# Technical Specification Group Services and System Aspects TSGS#14(01)0709

Meeting #14, Kyoto, Japan, 17-20 December 2001

Source:	TSG SA WG2
Title:	CRs on 23.107
Agenda Item:	7.2.3

The following Change Requests (CRs) have been approved by TSG SA WG2 and are requested to be approved by TSG SA plenary #14.

Note: the source of all these CRs is now S2, even if the name of the originating company(ies) is still reflected on the cover page of all the attached CRs.

Tdoc #	Source	Title	Spec	CR #	c	Rel	WI	Conclusion
					a			
					t			
S2-013574	Siemens	Clarification of the QoS mapping on the MS	23.107	070r1	F	R99	TEI	Approved.
S2-013603	Siemens	Clarification of the QoS mapping on the MS	23.107	071r2	A	Rel-4	TEI	Approved.
S2-013604	Siemens	Clarification of the QoS mapping on the MS	23.107	072r1	A	Rel-5	TEI	Approved.
S2-013418	Siemens	Deletion of QoS Requirement for Inter-SGSN RA Update	23.107	073	F	R99	TEI	Approved.
S2-013419	Siemens	Deletion of QoS Requirement for Inter-SGSN RA Update	23.107	074	A	Rel-4	TEI	Approved.
S2-013420	Siemens	Deletion of QoS Requirement for Inter-SGSN RA Update	23.107	075	A	Rel-5	TEI	Approved.
S2-013557	Siemens	Clarification of Bearer Service Attributes Maximum and Guaranteed bitrate	23.107	079r2	F	R99	TEI5	Approved.
S2-013558	Siemens	Clarification of Bearer Service attributes Maximum and Guaranteed Bitrate	23.107	080r2	A	Rel-4	TEI	Approved.
S2-013559	Siemens	Clarification of Bearer Service attributes Maximum and Guaranteed Bitrate	23.107	081r2	A	Rel-5	TEI	Approved.

CRs on 23.107 rel99 (v.3.6.0), Rel-4 (v. 4.2.0), and Rel-5 (v. 5.2.0)

CHANGE REQUEST													
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Proposed change affects: # (U)SIM ME/UE X Radio Access Network Core Network X													
Title: #	Cla	rificati	<mark>on of t</mark>	he QoS	<mark>mappin</mark> g	<mark>g on th</mark>	e MS						
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Category:       %       F       Release: %       R99         Use one of the following categories:       Use one of the following releases:       2       (GSM Phase 2)         A (corresponds to a correction in an earlier release)       R96       (Release 1996)         B (addition of feature),       R97       (Release 1997)         C (functional modification of feature)       R98       (Release 1998)         D (editorial modification)       R99       (Release 1999)         Detailed explanations of the above categories can be found in 3GPP <u>TR 21.900</u> .       REL-5       (Release 5)										leases:			
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# 2 References

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- [2] 3GPP TS 22.100: "Service aspects, Service principles".
- [3] 3GPP TS 23.121: "Evolution of the GSM platform towards UMTS".
- [4] (Void)
- [5] 3GPP TS 22.105: "Services & Service capabilities".
- [6]
   3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network Protocols –

   Stage 3"

## 6.4.3 UMTS Bearer Service Attributes

#### 6.4.3.1 List of attributes

#### Traffic class ('conversational', 'streaming', 'interactive', 'background')

Definition: type of application for which the UMTS bearer service is optimised [*Purpose: By including the traffic class itself as an attribute, UMTS can make assumptions about the traffic source and optimise the transport for that traffic type.*]

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#### **Allocation/Retention Priority**

Definition: specifies the relative importance compared to other UMTS bearers for allocation and retention of the UMTS bearer. The Allocation/Retention Priority attribute is a subscription attribute which is not negotiated from the mobile terminal.

NOTE 4: The addition of a user-controlled Allocation/Retention Priority attribute is for further study in future releases.

[Purpose: Priority is used for differentiating between bearers when performing allocation and retention of a bearer. In situations where resources are scarce, the relevant network elements can use the Allocation/Retention Priority to prioritize bearers with a high Allocation/Retention Priority over bearers with a low Allocation/Retention Priority when performing admission control.]

## 6.4.4 Radio Access Bearer Service Attributes

Radio Access Bearer Service Attributes shall be applied to both CS and PS domains.

#### 6.4.4.1 List of attributes

#### Traffic class ('conversational', 'streaming', 'interactive', 'background')

Definition: type of application for which the Radio Access Bearer service is optimised. [Purpose: By including the traffic class itself as an attribute, UTRAN can make assumptions about the traffic source and optimise the transport for that traffic type. In particular, buffer allocation may be based on traffic class.]

.....

#### **Allocation/Retention Priority**

Definition: specifies the relative importance compared to other Radio access bearers for allocation and retention of the Radio access bearer. The Allocation/Retention Priority attribute is a subscription parameter which is not negotiated from the mobile terminal.

NOTE 4: The addition of a user-controlled Allocation/Retention Priority attribute is for further study in future releases.

[Purpose: Priority is used for differentiating between bearers when performing allocation and retention of a bearer. In situations where resources are scarce, the relevant network elements can use the Allocation/Retention Priority to prioritize bearers with a high Allocation/Retention Priority over bearers with a low Allocation/Retention Priority when performing admission control.]

Source statistics descriptor ('speech'/'unknown')

Definition: specifies characteristics of the source of submitted SDUs.

[Purpose: Conversational speech has a well-known statistical behaviour (or the discontinuous transmission (DTX) factor). By being informed that the SDUs for a RAB are generated by a speech source, UTRAN may, based on experience, calculate a statistical multiplex gain for use in admission control on the radio and Iu interfaces.]

## 9.1.2.2 Determining R99 attributes from R97/98 attributes

This mapping is applicable in the following cases:

- hand over of PDP Context from GPRS R97/98 SGSN to GPRS R99 or UMTS SGSN;
- PDP Context Activation in a serving R99 SGSN with a R97/98 GGSN. When GGSN respond to the PDP Context Activation, mapping of the changed R97/98 QoS attributes received from the GGSN to R99 QoS attributes is performed in the serving SGSN

This mapping is also applicable if a R99 MS allows an application to receives a request for a PDP Context Activation with R97/98 QoS attributes, e.g. via AT command.

Resulting R99	Attribute	Deri	Derived from R97/98 Attribute				
Name	Value	Value	Name				
Traffic class	Interactive	1, 2, 3	Delay class				
	Background	4					
Traffic handling priority	1	1	Delay class				
	2	2					
	3	3					
SDU error ratio	10 <sup>-6</sup>	1, 2	Reliability class				
	10 <sup>-4</sup>	3					
	10 <sup>-3</sup>	4, 5					
Residual bit error ratio	10 <sup>-5</sup>	1, 2, 3, 4	Reliability class				
	4*10 <sup>-3</sup>	5					
Delivery of erroneous SDUs	'no'	1, 2, 3, 4	Reliability class				
	'yes'	5					
Maximum bitrate [kbps]	8	1	Peak throughput class				
	16	2					
	32	3					
	64	4					
	128	5					
	256	6					
	512	7					
	1024	8					
	2048	9					
Allocation/Retention priority	1	1	Precedence class				
	2	2					
	3	3					
Delivery order	yes'	yes'	Reordering Required (Information				
	'no'	'no'	in the SGSN and the GGSN PDP Contexts)				
Maximum SDU size	1 500 octets	(Fixed value)					

Table 6: Rules for determining R99 attributes from R97/98 attributes

Note: As the allocation/retention priority attribute is not available in the MS(see 6.4.4.1) the mapping of the allocation/retention priority attribute is not relevant for the MS.

### 9.1.2.3 Determining R97/98 attributes from R99 attributes

This mapping is applicable in the following cases:

- PDP Context is handed over from GPRS R99 or UMTS to GPRS R97/98;
- when a R99 MS perform a PDP Context Activation in a serving R99 SGSN while the GGSN is of R97/98. In this case the SGSN shall perform mapping of the R99 QoS attributes to the R97/98 QoS attributes;
- a R99 HLR may need to map the stored subscribed QoS attributes in the HLR subscriber data to R97/98 QoS attributes that are going to be sent in the Insert Subscriber Data message from the R99 HLR to the R97/98 and R99 SGSN. It is an implementation issue if the R97/98 QoS attributes are stored in the HLR in addition to the R99 QoS attributes.

# • <u>a R99 MS (except UMTS only MS) receives a request for a PDP Context Activation with R99 QoS attributes, e.g. via AT command.</u>

Resulting R97/98	Attribute	Derived from R99 Attribute					
Name	Value	Value	Name				
Delay class	1	Conversational	Traffic class				
	1	Streaming	Traffic class				
	1	Interactive	Traffic class				
		1	Traffic handling priority				
	2	Interactive	Traffic class				
		2	Traffic handling priority				
	3	Interactive	Traffic class				
		3	Traffic handling priority				
	4	Background	Traffic class				
Reliability class	2	<= 10 <sup>-5</sup>	SDU error ratio				
	3	$10^{-5} < x <= 5^{*}10^{-4}$	SDU error ratio				
	4	> 5*10 <sup>-4</sup>	SDU error ratio				
		<= 2*10 <sup>-4</sup>	Residual bit error ratio				
	5	> 5*10 <sup>-4</sup>	SDU error ratio				
		> 2*10 <sup>-4</sup>	Residual bit error ratio				
Peak throughput class	1	< 16	Maximum bitrate [kbps]				
	2	16 <= x < 32					
	3	32 <= x < 64					
	4	64 <= x < 128					
	5	128 <= x < 25					
	6	256 <= x < 512					
	7	512 <= x < 1024					
	8	1024 <= x < 2048					
	9	>= 2048					
Precedence class	1	1	Allocation/retention priority				
	2	2					
	3	3					
Mean throughput class	Always set to 31	-					
Reordering Required	yes'	yes'	Delivery order				
(Information in the SGSN and		· · ·					
the GGSN PDP Contexts)	'noʻ	'no′					

#### Table 7: Rules for determining R97/98 attributes from R99 attributes

<u>As the allocation/retention priority attribute is not available in the MS(see 6.4.4.1) the MS shall set the R97/98</u> precedence class attribute to the value "subscribed" (see <u>3GPP TS 24.008)</u>.

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Category:       #       A       Release: #       Rel 4         Use one of the following categories:       Use one of the following releases:       2       (GSM Phase 2)         A       (corresponds to a correction in an earlier release)       R96       (Release 1996)         B       (addition of feature),       R97       (Release 1997)         C       (functional modification of feature)       R98       (Release 1998)         D       (editorial modification)       R99       (Release 1999)         Detailed explanations of the above categories can be found in 3GPP TR 21.900.       REL-4       (Release 4)										ses:					
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- [6]
   3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network Protocols –

   Stage 3"

## 9.1.2.2 Determining R99 attributes from R97/98 attributes

This mapping is applicable in the following cases:

- hand over of PDP Context from GPRS R97/98 SGSN to GPRS R99 or UMTS SGSN;
- PDP Context Activation in a serving R99 SGSN with a R97/98 GGSN. When GGSN respond to the PDP Context Activation, mapping of the changed R97/98 QoS attributes received from the GGSN to R99 QoS attributes is performed in the serving SGSN<sub>i</sub>.

H This mapping is also applicable if a R99 MS allows an application to request a PDP Context Activation with R97/98 QoS attributes, e.g. via AT command. a R99 MS receives a request for a PDP Context Activation with R97/98 QoS attributes, e.g. via AT command.

Resulting R99	Attribute	Deri	Derived from R97/98 Attribute				
Name	Value	Value	Name				
Traffic class	Interactive	1, 2, 3	Delay class				
	Background	4					
Traffic handling priority	1	1	Delay class				
	2	2					
	3	3					
SDU error ratio	10 <sup>-6</sup>	1, 2	Reliability class				
	10 <sup>-4</sup>	3					
	10 <sup>-3</sup>	4, 5					
Residual bit error ratio	10 <sup>-5</sup>	1, 2, 3, 4	Reliability class				
	4*10 <sup>-3</sup>	5					
Delivery of erroneous SDUs	'no'	1, 2, 3, 4	Reliability class				
-	'yes'	5					
Maximum bitrate [kbps]	8	1	Peak throughput class				
	16	2					
	32	3					
	64	4					
	128	5					
	256	6					
	512	7					
	1024	8					
	2048	9					
Allocation/Retention priority	1	1	Precedence class				
	2	2					
	3	3					
Delivery order	yes'	yes'	Reordering Required (Information				
	'no'	'no'	in the SGSN and the GGSN PDP Contexts)				
Maximum SDU size	1 500 octets	(Fixed value)					

#### Table 6: Rules for determining R99 attributes from R97/98 attributes

Note: As the allocation/retention priority attribute is not available in the MS(see 6.4.4.1) the mapping of the allocation/retention priority attribute is not relevant for the MS.

### 9.1.2.3 Determining R97/98 attributes from R99 attributes

This mapping is applicable in the following cases:

- PDP Context is handed over from GPRS R99 or UMTS to GPRS R97/98;
- when a R99 MS perform a PDP Context Activation in a serving R99 SGSN while the GGSN is of R97/98. In this case the SGSN shall perform mapping of the R99 QoS attributes to the R97/98 QoS attributes;
- a R99 HLR may need to map the stored subscribed QoS attributes in the HLR subscriber data to R97/98 QoS attributes that are going to be sent in the Insert Subscriber Data message from the R99 HLR to the R97/98 and R99 SGSN. It is an implementation issue if the R97/98 QoS attributes are stored in the HLR in addition to the R99 QoS attributes are stored.

# • <u>a R99 MS (except UMTS only MS) receives a request for a PDP Context Activation with R99 QoS attributes, e.g. via AT command.</u>

Resulting R97/98	Attribute	Derived from R99 Attribute					
Name	Value	Value	Name				
Delay class	1	conversational	Traffic class				
-	1	streaming	Traffic class				
	1	Interactive	Traffic class				
		1	Traffic handling priority				
	2	Interactive	Traffic class				
		2	Traffic handling priority				
	3	Interactive	Traffic class				
		3	Traffic handling priority				
	4	Background	Traffic class				
Reliability class	2	<= 10 <sup>-5</sup>	SDU error ratio				
	3	$10^{-5} < x <= 5^{*}10^{-4}$	SDU error ratio				
	4	> 5*10 <sup>-4</sup>	SDU error ratio				
		<= 2*10 <sup>-4</sup>	Residual bit error ratio				
	5	> 5*10 <sup>-4</sup>	SDU error ratio				
		> 2*10 <sup>-4</sup>	Residual bit error ratio				
Peak throughput class	1	< 16	Maximum bitrate [kbps]				
	2	16 <= x < 32					
	3	32 <= x < 64	-				
	4	64 <= x < 128					
	5	128 <= x < 25					
	6	256 <= x < 512					
	7	512 <= x < 1024					
	8	1024 <= x < 2048	-				
	9	>= 2048					
Precedence class	1	1	Allocation/retention priority				
	2	2					
	3	3					
Mean throughput class	Always set to 31	-					
Reordering Required	yes'	yes'	Delivery order				
(Information in the SGSN and	1						
the GGSN PDP Contexts)	îno <sup>r</sup>	'no'					

#### Table 7: Rules for determining R97/98 attributes from R99 attributes

<u>As the allocation/retention priority attribute is not available in the MS(see 6.4.4.1) the MS shall set the R97/98</u> precedence class attribute to the value "subscribed" (see <u>3GPP TS 24.008)</u>.

CHANGE REQUEST														
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Category:       %       A       Release: %       Rel 5         Use one of the following categories:       Use one of the following releases:       2       (GSM Phase 2)         A       (corresponds to a correction in an earlier release)       R96       (Release 1996)         B       (addition of feature),       R97       (Release 1997)         C       (functional modification of feature)       R98       (Release 1998)         D       (editorial modification)       R99       (Release 1999)         Detailed explanations of the above categories can be found in 3GPP TR 21.900.       REL-4       (Release 5)										ses:				
Reason for change	e: X	At th attrib class QoS	e mom outes a s value attribu	pent it is pplies a the MS ites from	not spe lso for shall a the ap	ecified the MS ssum plicat	that S. Fu e for t ion.	the n rtheri the R	napp more (97/9	ping betwe e, it is open 8 attribute	en R9 h whic es if it	9 - R97 h prece gets on	7/98 ( edeno ly the	QoS ce e R99
Summary of chang	<b>je:</b>	It is prec	oropos edence	ed to de e value t	<mark>fine, th</mark> o subs	at in tl cribed	ne ab	ove i	ment	tioned cas	e the	MS sha	ill set	the
Consequences if not approved:	Ħ	Diffe	rent M	S impler	mentati	ons.								
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   3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network Protocols –

   Stage 3"

## 9.1.2.2 Determining R99 attributes from R97/98 attributes

This mapping is applicable in the following cases:

- hand over of PDP Context from GPRS R97/98 SGSN to GPRS R99 or UMTS SGSN;
- PDP Context Activation in a serving R99 SGSN with a R97/98 GGSN. When GGSN respond to the PDP Context Activation, mapping of the changed R97/98 QoS attributes received from the GGSN to R99 QoS attributes is performed in the serving SGSN<sub>i</sub>.

H This mapping is also applicable if a R99 MS allows an application to request a PDP Context Activation with R97/98 QoS attributes, e.g. via AT command. a R99 MS receives a request for a PDP Context Activation with R97/98 QoS attributes, e.g. via AT command.

Resulting R99	Attribute	Deri	Derived from R97/98 Attribute				
Name	Value	Value	Name				
Traffic class	Interactive	1, 2, 3	Delay class				
	Background	4					
Traffic handling priority	1	1	Delay class				
	2	2					
	3	3					
SDU error ratio	10 <sup>-6</sup>	1, 2	Reliability class				
	10 <sup>-4</sup>	3					
	10 <sup>-3</sup>	4, 5					
Residual bit error ratio	10 <sup>-5</sup>	1, 2, 3, 4	Reliability class				
	4*10 <sup>-3</sup>	5					
Delivery of erroneous SDUs	'no'	1, 2, 3, 4	Reliability class				
	'yes'	5					
Maximum bitrate [kbps]	8	1	Peak throughput class				
	16	2					
	32	3					
	64	4					
	128	5					
	256	6					
	512	7					
	1024	8					
	2048	9					
Allocation/Retention priority	1	1	Precedence class				
	2	2					
	3	3					
Delivery order	yes'	yes'	Reordering Required (Information				
	'no'	'no'	in the SGSN and the GGSN PDP Contexts)				
Maximum SDU size	1 500 octets	(Fixed value)					

#### Table 6: Rules for determining R99 attributes from R97/98 attributes

Note: As the allocation/retention priority attribute is not available in the MS(see 6.4.4.1) the mapping of the allocation/retention priority attribute is not relevant for the MS.

### 9.1.2.3 Determining R97/98 attributes from R99 attributes

This mapping is applicable in the following cases:

- PDP Context is handed over from GPRS R99 or UMTS to GPRS R97/98;
- when a R99 MS perform a PDP Context Activation in a serving R99 SGSN while the GGSN is of R97/98. In this case the SGSN shall perform mapping of the R99 QoS attributes to the R97/98 QoS attributes;
- a R99 HLR may need to map the stored subscribed QoS attributes in the HLR subscriber data to R97/98 QoS attributes that are going to be sent in the Insert Subscriber Data message from the R99 HLR to the R97/98 and R99 SGSN. It is an implementation issue if the R97/98 QoS attributes are stored in the HLR in addition to the R99 QoS attributes are stored.

# • <u>a R99 MS (except UMTS only MS) receives a request for a PDP Context Activation with R99 QoS attributes, e.g. via AT command.</u>

Resulting R97/98	Attribute	Derived from R99 Attribute					
Name	Value	Value	Name				
Delay class	1	conversational	Traffic class				
-	1	streaming	Traffic class				
	1	Interactive	Traffic class				
		1	Traffic handling priority				
	2	Interactive	Traffic class				
		2	Traffic handling priority				
	3	Interactive	Traffic class				
		3	Traffic handling priority				
	4	Background	Traffic class				
Reliability class	2	<= 10 <sup>-5</sup>	SDU error ratio				
	3	$10^{-5} < x <= 5^{*}10^{-4}$	SDU error ratio				
	4	> 5*10 <sup>-4</sup>	SDU error ratio				
		<= 2*10 <sup>-4</sup>	Residual bit error ratio				
	5	> 5*10 <sup>-4</sup>	SDU error ratio				
		> 2*10 <sup>-4</sup>	Residual bit error ratio				
Peak throughput class	1	< 16	Maximum bitrate [kbps]				
	2	16 <= x < 32					
	3	32 <= x < 64	-				
	4	64 <= x < 128					
	5	128 <= x < 25					
	6	256 <= x < 512					
	7	512 <= x < 1024					
	8	1024 <= x < 2048	-				
	9	>= 2048					
Precedence class	1	1	Allocation/retention priority				
	2	2					
	3	3					
Mean throughput class	Always set to 31	-					
Reordering Required	yes'	yes'	Delivery order				
(Information in the SGSN and	1						
the GGSN PDP Contexts)	îno <sup>r</sup>	'no'					

#### Table 7: Rules for determining R97/98 attributes from R99 attributes

<u>As the allocation/retention priority attribute is not available in the MS(see 6.4.4.1) the MS shall set the R97/98</u> precedence class attribute to the value "subscribed" (see <u>3GPP TS 24.008)</u>.

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Category:       %       F       Release: %       R99         Use one of the following categories:       Use one of the following releases:       2       (GSM Phase 2)         A (corresponds to a correction in an earlier release)       R96       (Release 1996)         B (addition of feature),       R97       (Release 1997)         C (functional modification of feature)       R98       (Release 1998)         D (editorial modification)       R99       (Release 1999)         Detailed explanations of the above categories can be found in 3GPP TR 21.900.       REL-4       (Release 4)										
Reason for change.	<ul> <li>Chapter 7 de relocation/ha no longer neg proposed to de relocation</li> </ul>	scribes some rec ndover in the PS eded as the reloc delete the confus	quirements which domain. These s ation/handover m ing statements.	are obviously fo tatements are of techanisms are s	r the utdated and also specified. It is					
Summary of change	: # Deletion of co	onfusing stateme	nts about realtime	e RA update.						
Consequences if not approved:	業 Confusion ab	out realtime RA	update mechanis	ms.						
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Other specs affected:	Conternation     Test species     O&M Species	e specifications fications cifications	ж							
Other comments:	ж									

# 7 <u>voidSupport of QoS Requirement During Inter-</u> SGSN RA Update

Support of QoS within the GSM/GPRS R99 network will require enhancements to the standard to enable QoS requirements to be maintained when mobility of the UE requires a change of serving elements within the network (e.g. change of BTS/BSC or nodeB/RNS and SGSN). These are currently not supported in GSM/GPRS R99 and therefore the next release shall support these enhancements.

QoS requirements (especially those for traffic classes such as Conversational and Streaming) shall be maintained during inter SGSN RA Update within the UMTS network (note: Pre R99 inter SGSN RA update mechanisms involving C7 signalling to the HLR, GGSN would need enhancement to satisfy some QoS classes identified).

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# 7 <u>voidSupport of QoS Requirement During Inter-</u> SGSN RA Update

Support of QoS within the GSM/GPRS R99 network will require enhancements to the standard to enable QoS requirements to be maintained when mobility of the UE requires a change of serving elements within the network (e.g. change of BTS/BSC or nodeB/RNS and SGSN). These are currently not supported in GSM/GPRS R99 and therefore the next release shall support these enhancements.

QoS requirements (especially those for traffic classes such as Conversational and Streaming) shall be maintained during inter SGSN RA Update within the UMTS network (note: Pre R99 inter SGSN RA update mechanisms involving C7 signalling to the HLR, GGSN would need enhancement to satisfy some QoS classes identified).

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# 7 <u>voidSupport of QoS Requirement During Inter-</u> SGSN RA Update

Support of QoS within the GSM/GPRS R99 network will require enhancements to the standard to enable QoS requirements to be maintained when mobility of the UE requires a change of serving elements within the network (e.g. change of BTS/BSC or nodeB/RNS and SGSN). These are currently not supported in GSM/GPRS R99 and therefore the next release shall support these enhancements.

QoS requirements (especially those for traffic classes such as Conversational and Streaming) shall be maintained during inter SGSN RA Update within the UMTS network (note: Pre R99 inter SGSN RA update mechanisms involving C7 signalling to the HLR, GGSN would need enhancement to satisfy some QoS classes identified).

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Reason for change. њ	Ambiguous definition of purpose of Maximum and Guaranteed bitrate.
Summary of change: #	The purpose of the bearer service attributes Maximum and Guaranteed bitrate is changed in the sense that they define a range for the requested bitrate of the bearer. That means, that under normal load conditions the quality requirements expressed by the other service attributes also apply for a bitrate larger than the Guaranteed.
Consequences if # not approved:	Different interpretation possibilities for Maximum bitrate.
Clauses affected: #	6.4.3. 6.4.4
Other specs % affected:	Other core specifications       #         Test specifications       •         O&M Specifications       •
Other comments: %	The description of the token bucket algorithm for the Guaranteed bitrate is aligned.

#### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G\_Specs/CRs.htm</u>. 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 <u>ftp://www.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

# 6.4.3 UMTS Bearer Service Attributes

## 6.4.3.1 List of attributes

#### Traffic class ('conversational', 'streaming', 'interactive', 'background')

Definition: type of application for which the UMTS bearer service is optimised

[Purpose: By including the traffic class itself as an attribute, UMTS can make assumptions about the traffic source and optimise the transport for that traffic type.]

#### Maximum bitrate (kbps)

Definition: maximum number of bits delivered by UMTS and to UMTS at a SAP within a period of time, divided by the duration of the period. The traffic is conformant with Maximum bitrate as long as it follows a token bucket algorithm where token rate equals Maximum bitrate and bucket size equals Maximum SDU size.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

The Maximum bitrate is the upper limit a user or application can accept or provide. All UMTS bearer service attributes may be fulfilled for traffic up to the Maximum bitrate depending on the network conditions.

[Purpose: Maximum bitrate can be used to make code reservations in the downlink of the radio interface. Its purpose is 1) to limit the delivered bitrate to applications or external networks with such limitations 2) to allow maximum wanted user bitrate to be defined for applications able to operate with different rates (e.g. non transparent circuit switched dataapplications with adapting codecs).]

#### Guaranteed bitrate (kbps)

Definition: guaranteed number of bits delivered by UMTS at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The traffic is conformant with the guaranteed bitrate as long as it follows a token bucket algorithm where token rate equals Guaranteed bitrate and bucket size equals k\*Maximum SDU size. For release 1999, k=1. A value of k greater than one Maximum SDU size may be specified in future releases to capture burstiness of sources. Signalling to specify the value of k may be provided in future releases.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

<u>UMTS</u> bearer service attributes, e.g. delay and reliability attributes, are guaranteed for traffic up to the Guaranteed bitrate. For the traffic exceeding the Guaranteed bitrate the UMTS bearer service attributes are not guaranteed.

[Purpose: <u>Describes the bitrate the UMTS bearer service shall guarantee to the user or application</u>. Guaranteed bitrate may be used to facilitate admission control based on available resources, and for resource allocation within UMTS. <u>Quality requirements expressed by e.g. delay and reliability attributes only apply to incoming</u> traffic up to the guaranteed bitrate.]

# NEXT MODIFICATON

## 6.4.4 Radio Access Bearer Service Attributes

Radio Access Bearer Service Attributes shall be applied to both CS and PS domains.

6.4.4.1 List of attributes

Traffic class ('conversational', 'streaming', 'interactive', 'background')

Definition: type of application for which the Radio Access Bearer service is optimised.

[Purpose: By including the traffic class itself as an attribute, UTRAN can make assumptions about the traffic source and optimise the transport for that traffic type. In particular, buffer allocation may be based on traffic class.]

#### Maximum bitrate (kbps)

Definition: maximum number of bits delivered by UTRAN and to UTRAN at a SAP within a period of time, divided by the duration of the period. The traffic is conformant with the Maximum bitrate as long as it follows a token bucket algorithm where token rate equals Maximum bitrate and bucket size equals Maximum SDU size.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

The Maximum bitrate is the upper limit a user or application can accept or provide. All RAB attributes may be fulfilled for traffic up to the Maximum bitrate depending on the network conditions.

[Purpose: 1) to limit the delivered bitrate to applications or external networks with such limitations, 2) to allow maximum wanted RAB bitrate to be defined for applications able to operate with different rates (e.g. applications with adapting codecsnon transparent circuit switched data.)]

#### Guaranteed bitrate (kbps)

Definition: guaranteed number of bits delivered at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The traffic is conformant with the Guaranteed bitrate as long as it follows a token bucket algorithm where token rate equals Guaranteed bitrate and bucket size equals k-Maximum SDU size. For Release 1999, k = 1. A value of k greater than one Maximum SDU size may be specified in future releases to capture burstiness of sources. Signalling to specify the value of k may be provided in future releases.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

RAB attributes, e.g. delay and reliability attributes, are guaranteed for traffic up to the Guaranteed bitrate. For the traffic exceeding the Guaranteed bitrate the RAB attributes are not guaranteed.

[Purpose: <u>Describes the bitrate the RAB shall guarantee to the user or application</u>. Guaranteed bitrate may be used to facilitate admission control based on available resources, and for resource allocation within UTRAN. <u>Quality requirements expressed by e.g. delay and reliability attributes only apply to incoming traffic up to the guaranteed bitrate</u>. The guaranteed bitrate at the RAB level may be different from that on UMTS bearer level, for example due to header compression.]

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Reason for change: #	Ambiguous definition of purpose of Maximum and Guaranteed bitrate.
Summary of change: #	The purpose of the bearer service attributes Maximum and Guaranteed bitrate is changed in the sense that they define a range for the requested bitrate of the bearer. That means, that under normal load conditions the quality requirements expressed by the other service attributes also apply for a bitrate larger than the Guaranteed.
Consequences if # not approved:	Different interpretation possibilities for Maximum bitrate.
Clauses affected: #	6.4.3, 6.4.4
Other specs % affected:	Other core specifications       #         Test specifications       #         O&M Specifications       •
Other comments: ೫	The description of the token bucket algorithm for the Guaranteed bitrate is aligned.

#### How to create CRs using this form:

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- 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 <u>ftp://www.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

# 6.4.3 UMTS Bearer Service Attributes

## 6.4.3.1 List of attributes

#### Traffic class ('conversational', 'streaming', 'interactive', 'background')

Definition: type of application for which the UMTS bearer service is optimised

[Purpose: By including the traffic class itself as an attribute, UMTS can make assumptions about the traffic source and optimise the transport for that traffic type.]

#### Maximum bitrate (kbps)

Definition: maximum number of bits delivered by UMTS and to UMTS at a SAP within a period of time, divided by the duration of the period. The traffic is conformant with Maximum bitrate as long as it follows a token bucket algorithm where token rate equals Maximum bitrate and bucket size equals Maximum SDU size.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

The Maximum bitrate is the upper limit a user or application can accept or provide. All UMTS bearer service attributes may be fulfilled for traffic up to the Maximum bitrate depending on the network conditions.

[Purpose: Maximum bitrate can be used to make code reservations in the downlink of the radio interface. Its purpose is 1) to limit the delivered bitrate to applications or external networks with such limitations 2) to allow maximum wanted user bitrate to be defined for applications able to operate with different rates (e.g. non transparent circuit switched dataapplications with adapting codecs).]

#### Guaranteed bitrate (kbps)

Definition: guaranteed number of bits delivered by UMTS at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The traffic is conformant with the guaranteed bitrate as long as it follows a token bucket algorithm where token rate equals Guaranteed bitrate and bucket size equals k\*Maximum SDU size. For release 1999, k=1. A value of k greater than one Maximum SDU size may be specified in future releases to capture burstiness of sources. Signalling to specify the value of k may be provided in future releases.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

<u>UMTS</u> bearer service attributes, e.g. delay and reliability attributes, are guaranteed for traffic up to the Guaranteed bitrate. For the traffic exceeding the Guaranteed bitrate the UMTS bearer service attributes are not guaranteed.

[Purpose: <u>Describes the bitrate the UMTS bearer service shall guarantee to the user or application</u>. Guaranteed bitrate may be used to facilitate admission control based on available resources, and for resource allocation within UMTS. <u>Quality requirements expressed by e.g. delay and reliability attributes only apply to incoming</u> traffic up to the guaranteed bitrate.]

# NEXT MODIFICATON

## 6.4.4 Radio Access Bearer Service Attributes

Radio Access Bearer Service Attributes shall be applied to both CS and PS domains.

6.4.4.1 List of attributes

Traffic class ('conversational', 'streaming', 'interactive', 'background')

Definition: type of application for which the Radio Access Bearer service is optimised.

[Purpose: By including the traffic class itself as an attribute, UTRAN can make assumptions about the traffic source and optimise the transport for that traffic type. In particular, buffer allocation may be based on traffic class.]

#### Maximum bitrate (kbps)

Definition: maximum number of bits delivered by UTRAN and to UTRAN at a SAP within a period of time, divided by the duration of the period. The traffic is conformant with the Maximum bitrate as long as it follows a token bucket algorithm where token rate equals Maximum bitrate and bucket size equals Maximum SDU size.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

The Maximum bitrate is the upper limit a user or application can accept or provide. All RAB attributes may be fulfilled for traffic up to the Maximum bitrate depending on the network conditions.

[Purpose: 1) to limit the delivered bitrate to applications or external networks with such limitations, 2) to allow maximum wanted RAB bitrate to be defined for applications able to operate with different rates (e.g. applications with adapting codecsnon transparent circuit switched data.)]

#### Guaranteed bitrate (kbps)

Definition: guaranteed number of bits delivered at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The traffic is conformant with the Guaranteed bitrate as long as it follows a token bucket algorithm where token rate equals Guaranteed bitrate and bucket size equals k-Maximum SDU size. For Release 1999, k = 1. A value of k greater than one Maximum SDU size may be specified in future releases to capture burstiness of sources. Signalling to specify the value of k may be provided in future releases.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

RAB attributes, e.g. delay and reliability attributes, are guaranteed for traffic up to the Guaranteed bitrate. For the traffic exceeding the Guaranteed bitrate the RAB attributes are not guaranteed.

[Purpose: <u>Describes the bitrate the RAB shall guarantee to the user or application</u>. Guaranteed bitrate may be used to facilitate admission control based on available resources, and for resource allocation within UTRAN. <u>Quality requirements expressed by e.g. delay and reliability attributes only apply to incoming traffic up to the guaranteed bitrate</u>. The guaranteed bitrate at the RAB level may be different from that on UMTS bearer level, for example due to header compression.]

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Passon for change: 9	Ambiguous definition of purpose of Maximum and Guaranteed hitrate
Reason for change. њ	Ambiguous definition of purpose of Maximum and Guaranteed bitrate.
Summary of change: #	The purpose of the bearer service attributes Maximum and Guaranteed bitrate is changed in the sense that they define a range for the requested bitrate of the bearer. That means, that under normal load conditions the quality requirements expressed by the other service attributes also apply for a bitrate larger than the Guaranteed.
Consequences if # not approved:	Different interpretation possibilities for Maximum bitrate.
Clauses affected: #	6.4.3. 6.4.4
Other specs % affected:	Other core specifications       #         Test specifications       •         O&M Specifications       •
Other comments: %	The description of the token bucket algorithm for the Guaranteed bitrate is aligned.

#### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G\_Specs/CRs.htm</u>. 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 <u>ftp://www.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

# 6.4.3 UMTS Bearer Service Attributes

## 6.4.3.1 List of attributes

#### Traffic class ('conversational', 'streaming', 'interactive', 'background')

Definition: type of application for which the UMTS bearer service is optimised

[Purpose: By including the traffic class itself as an attribute, UMTS can make assumptions about the traffic source and optimise the transport for that traffic type.]

#### Maximum bitrate (kbps)

Definition: maximum number of bits delivered by UMTS and to UMTS at a SAP within a period of time, divided by the duration of the period. The traffic is conformant with Maximum bitrate as long as it follows a token bucket algorithm where token rate equals Maximum bitrate and bucket size equals Maximum SDU size.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

The Maximum bitrate is the upper limit a user or application can accept or provide. All UMTS bearer service attributes may be fulfilled for traffic up to the Maximum bitrate depending on the network conditions.

[Purpose: Maximum bitrate can be used to make code reservations in the downlink of the radio interface. Its purpose is 1) to limit the delivered bitrate to applications or external networks with such limitations 2) to allow maximum wanted user bitrate to be defined for applications able to operate with different rates (e.g. non transparent circuit switched dataapplications with adapting codecs).]

#### Guaranteed bitrate (kbps)

Definition: guaranteed number of bits delivered by UMTS at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The traffic is conformant with the guaranteed bitrate as long as it follows a token bucket algorithm where token rate equals Guaranteed bitrate and bucket size equals k\*Maximum SDU size. For release 1999, k=1. A value of k greater than one Maximum SDU size may be specified in future releases to capture burstiness of sources. Signalling to specify the value of k may be provided in future releases.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

<u>UMTS</u> bearer service attributes, e.g. delay and reliability attributes, are guaranteed for traffic up to the Guaranteed bitrate. For the traffic exceeding the Guaranteed bitrate the UMTS bearer service attributes are not guaranteed.

[Purpose: <u>Describes the bitrate the UMTS bearer service shall guarantee to the user or application</u>. Guaranteed bitrate may be used to facilitate admission control based on available resources, and for resource allocation within UMTS. <u>Quality requirements expressed by e.g. delay and reliability attributes only apply to incoming</u> traffic up to the guaranteed bitrate.]

# NEXT MODIFICATON

## 6.4.4 Radio Access Bearer Service Attributes

Radio Access Bearer Service Attributes shall be applied to both CS and PS domains.

6.4.4.1 List of attributes

Traffic class ('conversational', 'streaming', 'interactive', 'background')

Definition: type of application for which the Radio Access Bearer service is optimised.

[Purpose: By including the traffic class itself as an attribute, UTRAN can make assumptions about the traffic source and optimise the transport for that traffic type. In particular, buffer allocation may be based on traffic class.]

#### Maximum bitrate (kbps)

Definition: maximum number of bits delivered by UTRAN and to UTRAN at a SAP within a period of time, divided by the duration of the period. The traffic is conformant with the Maximum bitrate as long as it follows a token bucket algorithm where token rate equals Maximum bitrate and bucket size equals Maximum SDU size.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

The Maximum bitrate is the upper limit a user or application can accept or provide. All RAB attributes may be fulfilled for traffic up to the Maximum bitrate depending on the network conditions.

[Purpose: 1) to limit the delivered bitrate to applications or external networks with such limitations, 2) to allow maximum wanted RAB bitrate to be defined for applications able to operate with different rates (e.g. applications with adapting codecsnon transparent circuit switched data.)]

#### Guaranteed bitrate (kbps)

Definition: guaranteed number of bits delivered at a SAP within a period of time (provided that there is data to deliver), divided by the duration of the period. The traffic is conformant with the Guaranteed bitrate as long as it follows a token bucket algorithm where token rate equals Guaranteed bitrate and bucket size equals k-Maximum SDU size. For Release 1999, k = 1. A value of k greater than one Maximum SDU size may be specified in future releases to capture burstiness of sources. Signalling to specify the value of k may be provided in future releases.

The conformance definition should not be interpreted as a required implementation algorithm. The token bucket algorithm is described in annex B.

RAB attributes, e.g. delay and reliability attributes, are guaranteed for traffic up to the Guaranteed bitrate. For the traffic exceeding the Guaranteed bitrate the RAB attributes are not guaranteed.

[Purpose: <u>Describes the bitrate the RAB shall guarantee to the user or application</u>. Guaranteed bitrate may be used to facilitate admission control based on available resources, and for resource allocation within UTRAN. <u>Quality requirements expressed by e.g. delay and reliability attributes only apply to incoming traffic up to the guaranteed bitrate</u>. The guaranteed bitrate at the RAB level may be different from that on UMTS bearer level, for example due to header compression.]