
Source: SA5 (Telecom Management)

Title: Rel-97/98/99 CRs 12.15/32.015 (PS Charging) : "Addition of SGSN's Mobile Country Code (MCC) and Mobile Network Code (MNC) on G-CDR"

Document for: Approval

Agenda Item: 7.5.3

Doc-1st-	Spec	CR	R	Phase	Subject	Cat	Version	Doc-2nd-	Workitem
SP-020733	12.15	A021	-	R97	Addition of SGSN's Mobile Country Code (MCC) and Mobile Network Code (MNC) on G-CDR	B	6.2.0	S5-024601	OAM-CH
SP-020733	12.15	A022	-	R98	Addition of SGSN's Mobile Country Code (MCC) and Mobile Network Code (MNC) on G-CDR	A	7.6.0	S5-024606	OAM-CH
SP-020733	32.015	037	-	R99	Addition of SGSN's Mobile Country Code (MCC) and Mobile Network Code (MNC) on G-CDR	A	3.9.0	S5-024604	OAM-CH

CR-Form-v7	
CHANGE REQUEST	
⌘ 12.15 CR A021 ⌘ rev - ⌘ Current version: 6.2.0 ⌘	

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘	Addition of SGSN's Mobile Country Code (MCC) and Mobile Network Code (MNC) on G-CDR	
Source:	⌘	SA5	
Work item code:	⌘	OAM-CH	Date: ⌘ 22/11/2002
Category:	⌘	B	Release: ⌘ R97
		Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘	The MCC and MNC of the serving SGSN are missing from the G-CDR. The changes are done as a result of requirements received from SA2 and CN4, as specified in S2-022619 and S5-020627.	
Summary of change:	⌘	1. 'Inter-PLMN SGSN change' added as partial output trigger for G-CDR 2. SGSN PLMN identifier (MCC and MNC) is added to the G-CDR	
Consequences if not approved:	⌘	Identification of the serving SGSN's location (PLMN) is not possible in a standardized way.	

Clauses affected:	⌘	5.7.3, 6.1.2, 6.1.6, 8.1									
Other specs affected:	⌘	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td>Y</td><td>N</td></tr> <tr><td>X</td><td></td></tr> <tr><td></td><td>X</td></tr> <tr><td>X</td><td></td></tr> </table> Other core specifications	Y	N	X			X	X		⌘ TS 09.60
		Y	N								
		X									
	X										
X											
Test specifications O&M Specifications	Rel-98 GSM 12.15 and Rel-99 32.015										
Other comments:	⌘	Correction to TS 09.60 has been approved by CN4. Submitted also Mirror CRs for Rel-98 12.15CRA021 and 32.015CR037.									

5.7.3 Triggers for G-CDR Charging Information Collection

A G-CDR is used to collect charging information related to the packet data information for a GPRS mobile in the GGSN.

A G-CDR shall be opened for each activated PDP context, and record details such as Record Type, Served IMSI, Sequence Number etc. Not all of the charging information to be collected is static, and other charging information is directly dependent on dynamic GPRS usage.

The "List of traffic volumes" attribute of the G-CDR consists of a set of containers which are added following specific trigger conditions, and identify the volume count on encountering that trigger condition. The trigger conditions are as for the S-CDR (see previous section on "Triggers for S-CDR Charging Information Collection") with [the following](#) exceptions:

- ~~that the~~ [an](#) SGSN change does not need to close the CDR;
- ~~an inter-PLMN SGSN change causes the closure of a partial record.~~

In the event that the G-CDR is closed and the PDP context remains active, a further G-CDR is opened with an incremented Sequence Number.

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....

6.1.2 GPRS charging data in GGSN (G-CDR)

If the collection of GGSN data is enabled then the following GPRS GGSN data shall be available for each PDP context.

Table 6: GPRS GGSN PDP context data

Field		Description
Record Type	M	GPRS GGSN PDP context record.
Network initiated PDP context	C	Present if this is a network initiated PDP context.
Anonymous Access Indicator	C	Set to true to indicate anonymous access (and that the Served IMSI is not supplied).
Served IMSI	M	IMSI of the served party (if Anonymous Access Indicator is FALSE or not supplied).
GGSN Address	M	The IP address of the GGSN used.
Charging ID	M	PDP context identifier used to identify this PDP context in different records created by GSNs
SGSN Address	M	List of SGSN addresses used during this record.
Access Point Name	M	The logical name of the connected access point to the external packet data network.
PDP Type	M	PDP type, e.g. X.25 or IP
Served PDP Address	M	PDP address, e.g. an IPv4, IPv6 or X.121.
Remote PDP Address	O	List of PDP addresses of the remote host or DTE e.g. an IPv4, IPv6, or X.121 (Included if the PDP type is X.25)
Dynamic Address Flag	C	Indicates whether served PDP address is dynamic, that is allocated during PDP context activation.
List of traffic data volumes	M	A list of changes in charging conditions for this PDP context, each time stamped. Charging conditions are used to categorise traffic volumes, such as per tariff period. Initial and subsequently changed QoS and corresponding data values are listed. Data volumes are in octets above the GTP layer and are separated for uplink and downlink traffic.
Record opening time	M	Time stamp when this record was opened.
Duration	M	Duration of this record in the GGSN .
Cause for record closing	M	The reason for the release of record from this GGSN .
Diagnostics	O	A more detailed reason for the release of the connection.
Record Sequence number	C	Partial record sequence number, only present in case of partial records.
Node ID	O	Name of the recording entity.
Record extensions	O	A set of network/ manufacturer specific extensions to the record.
SGSN PLMN Identifier	O	SGSN PLMN Identifier (MCC and MNC) used during this record.

...

<unmodified text>

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6.1.6.29 SGSN change

This field is present only in the S-CDR to indicate that this is the first record after an inter-SGSN routing area update.

6.1.6.30 SGSN PLMN Identifier

This field contains a SGSN PLMN Identifier (Mobile Country Code and Mobile Network Code), for the SGSNs which have been connected during the record. This implies that when the MS moves to another PLMN, the G-CDR has to be closed.

The MCC and MNC are coded as described for 'Routing Area Identity' in [22].

...
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8 Charging Data Record Structure

8.1 ASN.1 definitions for CDR information

...
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```

GGSNPDPPRecord ::= SET
{
    recordType           [0] CallEventRecordType,
    networkInitiation   [1] NetworkInitiatedPDPContext OPTIONAL,
    anonymousAccessIndicator [2] BOOLEAN OPTIONAL,
    servedIMSI          [3] IMSI,
    ggsnAddress         [4] GSNAddress,
    chargingID          [5] ChargingID,
    sgsnAddress         [6] SEQUENCE OF GSNAddress,
    accessPointName     [7] AccessPointName,
    pdpType             [8] PDPType,
    servedPDPAddress    [9] PDPAddress,
    remotePDPAddress    [10] SEQUENCE OF PDPAddress OPTIONAL,
    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] IA5 string OPTIONAL,
    recordExtensions    [19] ManagementExtensions OPTIONAL,
    sgsnPLMNIdentifier [27] PLMN-Id
}
    
```

...
 <unmodified text>


```

PDPType ::= OCTET STRING (SIZE(2))
--
--OCTET 1: PDP Type Organization
--OCTET 2: PDP Type Number
-- See TS GSM 09.60
--
    
```

```
PLMN-Id ::= OCTET STRING (SIZE (3))  
-- -- This is a 1:1 copy from the Routing Area Identity (RAI) IE specified in TS 09.60  
-- 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
```

```
QoSDelay ::= ENUMERATED  
{  
  --  
  -- See Quality of service TS GSM 04.08  
  --  
  delayClass1 (0),  
  delayClass2 (1),  
  delayClass3 (2),  
  delayClass4 (3)  
}
```

CHANGE REQUEST

⌘ **12.15 CR A022** ⌘ rev **-** ⌘ Current version: **7.6.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ⌘ ME Radio Access Network Core Network

Title:	⌘	Addition of SGSN's Mobile Country Code (MCC) and Mobile Network Code (MNC) on G-CDR
Source:	⌘	SA5
Work item code:	⌘	OAM-CH
		Date: ⌘ 22/11/2002
Category:	⌘	A
		<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Use <u>one</u> of the following categories:</i></p> <p>F (correction)</p> <p>A (corresponds to a correction in an earlier release)</p> <p>B (addition of feature),</p> <p>C (functional modification of feature)</p> <p>D (editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p> </div> <div style="width: 45%;"> <p><i>Use <u>one</u> of the following releases:</i></p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>Rel-4 (Release 4)</p> <p>Rel-5 (Release 5)</p> <p>Rel-6 (Release 6)</p> </div> </div>
		Release: ⌘ R98

Reason for change:	⌘	The MCC and MNC of the serving SGSN are missing from the G-CDR. The changes are done as a result of requirements received from SA2 and CN4, as specified in S2-022619 and S5-020627.
Summary of change:	⌘	<ol style="list-style-type: none"> 1. 'Inter-PLMN SGSN change' added as partial output trigger for G-CDR 2. SGSN PLMN identifier (MCC and MNC) is added to the G-CDR
Consequences if not approved:	⌘	Identification of the serving SGSN's location (PLMN) is not possible in a standardized way.

Clauses affected:	⌘	5.7.3, 6.1.2, 6.1.6, 8.1								
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> </table>	Y	N	X			X	X		Other core specifications
	Y	N								
	X									
	X									
X										
		Test specifications								
		O&M Specifications								
		⌘ TS 09.60								
		Rel-97 GSM 12.15 and Rel-99 32.015								
Other comments:	⌘	<p>Correction to TS 09.60 has been approved by CN4.</p> <p>Mirror CR of Rel-97 GSM TS 12.15.</p> <p>If this CR is approved than also Rel-99 32.015CR037 can be approved.</p>								

5.7.3 Triggers for G-CDR Charging Information Collection

A G-CDR is used to collect charging information related to the packet data information for a GPRS mobile in the GGSN.

A G-CDR shall be opened for each activated PDP context, and record details such as Record Type, Served IMSI, Sequence Number etc. Not all of the charging information to be collected is static, and other charging information is directly dependent on dynamic GPRS usage.

The "List of traffic volumes" attribute of the G-CDR consists of a set of containers which are added following specific trigger conditions, and identify the volume count on encountering that trigger condition. The trigger conditions are as for the S-CDR (see previous section on "Triggers for S-CDR Charging Information Collection") with [the following](#) exceptions:

- ~~that the~~ [an](#) SGSN change does not need to close the CDR;
- ~~an inter-PLMN SGSN change causes the closure of a partial record.~~

In the event that the G-CDR is closed and the PDP context remains active, a further G-CDR is opened with an incremented Sequence Number.

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....

6.1.2 GPRS charging data in GGSN (G-CDR)

If the collection of GGSN data is enabled then the following GPRS GGSN data shall be available for each PDP context.

Table 6: GPRS GGSN PDP context data

Field		Description
Record Type	M	GPRS GGSN PDP context record.
Network initiated PDP context	C	Present if this is a network initiated PDP context.
Anonymous Access Indicator	C	Set to true to indicate anonymous access (and that the Served IMSI is not supplied).
Served IMSI	M	IMSI of the served party (if Anonymous Access Indicator is FALSE or not supplied).
GGSN Address	M	The IP address of the GGSN used.
Charging ID	M	PDP context identifier used to identify this PDP context in different records created by GSNs
SGSN Address	M	List of SGSN addresses used during this record.
Access Point Name	M	The logical name of the connected access point to the external packet data network.
PDP Type	M	PDP type, e.g. X.25 or IP
Served PDP Address	M	PDP address, e.g. an IPv4, IPv6 or X.121.
Remote PDP Address	O	List of PDP addresses of the remote host or DTE e.g. an IPv4, IPv6, or X.121 (Included if the PDP type is X.25)
Dynamic Address Flag	C	Indicates whether served PDP address is dynamic, that is allocated during PDP context activation.
List of traffic data volumes	M	A list of changes in charging conditions for this PDP context, each time stamped. Charging conditions are used to categorise traffic volumes, such as per tariff period. Initial and subsequently changed QoS and corresponding data values are listed. Data volumes are in octets above the GTP layer and are separated for uplink and downlink traffic.
Record opening time	M	Time stamp when this record was opened.
Duration	M	Duration of this record in the GGSN .
Cause for record closing	M	The reason for the release of record from this GGSN .
Diagnostics	O	A more detailed reason for the release of the connection.
Record Sequence number	C	Partial record sequence number, only present in case of partial records.
Node ID	O	Name of the recording entity.
Record extensions	O	A set of network/ manufacturer specific extensions to the record.
SGSN PLMN Identifier	O	SGSN PLMN Identifier (MCC and MNC) used during this record.

...

<unmodified text>

....

6.1.6.29 SGSN change

This field is present only in the S-CDR to indicate that this is the first record after an inter-SGSN routing area update.

6.1.6.30 SGSN PLMN Identifier

This field contains a SGSN PLMN Identifier (Mobile Country Code and Mobile Network Code), for the SGSNs which have been connected during the record. This implies that when the MS moves to another PLMN, the G-CDR has to be closed.

The MCC and MNC are coded as described for 'Routing Area Identity' in [22].

...

<unmodified text>

....

8 Charging Data Record Structure

8.1 ASN.1 definitions for CDR information

...

<unmodified text>

....

```

GGSNPDPPRecord ::= SET
{
  recordType          [0] CallEventRecordType,
  networkInitiation  [1] NetworkInitiatedPDPContext OPTIONAL,
  anonymousAccessIndicator [2] BOOLEAN OPTIONAL,
  servedIMSI         [3] IMSI,
  ggsnAddress        [4] GSNAddress,
  chargingID         [5] ChargingID,
  sgsnAddress        [6] SEQUENCE OF GSNAddress,
  accessPointName    [7] AccessPointName,
  pdpType            [8] PDPType,
  servedPDPAddress   [9] PDPAddress,
  remotePDPAddress   [10] SEQUENCE OF PDPAddress OPTIONAL,
  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] IA5 string OPTIONAL,
  recordExtensions   [19] ManagementExtensions OPTIONAL,
  sgsnPLMNIdentifier [27] PLMN-Id
}

```

...

<unmodified text>

....

```

PDPType ::= OCTET STRING (SIZE(2))
--
--OCTET 1: PDP Type Organization
--OCTET 2: PDP Type Number
-- See TS GSM 09.60
--

```

```
PLMN-Id ::= OCTET STRING (SIZE (3))  
-- -- This is a 1:1 copy from the Routing Area Identity (RAI) IE specified in TS 09.60  
-- 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
```

```
QoSDelay ::= ENUMERATED  
{  
  --  
  -- See Quality of service TS GSM 04.08  
  --  
  delayClass1 (0),  
  delayClass2 (1),  
  delayClass3 (2),  
  delayClass4 (3)  
}
```

CR-Form-v7	
CHANGE REQUEST	
⌘ 32.015 CR 037 ⌘ rev - ⌘ Current version: 3.9.0 ⌘	

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘	Addition of SGSN's Mobile Country Code (MCC) and Mobile Network Code (MNC) on G-CDR	
Source:	⌘	SA5	
Work item code:	⌘	OAM-CH	Date: ⌘ 22/11/2002
Category:	⌘	A	Release: ⌘ R99
		Use <u>one</u> of the following categories: <i>F</i> (correction) <i>A</i> (corresponds to a correction in an earlier release) <i>B</i> (addition of feature), <i>C</i> (functional modification of feature) <i>D</i> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘	The MCC and MNC of the serving SGSN are missing from the G-CDR. The changes are done as a result of requirements received from SA2 and CN4, as specified in S2-022619 and S5-020627.
Summary of change:	⌘	1. 'Inter-PLMN SGSN change' added as partial output trigger for G-CDR 2. SGSN PLMN identifier (MCC and MNC) is added to the G-CDR
Consequences if not approved:	⌘	Identification of the serving SGSN's location (PLMN) is not possible in a standardized way.

Clauses affected:	⌘	5.6.3, 6.1.2, 6.1.6.35, 8.1								
Other specs affected:	<table border="1" style="font-size: x-small;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">X</td> <td></td> </tr> </table>	Y	N	X			X	X		Other core specifications ⌘ TS 29.060 Test specifications O&M Specifications Rel-97/98 GSM 12.15
	Y	N								
	X									
	X									
X										
Other comments:	⌘	Corresponding correction to TS 29.060 has been approved by CN4. Approval of this CR is depending on approval of CRs to Rel-97/98 GSM 12.15 (12.15CRA021/2).								

Change in Clause 5.6.3

5.6.3 Triggers for G-CDR Charging Information Collection

A G-CDR is used to collect charging information related to the packet data information for a GPRS mobile in the GGSN.

If, according to the Charging Characteristics of a PDP context, CDR generation is activated a G-CDR shall be opened at PDP context activation, and record includes details such as Record Type, Served IMSI, Sequence Number etc. Not all of the charging information to be collected is static, and other charging information is directly dependent on dynamic GPRS usage.

A G-CDR shall be opened for each activated PDP context, and record details such as Record Type, Served IMSI, Sequence Number etc. Not all of the charging information to be collected is static, and other charging information is directly dependent on dynamic GPRS usage.

The "List of Traffic Data Volumes" attribute of the G-CDR consists of a set of containers, which are added following specific trigger conditions, and identify the volume count on encountering that trigger condition. The trigger conditions are as for the S-CDR (see subclause 5.6.1 on "Triggers for S-CDR Charging Information Collection") with [the following](#) exceptions:

- ~~that~~ an SGSN change will not close the G-CDR;:-
- [an inter-PLMN SGSN change causes the closure of a partial record.](#)

Subsequent partial records may be opened if the G-CDR is closed and the PDP context is still active.

The Partial Record generation trigger thresholds are those associated to the Charging Characteristics of the related PDP context determined as follows:

- If a "PDP context Charging Characteristics" is present in the PDP context data, it shall be used;
- Otherwise a default charging profile shall be applied.

The Partial Record generation trigger thresholds are GSN configuration parameters defined by the operator through O&M means.

In the event that the G-CDR is closed and the PDP context remains active, a further G-CDR is opened with an incremented Sequence Number in the GGSN.

End of Change in Clause 5.6.3**Change in Clause 6.1.2**

6.1.2 GPRS charging data in GGSN (G-CDR)

If the collection of CDR data is enabled then the following GSM or 3G GGSN data shall be available for each PDP context.

Table 6: GPRS GGSN PDP context data

Field		Description
Record Type	M	GPRS GGSN PDP context record.
Network initiated PDP context	C	Present if this is a network initiated PDP context.
Served IMSI	M	IMSI of the served party (if Anonymous Access Indicator is FALSE or not supplied).
Served MSISDN	O	The primary MSISDN of the subscriber.
GGSN Address	M	The IP address of the GGSN used.
Charging ID	M	PDP context identifier used to identify this PDP context in different records created by GSNs
SGSN Address	M	List of SGSN addresses used during this record.
Access Point Name Network Identifier	M	The logical name of the connected access point to the external packet data network (network identifier part of APN).
APN Selection Mode	O	An index indicating how the APN was selected.
PDP Type	M	PDP type, i.e. IP, PPP, or IHOSS:OSP
Served PDP Address	C	PDP address, i.e. IPv4 or IPv6
Dynamic Address Flag	C	Indicates whether served PDP address is dynamic, which is allocated during PDP context activation.
List of Traffic Data Volumes	M	A list of changes in charging conditions for this PDP context, each time stamped. Charging conditions are used to categorise traffic volumes, such as per tariff period. Initial and subsequently changed QoS and corresponding data values are listed. In GSM, data volumes are in octets above the GTP layer and are separated for uplink and downlink traffic. In 3G, data volumes are in octets above the GTP-U layer and are separated for uplink and downlink traffic.
Record Opening Time	M	Time stamp when this record was opened.
Duration	M	Duration of this record in the GGSN.
Cause for Record Closing	M	The reason for the release of record from this GGSN.
Diagnostics	O	A more detailed reason for the release of the connection.
Record Sequence Number	C	Partial record sequence number, only present in case of partial records.
Node ID	O	Name of the recording entity.
Record Extensions	O	A set of network/ manufacturer specific extensions to the record.
Local Record Sequence Number	O	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Charging Characteristics	C	The Charging Characteristics flag retrieved from subscriber's data as described in subclause 6.1.6.5.
SGSN PLMN Identifier	O	SGSN PLMN Identifier (MCC and MNC) used during this record.

End of Change in Clause 6.1.2

Change in Clause 6.1.6.35

6.1.6.34 SGSN Change

This field is present only in the S-CDR to indicate that this is the first record after an inter-SGSN routing area update.

[6.1.6.35 SGSN PLMN Identifier](#)

[This field contains a SGSN PLMN Identifier \(Mobile Country Code and Mobile Network Code\), for the SGSNs which have been connected during the record. This implies that when the MS moves to another PLMN, the G-CDR has to be closed.](#)

[The MCC and MNC are coded as described for 'Routing Area Identity' in \[22\].](#)

End of Change in Clause 6.1.6.35

Change in Clause 8.1

8 Charging Data Record Structure

8.1 ASN.1 definitions for CDR information

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....

```

GGSNPDPPRecord ::= SET
{
  recordType          [0] CallEventRecordType,
  networkInitiation  [1] NetworkInitiatedPDPCContext OPTIONAL,
  servedIMSI         [3] IMSI,
  ggsnAddress        [4] GSNAddress,
  chargingID         [5] ChargingID,
  sgsnAddress        [6] SEQUENCE OF GSNAddress,
  accessPointNameNI [7] AccessPointNameNI,
  pdpType            [8] PDPType,
  servedPDPAddress   [9] PDPAddress OPTIONAL,
  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 OPTIONAL,
  servedMSISDN       [22] MSISDN OPTIONAL,
  chargingCharacteristics [23] ChargingCharacteristics OPTIONAL,
  sgsnPLMNIdentifier [27] PLMN-Id
}

```

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<unmodified text>

....

```

PDPType ::= OCTET STRING (SIZE(2))
--
--OCTET 1: PDP Type Organization
--OCTET 2: PDP Type Number
-- See TS 29.060
--

```

```

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

```

```

QoSDelay ::= ENUMERATED

```

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

End of Change in Clause 8.1