Technical Specification Group Services and System Aspects
Meeting #15, Cheju Island, Korea, 11-14 March 2002

TSGS#15(02)0024

Source: **SA5 (Telecom Management)**

Title: **2 R99 & Rel-4 CR 32.015 & 32.215 (CS & PS charging) Addition of "QoSRequested" parameter into "traffic volume containers"**

Document for: **Decision**

Agenda Item: **7.5.3**

Doc-1st-Level	Spec	CR	R	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
SP-020024	32.015	036		R99	**Addition of "QoSRequested" parameter into "traffic volume containers"**	F	3.8.0	3.9.0	S5-020188	OAM-CH
SP-020024	32.215	005		Rel-4	**Addition of "QoSRequested" parameter into "traffic volume containers"**	A	4.1.0	4.2.0	S5-020189	OAM-CH

3GPP TSG-SA5 (Telecom Management) **S5-020188**
Meeting #26, Miami / FL, USA, 25 February - 1 March 2002 **S5B020145**

CR-Form-v5

CHANGE REQUEST

⌘ **32.015** **CR** **036** ⌘ **rev** **-** ⌘ Current version: **3.8.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Addition of "QoSRequested" parameter into "traffic volume containers"
Source:	⌘	SA5
Work item code:	⌘	OAM-CH
Date:	⌘	01/03/2002
Category:	⌘	**F**
Release:	⌘	R99

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)

Reason for change:	⌘	According current specification the "QoSrequested" parameter does not appear in follow-on containers even the previous container was closed with value "QoSChange" and the MS did request a new QoS via a PDP context modification procedure. However, the QoS modification may have been driven by an MS request for a new QoS, in which case the "QoSRequested" included in the first S-CDR container is not valid anymore.
Summary of change:	⌘	The specification in section 6.1.6.13 is changed in the way that in case of an MS triggered QoS change via a PDP context modification procedure the "QoSrequested" parameter shall be added to the container similar to the first container.
Consequences if not approved:	⌘	The CDR does not reflect appropriately the QoS parameters requested by the user. This may lead to inaccurate charging.

Clauses affected:	⌘	6.1.6.13		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☒ O&M Specifications	⌘	Correspondent changes are made in the scope of REL-4 in TS 32.215.
Other comments:	⌘			

6.1.6.13 List of Traffic Data Volumes

This list includes one or more containers, which each include the following fields:

Data Volume Uplink, Data Volume Downlink, Change Condition and Time Stamp.

Data Volume includes the number of octets transmitted during the use of packet data services.

Change condition defines the reason for closing the container (see 5.7.1 and 5.7.3), such as tariff time change, QoS change or closing the CDR. Change time is a time stamp, which defines the moment when the new volume counts are started or CDR is closed. All the active PDP contexts do not need to have exactly the same time stamp e.g. due to same tariff time change (variance of the time stamps is implementation and traffic load dependent, and is out of the scope of standardisation).

First container includes following optional fields: QoS Requested (not in G-CDR) and QoS Negotiated. In following containers QoS Negotiated is present if previous change condition is "QoS change". In addition to the QoS Negotiated parameter the QoS Requested parameter is present in following containers if the change condition is "QoS change" and the QoS change was initiated by the MS via a PDP context modification procedure.

Following is an example of a list, which has three containers (sets of volume counts) caused by one QoS change and one tariff time change.

Table 10: Example list of traffic data volumes

QoS Requested = QoS1 QoS Negotiated = QoS1	QoS Requested = QoS2 (if requested by the MS) QoS Negotiated = QoS2	
Data Volume Uplink = 1 Data Volume Downlink = 2	Data Volume Uplink = 5 Data Volume Downlink = 6	Data Volume Uplink = 3 Data Volume Downlink = 4
Change Condition = QoS change Time Stamp = TIME1	Change Condition = Tariff change Time Stamp = TIME2	Change Condition = Record closed Time Stamp = TIME3

First container includes initial QoS values and corresponding volume counts. Second container includes new QoS values and corresponding volume counts before tariff time change. Last container includes volume counts after the tariff time change. Following total volume counts can be itemised (tariff1 is used before and tariff2 after the tariff time change):

		Container
QoS1+Tariff1	uplink = 1, downlink = 2	1
QoS2+Tariff1	uplink = 5, downlink = 6	2
QoS2+Tariff2	uplink = 3, downlink = 4	3
QoS1	uplink = 1, downlink = 2	1
QoS2	uplink = 8, downlink = 10	2+3
Tariff1	uplink = 6, downlink = 8	1+2
Tariff2	uplink = 3, downlink = 4	1

The amount of data counted in the GGSN shall be the data volume sent over the GTP layer. Therefore the data counted already includes the IP PDP bearer protocols i.e. IP, TCP or UDP Headers.

The data volume counted in the SGSN covers the amount of data transferred in the SNDCP PDUs. Therefore the data counted already includes the overheads of any PDP bearer protocols.

The amount of data counted in the 3G-GGSN shall be the data volume sent over the GTP-U layer. Therefore the data counted already includes the overheads of any PDP bearer protocols.

The data volume counted in the 3G-SGSN covers the amount of data transferred in the GTP-U PDUs. Therefore the data counted already includes the overheads of any PDP bearer protocols.

In GSM, in order to avoid that downstream packets transmitted from the old SGSN to the new SGSN at inter SGSN RA update induce the increase of the PDP CDR downstream volume counters in both SGSN the following rule is followed:

- For PDP contexts using LLC in unacknowledged mode: an SGSN shall update the PDP CDR when the packet has been sent by the SGSN towards the MS;

- In GSM, for PDP contexts using LLC in acknowledged mode a 2G-SGSN shall only update the PDP CDR at the reception of the acknowledgement by the MS of the correct reception of a downstream packet. This implies that for downstream packets under transmission at inter SGSN RA update a packet sent by the old SGSN actually received by the MS and acknowledged by the MS towards the new SGSN through the RA update complete message induces the update of the PDP CDR record by the new SGSN. In UMTS, the not transferred downlink data 'RNC Unsent Downlink Volume' can be accounted for in the S-CDR, i.e. data that the RNC has either discarded or forwarded during handover.

- In UMTS, The not transferred downlink data 'RNC Unsent Downlink Volume' can be accounted for in the S-CDR , i.e. data that the RNC has either discarded or forwarded during handover.

Data volumes retransmitted (by RLC or LLC) due to poor radio link conditions shall not be counted.

3GPP TSG-SA5 (Telecom Management) **S5-020189**
Meeting #26, Miami / FL, USA, 25 February - 1 March 2002 **S5B020147**

CR-Form-v5

CHANGE REQUEST

⌘ **32.215** **CR** **005** ⌘ **rev** **-** ⌘ Current version: **4.1.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Addition of "QoSRequested" parameter into "traffic volume containers"
Source:	⌘	SA5
Work item code:	⌘	OAM-CH
Date:	⌘	01/03/2002
Category:	⌘	**A**
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)

Reason for change:	⌘	According current specification the "QoSrequested" parameter does not appear in follow-on containers even the previous container was closed with value "QoSChange" and the MS did request a new QoS via a PDP context modification procedure. However, the QoS modification may have been driven by an MS request for a new QoS, in which case the "QoSRequested" included in the first S-CDR container is not valid anymore.
Summary of change:	⌘	The specification in section 5.15 is changed in the way that in case of an MS triggered QoS change via a PDP context modification procedure the "QoSrequested" parameter shall be added to the container similar to the first container.
Consequences if not approved:	⌘	The CDR does not reflect appropriately the QoS parameters requested by the user. This may lead to inaccurate charging.

Clauses affected:	⌘	5.15		
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications **X** O&M Specifications	⌘	Correspondent changes are made in the scope of R99 in TS 32.015.
Other comments:	⌘			

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

5.15 List of Traffic Data Volumes

This list includes one or more containers, each includes the following fields:

Data Volume Uplink, Data Volume Downlink, Change Condition and Change Time.

Data Volume, Uplink and/or **Downlink,** includes the number of octets transmitted during the use of the packet data services in the uplink and/or downlink direction, respectively.

Change Condition defines the reason for closing the container (see TS 32.200 [3] Clause 6), such as tariff time change, QoS change or closing of the CDR.

Change Time is a time stamp, which defines the moment when the new volume counts are started or the CDR is closed. All the active PDP contexts do not need to have exactly the same time stamp e.g. due to same tariff time change (variance of the time stamps is implementation and traffic load dependent, and is out of the scope of standardisation).

First container includes following optional fields: QoS Requested (not in G-CDR) and QoS Negotiated. In following containers QoS Negotiated is present if previous change condition is "QoS change". In addition to the QoS Negotiated parameter the QoS Requested parameter is present in following containers if the change condition is "QoS change" and the QoS change was initiated by the MS via a PDP context modification procedure.

Table 6 illustrates an example of a list, which has three containers (sets of volume counts) caused by one QoS change and one tariff time change.

Table 6: Example list of traffic data volumes

QoS Requested = QoS1 QoS Negotiated = QoS1 Data Volume Uplink = 1 Data Volume Downlink = 2 Change Condition = QoS change Time Stamp = TIME1	QoS Requested = QoS2 (if requested by the MS) QoS Negotiated = QoS2 Data Volume Uplink = 5 Data Volume Downlink = 6 Change Condition = Tariff change Time Stamp = TIME2	 Data Volume Uplink = 3 Data Volume Downlink = 4 Change Condition = Record closed Time Stamp = TIME3

First container includes initial QoS values and corresponding volume counts. Second container includes new QoS values and corresponding volume counts before tariff time change. Last container includes volume counts after the tariff time change. The total volume counts can be itemised as shown in Table 7 (tariff1 is used before and tariff2 after the tariff time change):

Table 7: Itemised list of total volume count corresponding to Table 6

		Container
QoS1+Tariff1	uplink = 1, downlink = 2	1
QoS2+Tariff1	uplink = 5, downlink = 6	2
QoS2+Tariff2	uplink = 3, downlink = 4	3
QoS1	uplink = 1, downlink = 2	1
QoS2	uplink = 8, downlink = 10	2+3
Tariff1	uplink = 6, downlink = 8	1+2
Tariff2	uplink = 3, downlink = 4	3

The amount of data counted in the GGSN shall be the payload of the GTP-U protocol at the Gn interface. Therefore the data counted already includes the IP PDP bearer protocols i.e. IP or PPP.

The data volume counted in the SGSN is dependent on the system. For GSM SGSN the data volume is the payload of the SNDCP PDUs at the Gb interface. For UMTS-SGSN it is the GTP-U PDUs at the Iu-PS interface. Therefore, in both systems, the data counted already includes the overheads of any PDP bearer protocols.

In GSM, in order to avoid that downstream packets transmitted from the old SGSN to the new SGSN at inter SGSN RA update induce the increase of the PDP CDR downstream volume counters in both SGSN the following rules must be followed:

- For PDP contexts using LLC in unacknowledged mode: an SGSN shall update the PDP CDR when the packet has been sent by the SGSN towards the MS;

  For PDP contexts using LLC in acknowledged mode, a GSM-SGSN shall only update the PDP CDR at the reception of the acknowledgement by the MS of the correct reception of a downstream packet. In other worlds, for inter SGSN RA update, the new SGSN shall update the PDP CDR record when a downstream packet sent by the old SGSN is received by the MS and acknowledged by the MS towards the new SGSN through the RA update complete message.

In UMTS, the not transferred downlink data can be accounted for in the S-CDR with "RNC Unsent Downlink Volume" field, which is the data that the RNC has either discarded or forwarded during handover. Data volumes retransmitted (by RLC or LLC) due to poor radio link conditions shall not be counted.