Technical Specification Group Services and System Aspects
Meeting #18, New Orleans, USA, 9-12 December 2002

TSGS#18(02)0735

Source: **SA5 (Telecom Management)**

Title: **2 Rel-4 CRs 32.215/32.200 (Bearer Charging): "Addition of SGSN's MNC and MCC in G-CDR" (Alignment with SA2/CN4/GSMA BARG) - Submit Rel-5 Mirror CRs to SA#19 (03/2003)**

Document for: **Approval**

Agenda Item: **7.5.3**

Doc-1st-	Spec	CR	R	Phase	Subject	Cat	Version	Doc-2nd-	Workitem
SP-020735	32.200	014	-	Rel-4	Addition of 'Inter-PLMN SGSN change' as partial output record trigger for G-CDR	B	4.2.0	S5-024605	OAM-CH
SP-020735	32.215	019	-	Rel-4	Addition of SGSN's Mobile Country Code (MCC) and Mobile Network Code (MNC) on G-CDR (Alignment with SA2/CN4/GSMA BARG)	B	4.3.0	S5-024466	OAM-CH

NOTE: Rel-5 mirror CRs are missing. SA5 intends to submit Rel-5 CR to SA#19 (03/2003).

3GPP TSG-SA5 (Telecom Management) **S5-024605**
Meeting #32, Vienna, AUSTRIA, 18-22 November 2002

CR-Form-v7

CHANGE REQUEST

⌘ **32.200** **CR** **014** ⌘**rev** **-** ⌘ Current version: **4.2.0** ⌘

*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 'Inter-PLMN SGSN change' as partial output record trigger for G-CDR
Source:	⌘	SA5
Work item code:	⌘	OAM-CH
Date:	⌘	22/11/2002
Category:	⌘	**B**
Release:	⌘	Rel-4

Use one 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 one 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 MNC and MCC of the serving SGSN have been added to the G-CDR therefore G-CDR must be closed when the UE performs an inter-PLMN SGSN change.
Summary of change:	⌘	'Inter-PLMN SGSN change' added as partial output trigger for G-CDR.
Consequences if not approved:	⌘	It is not possible to correlate data volumes with the applicable SGSN based on information in the G-CDR.

Clauses affected:	⌘	6.2.1.3

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
	X		O&M Specifications	Rel-5 32.200, Rel-4/5 32.215

Other comments:	⌘	Corresponding Rel-4 32.215CR019 provided. SA5 Agreed, but the Rel-5 mirror CR is still missing Submit Rel-5 Mirror CR to SA#19 (03/2003).

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.2.1.3 Triggers for G-CDR Charging Information Collection

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

If, according to the Charging Characteristics profile data, CDR generation is activated a G-CDR shall be opened at PDP context activation. The 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 Packet-Switched service 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 6.2.2.1 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 ~~shall~~ 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 with to the determined Charging Characteristics profile data. The Charging Characteristics profile data is determined as defined in 3GPP TS32.215 [6].

The Partial Record generation trigger thresholds are GSN configuration parameters defined per charging characteristics profile by the operator through O&M means (refer to 3GPP TS32.215 [6]).

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.

3GPP TSG-SA5 (Telecom Management) **S5-024466**
Meeting #30, Tampere, FINLAND, 19 - 23 August 2002

CR-Form-v7

CHANGE REQUEST

⌘ **32.215** **CR** **019** ⌘**rev** **-** ⌘ Current version: **4.3.0** ⌘

*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 (Alignment with SA2/CN4/GSMA BARG)
Source:	⌘	SA5
Work item code:	⌘	OAM-CH
Date:	⌘	08/10/2002
Category:	⌘	**B**
Release:	⌘	Rel-4

Use one 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 one 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 change is done as a result of requirements received from SA2, CN4 and GSMA BARG, as specified in S2-022619, S5-020627 and S5-020511.
Summary of change:	⌘	The PLMN identifier (MCC and MNC) of the used SGSNs 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:	⌘	4.3, 5.52, 5.53, 5.54, 6.1

		Y	N			
Other specs affected:	⌘		X	Other core specifications	⌘	
			X	Test specifications		
		X		O&M Specifications		Rel-4/5 32.200, Rel-5 32.215

Other comments:	⌘	Corresponding Rel-4 32.215CR019 provided. SA5 Agreed, but the Rel-5 mirror CR is still missing Submit Rel-5 Mirror CR to SA#19 (03/2003).

4.3 Charging data in GGSN (G-CDR)

If the collection of CDR data is enabled then the GGSN data specified in Table 2 shall be available for each PDP context. The table provides a brief description of each field. A more elaborate definition of the fields, sorted by the field name in alphabetical order, is provided in Clause 5.

Table 2: GGSN PDP context data (G-CDR)

Field	Category	Description
Record Type	M	GGSN PDP context record.
Network initiated PDP context	O_C	A flag that is present if this is a network initiated PDP context.
Served IMSI	M	IMSI of the served party
GGSN Address used	M	The control plane 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	O_M	The logical name of the connected access point to the external packet data network (network identifier part of APN).
PDP Type	O_M	PDP type, i.e. IP, PPP, or IHOSS:OSP
Served PDP Address	O_C	PDP address, i.e. IPv4 or IPv6. This parameter shall be present except when both the PDP type is PPP and dynamic PDP address assignment is used.
Dynamic Address Flag	O_C	Indicates whether served PDP address is dynamic, which is allocated during PDP context activation. This field is missing if address is static.
List of Traffic Data Volumes	O_M	A list of changes in charging conditions for this PDP context, each change is 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.
Record Opening Time	M	Time stamp when PDP context is activated in this GGSN or record opening time on subsequent partial records.
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_M	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_M	Name of the recording entity.
Record Extensions	O_C	A set of network operator/manufacturer specific extensions to the record. Conditioned upon the existence of an extension.
Local Record Sequence Number	O_M	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
APN Selection Mode	O_M	An index indicating how the APN was selected.
Served MSISDN	O_M	The primary MSISDN of the subscriber.
Charging Characteristics	M	The Charging Characteristics applied to the PDP context.
Charging Characteristics Selection Mode	O_M	Holds information about how Charging Characteristics were selected.
IMS Signalling Context	O_C	Included if the PDP context is used for IMS signalling
External Charging Identifier	O_C	A Charging Identifier received from a none-GPRS, external network entity
SGSN PLMN Identifier	O_M	SGSN PLMN identifier (MCC and MNC) used during this record.

...

<unmodified text>

...

5.37 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 UE moves to another PLMN, the G-CDR has to be closed.

The MCC and MNC are coded as described for 'Routing Area Identity' in [8].

5.~~37~~38 Short Message Service (SMS) Result

This field contains the result of an attempt to deliver a short message either to a service centre or to a mobile subscriber (see 3GPP TS 29.002[13]). Note that this field is only provided if the attempted delivery was unsuccessful.

5.~~38~~39 System Type

This field is present conditionally, indicating the use of the UTRAN or GERAN air-interface for the provision of service recorded by this CDR. In the case of service provided by a GSM air interface, this field is not present.

NOTE: The ASN.1 contains a value of "unknown" which may be used in other domains but not in the PS domain.

6 Charging Data Record Structure

6.1 ASN.1 definitions for CDR information

...

<unmodified text>

...

```
--------------------------------------------------------------------------------
--
--  CALL AND EVENT RECORDS
--
--------------------------------------------------------------------------------

GGSNPDPRecord   ::= SET
{
    recordType                  [0] CallEventRecordType,
    networkInitiation           [1] NetworkInitiatedPDPContext OPTIONAL,
    servedIMSI                  [3] IMSI,
    ggsnAddress                 [4] GSNAddress,
    chargingID                  [5] ChargingID,
    sgsnAddress                 [6] SEQUENCE OF GSNAddress,
    accessPointNameNI           [7] AccessPointNameNI OPTIONAL,
    pdpType                     [8] PDPType OPTIONAL,
    servedPDPAddress            [9] PDPAddress OPTIONAL,
    dynamicAddressFlag          [11] DynamicAddressFlag OPTIONAL,
    listOfTrafficVolumes        [12] SEQUENCE OF ChangeOfCharCondition OPTIONAL,
    recordOpeningTime           [13] TimeStamp,
    duration                    [14] CallDuration,
    causeForRecClosing          [15] CauseForRecClosing,
    diagnostics                 [16] Diagnostics OPTIONAL,
    recordSequenceNumber        [17] INTEGER OPTIONAL,
    nodeID                      [18] NodeID OPTIONAL,
    recordExtensions            [19] ManagementExtensions OPTIONAL,
    localSequenceNumber         [20] LocalSequenceNumber OPTIONAL,
    apnSelectionMode            [21] APNSelectionMode OPTIONAL,
    servedMSISDN                [22] MSISDN OPTIONAL,
    chargingCharacteristics     [23] ChargingCharacteristics,
    chChSelectionMode           [24] ChChSelectionMode OPTIONAL,
    iMSsignalingContext         [25] NULL OPTIONAL,
    externalChargingID          [26] OCTET STRING OPTIONAL,
    sgsnPLMNIdentifier          [27] PLMN-Id
    }
```

...

<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


QoSInformation  ::= OCTET STRING (SIZE (4..12))

--
-- This  octet string
-- is a 1:1 copy of the contents (i.e. starting with octet 4) of the "Quality of
-- service Profile" information element specified in 3GPP TS 29.060 [22].
```