



# WLAN CDR Field Descriptions

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This chapter describes the WLAN-CDR fields supported by PDG/TTG.

The following information is provided for each field:

- **Description:** The field's description.
- **Format:** The field's data format.
- **Length:** The field's size, in bytes.

All WLAN-CDRs are encoded using the ASN.1 format and are sent to the charging gateway function (CGF) using the GPRS Tunneling Protocol Prime (GTPP) as defined in the following standards:

- 3GPP TS 32.015
- 3GPP TS 32.215
- 3GPP TS 32.251 (v8.5.0, v8.6.0)
- 3GPP TS 32.252 (WLAN-CDRs)

Also see the *WLAN CDR Field Reference* chapter for information on CDR fields supported in WLAN-CDRs.



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## Important

The behavior for several of the fields supported in CDRs can be modified. For more information, refer to the **gtp attributes** command in the *Command Line Interface Reference*.

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## CDR Fields

### Access Point Name Network Identifier

This field contains the Network Identifier part of the Access Point Name (APN). It is provided by WMN during IPSEC or SSL establishment procedure.

**Format**

IA5 string

**Length**

1-63 bytes

## APN Selection Mode

An index indicating how the APN is selected.

The following APN selection mode indexes are possible:

- 0: MS or network provided APN, subscribed verified
- 1: MS provided APN, subscription not verified
- 2: Network provided APN, subscription not verified

**Format**

Enumerated

**Length**

1 byte

## Cause for Record Closing

This field contains a reason for the release of the CDR.

Supported values:

- normalRelease 0
- abnormalRelease 4
- volumeLimit 16
- timeLimit 17
- maxChangeCond 19
- managementIntervention 20

**Format**

Integer

**Length**

1 byte

## Charging Characteristics

This field lists the charging characteristics applied to the PDP context.

The PDG can accept charging characteristics from the AAA Server or use its own configured value. PDG configured charging characteristics are specified as part of the PDG Service and are applied for WLAN-CDRs to subscriber PDP contexts through APN templates.

**Format**

Octet string

**Length**

2 bytes

## Charging Characteristics Selection Mode

The charging characteristic type that the PDG applied to the CDR.

The following values for this field are defined in 3GPP TS 32.298:

- AAASupplied (0): The PDG is using the charging characteristics supplied by the AAA Server.
- homeDefault (3): PDG configured charging characteristics for home subscribers are used.
- roamingDefault (4): PDG configured charging characteristics for roaming subscribers are used.
- visitingDefault (5): PDG configured charging characteristics for visiting subscribers are used.

**Format**

Enumerated (Integer)

**Length**

1 byte

## Charging ID

This field contains a charging identifier, which can be used together with the PDG address to identify all records produced in the PDG involved in a single PDP context. The Charging ID is generated by the PDG at PDP context activation.

The possible values for the charging ID, which are defined in TS 29.060 are 1 - 4,294,967,295 and those values are encapsulated in the following scheme in the CDR field:

1 - 127 850101-85017F

128 - 32,767 85020080-85027FFF

32,768 - 8,388,607 8503008000-85037FFFFF

8,388,608 - 2,147,483,647 850400800000-85047FFFFFFF

2,147,483,648 - 4,294,967,295 85050080000000 - 850500FFFFFFF

**Format**

Integer

**Length**

1–5 bytes

## Diagnostics

This field is included in the CDR when the PDP context is released and when the option **gtp attribute diagnostics** is configured. Only the choice of "gsm0408Value" is used.

**Format**

Choice

**Length**

3 bytes

### gsm0408Cause

This cause is used in the Diagnostics field and contains one of the following values:

- 36: If the PDP context is terminated gracefully
- 40: AAA Server disconnect
- 26: If the PDG sends delete PDP context request for any other reason

**Format**

Integer

**Length**

1 byte

## Dynamic Address Flag

This field indicates that the PDP address has been dynamically allocated for that particular PDP context. This field is missing if address is static i.e. part of PDP context subscription.

**Format**

Boolean

**Length**

1 byte

## Duration

This field contains the relevant duration in seconds for PDP contexts with the range of 0 through 4294967295 ( $2^{32}-1$ ).

It is the duration from Record Opening Time to record closure. For partial records, this is the duration of the individual partial record and not the cumulative duration.

**Format**

Integer

**Length**

1–5 bytes

## Local Record Sequence Number

For each Node ID, this number with the range of 1 through 4294967295 is allocated sequentially for each CDR. This along with a Node ID uniquely identifies a CDR.

For WLAN-CDRs, this field is only included when the option **gtp attribute local-record-sequence number** is configured.

**Format**

Integer

**Length**

1–5 bytes

## List of Traffic Data Volumes

This list includes one or more traffic data volume containers. The number of containers is configurable with a maximum of 4 for WLAN-CDRs.

**Format**

Sequence

**Length**

Variable

## Change Of Charging Condition

One traffic data volume container contains a list of change of charging conditions:

- Data Volume Uplink
- Data Volume Downlink
- Change Condition
- Change Time
- Failurehandling Continue

The QoS values may only be included in the first container, in later containers the presence depends upon what was changed.

**Format**

Sequence

**Length**

Variable

**QoS Negotiated**

This field indicates the applied QoS is accepted by the network. It is compliant to 3GPP standards.

**Format**

Octet string

**Length**

4–15 bytes

**GPRS Uplink data volume**

This field includes the number of octets transmitted during the use of the packet data services in the uplink direction.

Note that a maximum of  $2^{32}$  bytes can be counted in this field. A volume trigger should be defined at least for this value to avoid an overflow, if not done already for a smaller amount of traffic.

**Format**

Integer

**Length**

1–5 bytes

**GPRS Downlink data volume**

This field includes the number of octets transmitted during the use of the packet data services in the downlink direction.

Note that a maximum of  $2^{32}$  bytes can be counted in this field. A volume trigger should be defined at least for this value to avoid an overflow, if not done already for a smaller amount of traffic.

**Format**

Integer

**Length**

1–5 bytes

**Change Condition**

This field defines the reason for closing the container, such as tariff time change, QoS change or closing of the CDR.

The following values are defined according to 3GPP TS 32.298:

- qoSChange 0
- tariffTime 1
- recordClosure 2

#### Format

Enumerated (Integer)

#### Length

1 byte

### Change time

Change Time is a time stamp, which defines the moment when the volume container is closed or the CDR is closed.

3GPP Format definition:

```
TimeStamp ::= OCTET STRING (SIZE(9))
-- UTC time (compact form: local time + offset to GMT)
-- YYMMDDhhssShhmm
-- octet 1..6: local time
-- octet 1: YY .. decade (2 digits BCD non-twisted, readable)
-- octet 2: MM ... month (2 digits BCD non-twisted, readable)
-- octet 3: DD ... day (2 digits BCD non-twisted, readable)
-- octet 4: hh ... hour (2 digits BCD non-twisted, readable)
-- octet 5: mm ... minute (2 digits BCD non-twisted, readable)
-- octet 6: ss ... second (2 digits BCD non-twisted, readable)
-- octet 7..9: ... offset to GMT (universal time)
-- octet 7: S ... H'2B: "+" H'2D: "-"(ASCII)
-- octet 8: hh ... hour (2 digits BCD non-twisted, readable)
-- octet 9: mm ... minute (2 digits BCD non-twisted, readable)
```

#### Format

BCD encoded octet string

#### Length

9 bytes

### Node ID

This field contains an identifier string for the node that generated the CDR.

On the PDG, this NodeID field is a printable string of the ndddSTRING format:

n: The first digit is the sessmgr restart counter having a value between 0 and 7.

ddd: The number of the sessmgr instance generating the CDR.

STRING: This is a configured node-id-suffix having any string from 1 to 16 characters, defined using the **gtp attribute node-id** command.

If this node-id-suffix is not configured, the PDG uses the GTP context name as the node-id-suffix (truncated to 16 characters).

For WLAN-CDRs, this field is only included when the option **gtp attribute local-record-sequence number** is configured.

**Format**

IA5string

**Length**

5-20 bytes

## PDG Address

This field provides the current serving PDG IP address for the Control Plane. The standard 32.298 offers a choice for the encoding of the address to be either in binary or text format.

The PDG encodes the address in binary format and includes the octet string.

**Format**

Choice

**Length**

6 bytes

## PDG IPv4 Binary Address

The octet string in this field includes the IPv4 address of the PDG service in binary coding.

**Format**

Octet string

**Length**

4 bytes

## PDG IPv6 Binary Address

The octet string in this field includes the IPv6 address of the PDG service in binary coding.



**Format**

Octet string

**Length**

16 bytes

## PDP Type

This field defines the PDP type, e.g. IP or PPP.

Supported values:

- IP = f121
- PPP = f001

**Format**

Octet string

**Length**

2 bytes

## RAT Type

This field indicates the Radio Access Technology (RAT) type currently used by the Mobile Station. This field is present in the CDR if provided by WLAN.

RAT Type values:

- Reserved 0
- UTRAN 1
- GERAN 2
- WLAN 3
- Spare 4-255

**Format**

Integer

**Length**

1 byte

## Record Opening Time

This field contains the time stamp when PDP context is activated in PDG or when a subsequent record is opened after a partial record.

The timestamp is determined based on the internal timer which has an accuracy of 10ms. Depending on the configured mechanism (ceiling, floor, or round-off) this field is translated to only show full seconds.

The contents of this field are a compact form of the UTC Time 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

**Format**

BCD encoded octet string

**Length**

9 bytes

## Record Sequence Number

A running sequence number with the range of 1 through 4294967295 used to link partial records generated by the PDG for a specific PDP context (characterized with the same Charging ID and PDG address pair). This field is not present if the first record is also the final record.

**Format**

Integer

**Length**

1–5 bytes

## Record Type

This field identifies the type of the record:

WLAN-CDR(WLANPDGRecord) 95 (0x5F)

WLAN-CDR(WLANTTGRecord) 96 (0x60)

The 3GPP 32.298 does not define any values for record type. This value is selected as this is not yet reserved by any CDRs.

**Format**

Integer

**Length**

1 byte

## Served IMSI

This field contains the International Mobile Subscriber Identity (IMSI) of the served party.

The IMSI is formatted in accordance with 3GPP TS 23.003.

**Example for Coding: (Set by PDG)**

```

3GPP TS 23.003 (CCITT Rec. E 212)
ServedIMSI ::= OCTET STRING (SIZE(1..8))
-- subscriber identification IMSI
-- octet 1..8: <= 15 digits TBCD-String (twisted)
-- substructure (without spares or fillers):
-- 3 digits - mobile country code (MCC)
-- 2 digits - mobile network code (MNC)
-- <= 10 digits - mobile subscriber identification number (MSIN)
-- first and intermediate octet = 2 digits
-- last octet = 2 digits or 1 digit + 1 fill digit H'F
--
-- example:
-- IMSI: '262025600010020'
-- filled: '262025600010020F'
-- encoded: H'62 02 52 06 00 01 20 F0

```

**Format**

BCD encoded octet string

**Length**

3–8 bytes

**Served MSISDN**

The field tracks the Mobile Station (MS) ISDN number (MSISDN) of the subscriber, which is sent by AAA server.

The MSISDN is TBCD encoded as shown in the example below:

```

3GPP TS 23.003 (CCITT Rec. E 213)
ServedMSISDN ::= OCTET STRING (SIZE(1..9))
subscriber identification MSISDN
octet 1 : bit 8 (msb): extension bit
= 1 : no extension
other : not relevant

bit 7..5 : type of number
= 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

bit 4..1 : numbering plan indicator
= 0001: ISDN/Telephony Numbering Plan (Rec CCITT E.164)
other : not relevant

octet 2..9: <= 16 digits TBCD-String (twisted)
substructure (without spares or fillers):
1..3 digits - country code (CC)
(only international number)
3 digits - national destination code (NDC)
<= 10 digits - subscriber number (SN)
first and intermediate octet = 2 digits
last octet = 2 digits or 1 digit + 1 fill digit H'F

```

```
example:
MSISDN: '<internat #><E.164>491720400305'
encoded: H'91 94 71 02 04 30 50
```

**Format**

BCD encoded octet string

**Length**

1–9 bytes

## Served WLAN PDP Address

This field contains the PDP address of the served IMSI, for which the standard 3GPP TS 32.298 allows a choice of either IPAddress or ETSIAddress.

**Format**

Choice

**Length**

8 bytes

## WLAN UE Remote Address

This field contains the PDP address of the served IMSI, which is supported only in IPAddress by the PDG.

**Format**

Choice

**Length**

6 bytes

## WLAN UE REMOTE IPV4 Binary Address

The octet string in this field contains the IPv4 address assigned to the subscriber by the PDG/TTG in binary coding.

**Format**

Octet string

**Length**

4 bytes

## WLAN UE REMOTE IPV6 Binary Address

The octet string in this field contains the IPv6 address assigned to the subscriber by the PDG/TTG in binary coding.

**Format**

Octet string

**Length**

16 bytes

