# 3GPP TSG CN Plenary Meeting #16 5<sup>th</sup> - 7<sup>th</sup> June 2002. Marco Island, USA.

NP-020295 rev of NP-020170

Source: TSG CN WG3

Title: CRs on R99+ Work Item GPRS

Agenda item: 7.3

Document for: APPROVAL

#### **Introduction:**

This document contains 10 CRs on R99+ Work Item GPRS, that have been agreed by TSG CN WG3, and are forwarded to TSG CN Plenary meeting #16 for approval.

Doc-2nd-Level	Spec	CR	Rev	Subject	Cat	Version-	Phase	Workitem
N3-020350	09.61	A037	1	Clarifications on the RADIUS flows	F	6.7.0	R97	GPRS
N3-020351	09.61	A038	1	Clarifications on the RADIUS flows	А	7.6.0	R98	GPRS
N3-020352	29.061	047	1	Clarifications on the RADIUS flows	А	3.9.0	R99	GPRS
N3-020353	29.061	055	3	Clarifications on the RADIUS flows	Α	4.4.0	Rel-4	GPRS
N3-020354	29.061	056	1	Clarifications on the RADIUS flows	Α	5.1.0	Rel-5	GPRS
N3-020291	09.61	A035	-	Corrections to the 3GPP RADIUS attributes	F	6.7.0	R97	GPRS
N3-020292	09.61	A036	-	Corrections to the 3GPP RADIUS attributes	Α	7.6.0	R98	GPRS
N3-020293	29.061	053	-	Corrections to the 3GPP RADIUS attributes	Α	3.9.0	R99	GPRS
N3-020294	29.061	048	1	Corrections to the 3GPP RADIUS attributes	Α	4.4.0	Rel-4	GPRS
N3-020295	29.061	054	-	Corrections to the 3GPP RADIUS attributes	A	5.1.0	Rel-5	GPRS

# 3GPP TSG-CN WG3#22 Fort Lauderdale, USA. 8<sup>th</sup> – 12<sup>th</sup> April 2002

			(	CHAN	IGE	REG	UE	ST				CR-Form-v5
*	0	9.61	CR	A037	9	e rev	1	ж	Current v	ersion:	6.7.0	¥
For <u>HELP</u> on u	sing t	his for	m, see	bottom	of this p	page or	look	at th	e pop-up t	ext ove	r the ¥ sy	mbols.
Proposed change a	affec	ts: #	(U)	SIM	ME/U	JE 🔃	Rad	io Ac	cess Netw	ork	Core N	etwork X
Title: 第	Cla	rificati	on on t	he Radiu	us Flow	S						
Source: #	TS	G CN	WG3									
Work item code: ₩	GP	RS							Date	æ <mark>Ap</mark>	o <mark>ril 09, 200</mark>	)2
Category: ₩	Use Deta	F (cord A (cord B (add C (fund D (edi iled exp	rection) respond dition of ctional i torial me olanatio	owing cate  It is to a co feature), modification ins of the TR 21.900	rrection in the second feating in the second	ature)		eleaso	2	of the formal (GS) (Rel (Rel (Rel (Rel 4 (Rel	ollowing reallowing re	) ) )
Reason for change	e: ¥	for Active Solution Accounts from Figure 1 one points from providing the first from providing th	counting SSN. Futing m ses to ADIUS fore it sting flexows for possible sequate (	ng Respondence Respondence Interimental Britanian Britan	onse (S it shou before s he RAD -Update e possil ions for PIUS Inte	TART) Id be p sending IUS flo e and D ole to e the op erim-Up e GGSN	to sellossible Creatives de liscontrator date a National de la validate de la val	nd the to tePE escripenect those those those sfor	pecifies the e CreateP have the CP Context of the context of the context of the context of the RADIU flows to me the context of the context o	DPCon GGSN v Respon his opti re option s on a p estrict th S respon	textResponder textResponder the contract of th	onse to the CR GGSN. pasis, ehavior to sending
Summary of chang	ıe: Ж	See	attache	ed pages	5							
Consequences if not approved:	ж	Cont	roversi	al stater	nents							
Clauses affected:	ж	16.3	.1, 16.3	3.3, 16.3	.4							
Other specs affected:	*	Te	est spe	re specif cificatior ecificatio	าร	s #	8					
Other comments:	¥											

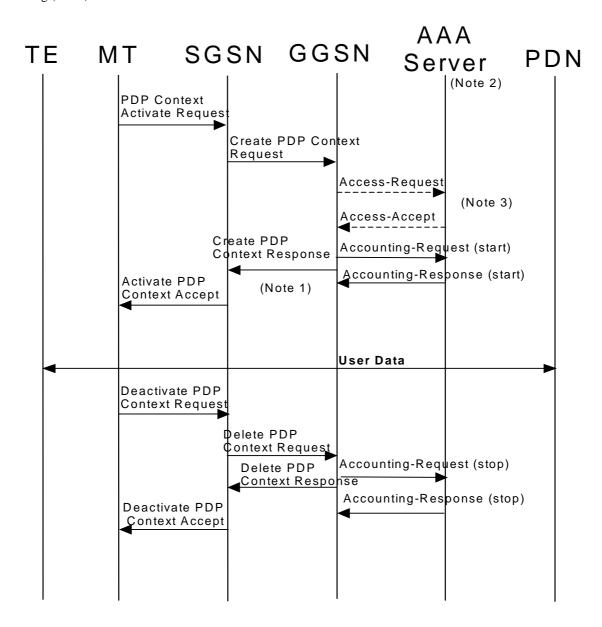
How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G">http://www.3gpp.org/3G</a> Specs/CRs.htm. Below is a brief summary:

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

# 16.3 Authentication and accounting message flows

#### 16.3.1 IP PDP type

The figure 22 represents the RADIUS message flows between a GGSN and an Authentication, Authorization and Accounting (AAA) server.



NOTE 1: If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN.

NOTE 2: Separate accounting and authentication servers may be used.

NOTE 3: The Access-Request message shall be used for primary PDP context only.

Figure 22: RADIUS message flow for PDP type IP (successful user authentication case)

When a GGSN receives a Create PDP Context Request message for a given APN, the GGSN may (depending on the configuration for this APN) send a RADIUS Access-Request to an AAA server. The AAA server authenticates and authorizes the user. If RADIUS is also responsible for IP address allocation the AAA server shall return the allocated IP address in the Access-Accept message.

Even if the GGSN was not involved in user authentication (e.g. transparent network access mode), it may send a RADIUS Accounting-Request START message to an AAA server. This message contains parameters, e.g. the tuple which includes the user-id and IP address, to be used by application servers (e.g. WAP gateway) in order to identify the user. This message also indicates to the AAA server that the user session has started. User data forwarding at the GGSN may not be allowed before the Accounting Response START is received. If this is the case, the GGSN drops user data until the Accounting Response START is received. This is configurable per APN.

If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. The authentication and accounting servers may be separately configured for each APN. Both Authentication and Accounting servers are may be optional and separately configured for each APN.

When the GGSN receives a Delete PDP Context Request message and providing a RADIUS Accounting-Request START message was sent previously, the GGSN shall send a RADIUS Accounting-Request STOP message to the AAA server, which indicates the termination of this particular user session. The GGSN shall immediately send a Delete PDP context response, without waiting for an Accounting-Response STOP message from the AAA server.

The AAA server shall deallocate the IP address (if any) initially allocated to the subscriber, if there is no session for the subscriber.

Accounting-Request ON and Accounting-Request OFF messages may be sent from the GGSN to the AAA server to ensure the correct synchronization of the session information in the GGSN and the AAA server.

The GGSN may send an Accounting-Request ON message to the AAA server to indicate that a restart has occurred. The AAA server may then release the associated resources.

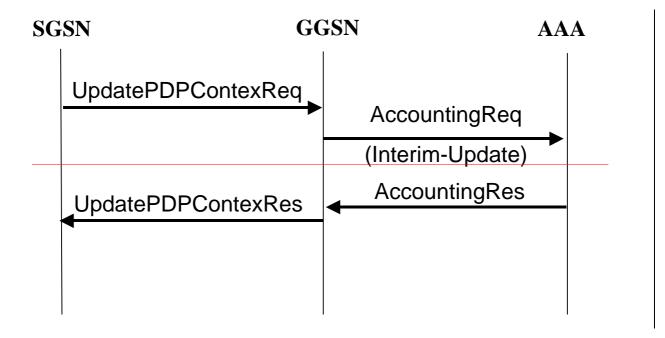
Prior to a scheduled restart, the GGSN may send Accounting-Request OFF message to the AAA server. The AAA server may then release the associated resources.

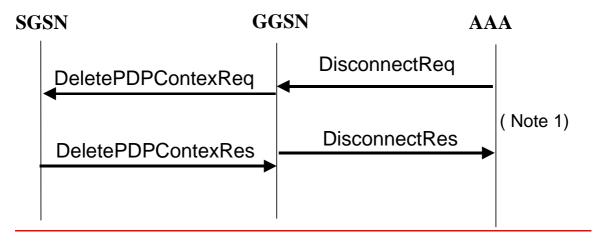
If an Access-Challenge is sent to the GGSN when an Access-Request message is pending and when IP PDP type is used, the GGSN shall silently discard the Access-Challenge message and it shall treat an Access-Challenge as though it had received an Access-Reject instead [38].

#### 16.3.2 Void

#### 16.3.3 Accounting Update

During the life of a PDP context some information related to this PDP context may change (i.e. SGSN address if a Inter-SGSN RA update occurs). Upon reception of an UpdatePDPContextRequest from the SGSN, the GGSN may send an Accounting Request Interim-Update to the AAA server to update the necessary information related to this PDP context (See Figure 24). In such a case, the GGSN need not wait for the RADIUS AccountingResponse from the AAA server message before sending the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.





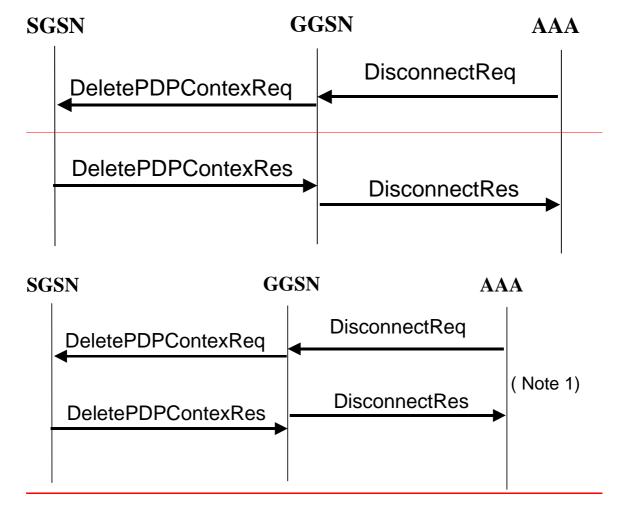
Note 1: As shown the GGSN need not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

Figure 24: RADIUS for PDP context Update

Note 1: As shown the GGSN may not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

#### 16.3.4 AAA-Initiated PDP context termination

RADIUS is used as the protocol between the GGSN and a AAA server or proxy for applications (e.g. MMS) to deliver information related to GPRS user session. However some IP applications could need to interwork with the GGSN to terminate a particular PDP context. For this purpose, the AAA server or proxy may send a RADIUS Disconnect Request to the GGSN. As depicted in Figure 25, the GGSN may react by deleting the corresponding PDP context or silently discard the Disconnect Request message. For more information on RADIUS Disconnect, see [40]. If the GGSN deletes the corresponding PDP context, it needmay not wait for the DeletePDPContextResponse from the SGSN before sending the RADIUS DisconnectResponse to the AAA server.



Note 1: As showned on Figure 25, the GGSN need not wait for the DeletePDPContextResponse from the SGSN to send the RADIUS DisconnectResponse to the AAA server.

Figure 25: PDP Context deletion with RADIUS

Note 1: As showned on Figure 25, the GGSN need not wait for the DeletePDPContextResponse from the SGSN to send the RADIUS DisconnectResponse to the AAA server.

# 3GPP TSG-CN WG3#22 Fort Lauderdale, USA. 8<sup>th</sup> – 12<sup>th</sup> April 2002

			CH	ANGE	REQ	UES	ST				CR-Form-v5
*	0	9.61	CR AO	38	⊭ rev	1	¥	Current vers	sion:	7.6.0	ж
For <u>HELP</u> on u	ısing	this form	, see botte	om of this	page or	look a	it the	pop-up text	over	the ₩ syr	nbols.
Proposed change	affec	ts: ¥	(U)SIM	ME/	UE	Radio	o Acc	cess Networ	k	Core Ne	twork X
Title:	Cla	rification	on the R	adius Flov	WS						
Source: #	TS	G CN W	G3								
Nork item code: % GPRS Date: % April 09, 2002											2
Category: #	Use Deta be fo	F (corre A (corre B (addit C (funct D (edito bund in 30  Alignm type co Accou The ger for Accot the SGS	sponds to a composition of feature ional modifications of GPP TR 21  ment of text asse concenting Responderal RAD counting Responderations and control responderations are considered as a control responderation and control responderations are control responderations are control responderations are control responderations and control responderations are control responderations are control responderations and control responderations are control responderations are control responderations are control responderations and control responderations are control responderations and control responderations are control responderations and control responderations are control responderations	t with figurations (ST IUS flows exponse (ST IVS flows exponse (Sver, it shows to the shows the state of the shows the state of the shows the show	re, alignmoptional of FART) is for IP PISTART) tuld be po	R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)  of PPP PDP type case with the IP PDP ping of user data by the GGSN before the					
Accouting message before sending CreatePDPContextResponse. The proposes to correct the RADIUS flows description with this option.  The RADIUS Interim-Update and Disconnect support are optional in Therefore it should be possible to enable those functions on a per Approviding flexible options for the operator.  The flows for the RADIUS Interim-Update and Disconnect restrict the GGS one possible scenario, where the GGSN waits for the RADIUS responses be the adequate GTP messages. This CR clarifies the flows to make the specific restrictive.									al in the Ger APN bases GGSN be	GGSN. asis, havior to sending	
Summary of chang	ge:#	See at	tached pa	ges							
Consequences if not approved:	ж	Contro	oversial sta	atements							
Clauses affected:	ж	16.3.1	, 16.3.2, 1	6.3.3, 16.3	3.4						
Other specs affected:	Ж	Oth Tes	er core sp t specifica M Specific	ecification							
Other comments:	Ж										

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

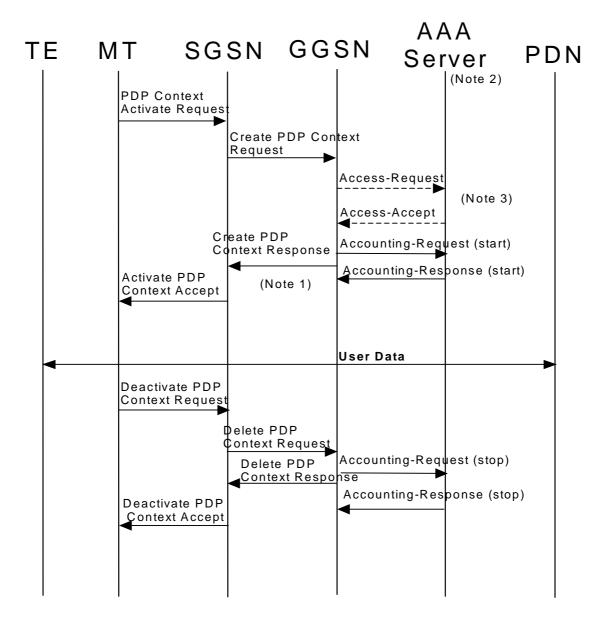
Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G">http://www.3gpp.org/3G</a> Specs/CRs.htm. Below is a brief summary:

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

# 16.3 Authentication and accounting message flows

#### 16.3.1 IP PDP type

The figure 22 represents the RADIUS message flows between a GGSN and an Authentication, Authorization and Accounting (AAA) server.



NOTE 1: If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN.

NOTE 2: Separate accounting and authentication servers may be used.

NOTE 3: The Access-Request message shall be used for primary PDP context only.

Figure 22: RADIUS message flow for PDP type IP (successful user authentication case)

When a GGSN receives a Create PDP Context Request message for a given APN, the GGSN may (depending on the configuration for this APN) send a RADIUS Access-Request to an AAA server. The AAA server authenticates and authorizes the user. If RADIUS is also responsible for IP address allocation the AAA server shall return the allocated IP address in the Access-Accept message.

Even if the GGSN was not involved in user authentication (e.g. transparent network access mode), it may send a RADIUS Accounting-Request START message to an AAA server. This message contains parameters, e.g. the tuple which includes the user-id and IP address, to be used by application servers (e.g. WAP gateway) in order to identify the user. This message also indicates to the AAA server that the user session has started. User data forwarding at the GGSN may not be allowed before the Accounting Response START is received. If this is the case, the GGSN drops user data until the Accounting Response START is received. This is configurable per APN.

If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. The authentication and accounting servers may be separately configured for each APN. Both Authentication and Accounting servers are may be optional and separately configured for each APN.

When the GGSN receives a Delete PDP Context Request message and providing a RADIUS Accounting-Request START message was sent previously, the GGSN shall send a RADIUS Accounting-Request STOP message to the AAA server, which indicates the termination of this particular user session. The GGSN shall immediately send a Delete PDP context response, without waiting for an Accounting-Response STOP message from the AAA server.

The AAA server shall deallocate the IP address (if any) initially allocated to the subscriber, if there is no session for the subscriber.

Accounting-Request ON and Accounting-Request OFF messages may be sent from the GGSN to the AAA server to ensure the correct synchronization of the session information in the GGSN and the AAA server.

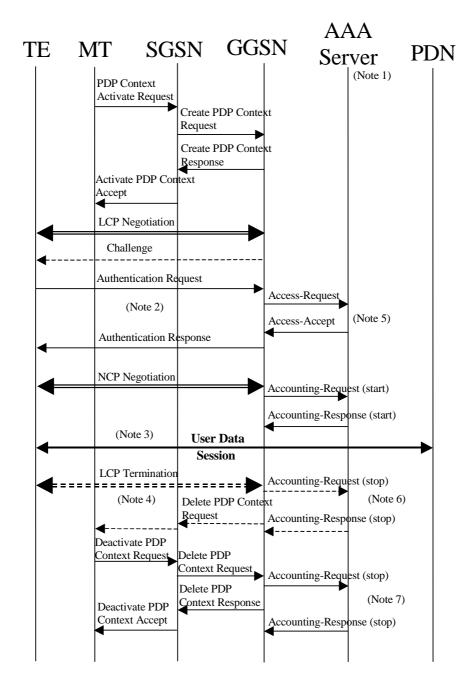
The GGSN may send an Accounting-Request ON message to the AAA server to indicate that a restart has occurred. The AAA server may then release the associated resources.

Prior to a scheduled restart, the GGSN may send Accounting-Request OFF message to the AAA server. The AAA server may then release the associated resources.

If an Access-Challenge is sent to the GGSN when an Access-Request message is pending and when IP PDP type is used, the GGSN shall silently discard the Access-Challenge message and it shall treat an Access-Challenge as though it had received an Access-Reject instead [38].

#### 16.3.2 PPP PDP type

The figure 23 describes the RADIUS message flows between a GGSN and an Authentication, Authorization and Accounting (AAA) server for the case where PPP is terminated at the GGSN. The case where PPP is relayed to an LNS is beyond the scope of this specification.



- NOTE 1: Separate accounting and Authentication servers may be used.
- NOTE 2: Actual messages depend on the used authentication protocol (e.g. PAP, CHAP)
- NOTE 3: If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. Both Authentication and Accounting servers may be optional and separately configured for each APN. The GGSN may delete the PDP context if the Accounting Response (START) is not received. User data may not be allowed before the Accounting Response (START) is received. If this is the case, the GGSN drops user data until the Accounting Response (START) is received.

- NOTE 4: An LCP termination procedure may be performed. Either the MS or the GGSN may initiate the context deactivation.
- NOTE 5: The Access-Request message shall be used for primary PDP context only.
- NOTE 6: Network Initiated deactivation
- NOTE 7: User Initiated deactivation

Figure 23: RADIUS message flow for PDP type PPP (successful user authentication case)

When a GGSN receives a Create PDP Context Request message for a given APN, the GGSN shall immediately send a Create PDP context response back to the SGSN. After PPP link setup, the authentication phase may take place. During Authentication phase, the GGSN sends a RADIUS Access-Request to an AAA server. The AAA server authenticates and authorizes the user. If RADIUS is also responsible for IP address allocation the AAA server shall return the allocated IP address in the Access-Accept message (if the user was authenticated).

If the user is not authenticated, the GGSN shall send a Delete PDP context request to the SGSN.

Even if the GGSN was not involved in user authentication (e.g. for PPP no authentication may be selected), it may send a RADIUS Accounting-Request START message to an AAA server. This message contains parameters, e.g. a tuple which includes the user-id and IP address, to be used by application servers (e.g. WAP gateway) in order to identify the user. This message also indicates to the AAA server that the user session has started, and the QoS parameters associated to the session.

If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may delete the PDP context if the Accounting Response (START) is not received. Both The Authentication and Accounting servers may be optional and separately configured for each APN. User data forwarding at the GGSN may not be allowed before the Accounting Response START is received. If this is the case, the GGSN drops user data until the Accounting Response START is received. This is configurable per APN.

When the GGSN receives a Delete PDP Context Request message and providing a RADIUS Accounting-Request START message was sent previously, the GGSN shall send a RADIUS Accounting-Request STOP message to the AAA server, which indicates the termination of this particular user session. The GGSN shall immediately send a Delete PDP context response, without waiting for an Accounting-Response STOP message from the AAA server.

The AAA server shall deallocate the IP address (if any) initially allocated to the subscriber.

Accounting-Request ON and Accounting-Request OFF messages may be sent from the GGSN to the AAA server to ensure the correct synchronization of the session information in the GGSN and the AAA server.

The GGSN may send an Accounting-Request ON message to the AAA server to indicate that a restart has occurred. The AAA server may then release the associated resources.

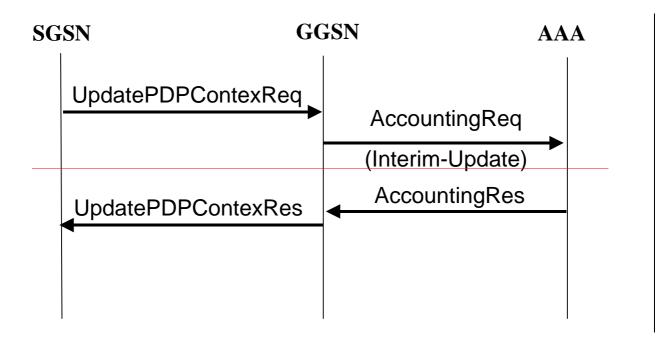
Prior to a scheduled restart, the GGSN may send Accounting-Request OFF message to the AAA server, the AAA server may then release the associated resources.

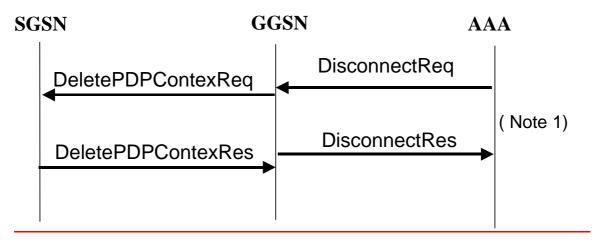
If an Access-Challenge is sent to the GGSN when using PPP PDP type, the GGSN shall handle it by PPP CHAP providing PPP CHAP was the selected Authentication protocol. If CHAP authentication was not selected, authentication shall fail [38].

# 16.3.3 Accounting Update

During the life of a PDP context some information related to this PDP context may change (i.e. SGSN address if a Inter-SGSN RA update occurs). Upon reception of an UpdatePDPContextRequest from the SGSN, the GGSN may send an Accounting Request Interim-Update to the AAA server to update the necessary information related to this PDP context (See Figure 24). In such a case, the GGSN need not wait for the RADIUS AccountingResponse from the AAA server

message before sending the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.





Note 1: As shown the GGSN need not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

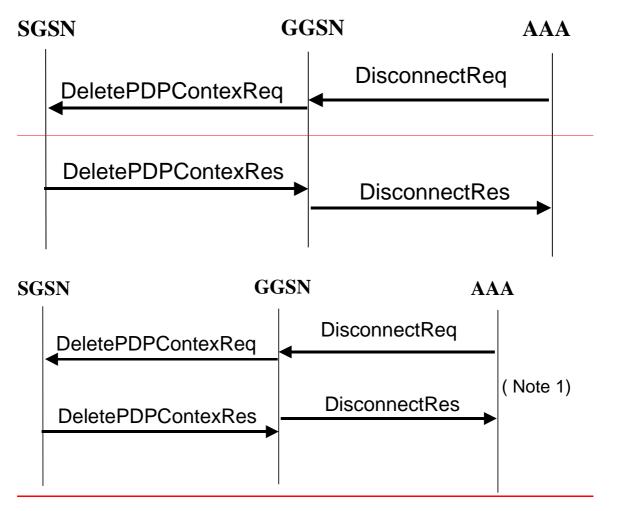
Figure 24: RADIUS for PDP context Update

Note 1: As shown the GGSN may not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

#### 16.3.4 AAA-Initiated PDP context termination

RADIUS is used as the protocol between the GGSN and a AAA server or proxy for applications (e.g. MMS) to deliver information related to GPRS user session. However some IP applications could need to interwork with the GGSN to terminate a particular PDP context. For this purpose, the AAA server or proxy may send a RADIUS Disconnect Request to the GGSN. As depicted in Figure 25, the GGSN may react by deleting the corresponding PDP context or silently discard the Disconnect Request message. For more information on RADIUS Disconnect, see [40]. If the GGSN

<u>deletes the corresponding PDP context, it needmay</u> not wait for the <u>DeletePDPContextResponse</u> from the <u>SGSN before sending the RADIUS DisconnectResponse to the AAA server.</u>



Note 1: As showned on Figure 25, the GGSN need not wait for the DeletePDPContextResponse from the SGSN to send the RADIUS DisconnectResponse to the AAA server.

Figure 25: PDP Context deletion with RADIUS

Note 1: As showned on Figure 25, the GGSN need not wait for the DeletePDPContextResponse from the SGSN to send the RADIUS DisconnectResponse to the AAA server.

# 3GPP TSG-CN WG3#22 Fort Lauderdale, USA. 8<sup>th</sup> – 12<sup>th</sup> April 2002

			CHA	ANGE	REQ	UE	ST				CR-Form-v5	
*	29	.061	CR <mark>047</mark>		жrev	1	¥	Current vers	sion:	3.9.0	ж	
For <u>HELP</u> on t	using	this form	, see botto	om of this	page or	look a	at the	pop-up text	t over	the 點 syr	nbols.	
Proposed change	affec	ts: #	(U)SIM	ME/	UE	Radio	o Acc	cess Networ	k	Core Ne	twork X	
Title: អ	Cla	rification	on the Ra	adius Flow	VS							
Source: #	TS	G CN W	G3									
Work item code: #	GP	RS						Date: ₩	Ар	ril 09, 200	2	
Reason for chang	Use Deta be fo	A (correct A (correct B (additive B (addit	sponds to a con of feature fonal modifications of the feature for the feature	correction of the ation) the above of 900.  with figure raining the conse (ST US flows asponse (Street, it should be ge before cut the RAI	in an ear ature) categories re, alignn optional of ART) is for IP PI START) to uld be posending DIUS flow	nent odroppi receiv DP typosen ossible Creat	REL-5 (Release 5)  nent of PPP PDP type case with the IP PDP tropping of user data by the GGSN before the					
The RADIUS Interim-Update and Disconnect support are optional in the Therefore it should be possible to enable those functions on a per APN to providing flexible options for the operator.  The flows for the RADIUS Interim-Update and Disconnect restrict the GGSN be one possible scenario, where the GGSN waits for the RADIUS responses before the adequate GTP messages. This CR clarifies the flows to make the specification restrictive.									er APN base GGSN be ses before	havior to sending		
Summary of chan	ae:Ж	See at	tached pa	aes								
Consequences if not approved:	<b>30.</b> 33		versial sta	-								
• •												
Clauses affected:	Ж	16.3.1,	16.3.2, 1	6.3.3, 16.3	3.4							
Other specs affected:	¥	Tes	er core spo t specifica M Specifica	tions	s ¥							
Other comments:	$\mathfrak{H}$											

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

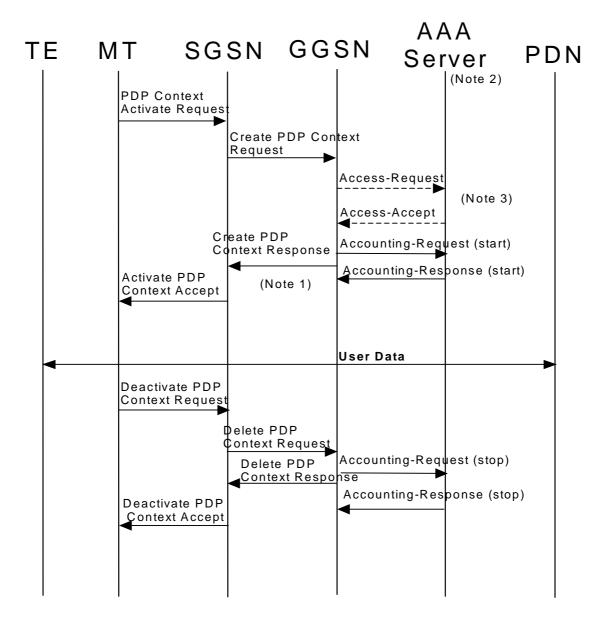
Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G">http://www.3gpp.org/3G</a> Specs/CRs.htm. Below is a brief summary:

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

# 16.3 Authentication and accounting message flows

#### 16.3.1 IP PDP type

The figure 22 represents the RADIUS message flows between a GGSN and an Authentication, Authorization and Accounting (AAA) server.



NOTE 1: If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN.

NOTE 2: Separate accounting and authentication servers may be used.

NOTE 3: The Access-Request message shall be used for primary PDP context only.

Figure 22: RADIUS message flow for PDP type IP (successful user authentication case)

When a GGSN receives a Create PDP Context Request message for a given APN, the GGSN may (depending on the configuration for this APN) send a RADIUS Access-Request to an AAA server. The AAA server authenticates and authorizes the user. If RADIUS is also responsible for IP address allocation the AAA server shall return the allocated IP address in the Access-Accept message.

Even if the GGSN was not involved in user authentication (e.g. transparent network access mode), it may send a RADIUS Accounting-Request START message to an AAA server. This message contains parameters, e.g. the tuple which includes the user-id and IP address, to be used by application servers (e.g. WAP gateway) in order to identify the user. This message also indicates to the AAA server that the user session has started. User data forwarding at the GGSN may not be allowed before the Accounting Response START is received. If this is the case, the GGSN drops user data until the Accounting Response START is received. This is configurable per APN.

If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. The authentication and accounting servers may be separately configured for each APN. Both Authentication and Accounting servers are may be optional and separately configured for each APN.

When the GGSN receives a Delete PDP Context Request message and providing a RADIUS Accounting-Request START message was sent previously, the GGSN shall send a RADIUS Accounting-Request STOP message to the AAA server, which indicates the termination of this particular user session. The GGSN shall immediately send a Delete PDP context response, without waiting for an Accounting-Response STOP message from the AAA server.

The AAA server shall deallocate the IP address (if any) initially allocated to the subscriber, if there is no session for the subscriber.

Accounting-Request ON and Accounting-Request OFF messages may be sent from the GGSN to the AAA server to ensure the correct synchronization of the session information in the GGSN and the AAA server.

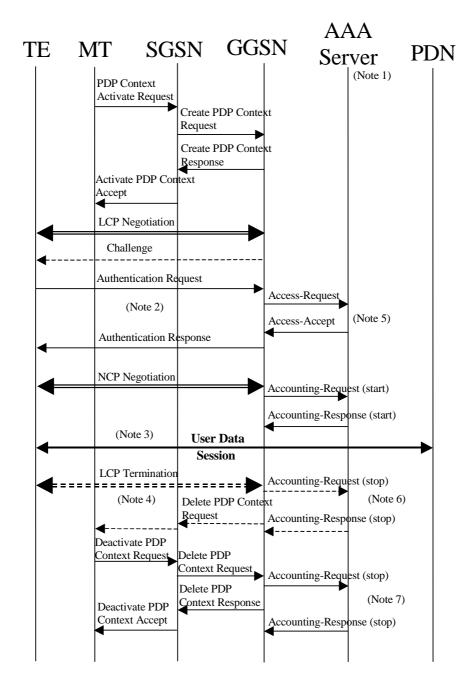
The GGSN may send an Accounting-Request ON message to the AAA server to indicate that a restart has occurred. The AAA server may then release the associated resources.

Prior to a scheduled restart, the GGSN may send Accounting-Request OFF message to the AAA server. The AAA server may then release the associated resources.

If an Access-Challenge is sent to the GGSN when an Access-Request message is pending and when IP PDP type is used, the GGSN shall silently discard the Access-Challenge message and it shall treat an Access-Challenge as though it had received an Access-Reject instead [38].

#### 16.3.2 PPP PDP type

The figure 23 describes the RADIUS message flows between a GGSN and an Authentication, Authorization and Accounting (AAA) server for the case where PPP is terminated at the GGSN. The case where PPP is relayed to an LNS is beyond the scope of this specification.



- NOTE 1: Separate accounting and Authentication servers may be used.
- NOTE 2: Actual messages depend on the used authentication protocol (e.g. PAP, CHAP)
- NOTE 3: If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. Both Authentication and Accounting servers may be optional and separately configured for each APN. The GGSN may delete the PDP context if the Accounting Response (START) is not received. User data may not be allowed before the Accounting Response (START) is received. If this is the case, the GGSN drops user data until the Accounting Response (START) is received.

- NOTE 4: An LCP termination procedure may be performed. Either the MS or the GGSN may initiate the context deactivation.
- NOTE 5: The Access-Request message shall be used for primary PDP context only.
- NOTE 6: Network Initiated deactivation
- NOTE 7: User Initiated deactivation

Figure 23: RADIUS message flow for PDP type PPP (successful user authentication case)

When a GGSN receives a Create PDP Context Request message for a given APN, the GGSN shall immediately send a Create PDP context response back to the SGSN. After PPP link setup, the authentication phase may take place. During Authentication phase, the GGSN sends a RADIUS Access-Request to an AAA server. The AAA server authenticates and authorizes the user. If RADIUS is also responsible for IP address allocation the AAA server shall return the allocated IP address in the Access-Accept message (if the user was authenticated).

If the user is not authenticated, the GGSN shall send a Delete PDP context request to the SGSN.

Even if the GGSN was not involved in user authentication (e.g. for PPP no authentication may be selected), it may send a RADIUS Accounting-Request START message to an AAA server. This message contains parameters, e.g. a tuple which includes the user-id and IP address, to be used by application servers (e.g. WAP gateway) in order to identify the user. This message also indicates to the AAA server that the user session has started, and the QoS parameters associated to the session.

If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may delete the PDP context if the Accounting Response (START) is not received. Both The Authentication and Accounting servers may be optional and separately configured for each APN. User data forwarding at the GGSN may not be allowed before the Accounting Response START is received. If this is the case, the GGSN drops user data until the Accounting Response START is received. This is configurable per APN.

When the GGSN receives a Delete PDP Context Request message and providing a RADIUS Accounting-Request START message was sent previously, the GGSN shall send a RADIUS Accounting-Request STOP message to the AAA server, which indicates the termination of this particular user session. The GGSN shall immediately send a Delete PDP context response, without waiting for an Accounting-Response STOP message from the AAA server.

The AAA server shall deallocate the IP address (if any) initially allocated to the subscriber.

Accounting-Request ON and Accounting-Request OFF messages may be sent from the GGSN to the AAA server to ensure the correct synchronization of the session information in the GGSN and the AAA server.

The GGSN may send an Accounting-Request ON message to the AAA server to indicate that a restart has occurred. The AAA server may then release the associated resources.

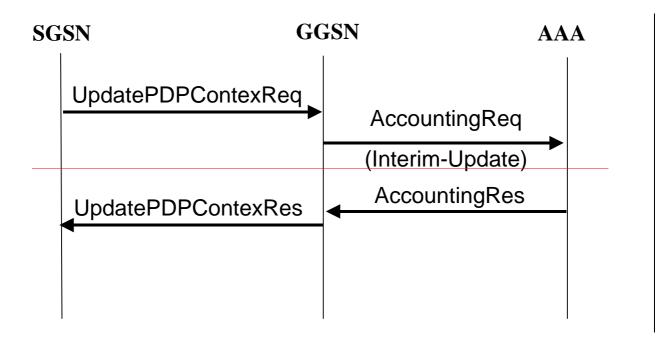
Prior to a scheduled restart, the GGSN may send Accounting-Request OFF message to the AAA server, the AAA server may then release the associated resources.

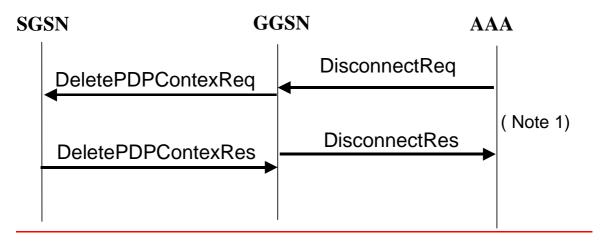
If an Access-Challenge is sent to the GGSN when using PPP PDP type, the GGSN shall handle it by PPP CHAP providing PPP CHAP was the selected Authentication protocol. If CHAP authentication was not selected, authentication shall fail [38].

# 16.3.3 Accounting Update

During the life of a PDP context some information related to this PDP context may change (i.e. SGSN address if a Inter-SGSN RA update occurs). Upon reception of an UpdatePDPContextRequest from the SGSN, the GGSN may send an Accounting Request Interim-Update to the AAA server to update the necessary information related to this PDP context (See Figure 24). In such a case, the GGSN need not wait for the RADIUS AccountingResponse from the AAA server

message before sending the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.





Note 1: As shown the GGSN need not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

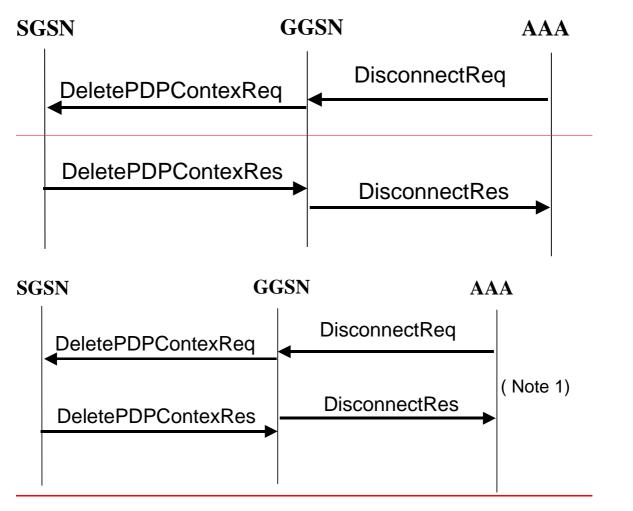
Figure 24: RADIUS for PDP context Update

Note 1: As shown the GGSN may not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

#### 16.3.4 AAA-Initiated PDP context termination

RADIUS is used as the protocol between the GGSN and a AAA server or proxy for applications (e.g. MMS) to deliver information related to GPRS user session. However some IP applications could need to interwork with the GGSN to terminate a particular PDP context. For this purpose, the AAA server or proxy may send a RADIUS Disconnect

Request to the GGSN. As depicted in Figure 25, the GGSN may react by deleting the corresponding PDP context or silently discard the Disconnect Request message. For more information on RADIUS Disconnect, see [40]. If the GGSN deletes the corresponding PDP context, it needmay not wait for the DeletePDPContextResponse from the SGSN before sending the RADIUS DisconnectResponse to the AAA server.



Note 1: As showned on Figure 25, the GGSN need not wait for the DeletePDPContextResponse from the SGSN to send the RADIUS DisconnectResponse to the AAA server.

Figure 25: PDP Context deletion with RADIUS

 $\underline{Note\ 1: As\ showned\ on\ Figure\ 25,\ the\ GGSN\ need\ not\ wait\ for\ the\ DeletePDPContextResponse\ from\ the\ SGSN\ to\ send\ the\ RADIUS\ DisconnectResponse\ to\ the\ AAA\ server.}$ 

# 3GPP TSG-CN WG3#22 Fort Lauderdale, USA. 8<sup>th</sup> – 12<sup>th</sup> April 2002

	CHANGE REQUEST	CR-Form-v5									
*	29.061 CR 055 # rev 3 # 0	Current version: 4.4.0 #									
For <u>HELP</u> on u	using this form, see bottom of this page or look at the	pop-up text over the % symbols.									
Proposed change affects: # (U)SIM ME/UE Radio Access Network Core Network X											
Title: #	Clarification on the Radius Flows										
Source: #	TSG CN WG3										
Work item code: 第	GPRS	Date:    April 09, 2002									
Reason for change	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.	R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)  P PDP type case with the IP PDP user data by the GGSN before the ecifies that the GGSN does not wait CreatePDPContextResponse to ave the GGSN waiting for the PContextResponse. This CR ion with this option.  upport are optional in the GGSN. a functions on a per APN basis,									
	the adequate GTP messages. This CR clarifies the flarestrictive.	lows to make the specification less									
Summary of chang	ge:   See attached pages										
Consequences if not approved:	器 Controversial statements										
Clauses affected:	<b>%</b> 16.3.1, 16.3.2, 16.3.3, 16.3.4										
Other specs affected:	Other core specifications     Test specifications     O&M Specifications										
Other comments:	<b>x</b>										

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

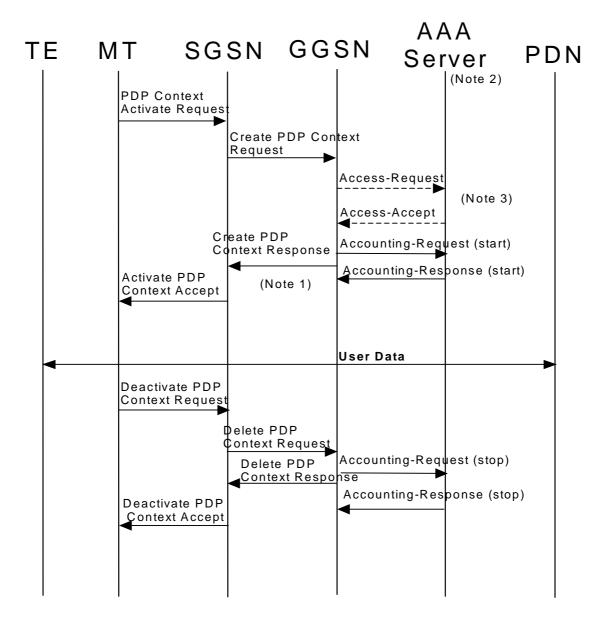
Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G">http://www.3gpp.org/3G</a> Specs/CRs.htm. Below is a brief summary:

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

# 16.3 Authentication and accounting message flows

#### 16.3.1 IP PDP type

The figure 22 represents the RADIUS message flows between a GGSN and an Authentication, Authorization and Accounting (AAA) server.



NOTE 1: If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN.

NOTE 2: Separate accounting and authentication servers may be used.

NOTE 3: The Access-Request message shall be used for primary PDP context only.

Figure 22: RADIUS message flow for PDP type IP (successful user authentication case)

When a GGSN receives a Create PDP Context Request message for a given APN, the GGSN may (depending on the configuration for this APN) send a RADIUS Access-Request to an AAA server. The AAA server authenticates and authorizes the user. If RADIUS is also responsible for IP address allocation the AAA server shall return the allocated IP address in the Access-Accept message.

Even if the GGSN was not involved in user authentication (e.g. transparent network access mode), it may send a RADIUS Accounting-Request START message to an AAA server. This message contains parameters, e.g. the tuple which includes the user-id and IP address, to be used by application servers (e.g. WAP gateway) in order to identify the user. This message also indicates to the AAA server that the user session has started. User data forwarding at the GGSN may not be allowed before the Accounting Response START is received. If this is the case, the GGSN drops user data until the Accounting Response START is received. This is configurable per APN.

If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. The authentication and accounting servers may be separately configured for each APN. Both Authentication and Accounting servers are may be optional and separately configured for each APN.

When the GGSN receives a Delete PDP Context Request message and providing a RADIUS Accounting-Request START message was sent previously, the GGSN shall send a RADIUS Accounting-Request STOP message to the AAA server, which indicates the termination of this particular user session. The GGSN shall immediately send a Delete PDP context response, without waiting for an Accounting-Response STOP message from the AAA server.

The AAA server shall deallocate the IP address (if any) initially allocated to the subscriber, if there is no session for the subscriber.

Accounting-Request ON and Accounting-Request OFF messages may be sent from the GGSN to the AAA server to ensure the correct synchronization of the session information in the GGSN and the AAA server.

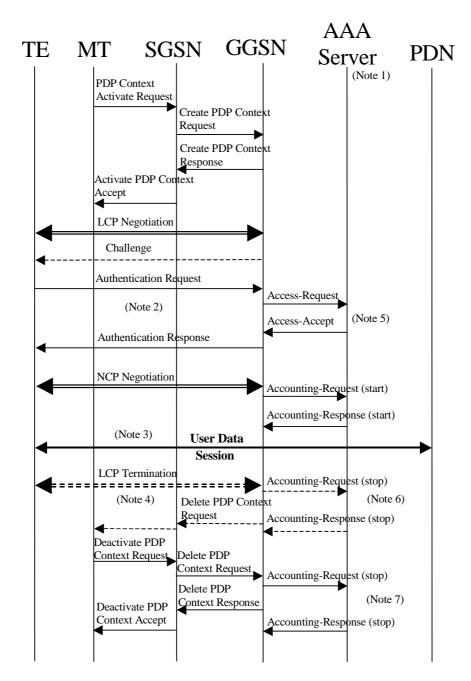
The GGSN may send an Accounting-Request ON message to the AAA server to indicate that a restart has occurred. The AAA server may then release the associated resources.

Prior to a scheduled restart, the GGSN may send Accounting-Request OFF message to the AAA server. The AAA server may then release the associated resources.

If an Access-Challenge is sent to the GGSN when an Access-Request message is pending and when IP PDP type is used, the GGSN shall silently discard the Access-Challenge message and it shall treat an Access-Challenge as though it had received an Access-Reject instead [38].

#### 16.3.2 PPP PDP type

The figure 23 describes the RADIUS message flows between a GGSN and an Authentication, Authorization and Accounting (AAA) server for the case where PPP is terminated at the GGSN. The case where PPP is relayed to an LNS is beyond the scope of this specification.



- NOTE 1: Separate accounting and Authentication servers may be used.
- NOTE 2: Actual messages depend on the used authentication protocol (e.g. PAP, CHAP)
- NOTE 3: If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. Both Authentication and Accounting servers may be optional and separately configured for each APN. The GGSN may delete the PDP context if the Accounting Response (START) is not received. User data may not be allowed before the Accounting Response (START) is received. If this is the case, the GGSN drops user data until the Accounting Response (START) is received.

- NOTE 4: An LCP termination procedure may be performed. Either the MS or the GGSN may initiate the context deactivation.
- NOTE 5: The Access-Request message shall be used for primary PDP context only.
- NOTE 6: Network Initiated deactivation
- NOTE 7: User Initiated deactivation

Figure 23: RADIUS message flow for PDP type PPP (successful user authentication case)

When a GGSN receives a Create PDP Context Request message for a given APN, the GGSN shall immediately send a Create PDP context response back to the SGSN. After PPP link setup, the authentication phase may take place. During Authentication phase, the GGSN sends a RADIUS Access-Request to an AAA server. The AAA server authenticates and authorizes the user. If RADIUS is also responsible for IP address allocation the AAA server shall return the allocated IP address in the Access-Accept message (if the user was authenticated).

If the user is not authenticated, the GGSN shall send a Delete PDP context request to the SGSN.

Even if the GGSN was not involved in user authentication (e.g. for PPP no authentication may be selected), it may send a RADIUS Accounting-Request START message to an AAA server. This message contains parameters, e.g. a tuple which includes the user-id and IP address, to be used by application servers (e.g. WAP gateway) in order to identify the user. This message also indicates to the AAA server that the user session has started, and the QoS parameters associated to the session.

If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may delete the PDP context if the Accounting Response (START) is not received. Both The Authentication and Accounting servers may be optional and separately configured for each APN. User data forwarding at the GGSN may not be allowed before the Accounting Response START is received. If this is the case, the GGSN drops user data until the Accounting Response START is received. This is configurable per APN.

When the GGSN receives a Delete PDP Context Request message and providing a RADIUS Accounting-Request START message was sent previously, the GGSN shall send a RADIUS Accounting-Request STOP message to the AAA server, which indicates the termination of this particular user session. The GGSN shall immediately send a Delete PDP context response, without waiting for an Accounting-Response STOP message from the AAA server.

The AAA server shall deallocate the IP address (if any) initially allocated to the subscriber.

Accounting-Request ON and Accounting-Request OFF messages may be sent from the GGSN to the AAA server to ensure the correct synchronization of the session information in the GGSN and the AAA server.

The GGSN may send an Accounting-Request ON message to the AAA server to indicate that a restart has occurred. The AAA server may then release the associated resources.

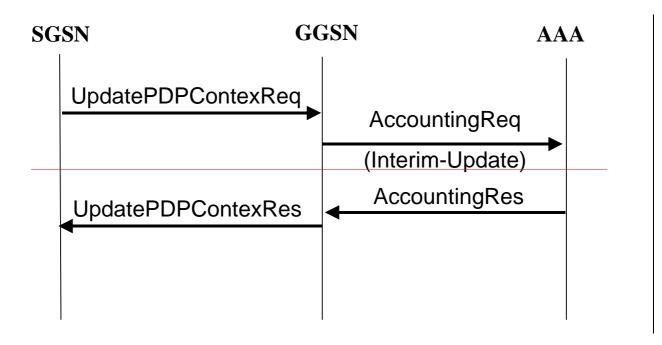
Prior to a scheduled restart, the GGSN may send Accounting-Request OFF message to the AAA server, the AAA server may then release the associated resources.

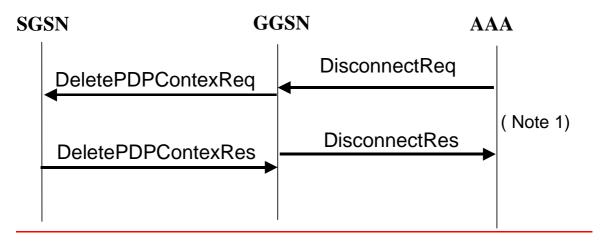
If an Access-Challenge is sent to the GGSN when using PPP PDP type, the GGSN shall handle it by PPP CHAP providing PPP CHAP was the selected Authentication protocol. If CHAP authentication was not selected, authentication shall fail [38].

# 16.3.3 Accounting Update

During the life of a PDP context some information related to this PDP context may change (i.e. SGSN address if a Inter-SGSN RA update occurs). Upon reception of an UpdatePDPContextRequest from the SGSN, the GGSN may send an Accounting Request Interim-Update to the AAA server to update the necessary information related to this PDP context (See Figure 24). In such a case, the GGSN need not wait for the RADIUS AccountingResponse from the AAA server

message before sending the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.





Note 1: As shown the GGSN need not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

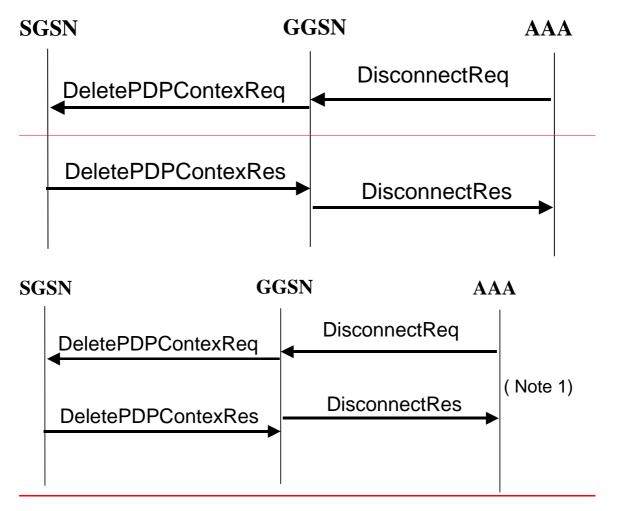
Figure 24: RADIUS for PDP context Update

Note 1: As shown the GGSN may not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

#### 16.3.4 AAA-Initiated PDP context termination

RADIUS is used as the protocol between the GGSN and a AAA server or proxy for applications (e.g. MMS) to deliver information related to GPRS user session. However some IP applications could need to interwork with the GGSN to terminate a particular PDP context. For this purpose, the AAA server or proxy may send a RADIUS Disconnect

Request to the GGSN. As depicted in Figure 25, the GGSN may react by deleting the corresponding PDP context or silently discard the Disconnect Request message. For more information on RADIUS Disconnect, see [40]. If the GGSN deletes the corresponding PDP context, it needmay not wait for the DeletePDPContextResponse from the SGSN before sending the RADIUS DisconnectResponse to the AAA server.



Note 1: As showned on Figure 25, the GGSN need not wait for the DeletePDPContextResponse from the SGSN to send the RADIUS DisconnectResponse to the AAA server.

Figure 25: PDP Context deletion with RADIUS

 $\underline{Note\ 1: As\ showned\ on\ Figure\ 25,\ the\ GGSN\ need\ not\ wait\ for\ the\ DeletePDPContextResponse\ from\ the\ SGSN\ to\ send\ the\ RADIUS\ DisconnectResponse\ to\ the\ AAA\ server.}$ 

# 3GPP TSG-CN WG3#22 Fort Lauderdale, USA. 8<sup>th</sup> – 12<sup>th</sup> April 2002

			CH	HANC	SE RE	EQI	UES	ST				CR-Form-v5
*	29	.061	CR 0	56	жre	ev	1	¥	Current ve	rsion:	5.1.0	æ
For <u>HELP</u> on u	ısing i	this forr	n, see bo	ottom of	this pag	e or l	ook a	t the	pop-up tex	kt ove	r the ₩ syı	mbols.
Proposed change	affec	ts: #	(U)SIN	Л	ME/UE		Radio	Aco	cess Netwo	ork	Core Ne	etwork X
Title: #	Cla	rificatio	n on the	Radius	Flows							
Source: #	TS	G CN V	VG3									
Work item code: ₩	GP	RS							Date: 8	<b>⊮</b> Ap	ril 09, 200	2
Category: #	Use Deta	F (corred A (cor	Release: # REL-5  go of the following categories: (correction) (corresponds to a correction in an earlier release) (addition of feature), (functional modification of feature) (delitorial modification) (descriptions of the above categories can description of text with figure, alignment of PPP PDP type case with the IP type case concerning the optional dropping of user data by the GGSN bear Accounting Response (START) is received.  The general RADIUS flows for IP PDP type specifies that the GGSN does a Counting Response (START) to send the CreatePDPContextResponse of the RADIUS flows description with this option.  The RADIUS Interim-Update and Disconnect support are optional in the Grant							P PDP efore the s not wait use to the CR		
Therefore it should be possible to enable those functions on a per APN bas providing flexible options for the operator.  The flows for the RADIUS Interim-Update and Disconnect restrict the GGSN behone possible scenario, where the GGSN waits for the RADIUS responses before so the adequate GTP messages. This CR clarifies the flows to make the specification restrictive.									havior to sending			
Summary of chang	ge:#	See a	attached	pages								
Consequences if not approved:	ж	Contr	oversial	stateme	ents							
Clauses affected:	ж	16.3.	1, 16.3.2	, 16.3.3,	16.3.4							
Other specs affected:	Ж	Те	her core st specifi kM Speci	cations		¥						
Other comments:	$\mathfrak{R}$											

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

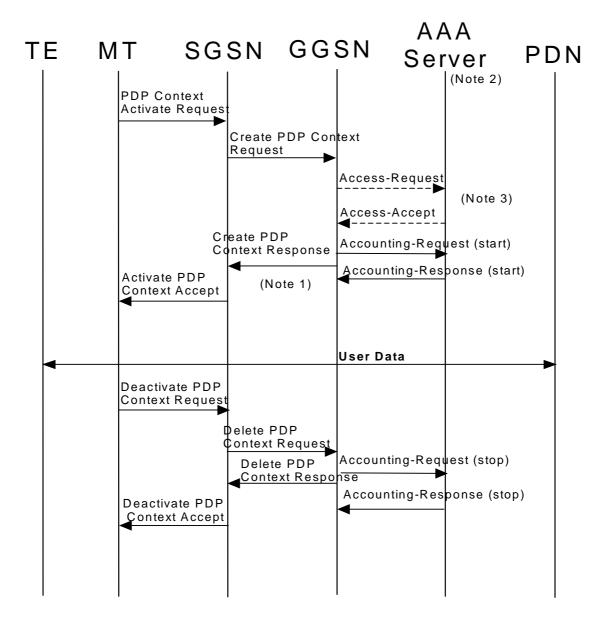
Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G">http://www.3gpp.org/3G</a> Specs/CRs.htm. Below is a brief summary:

- 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

# 16.3 Authentication and accounting message flows

#### 16.3.1 IP PDP type

The figure 22 represents the RADIUS message flows between a GGSN and an Authentication, Authorization and Accounting (AAA) server.



NOTE 1: If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN.

NOTE 2: Separate accounting and authentication servers may be used.

NOTE 3: The Access-Request message shall be used for primary PDP context only.

Figure 22: RADIUS message flow for PDP type IP (successful user authentication case)

When a GGSN receives a Create PDP Context Request message for a given APN, the GGSN may (depending on the configuration for this APN) send a RADIUS Access-Request to an AAA server. The AAA server authenticates and authorizes the user. If RADIUS is also responsible for IP address allocation the AAA server shall return the allocated IP address in the Access-Accept message.

Even if the GGSN was not involved in user authentication (e.g. transparent network access mode), it may send a RADIUS Accounting-Request START message to an AAA server. This message contains parameters, e.g. the tuple which includes the user-id and IP address, to be used by application servers (e.g. WAP gateway) in order to identify the user. This message also indicates to the AAA server that the user session has started. User data forwarding at the GGSN may not be allowed before the Accounting Response START is received. If this is the case, the GGSN drops user data until the Accounting Response START is received. This is configurable per APN.

If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may wait for the Accounting Response (START) before sending the CreatePDPContextResponse. The GGSN may reject the PDP context if the Accounting Response (START) is not received. The authentication and accounting servers may be separately configured for each APN. Both Authentication and Accounting servers are may be optional and separately configured for each APN.

When the GGSN receives a Delete PDP Context Request message and providing a RADIUS Accounting-Request START message was sent previously, the GGSN shall send a RADIUS Accounting-Request STOP message to the AAA server, which indicates the termination of this particular user session. The GGSN shall immediately send a Delete PDP context response, without waiting for an Accounting-Response STOP message from the AAA server.

The AAA server shall deallocate the IP address (if any) initially allocated to the subscriber, if there is no session for the subscriber.

Accounting-Request ON and Accounting-Request OFF messages may be sent from the GGSN to the AAA server to ensure the correct synchronization of the session information in the GGSN and the AAA server.

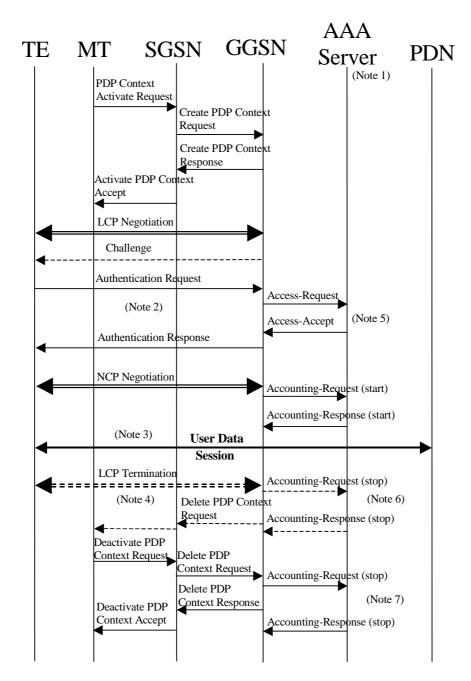
The GGSN may send an Accounting-Request ON message to the AAA server to indicate that a restart has occurred. The AAA server may then release the associated resources.

Prior to a scheduled restart, the GGSN may send Accounting-Request OFF message to the AAA server. The AAA server may then release the associated resources.

If an Access-Challenge is sent to the GGSN when an Access-Request message is pending and when IP PDP type is used, the GGSN shall silently discard the Access-Challenge message and it shall treat an Access-Challenge as though it had received an Access-Reject instead [38].

#### 16.3.2 PPP PDP type

The figure 23 describes the RADIUS message flows between a GGSN and an Authentication, Authorization and Accounting (AAA) server for the case where PPP is terminated at the GGSN. The case where PPP is relayed to an LNS is beyond the scope of this specification.



- NOTE 1: Separate accounting and Authentication servers may be used.
- NOTE 2: Actual messages depend on the used authentication protocol (e.g. PAP, CHAP)
- NOTE 3: If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. Both Authentication and Accounting servers may be optional and separately configured for each APN. The GGSN may delete the PDP context if the Accounting Response (START) is not received. User data may not be allowed before the Accounting Response (START) is received. If this is the case, the GGSN drops user data until the Accounting Response (START) is received.

- NOTE 4: An LCP termination procedure may be performed. Either the MS or the GGSN may initiate the context deactivation.
- NOTE 5: The Access-Request message shall be used for primary PDP context only.
- NOTE 6: Network Initiated deactivation
- NOTE 7: User Initiated deactivation

Figure 23: RADIUS message flow for PDP type PPP (successful user authentication case)

When a GGSN receives a Create PDP Context Request message for a given APN, the GGSN shall immediately send a Create PDP context response back to the SGSN. After PPP link setup, the authentication phase may take place. During Authentication phase, the GGSN sends a RADIUS Access-Request to an AAA server. The AAA server authenticates and authorizes the user. If RADIUS is also responsible for IP address allocation the AAA server shall return the allocated IP address in the Access-Accept message (if the user was authenticated).

If the user is not authenticated, the GGSN shall send a Delete PDP context request to the SGSN.

Even if the GGSN was not involved in user authentication (e.g. for PPP no authentication may be selected), it may send a RADIUS Accounting-Request START message to an AAA server. This message contains parameters, e.g. a tuple which includes the user-id and IP address, to be used by application servers (e.g. WAP gateway) in order to identify the user. This message also indicates to the AAA server that the user session has started, and the QoS parameters associated to the session.

If some external applications require RADIUS Accounting request (Start) information before they can process user packets, then the selected APN (GGSN) may be configured in such a way that the GGSN drops user data until the Accounting Response (START) is received from the AAA server. The GGSN may delete the PDP context if the Accounting Response (START) is not received. Both The Authentication and Accounting servers may be optional and separately configured for each APN. User data forwarding at the GGSN may not be allowed before the Accounting Response START is received. If this is the case, the GGSN drops user data until the Accounting Response START is received. This is configurable per APN.

When the GGSN receives a Delete PDP Context Request message and providing a RADIUS Accounting-Request START message was sent previously, the GGSN shall send a RADIUS Accounting-Request STOP message to the AAA server, which indicates the termination of this particular user session. The GGSN shall immediately send a Delete PDP context response, without waiting for an Accounting-Response STOP message from the AAA server.

The AAA server shall deallocate the IP address (if any) initially allocated to the subscriber.

Accounting-Request ON and Accounting-Request OFF messages may be sent from the GGSN to the AAA server to ensure the correct synchronization of the session information in the GGSN and the AAA server.

The GGSN may send an Accounting-Request ON message to the AAA server to indicate that a restart has occurred. The AAA server may then release the associated resources.

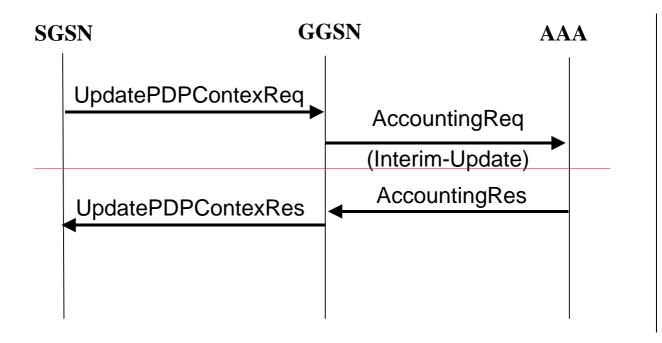
Prior to a scheduled restart, the GGSN may send Accounting-Request OFF message to the AAA server, the AAA server may then release the associated resources.

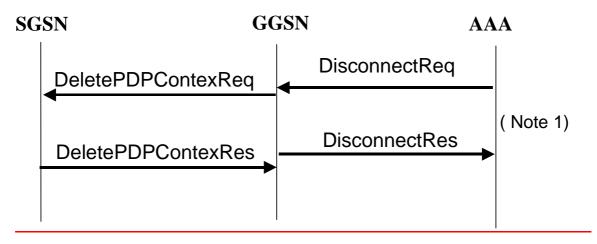
If an Access-Challenge is sent to the GGSN when using PPP PDP type, the GGSN shall handle it by PPP CHAP providing PPP CHAP was the selected Authentication protocol. If CHAP authentication was not selected, authentication shall fail [38].

## 16.3.3 Accounting Update

During the life of a PDP context some information related to this PDP context may change (i.e. SGSN address if a Inter-SGSN RA update occurs). Upon reception of an UpdatePDPContextRequest from the SGSN, the GGSN may send an Accounting Request Interim-Update to the AAA server to update the necessary information related to this PDP context (See Figure 24). In such a case, the GGSN need not wait for the RADIUS AccountingResponse from the AAA server

message before sending the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.





Note 1: As shown the GGSN need not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

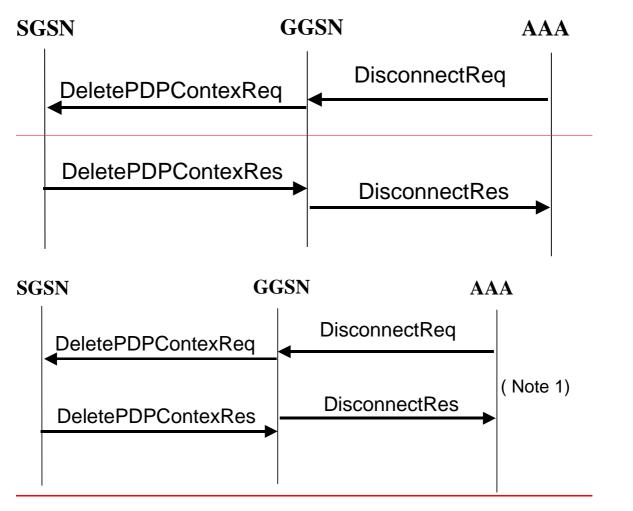
Figure 24: RADIUS for PDP context Update

Note 1: As shown the GGSN may not wait for the RADIUS AccountingResponse from the AAA server message to send the UpdatePDPContextResponse to the SGSN. The GGSN may delete the PDP context if the AccountingResponse is not received from the AAA.

## 16.3.4 AAA-Initiated PDP context termination

RADIUS is used as the protocol between the GGSN and a AAA server or proxy for applications (e.g. MMS) to deliver information related to GPRS user session. However some IP applications could need to interwork with the GGSN to terminate a particular PDP context. For this purpose, the AAA server or proxy may send a RADIUS Disconnect

Request to the GGSN. As depicted in Figure 25, the GGSN may react by deleting the corresponding PDP context or silently discard the Disconnect Request message. For more information on RADIUS Disconnect, see [40]. If the GGSN deletes the corresponding PDP context, it needmay not wait for the DeletePDPContextResponse from the SGSN before sending the RADIUS DisconnectResponse to the AAA server.



Note 1: As showned on Figure 25, the GGSN need not wait for the DeletePDPContextResponse from the SGSN to send the RADIUS DisconnectResponse to the AAA server.

Figure 25: PDP Context deletion with RADIUS

 $\underline{Note\ 1: As\ showned\ on\ Figure\ 25,\ the\ GGSN\ need\ not\ wait\ for\ the\ DeletePDPContextResponse\ from\ the\ SGSN\ to\ send\ the\ RADIUS\ DisconnectResponse\ to\ the\ AAA\ server.}$ 

# 3GPP TSG-CN WG3 Meeting #22 Ft Lauderdale, USA. 8<sup>th</sup>Apr – 12<sup>th</sup> Apr. 2002.

	CHANGE REQUEST	6.1
₩ <b>S</b> p	09.61 CR A035	
For <b>HELP</b> on us	sing this form, see bottom of this page or look at the pop-up text over the X symbols.	
Proposed change a	affects:   ### (U)SIM ME/UE Radio Access Network Core Network Core Network Radio Access Netw	X
Title: 第	Corrections to the 3GPP RADIUS attributes	
Source: 第	TSG CN WG3	
Work item code: 第	GPRS	
	F 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.  Release:   R97 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.	The QoS-Profile attribute length shall be 27 or 11 (currently 24 and 8), since the release indicator (2 characters) and the hyphen character need to be added. This CR proposes a correction for the QoS profile encoding.  In the current specification the QoS profile sent in the RADIUS message is the QoS profile received in the CreatePDPcontexReq, no the one used by the GGSN (i.e. negotiat QoS profile). Moreover, in the G-CDR the GGSN only sent the Negotiated QoS profile. To have consistency with the Ga interface the GGSN should only send the negotiated QoF profile via the RADIUS interface. This CR proposes to modify the requested QoS profile attribute to the negotiated QoS profile.  The length field for the NSAPI encoding has been incorrectly set to 6. This CR proposes to correct it to 3.  RADIUS attributes are based on TLV model, for consistency all the attributes should follow this model. Since the Stop-Session-Indicator as defined currently has no value, the CR proposes to define a value for this attribute to conform to the TLV model.	oS e
Summary of change	- QoS profile length corrected - Correction on QoS profile name - Correction on the NSAPI encoding length - Correction on the value for the Stop-Session-Indicator attribute	
Consequences if	# If the changes are not approved, incorrect implementations of the RADIUS	

not approved:		attributes will occur.			
Clauses affected:	ж	16.4			
Other specs Affected:	ж	Other core specifications Test specifications O&M Specifications	¥		
Other comments:	$\mathbf{x}$				

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G\_Specs/CRs.htm">http://www.3gpp.org/3G\_Specs/CRs.htm</a>. 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

## Start of modified section

# 16.4.7 Sub-attributes of the 3GPP Vendor-Specific attribute

The table below describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message.

Table 7: The sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message

Sub-attr #	Sub-attribute Name	Description	Presence Requirement	Associated attribute (Location of Sub-attr)
1	3GPP-IMSI	IMSI for this user	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
2	3GPP-Charging-Id	Charging ID for this PDP Context (this together with the GGSN- Address constitutes a unique identifier for the PDP context).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
3	3GPP-PDP Type	Type of PDP context, e.g. IP or PPP	Conditional (mandatory if attribute 7 is present)	Access-Request, Accounting-Request START, Accounting- Request STOP,
4	3GPP-CG-Address	Charging Gateway IP address	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
5	3GPP-GPRS- Negotiated-QoS-Profile	QoS profile receivedapplied by GGSN	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
6	3GPP-SGSN-Address	SGSN IP address that is used by the GTP control plane for the handling of control messages. It may be used to identify the PLMN to which the user is attached.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
7	3GPP-GGSN-Address	GGSN IP address that is used by the GTP control plane for the context establishment. It is the same as the GGSN IP address used in the GCDRs.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
8	3GPP-IMSI-MCC-MNC	MCC and MNC extracted from the user's IMSI (first 5 or 6 digits, as applicable from the presented IMSI).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
9	3GPP-GGSN- MCC- MNC	MCC-MNC of the network the GGSN belongs to.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
10	3GPP-NSAPI	Identifies a particular PDP context for the	Optional	Access-Request, Accounting-Request START, Access-

		associated PDN and MSISDN/IMSI from creation to deletion.		Request STOP
11	3GPP- Session- Indicator	Indicateds to the AAA server that the last PDP context of a session is released and that the PDP session has been terminated.	Optional	Accounting Request STOP
12	3GPP- Selection-Mode	Contains the Selection mode for this PDP Context received in the Create PDP Context Request Message	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
13	3GPP-Charging- Characteristics	Contains the charging characteristics for this PDP Context received in the Create PDP Context Request Message (only available in R99 and later releases)	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,

The RADIUS vendor Attribute is encoded as follows (as per RFC 2865)

				Bits	3					
Octets	8	7	6	5	4	3	2	1		
1				Type =	= 26					
2		Length = n								
3		Vendor id octet 1								
4			Ve	ndor id	octet 2	<u>)</u>				
5			Ve	ndor id	octet 3	}				
6			Ve	ndor id	octet 4	ļ				
7-n				Strin	g					

n>=7

3GPP Vendor Id = 10415

The string part is encoded as follows:

	Bits										
Octets	8	7	6	5	4	3	2	1			
1		3GPP type =									
2			3GI	PP Len	gth = n	n					
3 –m		3GPP value									

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

<u>1 - 3GPP-IMSI</u>

Bits

Octets 8 7 6 5 4 3 2 1

1 3GPP type = 1
2 3GPP Length= m

3-m IMSI digits 1-n (UTF-8 encoded)

3GPP Type: 1

n <= 15

Length: m = 17

IMSI value: Text:

This is the UTF-8 encoded IMSI; The definition of IMSI shall be in accordance with [41]. There shall be no padding characters between the MCC and MNC, and between the MNC and MSIN. If the IMSI is less than 15 digits, the padding in the GTP information element shall be removed by the GGSN and not encoded in this sub-attribute.

### 2 - 3GPP-Charging ID

				Bits	S					
Octets	8	7	6	5	4	3	2	1		
1			30	SPP ty	pe = 2					
2		3GPP Length= 6								
3			Chargir	ig ID va	alue O	ctet 1				
4			Chargir	ig ID va	alue O	ctet 2				
5			Chargir	ig ID va	alue O	ctet 3				
6			Chargir	ig ID va	alue O	ctet 4				

3GPP Type: 2

Length: 6

Charging ID value: 32 bits unsigned integer

<u>3-</u>3GPP-<u>PDP type</u>

Bits

Octets	8	7	6	5	4	3	2	1				
1		3GPP type = 3										
2		3GPP Length= 6										
3		PDP type octet 1										
4			PD	P type	octet 2							
5		PDP type octet 3										
6			PD	P type	octet 4							

3GPP Type: 3

Length: 6

PDP type value: Unsigned 32 bits integer

PDP type octet possible values:

0 = IP

## 4 - 3GPP-Charging Gateway address

Octets

Bits

8	7	6	5	4	3	2	1
		30	GPP typ	oe = 4			
		3G	PP Ler	gth= 6	)		
	(	Chargin	g GW a	addr O	ctet 1		
	(	Chargin	g GW a	addr O	ctet 2		
		Chargin	g GW a	addr O	ctet 3		
		Chargin	g GW a	addr O	ctet 4		

3GPP Type: 4

Length: 6

Charging GW address value: Address

## <u>5 -</u> 3GPP-<u>GPRS Negotiated QoS profile</u>

Bits

Octets	8	7	6	5	4	3	2	1			
1			30	SPP typ	oe = 5						
2		3GPP Length= L									
3 -L		L	JTF-8 e	ncodec	I QoS I	orofile		•			

3GPP Type: 5

Length: 24-27 (release 99) or 8-11 (release 98)

QoS profile value: Text

UTF-8 encoded QoS profile syntax:

"<Release indicator> - <release specific QoS IE UTF-8 encoding>"

<Release indicator> = UTF-8 encoded number :

"98" = Release 98

"99"= Release 99

<release specific QoS profile UTF-8 encoding> = UTF-8 encoded QoS profile for the release indicated by the release indicator.

The UTF-8 encoding of a QoS IE is defined as follows: each octet is described by 2 UTF-8 encoded digits, defining its hexadecimal representation. The QoS profile definition is in  $3G\ TS\ 24.008$ 

The release 98 QoS profile data is 3 octets long, which then results in a 6 octets UTF-8 encoded string,

The release 99 QoS profile data is 11 octets long, which results in a 22 octets UTF-8 encoded string.

#### 6 - 3GPP-SGSN address

				Bits	8				
Octets	8	7	6	5	4	3	2	1	
1			30	GPP ty	oe = 6				
2		3GPP Length= 6							
3			SGS	SN addi	r Octet	1			
4			SGS	SN addi	r Octet	2			
5			SGS	SN addi	r Octet	3			
6			SGS	SN addi	r Octet	4			

3GPP Type: 6

Length: 6

SGSN address value: Address

### 7 - 3GPP-GGSN address

				Bits	S					
Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 7								
2		3GPP Length= 6								
3			GGS	N add	r Octet	1				
4			GGS	N add	r Octet	2				
5			GGS	N add	r Octet	3				
6			GGS	N add	r Octet	4	•			

3GPP Type: 7

Length: 6

GGSN address value: Address

#### 8 - 3GPP-IMSI MCC-MNC

Bits Octets 5 3GPP type = 8 1 2 3GPP Length= n 3 MCC digit1 (UTF-8 encoded) 4 MCC digit2 (UTF-8 encoded) 5 MCC digit3 (UTF-8 encoded) 6 MNC digit1 (UTF-8 encoded) 7 MNC digit2 (UTF-8 encoded) MNC digit3 if present (UTF-8 encoded)

3GPP Type: 8

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

MS address value: text

This is the UTF-8 encoding of the MS MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

#### 9 - 3GPP-GGSN MCC-MNC

				Bits	3					
Octets	8	7	6	5	4	3	2	1		
1			30	GPP typ	e = 9					
2		3GPP Length= n								
3		MCC digit1 (UTF-8 encoded)								
4		М	CC dig	it2 (UTF	8 end	coded)				
5		М	CC dig	it3 (UTF	-8 en	coded)				
6		MNC digit1 (UTF-8 encoded)								
7		М	NC dig	it2 (UTF	-8 en	coded)				
8		MNC d	ligit3 if <sub>l</sub>	oresent	(UTF-	8 enco	ded)			

3GPP Type: 9

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

GGSN address value: text

This is the UTF-8 encoding of the GGSN MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

10 - 3GPP-NSAPI

Bits

Octets	8	7	6	5	4	3	2	1
1			3G	PP typ	e = 10			
2			3GF	P Len	gth= <u>3</u> (	6		
3				NSA	PI			

3GPP Type: 10

Length: 3

NSAPI value: text

It is the value of the NSAPI of the PDP context the RADIUS message is related to. It is encoded as its hexadecimal representation, using 1UTF-8 encoded digit.

## <u>11 -</u> 3GPP-<u>Session Stop Indicator</u>

				Bits	3			
Octets	8	7	6	5	4	3	2	1
1			3G	PP typ	e = 11			
2			3GI	PP Len	gth= <u>3</u> :	2		
<u>3</u>			1	1111	111	•	•	

3GPP Type: 11

Length: 32

There is no value field for this Vendor Specific Attribute.

Value is set to all 1.

## End of modified section

# 3GPP TSG-CN WG3 Meeting #22 Ft Lauderdale, USA. 8<sup>th</sup>Apr – 12<sup>th</sup> Apr. 2002.

			CI	HAN	GE R	EQI	JES <sup>-</sup>	Т			C	R-Form-v6.1
*	0	9.61	CR A	036	₩ ľ	rev	<b>_</b> #	Cur	rent ver	sion:	7.6.0	æ
S	_		Interw				the F		VI eun			æ
J	pco		Packe		_					portii	ig	
			donto	, Duo		71 1100	o am	ω (	J. 1)			
For <b>HELP</b> on t	using t	this forn	n, see b	ottom o	f this pa	ge or lo	ook at t	he poj	p-up tex	t over t	he ¥ syn	nbols.
Proposed change	affec	ts: ૠ	(U)SIN	М	ME/UE		Radio A	Access	s Netwoi	·k	Core Ne	twork X
Title:	€ Corr	ections	to the 3	GPP R	ADIUS a	attribute	es					
Source:	€ TS	G CN W	/G3									
Work item code: #	€ GP	RS							Date: ♯	April	9, 2002	
Category:	€ A							Rei	lease: #	R98		
			ne followi	ng categ	ories:			U.			owing rele	ases:
		F (corre	esponds	to a corre	ection in	an earli	ier relea	se)	2 R96		Phase 2) se 1996)	
		B (addi	tion of fe	ature),				,	R97	(Relea	se 1997)	
			tional mo orial modi		า of featu	ıre)			R98 R99		se 1998) se 1999)	
			anations		oove cate	eaories	can		REL-4	(Relea		
			GPP <u>TR</u>			<b>J</b>			REL-5	(Relea		
Reason for chang	re: #	In the correction of the length of the lengt	or (2 char on for the urrent sp received ofile). Mo e consiste via the R e to the n gth field oct it to 3.	ecification in the Croreover, ency with ADIUS egotiated for the Nutes are less than the content of the Nutes are less than the Croreover of the Nutes are less than	and the harofile endon the QueentePDP in the Garanterfaced QoS proposed on the Stop	psychen coding.  So profice context.  CDR thinterfact.  This Coffile.  TLV mrSessio	ile sent i Req, no he GGSI te the GCR propo has bee	in the I the on N only GSN sloses to en inco	RADIUS e used by sent the hould on modify rrectly se	messag  the GC Negotia ly send the request to 6. The attractions are the attractions are the surrently	e is the Qo GSN (i.e. r ated QoS p the negotic ested QoS This CR pro- ributes shown to vari	ooses a  ooS aegotiated orofile. ated QoS profile coposes
Summary of chan	ge: #	-	QoS pr	ofile lens	gth corre	cted						
,	<b>J</b>	_			oS profi							
		-			ne NSAP			gth				
		-	Correct	ion on th	ne value i	for the	Stop-Se	ssion-I	ndicator	attribute	e	
Consequences if	¥	If the	changes	s are no	t approv	ed, inc	correct i	impler	nentatio	ns of th	e RADIU	IS

not approved:	attributes will occur.
Clauses affected:	<b>%</b> 16.4
Other specs Affected:	Other core specifications  Test specifications
	O&M Specifications
Other comments:	<b>x</b>

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G\_Specs/CRs.htm">http://www.3gpp.org/3G\_Specs/CRs.htm</a>. 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 <a href="ftp://ftp.3qpp.org/specs/">ftp://ftp.3qpp.org/specs/</a> 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.

## Start of modified section

# 16.4.7 Sub-attributes of the 3GPP Vendor-Specific attribute

The table below describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message.

Table 7: The sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message

Sub-attr #	Sub-attribute Name	Description	Presence Requirement	Associated attribute (Location of Sub-attr)
1	3GPP-IMSI	IMSI for this user	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
2	3GPP-Charging-Id	Charging ID for this PDP Context (this together with the GGSN- Address constitutes a unique identifier for the PDP context).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
3	3GPP-PDP Type	Type of PDP context, e.g. IP or PPP	Conditional (mandatory if attribute 7 is present)	Access-Request, Accounting-Request START, Accounting- Request STOP,
4	3GPP-CG-Address	Charging Gateway IP address	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
5	3GPP-GPRS- Negotiated-QoS-Profile	QoS profile receivedapplied by GGSN	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
6	3GPP-SGSN-Address	SGSN IP address that is used by the GTP control plane for the handling of control messages. It may be used to identify the PLMN to which the user is attached.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
7	3GPP-GGSN-Address	GGSN IP address that is used by the GTP control plane for the context establishment. It is the same as the GGSN IP address used in the GCDRs.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
8	3GPP-IMSI-MCC-MNC	MCC and MNC extracted from the user's IMSI (first 5 or 6 digits, as applicable from the presented IMSI).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
9	3GPP-GGSN- MCC- MNC	MCC-MNC of the network the GGSN belongs to.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
10	3GPP-NSAPI	Identifies a particular PDP context for the	Optional	Access-Request, Accounting-Request START, Access-

		associated PDN and MSISDN/IMSI from creation to deletion.		Request STOP
11	3GPP- Session- Indicator	Indicateds to the AAA server that the last PDP context of a session is released and that the PDP session has been terminated.	Optional	Accounting Request STOP
12	3GPP- Selection-Mode	Contains the Selection mode for this PDP Context received in the Create PDP Context Request Message	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
13	3GPP-Charging- Characteristics	Contains the charging characteristics for this PDP Context received in the Create PDP Context Request Message (only available in R99 and later releases)	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,

The RADIUS vendor Attribute is encoded as follows (as per RFC 2865)

				Bits	3					
Octets	8	7	6	5	4	3	2	1		
1				Type =	= 26					
2		Length = n								
3			Ve	ndor id	octet 1					
4			Ve	ndor id	octet 2	<u>)</u>				
5			Ve	ndor id	octet 3	}				
6			Ve	ndor id	octet 4	ļ				
7-n				Strin	g					

n>=7

3GPP Vendor Id = 10415

The string part is encoded as follows:

Bits										
Octets	8	7	6	5	4	3	2	1		
1		3GPP type =								
2			3GI	PP Len	gth = n	n				
3 –m		3GPP value								

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

<u>1 - 3GPP-IMSI</u>

Bits

Octets 8 7 6 5 4 3 2 1

1 3GPP type = 1
2 3GPP Length= m

3-m IMSI digits 1-n (UTF-8 encoded)

3GPP Type: 1

n <= 15

Length: m = 17

IMSI value: Text:

This is the UTF-8 encoded IMSI; The definition of IMSI shall be in accordance with [41]. There shall be no padding characters between the MCC and MNC, and between the MNC and MSIN. If the IMSI is less than 15 digits, the padding in the GTP information element shall be removed by the GGSN and not encoded in this sub-attribute.

### 2 - 3GPP-Charging ID

				Bits	S					
Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 2								
2		3GPP Length= 6								
3			Chargir	ig ID va	alue O	ctet 1				
4			Chargir	ig ID va	alue O	ctet 2				
5			Chargir	ig ID va	alue O	ctet 3				
6			Chargir	ig ID va	alue O	ctet 4				

3GPP Type: 2

Length: 6

Charging ID value: 32 bits unsigned integer

<u>3-</u>3GPP-<u>PDP type</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			3	GPP typ	oe = 3			
2			3G	PP Ler	ngth= 6	)		
3			PD	P type	octet 1			
4			PD	P type	octet 2	)		
5			PD	P type	octet 3	}		
6			PD	P type	octet 4			

3GPP Type: 3

Length: 6

PDP type value: Unsigned 32 bits integer

PDP type octet possible values:

0 = IP

1 = PPP

## <u>4 - 3GPP-Charging Gateway address</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			30	SPP typ	oe = 4			
2			3G	PP Ler	gth= 6			
3		(	Charging	g GW a	addr O	ctet 1		
4		(	Chargin	g GW a	addr O	ctet 2		
5		(	Chargin	g GW a	addr O	ctet 3		
6		(	Chargin	g GW a	addr O	ctet 4		

3GPP Type: 4

Length: 6

Charging GW address value: Address

## <u>5 - 3GPP-GPRS Negotiated QoS profile</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			30	GPP ty	oe = 5			
2			3G	PP Ler	ngth= L	-		
3 -L		L	JTF-8 e	ncodec	l QoS <sub>l</sub>	orofile		

3GPP Type: 5

Length: 24-27 (release 99) or 8-11 (release 98)

QoS profile value: Text

UTF-8 encoded QoS profile syntax:

"<Release indicator> - <release specific QoS IE UTF-8 encoding>"

<Release indicator> = UTF-8 encoded number :

**Octets** 

2

5

"98" = Release 98

"99"= Release 99

<release specific QoS profile UTF-8 encoding> = UTF-8 encoded QoS profile for the release indicated by the release indicator.

The UTF-8 encoding of a QoS IE is defined as follows: each octet is described by 2 UTF-8 encoded digits, defining its hexadecimal representation. The QoS profile definition is in 3G TS 24.008

The release 98 QoS profile data is 3 octets long, which then results in a 6 octets UTF-8 encoded string,

The release 99 QoS profile data is 11 octets long, which results in a 22 octets UTF-8 encoded string.

## 6 - 3GPP-SGSN address

8	7	6	5	4	3	2	1
		30	GPP typ	e = 6			
		3G	PP Ler	gth= 6	;		
		SGS	SN addr	Octet	1		
SGSN addr Octet 2							
SGSN addr Octet 3							
		SGS	SN addr	Octet	4		

3GPP Type: 6

Length: 6

SGSN address value: Address

## 7 - 3GPP-GGSN address

Bits

Octets	8	7	6	5	4	3	2	1
1			30	GPP typ	oe = 7			
2			3G	PP Ler	ngth= 6	;		
3			GGS	SN add	r Octet	1		
4			GGS	SN add	r Octet	2		
5		GGSN addr Octet 3						
6			GGS	SN add	r Octet	4		

3GPP Type: 7

Length: 6

GGSN address value: Address

#### 8 - 3GPP-IMSI MCC-MNC

				Bits	8			
Octets	8	7	6	5	4	3	2	1
1			30	SPP typ	oe = 8			
2			3G	PP Ler	ngth= r	)		
3		М	CC digi	t1 (UTF	-8 en	coded)		
4		М	CC digi	t2 (UTF	-8 en	coded)		
5		М	CC digi	t3 (UTI	8 en	coded)		
6		MNC digit1 (UTF-8 encoded)						
7		М	NC digi	t2 (UTI	8 en	coded)		
8		MNC d	ligit3 if p	oresent	(UTF-	8 enco	ded)	

3GPP Type: 8

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

MS address value: text

This is the UTF-8 encoding of the MS MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

#### 9 - 3GPP-GGSN MCC-MNC

				Bits	1			
Octets	8	7	6	5	4	3	2	1
1			30	SPP typ	e = 9			
2			3G	PP Len	igth= n			
3		MCC digit1 (UTF-8 encoded)						
4		М	CC digi	t2 (UTF	-8 end	coded)		
5		М	CC digi	t3 (UTF	-8 end	coded)		
6		MNC digit1 (UTF-8 encoded)						
7		MNC digit2 (UTF-8 encoded)						
8		MNC d	ligit3 if p	resent	(UTF-	8 enco	ded)	

3GPP Type: 9

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

GGSN address value: text

This is the UTF-8 encoding of the GGSN MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

<u>10 -</u> 3GPP-<u>NSAPI</u>

Bits

Octets	8	7	6	5	4	3	2	1	
1		3GPP type = 10							
2			3GF	P Len	gth= <u>3</u> (	6			
3				NSA	PI				

3GPP Type: 10

Length: 3

NSAPI value: text

It is the value of the NSAPI of the PDP context the RADIUS message is related to. It is encoded as its hexadecimal representation, using 1UTF-8 encoded digit.

## <u>11 -</u> 3GPP-<u>Session Stop Indicator</u>

				Bits	3			
Octets	8	7	6	5	4	3	2	1
1			3G	PP typ	e = 11			
2			3GI	PP Len	gth= <u>3</u> :	2		
<u>3</u>			1	1111	111	•	•	

3GPP Type: 11

Length: 32

There is no value field for this Vendor Specific Attribute.

Value is set to all 1.

## End of modified section

# 3GPP TSG-CN WG3 Meeting #22 Ft Lauderdale, USA. 8<sup>th</sup>Apr – 12<sup>th</sup> Apr. 2002.

	CHANGE RE	CR-Form-v6.1
<b></b>	29.061 CR 053 #rev	✓ _ # Current version: 3.9.0 #
Sr	pec Title: Interworking between	
9	Packet Based Serv	en the reliving supporting
	r denet Based Corv	1000 and (1 211)
For <b>HELP</b> on u	sing this form, see bottom of this page	or look at the pop-up text over the ₩ symbols.
Proposed change a	affects: # (U)SIM ME/UE	Radio Access Network Core Network X
Title: 第	Corrections to the 3GPP RADIUS attri	butes
Source: #	TSG CN WG3	
Work item code: ₩	GPRS	Date: 第 April 9, 2002
Reason for change	Use one of the following categories:  F (correction)  A (corresponds to a correction in an B (addition of feature),  C (functional modification of feature)  D (editorial modification)  Detailed explanations of the above catego be found in 3GPP TR 21.900.  The QoS-Profile attribute length shall indicator (2 characters) and the hypl correction for the QoS profile encoding In the current specification the QoS profile received in the CreatePDPcon QoS profile). Moreover, in the G-CD To have consistency with the Ga interprofile via the RADIUS interface. The attribute to the negotiated QoS profile The length field for the NSAPI encode to correct it to 3.  RADIUS attributes are based on TL follow this model. Since the Stop-Se	R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) ries can REL-4 (Release 4) REL-5 (Release 5)  Il be 27 or 11 (currently 24 and 8), since the release nen character need to be added. This CR proposes a ng.  Profile sent in the RADIUS message is the QoS ntexReq, no the one used by the GGSN (i.e. negotiated or the GGSN only sent the Negotiated QoS profile.  Proface the GGSN should only send the negotiated QoS nis CR proposes to modify the requested QoS profile
Summary of chang	e: 光 - QoS profile length corrected	i
	- Correction on QoS profile n	ame
	- Correction on the NSAPI er	acoding length
	- Correction on the value for	the Stop-Session-Indicator attribute
Consequences if	★ If the changes are not approved	, incorrect implementations of the RADIUS

not approved:	attributes will occur.
Clauses affected:	<b>%</b> 16.4
Other specs Affected:	Other core specifications  Test specifications
	O&M Specifications
Other comments:	<b>x</b>

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G\_Specs/CRs.htm">http://www.3gpp.org/3G\_Specs/CRs.htm</a>. 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 <a href="ftp://ftp.3qpp.org/specs/">ftp://ftp.3qpp.org/specs/</a> 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.

## Start of modified section

# 16.4.7 Sub-attributes of the 3GPP Vendor-Specific attribute

The table below describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message.

Table 7: The sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message

Sub-attr #	Sub-attribute Name	Description	Presence Requirement	Associated attribute (Location of Sub-attr)
1	3GPP-IMSI	IMSI for this user	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
2	3GPP-Charging-Id	Charging ID for this PDP Context (this together with the GGSN- Address constitutes a unique identifier for the PDP context).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
3	3GPP-PDP Type	Type of PDP context, e.g. IP or PPP	Conditional (mandatory if attribute 7 is present)	Access-Request, Accounting-Request START, Accounting- Request STOP,
4	3GPP-CG-Address	Charging Gateway IP address	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
5	3GPP-GPRS- Negotiated-QoS-Profile	QoS profile receivedapplied by GGSN	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
6	3GPP-SGSN-Address	SGSN IP address that is used by the GTP control plane for the handling of control messages. It may be used to identify the PLMN to which the user is attached.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
7	3GPP-GGSN-Address	GGSN IP address that is used by the GTP control plane for the context establishment. It is the same as the GGSN IP address used in the GCDRs.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
8	3GPP-IMSI-MCC-MNC	MCC and MNC extracted from the user's IMSI (first 5 or 6 digits, as applicable from the presented IMSI).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
9	3GPP-GGSN- MCC- MNC	MCC-MNC of the network the GGSN belongs to.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
10	3GPP-NSAPI	Identifies a particular PDP context for the	Optional	Access-Request, Accounting-Request START, Access-

		associated PDN and MSISDN/IMSI from creation to deletion.		Request STOP
11	3GPP- Session- Indicator	Indicateds to the AAA server that the last PDP context of a session is released and that the PDP session has been terminated.	Optional	Accounting Request STOP
12	3GPP- Selection-Mode	Contains the Selection mode for this PDP Context received in the Create PDP Context Request Message	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
13	3GPP-Charging- Characteristics	Contains the charging characteristics for this PDP Context received in the Create PDP Context Request Message (only available in R99 and later releases)	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,

The RADIUS vendor Attribute is encoded as follows (as per RFC 2865)

				Bits	3					
Octets	8	7	6	5	4	3	2	1		
1				Type =	= 26					
2		Length = n								
3		Vendor id octet 1								
4			Ve	ndor id	octet 2	<u>)</u>				
5			Ve	ndor id	octet 3	}				
6			Ve	ndor id	octet 4	ļ				
7-n				Strin	g					

n>=7

3GPP Vendor Id = 10415

The string part is encoded as follows:

				Bits	8						
Octets	8	7	6	5	4	3	2	1			
1		3GPP type =									
2			3GI	PP Len	gth = n	n					
3 –m		3GPP value									

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

<u>1 - 3GPP-IMSI</u>

Bits

Octets 8 7 6 5 4 3 2 1

1 3GPP type = 1
2 3GPP Length= m

3-m IMSI digits 1-n (UTF-8 encoded)

3GPP Type: 1

n <= 15

Length: m = 17

IMSI value: Text:

This is the UTF-8 encoded IMSI; The definition of IMSI shall be in accordance with [41]. There shall be no padding characters between the MCC and MNC, and between the MNC and MSIN. If the IMSI is less than 15 digits, the padding in the GTP information element shall be removed by the GGSN and not encoded in this sub-attribute.

### 2 - 3GPP-Charging ID

				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			30	SPP ty	pe = 2			
2			3G	PP Ler	ngth= 6	6		
3			Chargir	ig ID va	alue O	ctet 1		
4			Chargir	ig ID va	alue O	ctet 2		
5			Chargir	ig ID va	alue O	ctet 3		
6			Chargir	ig ID va	alue O	ctet 4		

3GPP Type: 2

Length: 6

Charging ID value: 32 bits unsigned integer

<u>3-</u>3GPP-<u>PDP type</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			3	GPP typ	oe = 3			
2			3G	PP Ler	ngth= 6	)		
3			PD	P type	octet 1			
4			PD	P type	octet 2	)		
5			PD	P type	octet 3	}		
6			PD	P type	octet 4			

3GPP Type: 3

Length: 6

PDP type value: Unsigned 32 bits integer

PDP type octet possible values:

0 = IP

1 = PPP

## <u>4 - 3GPP-Charging Gateway address</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			30	SPP typ	oe = 4			
2			3G	PP Ler	gth= 6			
3		(	Charging	g GW a	addr O	ctet 1		
4		(	Chargin	g GW a	addr O	ctet 2		
5		(	Chargin	g GW a	addr O	ctet 3		
6		(	Chargin	g GW a	addr O	ctet 4		

3GPP Type: 4

Length: 6

Charging GW address value: Address

## <u>5 - 3GPP-GPRS Negotiated QoS profile</u>

Bits

Octets	8	7	6	5	4	3	2	1			
1		3GPP type = 5									
2			3G	PP Ler	ngth= L	-					
3 -L		L	JTF-8 e	ncodec	l QoS <sub>l</sub>	orofile					

3GPP Type: 5

Length: 24-27 (release 99) or 8-11 (release 98)

QoS profile value: Text

UTF-8 encoded QoS profile syntax:

"<Release indicator> - <release specific QoS IE UTF-8 encoding>"

<Release indicator> = UTF-8 encoded number :

**Octets** 

2

5

"98" = Release 98

"99"= Release 99

<release specific QoS profile UTF-8 encoding> = UTF-8 encoded QoS profile for the release indicated by the release indicator.

The UTF-8 encoding of a QoS IE is defined as follows: each octet is described by 2 UTF-8 encoded digits, defining its hexadecimal representation. The QoS profile definition is in 3G TS 24.008

The release 98 QoS profile data is 3 octets long, which then results in a 6 octets UTF-8 encoded string,

The release 99 QoS profile data is 11 octets long, which results in a 22 octets UTF-8 encoded string.

## 6 - 3GPP-SGSN address

8	7	6	5	4	3	2	1
		30	GPP typ	e = 6			
		3G	PP Ler	gth= 6	;		
		SGS	SN addr	Octet	1		
		SGS	SN addr	Octet	2		
		SGS	SN addr	Octet	3		
		SGS	SN addr	Octet	4		

3GPP Type: 6

Length: 6

SGSN address value: Address

## 7 - 3GPP-GGSN address

Bits

Octets	8	7	6	5	4	3	2	1
1			30	GPP typ	oe = 7			
2			3G	PP Ler	ngth= 6	;		
3			GGS	SN add	r Octet	1		
4			GGS	SN add	r Octet	2		
5			GGS	SN add	r Octet	3		
6			GGS	SN add	r Octet	4		

3GPP Type: 7

Length: 6

GGSN address value: Address

#### 8 - 3GPP-IMSI MCC-MNC

				Bits	8						
Octets	8	7	6	5	4	3	2	1			
1			30	SPP typ	oe = 8						
2		3GPP Length= n									
3		MCC digit1 (UTF-8 encoded)									
4		М	CC digi	t2 (UTF	-8 en	coded)					
5		М	CC digi	t3 (UTI	8 en	coded)					
6		MNC digit1 (UTF-8 encoded)									
7		М	NC digi	t2 (UTI	8 en	coded)					
8		MNC d	ligit3 if p	oresent	(UTF-	8 enco	ded)				

3GPP Type: 8

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

MS address value: text

This is the UTF-8 encoding of the MS MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

#### 9 - 3GPP-GGSN MCC-MNC

		Bits									
Octets	8	7	6	5	4	3	2	1			
1			30	SPP typ	e = 9						
2			3G	PP Len	igth= n						
3		MCC digit1 (UTF-8 encoded)									
4		М	CC digi	t2 (UTF	-8 end	coded)					
5		М	CC digi	t3 (UTF	-8 end	coded)					
6		М	NC digi	t1 (UTF	-8 end	coded)					
7		М	NC digi	t2 (UTF	-8 end	coded)					
8		MNC d	ligit3 if p	resent	(UTF-	8 enco	ded)				

3GPP Type: 9

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

GGSN address value: text

This is the UTF-8 encoding of the GGSN MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

<u>10 -</u> 3GPP-<u>NSAPI</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			3G	PP typ	e = 10			
2			3GF	P Len	gth= <u>3</u> (	6		
3				NSA	PI			

3GPP Type: 10

Length: 3

NSAPI value: text

It is the value of the NSAPI of the PDP context the RADIUS message is related to. It is encoded as its hexadecimal representation, using 1UTF-8 encoded digit.

## <u>11 -</u> 3GPP-<u>Session Stop Indicator</u>

	Bits							
Octets	8	7	6	5	4	3	2	1
1		3GPP type = 11						
2		3GPP Length= 32						
<u>3</u>			1	1111	111	•	•	

3GPP Type: 11

Length: 32

There is no value field for this Vendor Specific Attribute.

Value is set to all 1.

## End of modified section

# 3GPP TSG-CN WG3 Meeting #22 Ft Lauderdale, USA. 8<sup>th</sup>Apr – 12<sup>th</sup> Apr. 2002.

CR-Form-v6.1  CHANGE REQUEST							
<b></b>	29.061	CR 048	<b>≭rev</b>	<b>1</b> #	Current vers	ion: <b>4.4.0</b>	¥
Sı		Interworkin		the Pl	MN supr		¥
- •		Packet Bas	_		• • •	orang	
- 450					,		
For <u><b>HELP</b></u> on u	ising this fo	rm, see bottom c	t this page or	look at the	pop-up text	over the # sym	bols.
Proposed change	affects:	(U)SIM	ME/UE	Radio Aco	cess Network	Core Net	work X
Title: 第	Correction	s to the 3GPP R	ADIUS attribu	tes			
Source: #	TSG CN	WG3					
Work item code: ₩	GPRS				Date: ♯	April 8, 2002	
Category: #	Α				Release: ₩	REL-4	
	Use <u>one</u> of	the following cate	gories:		Use <u>one</u> of	the following relea	ases:
		rection) rresponds to a cori	ection in an ear	rlier release	2 e) R96	(GSM Phase 2) (Release 1996)	
	<b>B</b> (ad	dition of feature),			R97	(Release 1997)	
		nctional modificatio itorial modification,			R98 R99	(Release 1998) (Release 1999)	
	Detailed ex	planations of the a		s can	REL-4	(Release 4)	
	be found in	3GPP <u>TR 21.900</u> .			REL-5	(Release 5)	
Reason for change	In the profil attribution of the letter of t	ator (2 characters) etion for the QoS protion for the QoS protion for the QoS protion for the QoS profile). Moreover, we consistency with the RADIUS at the RADIUS at the tothe negotiate ength field for the protion for the protion for the protion for the proposes to define a propose to define a protion for the proposes to define a protion for the proposes to define a protion for the protocol for	and the hypher rofile encoding on the QoS proreatePDPconter in the G-CDR the Ga interface. This d QoS profile.  NSAPI encoding the Stop-Sessivalue for this a	file sent in xReq, no the the GGSN care the GGSN groposo	the RADIUS is the one used by only sent the NSN should only es to modify the incorrectly set consistency allor as defined consistency allor as defined consistency and the consistency allors are defined consistency and the consistency allors are defined consistency and the consistency are defined to the the consistency and the consistency are defined to t	message is the Qo the GGSN (i.e. no Negotiated QoS pays end the negotiated QoS to 6. This CR products to the attributes shourrently has no va	oses a  oS egotiated rofile. ated QoS profile opposes
Summary of chang	ge: # -	QoS profile len	gth corrected				
	-	Correction on C	OS profile nan	ne			
	-	Correction on t	he NSAPI enco	ding length	1		
	-	Correction on t	he value for the	Stop-Sessi	ion-Indicator a	attribute	
Consequences if	第 <mark>If th</mark>	e changes are no	ot approved, ir	correct im	plementation	ns of the RADIU	S

not approved:	attributes will occur.
Clauses affected:	<b>第 16.4</b>
Other specs Affected:	Other core specifications  Test specifications
	O&M Specifications
Other comments:	X

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G\_Specs/CRs.htm">http://www.3gpp.org/3G\_Specs/CRs.htm</a>. 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 <a href="ftp://ftp.3qpp.org/specs/">ftp://ftp.3qpp.org/specs/</a> 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.

## Start of modified section

# 16.4.7 Sub-attributes of the 3GPP Vendor-Specific attribute

The table below describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message.

Table 7: The sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message

Sub-attr #	Sub-attribute Name	Description	Presence Requirement	Associated attribute (Location of Sub-attr)
1	3GPP-IMSI	IMSI for this user	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
2	3GPP-Charging-Id	Charging ID for this PDP Context (this together with the GGSN- Address constitutes a unique identifier for the PDP context).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
3	3GPP-PDP Type	Type of PDP context, e.g. IP or PPP	Conditional (mandatory if attribute 7 is present)	Access-Request, Accounting-Request START, Accounting- Request STOP,
4	3GPP-CG-Address	Charging Gateway IP address	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
5	3GPP-GPRS- Negotiated-QoS-Profile	QoS profile receivedapplied by GGSN	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
6	3GPP-SGSN-Address	SGSN IP address that is used by the GTP control plane for the handling of control messages. It may be used to identify the PLMN to which the user is attached.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
7	3GPP-GGSN-Address	GGSN IP address that is used by the GTP control plane for the context establishment. It is the same as the GGSN IP address used in the GCDRs.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
8	3GPP-IMSI-MCC-MNC	MCC and MNC extracted from the user's IMSI (first 5 or 6 digits, as applicable from the presented IMSI).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
9	3GPP-GGSN- MCC- MNC	MCC-MNC of the network the GGSN belongs to.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
10	3GPP-NSAPI	Identifies a particular PDP context for the	Optional	Access-Request, Accounting-Request START, Access-

		associated PDN and MSISDN/IMSI from creation to deletion.		Request STOP
11	3GPP- Session- Indicator	Indicateds to the AAA server that the last PDP context of a session is released and that the PDP session has been terminated.	Optional	Accounting Request STOP
12	3GPP- Selection-Mode	Contains the Selection mode for this PDP Context received in the Create PDP Context Request Message	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
13	3GPP-Charging- Characteristics	Contains the charging characteristics for this PDP Context received in the Create PDP Context Request Message (only available in R99 and later releases)	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,

The RADIUS vendor Attribute is encoded as follows (as per RFC 2865)

				Bits	3						
Octets	8	7	6	5	4	3	2	1			
1		Type = 26									
2		Length = n									
3		Vendor id octet 1									
4			Ve	ndor id	octet 2	<u>)</u>					
5			Ve	ndor id	octet 3	}					
6			Ve	ndor id	octet 4	ļ					
7-n				Strin	g						

n>=7

3GPP Vendor Id = 10415

The string part is encoded as follows:

	Bits									
Octets	8	7	6	5	4	3	2	1		
1		3GPP type =								
2			3GI	PP Len	gth = n	n				
3 –m		3GPP value								

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

<u>1 - 3GPP-IMSI</u>

Bits

Octets 8 7 6 5 4 3 2 1

1 3GPP type = 1
2 3GPP Length= m

3-m IMSI digits 1-n (UTF-8 encoded)

3GPP Type: 1

n <= 15

Length: m = 17

IMSI value: Text:

This is the UTF-8 encoded IMSI; The definition of IMSI shall be in accordance with [41]. There shall be no padding characters between the MCC and MNC, and between the MNC and MSIN. If the IMSI is less than 15 digits, the padding in the GTP information element shall be removed by the GGSN and not encoded in this sub-attribute.

### 2 - 3GPP-Charging ID

	Bits										
Octets	8	7	6	5	4	3	2	1			
1		3GPP type = 2									
2		3GPP Length= 6									
3			Chargir	ig ID va	alue O	ctet 1					
4			Chargir	ig ID va	alue O	ctet 2					
5		Charging ID value Octet 3									
6			Chargir	ig ID va	alue O	ctet 4					

3GPP Type: 2

Length: 6

Charging ID value: 32 bits unsigned integer

<u>3-</u>3GPP-<u>PDP type</u>

Octets	8	7	6	5	4	3	2	1					
1		3GPP type = 3											
2		3GPP Length= 6											
3		PDP type octet 1											
4			PD	P type	octet 2	)							
5		PDP type octet 3											
6			PD	P type	octet 4								

Length: 6

PDP type value: Unsigned 32 bits integer

PDP type octet possible values:

0 = IP

1 = PPP

# <u>4 - 3GPP-Charging Gateway address</u>

Bits

Octets	8	7	6	5	4	3	2	1				
1		3GPP type = 4										
2		3GPP Length= 6										
3		Charging GW addr Octet 1										
4		(	Chargin	g GW a	addr O	ctet 2						
5		Charging GW addr Octet 3										
6		(	Chargin	g GW a	addr O	ctet 4						

3GPP Type: 4

Length: 6

Charging GW address value: Address

# <u>5 - 3GPP-GPRS Negotiated QoS profile</u>

Bits

Octets	8	7	6	5	4	3	2	1				
1		3GPP type = 5										
2		3GPP Length= L										
3 -L	UTF-8 encoded QoS profile											

3GPP Type: 5

Length: 24-27 (release 99) or 8-11 (release 98)

QoS profile value: Text

UTF-8 encoded QoS profile syntax:

"<Release indicator> - <release specific QoS IE UTF-8 encoding>"

<Release indicator> = UTF-8 encoded number :

**Octets** 

2

5

"98" = Release 98

"99"= Release 99

<release specific QoS profile UTF-8 encoding> = UTF-8 encoded QoS profile for the release indicated by the release indicator.

The UTF-8 encoding of a QoS IE is defined as follows: each octet is described by 2 UTF-8 encoded digits, defining its hexadecimal representation. The QoS profile definition is in 3G TS 24.008

The release 98 QoS profile data is 3 octets long, which then results in a 6 octets UTF-8 encoded string,

The release 99 QoS profile data is 11 octets long, which results in a 22 octets UTF-8 encoded string.

# 6 - 3GPP-SGSN address

8	7	6	5	4	3	2	1	
3GPP type = 6								
3GPP Length= 6								
		SGS	SN addr	Octet	1			
SGSN addr Octet 2								
SGSN addr Octet 3								
		SGS	SN addr	Octet	4			

3GPP Type: 6

Length: 6

SGSN address value: Address

# 7 - 3GPP-GGSN address

Bits

Octets	8	7	6	5	4	3	2	1				
1		3GPP type = 7										
2		3GPP Length= 6										
3		GGSN addr Octet 1										
4			GGS	SN add	r Octet	2						
5		GGSN addr Octet 3										
6			GGS	SN add	r Octet	4						

3GPP Type: 7

Length: 6

GGSN address value: Address

#### 8 - 3GPP-IMSI MCC-MNC

	Bits										
Octets	8	7	6	5	4	3	2	1			
1		3GPP type = 8									
2			3G	PP Ler	ngth= r	)					
3		MCC digit1 (UTF-8 encoded)									
4		М	CC digi	t2 (UTF	-8 en	coded)					
5		М	CC digi	t3 (UTI	8 en	coded)					
6		М	NC digi	t1 (UTF	-8 en	coded)					
7		MNC digit2 (UTF-8 encoded)									
8		MNC d	ligit3 if p	oresent	(UTF-	8 enco	ded)				

3GPP Type: 8

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

MS address value: text

This is the UTF-8 encoding of the MS MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

### 9 - 3GPP-GGSN MCC-MNC

				Bits	1				
Octets	8	7	6	5	4	3	2	1	
1			30	SPP typ	e = 9				
2			3G	PP Len	igth= n				
3		MCC digit1 (UTF-8 encoded)							
4		М	CC digi	t2 (UTF	-8 end	coded)			
5		М	CC digi	t3 (UTF	-8 end	coded)			
6		М	NC digi	t1 (UTF	-8 end	coded)			
7		М	NC digi	t2 (UTF	-8 end	coded)			
8		MNC d	ligit3 if p	resent	(UTF-	8 enco	ded)		

3GPP Type: 9

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

GGSN address value: text

This is the UTF-8 encoding of the GGSN MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

<u>10 -</u> 3GPP-<u>NSAPI</u>

Octets	8	7	6	5	4	3	2	1
1			3G	PP typ	e = 10			
2			3GF	P Len	gth= <u>3</u> (	6		
3				NSA	PI			

Length: 3

NSAPI value: text

It is the value of the NSAPI of the PDP context the RADIUS message is related to. It is encoded as its hexadecimal representation, using 1UTF-8 encoded digit.

# <u>11 -</u> 3GPP-<u>Session Stop Indicator</u>

				Bits	3			
Octets	8	7	6	5	4	3	2	1
1			3G	PP typ	e = 11			
2			3GI	PP Len	gth= <u>3</u> :	2		
<u>3</u>			1	1111	111	•	•	

3GPP Type: 11

Length: 32

There is no value field for this Vendor Specific Attribute.

Value is set to all 1.

# End of modified section

# 3GPP TSG-CN WG3 Meeting #22 Ft Lauderdale, USA. 8<sup>th</sup>Apr – 12<sup>th</sup> Apr. 2002.

CHANGE REQUEST										
<b></b>	29.06	1 CR 054	<b>⊭rev</b>	<b>_</b> #	Current vers	sion: <b>5.1.0</b>	¥			
Sı		: Interwork			MN supr		¥			
·			ased Servi			,				
For HELD on	vojna thio	farm and batton	a of this make a	u lo ols ot the		0. (0.11 th 0.00 o. (11)	h a la			
For <b>HELP</b> on u	ising this	iorm, see bottor	n or this page o	r iook at trie	е рор-ир техт	over the # sym	DOIS.			
Proposed change	affects:	₩ (U)SIM	ME/UE	Radio Ac	cess Networl	k Core Net	work X			
Title: Ж	Correcti	ons to the 3GPF	RADIUS attrib	utes						
Source: #	TSG C	N WG3								
Work item code: 第	GPRS				Date: ₩	April 9, 2002				
Category: 第	. A				Release: %					
Category: ж		of the following ca	ntegories:		Use <u>one</u> of	the following relea	ases:			
		correction) corresponds to a c	correction in an o	arliar ralaas	2 e) R96	(GSM Phase 2) (Release 1996)				
		addition of feature		arrier rerease	R97	(Release 1997)				
		unctional modifica			R98	(Release 1998)				
		editorial modificati explanations of th		es can	R99 REL-4	(Release 1999) (Release 4)				
		in 3GPP <u>TR 21.9</u>		es can	REL-5	(Release 5)				
Reason for change	In the to c	cator (2 chararcted ection for the Qood ne current specific file received in the profile). Moreover, and consistency file via the RADI bute to the negotion length field for the correct it to 3.	rs) and the hyphosis profile encoding action the QoS profile erreatePDPcontrol of the CreatePDPcontrol of the Galler of the Galler of the Galler of the NSAPI encoding the Based on TLV nice the Stop-Sessi	en character g.  rofile sent in exReq, no th R the GGSN face the GGS s CR propos ing has been model, for sion-Indicato	the RADIUS ne one used by only sent the ISN should only ses to modify the incorrectly set consistency allor as defined consistency allor as defined consistency and the consistency allor as defined consistency and the consistency allor as defined consistency and the consistency allors are defined consistency and the consistency allors are defined consistency and the consistency all the consistency and the consistency all the consistency all the consistency all the consistency are consistency and the consistency are consistency are consistency and the consistency are consistency and the consistency are consistency are consistency are consistency and the consistency are consistency are consistency are consistency are consistency and consistency are consistency are consistency and consistency are consistency ar	message is the Qo the GGSN (i.e. n Negotiated QoS p y send the negotia he requested QoS t to 6. This CR pro I the attributes sho	oses a  oS egotiated rofile. ated QoS profile opposes			
Summary of chang	ge: Ж	- QoS profile	length corrected							
		- Correction of	n QoS profile na	me						
			n the NSAPI end		h					
		- Correction of	n the value for th	ne Stop-Sess	ion-Indicator a	attribute				
Consequences if	₩ <mark>If</mark>	he changes are	not approved,	incorrect im	nplementation	ns of the RADIU	S			

not approved:		attributes will occur.			
Clauses affected:	ж	16.4			
Other specs Affected:	ж	Other core specifications Test specifications O&M Specifications	¥		
Other comments:	$\mathbf{x}$				

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <a href="http://www.3gpp.org/3G\_Specs/CRs.htm">http://www.3gpp.org/3G\_Specs/CRs.htm</a>. 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 <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> 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.

# Start of modified section

# 16.4.7 Sub-attributes of the 3GPP Vendor-Specific attribute

The table below describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message.

Table 7: The sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START and Accounting-Request STOP message

Sub-attr #	Sub-attribute Name	Description	Presence Requirement	Associated attribute (Location of Sub-attr)
1	3GPP-IMSI	IMSI for this user	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
2	3GPP-Charging-Id	Charging ID for this PDP Context (this together with the GGSN- Address constitutes a unique identifier for the PDP context).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
3	3GPP-PDP Type	Type of PDP context, e.g. IP or PPP	Conditional (mandatory if attribute 7 is present)	Access-Request, Accounting-Request START, Accounting- Request STOP,
4	3GPP-CG-Address	Charging Gateway IP address	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
5	3GPP-GPRS- Negotiated-QoS-Profile	QoS profile receivedapplied by GGSN	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
6	3GPP-SGSN-Address	SGSN IP address that is used by the GTP control plane for the handling of control messages. It may be used to identify the PLMN to which the user is attached.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
7	3GPP-GGSN-Address	GGSN IP address that is used by the GTP control plane for the context establishment. It is the same as the GGSN IP address used in the GCDRs.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
8	3GPP-IMSI-MCC-MNC	MCC and MNC extracted from the user's IMSI (first 5 or 6 digits, as applicable from the presented IMSI).	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
9	3GPP-GGSN- MCC- MNC	MCC-MNC of the network the GGSN belongs to.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
10	3GPP-NSAPI	Identifies a particular PDP context for the	Optional	Access-Request, Accounting-Request START, Access-

		associated PDN and MSISDN/IMSI from creation to deletion.		Request STOP
11	3GPP- Session- Indicator	Indicateds to the AAA server that the last PDP context of a session is released and that the PDP session has been terminated.	Optional	Accounting Request STOP
12	3GPP- Selection-Mode	Contains the Selection mode for this PDP Context received in the Create PDP Context Request Message	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,
13	3GPP-Charging- Characteristics	Contains the charging characteristics for this PDP Context received in the Create PDP Context Request Message (only available in R99 and later releases)	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP,

The RADIUS vendor Attribute is encoded as follows (as per RFC 2865)

				Bits	3				
Octets	8	7	6	5	4	3	2	1	
1				Type =	= 26				
2		Length = n							
3			Ve	ndor id	octet 1				
4			Ve	ndor id	octet 2	<u>)</u>			
5			Ve	ndor id	octet 3	}			
6			Ve	ndor id	octet 4	ļ			
7-n				Strin	g				

n>=7

3GPP Vendor Id = 10415

The string part is encoded as follows:

				Bits	8				
Octets	8	7	6	5	4	3	2	1	
1		3GPP type =							
2			3GI	PP Len	gth = n	n			
3 –m		3GPP value							

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

<u>1 - 3GPP-IMSI</u>

Bits

Octets 8 7 6 5 4 3 2 1

1 3GPP type = 1
2 3GPP Length= m

3-m IMSI digits 1-n (UTF-8 encoded)

3GPP Type: 1

n <= 15

Length: m = 17

IMSI value: Text:

This is the UTF-8 encoded IMSI; The definition of IMSI shall be in accordance with [41]. There shall be no padding characters between the MCC and MNC, and between the MNC and MSIN. If the IMSI is less than 15 digits, the padding in the GTP information element shall be removed by the GGSN and not encoded in this sub-attribute.

### 2 - 3GPP-Charging ID

				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			30	SPP ty	pe = 2			
2		3GPP Length= 6						
3			Chargir	ig ID va	alue O	ctet 1		
4			Chargir	ig ID va	alue O	ctet 2		
5			Chargir	ig ID va	alue O	ctet 3		
6			Chargir	ig ID va	alue O	ctet 4		

3GPP Type: 2

Length: 6

Charging ID value: 32 bits unsigned integer

<u>3-</u>3GPP-<u>PDP type</u>

Octets	8	7	6	5	4	3	2	1
1			3	GPP typ	oe = 3			
2			3G	PP Ler	ngth= 6	)		
3			PD	P type	octet 1			
4			PD	P type	octet 2	)		
5			PD	P type	octet 3	}		
6			PD	P type	octet 4			

Length: 6

PDP type value: Unsigned 32 bits integer

PDP type octet possible values:

0 = IP

1 = PPP

# <u>4 - 3GPP-Charging Gateway address</u>

Bits

Octets	8	7	6	5	4	3	2	1	
1			30	SPP typ	oe = 4				
2			3G	PP Ler	gth= 6				
3		Charging GW addr Octet 1							
4		(	Chargin	g GW a	addr O	ctet 2			
5		(	Chargin	g GW a	addr O	ctet 3			
6		(	Chargin	g GW a	addr O	ctet 4			

3GPP Type: 4

Length: 6

Charging GW address value: Address

# <u>5 - 3GPP-GPRS Negotiated QoS profile</u>

Bits

Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 5								
2		3GPP Length= L								
3 -L		L	JTF-8 e	ncodec	l QoS <sub>l</sub>	orofile				

3GPP Type: 5

Length: 24-27 (release 99) or 8-11 (release 98)

QoS profile value: Text

UTF-8 encoded QoS profile syntax:

"<Release indicator> - <release specific QoS IE UTF-8 encoding>"

<Release indicator> = UTF-8 encoded number :

**Octets** 

2

5

"98" = Release 98

"99"= Release 99

<release specific QoS profile UTF-8 encoding> = UTF-8 encoded QoS profile for the release indicated by the release indicator.

The UTF-8 encoding of a QoS IE is defined as follows: each octet is described by 2 UTF-8 encoded digits, defining its hexadecimal representation. The QoS profile definition is in 3G TS 24.008

The release 98 QoS profile data is 3 octets long, which then results in a 6 octets UTF-8 encoded string,

The release 99 QoS profile data is 11 octets long, which results in a 22 octets UTF-8 encoded string.

# 6 - 3GPP-SGSN address

8	7	6	5	4	3	2	1	
		30	GPP typ	e = 6				
3GPP Length= 6								
SGSN addr Octet 1								
SGSN addr Octet 2								
SGSN addr Octet 3								
		SGS	SN addr	Octet	4			

3GPP Type: 6

Length: 6

SGSN address value: Address

# 7 - 3GPP-GGSN address

Bits

Octets	8	7	6	5	4	3	2	1		
1			30	GPP typ	oe = 7					
2		3GPP Length= 6								
3		GGSN addr Octet 1								
4		GGSN addr Octet 2								
5		GGSN addr Octet 3								
6			GGS	SN add	r Octet	4				

3GPP Type: 7

Length: 6

GGSN address value: Address

#### 8 - 3GPP-IMSI MCC-MNC

				Bits	8					
Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 8								
2		3GPP Length= n								
3		MCC digit1 (UTF-8 encoded)								
4		М	CC digi	t2 (UTI	-8 en	coded)				
5		MCC digit3 (UTF-8 encoded)								
6		MNC digit1 (UTF-8 encoded)								
7		MNC digit2 (UTF-8 encoded)								
8		MNC d	ligit3 if p	oresent	(UTF-	8 enco	ded)			

3GPP Type: 8

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

MS address value: text

This is the UTF-8 encoding of the MS MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

### 9 - 3GPP-GGSN MCC-MNC

Octets         8         7         6         5         4         3         2         1           1         3GPP type = 9         3GPP Length= n         3         3GPP Length= n         3         4 <th></th> <th></th> <th></th> <th></th> <th>Bits</th> <th>1</th> <th></th> <th></th> <th></th>					Bits	1						
2 3GPP Length= n 3 MCC digit1 (UTF-8 encoded) 4 MCC digit2 (UTF-8 encoded) 5 MCC digit3 (UTF-8 encoded) 6 MNC digit1 (UTF-8 encoded) 7 MNC digit2 (UTF-8 encoded)	Octets	8	7	6	5	4	3	2	1			
3 MCC digit1 (UTF-8 encoded) 4 MCC digit2 (UTF-8 encoded) 5 MCC digit3 (UTF-8 encoded) 6 MNC digit1 (UTF-8 encoded) 7 MNC digit2 (UTF-8 encoded)	1			30	SPP typ	e = 9						
4 MCC digit2 (UTF-8 encoded) 5 MCC digit3 (UTF-8 encoded) 6 MNC digit1 (UTF-8 encoded) 7 MNC digit2 (UTF-8 encoded)	2		3GPP Length= n									
5 MCC digit3 (UTF-8 encoded) 6 MNC digit1 (UTF-8 encoded) 7 MNC digit2 (UTF-8 encoded)	3		MCC digit1 (UTF-8 encoded)									
6 MNC digit1 (UTF-8 encoded) 7 MNC digit2 (UTF-8 encoded)	4		MCC digit2 (UTF-8 encoded)									
7 MNC digit2 (UTF-8 encoded)	5		MCC digit3 (UTF-8 encoded)									
	6		MNC digit1 (UTF-8 encoded)									
8 MNC digit3 if present (UTF-8 encoded)	7		М	NC digi	t2 (UTF	-8 end	coded)					
: (	8		MNC d	ligit3 if p	resent	(UTF-	8 enco	ded)				

3GPP Type: 9

Length: n shall be 7 or 8 octets depending on the presence of MNC digit 3

GGSN address value: text

This is the UTF-8 encoding of the GGSN MCC-MNC values. In accordance with [41] the MCC shall be 3 digits and the MNC shall be either 2 or 3 digits. There shall be no padding characters between the MCC and MNC.

<u>10 -</u> 3GPP-<u>NSAPI</u>

Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 10								
2			3GF	P Len	gth= <u>3</u> (	6				
3				NSA	PI					

Length: 3

NSAPI value: text

It is the value of the NSAPI of the PDP context the RADIUS message is related to. It is encoded as its hexadecimal representation, using 1UTF-8 encoded digit.

# <u>11 -</u> 3GPP-<u>Session Stop Indicator</u>

	Bits									
Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 11								
2		3GPP Length= <u>3</u> 2								
<u>3</u>		1111111 11111111								

3GPP Type: 11

Length: 32

There is no value field for this Vendor Specific Attribute.

Value is set to all 1.

# End of modified section