# 3GPP TSG CN Plenary Meeting #18 4<sup>th</sup> - 6<sup>th</sup> December 2002. New Orleans, USA.

Source: TSG CN WG3

Title: CRs on R97 Work Item TEI [GPRS], [CR Pack 1]

Agenda item: 7.3

**Document for:** APPROVAL

# **Introduction:**

This document contains 8 CRs on R97 WI TEI [GPRS], including the corresponding mirror CRs (as required).

These CRs have been agreed by TSG CN WG3 and are forwarded to TSG CN Plenary meeting #18 for approval.

WG_tdoc	Title	Spec	CR	Rev	Cat	Rel	Version
N3-021005	RADIUS enhancement for identification of VPLMN	09.61	A039	1	F	R97	6.8.0
N3-021006	RADIUS enhancement for identification of VPLMN	09.61	A040	1	Α	R98	7.7.0
N3-020920	RADIUS enhancement for identification of VPLMN	29.061	070		Α	R99	3.10.0
N3-020921	RADIUS enhancement for identification of VPLMN	29.061	071		Α	Rel-4	4.5.0
N3-020922	RADIUS enhancement for identification of VPLMN	29.061	072		Α	Rel-5	5.3.0
N3-020769	Correction of Radius Accounting Update figure	29.061	064		F	R99	3.10.0
N3-020770	Correction of Radius Accounting Update figure	29.061	065		Α	Rel-4	4.5.0
N3-020771	Correction of Radius Accounting Update figure	29.061	066		Α	Rel-5	5.3.0

# 3GPP TSG-CN WG3 Meeting #25 Miami, USA, 23<sup>rd</sup> - 27<sup>th</sup> September 2002.

		CHANGE	REQ	JEST		CR-Form-v7
<b>*</b> 29	0.061 CR	064	жrev	<b>-</b> #	Current vers	ion: 3.10.0 **
For <u><b>HELP</b></u> on using	this form, se	e bottom of this	s page or l	ook at the	e pop-up text	over the 🛱 symbols.
Proposed change affect	ets: UICC	apps <b></b>	ME	Radio Ad	ccess Networ	ck Core Network X
Title: 第 Con	rrection of fig	gure for Radius	Accountin	g Update		
Source: # TSC	G_CN WG3					
Manteltana aada 90 TCI	_				D-4 90	45/00/2002
Work item code:      TEI					Date: ₩	15/09/2002
Deta	F (correction A (correspo B (addition C (functional D (editorial	nds to a correction of feature), I modification of a modification) ions of the above	on in an earl feature)		2	R99 the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)
Reason for change: ₩						een replaced by the ial copy-and-paste
Summary of change: ₩	Replace t text.	ne figure with th	ne one fron	n previou	s release, mo	odified to fit updated
Consequences if # not approved:	Erroneous	specification				
Clauses affected: #	16.3.3					
Other specs 第 affected:	Y N Oth X O&I	er core specifications  M Specifications		*		
Other comments: #						

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

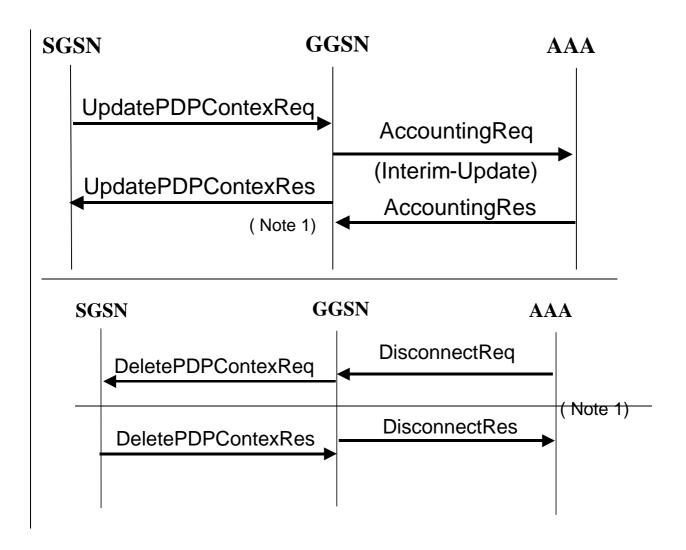
Comprehensive information and tips about how to create CRs can be found at <a href="http://www.3gpp.org/specs/CR.htm">http://www.3gpp.org/specs/CR.htm</a>. Below is a brief summary:

- 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 ( the clause containing the first piece of changed text. Del the change request.	(use CTRL-A to select it) into the specification just in front of ete those parts of the specification which are not relevant to

# 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.



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Figure 24: RADIUS for PDP context Update

End of modified section

# 3GPP TSG-CN WG3 Meeting #25 Miami, USA, 23<sup>rd</sup> - 27<sup>th</sup> September 2002.

		СН	ANGE	REQ	UE	ST			(	CR-Form-v7
¥ 2	9.061	CR 06	5	жrev	-	ж	Current vers	ion: <b>4.5</b>	.0	*
For <u>HELP</u> on using Proposed change affer		m, see bot		s page or	_		e pop-up text		-	
		of figure fo	or Radius	Accounti	ng Up	date				
Source: # TS	SG_CN V	VG3								
Work item code:	il .						Date: ₩	15/09/20	02	
De	rection) responds to dition of featu ctional modifications of	e following categories:			2	Rel-4 the following (GSM Phas (Release 19 (Release 19 (Release 19 (Release 19 (Release 4) (Release 5) (Release 6)	e 2) 996) 997) 998) 999)	ases:		
Reason for change:		e figure as					est release be be an editor			
Summary of change:	Repl text.	ace the figu	ure with th	e one fro	m pre	viou	s release, mo	odified to fit	upda	ated
Consequences if not approved:	₩ Erroi	neous spec	cification							
Other specs affected:	X X X	Other core Test spec O&M Spe	ifications		*					
Other comments:	HE .									

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

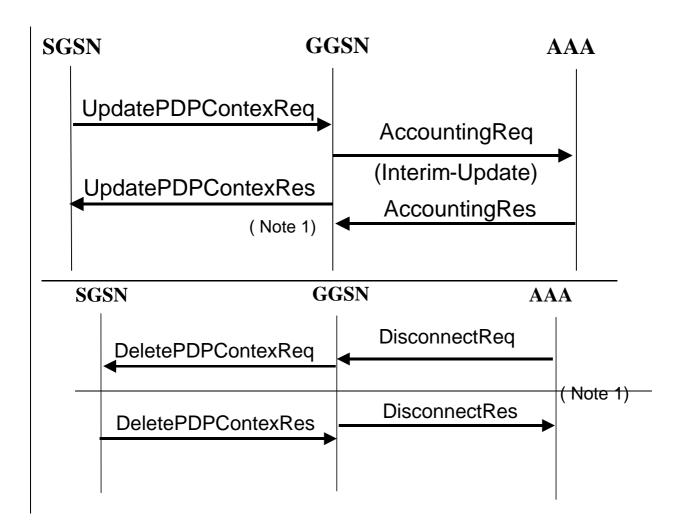
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Figure 24: RADIUS for PDP context Update

	End of modified section	

# 3GPP TSG-CN WG3 Meeting #25 Miami, USA, 23<sup>rd</sup> - 27<sup>th</sup> September 2002.

		СНА	NGE REC	QUEST	•	CR-Form-vi
ж	<mark>29.061</mark>	CR 066	<b>≋ rev</b>	<b>-</b> #	Current vers	5.3.0 **
For <u>HELP</u> on usi		orm, see botton			e pop-up text	over the 光 symbols. k
		_	Radius Accoun	ting Update	)	
Source: # T	rsg_cn	WG3				
Work item code:	TEI				Date: ₩	15/09/2002
	F (co A (co B (ac C (fu D (ec Detailed ex	ldition of feature nctional modifica litorial modificati	correction in an e ), ation of feature) on) e above categori		2 e) R96 R97 R98 R99	Rel-5 the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)
Reason for change:		ne figure as in s				een replaced by the ial copy-and-paste
Summary of change	完業 Rep text		with the one fr	om previou	is release, mo	odified to fit updated
Consequences if not approved:	₩ Erro	oneous specific	cation			
Clauses affected:	ж 16.3 Y N					
Other specs affected:	果 X X	Test specific		*		
Other comments:	H					

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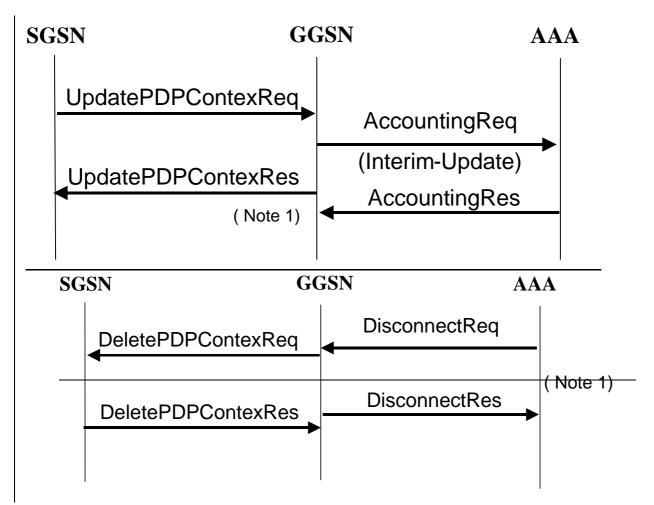
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Figure 24: RADIUS for PDP context Update

End of modified section

# 3GPP TSG-CN WG3 Meeting #26 Bangkok, Thailand, 11<sup>th</sup> - 15<sup>th</sup> November 2002.

				С	HANC	GE REC	QUE	ST		CR-I	Form-v7
¥		29.	.061	CR (	70	ж rev	-	ж	Current vers	ion: 3.10.0 <sup>#</sup>	
For <b>H</b>	IELP on t	using t	his for	m, see	bottom of	this page o	r look i	at the	pop-up text	over the ¥ symbo	ls.
For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the <b>%</b> symbols.  Proposed change affects: UICC apps <b>**</b> ME Radio Access Network Core Network <b>X</b>											
Title:	Ж	RAI	DIUS	enhance	ement for	identificatio	n of VI	PLMN	1		
Source:	я	tso	G_CN	WG3							
Work ite	m code: ₩	TEI							Date: ₩	05/11/2002	
Categor	<i>y:</i> ≇	Use of	F (corn A (corn B (add C (fun D (edi iled exp	rection) responds lition of foctional motorial motorial	eature), odification dification)	ories: ection in an ea of feature) nove categori		elease	2	R99 the following release (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)	es:
Reason	for chang	e: #	legal legal orde natu	constraction const	ints as de int is the work oper ntent, the	efined by the nature of co rators to cor network op	e approntent of appropries approp	opriat that is rith th will n	te regulatory someone permissible e regulatory eed the capa	o operate within the bodies. Once such in certain countrie demands regarding ibility to perform ng a content downl	n es. In g the
Summar	y of chan	ge:♯	Defir	nition of	a new RA	ADIUS 3GPI	<sup>2</sup> Vend	dor-sp	oecific attribu	te	
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# 16.4.7 Sub-attributes of the 3GPP Vendor-Specific attribute

The table 7 describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START, Accounting-Request STOP and Accounting-Request Interim-Update messages.

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

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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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 applied 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, Accounting-Request Interim-Update
8	3GPP-IMSI-MCC-MNC	MCC and MNC extracted from the user's IMSI (first 5 or 6 digits, as applicable from the presented	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update

		IMSI).		
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 associated PDN and MSISDN/IMSI from creation to deletion.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP Accounting-Request Interim-Update
11	3GPP- Session-Stop- Indicator	Indicates 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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
14	3GPP-CG-IPv6- Address	Charging Gateway IPv6 address	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
15	3GPP-SGSN-IPv6- Address	SGSN IPv6 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
16	3GPP-GGSN-IPv6- Address	GGSN IPv6 address that is used by the GTP control plane for the context establishment.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
17	3GPP- IPv6-DNS- Servers	List of IPv6 addresses of DNS servers for an APN	Optional	Access-Accept
<u>18</u>	3GPP-SGSN-MCC-	MCC and MNC	<u>Optional</u>	Access-Request,

MNC	extracted from the	Accounting-Request
	RAI within the	START, Accounting-
	Create PDP	Request STOP,
	Context Request	Accounting-Request
	or Update PDP	Interim-Update
	Context Request	
	message.	

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			Vei	ndor id	octet 1			
4			Vei	ndor id	octet 2	2		
5			Vei	ndor id	octet 3	3		
6			Vei	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			3	GPP ty	/pe =			
2			3GF	PP Len	gth = n	n		
3 –m			3	3GPP v	alue			

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

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

			Bits	S			
8	7	6	5	4	3	2	1
		30	GPP typ	oe = 1			
		3G	PP Len	gth= n	1		
	IMS	SI digits	1-n (U	TF-8 e	ncode	d)	
	8	8 7	3G	8 7 6 5 3GPP typ 3GPP Len	,	8 7 6 5 4 3  3GPP type = 1  3GPP Length= m	8 7 6 5 4 3 2 3GPP type = 1

3GPP Type: 1

 $n \le 15$ 

Length: m = 17

IMSI value: Text:

This is the UTF-8 encoded IMSI; The definition of IMSI shall be in accordance with [24] and [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	GPP typ	oe = 2			
2			3G	PP Ler	ngth= 6	3		
3			Chargir	ig ID va	alue O	ctet 1		
4			Chargin	ig ID va	alue O	ctet 2		
5			Chargir	ig ID va	alue O	ctet 3		
6			Chargir	ng ID va	alue O	ctet 4		•
-			- · · · · · · · · · · · · · · · · · ·	9				

3GPP Type: 2

Length: 6

Charging ID value: 32 bits unsigned integer

#### 3-3GPP-PDP type

				Bits	S					
Octets	8	7	6	5	4	3	2	1		
1			30	GPP ty	oe = 3					
2		3GPP Length= 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 = IPv4

1 = PPP

2 = IPv6

# 4 - 3GPP-Charging Gateway address

				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			30	GPP ty	pe = 4			
2			3G	PP Ler	ngth= 6	;		
3		(	Chargin	ig 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		

Length: 6

Charging GW address value: Address

### 5 - 3GPP-GPRS Negotiated QoS profile

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

3GPP Type: 5

Length: 27 (release 99) or 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.

# <u>6 - 3GPP-SGSN address</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			30	GPP typ	oe = 6			
2			3G	PP Ler	ngth= 6			
3			SGS	SN addr	Octet	1		
4			SGS	SN addr	Octet	2		
5			SGS	SN addr	Octet	3		
6			SGS	SN addr	Octet	4		

3GPP Type: 6

Length: 6

SGSN address value: Address

# <u>7 - 3GPP-GGSN address</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			30	3PP typ	oe = 7			
2			3G	PP Ler	ngth= 6			
3			GGS	N 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

# <u>8 -</u> 3GPP-<u>IMSI MCC-MNC</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			30	SPP typ	e = 8			
2			3G	PP Ler	gth= n			
3		М	CC digi	t1 (UTF	-8 end	coded)		
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	igit3 if p	resent	(UTF-	8 encc	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 [24] and [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	3PP typ	oe = 9				
2			3G	PP Ler	gth= r	1			
3		MCC digit1 (UTF-8 encoded)							
4		М	CC digi	t2 (UTF	-8 en	coded)			
5		М	CC digi	t3 (UTF	-8 en	coded)			
6		М	NC digi	t1 (UTF	-8 en	coded)			
7		М	NC digi	t2 (UTF	-8 en	coded)			
8		MNC d	ligit3 if p	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 [24] and [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	S				
Octets	8	7	6	5	4	3	2	1	
1			3G	PP typ	e = 10				
2		3GPP Length= 3							
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.

### 11 - 3GPP-Session Stop Indicator

				Bits	5					
Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 11								
2				PP Ler						
3			1	1111	111					

Length: 3

Value is set to all 1.

#### 12 - 3GPP-Selection-Mode

				Bits	5					
Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 12								
2		3GPP Length= 1								
3		UTF-8	encod	ed Sele	ction r	node s	tring			

3GPP Type: 12

Length: 3

Selection mode value: Text

The format of this attribute shall be a character string consisting of a single digit, mapping from the binary value of the selection mode in the Create PDP Context message [24]. Where TS 29.060 provides for interpretation of the value, e.g. map '3' to '2', this shall be done by the GGSN.

#### 13 - 3GPP-Charging-Characteristics

				Bits	3				
Octets	8	7	6	5	4	3	2	1	
1			30	PP typ	e = 13				
2		3GPP Length= 6							
3-6	UTF	-8 enc	oded C	harging	Chara	acterist	tics val	ue	

3GPP Type: 13

Length: 6

Charging characteristics value: Text

The charging characteristics is value is the value of the 2 octets value field taken from the GTP IE described in 29.060section 7.7.23.

Each octet of this IE field value is represented via 2 UTF-8 encoded digits, defining its hexadecimal representation.

#### 14 - 3GPP-Charging Gateway IPv6 address

Bits

Octets	8	7	6	5	4	3	2	1
1			3G	PP typ	e = 14			
2			3GF	PP Len	gth= 18	3		
3		Ch	arging (	3W IPv	6 addr	Octet	1	
4		Ch	arging (	3W IPv	6 addr	Octet	2	
5-18		Char	ging GV	V IPv6	addr C	ctet 3	-16	

Length: 18

Charging GW IPv6 address value: IPv6 Address

# <u>15 -</u> 3GPP-<u>SGSN IPv6 address</u>

				Bits	8			
Octets	8	7	6	5	4	3	2	1
1			3G	PP typ	e = 15			
2			3GF	PP Len	gth= 1	8		
3			SGSN	IPv6 ad	ddr Oc	tet 1		
4			SGSN	IPv6 ad	ddr Oc	tet 2		
5-18		S	GSN IF	v6 add	dr Octe	t 3-16		

3GPP Type: 15

Length: 18

SGSN IPv6 address value: IPv6 Address<u>16 -</u> 3GPP-<u>GGSN IPv6 address</u>

				Bits	3				
Octets	8	7	6	5	4	3	2	1	
1		3GPP type = 16							
2			3GF	PP Len	gth= 1	8			
3			GGSN	IPv6 a	ddr Oc	tet 1			
4			GGSN	IPv6 a	ddr Oc	tet 2			
5-18		G	GSN IF	v6 add	dr Octe	t 3-16			

3GPP Type: 16

Length: 18

GGSN IPv6 address value: IPv6 Address

### <u>17 -</u> 3GPP-<u>IPv6-DNS-Servers</u>

				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			30	PP typ	e = 17			
2			3G	PP Len	gth= n	า		
3-18		(1s	t) DNS	IPv6 a	ddr Oc	tet 1-1	6	
19-34		(2n	d) DNS	IPv6 a	ıddr Od	tet 1-1	16	
k-m		(n-t	h) DNS	IPv6 a	ıddr Od	ctet 1-1	16	

3GPP Type: 17

Length: m = n\*16 + 2; n > = 1 and n < = 15; k = m-15

IPv6 DNS Server value: IPv6 AddressThe 3GPP- IPv6-DNS-Servers Attribute provides a list of one or more ('n') IPv6 addresses of Domain Name Server (DNS) servers for an APN. The DNS servers are listed in the order of preference for use by a client resolver, i.e. the first is 'Primary DNS Server', the second is 'Secondary DNS Server' etc. The attribute may be included in Access-Accept packets.

### 18 - 3GPP-SGSN MCC-MNC

				Bits	<u>i</u>			
<u>Octets</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	4	<u>3</u>	<u>2</u>	1
<u>1</u>			<u>3G</u>	PP typ	e = 18			
<u>2</u>			<u>3G</u>	PP Len	igth= n	1		
<u>3</u>		M	CC digi	t1 (UTF	-8 end	coded)		
<u>4</u>		M	CC digi	t2 (UTF	-8 end	coded)		
<u>4</u> <u>5</u>		M	CC digi	t3 (UTF	-8 end	coded)		
<u>6</u>		M	NC digi	t1 (UTF	-8 end	coded)		
<u>7</u>		M	NC digi	t2 (UTF	-8 end	coded)		
<u>8</u>		MNC d	ligit3 if p	resent	(UTF-	8 enco	ded)	

3GPP Type: 18

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

SGSN address value: text

This is the UTF-8 encoding of the RAI MCC-MNC values. In accordance with [24] and [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.

# 3GPP TSG-CN WG3 Meeting #26 Bangkok, Thailand, 11<sup>th</sup> - 15<sup>th</sup> November 2002.

	CHANGE REQUEST										CR-Form-v7
*	29.	061	CR 07	1	ж rev	-	ж	Current vers	sion:	4.5.0	ж
For <u><b>HELP</b></u> on us	sing t	his for	m, see bo	ttom of this	s page or	look	at the	e pop-up tex	t over	the ¥ syr	mbols.
Proposed change a	affect	's: ∖	JICC apps	<b>#</b>	ME	Rad	dio A	ccess Netwo	rk	Core Ne	etwork X
Title: #	RAI	OIUS (	enhancem	ent for ide	ntification	of V	PLMI	V			
Source: #	TSC	G_CN	WG3								
Work item code: ₩	TEI							Date: ₩	05/	11/2002	
Category: 第	Use of	F (corr A (cor B (add C (fun D (edi led exp	the following rection) responds to dition of feat ctional modifi torial modifi planations o 3GPP TR 2	a correction a correction if it cation of the cation of the cation of the cation is the cation is the above	on in an ea feature)		elease	Release: #6 Use one of 2 e) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	the fo (GSN (Rele (Rele (Rele (Rele (Rele		eases:
Reason for change	e: ¥	legal legal orde natu	constraint constraint r for netwo re of conte	s as defing is the nate of the	ed by the ture of co ors to con twork ope	e appr ntent nply w erator	opria that i /ith th will n	are required to the regulatory is permissible to regulatory the capabefore allowing the regulatory to the capabefore allowing the requirements.	bodie e in ce dema ability	es. Once sertain coul ands regal to perforr	such ntries. In rding the n
Summary of chang Consequences if not approved:	ø:₩ #	Ope	ators will r	not be able	e to comp	oly wit	h the	pecific attributes of the pecific attributes	eman		
Clauses affected:	ж	16.4	7								
Other specs affected:	*	Y N X X	Other cor	re specifications		¥					
Other comments:	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/specs/CR.htm">http://www.3gpp.org/specs/CR.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.

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

The table 7 describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START, Accounting-Request STOP and Accounting-Request Interim-Update messages.

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

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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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 applied 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, Accounting-Request Interim-Update
8	3GPP-IMSI-MCC-MNC	MCC and MNC extracted from the user's IMSI (first 5 or 6 digits, as applicable from the presented	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update

		IMSI).		
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 associated PDN and MSISDN/IMSI from creation to deletion.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP Accounting-Request Interim-Update
11	3GPP- Session-Stop- Indicator	Indicates 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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
14	3GPP-CG-IPv6- Address	Charging Gateway IPv6 address	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
15	3GPP-SGSN-IPv6- Address	SGSN IPv6 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
16	3GPP-GGSN-IPv6- Address	GGSN IPv6 address that is used by the GTP control plane for the context establishment.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
17	3GPP- IPv6-DNS- Servers	List of IPv6 addresses of DNS servers for an APN	Optional	Access-Accept
<u>18</u>	3GPP-SGSN-MCC-	MCC and MNC	<u>Optional</u>	Access-Request,

MNC	extracted from the	Accounting-Request
	RAI within the	START, Accounting-
	Create PDP	Request STOP,
	Context Request	Accounting-Request
	or Update PDP	Interim-Update
	Context Request	
	message.	

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			Vei	ndor id	octet 1			
4			Vei	ndor id	octet 2	2		
5			Vei	ndor id	octet 3	3		
6			Vei	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			3	GPP ty	/pe =			
2			3GF	PP Len	gth = n	n		
3 –m			3	3GPP v	alue			

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

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

			Bits	S			
8	7	6	5	4	3	2	1
		30	GPP typ	oe = 1			
		3G	PP Len	gth= n	1		
	IMS	SI digits	1-n (U	TF-8 e	ncode	d)	
	8	8 7	3G	8 7 6 5 3GPP typ 3GPP Len	,	8 7 6 5 4 3  3GPP type = 1  3GPP Length= m	8 7 6 5 4 3 2 3GPP type = 1

3GPP Type: 1

 $n \le 15$ 

Length: m = 17

IMSI value: Text:

This is the UTF-8 encoded IMSI; The definition of IMSI shall be in accordance with [24] and [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	GPP typ	oe = 2			
2			3G	PP Ler	ngth= 6	3		
3			Chargir	ig ID va	alue O	ctet 1		
4			Chargin	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		•
-			- · · · · · · · · · · · · · · · · · ·	9				

3GPP Type: 2

Length: 6

Charging ID value: 32 bits unsigned integer

#### 3-3GPP-PDP type

				Bits	S					
Octets	8	7	6	5	4	3	2	1		
1			30	GPP ty	oe = 3					
2		3GPP Length= 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 = IPv4

1 = PPP

2 = IPv6

# 4 - 3GPP-Charging Gateway address

				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			30	GPP typ	oe = 4			
2			3G	PP Ler	ngth= 6	6		
3		(	Chargin	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	•	

Length: 6

Charging GW address value: Address

### 5 - 3GPP-GPRS Negotiated QoS profile

				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			30	GPP ty	pe = 5			
2			3G	PP Ler	ngth= L	_		
3 -L			JTF-8 e	ncoded	2oQ t	orofile		

3GPP Type: 5

Length: 27 (release 99) or 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.

# <u>6 - 3GPP-SGSN address</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			30	GPP typ	oe = 6			
2			3G	PP Ler	ngth= 6			
3			SGS	SN addr	Octet	1		
4			SGS	SN addr	Octet	2		
5			SGS	SN addr	Octet	3		
6			SGS	SN addr	Octet	4		

3GPP Type: 6

Length: 6

SGSN address value: Address

# <u>7 - 3GPP-GGSN address</u>

Bits

Octets	8	7	6	5	4	3	2	1			
1		3GPP type = 7									
2			3G	PP Ler	ngth= 6						
3			GGS	N 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

# <u>8 -</u> 3GPP-<u>IMSI MCC-MNC</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			30	SPP typ	e = 8			
2			3G	PP Ler	gth= n			
3		М	CC digi	t1 (UTF	-8 end	coded)		
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	igit3 if p	resent	(UTF-	8 encc	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 [24] and [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	8				
Octets	8	7	6	5	4	3	2	1	
1			30	3PP typ	oe = 9				
2			3G	PP Ler	ngth= r	1			
3		MCC digit1 (UTF-8 encoded)							
4		М	CC digi	t2 (UTF	8 en	coded)			
5		M	CC digi	t3 (UTF	8 en	coded)			
6		М	NC digi	t1 (UTF	8 en	coded)			
7		М	NC digi	t2 (UTF	8 en	coded)			
8		MNC d	ligit3 if p	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 [24] and [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		3GPP Length= 3											
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.

### 11 - 3GPP-Session Stop Indicator

	Bits											
Octets	8	7	6	5	4	3	2	1				
1			30	PP typ	e = 11							
2		3GPP Length= 3										
3		1111111										

Length: 3

Value is set to all 1.

#### 12 - 3GPP-Selection-Mode

				Bits	8								
Octets	8	7	6	5	4	3	2	1					
1		3GPP type = 12											
2		3GPP Length= 1											
3		UTF-8 encoded Selection mode string											

3GPP Type: 12

Length: 3

Selection mode value: Text

The format of this attribute shall be a character string consisting of a single digit, mapping from the binary value of the selection mode in the Create PDP Context message [24]. Where TS 29.060 provides for interpretation of the value, e.g. map '3' to '2', this shall be done by the GGSN.

#### 13 - 3GPP-Charging-Characteristics

Bits													
Octets	8	7	6	5	4	3	2	1					
1		3GPP type = 13											
2		3GPP Length= 6											
3-6	UTF	UTF-8 encoded Charging Characteristics value											

3GPP Type: 13

Length: 6

Charging characteristics value: Text

The charging characteristics is value is the value of the 2 octets value field taken from the GTP IE described in 29.060section 7.7.23.

Each octet of this IE field value is represented via 2 UTF-8 encoded digits, defining its hexadecimal representation.

#### 14 - 3GPP-Charging Gateway IPv6 address

Bits

Octets	8	7	6	5	4	3	2	1					
1			3G	PP typ	e = 14								
2		3GPP Length= 18											
3		Ch	arging (	3W IPv	6 addr	Octet	1						
4		Charging GW IPv6 addr Octet 2											
5-18		Char	ging GV	V IPv6	addr C	ctet 3	-16						

Length: 18

Charging GW IPv6 address value: IPv6 Address

# <u>15 -</u> 3GPP-<u>SGSN IPv6 address</u>

		Bits											
Octets	8	7	6	5	4	3	2	1					
1		3GPP type = 15											
2			3GF	PP Len	gth= 1	8							
3			SGSN	IPv6 a	ddr Oc	tet 1							
4		SGSN IPv6 addr Octet 2											
5-18		S	GSN IF	v6 add	dr Octe	t 3-16							

3GPP Type: 15

Length: 18

SGSN IPv6 address value: IPv6 Address<u>16 -</u> 3GPP-<u>GGSN IPv6 address</u>

		Bits											
Octets	8	7	6	5	4	3	2	1					
1		3GPP type = 16											
2			3GF	PP Len	gth= 1	8							
3			GGSN	IPv6 a	ddr Oc	tet 1							
4		GGSN IPv6 addr Octet 2											
5-18		G	GSN IF	v6 add	dr Octe	t 3-16							

3GPP Type: 16

Length: 18

GGSN IPv6 address value: IPv6 Address

### <u>17 -</u> 3GPP-<u>IPv6-DNS-Servers</u>

				Bits	S								
Octets	8	7	6	5	4	3	2	1					
1		3GPP type = 17											
2			3G	PP Len	gth= n	า							
3-18		(1s	t) DNS	IPv6 a	ddr Oc	tet 1-1	6						
19-34		(2n	d) DNS	IPv6 a	ıddr Od	tet 1-1	16						
k-m		(n-t	h) DNS	IPv6 a	ıddr Od	ctet 1-1	16						

3GPP Type: 17

Length: m = n\*16 + 2; n > = 1 and n < = 15; k = m-15

IPv6 DNS Server value: IPv6 AddressThe 3GPP- IPv6-DNS-Servers Attribute provides a list of one or more ('n') IPv6 addresses of Domain Name Server (DNS) servers for an APN. The DNS servers are listed in the order of preference for use by a client resolver, i.e. the first is 'Primary DNS Server', the second is 'Secondary DNS Server' etc. The attribute may be included in Access-Accept packets.

### 18 - 3GPP-SGSN MCC-MNC

		<u>Bits</u>												
<u>Octets</u>	8	<u>7</u>	<u>6</u>	<u>5</u>	4	<u>3</u>	<u>2</u>	1						
<u>1</u>			<u>3G</u>	PP typ	e = 18									
<u>2</u>		3GPP Length= n												
<u>3</u>		MCC digit1 (UTF-8 encoded)												
<u>4</u>		M	CC digi	t2 (UTF	-8 end	coded)								
<u>4</u> <u>5</u>		M	CC digi	t3 (UTF	-8 end	coded)								
<u>6</u>		M	NC digi	t1 (UTF	-8 end	coded)								
<u>7</u>		M	NC digi	t2 (UTF	-8 end	coded)								
<u>8</u>		MNC d	ligit3 if p	resent	(UTF-	8 enco	ded)							

3GPP Type: 18

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

SGSN address value: text

This is the UTF-8 encoding of the RAI MCC-MNC values. In accordance with [24] and [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.

# 3GPP TSG-CN WG3 Meeting #26 Bangkok, Thailand, 11<sup>th</sup> - 15<sup>th</sup> November 2002.

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# 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/specs/CR.htm">http://www.3gpp.org/specs/CR.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.

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

The table 7 describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START, Accounting-Request STOP and Accounting-Request Interim-Update messages.

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

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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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 applied 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, Accounting-Request Interim-Update
8	3GPP-IMSI-MCC-MNC	MCC and MNC extracted from the user's IMSI (first 5 or 6 digits, as applicable from the presented	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update

		IMSI).		
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 associated PDN and MSISDN/IMSI from creation to deletion.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP Accounting-Request Interim-Update
11	3GPP- Session-Stop- Indicator	Indicates 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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
14	3GPP-CG-IPv6- Address	Charging Gateway IPv6 address	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
15	3GPP-SGSN-IPv6- Address	SGSN IPv6 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
16	3GPP-GGSN-IPv6- Address	GGSN IPv6 address that is used by the GTP control plane for the context establishment.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update
17	3GPP- IPv6-DNS- Servers	List of IPv6 addresses of DNS servers for an APN	Optional	Access-Accept
<u>18</u>	3GPP-SGSN-MCC-	MCC and MNC	<u>Optional</u>	Access-Request,

MNC	extracted from the	Accounting-Request
	RAI within the	START, Accounting-
	Create PDP	Request STOP,
	Context Request	Accounting-Request
	or Update PDP	Interim-Update
	Context Request	
	message.	

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

Octets         8         7         6         5         4         3         2         1           1         Type = 26           2         Length = n           3         Vendor id octet 1           4         Vendor id octet 2           5         Vendor id octet 3           6         Vendor id octet 4					Bits	3			
2	Octets	8	7	6	5	4	3	2	1
3 Vendor id octet 1 4 Vendor id octet 2 5 Vendor id octet 3	1				Type =	= 26			
4 Vendor id octet 2 5 Vendor id octet 3	2				Length	= n			
5 Vendor id octet 3	3			Vei	ndor id	octet 1			
	4			Vei	ndor id	octet 2	)		
6 Vendor id octat 4	5			Vei	ndor id	octet 3	}		
Vendor la octet 4	6			Vei	ndor id	octet 4			
7-n String	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		3GPP Length = m								
3 –m			3	3GPP v	alue					

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

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

				Bits	8			
Octets	8	7	6	5	4	3	2	1
1			30	GPP typ	oe = 1			
2			3G	PP Len	gth= n	า		
3-m		IMS	SI digits	1-n (U	TF-8 e	ncode	d)	

3GPP Type: 1

 $n \le 15$ 

Length: m =17

IMSI value: Text:

This is the UTF-8 encoded IMSI; The definition of IMSI shall be in accordance with [24] and [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

Octets 1 2 3 4 5				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			30	GPP typ	oe = 2			
2			3G	PP Ler	ngth= 6	3		
3			Chargir	ig ID va	alue O	ctet 1		
4			Chargin	ig ID va	alue O	ctet 2		
5			Chargir	ig ID va	alue O	ctet 3		
6			Chargir	ng ID va	alue O	ctet 4		•
-			- · · · · · · · · · · · ·	9				

3GPP Type: 2

Length: 6

Charging ID value: 32 bits unsigned integer

#### 3-3GPP-PDP type

		Bits								
Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 3								
2		3GPP Length= 6								
3			PD	P 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 = IPv4

1 = PPP

2 = IPv6

## 4 - 3GPP-Charging Gateway address

				Bits	S				
Octets	8	7	6	5	4	3	2	1	
1			30	GPP typ	oe = 4				
2		3GPP Length= 6							
3		(	Chargin	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	•		

Length: 6

Charging GW address value: Address

#### 5 - 3GPP-GPRS Negotiated QoS profile

				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			30	GPP ty	pe = 5			
2			3G	PP Ler	ngth= L	_		
3 -L			JTF-8 e	ncoded	2oQ t	orofile		

3GPP Type: 5

Length: 27 (release 99) or 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.

#### <u>6 - 3GPP-SGSN address</u>

Bits

Octets	8	7	6	5	4	3	2	1	
1			30	GPP typ	oe = 6				
2			3G	PP Ler	ngth= 6				
3		SGSN addr Octet 1							
4			SGS	SN addr	Octet	2			
5			SGS	SN addr	Octet	3			
6			SGS	SN addr	Octet	4			

3GPP Type: 6

Length: 6

SGSN address value: Address

## <u>7 - 3GPP-GGSN address</u>

Bits

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	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

## <u>8 -</u> 3GPP-<u>IMSI MCC-MNC</u>

Bits

Octets	8	7	6	5	4	3	2	1
1			30	SPP typ	e = 8			
2			3G	PP Ler	gth= n			
3		М	CC digi	t1 (UTF	-8 end	coded)		
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	igit3 if p	resent	(UTF-	8 encc	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 [24] and [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	3PP typ	oe = 9					
2			3G	PP Ler	ngth= r	1				
3		M	CC digi	t1 (UTF	8 en	coded)				
4		М	CC digi	t2 (UTF	8 en	coded)				
5		M	CC digi	t3 (UTF	8 en	coded)				
6		М	NC digi	t1 (UTF	8 en	coded)				
7		М	NC digi	t2 (UTF	8 en	coded)				
8		MNC d	ligit3 if p	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 [24] and [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		3GPP Length= 3									
3		NSAPI									

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.

#### 11 - 3GPP-Session Stop Indicator

		Bits								
Octets	8	7	6	5	4	3	2	1		
1			3G	PP typ	e = 11					
2		3GPP Length= 3								
3		1111111								

Length: 3

Value is set to all 1.

#### 12 - 3GPP-Selection-Mode

				Bits	8					
Octets	8	7	6	5	4	3	2	1		
1		3GPP type = 12								
2		3GPP Length= 1								
3		UTF-8 encoded Selection mode string								

3GPP Type: 12

Length: 3

Selection mode value: Text

The format of this attribute shall be a character string consisting of a single digit, mapping from the binary value of the selection mode in the Create PDP Context message [24]. Where TS 29.060 provides for interpretation of the value, e.g. map '3' to '2', this shall be done by the GGSN.

#### 13 - 3GPP-Charging-Characteristics

	Bits									
Octets	8	7	6	5	4	3	2	1		
1			30	PP typ	e = 13					
2		3GPP Length= 6								
3-6	UTF	UTF-8 encoded Charging Characteristics value								

3GPP Type: 13

Length: 6

Charging characteristics value: Text

The charging characteristics is value is the value of the 2 octets value field taken from the GTP IE described in 29.060section 7.7.23.

Each octet of this IE field value is represented via 2 UTF-8 encoded digits, defining its hexadecimal representation.

#### 14 - 3GPP-Charging Gateway IPv6 address

Bits

Octets	8	7	6	5	4	3	2	1		
1			3G	PP typ	e = 14					
2		3GPP Length= 18								
3		Ch	arging (	3W IPv	6 addr	Octet	1			
4		Charging GW IPv6 addr Octet 2								
5-18		Charging GW IPv6 addr Octet 3-16								

Length: 18

Charging GW IPv6 address value: IPv6 Address

## <u>15 -</u> 3GPP-<u>SGSN IPv6 address</u>

		Bits								
Octets	8	7	6	5	4	3	2	1		
1			3G	PP typ	e = 15					
2			3GF	PP Len	gth= 1	8				
3			SGSN	IPv6 ad	ddr Oc	tet 1				
4		SGSN IPv6 addr Octet 2								
5-18		S	GSN IF	v6 add	dr Octe	t 3-16				

3GPP Type: 15

Length: 18

SGSN IPv6 address value: IPv6 Address<u>16 -</u> 3GPP-<u>GGSN IPv6 address</u>

	Bits									
Octets	8	7	6	5	4	3	2	1		
1			3G	PP typ	e = 16					
2			3GF	PP Len	gth= 18	8				
3			GGSN	IPv6 a	ddr Oc	tet 1				
4		GGSN IPv6 addr Octet 2								
5-18		G	GSN IF	v6 add	dr Octe	t 3-16				

3GPP Type: 16

Length: 18

GGSN IPv6 address value: IPv6 Address

#### <u>17 -</u> 3GPP-<u>IPv6-DNS-Servers</u>

				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			3G	PP typ	e = 17			
2			3G	PP Len	gth= n	า		
3-18		(1s	t) DNS	IPv6 a	ddr Oc	tet 1-1	6	
19-34		(2n	d) DNS	IPv6 a	ıddr Od	tet 1-1	16	
k-m		(n-t	h) DNS	IPv6 a	ddr O	ctet 1-1	16	

3GPP Type: 17

Length: m = n\*16 + 2;  $n \ge 1$  and  $n \le 15$ ; k = m-15

IPv6 DNS Server value: IPv6 AddressThe 3GPP- IPv6-DNS-Servers Attribute provides a list of one or more ('n') IPv6 addresses of Domain Name Server (DNS) servers for an APN. The DNS servers are listed in the order of preference for use by a client resolver, i.e. the first is 'Primary DNS Server', the second is 'Secondary DNS Server' etc. The attribute may be included in Access-Accept packets.

#### 18 - 3GPP-SGSN MCC-MNC

				Bits	<u>i</u>			
<u>Octets</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	1
<u>1</u>			<u>3G</u>	PP typ	e = 18			
<u>2</u>			<u>3G</u>	PP Len	igth= n	1		
<u>3</u>		M	CC digi	t1 (UTF	-8 end	coded)		
<u>4</u>		M	CC digi	t2 (UTF	-8 end	coded)		
<u>4</u> <u>5</u>		M	CC digi	t3 (UTF	-8 end	coded)		
<u>6</u>		M	NC digi	t1 (UTF	-8 end	coded)		
<u>7</u>		M	NC digi	t2 (UTF	-8 end	coded)		
<u>8</u>		MNC d	ligit3 if p	resent	(UTF-	8 enco	ded)	

3GPP Type: 18

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

SGSN address value: text

This is the UTF-8 encoding of the RAI MCC-MNC values. In accordance with [24] and [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.

## 3GPP TSG-CN WG3 Meeting #26 Bangkok, Thailand, 11<sup>th</sup> - 15<sup>th</sup> November 2002.

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Other com	ments:	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/specs/CR.htm">http://www.3gpp.org/specs/CR.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.

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

The table 7 describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START, Accounting-Request STOP and Accounting-Request Interim-Update messages.

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

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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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 applied 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, Accounting-Request Interim-Update
8	3GPP-IMSI-MCC-MNC	MCC and MNC extracted from the user's IMSI (first 5 or 6 digits, as applicable from the presented	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update

		IMSI).		
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 associated PDN and MSISDN/IMSI from creation to deletion.	Optional	Access-Request, Accounting-Request START, Accounting- Request STOP Accounting-Request Interim-Update
11	3GPP- Session-Stop- Indicator	Indicates 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, Accounting-Request Interim-Update
18	3GPP-SGSN-MCC- MNC	MCC and MNC extracted from the RAI within the Create PDP Context Request or Update PDP Context Request message.	<u>Optional</u>	Access-Request, Accounting-Request START, Accounting- Request STOP, Accounting-Request Interim-Update

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

b	1	U	S	

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	)						
5			Ve	ndor id	octet 3	}						
6	Vendor id octet 4											
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			3	GPP ty	/pe =							
2		3GPP Length = m										
3 –m		3GPP value										

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

<u>1 -</u> 3GPP-<u>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 [24]. 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	ng ID va	alue O	ctet 1				
4			Chargir	ng ID va	alue O	ctet 2				
5		Charging ID value Octet 3								
6			Chargir	ng 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
 PDP type octet 2

 5
 PDP type octet 3

 6
 PDP 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

-		٠		
	ĸ	1	t	C

Octets	8	7	6	5	4	3	2	1			
1			30	SPP ty	oe = 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									

Length: 27 (release 99) or 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

Rite

SGSN addr Octet 4

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

				DIG	5				
Octets	8	7	6	5	4	3	2	1	
1			30	GPP ty	pe = 6				
2		3GPP Length= 6							
3			SGS	SN add	r Octet	1			
4			SGS	SN add	r Octet	2			
5			SGS	SN add	r Octet	3			

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 ty	oe = 7					
2		3GPP Length= 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				

Length: 6

GGSN address value: Address

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

				Bits	3					
Octets	8	7	6	5	4	3	2	1		
1			30	SPP typ	e = 8					
2			3G	PP Ler	gth= r	1				
3		MCC digit1 (UTF-8 encoded)								
4		М	CC digi	t2 (UTF	8 en	coded)				
5		М	CC digi	t3 (UTF	-8 en	coded)				
6		М	NC digi	t1 (UTF	-8 en	coded)				
7		М	NC digi	t2 (UTF	8 en	coded)				
8		MNC d	ligit3 if p	resent	(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 [24] 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				PP Len				
3		М	CC digi	t1 (UTF	-8 en	coded)		
4		М	CC digi	t2 (UTF	-8 en	coded)		
5		М	CC digi	t3 (UTF	-8 en	coded)		
6		М	NC digi	t1 (UTF	-8 en	coded)		
7		М	NC digi	t2 (UTF	-8 en	coded)		
8		MNC d	ligit3 if p	resent	(UTF-	8 encc	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 [24] 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 3GPP Length= 3
3 NSAPI

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= 3							
3	1111111								

3GPP Type: 11

Length: 3

Value is set to all 1.

#### <u>12 -</u> 3GPP-Selection-Mode

				Bits	3				
Octets	8	7	6	5	4	3	2	1	
1		3GPP type = 12							
2			3G	PP Ler	ngth= 1				
3		UTF-8 encoded Selection mode string							

3GPP Type: 12

Length: 3

Selection mode value: Text

The format of this attribute shall be a character string consisting of a single digit, mapping from the binary value of the selection mode in the Create PDP Context message [22]. Where TS 29.060 provides for interpretation of the value, e.g. map '3' to '2', this shall be done by the GGSN.

#### 18 - 3GPP-SGSN MCC-MNC

				Bits	<u>3</u>					
<u>Octets</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>		
<u>1</u>			<u>3G</u>	PP typ	e = 18					
<u>2</u>		3GPP Length= n								
<u>3</u>		MCC digit1 (UTF-8 encoded)								
<u>4</u>		М	CC digi	t2 (UTF	8 end	coded)				
<u>5</u>		M	CC digi	t3 (UTF	8 end	coded)				
<u>6</u>		MNC digit1 (UTF-8 encoded)								
<u>7</u>		MNC digit2 (UTF-8 encoded)								
<u>8</u>		MNC d	ligit3 if p	resent	(UTF-	8 enco	ded)			

3GPP Type: 18

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

SGSN address value: text

This is the UTF-8 encoding of the RAI MCC-MNC values. In accordance with [24] and [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.

## 3GPP TSG-CN WG3 Meeting #26 Bangkok, Thailand, 11<sup>th</sup> - 15<sup>th</sup> November 2002.

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## 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/specs/CR.htm">http://www.3gpp.org/specs/CR.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.

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

The table 7 describes the sub-attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request START, Accounting-Request STOP and Accounting-Request Interim-Update messages.

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

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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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 applied 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, Accounting-Request Interim-Update
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, Accounting-Request Interim-Update
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 associated PDN and	Optional	Access-Request, Accounting-Request START, Accounting-

		MSISDN/IMSI from creation to deletion.		Request STOP Accounting-Request Interim-Update
11	3GPP- Session-Stop- Indicator	Indicates 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, Accounting-Request Interim-Update
18	3GPP-SGSN-MCC- MNC	MCC and MNC extracted from the RAI within the Create PDP Context Request or Update PDP Context Request message.	<u>Optional</u>	Access-Request. Accounting-Request START, Accounting- Request STOP. Accounting-Request Interim-Update

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

				Bits	S						
Octets	8	7	6	5	4	3	2	1			
1	Type = 26										
2		Length = n									
3		Vendor id octet 1									
4			Vei	ndor id	octet 2	2					
5			Vei	ndor id	octet 3	3					
6		Vendor id octet 4									
7-n			•	Strin	ıg		•				

n>=7

3GPP Vendor Id = 10415

The string part is encoded as follows:

				Bits	S					
Octets	8	7	6	5	4	3	2	1		
1	3GPP type =									
2	3GPP Length = m									
3 –m	3GPP value									

m>=2 and m<=248

The 3GPP specific attributes encoding is clarified below.

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

				Bits	S			
Octets	8	7	6	5	4	3	2	1
1			30	GPP ty	oe = 1			
2			3G	PP Ler	gth= n	n		
3-m		IMS	SI digits	1-n (U	TF-8 e	ncode	d)	

n <=15

Length: m = 17

IMSI value: Text:

This is the UTF-8 encoded IMSI; The definition of IMSI shall be in accordance with [26]. 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
 Charging ID value Octet 1

 4
 Charging ID value Octet 2

 5
 Charging ID value Octet 3

 6
 Charging ID value Octet 4

3GPP Type: 2

Length: 6

Charging ID value: 32 bits unsigned integer

#### 3-3GPP-PDP type

				Bits	S					
Octets	8	7	6	5	4	3	2	1		
1			30	SPP typ	oe = 3					
2		3GPP Length= 6								
3			PD	P 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

1 = PPP

#### 4 - 3GPP-Charging Gateway address

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 Charging GW addr Octet 2

5 Charging GW addr Octet 3

6 Charging GW addr Octet 4

3GPP Type: 4

Length: 6

Charging GW address value: Address

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

				ыц	8						
Octets	8	7	6	5	4	3	2	1			
1		3GPP type = 5									
2		3GPP Length= L									
3 -L		l	JTF-8 e	ncodec	I QoS	profile		·			

3GPP Type: 5

Length: 27 (release 99) or 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 3GPP 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

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

3GPP Type: 7

Length: 6

GGSN address value: Address

## <u>8 -</u> 3GPP-<u>IMSI MCC-MNC</u>

Bits

Octets	8	7	6	5	4	3	2	1		
1			30	SPP typ	e = 8					
2		3GPP Length= n								
3		MCC digit1 (UTF-8 encoded)								
4		MCC digit2 (UTF-8 encoded)								
5		М	CC digi	t3 (UTF	-8 end	coded)				
6		М	NC digi	t1 (UTF	-8 end	coded)				
7		MNC digit2 (UTF-8 encoded)								
8		MNC d	igit3 if p	resent	(UTF-	8 encc	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 [26] 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** 5 3 3GPP type = 91 2 3GPP Length= n 3 MCC digit1 (UTF-8 encoded) 4 MCC digit2 (UTF-8 encoded) 5 MCC digit3 (UTF-8 encoded) MNC digit1 (UTF-8 encoded) 7 MNC digit2 (UTF-8 encoded) MNC digit3 if present (UTF-8 encoded)

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 [26] 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	3					
8	7	6	5	4	3	2	1		
	3GPP type = 10								
		3G	PP Ler	ngth= 3	}				
			NSA	PI					
	8	8 7		8 7 6 5 3GPP typ 3GPP Ler		8 7 6 5 4 3 3GPP type = 10 3GPP Length= 3	8 7 6 5 4 3 2 3GPP type = 10 3GPP Length= 3		

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		3GPP type = 11								
2		3GPP Length= 3								
3		•	1	1111	111	•	•			

3GPP Type: 11

Length: 3

Value is set to all 1.

#### 12 - 3GPP-Selection-Mode

				Bits	5						
Octets	8	7	6	5	4	3	2	1			
1		3GPP type = 12									
2			3G	PP Ler	ngth= 1						
3		UTF-8	encode	ed Sele	ction r	node s	tring				

3GPP Type: 12

Length: 3

Selection mode value: Text

The format of this attribute shall be a character string consisting of a single digit, mapping from the binary value of the selection mode in the Create PDP Context message [24]. Where 3GPP TS 29.060 provides for interpretation of the value, e.g. map '3' to '2', this shall be done by the GGSN.

#### 18 - 3GPP-SGSN MCC-MNC

				Bits	3							
<u>Octets</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>				
<u>1</u>		3GPP type = 18										
<u>2</u>		3GPP Length= n										
<u>3</u>		M	CC digi	t1 (UTF	8 en	coded)						
<u>4</u>		M	CC digi	t2 (UTF	-8 en	coded)						
<u>5</u>		<u>M</u>	CC digi	t3 (UTF	-8 en	coded)						
<u>6</u>		M	NC digi	t1 (UTF	8 en	coded)						
<u>7</u>		M	NC digi	t2 (UTF	-8 en	coded)						
<u>8</u>		MNC c	ligit3 if p	resent	(UTF-	8 encc	ded)					

3GPP Type: 18

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

SGSN address value: text

This is the UTF-8 encoding of the RAI MCC-MNC values. In accordance with [24] and [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.