

CR-Formv7			
CHANGE REQUEST			
✍ 24.008	CR	✍ 830	✍ rev - ✍ Current version: 5.9.0 ✍

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:	✍ SSD and Signalling indication in QoS IE		
Source:	✍ Nokia, Ericsson		
Work item code:	✍ TEI5	Date:	✍ 03/12/2003
Category:	✍ F	Release:	✍ Rel-5
	<i>Use <u>one</u> of the following categories:</i> 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 .		<i>Use <u>one</u> of the following releases:</i> 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:	✍ Currently 24.008 defines the relevancy of QoS attributes for each bearer traffic class (e.g. transfer delay, traffic handling priority and guaranteed bit rate). However when Source Statistics Descriptor and Signalling Indication attributes were introduced, similar restrictions were not specified. In order to avoid possible misinterpretation and to be in line with 23.107, it is proposed to clearly state the traffic classes which these two attributes are not valid for.
Summary of change:	✍ <ul style="list-style-type: none"> - Typo in THP (octect 11) corrected. - SSD (octect 13), statement that the attribute shall be ignored if traffic class is either interactive or background. - Signalling Indication (octect 14), statement that the attribute shall be ignored if traffic class is either conversational, streaming or background.
Consequences if not approved:	✍ Possible misinterpretation and misalignment with the rest of attributes in 24.008 and 23.107.

Clauses affected:	✍ 10.5.6.5						
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;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	✍
	Y	N					
	<input type="checkbox"/>	<input checked="" type="checkbox"/>					
<input checked="" type="checkbox"/>	Test specifications						
<input checked="" type="checkbox"/>	O&M Specifications						
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/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.

10.5.6.5 Quality of service

The purpose of the *quality of service* information element is to specify the QoS parameters for a PDP context.

The QoS IE is defined to allow backward compatibility to earlier version of Session Management Protocol.

The *quality of service* is a type 4 information element with a minimum length of 14 octets and a maximum length of 16 octets. The QoS requested by the MS shall be encoded both in the QoS attributes specified in octets 3-5 and in the QoS attributes specified in octets 6-14.

In the MS to network direction and in the network to MS direction the following applies:

- Octets 15 and 16 are optional. If octet 15 is included, then octet 16 shall also be included.
- A QoS IE received without octets 6-16, without octets 14-16, or without octets 15-16 shall be accepted by the receiving entity.

NOTE: This behavior is required for interworking with entities supporting an earlier version of the protocol, or when the Maximum bit rate for downlink is negotiated to a value lower than 8700 kbps.

The *quality of service* information element is coded as shown in figure 10.5.138/3GPP TS 24.008 and table 10.5.156/3GPP TS 24.008.

	8	7	6	5	4	3	2	1	
Quality of service IEI									Octet 1
Length of quality of service IE									Octet 2
0 0 spare			Delay class			Reliability class			Octet 3
Peak throughput				0 spare		Precedence class			Octet 4
0 0 0 spare			Mean throughput						Octet 5
Traffic Class			Delivery order		Delivery of erroneous SDU				Octet 6
Maximum SDU size									Octet 7
Maximum bit rate for uplink									Octet 8
Maximum bit rate for downlink									Octet 9
Residual BER				SDU error ratio					Octet 10
Transfer delay						Traffic Handling priority			Octet 11
Guaranteed bit rate for uplink									Octet 12
Guaranteed bit rate for downlink									Octet 13
0 0 0 spare			Signal- ling Indicat- ion		Source Statistics Descriptor				Octet 14
Maximum bit rate for downlink (extended)									Octet 15
Guaranteed bit rate for downlink (extended)									Octet 16

Figure 10.5.138/3GPP TS 24.008: *Quality of service* information element

Table 10.5.156/3GPP TS 24.008: Quality of service information element

<p>Reliability class, octet 3 (see 3GPP TS 23.107)</p> <p>Bits</p> <p>3 2 1</p> <p>In MS to network direction:</p> <p>0 0 0 Subscribed reliability class</p> <p>In network to MS direction:</p> <p>0 0 0 Reserved</p> <p>In MS to network direction and in network to MS direction:</p> <p>0 0 1 Acknowledged GTP, LLC, and RLC; Protected data</p> <p>0 1 0 Unacknowledged GTP; Acknowledged LLC and RLC, Protected data</p> <p>0 1 1 Unacknowledged GTP and LLC; Acknowledged RLC, Protected data</p> <p>1 0 0 Unacknowledged GTP, LLC, and RLC, Protected data</p> <p>1 0 1 Unacknowledged GTP, LLC, and RLC, Unprotected data</p> <p>1 1 1 Reserved</p> <p>All other values are interpreted as <i>Unacknowledged GTP and LLC; Acknowledged RLC, Protected data</i> in this version of the protocol.</p> <p>Delay class, octet 3 (see 3GPP TS 22.060 and 3GPP TS 23.107)</p> <p>Bits</p> <p>6 5 4</p> <p>In MS to network direction:</p> <p>0 0 0 Subscribed delay class</p> <p>In network to MS direction:</p> <p>0 0 0 Reserved</p> <p>In MS to network direction and in network to MS direction:</p> <p>0 0 1 Delay class 1</p> <p>0 1 0 Delay class 2</p> <p>0 1 1 Delay class 3</p> <p>1 0 0 Delay class 4 (best effort)</p> <p>1 1 1 Reserved</p>
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All other values are interpreted as *Delay class 4 (best effort)* in this version of the protocol.

Bit 7 and 8 of octet 3 are spare and shall be coded all 0.

Precedence class, octet 4 (see 3GPP TS 23.107)

Bits

3 2 1

In MS to network direction:

0 0 0 Subscribed precedence

In network to MS direction:

0 0 0 Reserved

In MS to network direction and in network to MS direction:

0 0 1 High priority

0 1 0 Normal priority

0 1 1 Low priority

1 1 1 Reserved

All other values are interpreted as *Normal priority* in this version of the protocol.

Bit 4 of octet 4 is spare and shall be coded as 0.

Peak throughput, octet 4 (see 3GPP TS 23.107)

Bits

8 7 6 5

In MS to network direction:

0 0 0 0 Subscribed peak throughput

In network to MS direction:

0 0 0 0 Reserved

In MS to network direction and in network to MS direction:

0 0 0 1 Up to 1 000 octet/s

0 0 1 0 Up to 2 000 octet/s

0 0 1 1 Up to 4 000 octet/s

0 1 0 0 Up to 8 000 octet/s

0 1 0 1 Up to 16 000 octet/s

0 1 1 0 Up to 32 000 octet/s

0 1 1 1 Up to 64 000 octet/s

1 0 0 0 Up to 128 000 octet/s

1 0 0 1 Up to 256 000 octet/s

1 1 1 1 Reserved

All other values are interpreted as *Up to 1 000 octet/s* in this version of the protocol.

Mean throughput, octet 5 (see 3GPP TS 23.107)

Bits

5 4 3 2 1

In MS to network direction:
0 0 0 0 Subscribed mean throughput
In network to MS direction:
0 0 0 0 Reserved
In MS to network direction and in network to MS direction:
0 0 0 1 100 octet/h
0 0 0 1 0 200 octet/h
0 0 0 1 1 500 octet/h
0 0 1 0 0 1 000 octet/h
0 0 1 0 1 2 000 octet/h
0 0 1 1 0 5 000 octet/h
0 0 1 1 1 10 000 octet/h
0 1 0 0 0 20 000 octet/h
0 1 0 0 1 50 000 octet/h
0 1 0 1 0 100 000 octet/h
0 1 0 1 1 200 000 octet/h
0 1 1 0 0 500 000 octet/h
0 1 1 0 1 1 000 000 octet/h
0 1 1 1 0 2 000 000 octet/h
0 1 1 1 1 5 000 000 octet/h
1 0 0 0 0 10 000 000 octet/h
1 0 0 0 1 20 000 000 octet/h
1 0 0 1 0 50 000 000 octet/h
1 1 1 1 0 Reserved
1 1 1 1 1 Best effort

The value Best effort indicates that throughput shall be made available to the MS on a per need and availability basis. All other values are interpreted as *Best effort* in this version of the protocol.

Bits 8 to 6 of octet 5 are spare and shall be coded all 0.

Delivery of erroneous SDUs , octet 6 (see 3GPP TS 23.107)

Bits
3 2 1
In MS to network direction:
0 0 0 Subscribed delivery of erroneous SDUs
In network to MS direction:
0 0 0 Reserved
In MS to network direction and in network to MS direction:
0 0 1 No detect ('-')
0 1 0 Erroneous SDUs are delivered ('yes')
0 1 1 Erroneous SDUs are not delivered ('no')
1 1 1 Reserved

The network shall map all other values not explicitly defined onto one of the values defined in this version of the protocol. The network shall return a negotiated value which is explicitly defined in this version of this protocol.

The MS shall consider all other values as reserved.

Delivery order, octet 6 (see 3GPP TS 23.107)

Bits
5 4 3
In MS to network direction:
0 0 Subscribed delivery order
In network to MS direction:
0 0 Reserved
In MS to network direction and in network to MS direction:
0 1 With delivery order ('yes')
1 0 Without delivery order ('no')
1 1 Reserved

Traffic class, octet 6 (see 3GPP TS 23.107)

Bits

8 7 6

In MS to network direction:

0 0 0 Subscribed traffic class

In network to MS direction:

0 0 0 Reserved

In MS to network direction and in network to MS direction:

0 0 1 Conversational class

0 1 0 Streaming class

0 1 1 Interactive class

1 0 0 Background class

1 1 1 Reserved

The network shall map all other values not explicitly defined onto one of the values defined in this version of the protocol. The network shall return a negotiated value which is explicitly defined in this version of this protocol.

The MS shall consider all other values as reserved.

Maximum SDU size, octet 7 (see 3GPP TS 23.107)

In MS to network direction:

0 0 0 0 0 0 0 0 Subscribed maximum SDU size

1 1 1 1 1 1 1 1 Reserved

In network to MS direction:

0 0 0 0 0 0 0 0 Reserved

1 1 1 1 1 1 1 1 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:

1 0 0 1 0 1 1 1 1502 octets

1 0 0 1 1 0 0 0 1510 octets

1 0 0 1 1 0 0 1 1520 octets

The network shall map all other values not explicitly defined onto one of the values defined in this version of the protocol. The network shall return a negotiated value which is explicitly defined in this version of this protocol.

The MS shall consider all other values as reserved.

Maximum bit rate for uplink, octet 8

Bits

8 7 6 5 4 3 2 1

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 maximum 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 The maximum bit rate 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 568 kbps in 8 kbps increments.

1 0 0 0 0 0 0 0 The maximum bit rate 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 0kbps

Maximum bit rate for downlink, octet 9 (see 3GPP TS 23.107)

Coding is identical to that of Maximum bit rate for uplink.

If the sending entity wants to indicate a Maximum bit rate for downlink higher than 8640 kbps, it shall set octet 9 to "11111110", i.e. 8640 kbps, and shall encode the value for the Maximum bit rate in octet 15.

In this version of the protocol, for messages specified in the present document, the sending entity shall not request 0 kbps for both the Maximum bitrate for downlink and the Maximum bitrate for uplink at the same time. Any entity receiving a request for 0 kbps in both the Maximum bitrate for downlink and the Maximum bitrate for uplink shall consider that as a syntactical error (see clause 8).

Residual Bit Error Rate (BER), octet 10 (see 3GPP TS 23.107)

Bits

8 7 6 5

In MS to network direction:

0 0 0 0 Subscribed residual BER

In network to MS direction:

0 0 0 0 Reserved

In MS to network direction and in network to MS direction:

The Residual BER value consists of 4 bits. The range is from $5 \cdot 10^{-2}$ to $6 \cdot 10^{-8}$.

0 0 0 1 $5 \cdot 10^{-2}$

0 0 1 0 $1 \cdot 10^{-2}$

0 0 1 1 $5 \cdot 10^{-3}$

0 1 0 0 $4 \cdot 10^{-3}$

0 1 0 1 $1 \cdot 10^{-3}$

0 1 1 0 $1 \cdot 10^{-4}$

0 1 1 1 $1 \cdot 10^{-5}$

1 0 0 0 $1 \cdot 10^{-6}$

1 0 0 1 $6 \cdot 10^{-8}$

1 1 1 1 Reserved

The network shall map all other values not explicitly defined onto one of the values defined in this version of the protocol. The network shall return a negotiated value which is explicitly defined in this version of the protocol.

The MS shall consider all other values as reserved.

SDU error ratio, octet 10 (see 3GPP TS 23.107)

Bits

4 3 2 1

In MS to network direction:

0 0 0 0 Subscribed SDU error ratio

In network to MS direction:

0 0 0 0 Reserved

In MS to network direction and in network to MS direction:

The SDU error ratio value consists of 4 bits. The range is from $1 \cdot 10^{-1}$ to $1 \cdot 10^{-6}$.

0 0 0 1 $1 \cdot 10^{-2}$

0 0 1 0 $7 \cdot 10^{-3}$

0 0 1 1 $1 \cdot 10^{-3}$

0 1 0 0 $1 \cdot 10^{-4}$

0 1 0 1 $1 \cdot 10^{-5}$

0 1 1 0 $1 \cdot 10^{-6}$

0 1 1 1 $1 \cdot 10^{-1}$

1 1 1 1 Reserved

The network shall map all other values not explicitly defined onto one of the values defined in this version of the protocol. The network shall return a negotiated value which is explicitly defined in this version of the protocol.

The MS shall consider all other values as reserved.

Traffic handling priority, octet 11 (see 3GPP TS 23.107)

Bits

2 1

In MS to network direction:

0 0 Subscribed traffic handling priority

In network to MS direction:

0 0 Reserved

In MS to network direction and in network to MS direction:

0 1 Priority level 1
 1 0 Priority level 2
 1 1 Priority level 3

The Traffic handling priority value is ignored if the Traffic Class is Conversation class, Streaming class or Background class.

Transfer delay, octet 11 (See 3GPP TS 23.107)

Bits
 8 7 6 5 4 3

In MS to network direction:

0 0 0 0 0 0 Subscribed transfer delay

In 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 The 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 The 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 4000 ms in 100ms increments

1 1 1 1 1 1 Reserved

The Transfer delay value is ignored if the Traffic Class is Interactive class or Background class.

Guaranteed bit rate for uplink, octet 12 (See 3GPP TS 23.107)

Coding is identical to that of Maximum bit rate for uplink.

The Guaranteed bit rate for uplink value is ignored if the Traffic Class is Interactive class or Background class, or Maximum bit rate for uplink is set to 0 kbps.

Guaranteed bit rate for downlink, octet 13(See 3GPP TS 23.107)

Coding is identical to that of Maximum bit rate for uplink.

If the sending entity wants to indicate a Guaranteed bit rate for downlink higher than 8640 kbps, it shall set octet 13 to "11111110", i.e. 8640 kbps, and shall encode the value for the Guaranteed bit rate in octet 16.

The Guaranteed bit rate for downlink value is ignored if the Traffic Class is Interactive class or Background class, or Maximum bit rate for downlink is set to 0 kbps.

Source Statistics Descriptor, octet 14 (see 3GPP TS 23.107)

Bits
 4 3 2 1
 In MS to network direction
 0 0 0 0 unknown
 0 0 0 1 speech

The network shall consider all other values as unknown.

In network to MS direction

Bits 4 to 1 of octet 14 are spare and shall be coded all 0.

[The Source Statistics Descriptor value is ignored if the Traffic Class is Interactive class or Background class.](#)

Signalling Indication, octet 14 (see 3GPP TS 23.107)

Bit
 5

In MS to network direction and in network to MS direction:

- 0 Not optimised for signalling traffic
- 1 Optimised for signalling traffic

If set to '1' the QoS of the PDP context is optimised for signalling

Bits 8 to 6 of octet 14 are spare and shall be coded all 0.

[The Signalling Indication value is ignored if the Traffic Class is Conversational class, Streaming class or Background class.](#)

Maximum bit rate for downlink (extended), octet 15

Bits

8 7 6 5 4 3 2 1

In MS to network direction and in network to MS direction:

0 0 0 0 0 0 0 0 Use the value indicated by the Maximum bit rate for downlink in octet 9.

0 0 0 0 0 0 0 1 Ignore the value indicated by the Maximum bit rate for downlink in octet 9. The maximum bit rate is 8600 kbps + ((the binary coded value in 8 bits) * 100 kbps), giving a range of values from 8700 kbps to 16000 kbps in 100 kbps increments.

The network shall map all other values not explicitly defined onto one of the values defined in this version of the protocol. The network shall return a negotiated value which is explicitly defined in this version of the protocol.

Guaranteed bit rate for downlink (extended), octet 16

Bits

8 7 6 5 4 3 2 1

In MS to network direction and in network to MS direction:

0 0 0 0 0 0 0 0 Use the value indicated by the Guaranteed bit rate for downlink in octet 13.

0 0 0 0 0 0 0 1 Ignore the value indicated by the Guaranteed bit rate for downlink in octet 13. The maximum bit rate is 8600 kbps + ((the binary coded value in 8 bits) * 100 kbps), giving a range of values from 8700 kbps to 16000 kbps in 100 kbps increments.

The network shall map all other values not explicitly defined onto one of the values defined in this version of the protocol. The network shall return a negotiated value which is explicitly defined in this version of the protocol.