.197.19','0','0','IPTextV4Addre
ss=47.104.220.249','shasta.nortel.gprs','','','ChangeCondition=2
ChangeTime=02 06 04 11 56 24 2b 02 00
QosNegotiated=GsmQosInformation=PeakThroughput=2 Delay=1 Precedence=2
MeanThroughput=3 Reliability=1 DataVolumeGPRSUpLink=24
```

[illegible]

GPRS 3.0 ASCII record sample

The following is ASCII sample data for GPRS 3.0.

Charging-ID, Access-Point-Name-Network-Identifier, Record-Opening-Time, Duration, Record-Sequence-Number, Call-Event-Record-Type, Served-PDP-Address, Cause-For-Record-Closing, APN-Selection-Mode, SGSN-Address, APN-Operator-

[illegible]

GPRS 4.0 ASCII record sample

The following is ASCII sample data for GPRS 4.0. In this example, the comma (,) is the delimiter and the apostrophe (') is the text qualifier. You can configure these values in the Offline Mediation Controller Administration GUI.

```
Charging-ID,Access-Point-Name-Network-Identifier,Record-Opening-
Time,Duration,Record-Sequence-Number,Call-Event-Record-Type,Served-PDP-
Address,Cause-For-Record-Closing,APN-Selection-Mode,SGSN-Address,APN-Operator-
Identifier,ServiceCentre,Recording-Entity,Origination-Time,List-Of-Traffic-
Volumes,PDP-Type,MS-Network-Capability,Message-Reference,Network-
Initiation,Remote-PDP-Address,Dynamic-Address-Flag,Node-ID,Local-Record-Sequence-
Number,Served-IMEI,Routing-Area,Location-Area-Code,Cell-Identity,Change-
Location,SGSN-Change,Served-MSISDN,Record-Extensions,Diagnostics,SMS-
Result,Served-IMSI,GGSN-Address-Used,Inbound-Roamer-Flag,System-Type,RNC-Unsent-
Downlink-Volume,Charging-Characteristics,Destination-Number,CAMEL-Information-
PDP,CAMEL-Information-SMS,CAMEL-Information-
MM,appId,msid,mdn,billGroup,callBillId,reqHorAccuracy,reqAltAccuracy,errorCode,rep
HorAccuracy,repAltAccuracy,lat,long,alt,src,conf,heading,speed,climb,cellLoc,tim
eDate,lerSource,connId,RecordIdentifier,ContextId,OperationType,BearerId,Operatio
nTime,UserId,AccesType,PrePaidFlag,DialedNumber,Url,InbandBillingHeader,MetaProf
ileId,ProfileId,IncommingPortNumber,OutgoingPortNumber,BytesIncomming,BytesOutgoi
ng,FragmentsIncomming,FragmentsOutgoing,CookiesIncomming,CookiesOutgoing,ConnectT
ime,TarrifCode,Credits,ServiceCategory,FaultCode,NasIP,RemoteIP,LocalIP,NumberOfC
reditsUsed,Wtlsclass,wtlsssecLevel,wtliskeyRefreshRate,wtliskeyExchangeSuite,wtlsmac
Algorithm,wtlsbulkAlgorithm,UniqueId,Language,Bears,CellId,Alias,UserPasswd,Cooki
eBehaviour,Tag,Ports,Qos,AllowCookies,FreeBrowsing>TotalCredits,FreeUrls,FreeUrls
Credits,Location,Operation,UserAgentHeader,Status,SourceAddress,SourcePort,Bearer
Type,DestAddress,DestPort,URI,EventLinkageId,EventId,SourceModuleId,DateTime,Gene
ratingEntity,ContentLength,NumShortMessages,MSISDN,BillHTTPHeader,BillHTTPValue,C
lientId,ClassOfInterface,ClientAddress,CallBackAddress,CallBackProtocol,StoreDate
,ForwardDate,PreferedBearer,ResultOfPush,PDUSize,ClassOfService,SessionTime,Input
Octets,OutputOctets,StartTime,Transaction,RASAttributes,PushInitiatorId,PushType,
ProxyNAVResult,SE:AppSrvID,SE:AppSrvVer,UE:NGS_ID,UE:Charge_ID,UE:GGSN_Ip,UE:App_
ID,UE:Method,UE:Param,UE:Dev_Ip,UE:MSISDN,SC:Requestor,UE:User_ID,UE:Source_UserI
D,UE:Dest_UserID,UE:QoS,UE:Time,UE:Descr,UE:Status,UE:FR,UE:Unit_T,UE:N_Units,UE:
Amount,UE:Currency,UE:Merchant_ID,UE:Add_Info,UE:NE_Ip,UE:URL,UE:APN,IPDRRec:star
tTime
','02 01 22 16 12 16 + 00 00
','414','3','20','4','IPBinV4Address=47.104.220.150','05 05 42 01 21
51 00 f8
','02 01 22 16 19 10 + 00 00
','316','20','4','IPBinV4Address=47.104.220.150','08
','TPP159X','36','01','01 59','00 01','11 16 14 21 51 10
f1','05 05 42 01 21 51 00 f8','08 00
','02 01 22 16 25 31 + 00 00
```

[illegible]

GGSN/SGSN DC output formats

The following samples are DC output formats for the GGSN/SGSN node chain based on the 3GPP 32.015 v3.6.0 format.

Version hiding for 3GPP 32.015

Version hiding is only supported for 3GPP 32.015 v3.6 input to v3.2 or v3.6 output. "Forward" version hiding (v3.2 input to v3.6 output) is not supported.

List of Traffic Volume field in ASCII output

The order of appearance of the fields contained in the List of Traffic Volume field is not pre-determined.

The following are the only constant conditions:

- the entries in the List of Traffic Volume field are outputted sequentially. For example, all fields of the first entry are output before all fields of the second entry and so on.
- if a QosRequested/Negotiated field exists, its entire contents are outputted without interruption by any other fields such as DataVolumeGPRSUplink, DataVolumeGPRSDownlink, ChangeTime and ChangeCondition.

ASCII delimited DC output format

Here is a sample of ASCII delimited DC output format for GGSN/SGSN. You can configure the delimiter and separator through the GUI.

GGSN/SGSN: ASCII delimited file format

Charging-ID, Access-Point-Name-Network-Identifier, Record-Opening-Time, Duration, Record-Sequence-Number, Call-Event-Record-Type, Served-PDP-Address, Cause-For-Record-Closing, APN-Selection-Mode, SGSN-Address, APN-Operator-Identifier, ServiceCentre, Recording-Entity, Origination-Time, List-Of-Traffic-Volumes, PDP-Type, MS-Network-Capability, Message-Reference, Network-Initiation, Remote-PDP-Address, Dynamic-Address-Flag, Node-ID, Local-Record-Sequence-Number, Served-IMEI, Routing-Area, Location-Area-Code, Cell-Identity, Change-Location, SGSN-Change, Served-MSISDN, Record-Extensions, Diagnostics, SMS-Result, Served-IMSI, GGSN-Address-Used, Inbound-Roamer-Flag, System-Type, RNC-Unsent-Downlink-Volume, Charging-Characteristics, Destination-Number, CAMEL-Information-PDP, CAMEL-Information-SMS, CAMEL-Information-MM, appId, msid, mdn, billGroup, callBillId, reqHwAccuracy, reqAltAccuracy, errorCode, re

[illegible]

[illegible]

3GPP 32.015 ASN.1 output format

Here is the 3GPP 32.015 ASN.1 output for the GGSN/SGSN node chain.

GGSN/SGSN: 3GPP 32.015 ASN.1 output format

```

value CallEventRecord ::= sgsnMMRecord : {
  recordType sgsnMMRecord,
  servedIMSI '05054201215100F8'H,
  sgsnAddress iPBinaryAddress : iPBinV4Address : '2F68DC96'H,
  routingArea '02'H,
  locationAreaCode '0159'H,
  cellIdentifier '0002'H,
  recordOpeningTime '0201221612162B0000'H,
  duration 414,
  causeForRecClosing abnormalRelease,
  recordSequenceNumber 3,
  localSequenceNumber 33
}

value CallEventRecord ::= sgsnMMRecord : {
  recordType sgsnMMRecord,
  servedIMSI '05054201215100F8'H,
  sgsnAddress iPBinaryAddress : iPBinV4Address : '2F68DC96'H,
  msNetworkCapability '08'H,
  routingArea '01'H,
  locationAreaCode '0159'H,
  cellIdentifier '0001'H,
  recordOpeningTime '0201221619102B0000'H,
  duration 316,
  causeForRecClosing abnormalRelease,
  nodeID "TPP159X",
  localSequenceNumber 36,
  servedMSISDN '11614215110F1'H,
  chargingCharacteristics '0800'H
}

value CallEventRecord ::= sgsnMMRecord : {
  recordType sgsnMMRecord,
  servedIMSI '05054201215110F1'H,
  sgsnAddress iPBinaryAddress : iPBinV4Address : '2F68DC96'H,
  msNetworkCapability '08'H,
  routingArea '01'H,
  locationAreaCode '0159'H,
  cellIdentifier '0001'H,
  recordOpeningTime '0201221625312B0000'H,

```

```

duration 8,
causeForRecClosing normalRelease,
nodeID "TPP159X",
localSequenceNumber 39,
servedMSISDN '111614215110F1'H,
chargingCharacteristics '0800'H
}

```

XML DC output format

XML files are in HTML format. The general format of these files is a group of data lines for each count. Each data line contains an attribute tag, the associated value, and an ending tag.

Here is a sample of the XML DC output format for the GGSN/SGSN. The delimiter used in this sample is an **Enter** character.

GGSN/SGSN: XML DC output format

```

<?xml version="1.0"?>
<XMLDoc>
<rec>
<Charging-ID>947678</Charging-ID>
<Access-Point-Name-Network-Identifier>wap.viaginterkom.de</Access-Point-Name-
Network-Identifier>
<Record-Opening-Time>05 02 04 23 45 00 + 01 00 </Record-Opening-Time>
<Duration>900</Duration>
<Record-Sequence-Number>6</Record-Sequence-Number>
<Call-Event-Record-Type>18</Call-Event-Record-Type>
<Served-PDP-Address>
<IPAddress>
<IPBinV4Address>10.38.139.172</IPBinV4Address>
</IPAddress>
</Served-PDP-Address>
<Cause-For-Record-Closing>17</Cause-For-Record-Closing>
<SGSN-Address>
<IPBinV4Address>10.80.2.102</IPBinV4Address>
</SGSN-Address>
<APN-Operator-Identifier>mnc007.mcc262.gprs</APN-Operator-Identifier>
<List-Of-Traffic-Volumes>
<MAP>
<ChangeCondition>2</ChangeCondition>
<ChangeTime>05 02 05 00 00 00 2b 01 00 </ChangeTime>
<DataVolumeGPRSUplink>103817</DataVolumeGPRSUplink>
<DataVolumeGPRSDownlink>107350</DataVolumeGPRSDownlink>
</MAP>
</List-Of-Traffic-Volumes>
<PDP-Type>01 21 </PDP-Type>
<Local-Record-Sequence-Number>21674760</Local-Record-Sequence-Number>
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