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

| 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        | A   | 7.6.0    | R98   | GPRS     |
| N3-020352     | 29.061 | 047  | 1   | Clarifications on the RADIUS flows        | A   | 3.1.0    | R99   | GPRS     |
| N3-020353     | 29.061 | 055  | 3   | Clarifications on the RADIUS flows        | A   | 4.4.0    | Rel-4 | GPRS     |
| N3-020354     | 29.061 | 056  | 1   | Clarifications on the RADIUS flows        | A   | 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 | A   | 7.6.0    | R98   | GPRS     |
| N3-020293     | 29.061 | 053  | -   | Corrections to the 3GPP RADIUS attributes | A   | 3.1.0    | R99   | GPRS     |
| N3-020294     | 29.061 | 048  | 1   | Corrections to the 3GPP RADIUS attributes | A   | 4.4.0    | Rel-4 | GPRS     |
| N3-020295     | 29.061 | 054  | -   | Corrections to the 3GPP RADIUS attributes | A   | 5.1.0    | Rel-5 | GPRS     |

### Tdoc N3-020291

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

|                      | ,          |  | •  | •  |  |   |  |  |  |  | C   | R-Form-v6.1   |
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| ж                    |            | 09.6   | 1 CR   | A035   | \$   | rev   | -  | ж  | Current ver  | sion:  | 6.7.0   | ж   |
|                      | Sp         | oec Title  | : Inter  | rworkir  | ng be  | tweer   | n the  | e PL   | .MN sup  | porti  | ng  | ж   |
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| Title:               | ж          | Correctio  | ons to the   | <mark>e 3GPP F</mark>  | RADIUS   | attribu   | tes  |  |  |  |   |   |
| Source:              | ж          | TSG CI   | WG3  |  |  |   |  |  |  |  |   |   |
| Work iter            | m code: ₩  | GPRS   |  |  |  |   |  |  | لا :Date   | € <mark>Apr</mark>   | <mark>il 9, 2002</mark>   |   |
| Category<br>Reason f | r: ₩       | F<br>Use <u>one</u> of<br>F (c.<br>A (c<br>B (a<br>C (ft<br>D (e<br>Detailed e<br>be found i<br>e: X The<br>indic<br>corre<br>In th<br>profi<br>QoS<br>To h<br>profi<br>attril | of the follo<br>orrection)<br>orrespond<br>dition of<br>unctional<br>ditorial me<br>explanation<br>n 3GPP<br>QoS-Pro-<br>cator (2 c<br>ection for<br>ection for<br>ection for<br>profile).<br>ave cons-<br>ile via the<br>bute to the<br>length fiel | ds to a col<br>feature),<br>modification<br>ons of the a<br>TR 21.900<br>file attribut<br>hararcters<br>the QoS p<br>specificat<br>din the Q<br>Moreover<br>istency wi<br>e RADIUS<br>e negotiat | egories:<br>rrection i<br>on of fea<br>))<br>above ca<br>),<br>above ca<br>),<br>above ca<br>),<br>and the<br>profile e<br>createPI<br>c, in the<br>CreatePI<br>c, in the<br>CreatePI<br>c, in the<br>CreatePI<br>c, in the<br>S interface<br>ed QoS | in an eau<br>ture)<br>ategorie:<br>h shall b<br>e hypher<br>ncoding<br>QoS pro<br>DPconte<br>G-CDR<br>a interfa<br>ce. This<br>profile. | rlier re<br>s can<br>be 27 co<br>n chara<br>offile se<br>xReq,<br>the Ge<br>ace the<br>CR pr<br>ag has | or 11 (<br>acter 1<br>no th<br>GSN<br>copose<br>been | Release: 8<br>Use <u>one</u> o<br>2<br>) R96<br>R97<br>R98<br>R99<br>REL-4<br>REL-5<br>(currently 24<br>need to be ad<br>the RADIUS<br>e one used b<br>only sent the<br>SN should on<br>es to modify | f The for<br>(GSM<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele (Rele<br>(Rele (Rele<br>(Rele (Rele<br>(Rele (Rele<br>(Rele (Rele<br>(Rele (Rele<br>(Rele (Rele<br>(Rele (Rele<br>(Rele (Rele (Rele<br>(Rele (Rele (Re | 7<br>Ilowing relea<br>1 Phase 2)<br>ase 1996)<br>ase 1997)<br>ase 1998)<br>ase 1998)<br>ase 5)<br>ase 5)<br>, since the phase 5)<br>ge is the Q<br>GSN (i.e. phase 1)<br>iated QoS p<br>the negoti<br>uested QoS<br>This CR pro | eases:<br>release<br>poses a<br>oS<br>negotiated<br>profile.<br>ated QoS<br>S profile |
| Summary              | y of chang | to co<br>RAI<br>folic<br>CR j  | DIUS attr<br>DIUS attr<br>ow this m<br>proposes<br>- QoS   | o 3.<br>ributes are<br>odel. Sinc<br>to define a<br>profile ler  | based c<br>e the Sto<br>a value f<br>ngth cor  | on TLV is op-Sessi or this a rected   | model<br>on-Inc<br>ttribut   | , for c<br>licato<br>te to c                         | consistency a<br>r as defined (<br>conform to th   | ll the a<br>currentl<br>e TLV  | ttributes sh<br>ly has no v<br>model.   | ould<br>alue, this  |
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|                      |            |  | - Corr   | ection on  | the valu   | e for the   | e Stop-  | -Sessi   | on-Indicator   | attribu  | te  |   |
| Consequ              | ences if   | 쁐 <mark>lft</mark>   | he chang   | ges are n  | ot appr  | oved, ir  | ncorre   | ct im  | plementatic  | ons of t   | he RADIL  | JS  |

| not approved:            | attributes will occur.   |
|--------------------------|--|
| Clauses affected:        | <b>% 16.4</b>  |
| Other specs<br>Affected: | #       Other core specifications       #         Test specifications       0&M Specifications |
| Other comments:          | ¥  |

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

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

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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   | Associated attribute   |
|------------|--|--|--|--|
|            |  |  | Requirement  | (Location of Sub-attr)   |
| 1          | 3GPP-IMSI                                    | IMSI for this user   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 2          | 3GPP-Charging-Id                             | Charging ID for<br>this PDP Context<br>(this together with<br>the GGSN-<br>Address<br>constitutes a<br>unique identifier<br>for the PDP<br>context).                                   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 3          | 3GPP-PDP Type                                | Type of PDP<br>context, e.g. IP or<br>PPP  | Conditional<br>(mandatory if<br>attribute 7 is<br>present) | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 4          | 3GPP-CG-Address                              | Charging<br>Gateway IP<br>address  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 5          | 3GPP-GPRS-<br><u>Negotiated-</u> QoS-Profile | QoS profile<br>receivedapplied<br>by GGSN  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 6          | 3GPP-SGSN-Address                            | SGSN IP address<br>that is used by the<br>GTP control plane<br>for the handling of<br>control messages.<br>It may be used to<br>identify the PLMN<br>to which the user<br>is attached. | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 7          | 3GPP-GGSN-Address                            | GGSN IP address<br>that is used by the<br>GTP control plane<br>for the context<br>establishment. It<br>is the same as the<br>GGSN IP address<br>used in the<br>GCDRs.                  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 8          | 3GPP-IMSI-MCC-MNC                            | MCC and MNC<br>extracted from the<br>user's IMSI (first 5<br>or 6 digits, as<br>applicable from<br>the presented<br>IMSI).   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 9          | 3GPP-GGSN- MCC-<br>MNC                       | MCC-MNC of the network the GGSN belongs to.  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 10         | 3GPP-NSAPI                                   | Identifies a<br>particular PDP<br>context for the  | Optional   | Access-Request,<br>Accounting-Request<br>START, Access-  |

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

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

| Octets | 8 | 7                 | 6  | 5       | 4       | 3 | 2 | 1 |  |  |  |  |
|--------|---|-------------------|----|---------|---------|---|---|---|--|--|--|--|
| 1      |   | Туре = 26         |    |         |         |   |   |   |  |  |  |  |
| 2      |   | Length = n        |    |         |         |   |   |   |  |  |  |  |
| 3      |   | Vendor id octet 1 |    |         |         |   |   |   |  |  |  |  |
| 4      |   |                   | Ve | ndor id | octet 2 | 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      |      | 3GPP type =     |   |   |   |   |   |   |  |  |  |
| 2      |      | 3GPP Length = m |   |   |   |   |   |   |  |  |  |
| 3 –m   |      | 3GPP value      |   |   |   |   |   |   |  |  |  |

Bits

 $m \ge 2$  and  $m \le 248$ 

The 3GPP specific attributes encoding is clarified below.

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



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.

#### <u>2 - 3GPP-Charging ID</u>

|        |   |                           |         | Bits     | 3       |        |   |   |  |  |
|--------|---|---------------------------|---------|----------|---------|--------|---|---|--|--|
| Octets | 8 | 7                         | 6       | 5        | 4       | 3      | 2 | 1 |  |  |
| 1      |   | 3GPP type = 2             |         |          |         |        |   |   |  |  |
| 2      |   | 3GPP Length= 6            |         |          |         |        |   |   |  |  |
| 3      |   |                           | Chargir | ng ID va | alue Oo | ctet 1 |   |   |  |  |
| 4      |   |                           | Chargir | ng ID va | alue Oo | ctet 2 |   |   |  |  |
| 5      |   | Charging ID value Octet 3 |         |          |         |        |   |   |  |  |
| 6      |   |                           | Chargir | ng ID va | alue Oo | 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      |   |                  | PD | P type | octet 4 |   |   |   |  |  |  |  |

#### 3GPP Type: 3

Length: 6

PDP type value: Unsigned 32 bits integer

PDP type octet possible values:

0 = IP

<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      |   | Charging GW addr Octet 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>



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.

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

|        |   |                   |     | Bits    | 8       |   |   |   |  |  |
|--------|---|-------------------|-----|---------|---------|---|---|---|--|--|
| Octets | 8 | 7                 | 6   | 5       | 4       | 3 | 2 | 1 |  |  |
| 1      |   | 3GPP type = 6     |     |         |         |   |   |   |  |  |
| 2      |   | 3GPP Length= 6    |     |         |         |   |   |   |  |  |
| 3      |   |                   | SGS | SN addi | r Octet | 1 |   |   |  |  |
| 4      |   |                   | SGS | SN addi | r Octet | 2 |   |   |  |  |
| 5      |   | SGSN addr Octet 3 |     |         |         |   |   |   |  |  |
| 6      |   |                   | SGS | SN addi | r Octet | 4 |   |   |  |  |

3GPP Type: 6

Length: 6

SGSN address value: Address

#### 7 - 3GPP-GGSN address

|        |   |                |     | Bits    | 5       |   |   |   |  |
|--------|---|----------------|-----|---------|---------|---|---|---|--|
| Octets | 8 | 7              | 6   | 5       | 4       | 3 | 2 | 1 |  |
| 1      |   |                | 30  | GPP typ | 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 |   |   |  |

3GPP Type: 7

Length: 6

GGSN address value: Address

|        |   | Dits                       |             |          |         |        |       |   |  |  |  |
|--------|---|----------------------------|-------------|----------|---------|--------|-------|---|--|--|--|
| Octets | 8 | 7                          | 6           | 5        | 4       | 3      | 2     | 1 |  |  |  |
| 1      |   |                            | 30          | GPP typ  | be = 8  |        |       |   |  |  |  |
| 2      |   |                            | 3G          | PP Ler   | ngth= r | 1      |       |   |  |  |  |
| 3      |   | MCC digit1 (UTF-8 encoded) |             |          |         |        |       |   |  |  |  |
| 4      |   | М                          | CC dig      | it2 (UTF | -8 en   | coded) |       |   |  |  |  |
| 5      |   | М                          | CC dig      | it3 (UTF | -8 en   | coded) |       |   |  |  |  |
| 6      |   | М                          | NC dig      | it1 (UTF | -8 en   | coded) |       |   |  |  |  |
| 7      |   | М                          | NC dig      | it2 (UTF | -8 en   | coded) |       |   |  |  |  |
| 8      |   | MNC d                      | ligit3 if I | present  | (UTF-   | 8 enco | oded) |   |  |  |  |

Rite

#### 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.

#### <u>9 -</u> 3GPP-<u>GGSN MCC-MNC</u>

| Octets | 8 | 7     | 6           | 5        | 4      | 3      | 2    | 1 |
|--------|---|-------|-------------|----------|--------|--------|------|---|
| 1      |   |       | 30          | GPP typ  | e = 9  |        |      |   |
| 2      |   |       | 3G          | PP Len   | gth= n |        |      |   |
| 3      |   | М     | CC dig      | it1 (UTF | -8 end | coded) |      |   |
| 4      |   | М     | CC dig      | it2 (UTF | -8 end | coded) |      |   |
| 5      |   | М     | CC dig      | it3 (UTF | -8 end | coded) |      |   |
| 6      |   | М     | NC dig      | it1 (UTF | -8 end | coded) |      |   |
| 7      |   | М     | NC dig      | it2 (UTF | -8 end | coded) |      |   |
| 8      |   | MNC d | ligit3 if I | oresent  | (UTF-  | 8 encc | ded) |   |

Bits

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>



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   | 8             |   |   |   |
|----------|---|---|----------|--------|---------------|---|---|---|
| Octets   | 8 | 7 | 6        | 5      | 4             | 3 | 2 | 1 |
| 1        |   |   | 3G       | PP typ | e = 11        |   |   |   |
| 2        |   |   | 3GF      | P Len  | gth= <u>3</u> | 2 |   |   |
| <u>3</u> |   |   | <u>1</u> | 1111   | 111           |   |   |   |
|          |   |   |          |        |               |   |   |   |

ъ.

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

### Tdoc N3-020292

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

|                |            |  | •  | •  |  |                                      |  |  |  |   | C  | R-Form-v6.1   |
|----------------|------------|--|--|--|--|--------------------------------------|--|--|--|---|--|---|
| CHANGE REQUEST |            |  |  |  |  |                                      |  |  |  |   |  |   |
| ж              |            | <b>09.6</b> <sup>°</sup>   | 1 CR   | A036   | жI   | rev                                  | -  | ж  | Current vers   | sion:   | 7.6.0  | ж   |
|                | S          | pec Title  | : Inter  | workin   | g betv   | veen                                 | the  | PL   | MN sup   | porti   | ng   | ж   |
|                |            |  | Pac  | ket Bas  | sed Se   | ervic                                | es a   | ind  | (PDN)  |   | Ū  |   |
| Eor <b>U</b>   |            | uning this f   | orm 00/  | bottom   | of this pa   | ao or                                | look   | ot tho   | non un tox   | tovor   | the fe aver  |   |
| гої <u>II</u>  |            | ising this i   | onn, see   |  | n uns pa   | ge or                                | IUUK a   |  | pop-up lex   | lover   | uie a syn  | 10015.  |
| Propose        | d change   | affects: 3   | € (U)  | SIM  | ME/UE  |                                      | Radi   | o Acc  | cess Networ  | 'k  | Core Ne  | twork X   |
| Title:         | ж          | Correctio  | ns to the  | <mark>e 3GPP R</mark>  | ADIUS a  | attribut                             | tes  |  |  |   |  |   |
| Source:        | ж          | TSG CN   | WG3  |  |  |                                      |  |  |  |   |  |   |
| Work ite       | m code: ೫  | GPRS   |  |  |  |                                      |  |  | Date: #  | Apr   | il 9, 2002   |   |
| Category       | r: ¥       | A<br>Use <u>one</u> c<br>F (cc<br>A (cd<br>B (ad<br>C (fu<br>D (ed<br>Detailed e<br>be found i | of the follo<br>prection)<br>prespon<br>ddition of<br>unctional<br>ditorial m<br>xplanatic<br>n 3GPP   | owing cate<br>ds to a cor<br>feature),<br>modification<br>ons of the a<br>TR 21.900<br>file attribu  | gories:<br>rection in<br>on of featu<br>)<br>above catu<br>te length   | an ear<br>ıre)<br>egories<br>shall b | lier re<br>s can<br>e 27 o   | lease)<br>nr 11 (  | <b>Release: %</b><br>Use <u>one</u> of<br>2<br>R96<br>R97<br>R98<br>R99<br>REL-4<br>REL-5  | f the for<br>(GSM)<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele<br>(Rele | 3<br>Ilowing rele<br>1 Phase 2)<br>ase 1996)<br>ase 1997)<br>ase 1998)<br>ase 1999)<br>ase 4)<br>ase 5)<br>, since the r                                     | ases:   |
|                |            | In th<br>profi<br>QoS<br>To h<br>profi<br>attrib<br>to co<br>RAD<br>follo<br>CR p              | ection for<br>e current<br>le receiv<br>profile).<br>ave cons<br>le via the<br>bute to th<br>length fie<br>prect it to<br>DIUS attu-<br>w this m<br>proposes | hararcters)<br>the QoS p<br>specificat<br>ed in the Q<br>Moreover<br>istency with<br>RADIUS<br>e negotiate<br>eld for the<br>o 3.<br>ributes are<br>odel. Since<br>to define a | and the l<br>profile end<br>ion the Q<br>CreatePDI<br>, in the G<br>th the Ga<br>interface<br>ed QoS pr<br>NSAPI en<br>based on<br>the the Stop<br>value for | TLV r<br>-Sessio                     | file se<br>Req,<br>the GC<br>ce the<br>CR pr<br>g has<br>phas<br>phas<br>ttribut | nt in t<br>no the<br>GSN c<br>GGS<br>opose<br>been i<br>, for c<br>licator<br>e to c | the RADIUS<br>only sent the<br>N should only<br>to modify t<br>ncorrectly se<br>onsistency al<br>r as defined c<br>onform to the | ded. The<br>messa<br>the G<br>Negoti<br>ly send<br>the requ<br>et to 6.           | is CR prop<br>ge is the Qo<br>GSN (i.e. n<br>lated QoS p<br>the negotia<br>uested QoS<br>This CR pr<br>this CR pr<br>ttributes sho<br>by has no va<br>model. | oses a<br>oS<br>legotiated<br>profile.<br>ated QoS<br>profile<br>oposes<br>ould<br>alue, this |
| Summar         | y of chang | ye: #  | - QoS<br>- Corr<br>- Corr<br>- Corr  | profile ler<br>ection on (<br>ection on t<br>ection on t   | ngth corre<br>QoS profi<br>the NSAF<br>the value   | cted<br>le nam<br>I enco<br>for the  | e<br>ding l<br>Stop-   | ength<br>Sessio  | on-Indicator   | attribu   | te   |   |
| Conseau        | ences if   | 육 lf th  | ne chano   | ges are no   | ot approv  | /ed. in                              | corre  | ct im  | olementatio  | ns of t   | he RADIU   | S   |

| not approved:            | attributes will occur.   |
|--------------------------|--|
| Clauses affected:        | <b>% 16.4</b>  |
| Other specs<br>Affected: | #       Other core specifications       #         Test specifications       0&M Specifications |
| Other comments:          | ¥  |

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

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

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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   | Associated attribute   |
|------------|--|--|--|--|
|            |  |  | Requirement  | (Location of Sub-attr)   |
| 1          | 3GPP-IMSI                                    | IMSI for this user   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 2          | 3GPP-Charging-Id                             | Charging ID for<br>this PDP Context<br>(this together with<br>the GGSN-<br>Address<br>constitutes a<br>unique identifier<br>for the PDP<br>context).                                   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 3          | 3GPP-PDP Type                                | Type of PDP<br>context, e.g. IP or<br>PPP  | Conditional<br>(mandatory if<br>attribute 7 is<br>present) | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 4          | 3GPP-CG-Address                              | Charging<br>Gateway IP<br>address  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 5          | 3GPP-GPRS-<br><u>Negotiated-</u> QoS-Profile | QoS profile<br>receivedapplied<br>by GGSN  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 6          | 3GPP-SGSN-Address                            | SGSN IP address<br>that is used by the<br>GTP control plane<br>for the handling of<br>control messages.<br>It may be used to<br>identify the PLMN<br>to which the user<br>is attached. | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 7          | 3GPP-GGSN-Address                            | GGSN IP address<br>that is used by the<br>GTP control plane<br>for the context<br>establishment. It<br>is the same as the<br>GGSN IP address<br>used in the<br>GCDRs.                  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 8          | 3GPP-IMSI-MCC-MNC                            | MCC and MNC<br>extracted from the<br>user's IMSI (first 5<br>or 6 digits, as<br>applicable from<br>the presented<br>IMSI).   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 9          | 3GPP-GGSN- MCC-<br>MNC                       | MCC-MNC of the network the GGSN belongs to.  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 10         | 3GPP-NSAPI                                   | Identifies a<br>particular PDP<br>context for the  | Optional   | Access-Request,<br>Accounting-Request<br>START, Access-  |

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

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      |   |   | Ve  | ndor id | octet 1 |   |   |   |
| 4      |   |   | Ve  | ndor id | octet 2 | 2 |   |   |
| 5      |   |   | Vei | 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  |     |        |         |   |   |   |  |  |

Bits

 $m \ge 2$  and  $m \le 248$ 

The 3GPP specific attributes encoding is clarified below.

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



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.

#### <u>2 - 3GPP-Charging ID</u>

|        |   |                |         | Bits     | 3       |        |   |   |
|--------|---|----------------|---------|----------|---------|--------|---|---|
| Octets | 8 | 7              | 6       | 5        | 4       | 3      | 2 | 1 |
| 1      |   |                | 30      | GPP typ  | be = 2  |        |   |   |
| 2      |   | 3GPP Length= 6 |         |          |         |        |   |   |
| 3      |   |                | Chargir | ng ID va | alue Oo | ctet 1 |   |   |
| 4      |   |                | Chargir | ng ID va | alue Oo | ctet 2 |   |   |
| 5      |   |                | Chargir | ng ID va | alue Oo | ctet 3 |   |   |
| 6      |   |                | Chargir | ng ID va | alue Oo | 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      |   |                  | 30 | GPP typ | be = 3  |   |   |   |  |
| 2      |   |                  | 3G | PP Ler  | ngth= 6 |   |   |   |  |
| 3      |   | PDP 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      |   | 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   |   | l              | JTF-8 e | ncodec | I QoS | 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

Bits

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>

| 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 addi | <sup>r</sup> Octet | 2 |   |   |  |  |  |  |
| 5      |   | SGSN addr Octet 3 |     |         |                    |   |   |   |  |  |  |  |
| 6      |   |                   | SGS | SN addi | <sup>r</sup> Octet | 4 |   |   |  |  |  |  |

3GPP Type: 6

Length: 6

SGSN address value: Address

#### 7 - 3GPP-GGSN address

| Octets | 8 | 7                 | 6   | 5      | 4       | 3 | 2 | 1 |  |  |  |  |
|--------|---|-------------------|-----|--------|---------|---|---|---|--|--|--|--|
| 1      |   | 3GPP type = 7     |     |        |         |   |   |   |  |  |  |  |
| 2      |   | 3GPP Length= 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 |   |   |  |  |  |  |

Bits

#### 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      |      | 3GPP Length= n             |                        |         |       |        |      |   |  |  |  |  |
| 3      |      | MCC digit1 (UTF-8 encoded) |                        |         |       |        |      |   |  |  |  |  |
| 4      |      | Μ                          | CC digi                | t2 (UTF |       | coded) |      |   |  |  |  |  |
| 5      |      | Μ                          | CC digi                | t3 (UTF | -8 en | coded) |      |   |  |  |  |  |
| 6      |      | Μ                          | NC digi                | t1 (UTF | -8 en | coded) |      |   |  |  |  |  |
| 7      |      | Μ                          | NC digi                | t2 (UTF | -8 en | coded) |      |   |  |  |  |  |
| 8      |      | MNC d                      | ligit3 if <sub>l</sub> | present | (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.

#### <u>9 -</u> 3GPP-<u>GGSN MCC-MNC</u>

|        |   | Bits                       |             |         |                     |        |      |   |  |  |  |  |
|--------|---|----------------------------|-------------|---------|---------------------|--------|------|---|--|--|--|--|
| Octets | 8 | 7                          | 6           | 5       | 4                   | 3      | 2    | 1 |  |  |  |  |
| 1      |   | 3GPP type = 9              |             |         |                     |        |      |   |  |  |  |  |
| 2      |   | 3GPP Length= n             |             |         |                     |        |      |   |  |  |  |  |
| 3      |   | MCC digit1 (UTF-8 encoded) |             |         |                     |        |      |   |  |  |  |  |
| 4      |   | М                          | CC digi     | t2 (UTF |                     | coded) |      |   |  |  |  |  |
| 5      |   | М                          | CC digi     | t3 (UTF | -8 end              | coded) |      |   |  |  |  |  |
| 6      |   | М                          | NC digi     | t1 (UTF | <sup>-</sup> -8 end | coded) |      |   |  |  |  |  |
| 7      |   | М                          | NC digi     | t2 (UTF |                     | coded) |      |   |  |  |  |  |
| 8      |   | MNC d                      | ligit3 if p | present | (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



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        |      |   | 3G       | PP typ | e = 11        |   |   |   |  |  |
| 2        |      |   | 3GF      | P Len  | gth= <u>3</u> | 2 |   |   |  |  |
| <u>3</u> |      |   | <u>1</u> | 1111   | 111           |   |   |   |  |  |
|          |      |   |          |        |               |   |   |   |  |  |

ъ.

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#22 Fort Lauderdale, USA. $8^{th} - 12^{th}$ April 2002

### Tdoc N3-020350

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| Source: ೫                     | TSG CN  | WG3  |  |   |   |  |
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How to create CRs using this form: Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G\_Specs/CRs.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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. <u>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. <u>Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN</u>.</u>
- 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)

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 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

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

### 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

### Tdoc N3-020351

|                                  | CHANGE REQUEST   |
|----------------------------------|--|
| ж                                | <b>09.61</b> CR A038 <b># rev 1</b> <sup># Current version:</sup> <b>7.6.0</b> <sup>#</sup>  |
| For <u>HELP</u> on u             | sing this form, see bottom of this page or look at the pop-up text over the $st$ symbols.  |
| Proposed change a                | ffects: ¥ (U)SIM ME/UE Radio Access Network Core Network   |
| Title: अ                         | Clarification on the Radius Flows  |
| Source: ೫                        | TSG CN WG3   |
| Work item code: Ж                | GPRS Date: # April 09, 2002  |
| Category:                        | <ul> <li><b>A</b> Release: # R98</li> <li>Use one of the following categories:<br/><i>F</i> (correction)</li></ul>   |
|                                  | The flows for the RADIUS Interim-Update and Disconnect restrict the GGSN behavior to<br>one possible scenario, where the GGSN waits for the RADIUS responses before sending<br>the adequate GTP messages. This CR clarifies the flows to make the specification less<br>restrictive. |
| Summary of chang                 | e: # See attached pages  |
| Consequences if<br>not approved: | Controversial statements   |
| Clauses affected:                | # <u>16.3.1, 16.3.2, 16.3.3, 16.3.4</u>  |
| Other specs<br>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: <u>http://www.3gpp.org/3G\_Specs/CRs.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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. <u>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. <u>Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN</u>.</u>
- 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)

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 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.

![](_page_31_Figure_2.jpeg)

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 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.

![](_page_33_Figure_1.jpeg)

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

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

### 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 not wait for the DeletePDPContextResponse from the SGSN before</u> <u>sending the RADIUS DisconnectResponse to the AAA server.</u>

![](_page_34_Figure_1.jpeg)

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

### Tdoc N3-020352

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| Other comments:               | ж                                    |   |   |  |  |  |             |  |   |  |   |  |
#### How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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. <u>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. <u>Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN</u>.</u>
- 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)

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 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 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

<u>Note 1: As shown the GGSN may not wait for the RADIUS AccountingResponse from the AAA server message to</u> 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

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

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| Reason for change: ೫           | 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. negotiated 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 QoS 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, this CR proposes to define a value for this attribute to conform to the TLV model.  |
|                                |  |
| Summary of change: <sup></sup> | - 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:        | <b>光</b> 16.4  |
| Other specs<br>Affected: | %       Other core specifications       %         Test specifications       0&M Specifications |
| Other comments:          | ¥  |

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- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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   | Associated attribute   |
|------------|--|--|--|--|
|            |  |  | Requirement  | (Location of Sub-attr)   |
| 1          | 3GPP-IMSI                                    | IMSI for this user   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 2          | 3GPP-Charging-Id                             | Charging ID for<br>this PDP Context<br>(this together with<br>the GGSN-<br>Address<br>constitutes a<br>unique identifier<br>for the PDP<br>context).                                   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 3          | 3GPP-PDP Type                                | Type of PDP<br>context, e.g. IP or<br>PPP  | Conditional<br>(mandatory if<br>attribute 7 is<br>present) | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 4          | 3GPP-CG-Address                              | Charging<br>Gateway IP<br>address  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 5          | 3GPP-GPRS-<br><u>Negotiated-</u> QoS-Profile | QoS profile<br>receivedapplied<br>by GGSN  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 6          | 3GPP-SGSN-Address                            | SGSN IP address<br>that is used by the<br>GTP control plane<br>for the handling of<br>control messages.<br>It may be used to<br>identify the PLMN<br>to which the user<br>is attached. | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 7          | 3GPP-GGSN-Address                            | GGSN IP address<br>that is used by the<br>GTP control plane<br>for the context<br>establishment. It<br>is the same as the<br>GGSN IP address<br>used in the<br>GCDRs.                  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 8          | 3GPP-IMSI-MCC-MNC                            | MCC and MNC<br>extracted from the<br>user's IMSI (first 5<br>or 6 digits, as<br>applicable from<br>the presented<br>IMSI).   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 9          | 3GPP-GGSN- MCC-<br>MNC                       | MCC-MNC of the network the GGSN belongs to.  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 10         | 3GPP-NSAPI                                   | Identifies a<br>particular PDP<br>context for the  | Optional   | Access-Request,<br>Accounting-Request<br>START, Access-  |

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

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 |   |       |   |   |   |   |  |  |  |  |
| 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      |      | 3GPP Length = m |   |   |   |   |   |   |  |  |  |
| 3 –m   |      | 3GPP value      |   |   |   |   |   |   |  |  |  |

 $m \ge 2$  and  $m \le 248$ 

The 3GPP specific attributes encoding is clarified below.

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



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.

#### <u>2 - 3GPP-Charging ID</u>

|        | Bits |                           |         |          |         |        |   |   |  |  |
|--------|------|---------------------------|---------|----------|---------|--------|---|---|--|--|
| Octets | 8    | 7                         | 6       | 5        | 4       | 3      | 2 | 1 |  |  |
| 1      |      | 3GPP type = 2             |         |          |         |        |   |   |  |  |
| 2      |      | 3GPP Length= 6            |         |          |         |        |   |   |  |  |
| 3      |      |                           | Chargir | ng ID va | alue Oo | ctet 1 |   |   |  |  |
| 4      |      |                           | Chargir | ng ID va | alue Oo | ctet 2 |   |   |  |  |
| 5      |      | Charging ID value Octet 3 |         |          |         |        |   |   |  |  |
| 6      |      |                           | Chargir | ng ID va | alue Oo | 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      |   | 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:

$$0 = IP$$

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      |   | Charging GW addr Octet 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   |      | l              | JTF-8 e | ncodec | I QoS | 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

Bits

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>

| Octets | 8 | 7                 | 6   | 5       | 4                  | 3 | 2 | 1 |  |  |  |
|--------|---|-------------------|-----|---------|--------------------|---|---|---|--|--|--|
| 1      |   | 3GPP type = 6     |     |         |                    |   |   |   |  |  |  |
| 2      |   | 3GPP Length= 6    |     |         |                    |   |   |   |  |  |  |
| 3      |   |                   | SGS | SN addi | <sup>r</sup> Octet | 1 |   |   |  |  |  |
| 4      |   |                   | SGS | SN addi | <sup>r</sup> Octet | 2 |   |   |  |  |  |
| 5      |   | SGSN addr Octet 3 |     |         |                    |   |   |   |  |  |  |
| 6      |   |                   | SGS | SN addi | <sup>r</sup> Octet | 4 |   |   |  |  |  |

3GPP Type: 6

Length: 6

SGSN address value: Address

#### 7 - 3GPP-GGSN address

| Octets | 8 | 7                 | 6   | 5      | 4       | 3 | 2 | 1 |  |  |  |
|--------|---|-------------------|-----|--------|---------|---|---|---|--|--|--|
| 1      |   | 3GPP type = 7     |     |        |         |   |   |   |  |  |  |
| 2      |   | 3GPP Length= 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 |   |   |  |  |  |

Bits

#### 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      |   | 3GPP Length= n             |                        |         |       |        |      |   |  |  |
| 3      |   | MCC digit1 (UTF-8 encoded) |                        |         |       |        |      |   |  |  |
| 4      |   | Μ                          | CC digi                | t2 (UTF |       | coded) |      |   |  |  |
| 5      |   | Μ                          | CC digi                | t3 (UTF | -8 en | coded) |      |   |  |  |
| 6      |   | Μ                          | NC digi                | t1 (UTF | -8 en | coded) |      |   |  |  |
| 7      |   | Μ                          | NC digi                | t2 (UTF | -8 en | coded) |      |   |  |  |
| 8      |   | MNC d                      | ligit3 if <sub>l</sub> | present | (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.

#### <u>9 -</u> 3GPP-<u>GGSN MCC-MNC</u>

|        |   | Bits                       |             |          |       |        |      |   |  |  |  |
|--------|---|----------------------------|-------------|----------|-------|--------|------|---|--|--|--|
| Octets | 8 | 7                          | 6           | 5        | 4     | 3      | 2    | 1 |  |  |  |
| 1      |   | 3GPP type = 9              |             |          |       |        |      |   |  |  |  |
| 2      |   | 3GPP Length= n             |             |          |       |        |      |   |  |  |  |
| 3      |   | MCC digit1 (UTF-8 encoded) |             |          |       |        |      |   |  |  |  |
| 4      |   | Μ                          | CC digi     | it2 (UTF | -8 en | coded) |      |   |  |  |  |
| 5      |   | М                          | CC digi     | it3 (UTF | -8 en | coded) |      |   |  |  |  |
| 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: 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>



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

ъ.

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

#### N3-020293 **-** /

#### \_ **.**... . . . 3GF Ft

| Ft Lauderdale, USA                    | . 8 <sup>th</sup> Apr   | – 12 <sup>th</sup> Apr.   | 2002.   |   |   | 1000 110 0  | 20293  |
|---------------------------------------|---|---|---|---|---|---|--|
|                                       |   | CHAN  | GE REQ  | UEST  | •   | CI  | R-Form-v6.1  |
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| Spec                                  | litie: In<br>P  | acket Bas   | g betweer<br>sed Servic   | es and  | LMN supp<br>(PDN)   | oorting   | ተ  |
| For <u>HELP</u> on using              | this form,  | see bottom c  | of this page or   | look at th  | e pop-up text   | over the # sym  | nbols.   |
| Proposed change affect                | :ts: #  | (U)SIM  | ME/UE   | Radio Ad  | ccess Networ  | k Core Net  | twork X  |
| Title:                                | rections to   | the 3GPP R  | ADIUS attribu   | tes   |   |   |  |
| Source: # TS                          | G CN WO   | 33  |   |   |   |   |  |
| Work item code: # GF                  | PRS   |   |   |   | Date: ೫   | April 9, 2002   |  |
| Category: # A<br>Use<br>Deta<br>be fo | one of the<br><b>F</b> (correct<br><b>A</b> (correst<br><b>B</b> (addition<br><b>C</b> (function<br><b>D</b> (editoria<br>ailed explane<br>bund in 3G                                   | following cates<br>tion)<br>ponds to a corr<br>n of feature),<br>nal modification<br>al modification,<br>nations of the a<br>PP <u>TR 21.900</u> .  | gories:<br>rection in an ea<br>n of feature)<br>)<br>bove categorie:  | rlier releas<br>s can   | Release: #<br>Use <u>one</u> of<br>2<br>e) R96<br>R97<br>R98<br>R99<br>REL-4<br>REL-5   | R99<br>the following relea<br>(GSM Phase 2)<br>(Release 1996)<br>(Release 1997)<br>(Release 1998)<br>(Release 1999)<br>(Release 4)<br>(Release 5)   | ases:  |
| Reason for change: #                  | The QoS-<br>indicator<br>correction<br>In the cur<br>profile red<br>QoS profi<br>To have c<br>profile via<br>attribute t<br>The lengt<br>to correct<br>RADIUS<br>follow thi<br>CR propo | Profile attribut<br>(2 chararcters)<br>a for the QoS p<br>rent specificatic<br>ceived in the C<br>de). Moreover,<br>consistency with<br>a the RADIUS<br>o the negotiate<br>h field for the 1<br>it to 3.<br>attributes are<br>s model. Since<br>ses to define a | and the hypher<br>and the hypher<br>rofile encoding<br>on the QoS pro-<br>reatePDPconte<br>in the G-CDR<br>h the Ga interfa<br>interface. This<br>d QoS profile.<br>NSAPI encodin<br>based on TLV<br>the Stop-Sessi<br>value for this a | e 27 or 11<br>a character<br>file sent in<br>xReq, no the<br>the GGSN<br>ace the GG<br>CR propose<br>g has been<br>model, for<br>on-Indicate<br>the for | (currently 24 a<br>need to be add<br>the RADIUS<br>he one used by<br>only sent the I<br>SN should only<br>ses to modify the<br>incorrectly set<br>consistency all<br>or as defined co<br>conform to the | and 8), since the re-<br>led. This CR prop<br>message is the Qo<br>the GGSN (i.e. n<br>Negotiated QoS p<br>y send the negotia<br>he requested QoS<br>t to 6. This CR pr<br>l the attributes sho<br>urrently has no va<br>e TLV model. | elease<br>boses a<br>oS<br>egotiated<br>rofile.<br>ated QoS<br>profile<br>oposes<br>ould<br>alue, this |
| Summary of change: #                  | - (<br>- (<br>- (   | QoS profile len<br>Correction on (<br>Correction on t<br>Correction on t  | agth corrected<br>QoS profile nan<br>he NSAPI enco<br>he value for the  | ne<br>ding lengt<br>Stop-Sess   | h<br>sion-Indicator a   | attribute   | S  |

| not approved:            | attributes will occur.   |
|--------------------------|--|
| Clauses affected:        | <b>% 16.4</b>  |
| Other specs<br>Affected: | #       Other core specifications       #         Test specifications       0&M Specifications |
| Other comments:          | ¥  |

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

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

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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   | Associated attribute   |
|------------|--|--|--|--|
|            |  |  | Requirement  | (Location of Sub-attr)   |
| 1          | 3GPP-IMSI                                    | IMSI for this user   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 2          | 3GPP-Charging-Id                             | Charging ID for<br>this PDP Context<br>(this together with<br>the GGSN-<br>Address<br>constitutes a<br>unique identifier<br>for the PDP<br>context).                                   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 3          | 3GPP-PDP Type                                | Type of PDP<br>context, e.g. IP or<br>PPP  | Conditional<br>(mandatory if<br>attribute 7 is<br>present) | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 4          | 3GPP-CG-Address                              | Charging<br>Gateway IP<br>address  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 5          | 3GPP-GPRS-<br><u>Negotiated-</u> QoS-Profile | QoS profile<br>receivedapplied<br>by GGSN  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 6          | 3GPP-SGSN-Address                            | SGSN IP address<br>that is used by the<br>GTP control plane<br>for the handling of<br>control messages.<br>It may be used to<br>identify the PLMN<br>to which the user<br>is attached. | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 7          | 3GPP-GGSN-Address                            | GGSN IP address<br>that is used by the<br>GTP control plane<br>for the context<br>establishment. It<br>is the same as the<br>GGSN IP address<br>used in the<br>GCDRs.                  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 8          | 3GPP-IMSI-MCC-MNC                            | MCC and MNC<br>extracted from the<br>user's IMSI (first 5<br>or 6 digits, as<br>applicable from<br>the presented<br>IMSI).   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 9          | 3GPP-GGSN- MCC-<br>MNC                       | MCC-MNC of the network the GGSN belongs to.  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 10         | 3GPP-NSAPI                                   | Identifies a<br>particular PDP<br>context for the  | Optional   | Access-Request,<br>Accounting-Request<br>START, Access-  |

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

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      |   |                   | Ve | ndor id | octet 2 | 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      |      | 3GPP type =     |   |   |   |   |   |   |  |  |  |
| 2      |      | 3GPP Length = m |   |   |   |   |   |   |  |  |  |
| 3 –m   |      | 3GPP value      |   |   |   |   |   |   |  |  |  |

 $m \ge 2$  and  $m \le 248$ 

The 3GPP specific attributes encoding is clarified below.

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



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.

#### <u>2 - 3GPP-Charging ID</u>

|        | Bits |                           |         |          |         |        |   |   |  |  |
|--------|------|---------------------------|---------|----------|---------|--------|---|---|--|--|
| Octets | 8    | 7                         | 6       | 5        | 4       | 3      | 2 | 1 |  |  |
| 1      |      | 3GPP type = 2             |         |          |         |        |   |   |  |  |
| 2      |      | 3GPP Length= 6            |         |          |         |        |   |   |  |  |
| 3      |      |                           | Chargir | ng ID va | alue Oo | ctet 1 |   |   |  |  |
| 4      |      |                           | Chargir | ng ID va | alue Oo | ctet 2 |   |   |  |  |
| 5      |      | Charging ID value Octet 3 |         |          |         |        |   |   |  |  |
| 6      |      |                           | Chargir | ng ID va | alue Oo | 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 |   |   |   |  |  |

#### 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      | GPP typ | be = 4  |        |   |   |
| 2      |   |   | 3G      | PP Ler  | ngth= 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 |   |   |

3GPP Type: 4

Length: 6

Charging GW address value: Address

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

|        |   |   |         | Bits    | 3       |         |   |   |
|--------|---|---|---------|---------|---------|---------|---|---|
| Octets | 8 | 7 | 6       | 5       | 4       | 3       | 2 | 1 |
| 1      |   |   | 30      | GPP typ | oe = 5  |         |   |   |
| 2      |   |   | 3G      | PP Ler  | ngth= L | _       |   |   |
| 3 -L   |   | l | JTF-8 e | ncodec  | I QoS   | 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

Bits

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>

| Octets | 8 | 7 | 6   | 5       | 4                  | 3 | 2 | 1 |
|--------|---|---|-----|---------|--------------------|---|---|---|
| 1      |   |   | 30  | GPP ty  | be = 6             |   |   |   |
| 2      |   |   | 3G  | PP Ler  | ngth= 6            |   |   |   |
| 3      |   |   | SGS | SN addi | <sup>r</sup> Octet | 1 |   |   |
| 4      |   |   | SGS | SN addi | <sup>r</sup> Octet | 2 |   |   |
| 5      |   |   | SGS | SN add  | <sup>·</sup> Octet | 3 |   |   |
| 6      |   |   | SGS | SN addi | <sup>r</sup> Octet | 4 |   |   |

3GPP Type: 6

Length: 6

SGSN address value: Address

#### 7 - 3GPP-GGSN address

| Octets | 8 | 7 | 6   | 5       | 4       | 3 | 2 | 1 |
|--------|---|---|-----|---------|---------|---|---|---|
| 1      |   |   | 30  | GPP typ | be = 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 |   |   |

Bits

#### 3GPP Type: 7

Length: 6

#### GGSN address value: Address

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

|        |   |                            |                        | Bits    | 5       |        |      |   |  |
|--------|---|----------------------------|------------------------|---------|---------|--------|------|---|--|
| Octets | 8 | 7                          | 6                      | 5       | 4       | 3      | 2    | 1 |  |
| 1      |   |                            | 30                     | GPP typ | be = 8  |        |      |   |  |
| 2      |   |                            | 3G                     | PP Ler  | ngth= r | 1      |      |   |  |
| 3      |   | MCC digit1 (UTF-8 encoded) |                        |         |         |        |      |   |  |
| 4      |   | Μ                          | CC digi                | t2 (UTF |         | coded) |      |   |  |
| 5      |   | М                          | CC digi                | t3 (UTF | -8 en   | coded) |      |   |  |
| 6      |   | Μ                          | NC digi                | t1 (UTF | -8 en   | coded) |      |   |  |
| 7      |   | Μ                          | NC digi                | t2 (UTF | -8 en   | coded) |      |   |  |
| 8      |   | MNC d                      | ligit3 if <sub>l</sub> | present | (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.

#### <u>9 -</u> 3GPP-<u>GGSN MCC-MNC</u>

|        |   | Bits                       |             |          |        |        |      |   |  |  |
|--------|---|----------------------------|-------------|----------|--------|--------|------|---|--|--|
| Octets | 8 | 7                          | 6           | 5        | 4      | 3      | 2    | 1 |  |  |
| 1      |   |                            | 30          | GPP typ  | be = 9 |        |      |   |  |  |
| 2      |   | 3GPP Length= n             |             |          |        |        |      |   |  |  |
| 3      |   | MCC digit1 (UTF-8 encoded) |             |          |        |        |      |   |  |  |
| 4      |   | Μ                          | CC digi     | it2 (UTF | -8 en  | coded) |      |   |  |  |
| 5      |   | М                          | CC digi     | it3 (UTF | -8 en  | coded) |      |   |  |  |
| 6      |   | MNC digit1 (UTF-8 encoded) |             |          |        |        |      |   |  |  |
| 7      |   | Μ                          | NC digi     | it2 (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 [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>



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   | 8             |   |   |   |
|----------|---|---|----------|--------|---------------|---|---|---|
| Octets   | 8 | 7 | 6        | 5      | 4             | 3 | 2 | 1 |
| 1        |   |   | 3G       | PP typ | e = 11        |   |   |   |
| 2        |   |   | 3GF      | P Len  | gth= <u>3</u> | 2 |   |   |
| <u>3</u> |   |   | <u>1</u> | 1111   | 111           |   |   |   |
|          |   |   |          |        |               |   |   |   |

ъ.

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

# Tdoc N3-020295

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 |            |                                 |                                  |                            |                   |                          |                |                 |                       |                      |                           |                       |
| ж              |            | 29.06                           | 1 CR                             | 054                        |                   | жrev                     | -              | ж               | Current ver           | sion:                | 5.1.0                     | ж                     |
|                | Sp         | oec Title                       | : Inte                           | rworki                     | ng b              | etweer                   | n the          | PL              | . <mark>MN sup</mark> | porti                | ng                        | ж                     |
|                |            |                                 | Pad                              | cket Ba                    | sed               | Servic                   | es a           | and             | (PDN)                 |                      | -                         |                       |
| Eor <b>H</b>   | FIP        | sina this t                     | form so                          | o hottom                   | of this           | nage or                  | look :         | ot tho          | non-un tox            | t over               | tho ff ov                 | mbols                 |
| 101 <u>11</u>  |            | sing uns i                      | 0111, 30                         |                            | Or trite          |                          | 100K 6         |                 | pop-up lex            |                      | யாசக் அ                   |                       |
| Propose        | d change   | affects:                        | ቻ (U                             | )SIM                       | ME                | /UE                      | Radi           | o Aco           | cess Netwo            | rk                   | Core N                    | etwork X              |
| Title:         | ж          | Correctio                       | ons to th                        | ne 3GPP I                  | RADIL             | JS attribu               | tes            |                 |                       |                      |                           |                       |
| Source:        | ж          | TSG CI                          | VWG3                             |                            |                   |                          |                |                 |                       |                      |                           |                       |
| Work ite       | m code: भ  | GPRS                            |                                  |                            |                   |                          |                |                 | Date: 🖁               | ଣ <mark> Ap</mark> r | <mark>il 9, 2002</mark>   | 2                     |
| Category       | /: ¥       | Α                               |                                  |                            |                   |                          |                |                 | Release: a            | RE RE                | L-5                       |                       |
|                |            | Use <u>one</u> o<br><b>F</b> (c | of the fol<br>orrectior          | llowing cate<br>1)         | egories           | S:                       |                |                 | Use <u>one</u> o<br>2 | f the fo<br>(GSN     | llowing rel<br>1 Phase 2) | eases:<br>)           |
|                |            | A (c<br>B (a                    | orrespoi                         | nds to a co<br>of feature) | rrectio           | n in an eal              | rlier re       | lease,          | ) R96<br>R97          | (Rele<br>(Rele       | ase 1996)<br>ase 1997     |                       |
|                |            | <b>C</b> (fu                    | unctiona                         | l modificati               | ion of f          | eature)                  |                |                 | R98                   | (Rele                | ase 1998)                 | )                     |
|                |            | Detailed e                      | e <i>ditorial r</i><br>explanati | nodification               | n)<br>above       | categories               | s can          |                 | R99<br>REL-4          | (Rele<br>(Rele       | ease 1999)<br>ease 4)     | )                     |
|                |            | be found i                      | in 3GPP                          | TR 21.900                  | <u>)</u> .        | 0                        |                |                 | REL-5                 | (Rele                | ase 5)                    |                       |
| Baasan         | for change | W W The                         | Oos Pr                           | ofilo attribu              | ita lan           | ath chall h              | 0.27 0         | r 11 (          | ourrontly 24          | and 8)               | since the                 | ralassa               |
| Reason         | or change  | indic<br>corre                  | cator (2)                        | chararcters<br>or the QoS  | and to profile    | the hypher<br>e encoding | i chara        | acter r         | need to be ad         | ded. Tl              | his CR pro                | poses a               |
|                |            | In th                           | e curren                         | t specifica                | tion th           | e QoS pro                | file se        | nt in t         | the RADIUS            | messa                | ge is the Q               | QoS                   |
|                |            | prof                            | ile recei                        | ved in the<br>Moreove      | Create<br>r in th | PDPconte:<br>e G-CDR     | xReq,<br>the G | no the<br>GSN o | e one used by         | y the G              | GSN (i.e.                 | negotiated<br>profile |
|                |            | To h                            | ave con                          | sistency w                 | ith the           | Ga interfa               | ice the        | GGS             | SN should on          | ly send              | the negot                 | tiated QoS            |
|                |            | prof.<br>attri                  | ile via th<br>bute to t          | ne RADIU:                  | S inter<br>ted Qo | face. This S profile.    | CR pr          | opose           | es to modify          | the req              | uested Qo                 | S profile             |
|                |            | The                             | length f                         | ield for the               | NSA               | PI encodin               | g has          | been i          | incorrectly s         | et to 6.             | This CR p                 | proposes              |
|                |            | to co                           | orrect it                        | to 3.                      |                   |                          |                |                 |                       |                      |                           |                       |
|                |            | RAI                             | DIUS at                          | tributes are               | e based           | l on TLV                 | model          | , for c         | consistency a         | ll the a             | ttributes s               | hould                 |
|                |            | CR                              | proposes                         | to define                  | a valu            | e for this a             | ttribut        | te to c         | onform to th          | e TLV                | model.                    | value, uns            |
|                |            |                                 |                                  |                            |                   |                          |                |                 |                       |                      |                           |                       |
|                |            |                                 |                                  |                            |                   |                          |                |                 |                       |                      |                           |                       |
| Summar         | y of chang | <b>je:</b> <sup></sup>          | - Qo                             | S profile le               | ength c           | orrected                 |                |                 |                       |                      |                           |                       |
|                |            |                                 | - Coi                            | rection on                 | QoS p             | orofile nan              | ne             |                 |                       |                      |                           |                       |
|                |            |                                 | - Co                             | rection on                 | the N             | SAPL enco                | ding 1         | ength           |                       |                      |                           |                       |
|                |            |                                 | Co                               | rection on                 | the ve            | lue for the              | Stor           | Sassi           | on Indicator          | attribu              | to                        |                       |
|                |            |                                 | - 01                             |                            | the va            | ide for the              | Stop-          | -968810         | on-mulcator           | attiibu              |                           |                       |
| Conseau        | iences if  | 策 <mark>lft</mark>              | he char                          | nges are r                 | not api           | oroved, ir               | corre          | ct im           | plementatic           | ns of t              | the RADI                  | US                    |

| not approved:            | attributes will occur.   |
|--------------------------|--|
|                          |  |
| Clauses affected:        | <b>光</b> 16.4  |
| Other specs<br>Affected: | %       Other core specifications       %         Test specifications       0&M Specifications |
| Other comments:          | ¥  |

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

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

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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   | Associated attribute   |
|------------|--|--|--|--|
|            |  |  | Requirement  | (Location of Sub-attr)   |
| 1          | 3GPP-IMSI                                    | IMSI for this user   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 2          | 3GPP-Charging-Id                             | Charging ID for<br>this PDP Context<br>(this together with<br>the GGSN-<br>Address<br>constitutes a<br>unique identifier<br>for the PDP<br>context).                                   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 3          | 3GPP-PDP Type                                | Type of PDP<br>context, e.g. IP or<br>PPP  | Conditional<br>(mandatory if<br>attribute 7 is<br>present) | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 4          | 3GPP-CG-Address                              | Charging<br>Gateway IP<br>address  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 5          | 3GPP-GPRS-<br><u>Negotiated-</u> QoS-Profile | QoS profile<br>receivedapplied<br>by GGSN  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 6          | 3GPP-SGSN-Address                            | SGSN IP address<br>that is used by the<br>GTP control plane<br>for the handling of<br>control messages.<br>It may be used to<br>identify the PLMN<br>to which the user<br>is attached. | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 7          | 3GPP-GGSN-Address                            | GGSN IP address<br>that is used by the<br>GTP control plane<br>for the context<br>establishment. It<br>is the same as the<br>GGSN IP address<br>used in the<br>GCDRs.                  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 8          | 3GPP-IMSI-MCC-MNC                            | MCC and MNC<br>extracted from the<br>user's IMSI (first 5<br>or 6 digits, as<br>applicable from<br>the presented<br>IMSI).   | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,   |
| 9          | 3GPP-GGSN- MCC-<br>MNC                       | MCC-MNC of the network the GGSN belongs to.  | Optional   | Access-Request,<br>Accounting-Request<br>START, Accounting-<br>Request STOP,<br>Accounting-Request<br>Interim-Update |
| 10         | 3GPP-NSAPI                                   | Identifies a<br>particular PDP<br>context for the  | Optional   | Access-Request,<br>Accounting-Request<br>START, Access-  |

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

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

| Octets | 8 | 7                 | 6  | 5       | 4       | 3 | 2 | 1 |  |  |  |  |
|--------|---|-------------------|----|---------|---------|---|---|---|--|--|--|--|
| 1      |   | Туре = 26         |    |         |         |   |   |   |  |  |  |  |
| 2      |   | Length = n        |    |         |         |   |   |   |  |  |  |  |
| 3      |   | Vendor id octet 1 |    |         |         |   |   |   |  |  |  |  |
| 4      |   |                   | Ve | ndor id | octet 2 | 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      |      | 3GPP type =     |   |   |   |   |   |   |  |  |  |
| 2      |      | 3GPP Length = m |   |   |   |   |   |   |  |  |  |
| 3 –m   |      | 3GPP value      |   |   |   |   |   |   |  |  |  |

 $m \ge 2$  and  $m \le 248$ 

The 3GPP specific attributes encoding is clarified below.

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



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.

#### <u>2 - 3GPP-Charging ID</u>

|        | Bits |                           |         |          |         |        |   |   |  |  |
|--------|------|---------------------------|---------|----------|---------|--------|---|---|--|--|
| Octets | 8    | 7                         | 6       | 5        | 4       | 3      | 2 | 1 |  |  |
| 1      |      |                           | 30      | GPP typ  | oe = 2  |        |   |   |  |  |
| 2      |      |                           | 3G      | PP Ler   | ngth= 6 | ;      |   |   |  |  |
| 3      |      |                           | Chargir | ng ID va | alue Oo | ctet 1 |   |   |  |  |
| 4      |      |                           | Chargir | ng ID va | alue Oo | ctet 2 |   |   |  |  |
| 5      |      | Charging ID value Octet 3 |         |          |         |        |   |   |  |  |
| 6      |      |                           | Chargir | ng ID va | alue Oo | 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 |   |   |   |  |  |  |  |

#### 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      |   | 3GPP type = 4            |         |        |        |        |   |   |  |  |  |
| 2      |   | 3GPP Length= 6           |         |        |        |        |   |   |  |  |  |
| 3      |   | (                        | Chargin | g GW a | addr O | ctet 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   |      | l              | JTF-8 e | ncodec | I QoS | 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

Bits

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>

| Octets | 8 | 7                 | 6   | 5       | 4                  | 3 | 2 | 1 |  |  |  |
|--------|---|-------------------|-----|---------|--------------------|---|---|---|--|--|--|
| 1      |   | 3GPP type = 6     |     |         |                    |   |   |   |  |  |  |
| 2      |   | 3GPP Length= 6    |     |         |                    |   |   |   |  |  |  |
| 3      |   |                   | SGS | SN addi | <sup>r</sup> Octet | 1 |   |   |  |  |  |
| 4      |   |                   | SGS | SN addi | <sup>r</sup> Octet | 2 |   |   |  |  |  |
| 5      |   | SGSN addr Octet 3 |     |         |                    |   |   |   |  |  |  |
| 6      |   |                   | SGS | SN addi | <sup>r</sup> Octet | 4 |   |   |  |  |  |

3GPP Type: 6

Length: 6

SGSN address value: Address

#### 7 - 3GPP-GGSN address

| Octets | 8 | 7                 | 6   | 5      | 4       | 3 | 2 | 1 |  |  |  |
|--------|---|-------------------|-----|--------|---------|---|---|---|--|--|--|
| 1      |   | 3GPP type = 7     |     |        |         |   |   |   |  |  |  |
| 2      |   | 3GPP Length= 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 |   |   |  |  |  |

Bits

#### 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      |   |                            | 30                     | GPP typ | be = 8  |        |      |   |  |  |
| 2      |   |                            | 3G                     | PP Ler  | ngth= r | 1      |      |   |  |  |
| 3      |   | MCC digit1 (UTF-8 encoded) |                        |         |         |        |      |   |  |  |
| 4      |   | Μ                          | CC digi                | t2 (UTF |         | coded) |      |   |  |  |
| 5      |   | Μ                          | CC digi                | t3 (UTF | -8 en   | coded) |      |   |  |  |
| 6      |   | Μ                          | NC digi                | t1 (UTF | -8 en   | coded) |      |   |  |  |
| 7      |   | MNC digit2 (UTF-8 encoded) |                        |         |         |        |      |   |  |  |
| 8      |   | MNC d                      | ligit3 if <sub>l</sub> | present | (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.

#### <u>9 -</u> 3GPP-<u>GGSN MCC-MNC</u>

|        |   | Bits                       |             |         |        |        |      |   |  |  |
|--------|---|----------------------------|-------------|---------|--------|--------|------|---|--|--|
| Octets | 8 | 7                          | 6           | 5       | 4      | 3      | 2    | 1 |  |  |
| 1      |   |                            | 30          | GPP typ | be = 9 |        |      |   |  |  |
| 2      |   | 3GPP Length= n             |             |         |        |        |      |   |  |  |
| 3      |   | MCC digit1 (UTF-8 encoded) |             |         |        |        |      |   |  |  |
| 4      |   | М                          | CC digi     | t2 (UTF |        | 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 | present | (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>


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= <u>3</u> 2 |   |   |   |   |   |   |  |
| <u>3</u> |      | <u>1111111</u>          |   |   |   |   |   |   |  |
|          |      |                         |   |   |   |   |   |   |  |

ъ.

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#22 Fort Lauderdale, USA. 8<sup>th</sup> – 12<sup>th</sup> April 2002

# Tdoc N3-020353

| CHANGE REQUEST   |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
| ж  | <b>29.061</b> CR <b>055 * rev 3</b> <sup>*</sup> Current version: <b>4.4.0</b> <sup>*</sup>  |  |  |  |  |  |  |
| For <b>HELP</b> on using this form, see bottom of this page or look at the pop-up text over the $\Re$ symbols. |  |  |  |  |  |  |  |
| Proposed change affects: # (U)SIM ME/UE Radio Access Network Core Network X                                    |  |  |  |  |  |  |  |
| Title: Ж   | Clarification on the Radius Flows  |  |  |  |  |  |  |
| Source: ೫  | TSG CN WG3   |  |  |  |  |  |  |
| Work item code: 郑  | GPRS   Date: #   April 09, 2002  |  |  |  |  |  |  |
| Category: ⊮  | A Release: % REL-4   Use one of the following categories: Use one of the following releases:   F (correction) 2 (GSM Phase 2)   A (corresponds to a correction in an earlier release) R96 (Release 1996)   B (addition of feature), R97 (Release 1997)   C (functional modification of feature) R98 (Release 1998)   D (editorial modification) R99 (Release 1999)   Detailed explanations of the above categories can REL-4 (Release 4)   be found in 3GPP TR 21.900. REL-5 (Release 5)   ** Alignment of text with figure, alignment of PPP PDP type case with the IP PDP type case concerning the optional dropping of user data by the GGSN before the Accounting Response (START) is received.   The general RADIUS flows for IP PDP type specifies that the GGSN does not wait for Accounting Response (START) to send the CreatePDPContextResponse to the SGSN. However, it should be possible to have the GGSN waiting for the Accounting message before sending CreatePDPContextResponse. This CR proposes to correct the RADIUS flows description with this option.   The RADIUS Interim-Update and Disconnect support are optional in the GGSN. Therefore it should be precisible to each protonal in the GGSN. |  |  |  |  |  |  |
|  | The flows for the RADIUS Interim-Update and Disconnect restrict the GGSN behavior to one possible scenario, where the GGSN waits for the RADIUS responses before sending the adequate GTP messages. This CR clarifies the flows to make the specification less restrictive.  |  |  |  |  |  |  |
| Summary of chang   | e: # See attached pages  |  |  |  |  |  |  |
| Consequences if<br>not approved:   | Controversial statements   |  |  |  |  |  |  |
| Clauses affected:  | 策 <mark>16.3.1, 16.3.2, 16.3.3, 16.3.4</mark>  |  |  |  |  |  |  |
| Other specs<br>affected:   | % Other core specifications %   Test specifications 0&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: <u>http://www.3gpp.org/3G\_Specs/CRs.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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. <u>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. <u>Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN</u>.</u>
- 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)

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 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 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

<u>Note 1: As shown the GGSN may not wait for the RADIUS AccountingResponse from the AAA server message to</u> 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

# Tdoc N3-020354

| CHANGE REQUEST  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
| ж   | <b>29.061</b> CR <b>056 # rev 1</b> <sup>#</sup> Current version: <b>5.1.0</b> <sup>#</sup>  |  |  |  |  |  |  |
| For <u>HELP</u> on u  | sing 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: Ж  | Clarification on the Radius Flows  |  |  |  |  |  |  |
| Source: ೫   | TSG CN WG3   |  |  |  |  |  |  |
| Work item code: Ж   | GPRS   Date: # April 09, 2002  |  |  |  |  |  |  |
| Category: ₩   | A Release: % REL-5   Use one of the following categories: Use one of the following releases: 2 (GSM Phase 2)   A (corresponds to a correction in an earlier release) R96 (Release 1996)   B (addition of feature), R97 (Release 1997)   C (functional modification) R99 (Release 1998)   D (editorial modification) R99 (Release 1999)   Detailed explanations of the above categories can REL-4 (Release 4)   be found in 3GPP TR 21.900. REL-5 (Release 5)   e: <b>%</b> Alignment of text with figure, alignment of PPP PDP type case with the IP PDP type case concerning the optional dropping of user data by the GGSN before the Accounting Response (START) is received.   The general RADIUS flows for IP PDP type specifies that the GGSN does not wait for Accounting Response (START) to send the CreatePDPContextResponse to the SGSN. However, it should be possible to have the GGSN waiting for the Accounting message before sending CreatePDPContextResponse. This CR proposes to correct the RADIUS flows description with this option.   The RADIUS Interim-Update and Disconnect support are optional in the GGSN. Therefore it should be possible to enable those functions on a per APN basis, providing flexible options for the operator.   The flows for the RADIUS Interim-Update and Disconnect restrict the GGSN behavior to one possible scenario, where the GGSN waits for the RADIUS responses before sending the adeq |  |  |  |  |  |  |
| Summary of chang  | e: # See attached pages  |  |  |  |  |  |  |
| Consequences if not approved:   | Controversial statements   |  |  |  |  |  |  |
| Clauses affected:   | ¥ 16.3.1, 16.3.2, 16.3.3, 16.3.4   |  |  |  |  |  |  |
| Other specs<br>affected:  | % Other core specifications %   Test specifications 0&M Specifications   |  |  |  |  |  |  |
| Other comments:   | ¥  |  |  |  |  |  |  |

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

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

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> 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. <u>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. <u>Usage of Both Authentication and Accounting servers may be optional and separately configured for each APN</u>.</u>
- 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)

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 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 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

<u>Note 1: As shown the GGSN may not wait for the RADIUS AccountingResponse from the AAA server message to</u> 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

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