

**3GPP TSG CN Plenary Meeting #17**  
**4<sup>th</sup> – 6<sup>th</sup> September 2002 Biarritz, FRANCE.**

**NP-020443**

**Source:** TSG CN WG4  
**Title:** CRs on Rel99 & earlier GPRS  
**Agenda item:** 7.3  
**Document for:** APPROVAL

| Spec   | CR  | Rev | Doc-2nd-Level | Phase | Subject   | Cat | Ver_C  |
|--------|-----|-----|---------------|-------|---|-----|--------|
| 23.003 | 047 | 2   | N4-021064     | R99   | Clarification on the definition of DNS  | F   | 3.10.0 |
| 23.003 | 048 | 2   | N4-021065     | Rel4  | Clarification on the definition of DNS  | A   | 4.4.0  |
| 23.003 | 049 | 3   | N4-021080     | Rel5  | Clarification on the definition of DNS  | F   | 5.3.0  |
| 29.060 | 334 |     | N4-020921     | R99   | Removing inconsistency in definition of PDP Address length                    | F   | 3.13.0 |
| 29.060 | 335 |     | N4-020922     | Rel4  | Removing inconsistency in definition of PDP Address length                    | A   | 4.4.0  |
| 29.060 | 336 |     | N4-020923     | Rel5  | Removing inconsistency in definition of PDP Address length                    | A   | 5.2.0  |
| 29.060 | 337 |     | N4-020924     | R99   | 16 bit PDCP sequence numbers in RAB Context                                   | F   | 3.13.0 |
| 29.060 | 338 |     | N4-020925     | Rel4  | 16 bit PDCP sequence numbers in RAB Context                                   | A   | 4.4.0  |
| 29.060 | 339 |     | N4-020926     | Rel5  | 16 bit PDCP sequence numbers in RAB Context                                   | A   | 5.2.0  |
| 29.060 | 345 |     | N4-020968     | R99   | No equivalent Cause Code in GTP to 'PDP context without TFT already activated | F   | 3.13.0 |
| 29.060 | 346 |     | N4-020969     | Rel4  | No equivalent Cause Code in GTP to 'PDP context without TFT already activated | A   | 4.4.0  |
| 29.060 | 347 |     | N4-020970     | Rel5  | No equivalent Cause Code in GTP to 'PDP context without TFT already activated | A   | 5.2.0  |
| 29.060 | 349 |     | N4-021010     | Rel4  | Incorrect references  | F   | 4.4.0  |
| 29.060 | 340 | 1   | N4-021016     | R99   | Forward Relocation Response without 'RAB Setup Information' IE                | F   | 3.13.0 |
| 29.060 | 341 | 1   | N4-021017     | Rel4  | Forward Relocation Response without 'RAB Setup Information' IE                | A   | 4.4.0  |
| 29.060 | 342 | 1   | N4-021018     | Rel5  | Forward Relocation Response without 'RAB Setup Information' IE                | A   | 5.2.0  |
| 29.060 | 330 | 1   | N4-021061     | R99   | Setting PDP ID after inter-SGSN RAU using GTPv0                               | F   | 3.13.0 |
| 29.060 | 331 | 1   | N4-021062     | Rel4  | Setting PDP ID after inter-SGSN RAU using GTPv0                               | A   | 4.4.0  |
| 29.060 | 332 | 1   | N4-021063     | Rel5  | Setting PDP ID after inter-SGSN RAU using GTPv0                               | A   | 5.2.0  |
| 29.060 | 326 | 1   | N4-021067     | R99   | Clarification on the coding of RANAP cause value                              | F   | 3.13.0 |
| 29.060 | 327 | 1   | N4-021068     | Rel4  | Clarification on the coding of RANAP cause value                              | A   | 4.4.0  |
| 29.060 | 328 | 1   | N4-021069     | Rel5  | Clarification on the coding of RANAP cause value                              | A   | 5.2.0  |

CR-Form-v7

## CHANGE REQUEST

⌘ **23.003 CR 046** ⌘ rev **2** ⌘ Current version: **3.10.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Clarification on the definition of DNS                                      |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 26/06/2002                              |
| <b>Category:</b>       | ⌘ <b>F</b>  | <b>Release:</b> | ⌘ R99                                     |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   | 2               | (GSM Phase 2)                             |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  | R96             | (Release 1996)                            |
|                        | <b>B</b> (addition of feature),   | R97             | (Release 1997)                            |
|                        | <b>C</b> (functional modification of feature)                                 | R98             | (Release 1998)                            |
|                        | <b>D</b> (editorial modification)   | R99             | (Release 1999)                            |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |
|                        |   |                 | Rel-5 (Release 5)                         |
|                        |   |                 | Rel-6 (Release 6)                         |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ Critical correction  |
|                                      | The current definition of logical names allows different interpretations for logical names regarding MNC and MCC   |
| <b>Summary of change:</b>            | ⌘ The range for MNC is limited to the digits 0-9 and an example is added   |
| <b>Consequences if not approved:</b> | ⌘ Inconsistent implementations are possible. The current definition allows two methods for logical name for one MNC-MCC combination:<br>i.e. MCC=167, MNC=92<br>1) RACxxx.LACyyy.MNC0092.MCC0167 or<br>RACxxx.LACyyy.MNC005C.MCC00A7 |

|                              |  |                     |   |                          |                                     |                           |   |
|------------------------------|--|---------------------|---|--------------------------|-------------------------------------|---------------------------|---|
| <b>Clauses affected:</b>     | ⌘ C.1, C.2   |                     |   |                          |                                     |                           |   |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> | Y                   | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Other core specifications | ⌘ |
| Y                            | N  |                     |   |                          |                                     |                           |   |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |                     |   |                          |                                     |                           |   |
|                              | <input checked="" type="checkbox"/>  | Test specifications |   |                          |                                     |                           |   |
|                              | <input checked="" type="checkbox"/>  | O&M Specifications  |   |                          |                                     |                           |   |
| <b>Other comments:</b>       | ⌘  |                     |   |                          |                                     |                           |   |

### How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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## C.1 Routing Area Identities

A possible way to support inter-PLMN roaming is discussed very briefly in this sub-section.

When an MS roams between two SGSNs within the same PLMN, the new SGSN finds the address to the old SGSN by the association old RA - old SGSN. Thus, each SGSN knows the address to every other SGSN in the PLMN.

When an MS roams from an SGSN to an SGSN in another PLMN, the new SGSN may not itself have access to the address to the old SGSN. Instead, the SGSN transforms the old RA information to a logical name of the form:

*RACxxxx.LACyyyy.MNCzzzz.MCCwwww.GPRS;*     *x and y, z and w shall be Hex coded digits, z and w shall be encoded as single digits (in the range of 0-9).* ~~*where z and w are in the range of 0-9.*~~

If there are less than 4 significant digits in xxxx, yyyy, zzzz, wwww, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits ~~HEX~~-coding.

As an example, the logical name for RAC 123A, LAC 234B, MCC 167 and MNC 92 shall be coded in the DNS as *RAC123A.LAC234B.MNC0092.MCC0167.GPRS.*

The SGSN may then acquire the IP address of the old SGSN from a DNS server, using the logical address. Every PLMN should include one DNS server each. Note that these DNS servers are GPRS internal entities, unknown outside the GPRS system.

The above implies that at least MCC + MNC + RAC + LAC (= RAI) is sent as RA parameter over the radio when an MS roams to another RA.

If the new SGSN for any reason fails to obtain the address of the old SGSN, the same actions as when the corresponding event occurs within one PLMN are taken.

Introducing the DNS concept in GPRS gives a general possibility to use logical names instead of IP addresses when referring to e.g. GSNs, thus providing flexibility in addressing of PLMN nodes.

Another way to support seamless inter-PLMN roaming is to store the SGSN IP addresses in HLR and request them when necessary.

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## C.2 GPRS Support Nodes

In this sub-section a naming convention for GSNs is described.

It shall be possible to refer to a GSN by a logical name that shall then be translated into a physical IP address. Here a GSN naming convention is proposed which would make it possible for an internal GPRS DNS server to make the translation.

An example of how a logical name of a SGSN could look like is:

SGSNxxx.MNCyyy.MCCzzz.GPRS; x,y and z shall be Hex coded digits, y and z shall be encoded as single digits (in the range of 0-9), where z and y are in the range of 0-9.

If there are less than 4 significant digits in xxxx, yyyy, zzzz, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits coding.

As an example, the logical name for SGSN 12B34, MCC 167 and MNC 92 shall be coded in the DNS as SGSN12B34.MNC0092.MCC0167.GPRS.

CR-Form-v7

## CHANGE REQUEST

⌘ **23.003 CR 047** ⌘ rev **2** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Clarification on the definition of DNS                                      |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 26/06/2002                              |
| <b>Category:</b>       | ⌘ <b>A</b>  | <b>Release:</b> | ⌘ Rel-4                                   |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   |                 | 2 (GSM Phase 2)                           |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  |                 | R96 (Release 1996)                        |
|                        | <b>B</b> (addition of feature),   |                 | R97 (Release 1997)                        |
|                        | <b>C</b> (functional modification of feature)                                 |                 | R98 (Release 1998)                        |
|                        | <b>D</b> (editorial modification)   |                 | R99 (Release 1999)                        |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |
|                        |   |                 | Rel-5 (Release 5)                         |
|                        |   |                 | Rel-6 (Release 6)                         |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ The current definition of logical names allows different interpretations for logical names regarding MNC and MCC   |
| <b>Summary of change:</b>            | ⌘ The range for MNC is limited to the digits 0-9 and an example is added   |
| <b>Consequences if not approved:</b> | ⌘ Inconsistent implementations are possible. The current definition allows two methods for logical name for one MNC-MCC combination:<br>i.e. MCC=167, MNC=92<br>1) RACxxxx.LACyyyy.MNC0092.MCC0167 or<br>RACxxxx.LACyyyy.MNC005C.MCC00A7 |

|                              |  |                     |   |                          |                                     |                           |   |
|------------------------------|--|---------------------|---|--------------------------|-------------------------------------|---------------------------|---|
| <b>Clauses affected:</b>     | ⌘ C.1, C.2   |                     |   |                          |                                     |                           |   |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> </table> | Y                   | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Other core specifications | ⌘ |
| Y                            | N  |                     |   |                          |                                     |                           |   |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |                     |   |                          |                                     |                           |   |
|                              | <input checked="" type="checkbox"/>  | Test specifications |   |                          |                                     |                           |   |
|                              | <input checked="" type="checkbox"/>  | O&M Specifications  |   |                          |                                     |                           |   |
| <b>Other comments:</b>       | ⌘  |                     |   |                          |                                     |                           |   |

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## C.1 Routing Area Identities

A possible way to support inter-PLMN roaming is discussed very briefly in this sub-section.

When an MS roams between two SGSNs within the same PLMN, the new SGSN finds the address to the old SGSN by the association old RA - old SGSN. Thus, each SGSN knows the address to every other SGSN in the PLMN.

When an MS roams from an SGSN to an SGSN in another PLMN, the new SGSN may not itself have access to the address to the old SGSN. Instead, the SGSN transforms the old RA information to a logical name of the form:

*RACxxxx.LACyyyy.MNCzzzz.MCCwwww.GPRS;* ~~x, and y, z and w shall be Hex coded digits, z and w shall be encoded as single digits (in the range of 0-9).~~ x, and y, z and w shall be Hex coded digits, z and w shall be encoded as single digits (in the range of 0-9).

If there are less than 4 significant digits in xxxx, yyyy, zzzz, wwwww, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits ~~HEX~~-coding.

As an example, the logical name for RAC 123A, LAC 234B, MCC 167 and MNC 92 shall be coded in the DNS as RAC123A.LAC234B.MNC0092.MCC0167.GPRS.

The SGSN may then acquire the IP address of the old SGSN from a DNS server, using the logical address. Every PLMN should include one DNS server each. Note that these DNS servers are GPRS internal entities, unknown outside the GPRS system.

The above implies that at least MCC + MNC + RAC + LAC (= RAI) is sent as RA parameter over the radio when an MS roams to another RA.

If the new SGSN for any reason fails to obtain the address of the old SGSN, the same actions as when the corresponding event occurs within one PLMN are taken.

Introducing the DNS concept in GPRS gives a general possibility to use logical names instead of IP addresses when referring to e.g. GSNs, thus providing flexibility in addressing of PLMN nodes.

Another way to support seamless inter-PLMN roaming is to store the SGSN IP addresses in HLR and request them when necessary.

---

## C.2 GPRS Support Nodes

In this sub-section a naming convention for GSNs is described.

It shall be possible to refer to a GSN by a logical name that shall then be translated into a physical IP address. Here a GSN naming convention is proposed which would make it possible for an internal GPRS DNS server to make the translation.



An example of how a logical name of a SGSN could look like is:

SGSNxxx.MNCyyy.MCCzzz.GPRS; x,y and z shall be Hex coded digits, where y and z shall be encoded as single digits (in the range of 0-9). z and y are in the range of 0-9.

If there are less than 4 significant digits in xxxx, yyyy, zzzz, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits coding.

As an example, the logical name for SGSN 1B34, MCC 167 and MNC 92 shall be coded in the DNS as SGSN1B34.MNC0092.MCC0167.GPRS.

## CHANGE REQUEST

⌘ **23.003 CR 048** ⌘ rev **3** ⌘ Current version: **5.3.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Clarification on the definition of DNS                                      |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 01/08/2002                              |
| <b>Category:</b>       | ⌘ <b>F</b>  | <b>Release:</b> | ⌘ Rel5                                    |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> 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 be found in 3GPP TR 21.900. | Rel-4           | (Release 4)                               |
|                        |   | Rel-5           | (Release 5)                               |
|                        |   | Rel-6           | (Release 6)                               |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ The current definition of logical names allows different interpretations for logical names regarding MNC and MCC   |
| <b>Summary of change:</b>            | ⌘ The range for MNC is limited to the digits 0-9 and an example is added   |
| <b>Consequences if not approved:</b> | ⌘ Inconsistent implementations are possible. The current definition allows two methods for logical name for one MNC-MCC combination:<br>i.e. MCC=167, MNC=92<br>1) RACxxxx.LACyyyy.MNC0092.MCC0167 or<br>RACxxxx.LACyyyy.MNC005C.MCC00A7 |

|                              |  |   |   |                          |                                     |                          |                                     |                          |                                     |  |   |
|------------------------------|--|---|---|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--|---|
| <b>Clauses affected:</b>     | ⌘ C.1, C.2   |   |   |                          |                                     |                          |                                     |                          |                                     |  |   |
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| Y                            | N  |   |   |                          |                                     |                          |                                     |                          |                                     |  |   |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |                          |                                     |                          |                                     |  |   |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |                          |                                     |                          |                                     |  |   |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |                          |                                     |                          |                                     |  |   |
| <b>Other comments:</b>       | ⌘  |   |   |                          |                                     |                          |                                     |                          |                                     |  |   |

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- 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.

## C.1 Routing Area Identities

A possible way to support inter-PLMN roaming is discussed very briefly in this clause.

When an MS roams between two SGSNs within the same PLMN, the new SGSN finds the address to the old SGSN by the association old RA - old SGSN. Thus, each SGSN knows the address to every other SGSN in the PLMN.

When an MS roams from an SGSN to an SGSN in another PLMN, the new SGSN may not itself have access to the address to the old SGSN. Instead, the SGSN transforms the old RA information to a logical name of the form:

*RACxxxx.LACyyyy.MNCzzzz.MCCwwww.GPRS;* ~~*x, and y, z and w shall be Hex coded digits z and w shall be encoded as single digits (in the range of 0-9), where z and w are in the range of 0-9.*~~

If there are less than 4 significant digits in xxxx, yyyy, zzzz, wwww, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits ~~Hex~~-coding.

As an example, the logical name for RAC 123A, LAC 234B, MCC 167 and MNC 92 shall be coded in the DNS as *RAC123A.LAC234B.MNC0092.MCC0167.GPRS*.

The SGSN may then acquire the IP address of the old SGSN from a DNS server, using the logical address. Every PLMN should include one DNS server each. Note that these DNS servers are GPRS internal entities, unknown outside the GPRS system.

The above implies that at least MCC + MNC + RAC + LAC (= RAI) is sent as RA parameter over the radio when an MS roams to another RA.

If the new SGSN for any reason fails to obtain the address of the old SGSN, the same actions as when the corresponding event occurs within one PLMN are taken.

Introducing the DNS concept in GPRS gives a general possibility to use logical names instead of IP addresses when referring to e.g. SGSNs, thus providing flexibility in addressing of PLMN nodes.

Another way to support seamless inter-PLMN roaming is to store the SGSN IP addresses in HLR and request them when necessary.

If Intra Domain Connection of RAN Nodes to Multiple CN Nodes [23] is applied then the Network Resource Identifier (NRI) identifies uniquely a given SGSN node out of all SGSNs serving the same pool area.

- If the new SGSN is not able to extract the NRI from the old P-TMSI, it shall retrieve the address of the default SGSN [23] serving the old RA, using the logical name described earlier in this section. The default SGSN in the old RA relays the GTP signalling to the old SGSN identified by the NRI in the old P-TMSI unless the default SGSN itself is the old SGSN.

If the new SGSN is able to extract NRI from old P-TMSI, then it shall attempt to derive the address of the old SGSN from the NRI and the old RAI. NRI-to-SGSN assignments may be either configured (by O&M) in the new SGSN, or retrieved from DNS. If DNS is used, it shall be queried using the following logical name, derived from old RAI and NRI information:

*NRIxxxx.RACyyyy.LACzzzz.MNCvvvv.MCCwwww.GPRS*

~~*x, y, and z, v and w shall be Hex coded digits, v and w shall be encoded as single digits (in the range of 0-9).*~~ If there are less than 4 significant digits in xxxx, yyyy, zzzz, vvvv, wwww, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits ~~Hex~~-coding.

As an example, the logical name for NRI 3A, RAC 123A, LAC 234B, MCC 167 and MNC 92 shall be coded in the DNS as *NRI003A.RAC123A.LAC234B.MNC0092.MCC0167.GPRS*.

If the new SGSN for any reason fails to obtain the address of the old SGSN using this method, then as a fallback method it shall retrieve the address of the default SGSN serving the old RA.

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## C.2 GPRS Support Nodes

In this sub-section a naming convention for GSNs is described.

It shall be possible to refer to a GSN by a logical name that shall then be translated into a physical IP address. Here a GSN naming convention is proposed which would make it possible for an internal GPRS DNS server to make the translation.

An example of how a logical name of a SGSN could look like is:

*SGSNxxxx.MNCyyyy.MCCzzzz.GPRS;*      *x,y and z shall be Hex coded digits, y and z shall be encoded as single digits (in the range of 0-9).*

If there are less than 4 significant digits in xxxx, yyyy, zzzz, one or more "0" digit(s) is/are inserted at the left side to fill the 4 digits coding.

As an example, the logical name for SGSN 1B34, MCC 167 and MNC 92 shall be coded in the DNS as *SGSN1B34.MNC0092.MCC0167.GPRS.*

## CHANGE REQUEST

⌘ **29.060 CR 326** ⌘ rev **1** ⌘ Current version: **3.13.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Clarification on the coding of RANAP cause value                            |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GTP enhancements  | <b>Date:</b>    | ⌘ 31/07/2002                              |
| <b>Category:</b>       | ⌘ <b>F</b>  | <b>Release:</b> | ⌘ R99                                     |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   |                 | 2 (GSM Phase 2)                           |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  |                 | R96 (Release 1996)                        |
|                        | <b>B</b> (addition of feature),   |                 | R97 (Release 1997)                        |
|                        | <b>C</b> (functional modification of feature)                                 |                 | R98 (Release 1998)                        |
|                        | <b>D</b> (editorial modification)   |                 | R99 (Release 1999)                        |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |
|                        |   |                 | Rel-5 (Release 5)                         |
|                        |   |                 | Rel-6 (Release 6)                         |

|                                      |   |
|--------------------------------------|---|
| <b>Reason for change:</b>            | ⌘ Critical correction   |
|                                      | Only a hint to 25.413 is not sufficient because in 25.413 the RANAP cause is defined as a choice (1 bit for extension) of 6 groups (3 bits) and the largest group has a range of 1-64 (6 bits) so we need 10 bits. 29.060 reserves only one octet for the RANAP cause value. No mapping of the different codings is defined |
| <b>Summary of change:</b>            | ⌘ A definition is added that the RANAP cause value is the integer value of the cause defined in 25.413 decremented by 1   |
| <b>Consequences if not approved:</b> | ⌘ Definition of the mapping of RANAP cause value from lu to GTP is not defined. This leads to interoperability problems.  |

|                              |  |                     |   |   |  |  |   |  |   |                           |          |
|------------------------------|--|---------------------|---|---|--|--|---|--|---|---------------------------|----------|
| <b>Clauses affected:</b>     | ⌘ 7.7.18   |                     |   |   |  |  |   |  |   |                           |          |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table> | Y                   | N | X |  |  | X |  | X | Other core specifications | ⌘ 25.413 |
| Y                            | N  |                     |   |   |  |  |   |  |   |                           |          |
| X                            |  |                     |   |   |  |  |   |  |   |                           |          |
|                              | X  |                     |   |   |  |  |   |  |   |                           |          |
|                              | X  |                     |   |   |  |  |   |  |   |                           |          |
|                              |  | Test specifications |   |   |  |  |   |  |   |                           |          |
|                              |  | O&M Specifications  |   |   |  |  |   |  |   |                           |          |
| <b>Other comments:</b>       | ⌘  |                     |   |   |  |  |   |  |   |                           |          |

### How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 7.7.18 RANAP Cause

The RANAP Cause information element contains the cause as defined in 3GPP TS 25.413. The value part (which has a range of 1..2565) of the RANAP Cause IE which is transferred over the Iu interface is encoded into one octet by subtracting 1 from the binary encoding of the value part of the RANAP Cause IE.

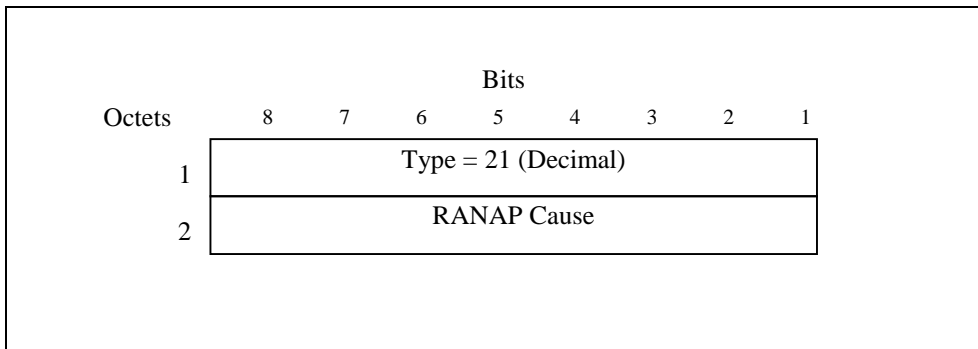


Figure 26: RANAP Cause Information Element



CR-Form-v7

## CHANGE REQUEST

⌘ **29.060 CR 327** ⌘ rev **1** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Clarification on the coding of RANAP causevalue                             |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GTP enhancements  | <b>Date:</b>    | ⌘ 26/06/2002                              |
| <b>Category:</b>       | ⌘ <b>A</b>  | <b>Release:</b> | ⌘ Rel-4                                   |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   |                 | 2 (GSM Phase 2)                           |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  |                 | R96 (Release 1996)                        |
|                        | <b>B</b> (addition of feature),   |                 | R97 (Release 1997)                        |
|                        | <b>C</b> (functional modification of feature)                                 |                 | R98 (Release 1998)                        |
|                        | <b>D</b> (editorial modification)   |                 | R99 (Release 1999)                        |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |
|                        |   |                 | Rel-5 (Release 5)                         |
|                        |   |                 | Rel-6 (Release 6)                         |

|                                      |   |
|--------------------------------------|---|
| <b>Reason for change:</b>            | ⌘ Only a hint to 25.413 is not sufficient because in 25.413 the RANAP cause is defined as a choice (1 bit for extension) of 6 groups (3 bits) and the largest group has a range of 1-64 (6 bits) so we need 10 bits. 29.060 reserves only one octet for the RANAP cause value. No mapping of the different codings is defined |
| <b>Summary of change:</b>            | ⌘ A definition mapping of is added that the RANAP cause value from lu to GTP is the integer value of the cause defined in 25.413 decremented by 1   |
| <b>Consequences if not approved:</b> | ⌘ Definition of the RANAP cause value is not defined. This leads to interoperability problems..   |

|                              |   |                     |   |   |  |  |   |  |   |                           |          |
|------------------------------|---|---------------------|---|---|--|--|---|--|---|---------------------------|----------|
| <b>Clauses affected:</b>     | ⌘ 7.7.18  |                     |   |   |  |  |   |  |   |                           |          |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table> | Y                   | N | X |  |  | X |  | X | Other core specifications | ⌘ 25.413 |
| Y                            | N   |                     |   |   |  |  |   |  |   |                           |          |
| X                            |   |                     |   |   |  |  |   |  |   |                           |          |
|                              | X   |                     |   |   |  |  |   |  |   |                           |          |
|                              | X   |                     |   |   |  |  |   |  |   |                           |          |
|                              |   | Test specifications |   |   |  |  |   |  |   |                           |          |
|                              |   | O&M Specifications  |   |   |  |  |   |  |   |                           |          |
| <b>Other comments:</b>       | ⌘   |                     |   |   |  |  |   |  |   |                           |          |

### How to create CRs using this form:

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

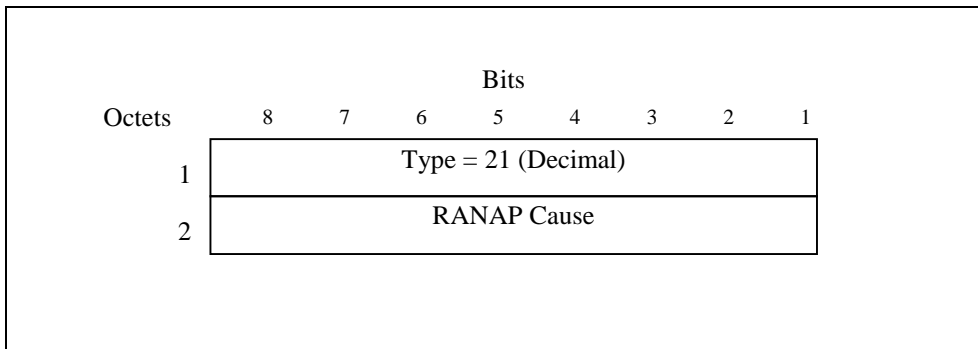
- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 7.7.18 RANAP Cause

The RANAP Cause information element contains the cause as defined in 3GPP TS 25.413. The value part (which has a range of 1..2565) of the RANAP Cause IE which is transferred over the Iu interface is encoded into one octet by subtracting 1 from the binary encoding of the value part of the RANAP Cause IE.



**Figure 26: RANAP Cause Information Element**

## CHANGE REQUEST

⌘ **29.060 CR 328** ⌘ rev **1** ⌘ Current version: **5.2.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Clarification on the coding of RANAP causevalue                             |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GTP enhancements  | <b>Date:</b>    | ⌘ 26/06/2002                              |
| <b>Category:</b>       | ⌘ <b>A</b>  | <b>Release:</b> | ⌘ Rel-5                                   |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   |                 | 2 (GSM Phase 2)                           |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  |                 | R96 (Release 1996)                        |
|                        | <b>B</b> (addition of feature),   |                 | R97 (Release 1997)                        |
|                        | <b>C</b> (functional modification of feature)                                 |                 | R98 (Release 1998)                        |
|                        | <b>D</b> (editorial modification)   |                 | R99 (Release 1999)                        |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |
|                        |   |                 | Rel-5 (Release 5)                         |
|                        |   |                 | Rel-6 (Release 6)                         |

|                                      |   |
|--------------------------------------|---|
| <b>Reason for change:</b>            | ⌘ Only a hint to 25.413 is not sufficient because in 25.413 the RANAP cause is defined as a choice (1 bit for extension) of 6 groups (3 bits) and the largest group has a range of 1-64 (6 bits) so we need 10 bits. 29.060 reserves only one octet for the RANAP cause value. No mapping of the different codings is defined |
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| <b>Consequences if not approved:</b> | ⌘ Definition of the mapping of RANAP cause value from lu to GTP is not defined. This leads to interoperability problems.  |

|                              |   |                     |   |   |  |  |   |  |   |                           |          |
|------------------------------|---|---------------------|---|---|--|--|---|--|---|---------------------------|----------|
| <b>Clauses affected:</b>     | ⌘ 7.7.18  |                     |   |   |  |  |   |  |   |                           |          |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table> | Y                   | N | X |  |  | X |  | X | Other core specifications | ⌘ 25.413 |
| Y                            | N   |                     |   |   |  |  |   |  |   |                           |          |
| X                            |   |                     |   |   |  |  |   |  |   |                           |          |
|                              | X   |                     |   |   |  |  |   |  |   |                           |          |
|                              | X   |                     |   |   |  |  |   |  |   |                           |          |
|                              |   | Test specifications |   |   |  |  |   |  |   |                           |          |
|                              |   | O&M Specifications  |   |   |  |  |   |  |   |                           |          |
| <b>Other comments:</b>       | ⌘   |                     |   |   |  |  |   |  |   |                           |          |

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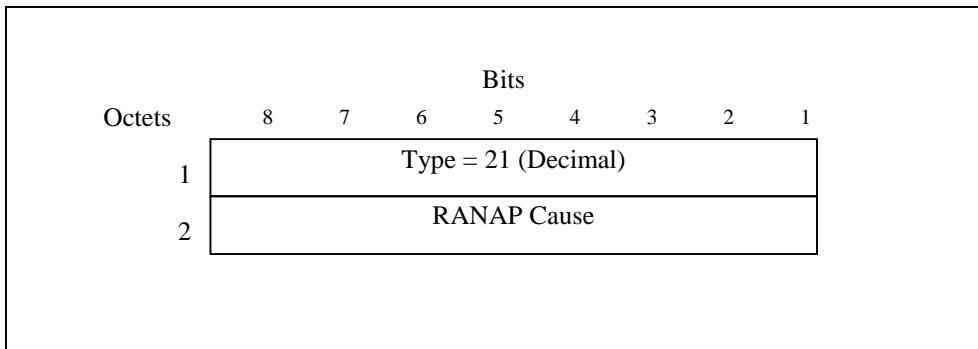
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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 7.7.18 RANAP Cause

The RANAP Cause information element contains the cause as defined in 3GPP TS 25.413. The value part (which has a range of 1..2565) of the RANAP Cause IE which is transferred over the Iu interface is encoded into one octet by subtracting 1 from the binary encoding of the value part of the RANAP Cause IE.



**Figure 26: RANAP Cause Information Element**

CR-Form-v7

## CHANGE REQUEST

⌘ **29.060 CR 330** ⌘ rev **1** ⌘ Current version: **3.13.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |  |
|------------------------|---|-----------------|--|
| <b>Title:</b>          | ⌘ Setting PDP ID after inter-SGSN RAU using GTPv0   |                 |  |
| <b>Source:</b>         | ⌘ CN4   |                 |  |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 31 July 2002   |
| <b>Category:</b>       | ⌘ <b>F</b>  | <b>Release:</b> | ⌘ R99  |
|                        | <i>Use <u>one</u> of the following categories:</i><br><b>F</b> (correction)<br><b>A</b> (corresponds to a correction in an earlier release)<br><b>B</b> (addition of feature),<br><b>C</b> (functional modification of feature)<br><b>D</b> (editorial modification)<br>Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | <i>Use <u>one</u> of the following releases:</i><br><b>2</b> (GSM Phase 2)<br><b>R96</b> (Release 1996)<br><b>R97</b> (Release 1997)<br><b>R98</b> (Release 1998)<br><b>R99</b> (Release 1999)<br><b>Rel-4</b> (Release 4)<br><b>Rel-5</b> (Release 5)<br><b>Rel-6</b> (Release 6) |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ Critical correction  |
|                                      | Deficiency in <b>GTPv0</b> results in that the old SGSN_1 cannot pass the 'PDP Context Identifier' IE to the next SGSN_2 in the SGSN Context Response message. It's too late to add this IE to the protocol.<br><br>SGSN_2 would have a set of PDP contexts without PDP IDs. Later SGSN_2 would send the SGSN Context Response message to the next SGSN_3. However, SGSN_2 would not be able to determine a right value for the 'PDP Context Identifier' IE in each the PDP Context IE.<br><br>It is proposed to use a PDP Context ID value $(1111\ 1111)_2$ for such cases. |
| <b>Summary of change:</b>            | ⌘ Once SGSN does not have valid value for PDP IDs, it shall set the values to binary (1111 1111).  |
| <b>Consequences if not approved:</b> | ⌘ Possible problems in the SGSN once PDP Context IDs are missing and the SGSN has to send the SGSN Context Response message.   |

|                              |  |   |   |   |  |  |   |                 |  |
|------------------------------|--|---|---|---|--|--|---|-----------------|--|
| <b>Clauses affected:</b>     | ⌘ 7.7.29   |   |   |   |  |  |   |                 |  |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications | Y | N | X |  |  | X | ⌘ 23.060 CR 376 |  |
| Y                            | N  |   |   |   |  |  |   |                 |  |
| X                            |  |   |   |   |  |  |   |                 |  |
|                              | X  |   |   |   |  |  |   |                 |  |
|                              | Test specifications  |   |   |   |  |  |   |                 |  |

**Other comments:** ⌘ Related LS (N4-020881) to S2 "in reply to the LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN (S2-022052)".

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

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.



## 7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the old SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the Uplink Tunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

|                     |   |     |                   |                        |       |
|---------------------|---|-----|-------------------|------------------------|-------|
| 1                   | Type = 130 (Decimal)                            |     |                   |                        |       |
| 2-3                 | Length  |     |                   |                        |       |
| 4                   | Res-<br>erved                                   | VAA | Res-<br>erve<br>d | Ord<br>er              | NSAPI |
| 5                   | X   | X   | X                 | X                      | SAPI  |
| 6                   | QoS Sub Length                                  |     |                   |                        |       |
| 7 - (q+6)           | QoS Sub [4..255]                                |     |                   |                        |       |
| q+7                 | QoS Req Length                                  |     |                   |                        |       |
| (q+8)-(2q+7)        | QoS Req [4..255]                                |     |                   |                        |       |
| 2q+8                | QoS Neg. Length                                 |     |                   |                        |       |
| (2q+9)-<br>(3q+8)   | QoS Neg [4..255]                                |     |                   |                        |       |
| (3q+9)-<br>(3q+10)  | Sequence Number Down (SND) <sup>1)</sup>        |     |                   |                        |       |
| (3q+11)-<br>(3q+12) | Sequence Number Up (SNU) <sup>1)</sup>          |     |                   |                        |       |
| 3q+13               | Send N-PDU Number <sup>1)</sup>                 |     |                   |                        |       |
| 3q+14               | Receive N-PDU Number <sup>1)</sup>              |     |                   |                        |       |
| (3q+15)-<br>(3q+18) | Uplink Tunnel Endpoint Identifier Control Plane |     |                   |                        |       |
| (3q+19)-<br>(3q+22) | Uplink Tunnel Endpoint Identifier Data I        |     |                   |                        |       |
| 3q+23               | PDP Context Identifier                          |     |                   |                        |       |
| 3q+24               | Spare 1 1 1 1                                   |     |                   | PDP Type Organisation  |       |
| 3q+25               | PDP Type Number                                 |     |                   |                        |       |
| 3q+26               | PDP Address Length                              |     |                   |                        |       |
| (3q+27)-m           | PDP Address [1..63]                             |     |                   |                        |       |
| m+1                 | GGSN Address for control plane Length           |     |                   |                        |       |
| (m+2)-n             | GGSN Address for control plane [4..16]          |     |                   |                        |       |
| n+1                 | GGSN Address for User Traffic Length            |     |                   |                        |       |
| (n+2)-o             | GGSN Address for User Traffic [4..16]           |     |                   |                        |       |
| o+1                 | APN length                                      |     |                   |                        |       |
| (o+2)-p             | APN   |     |                   |                        |       |
| p+1                 | Spare (sent as 0 0 0 0)                         |     |                   | Transaction Identifier |       |
| p+2                 | Transaction Identifier                          |     |                   |                        |       |

Figure 43: PDP Context Information Element

1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

**Table 48: Reordering Required Values**

| <b>Reordering Required</b> | <b>Value (Decimal)</b> |
|----------------------------|------------------------|
| No                         | 0                      |
| Yes                        | 1                      |

**Table 49: VPLMN Address Allowed**

| <b>VPLMN Address Allowed</b> | <b>Value (Decimal)</b> |
|------------------------------|------------------------|
| No                           | 0                      |
| Yes                          | 1                      |

## CHANGE REQUEST

⌘ **29.060 CR 330** ⌘ rev **1** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Setting PDP ID after inter-SGSN RAU using GTPv0                             |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 31 July 2002                            |
| <b>Category:</b>       | ⌘ <b>A</b>  | <b>Release:</b> | ⌘ Rel-4                                   |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   |                 | 2 (GSM Phase 2)                           |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  |                 | R96 (Release 1996)                        |
|                        | <b>B</b> (addition of feature),   |                 | R97 (Release 1997)                        |
|                        | <b>C</b> (functional modification of feature)                                 |                 | R98 (Release 1998)                        |
|                        | <b>D</b> (editorial modification)   |                 | R99 (Release 1999)                        |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |
|                        |   |                 | Rel-5 (Release 5)                         |
|                        |   |                 | Rel-6 (Release 6)                         |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ Critical correction  |
|                                      | <p>Deficiency in <b>GTPv0</b> results in that the old SGSN_1 cannot pass the 'PDP Context Identifier' IE to the next SGSN_2 in the SGSN Context Response message. It's too late to add this IE to the protocol.</p> <p>SGSN_2 would have a set of PDP contexts without PDP IDs. Later SGSN_2 would send the SGSN Context Response message to the next SGSN_3. However, SGSN_2 would not be able to determine a right value for the 'PDP Context Identifier' IE in each the PDP Context IE.</p> <p>It is proposed to use a PDP Context ID value <math>(1111\ 1111)_2</math> for such cases.</p> |
| <b>Summary of change:</b>            | ⌘ Once SGSN does not have valid value for PDP IDs, it shall set the values to binary (1111 1111).  |
| <b>Consequences if not approved:</b> | ⌘ Possible problems in the SGSN once PDP Context IDs are missing and the SGSN has to send the SGSN Context Response message.   |

|                              |  |                     |   |   |  |  |   |                           |                 |
|------------------------------|--|---------------------|---|---|--|--|---|---------------------------|-----------------|
| <b>Clauses affected:</b>     | ⌘ 7.7.29   |                     |   |   |  |  |   |                           |                 |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table> | Y                   | N | X |  |  | X | Other core specifications | ⌘ 23.060 CR 377 |
| Y                            | N  |                     |   |   |  |  |   |                           |                 |
| X                            |  |                     |   |   |  |  |   |                           |                 |
|                              | X  |                     |   |   |  |  |   |                           |                 |
|                              |  | Test specifications |   |   |  |  |   |                           |                 |

**Other comments:** ⌘ Related LS (N4-020881) to S2 "in reply to the LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN (S2-022052)".

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

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the old SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the Uplink Tunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN should shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

|                     |   |     |                   |                        |       |
|---------------------|---|-----|-------------------|------------------------|-------|
| 1                   | Type = 130 (Decimal)                            |     |                   |                        |       |
| 2-3                 | Length  |     |                   |                        |       |
| 4                   | Res-<br>erved                                   | VAA | Res-<br>erve<br>d | Ord<br>er              | NSAPI |
| 5                   | X   | X   | X                 | X                      | SAPI  |
| 6                   | QoS Sub Length                                  |     |                   |                        |       |
| 7 - (q+6)           | QoS Sub [4..255]                                |     |                   |                        |       |
| q+7                 | QoS Req Length                                  |     |                   |                        |       |
| (q+8)-(2q+7)        | QoS Req [4..255]                                |     |                   |                        |       |
| 2q+8                | QoS Neg. Length                                 |     |                   |                        |       |
| (2q+9)-<br>(3q+8)   | QoS Neg [4..255]                                |     |                   |                        |       |
| (3q+9)-<br>(3q+10)  | Sequence Number Down (SND) <sup>1)</sup>        |     |                   |                        |       |
| (3q+11)-<br>(3q+12) | Sequence Number Up (SNU) <sup>1)</sup>          |     |                   |                        |       |
| 3q+13               | Send N-PDU Number <sup>1)</sup>                 |     |                   |                        |       |
| 3q+14               | Receive N-PDU Number <sup>1)</sup>              |     |                   |                        |       |
| (3q+15)-<br>(3q+18) | Uplink Tunnel Endpoint Identifier Control Plane |     |                   |                        |       |
| (3q+19)-<br>(3q+22) | Uplink Tunnel Endpoint Identifier Data I        |     |                   |                        |       |
| 3q+23               | PDP Context Identifier                          |     |                   |                        |       |
| 3q+24               | Spare 1 1 1 1                                   |     |                   | PDP Type Organisation  |       |
| 3q+25               | PDP Type Number                                 |     |                   |                        |       |
| 3q+26               | PDP Address Length                              |     |                   |                        |       |
| (3q+27)-m           | PDP Address [1..63]                             |     |                   |                        |       |
| m+1                 | GGSN Address for control plane Length           |     |                   |                        |       |
| (m+2)-n             | GGSN Address for control plane [4..16]          |     |                   |                        |       |
| n+1                 | GGSN Address for User Traffic Length            |     |                   |                        |       |
| (n+2)-o             | GGSN Address for User Traffic [4..16]           |     |                   |                        |       |
| o+1                 | APN length                                      |     |                   |                        |       |
| (o+2)-p             | APN   |     |                   |                        |       |
| p+1                 | Spare (sent as 0 0 0 0)                         |     |                   | Transaction Identifier |       |
| p+2                 | Transaction Identifier                          |     |                   |                        |       |

Figure 43: PDP Context Information Element

1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

**Table 48: Reordering Required Values**

| <b>Reordering Required</b> | <b>Value (Decimal)</b> |
|----------------------------|------------------------|
| No                         | 0                      |
| Yes                        | 1                      |

**Table 49: VPLMN Address Allowed**

| <b>VPLMN Address Allowed</b> | <b>Value (Decimal)</b> |
|------------------------------|------------------------|
| No                           | 0                      |
| Yes                          | 1                      |



## CHANGE REQUEST

⌘ **29.060 CR 330** ⌘ rev **1** ⌘ Current version: **5.2.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Setting PDP ID after inter-SGSN RAU using GTPv0                             |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 31 July 2002                            |
| <b>Category:</b>       | ⌘ <b>A</b>  | <b>Release:</b> | ⌘ Rel-5                                   |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   |                 | 2 (GSM Phase 2)                           |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  |                 | R96 (Release 1996)                        |
|                        | <b>B</b> (addition of feature),   |                 | R97 (Release 1997)                        |
|                        | <b>C</b> (functional modification of feature)                                 |                 | R98 (Release 1998)                        |
|                        | <b>D</b> (editorial modification)   |                 | R99 (Release 1999)                        |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |
|                        |   |                 | Rel-5 (Release 5)                         |
|                        |   |                 | Rel-6 (Release 6)                         |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ Critical correction  |
|                                      | <p>Deficiency in <b>GTPv0</b> results in that the old SGSN_1 cannot pass the 'PDP Context Identifier' IE to the next SGSN_2 in the SGSN Context Response message. It's too late to add this IE to the protocol.</p> <p>SGSN_2 would have a set of PDP contexts without PDP IDs. Later SGSN_2 would send the SGSN Context Response message to the next SGSN_3. However, SGSN_2 would not be able to determine a right value for the 'PDP Context Identifier' IE in each the PDP Context IE.</p> <p>It is proposed to use a PDP Context ID value <math>(1111\ 1111)_2</math> for such cases.</p> |
| <b>Summary of change:</b>            | ⌘ Once SGSN does not have valid value for PDP IDs, it shall set the values to binary (1111 1111).  |
| <b>Consequences if not approved:</b> | ⌘ Possible problems in the SGSN once PDP Context IDs are missing and the SGSN has to send the SGSN Context Response message.   |

|                              |   |                     |   |   |  |  |   |                           |                 |
|------------------------------|---|---------------------|---|---|--|--|---|---------------------------|-----------------|
| <b>Clauses affected:</b>     | ⌘ 7.7.29  |                     |   |   |  |  |   |                           |                 |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> | Y                   | N | X |  |  | X | Other core specifications | ⌘ 23.060 CR 378 |
| Y                            | N   |                     |   |   |  |  |   |                           |                 |
| X                            |   |                     |   |   |  |  |   |                           |                 |
|                              | X   |                     |   |   |  |  |   |                           |                 |
|                              |   | Test specifications |   |   |  |  |   |                           |                 |

**Other comments:** ⌘ Related LS (N4-020881) to S2 "in reply to the LS on Setting of PDP Context Identifier after inter-SGSN RAU from GTPv0-only SGSN (S2-022052)".

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

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the old SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the Uplink Tunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber. The SGSN should shall set the value of PDP Context Identifier to binary (1111 1111) if after inter-SGSN RAU using GTPv0 the new SGSN is not able to assign a correct PDP Context Identifier to the existing PDP contexts.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

|                     |   |     |                   |                        |       |
|---------------------|---|-----|-------------------|------------------------|-------|
| 1                   | Type = 130 (Decimal)                            |     |                   |                        |       |
| 2-3                 | Length  |     |                   |                        |       |
| 4                   | Res-<br>erved                                   | VAA | Res-<br>erve<br>d | Ord<br>er              | NSAPI |
| 5                   | X   | X   | X                 | X                      | SAPI  |
| 6                   | QoS Sub Length                                  |     |                   |                        |       |
| 7 - (q+6)           | QoS Sub [4..255]                                |     |                   |                        |       |
| q+7                 | QoS Req Length                                  |     |                   |                        |       |
| (q+8)-(2q+7)        | QoS Req [4..255]                                |     |                   |                        |       |
| 2q+8                | QoS Neg. Length                                 |     |                   |                        |       |
| (2q+9)-<br>(3q+8)   | QoS Neg [4..255]                                |     |                   |                        |       |
| (3q+9)-<br>(3q+10)  | Sequence Number Down (SND) <sup>1)</sup>        |     |                   |                        |       |
| (3q+11)-<br>(3q+12) | Sequence Number Up (SNU) <sup>1)</sup>          |     |                   |                        |       |
| 3q+13               | Send N-PDU Number <sup>1)</sup>                 |     |                   |                        |       |
| 3q+14               | Receive N-PDU Number <sup>1)</sup>              |     |                   |                        |       |
| (3q+15)-<br>(3q+18) | Uplink Tunnel Endpoint Identifier Control Plane |     |                   |                        |       |
| (3q+19)-<br>(3q+22) | Uplink Tunnel Endpoint Identifier Data I        |     |                   |                        |       |
| 3q+23               | PDP Context Identifier                          |     |                   |                        |       |
| 3q+24               | Spare 1 1 1 1                                   |     |                   | PDP Type Organisation  |       |
| 3q+25               | PDP Type Number                                 |     |                   |                        |       |
| 3q+26               | PDP Address Length                              |     |                   |                        |       |
| (3q+27)-m           | PDP Address [1..63]                             |     |                   |                        |       |
| m+1                 | GGSN Address for control plane Length           |     |                   |                        |       |
| (m+2)-n             | GGSN Address for control plane [4..16]          |     |                   |                        |       |
| n+1                 | GGSN Address for User Traffic Length            |     |                   |                        |       |
| (n+2)-o             | GGSN Address for User Traffic [4..16]           |     |                   |                        |       |
| o+1                 | APN length                                      |     |                   |                        |       |
| (o+2)-p             | APN   |     |                   |                        |       |
| p+1                 | Spare (sent as 0 0 0 0)                         |     |                   | Transaction Identifier |       |
| p+2                 | Transaction Identifier                          |     |                   |                        |       |

Figure 43: PDP Context Information Element

1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

**Table 48: Reordering Required Values**

| <b>Reordering Required</b> | <b>Value (Decimal)</b> |
|----------------------------|------------------------|
| No                         | 0                      |
| Yes                        | 1                      |

**Table 49: VPLMN Address Allowed**

| <b>VPLMN Address Allowed</b> | <b>Value (Decimal)</b> |
|------------------------------|------------------------|
| No                           | 0                      |
| Yes                          | 1                      |

CR-Form-v7

## CHANGE REQUEST

⌘ **29.060 CR 334** ⌘ rev **-** ⌘ Current version: **3.13.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |  |                 |   |
|------------------------|--|-----------------|---|
| <b>Title:</b>          | ⌘ Removing inconsistency in definition of PDP Address length   |                 |   |
| <b>Source:</b>         | ⌘ CN4  |                 |   |
| <b>Work item code:</b> | ⌘ GPRS   | <b>Date:</b>    | ⌘ 17/07/2002  |
| <b>Category:</b>       | ⌘ <b>F</b>   | <b>Release:</b> | ⌘ R99   |
|                        | Use <u>one</u> of the following categories:<br><b>F</b> (correction)<br><b>A</b> (corresponds to a correction in an earlier release)<br><b>B</b> (addition of feature),<br><b>C</b> (functional modification of feature)<br><b>D</b> (editorial modification)<br>Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Use <u>one</u> of the following releases:<br>2 (GSM Phase 2)<br>R96 (Release 1996)<br>R97 (Release 1997)<br>R98 (Release 1998)<br>R99 (Release 1999)<br>Rel-4 (Release 4)<br>Rel-5 (Release 5)<br>Rel-6 (Release 6) |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ There is an inconsistency in 29.060 in the definition of the length of the PDP Address. In chapter 7.7.29 the length of the 'pure' PDP Address is defined as [1..63]. I.e. even if no PDP Address shall be provided, this IE cannot be empty. In the same chapter a reference is given to chapter 7.7.27, where the same Address can be of length 0. |
| <b>Summary of change:</b>            | ⌘ 7.7.29: Change length of PDP Address to [0..63].   |
| <b>Consequences if not approved:</b> | ⌘ The inconsistent definition will lead to different implementations and to interoperability problems.   |

|                              |   |   |   |                          |                                     |                          |                                     |                          |                                     |   |  |
|------------------------------|---|---|---|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|---|--|
| <b>Clauses affected:</b>     | ⌘ 7.7.29  |   |   |                          |                                     |                          |                                     |                          |                                     |   |  |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N   |   |   |                          |                                     |                          |                                     |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>   |   |   |                          |                                     |                          |                                     |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>   |   |   |                          |                                     |                          |                                     |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>   |   |   |                          |                                     |                          |                                     |                          |                                     |   |  |
| <b>Other comments:</b>       | ⌘   |   |   |                          |                                     |                          |                                     |                          |                                     |   |  |

### How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

\*\*\*\* FOR INFORMATION \*\*\*\*

### 7.7.27 End User Address

The purpose of the End User Address information element shall be to supply protocol specific information of the external packet data network accessed by the GPRS subscriber.

The Length field value shall be 2 in an End User Address information element with an empty PDP Address.

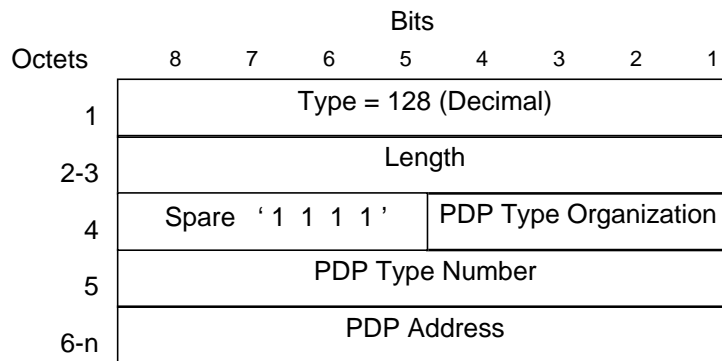
The PDP Type defines the end user protocol to be used between the external packet data network and the MS and is divided into an Organisation field and a Number field.

The PDP Type Organisation is the organisation that is responsible for the PDP Type Number field and the PDP Address format.

For PPP the PDP Type Organisation is ETSI and the PDP Type Number is 1 and there shall be no address in the End User Address IE. In this case the address is negotiated later as part of the PPP protocol.

If the PDP Type Organisation is IETF, the PDP Type Number is a compressed number (i.e. the most significant HEX(00) is skipped) in the “Assigned PPP DLL Protocol Numbers” list in the most recent “Assigned Numbers” RFC (RFC 1700 or later). The most recent “Assigned PPP DLL Protocol Numbers” can also be found using the URL = ftp://ftp.isi.edu/in-notes/iana/assignments/ppp-numbers.

The PDP Address shall be the address that this PDP context of the MS is identified with from the external packet data network.



**Figure 35: End User Address Information Element**

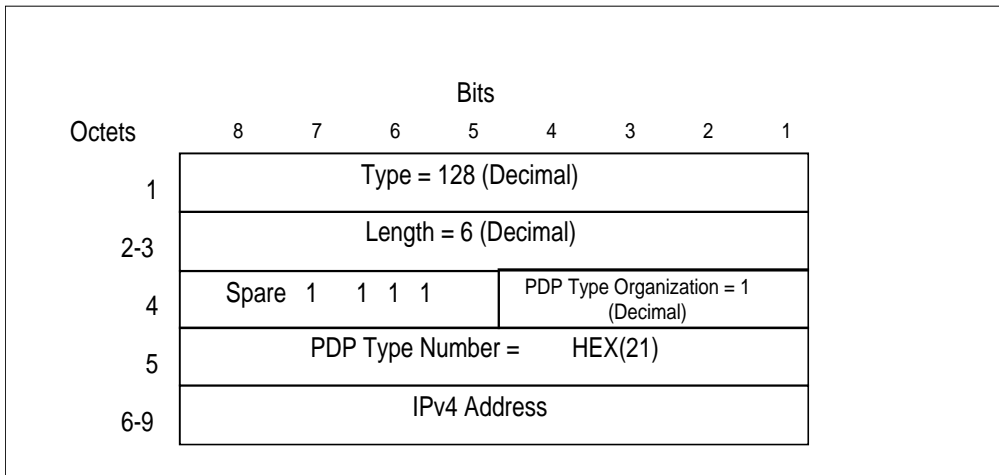
**Table 44: PDP Type Organisation Values**

| PDP Type Organisation         | Value (Decimal) |
|-------------------------------|-----------------|
| ETSI                          | 0               |
| IETF                          | 1               |
| All other values are reserved |                 |

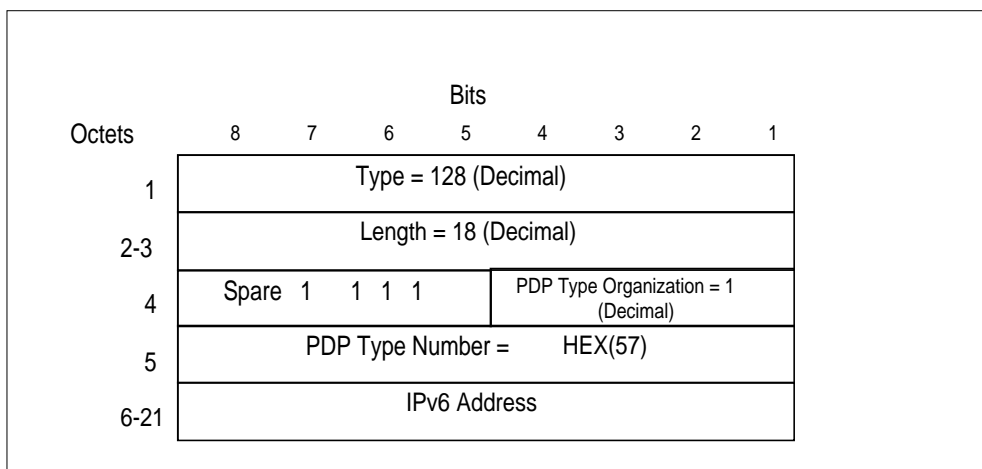
**Table 45: ETSI defined PDP Type Values**

| PDP Type Number               | Value (Decimal) |
|-------------------------------|-----------------|
| PPP                           | 1               |
| All other values are reserved |                 |

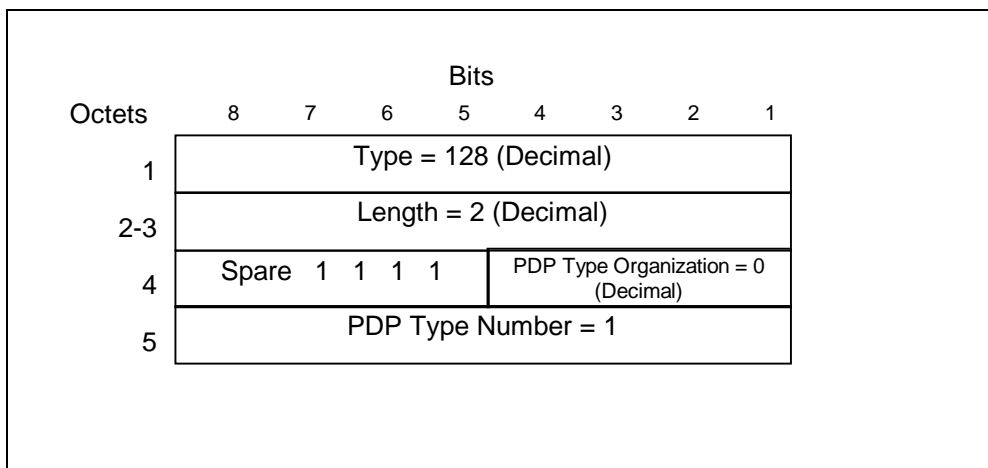




**Figure 36: End User Address Information Element for IPv4**



**Figure 37: End User Address Information Element for IPv6**



**Figure 38: End User Address Information Element for PPP**

\*\*\*\* FOR INFORMATION \*\*\*\*

**\*\*\*\* START OF MODIFICATION \*\*\*\***

## 7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the old SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the Uplink Tunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

|                     |   |     |                   |                        |       |
|---------------------|---|-----|-------------------|------------------------|-------|
| 1                   | Type = 130 (Decimal)                            |     |                   |                        |       |
| 2-3                 | Length  |     |                   |                        |       |
| 4                   | Res-<br>erved                                   | VAA | Res-<br>erve<br>d | Ord<br>er              | NSAPI |
| 5                   | X   | X   | X                 | X                      | SAPI  |
| 6                   | QoS Sub Length                                  |     |                   |                        |       |
| 7 - (q+6)           | QoS Sub [4..255]                                |     |                   |                        |       |
| q+7                 | QoS Req Length                                  |     |                   |                        |       |
| (q+8)-(2q+7)        | QoS Req [4..255]                                |     |                   |                        |       |
| 2q+8                | QoS Neg. Length                                 |     |                   |                        |       |
| (2q+9)-<br>(3q+8)   | QoS Neg [4..255]                                |     |                   |                        |       |
| (3q+9)-<br>(3q+10)  | Sequence Number Down (SND) <sup>1)</sup>        |     |                   |                        |       |
| (3q+11)-<br>(3q+12) | Sequence Number Up (SNU) <sup>1)</sup>          |     |                   |                        |       |
| 3q+13               | Send N-PDU Number <sup>1)</sup>                 |     |                   |                        |       |
| 3q+14               | Receive N-PDU Number <sup>1)</sup>              |     |                   |                        |       |
| (3q+15)-<br>(3q+18) | Uplink Tunnel Endpoint Identifier Control Plane |     |                   |                        |       |
| (3q+19)-<br>(3q+22) | Uplink Tunnel Endpoint Identifier Data I        |     |                   |                        |       |
| 3q+23               | PDP Context Identifier                          |     |                   |                        |       |
| 3q+24               | Spare 1 1 1 1                                   |     |                   | PDP Type Organisation  |       |
| 3q+25               | PDP Type Number                                 |     |                   |                        |       |
| 3q+26               | PDP Address Length                              |     |                   |                        |       |
| (3q+27)-m           | PDP Address [04..63]                            |     |                   |                        |       |
| m+1                 | GGSN Address for control plane Length           |     |                   |                        |       |
| (m+2)-n             | GGSN Address for control plane [4..16]          |     |                   |                        |       |
| n+1                 | GGSN Address for User Traffic Length            |     |                   |                        |       |
| (n+2)-o             | GGSN Address for User Traffic [4..16]           |     |                   |                        |       |
| o+1                 | APN length                                      |     |                   |                        |       |
| (o+2)-p             | APN   |     |                   |                        |       |
| p+1                 | Spare (sent as 0 0 0 0)                         |     |                   | Transaction Identifier |       |
| p+2                 | Transaction Identifier                          |     |                   |                        |       |

Figure 43: PDP Context Information Element

1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

**Table 48: Reordering Required Values**

| <b>Reordering Required</b> | <b>Value (Decimal)</b> |
|----------------------------|------------------------|
| No                         | 0                      |
| Yes                        | 1                      |

**Table 49: VPLMN Address Allowed**

| <b>VPLMN Address Allowed</b> | <b>Value (Decimal)</b> |
|------------------------------|------------------------|
| No                           | 0                      |
| Yes                          | 1                      |

**\*\*\*\* END OF MODIFICATION \*\*\*\***

CR-Form-v7

## CHANGE REQUEST

⌘ **29.060 CR 335** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Removing inconsistency in definition of PDP Address length                  |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 17/07/2002                              |
| <b>Category:</b>       | ⌘ <b>A</b>  | <b>Release:</b> | ⌘ Rel-4                                   |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   |                 | 2 (GSM Phase 2)                           |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  |                 | R96 (Release 1996)                        |
|                        | <b>B</b> (addition of feature),   |                 | R97 (Release 1997)                        |
|                        | <b>C</b> (functional modification of feature)                                 |                 | R98 (Release 1998)                        |
|                        | <b>D</b> (editorial modification)   |                 | R99 (Release 1999)                        |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |
|                        |   |                 | Rel-5 (Release 5)                         |
|                        |   |                 | Rel-6 (Release 6)                         |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ There is an inconsistency in 29.060 in the definition of the length of the PDP Address. In chapter 7.7.29 the length of the 'pure' PDP Address is defined as [1..63]. I.e. even if no PDP Address shall be provided, this IE cannot be empty. In the same chapter a reference is given to chapter 7.7.27, where the same Address can be of length 0. |
| <b>Summary of change:</b>            | ⌘ 7.7.29: Change length of PDP Address to [0..63].   |
| <b>Consequences if not approved:</b> | ⌘ The inconsistent definition will lead to different implementations and to interoperability problems.   |

|                              |   |                     |   |   |   |   |   |   |   |                           |   |
|------------------------------|---|---------------------|---|---|---|---|---|---|---|---------------------------|---|
| <b>Clauses affected:</b>     | ⌘ 7.7.29  |                     |   |   |   |   |   |   |   |                           |   |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table> | Y                   | N | ⌘ | X | ⌘ | X | ⌘ | X | Other core specifications | ⌘ |
| Y                            | N   |                     |   |   |   |   |   |   |   |                           |   |
| ⌘                            | X   |                     |   |   |   |   |   |   |   |                           |   |
| ⌘                            | X   |                     |   |   |   |   |   |   |   |                           |   |
| ⌘                            | X   |                     |   |   |   |   |   |   |   |                           |   |
|                              |   | Test specifications |   |   |   |   |   |   |   |                           |   |
|                              |   | O&M Specifications  |   |   |   |   |   |   |   |                           |   |
| <b>Other comments:</b>       | ⌘   |                     |   |   |   |   |   |   |   |                           |   |

### How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

\*\*\*\* FOR INFORMATION \*\*\*\*

### 7.7.27 End User Address

The purpose of the End User Address information element shall be to supply protocol specific information of the external packet data network accessed by the GPRS subscriber.

The Length field value shall be 2 in an End User Address information element with an empty PDP Address.

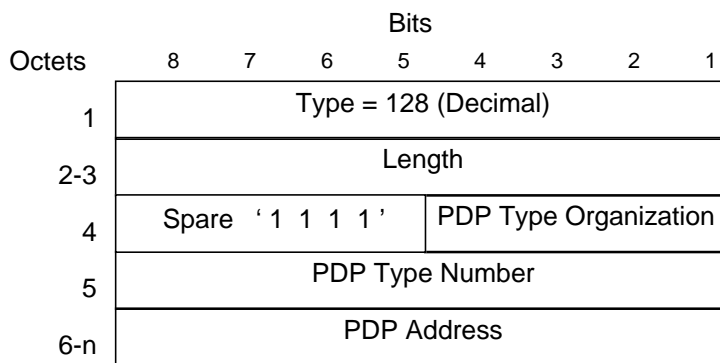
The PDP Type defines the end user protocol to be used between the external packet data network and the MS and is divided into an Organisation field and a Number field.

The PDP Type Organisation is the organisation that is responsible for the PDP Type Number field and the PDP Address format.

For PPP the PDP Type Organisation is ETSI and the PDP Type Number is 1 and there shall be no address in the End User Address IE. In this case the address is negotiated later as part of the PPP protocol.

If the PDP Type Organisation is IETF, the PDP Type Number is a compressed number (i.e. the most significant HEX(00) is skipped) in the “Assigned PPP DLL Protocol Numbers” list in the most recent “Assigned Numbers” RFC (RFC 1700 or later). The most recent “Assigned PPP DLL Protocol Numbers” can also be found using the URL = ftp://ftp.isi.edu/in-notes/iana/assignments/ppp-numbers.

The PDP Address shall be the address that this PDP context of the MS is identified with from the external packet data network.



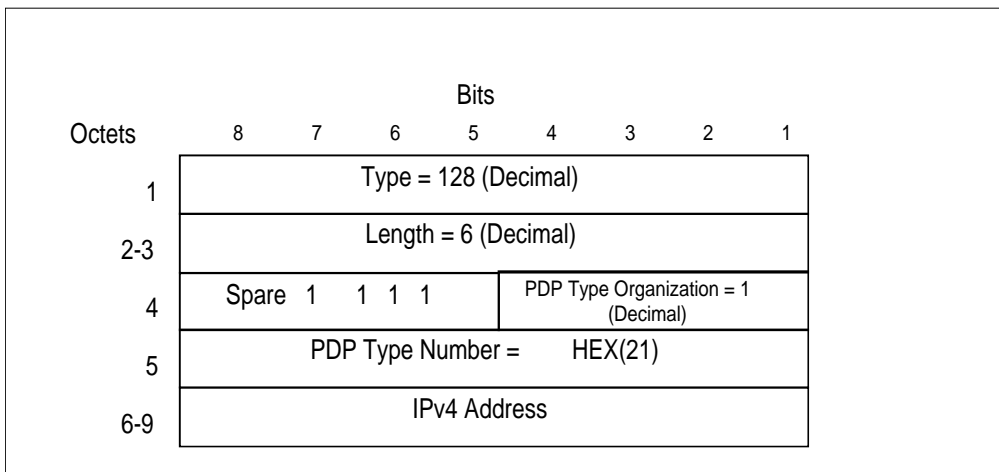
**Figure 35: End User Address Information Element**

**Table 44: PDP Type Organisation Values**

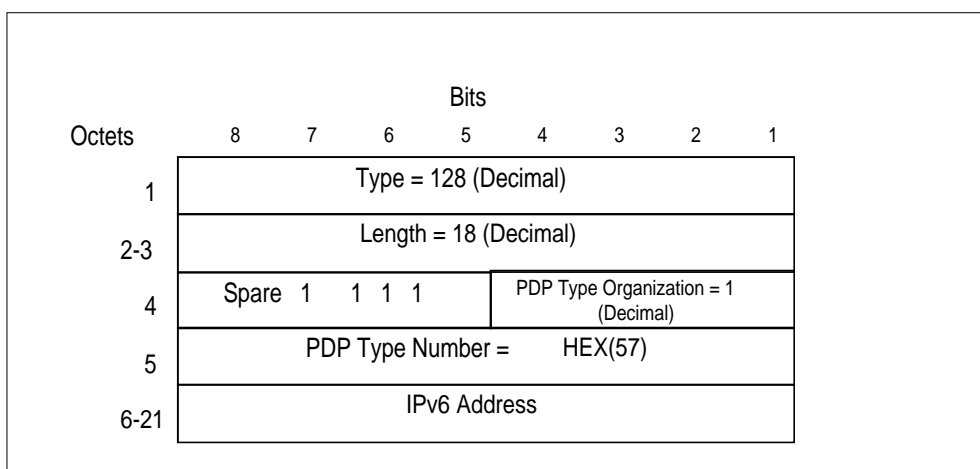
| PDP Type Organisation         | Value (Decimal) |
|-------------------------------|-----------------|
| ETSI                          | 0               |
| IETF                          | 1               |
| All other values are reserved |                 |

**Table 45: ETSI defined PDP Type Values**

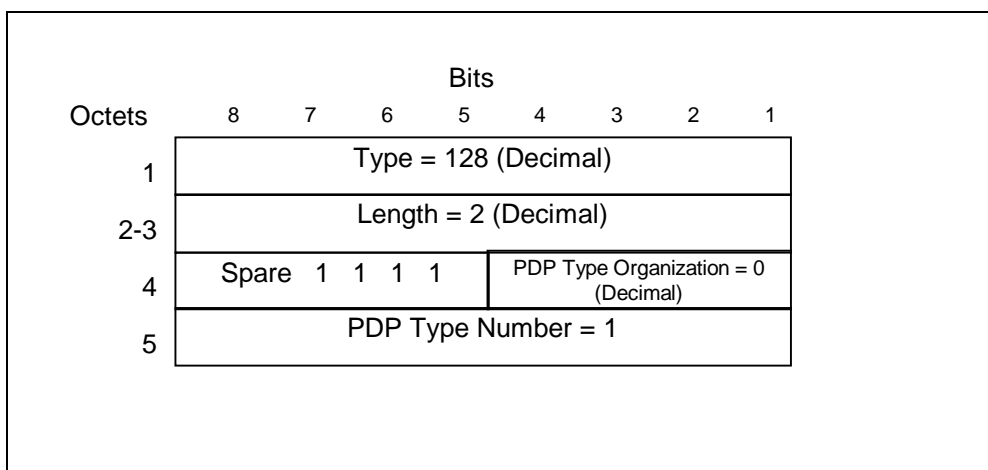
| PDP Type Number               | Value (Decimal) |
|-------------------------------|-----------------|
| PPP                           | 1               |
| All other values are reserved |                 |



**Figure 36: End User Address Information Element for IPv4**



**Figure 37: End User Address Information Element for IPv6**



**Figure 38: End User Address Information Element for PPP**

\*\*\*\* FOR INFORMATION \*\*\*\*



**\*\*\*\* START OF MODIFICATION \*\*\*\***

## 7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the old SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the Uplink Tunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN

The PDP Context Identifier is used to identify a PDP context for the subscriber.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

|                     |   |     |                   |                        |       |
|---------------------|---|-----|-------------------|------------------------|-------|
| 1                   | Type = 130 (Decimal)                            |     |                   |                        |       |
| 2-3                 | Length  |     |                   |                        |       |
| 4                   | Res-<br>erved                                   | VAA | Res-<br>erve<br>d | Ord<br>er              | NSAPI |
| 5                   | X   | X   | X                 | X                      | SAPI  |
| 6                   | QoS Sub Length                                  |     |                   |                        |       |
| 7 - (q+6)           | QoS Sub [4..255]                                |     |                   |                        |       |
| q+7                 | QoS Req Length                                  |     |                   |                        |       |
| (q+8)-(2q+7)        | QoS Req [4..255]                                |     |                   |                        |       |
| 2q+8                | QoS Neg. Length                                 |     |                   |                        |       |
| (2q+9)-<br>(3q+8)   | QoS Neg [4..255]                                |     |                   |                        |       |
| (3q+9)-<br>(3q+10)  | Sequence Number Down (SND) <sup>1)</sup>        |     |                   |                        |       |
| (3q+11)-<br>(3q+12) | Sequence Number Up (SNU) <sup>1)</sup>          |     |                   |                        |       |
| 3q+13               | Send N-PDU Number <sup>1)</sup>                 |     |                   |                        |       |
| 3q+14               | Receive N-PDU Number <sup>1)</sup>              |     |                   |                        |       |
| (3q+15)-<br>(3q+18) | Uplink Tunnel Endpoint Identifier Control Plane |     |                   |                        |       |
| (3q+19)-<br>(3q+22) | UplinkTunnel Endpoint Identifier Data I         |     |                   |                        |       |
| 3q+23               | PDP Context Identifier                          |     |                   |                        |       |
| 3q+24               | Spare 1 1 1 1                                   |     |                   | PDP Type Organisation  |       |
| 3q+25               | PDP Type Number                                 |     |                   |                        |       |
| 3q+26               | PDP Address Length                              |     |                   |                        |       |
| (3q+27)-m           | PDP Address [04..63]                            |     |                   |                        |       |
| m+1                 | GGSN Address for control plane Length           |     |                   |                        |       |
| (m+2)-n             | GGSN Address for control plane [4..16]          |     |                   |                        |       |
| n+1                 | GGSN Address for User Traffic Length            |     |                   |                        |       |
| (n+2)-o             | GGSN Address for User Traffic [4..16]           |     |                   |                        |       |
| o+1                 | APN length                                      |     |                   |                        |       |
| (o+2)-p             | APN   |     |                   |                        |       |
| p+1                 | Spare (sent as 0 0 0 0)                         |     |                   | Transaction Identifier |       |
| p+2                 | Transaction Identifier                          |     |                   |                        |       |

Figure 43: PDP Context Information Element

NOTE 1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

**Table 48: Reordering Required Values**

| <b>Reordering Required</b> | <b>Value (Decimal)</b> |
|----------------------------|------------------------|
| No                         | 0                      |
| Yes                        | 1                      |

**Table 49: VPLMN Address Allowed**

| <b>VPLMN Address Allowed</b> | <b>Value (Decimal)</b> |
|------------------------------|------------------------|
| No                           | 0                      |
| Yes                          | 1                      |

**\*\*\*\* END OF MODIFICATION \*\*\*\***

## CHANGE REQUEST

⌘ **29.060 CR 336** ⌘ rev **-** ⌘ Current version: **5.2.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Removing inconsistency in definition of PDP Address length                  |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 17/07/2002                              |
| <b>Category:</b>       | ⌘ <b>A</b>  | <b>Release:</b> | ⌘ Rel-5                                   |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   |                 | 2 (GSM Phase 2)                           |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  |                 | R96 (Release 1996)                        |
|                        | <b>B</b> (addition of feature),   |                 | R97 (Release 1997)                        |
|                        | <b>C</b> (functional modification of feature)                                 |                 | R98 (Release 1998)                        |
|                        | <b>D</b> (editorial modification)   |                 | R99 (Release 1999)                        |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |
|                        |   |                 | Rel-5 (Release 5)                         |
|                        |   |                 | Rel-6 (Release 6)                         |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ There is an inconsistency in 29.060 in the definition of the length of the PDP Address. In chapter 7.7.29 the length of the 'pure' PDP Address is defined as [1..63]. I.e. even if no PDP Address shall be provided, this IE cannot be empty. In the same chapter a reference is given to chapter 7.7.27, where the same Address can be of length 0. |
| <b>Summary of change:</b>            | ⌘ 7.7.29: Change length of PDP Address to [0..63].   |
| <b>Consequences if not approved:</b> | ⌘ The inconsistent definition will lead to different implementations and to interoperability problems.   |

|                              |  |                     |   |   |   |   |   |   |   |                           |   |
|------------------------------|--|---------------------|---|---|---|---|---|---|---|---------------------------|---|
| <b>Clauses affected:</b>     | ⌘ 7.7.29   |                     |   |   |   |   |   |   |   |                           |   |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table> | Y                   | N | ⌘ | X | ⌘ | X | ⌘ | X | Other core specifications | ⌘ |
| Y                            | N  |                     |   |   |   |   |   |   |   |                           |   |
| ⌘                            | X  |                     |   |   |   |   |   |   |   |                           |   |
| ⌘                            | X  |                     |   |   |   |   |   |   |   |                           |   |
| ⌘                            | X  |                     |   |   |   |   |   |   |   |                           |   |
|                              |  | Test specifications |   |   |   |   |   |   |   |                           |   |
|                              |  | O&M Specifications  |   |   |   |   |   |   |   |                           |   |
| <b>Other comments:</b>       | ⌘  |                     |   |   |   |   |   |   |   |                           |   |

### How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

\*\*\*\* FOR INFORMATION \*\*\*\*

### 7.7.27 End User Address

The purpose of the End User Address information element shall be to supply protocol specific information of the external packet data network accessed by the GPRS subscriber.

The Length field value shall be 2 in an End User Address information element with an empty PDP Address.

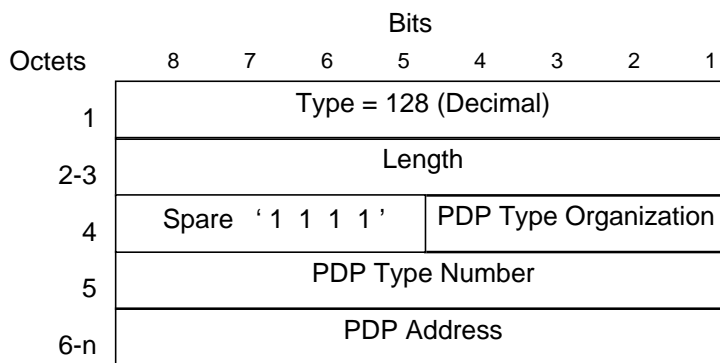
The PDP Type defines the end user protocol to be used between the external packet data network and the MS and is divided into an Organisation field and a Number field.

The PDP Type Organisation is the organisation that is responsible for the PDP Type Number field and the PDP Address format.

For PPP the PDP Type Organisation is ETSI and the PDP Type Number is 1 and there shall be no address in the End User Address IE. In this case the address is negotiated later as part of the PPP protocol.

If the PDP Type Organisation is IETF, the PDP Type Number is a compressed number (i.e. the most significant HEX(00) is skipped) in the “Assigned PPP DLL Protocol Numbers” list in the most recent “Assigned Numbers” RFC (RFC 1700 or later). The most recent “Assigned PPP DLL Protocol Numbers” can also be found using the URL = ftp://ftp.isi.edu/in-notes/iana/assignments/ppp-numbers.

The PDP Address shall be the address that this PDP context of the MS is identified with from the external packet data network.



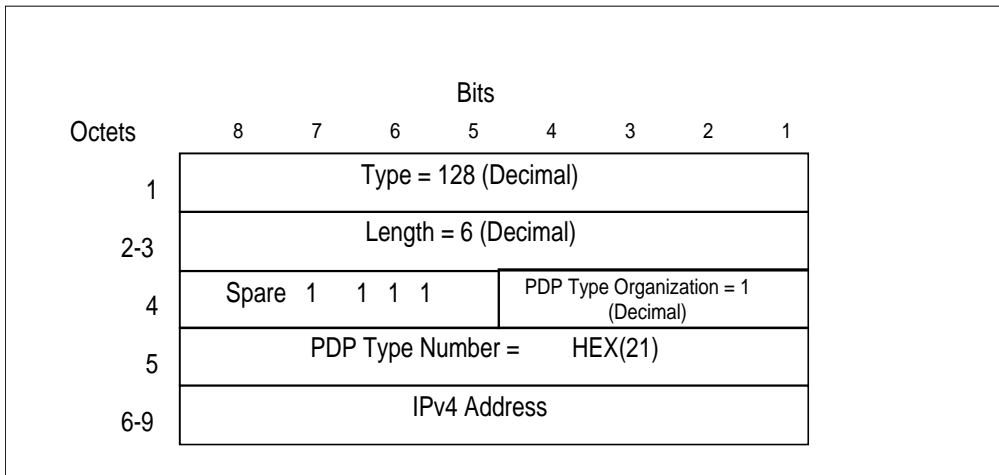
**Figure 35: End User Address Information Element**

**Table 44: PDP Type Organisation Values**

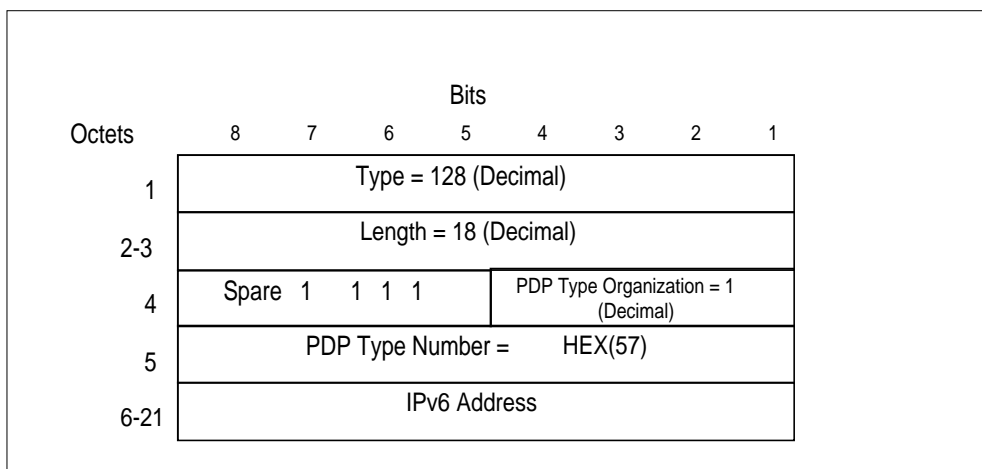
| PDP Type Organisation         | Value (Decimal) |
|-------------------------------|-----------------|
| ETSI                          | 0               |
| IETF                          | 1               |
| All other values are reserved |                 |

**Table 45: ETSI defined PDP Type Values**

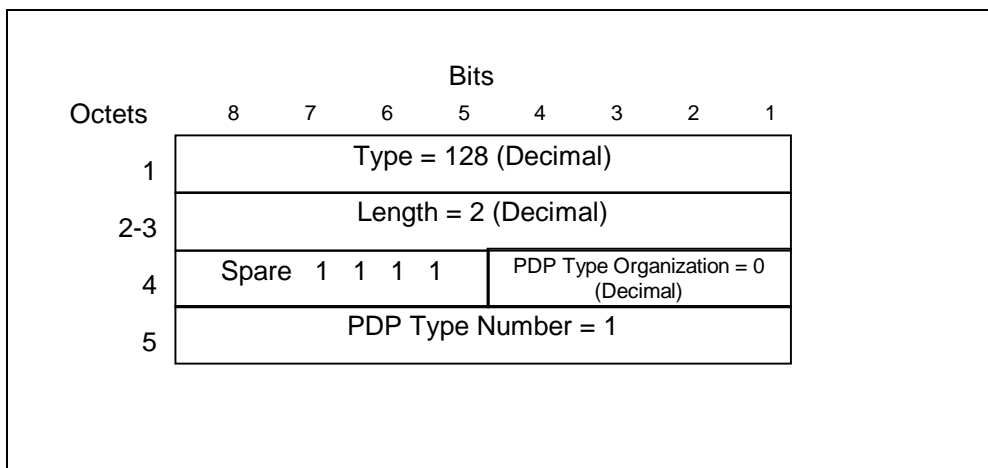
| PDP Type Number               | Value (Decimal) |
|-------------------------------|-----------------|
| PPP                           | 1               |
| All other values are reserved |                 |



**Figure 36: End User Address Information Element for IPv4**



**Figure 37: End User Address Information Element for IPv6**



**Figure 38: End User Address Information Element for PPP**

\*\*\*\* FOR INFORMATION \*\*\*\*

**\*\*\*\* START OF MODIFICATION \*\*\*\***

## 7.7.29 PDP Context

The PDP Context information element contains the Session Management parameters, defined for an external packet data network address, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected PDP context.

The SAPI indicates the LLC SAPI that is associated with the NSAPI.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 Session Management messages which control this PDP Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007. The latest Transaction Identifier sent from SGSN to MS is stored in the PDP context IE.

Reordering Required (Order) indicates whether the SGSN shall reorder T-PDUs before delivering the T-PDUs to the MS. When the Quality of Service Negotiated (QoS Neg) is Release 99, the Reordering Required (Order) shall be ignored by receiving entity.

The VPLMN Address Allowed (VAA) indicates whether the MS is allowed to use the APN in the domain of the HPLMN only or additionally the APN in the domain of the VPLMN.

The QoS Sub Length, QoS Req Length and QoS Neg Length represent respectively the lengths of the QoS Sub, QoS Req and QoS Neg fields, excluding the QoS Length octet.

The Quality of Service Subscribed (QoS Sub), Quality of Service Requested (QoS Req) and Quality of Service Negotiated (QoS Neg) are encoded as described in section 'Quality of Service (QoS) Profile'. Their minimum length is 4 octets; their maximum length may be 255 octets.

The Sequence Number Down is the number of the next T-PDU that shall be sent from the new SGSN to the MS. The number is associated to the Sequence Number from the GTP Header of an encapsulated T-PDU. The new SGSN shall ignore Sequence Number Down when the PDP context QoS profile does not require transmission order to be preserved. In this case the new SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Sequence Number Up is the number that new SGSN shall use as the Sequence Number in the GTP Header for the next encapsulated T-PDU from the MS to the GGSN. The new SGSN shall ignore Sequence Number Up when the PDP context QoS profile does not require transmission order to be preserved. In this case, the old SGSN shall not include Sequence number field in the G-PDUs of the PDP context.

The Send N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. Send N-PDU Number is the N-PDU number to be assigned by SNDCP to the next down link N-PDU received from the GGSN. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Receive N-PDU Number is used only when acknowledged peer-to-peer LLC operation is used for the PDP context. The Receive N-PDU Number is the N-PDU number expected by SNDCP from the next up link N-PDU to be received from the MS. It shall be set to 255 if unacknowledged peer-to-peer LLC operation is used for the PDP context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update PDP Context Request message.

The GGSN Address for User Traffic and the Uplink Tunnel Endpoint Identifier Data I are the GGSN address and the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in uplink direction for user plane traffic on a PDP context. They shall be used by the new SGSN to send uplink user plane PDU to the GGSN until new GGSN address for User Traffic is possibly received from GGSN (in Update PDP Context Response).

The PDP Context Identifier is used to identify a PDP context for the subscriber.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.



The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element if the PDP Type is IPv4 or IPv6.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

When forwarding the GGSN addresses to another SGSN (in PDP Context IE in Forward Relocation Request or SGSN Context Response message), the IPv4/IPv6 capable SGSN shall include GGSN addresses according to the IP version capability of the receiving SGSN.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at PDP context activation or update. If the new SGSN is IPv6 capable and the old SGSN has IPv6 control plane address of the GGSN available, the old IPv4/IPv6 capable SGSN includes the IPv6 GGSN control plane address in the field GGSN Address for control plane. If the new SGSN is IPv4 only capable or the old SGSN does not have any IPv6 GGSN address for control plane, the old SGSN includes the IPv4 GGSN Address in the field GGSN Address for control plane.

The use of IPv6 addressing in pre-Release 5 nodes can cause interoperability problems and as such the use of IPv6 GSN addressing is not recommended in pre-Release 5.

NOTE: There is still the need for further study of the included addresses on SRNS relocation.

The APN is the Access Point Name in use in the old SGSN. This APN field shall be composed of the APN Network Identifier part and the APN Operator Identifier part.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

|                     |   |     |                   |                        |       |
|---------------------|---|-----|-------------------|------------------------|-------|
| 1                   | Type = 130 (Decimal)                            |     |                   |                        |       |
| 2-3                 | Length  |     |                   |                        |       |
| 4                   | Res-<br>erved                                   | VAA | Res-<br>erve<br>d | Ord<br>er              | NSAPI |
| 5                   | X   | X   | X                 | X                      | SAPI  |
| 6                   | QoS Sub Length                                  |     |                   |                        |       |
| 7 - (q+6)           | QoS Sub [4..255]                                |     |                   |                        |       |
| q+7                 | QoS Req Length                                  |     |                   |                        |       |
| (q+8)-(2q+7)        | QoS Req [4..255]                                |     |                   |                        |       |
| 2q+8                | QoS Neg. Length                                 |     |                   |                        |       |
| (2q+9)-<br>(3q+8)   | QoS Neg [4..255]                                |     |                   |                        |       |
| (3q+9)-<br>(3q+10)  | Sequence Number Down (SND) <sup>1)</sup>        |     |                   |                        |       |
| (3q+11)-<br>(3q+12) | Sequence Number Up (SNU) <sup>1)</sup>          |     |                   |                        |       |
| 3q+13               | Send N-PDU Number <sup>1)</sup>                 |     |                   |                        |       |
| 3q+14               | Receive N-PDU Number <sup>1)</sup>              |     |                   |                        |       |
| (3q+15)-<br>(3q+18) | Uplink Tunnel Endpoint Identifier Control Plane |     |                   |                        |       |
| (3q+19)-<br>(3q+22) | Uplink Tunnel Endpoint Identifier Data I        |     |                   |                        |       |
| 3q+23               | PDP Context Identifier                          |     |                   |                        |       |
| 3q+24               | Spare 1 1 1 1                                   |     |                   | PDP Type Organisation  |       |
| 3q+25               | PDP Type Number                                 |     |                   |                        |       |
| 3q+26               | PDP Address Length                              |     |                   |                        |       |
| (3q+27)-m           | PDP Address [04..63]                            |     |                   |                        |       |
| m+1                 | GGSN Address for control plane Length           |     |                   |                        |       |
| (m+2)-n             | GGSN Address for control plane [4..16]          |     |                   |                        |       |
| n+1                 | GGSN Address for User Traffic Length            |     |                   |                        |       |
| (n+2)-o             | GGSN Address for User Traffic [4..16]           |     |                   |                        |       |
| o+1                 | APN length                                      |     |                   |                        |       |
| (o+2)-p             | APN   |     |                   |                        |       |
| p+1                 | Spare (sent as 0 0 0 0)                         |     |                   | Transaction Identifier |       |
| p+2                 | Transaction Identifier                          |     |                   |                        |       |

Figure 43: PDP Context Information Element

NOTE 1) This field shall not be evaluated when the PDP context is received during UMTS intra system handover/relocation.

Table 48: Reordering Required Values

| Reordering Required | Value (Decimal) |
|---------------------|-----------------|
| No                  | 0               |
| Yes                 | 1               |

Table 49: VPLMN Address Allowed

| VPLMN Address Allowed | Value (Decimal) |
|-----------------------|-----------------|
| No                    | 0               |
| Yes                   | 1               |

\*\*\*\* END OF MODIFICATION \*\*\*\*

|  |                |
|--|----------------|
| CR-Form-v7   | CHANGE REQUEST |
| ⌘ <b>29.060 CR 337</b> ⌘ rev <b>-</b> ⌘ Current version: <b>3.13.0</b> ⌘ |                |

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |  |                 |   |
|------------------------|--|-----------------|---|
| <b>Title:</b>          | ⌘ 16 bit PDCP sequence numbers in RAB Context  |                 |   |
| <b>Source:</b>         | ⌘ CN4  |                 |   |
| <b>Work item code:</b> | ⌘ GPRS   | <b>Date:</b>    | ⌘ 17/07/2002  |
| <b>Category:</b>       | ⌘ <b>F</b>   | <b>Release:</b> | ⌘ R99   |
|                        | Use <u>one</u> of the following categories:<br><b>F</b> (correction)<br><b>A</b> (corresponds to a correction in an earlier release)<br><b>B</b> (addition of feature),<br><b>C</b> (functional modification of feature)<br><b>D</b> (editorial modification)<br>Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Use <u>one</u> of the following releases:<br>2 (GSM Phase 2)<br>R96 (Release 1996)<br>R97 (Release 1997)<br>R98 (Release 1998)<br>R99 (Release 1999)<br>Rel-4 (Release 4)<br>Rel-5 (Release 5)<br>Rel-6 (Release 6) |

|                                      |   |
|--------------------------------------|---|
| <b>Reason for change:</b>            | ⌘ In 25.413 and in 29.060 chapter 6.1.1 (GTP Header), the PDCP sequence numbers are encoded in 16 bits. In contrary to that, 29.060 chapter 7.7.19 'RAB Context' defines the PDCP sequence numbers to only have one octet (8 bits). |
| <b>Summary of change:</b>            | ⌘ 7.7.19 Changing 'DL PDCP Sequence Number' and 'UL PDCP Sequence Number' to 2 octets.  |
| <b>Consequences if not approved:</b> | ⌘ Lossless Inter SGSN Hard Handover will not work.  |

|                              |   |   |                     |  |   |  |   |  |   |   |  |
|------------------------------|---|---|---------------------|--|---|--|---|--|---|---|--|
| <b>Clauses affected:</b>     | ⌘ 7.7.19  |   |                     |  |   |  |   |  |   |   |  |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 2px 5px;">Y</td> <td style="padding: 2px 5px;">N</td> </tr> <tr> <td style="padding: 2px 5px;"> </td> <td style="padding: 2px 5px;">X</td> </tr> <tr> <td style="padding: 2px 5px;"> </td> <td style="padding: 2px 5px;">X</td> </tr> <tr> <td style="padding: 2px 5px;"> </td> <td style="padding: 2px 5px;">X</td> </tr> </table> Other core specifications | Y | N                   |  | X |  | X |  | X | ⌘ |  |
| Y                            | N   |   |                     |  |   |  |   |  |   |   |  |
|                              | X   |   |                     |  |   |  |   |  |   |   |  |
|                              | X   |   |                     |  |   |  |   |  |   |   |  |
|                              | X   |   |                     |  |   |  |   |  |   |   |  |
|                              |   |   | Test specifications |  |   |  |   |  |   |   |  |
|                              |   |   | O&M Specifications  |  |   |  |   |  |   |   |  |
| <b>Other comments:</b>       | ⌘   |   |                     |  |   |  |   |  |   |   |  |

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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.
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downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

\*\*\*\* **START OF MODIFICATION** \*\*\*\*

### 7.7.19 RAB Context

The RAB context information element contains sequence number status for one RAB in RNC, which corresponds to one PDP context in CN. The RAB contexts are transferred between the RNCs via the SGSNs at inter SGSN hard handover.

NSAPI identifies the PDP context and the associated RAB for which the RAB context IE is intended.

DL GTP-U Sequence Number is the number for the next downlink GTP-U T-PDU to be sent to the MS.

UL GTP-U Sequence Number is the number for the next uplink GTP-U T-PDU to be tunnelled to the GGSN.

DL PDCP Sequence Number is the number for the next downlink PDCP-PDU to be sent to the MS.

UL PDCP Sequence Number is the number for the next uplink PDCP-PDU to be received from the MS.

|                      |                          |       |
|----------------------|--------------------------|-------|
| 1                    | Type = 22 (Decimal)      |       |
| 2                    | Spare (0 0 0 0)          | NSAPI |
| 3-4                  | DL GTP-U Sequence Number |       |
| 5-6                  | UL GTP-U Sequence Number |       |
| 7-8                  | DL PDCP Sequence Number  |       |
| <del>8</del><br>9-10 | UL PDCP Sequence Number  |       |

**Figure 27: RAB Context Information Element**

\*\*\*\* **END OF MODIFICATION** \*\*\*\*

CR-Form-v7

## CHANGE REQUEST

⌘ **29.060 CR 338** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |  |                 |   |
|------------------------|--|-----------------|---|
| <b>Title:</b>          | ⌘ 16 bit PDCP sequence numbers in RAB Context  |                 |   |
| <b>Source:</b>         | ⌘ CN4  |                 |   |
| <b>Work item code:</b> | ⌘ GPRS   | <b>Date:</b>    | ⌘ 17/07/2002  |
| <b>Category:</b>       | ⌘ <b>A</b>   | <b>Release:</b> | ⌘ Rel-4   |
|                        | <i>Use one of the following categories:</i><br><b>F</b> (correction)<br><b>A</b> (corresponds to a correction in an earlier release)<br><b>B</b> (addition of feature),<br><b>C</b> (functional modification of feature)<br><b>D</b> (editorial modification)<br>Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | <i>Use one of the following releases:</i><br><b>2</b> (GSM Phase 2)<br><b>R96</b> (Release 1996)<br><b>R97</b> (Release 1997)<br><b>R98</b> (Release 1998)<br><b>R99</b> (Release 1999)<br><b>Rel-4</b> (Release 4)<br><b>Rel-5</b> (Release 5)<br><b>Rel-6</b> (Release 6) |

|                                      |   |
|--------------------------------------|---|
| <b>Reason for change:</b>            | ⌘ In 25.413 and in 29.060 chapter 6.1.1 (GTP Header), the PDCP sequence numbers are encoded in 16 bits. In contrary to that, 29.060 chapter 7.7.19 'RAB Context' defines the PDCP sequence numbers to only have one octet (8 bits). |
| <b>Summary of change:</b>            | ⌘ 7.7.19 Changing 'DL PDCP Sequence Number' and 'UL PDCP Sequence Number' to 2 octets.  |
| <b>Consequences if not approved:</b> | ⌘ Lossless Inter SGSN Hard Handover will not work.  |

|                              |  |   |   |                          |                                     |   |  |
|------------------------------|--|---|---|--------------------------|-------------------------------------|---|--|
| <b>Clauses affected:</b>     | ⌘ 7.7.19   |   |   |                          |                                     |   |  |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N  |   |   |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |   |  |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Test specifications       | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N  |   |   |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |   |  |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> O&M Specifications        | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N  |   |   |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |   |  |
| <b>Other comments:</b>       | ⌘  |   |   |                          |                                     |   |  |

### How to create CRs using this form:

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- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
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downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

\*\*\*\* **START OF MODIFICATION** \*\*\*\*

### 7.7.19 RAB Context

The RAB context information element contains sequence number status for one RAB in RNC, which corresponds to one PDP context in CN. The RAB contexts are transferred between the RNCs via the SGSNs at inter SGSN hard handover.

NSAPI identifies the PDP context and the associated RAB for which the RAB context IE is intended.

DL GTP-U Sequence Number is the number for the next downlink GTP-U T-PDU to be sent to the MS.

UL GTP-U Sequence Number is the number for the next uplink GTP-U T-PDU to be tunnelled to the GGSN.

DL PDCP Sequence Number is the number for the next downlink PDCP-PDU to be sent to the MS.

UL PDCP Sequence Number is the number for the next uplink PDCP-PDU to be received from the MS.

|                   |                          |       |
|-------------------|--------------------------|-------|
| 1                 | Type = 22 (Decimal)      |       |
| 2                 | Spare (0 0 0 0)          | NSAPI |
| 3-4               | DL GTP-U Sequence Number |       |
| 5-6               | UL GTP-U Sequence Number |       |
| 7-8               | DL PDCP Sequence Number  |       |
| <del>8</del> 9-10 | UL PDCP Sequence Number  |       |

**Figure 27: RAB Context Information Element**

\*\*\*\* **END OF MODIFICATION** \*\*\*\*



CR-Form-v7

## CHANGE REQUEST

⌘ **29.060 CR 339** ⌘ rev **-** ⌘ Current version: **5.2.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |  |                 |   |
|------------------------|--|-----------------|---|
| <b>Title:</b>          | ⌘ 16 bit PDCP sequence numbers in RAB Context  |                 |   |
| <b>Source:</b>         | ⌘ CN4  |                 |   |
| <b>Work item code:</b> | ⌘ GPRS   | <b>Date:</b>    | ⌘ 17/07/2002  |
| <b>Category:</b>       | ⌘ <b>A</b>   | <b>Release:</b> | ⌘ Rel-5   |
|                        | <i>Use one of the following categories:</i><br><b>F</b> (correction)<br><b>A</b> (corresponds to a correction in an earlier release)<br><b>B</b> (addition of feature),<br><b>C</b> (functional modification of feature)<br><b>D</b> (editorial modification)<br>Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | <i>Use one of the following releases:</i><br><b>2</b> (GSM Phase 2)<br><b>R96</b> (Release 1996)<br><b>R97</b> (Release 1997)<br><b>R98</b> (Release 1998)<br><b>R99</b> (Release 1999)<br><b>Rel-4</b> (Release 4)<br><b>Rel-5</b> (Release 5)<br><b>Rel-6</b> (Release 6) |

|                                      |   |
|--------------------------------------|---|
| <b>Reason for change:</b>            | ⌘ In 25.413 and in 29.060 chapter 6.1.1 (GTP Header), the PDCP sequence numbers are encoded in 16 bits. In contrary to that, 29.060 chapter 7.7.19 'RAB Context' defines the PDCP sequence numbers to only have one octet (8 bits). |
| <b>Summary of change:</b>            | ⌘ 7.7.19 Changing 'DL PDCP Sequence Number' and 'UL PDCP Sequence Number' to 2 octets.  |
| <b>Consequences if not approved:</b> | ⌘ Lossless Inter SGSN Hard Handover will not work.  |

|                              |  |   |   |                          |                                     |   |  |
|------------------------------|--|---|---|--------------------------|-------------------------------------|---|--|
| <b>Clauses affected:</b>     | ⌘ 7.7.19   |   |   |                          |                                     |   |  |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N  |   |   |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |   |  |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Test specifications       | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N  |   |   |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |   |  |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> O&M Specifications        | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N  |   |   |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |   |  |
| <b>Other comments:</b>       | ⌘  |   |   |                          |                                     |   |  |

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

\*\*\*\* **START OF MODIFICATION** \*\*\*\*

### 7.7.19 RAB Context

The RAB context information element contains sequence number status for one RAB in RNC, which corresponds to one PDP context in CN. The RAB contexts are transferred between the RNCs via the SGSNs at inter SGSN hard handover.

NSAPI identifies the PDP context and the associated RAB for which the RAB context IE is intended.

DL GTP-U Sequence Number is the number for the next downlink GTP-U T-PDU to be sent to the MS.

UL GTP-U Sequence Number is the number for the next uplink GTP-U T-PDU to be tunnelled to the GGSN.

DL PDCP Sequence Number is the number for the next downlink PDCP-PDU to be sent to the MS.

UL PDCP Sequence Number is the number for the next uplink PDCP-PDU to be received from the MS.

|                   |                          |       |
|-------------------|--------------------------|-------|
| 1                 | Type = 22 (Decimal)      |       |
| 2                 | Spare (0 0 0 0)          | NSAPI |
| 3-4               | DL GTP-U Sequence Number |       |
| 5-6               | UL GTP-U Sequence Number |       |
| 7-8               | DL PDCP Sequence Number  |       |
| <del>8</del> 9-10 | UL PDCP Sequence Number  |       |

**Figure 27: RAB Context Information Element**

\*\*\*\* **END OF MODIFICATION** \*\*\*\*

## CHANGE REQUEST

⌘ **29.060 CR 340** ⌘ rev **1** ⌘ Current version: **3.13.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Forward Relocation Response without 'RAB Setup Information' IE              |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 30/07/2002                              |
| <b>Category:</b>       | ⌘ <b>F</b>  | <b>Release:</b> | ⌘ R99                                     |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> 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 be found in 3GPP TR 21.900. | Rel-4           | (Release 4)                               |
|                        |   | Rel-5           | (Release 5)                               |
|                        |   | Rel-6           | (Release 6)                               |

|                                      |   |
|--------------------------------------|---|
| <b>Reason for change:</b>            | ⌘ Essential Correction:<br>During SRNS Relocation the new SGSN may receive a valid Forward Relocation Request that does not contain any PDP Context. Therefore it also shall be possible for the new SGSN to reply with a Forward Relocation Response with cause 'Request accepted' and without any 'RAB Setup Information' IE. 25.413 also allows this for the corresponding RANAP message 'Relocation Request Acknowledge'. But according to chapter 7.5.7 this is not possible in GTP. |
| <b>Summary of change:</b>            | ⌘ 7.5.7 Allow to send a Forward Relocation Response with cause 'Request accepted' and without the 'RAB Setup Information' IE.   |
| <b>Consequences if not approved:</b> | ⌘ Interoperability problems for SRNS Relocation for a MS without PDP contexts.  |

|                              |   |   |   |                     |   |                           |   |
|------------------------------|---|---|---|---------------------|---|---------------------------|---|
| <b>Clauses affected:</b>     | ⌘ 7.5.7   |   |   |                     |   |                           |   |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table> | Y | N | ⌘                   | X | Other core specifications | ⌘ |
| Y                            | N   |   |   |                     |   |                           |   |
| ⌘                            | X   |   |   |                     |   |                           |   |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>  | ⌘ | X | Test specifications |   |                           |   |
| ⌘                            | X   |   |   |                     |   |                           |   |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>  | ⌘ | X | O&M Specifications  |   |                           |   |
| ⌘                            | X   |   |   |                     |   |                           |   |
| <b>Other comments:</b>       | ⌘   |   |   |                     |   |                           |   |

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- 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 MODIFICATION \*\*\*\*

## 7.5.7 Forward Relocation Response

The new SGSN shall send a Forward Relocation Response to the old SGSN as a response to a previous Forward Relocation Request.

Possible Cause values is:

- 'Request Accepted'.
- 'System failure'.
- 'Mandatory IE incorrect'.
- 'Mandatory IE missing'.
- 'Optional IE incorrect'.
- 'No resources available'.
- 'Invalid message format'.
- 'Relocation failure'.

RANAP Cause is mandatory if cause value is contained in RANAP message.

RAB Setup Information, UTRAN transparent container and RANAP Cause are information from the target RNC in the new SGSN.

One or more RAB Setup Information parameters ~~may~~ shall be sent in this message. This information element shall be included if the Cause contains the value 'Request accepted' and there is at least ~~one~~ one RAB assigned in the new SGSN.

The new SGSN shall include a SGSN Address for control plane. The old SGSN shall store this SGSN Address and use it when sending control plane messages for the MS to the new SGSN in the SRNS Relocation Procedure.

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier that is chosen by the new SGSN. The old SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent signalling messages that are sent from the old SGSN to the new SGSN. This information element shall be included if the Cause contains the value 'Request accepted'.

The optional Private Extension contains vendor or operator specific information.

**Table 30: Information Elements in a Forward Relocation**

| Information element                      | Presence requirement | Reference |
|--|----------------------|-----------|
| Cause                                    | Mandatory            | 7.7.1     |
| Tunnel Endpoint Identifier Control Plane | Conditional          | 7.7.14    |
| RANAP Cause                              | Conditional          | 7.7.18    |
| SGSN Address for Control plane           | Conditional          | 7.7.32    |
| UTRAN transparent container              | Optional             | 7.7.38    |
| RAB Setup Information                    | Conditional          | 7.7.39    |
| Private Extension                        | Optional             | 7.7.44    |

\*\*\*\* END OF MODIFICATION \*\*\*\*

## CHANGE REQUEST

⌘ **29.060 CR 341** ⌘ rev **1** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |  |                 |   |
|------------------------|--|-----------------|---|
| <b>Title:</b>          | ⌘ Forward Relocation Response without 'RAB Setup Information' IE   |                 |   |
| <b>Source:</b>         | ⌘ CN4  |                 |   |
| <b>Work item code:</b> | ⌘ GPRS   | <b>Date:</b>    | ⌘ 30/07/2002  |
| <b>Category:</b>       | ⌘ <b>A</b>   | <b>Release:</b> | ⌘ Rel-4   |
|                        | Use <u>one</u> of the following categories:<br><b>F</b> (correction)<br><b>A</b> (corresponds to a correction in an earlier release)<br><b>B</b> (addition of feature),<br><b>C</b> (functional modification of feature)<br><b>D</b> (editorial modification)<br>Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Use <u>one</u> of the following releases:<br>2 (GSM Phase 2)<br>R96 (Release 1996)<br>R97 (Release 1997)<br>R98 (Release 1998)<br>R99 (Release 1999)<br>Rel-4 (Release 4)<br>Rel-5 (Release 5)<br>Rel-6 (Release 6) |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ During SRNS Relocation the new SGSN may receive a valid Forward Relocation Request that does not contain any PDP Context. Therefore it also shall be possible for the new SGSN to reply with a Forward Relocation Response with cause 'Request accepted' and without any 'RAB Setup Information' IE. 25.413 also allows this for the corresponding RANAP message 'Relocation Request Acknowledge'. But according to chapter 7.5.7 this is not possible in GTP. |
| <b>Summary of change:</b>            | ⌘ 7.5.7 Allow to send a Forward Relocation Response with cause 'Request accepted' and without the 'RAB Setup Information' IE.  |
| <b>Consequences if not approved:</b> | ⌘ Interoperability problems for SRNS Relocation for a MS without PDP contexts.   |

|                              |  |   |   |                          |                                     |   |  |
|------------------------------|--|---|---|--------------------------|-------------------------------------|---|--|
| <b>Clauses affected:</b>     | ⌘ 7.5.7  |   |   |                          |                                     |   |  |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N  |   |   |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |   |  |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Test specifications       | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N  |   |   |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |   |  |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> O&M Specifications        | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | ⌘ |  |
| Y                            | N  |   |   |                          |                                     |   |  |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |   |  |
| <b>Other comments:</b>       | ⌘  |   |   |                          |                                     |   |  |

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- 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 MODIFICATION \*\*\*\*

## 7.5.7 Forward Relocation Response

The new SGSN shall send a Forward Relocation Response to the old SGSN as a response to a previous Forward Relocation Request.

Possible Cause values is:

- 'Request Accepted'.
- 'System failure'.
- 'Mandatory IE incorrect'.
- 'Mandatory IE missing'.
- 'Optional IE incorrect'.
- 'No resources available'.
- 'Invalid message format'.
- 'Relocation failure'.

RANAP Cause is mandatory if cause value is contained in RANAP message.

RAB Setup Information, UTRAN transparent container and RANAP Cause are information from the target RNC in the new SGSN.

One or more RAB Setup Information parameters ~~may~~ shall be sent in this message. This information element shall be included if the Cause contains the value 'Request accepted' and there is at least ~~one~~ one RAB assigned in the new SGSN.

The new SGSN shall include a SGSN Address for control plane. The old SGSN shall store this SGSN Address and use it when sending control plane messages for the MS to the new SGSN in the SRNS Relocation Procedure.

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier that is chosen by the new SGSN. The old SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent signalling messages that are sent from the old SGSN to the new SGSN. This information element shall be included if the Cause contains the value 'Request accepted'.

The optional Private Extension contains vendor or operator specific information.

**Table 30: Information Elements in a Forward Relocation**

| Information element                      | Presence requirement | Reference |
|--|----------------------|-----------|
| Cause                                    | Mandatory            | 7.7.1     |
| Tunnel Endpoint Identifier Control Plane | Conditional          | 7.7.14    |
| RANAP Cause                              | Conditional          | 7.7.18    |
| SGSN Address for Control plane           | Conditional          | 7.7.32    |
| UTRAN transparent container              | Optional             | 7.7.38    |
| RAB Setup Information                    | Conditional          | 7.7.39    |
| Private Extension                        | Optional             | 7.7.44    |

\*\*\*\* END OF MODIFICATION \*\*\*\*

## CHANGE REQUEST

⌘ **29.060 CR 342** ⌘ rev **1** ⌘ Current version: **5.2.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |                 |   |
|------------------------|---|-----------------|---|
| <b>Title:</b>          | ⌘ Forward Relocation Response without 'RAB Setup Information' IE              |                 |   |
| <b>Source:</b>         | ⌘ CN4   |                 |   |
| <b>Work item code:</b> | ⌘ GPRS  | <b>Date:</b>    | ⌘ 30/07/2002                              |
| <b>Category:</b>       | ⌘ <b>A</b>  | <b>Release:</b> | ⌘ Rel-5                                   |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |
|                        | <b>F</b> (correction)   | <b>2</b>        | (GSM Phase 2)                             |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  | <b>R96</b>      | (Release 1996)                            |
|                        | <b>B</b> (addition of feature),   | <b>R97</b>      | (Release 1997)                            |
|                        | <b>C</b> (functional modification of feature)                                 | <b>R98</b>      | (Release 1998)                            |
|                        | <b>D</b> (editorial modification)   | <b>R99</b>      | (Release 1999)                            |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. | <b>Rel-4</b>    | (Release 4)                               |
|                        |   | <b>Rel-5</b>    | (Release 5)                               |
|                        |   | <b>Rel-6</b>    | (Release 6)                               |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | ⌘ During SRNS Relocation the new SGSN may receive a valid Forward Relocation Request that does not contain any PDP Context. Therefore it also shall be possible for the new SGSN to reply with a Forward Relocation Response with cause 'Request accepted' and without any 'RAB Setup Information' IE. 25.413 also allows this for the corresponding RANAP message 'Relocation Request Acknowledge'. But according to chapter 7.5.7 this is not possible in GTP. |
| <b>Summary of change:</b>            | ⌘ 7.5.7 Allow to send a Forward Relocation Response with cause 'Request accepted' and without the 'RAB Setup Information' IE.  |
| <b>Consequences if not approved:</b> | ⌘ Interoperability problems for SRNS Relocation for a MS without PDP contexts.   |

|                              |  |                     |   |                          |                                     |                           |   |
|------------------------------|--|---------------------|---|--------------------------|-------------------------------------|---------------------------|---|
| <b>Clauses affected:</b>     | ⌘ 7.5.7  |                     |   |                          |                                     |                           |   |
| <b>Other specs affected:</b> | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> | Y                   | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Other core specifications | ⌘ |
| Y                            | N  |                     |   |                          |                                     |                           |   |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |                     |   |                          |                                     |                           |   |
|                              | <input checked="" type="checkbox"/>  | Test specifications |   |                          |                                     |                           |   |
|                              | <input checked="" type="checkbox"/>  | O&M Specifications  |   |                          |                                     |                           |   |
| <b>Other comments:</b>       | ⌘  |                     |   |                          |                                     |                           |   |

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

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

\*\*\*\* START OF MODIFICATION \*\*\*\*

## 7.5.7 Forward Relocation Response

The new SGSN shall send a Forward Relocation Response to the old SGSN as a response to a previous Forward Relocation Request.

Possible Cause values is:

- 'Request Accepted'.
- 'System failure'.
- 'Mandatory IE incorrect'.
- 'Mandatory IE missing'.
- 'Optional IE incorrect'.
- 'No resources available'.
- 'Invalid message format'.
- 'Relocation failure'.

RANAP Cause is mandatory if cause value is contained in RANAP message.

RAB Setup Information, UTRAN transparent container and RANAP Cause are information from the target RNC in the new SGSN.

One or more RAB Setup Information parameters ~~may~~ shall be sent in this message. This information element shall be included if the Cause contains the value 'Request accepted' and there is at least ~~one~~ one RAB assigned in the new SGSN.

The new SGSN shall include a SGSN Address for control plane. The old SGSN shall store this SGSN Address and use it when sending control plane messages for the MS to the new SGSN in the SRNS Relocation Procedure.

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier that is chosen by the new SGSN. The old SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent signalling messages that are sent from the old SGSN to the new SGSN. This information element shall be included if the Cause contains the value 'Request accepted'.

The optional Private Extension contains vendor or operator specific information.

**Table 30: Information Elements in a Forward Relocation**

| Information element                      | Presence requirement | Reference |
|--|----------------------|-----------|
| Cause                                    | Mandatory            | 7.7.1     |
| Tunnel Endpoint Identifier Control Plane | Conditional          | 7.7.14    |
| RANAP Cause                              | Conditional          | 7.7.18    |
| SGSN Address for Control plane           | Conditional          | 7.7.32    |
| UTRAN transparent container              | Optional             | 7.7.38    |
| RAB Setup Information                    | Conditional          | 7.7.39    |
| Private Extension                        | Optional             | 7.7.46    |

\*\*\*\* END OF MODIFICATION \*\*\*\*

## CHANGE REQUEST

⌘ **29.060 CR 345** ⌘ rev **-** ⌘ Current version: **3.13.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |  |   |
|------------------------|---|--|---|
| <b>Title:</b>          | ⌘ | No equivalent Cause Code in GTP to 'PDP context without TFT already activated'   |   |
| <b>Source:</b>         | ⌘ | CN4  |   |
| <b>Work item code:</b> | ⌘ | GTP enhancements   | <b>Date:</b> ⌘ 18/07/2002   |
| <b>Category:</b>       | ⌘ | <b>F</b>   | <b>Release:</b> ⌘ R99   |
|                        |   | Use <u>one</u> of the following categories:<br><b>F</b> (correction)<br><b>A</b> (corresponds to a correction in an earlier release)<br><b>B</b> (addition of feature),<br><b>C</b> (functional modification of feature)<br><b>D</b> (editorial modification)<br>Detailed explanations of the above categories can be found in 3GPP TR 21.900. | Use <u>one</u> of the following releases:<br>2 (GSM Phase 2)<br>R96 (Release 1996)<br>R97 (Release 1997)<br>R98 (Release 1998)<br>R99 (Release 1999)<br>Rel-4 (Release 4)<br>Rel-5 (Release 5)<br>Rel-6 (Release 6) |

|                                      |   |  |
|--------------------------------------|---|--|
| <b>Reason for change:</b>            | ⌘ | <p>Within 24.008, cause code <i>PDP context without TFT already activated</i> is used to report to the MS that a PDP Context could not be activated without a TFT, because there is already a PDP Context without a TFT active for that MS. 29.060 does not include an equivalent cause code, so it could be assumed that the SGSN is expected to determine when this condition exists. This requires that the SGSN track which contexts have TFT and which do not. However, 23.060 implies that the SGSN should not be doing anything in relation to TFT. For example in section 9.2.2.1.1 (Secondary PDP Context Activation) it is stated that</p> <p style="padding-left: 20px;"><i>"TFT is sent <b>transparently</b> through the SGSN to the GGSN to enable packet classification for downlink data transfer."</i></p> <p>Further, during an IRAU event, the old SGSN does not inform the new SGSN which PDP contexts have TFT. As a result, the new SGSN cannot reliably track which contexts have TFTs associated with them.</p> <p>Thus, the SGSN can never send the <i>PDP context without TFT already activated</i> cause code to the MS.</p> <p>This is a critical correction.</p> |
| <b>Summary of change:</b>            | ⌘ | Introduce a cause code into 29.060 to map onto <i>PDP context without TFT already activated</i> in 24.008.   |
| <b>Consequences if not approved:</b> | ⌘ | <i>PDP context without TFT already activated</i> can not ever be sent to the MS, denying the MS useful diagnostic information. Also the SGSN can not accurately interpret error causes for Create Context Requests.  |

|                              |                     |   |   |   |  |   |  |   |  |   |                           |   |
|------------------------------|---------------------|---|---|---|--|---|--|---|--|---|---------------------------|---|
| <b>Clauses affected:</b>     | ⌘                   | 7.3.2, 7.7.1  |   |   |  |   |  |   |  |   |                           |   |
| <b>Other specs affected:</b> | ⌘                   | <table border="1"><tr><td>Y</td><td>N</td></tr><tr><td></td><td>X</td></tr><tr><td></td><td>X</td></tr><tr><td></td><td>X</td></tr></table> | Y | N |  | X |  | X |  | X | Other core specifications | ⌘ |
|                              |                     | Y   | N |   |  |   |  |   |  |   |                           |   |
|                              |                     |   | X |   |  |   |  |   |  |   |                           |   |
|                              | X                   |   |   |   |  |   |  |   |  |   |                           |   |
|                              | X                   |   |   |   |  |   |  |   |  |   |                           |   |
|                              | Test specifications |   |   |   |  |   |  |   |  |   |                           |   |
|                              | O&M Specifications  |   |   |   |  |   |  |   |  |   |                           |   |
| <b>Other comments:</b>       | ⌘                   |   |   |   |  |   |  |   |  |   |                           |   |

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

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 7.3.2 Create PDP Context Response

The message shall be sent from a GGSN node to a SGSN node as a response of a Create PDP Context Request. When the SGSN receives a Create PDP Context Response with the Cause value indicating 'Request Accepted', the SGSN activates the PDP context and may start to forward T-PDUs to/from the MS from/to the external data network.

The Cause value indicates if a PDP context has been created in the GGSN or not. A PDP context has not been created in the GGSN if the Cause differs from 'Request accepted'. Possible Cause values are:

- "Request Accepted".
- "No resources available".
- "All dynamic PDP addresses are occupied".
- "No memory is available".
- "Missing or unknown APN".
- "Unknown PDP address or PDP type".
- "User authentication failed".
- "System failure".
- "Semantic error in the TFT operation".
- "Syntactic error in the TFT operation".
- "Semantic errors in packet filter(s)".
- "Syntactic errors in packet filters(s)".
- "Mandatory IE incorrect".
- "Mandatory IE missing".
- "Optional IE incorrect".
- \_\_\_—"Invalid message format".
- "PDP context without TFT already activated"

'No resources available' indicates e.g. that all dynamic PDP addresses are occupied or no memory is available. 'Missing or unknown APN' indicates e.g. when the GGSN does not support the Access Point Name. 'Unknown PDP address or PDP type' indicates e.g. when the GGSN does not support the PDP type or the PDP address.

'User authentication failed' indicates that the external packet network has rejected the service requested by the user.

'PDP context without TFT already activated' indicates that a PDP context has already been activated without a TFT for that MS.

Only the Cause information element, optionally Protocol Configuration Options and optionally the Recovery information element shall be included in the response if the Cause contains another value than 'Request accepted'.

All information elements, except Recovery, Protocol Configuration Options, Charging Gateway Address, Tunnel Endpoint Identifier Control Plane and Private Extension, are mandatory if the Cause contains the value 'Request accepted'.

The Tunnel Endpoint Identifier for Data (I) field specifies an uplink Tunnel Endpoint Identifier for G-PDUs that is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink G-PDUs which are related to the requested PDP context.

The Tunnel Endpoint Identifier Control Plane field specifies an uplink Tunnel Endpoint Identifier for control plane messages, which is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink-control plane messages, which are related to the requested PDP context. If the GGSN has already

confirmed successful assignment of its Tunnel Endpoint Identifier Control Plane to the peer SGSN, this field shall not be present. The GGSN confirms successful assignment of its Tunnel Endpoint Identifier Control Plane to the SGSN when it receives any message with its assigned Tunnel Endpoint Identifier Control Plane in the GTP header from the SGSN.

The GGSN shall include a GGSN Address for control plane and a GGSN address for user traffic, which may differ from that provided by the underlying network service (e.g. IP). The SGSN shall store these GGSN Addresses and use them when sending control plane on this GTP tunnel or G-PDUs to the GGSN for the MS.

If the MS requests a dynamic PDP address with the PDP Type IPv4 or IPv6 and a dynamic PDP address is allowed, then the End User Address information element shall be included and the PDP Address field in the End User Address information element shall contain the dynamic PDP Address allocated by the GGSN.

If the MS requests a static PDP address with the PDP Type IPv4 or IPv6, or a PDP address is specified with PDP Type PPP, then the End User Address information element shall be included and the PDP Address field shall not be included.

The PDP address in End User Address IE and in the Protocol configuration options IE shall be the same, if both IEs are present in the create PDP context response.

The QoS values supplied in the Create PDP Context Request may be negotiated downwards by the GGSN. The negotiated values or the original values from SGSN are inserted in the Quality of Service Profile information element of the Create PDP Context Response message.

The GGSN may start to forward T-PDUs after the Create PDP Context Response has been sent. The SGSN may start to forward T-PDUs when the Create PDP Context Response has been received. In this case the SGSN shall also be prepared to receive T-PDUs from the GGSN after it has sent a Create PDP Context Request but before a Create PDP Context Response has been received.

The Reordering Required value supplied in the Create PDP Context Response indicates whether the end user protocol benefits from packet in sequence delivery and whether the SGSN and the GGSN therefore shall perform reordering or not. In other words, if reordering is required by the GGSN, the SGSN and the GGSN shall perform reordering of incoming T-PDUs on this path. When the Quality of Service (QoS) Profile is Release 99 the receiving entity shall ignore the Reordering Required.

The GGSN shall include the Recovery information element into the Create PDP Context Response if the GGSN is in contact with the SGSN for the first time or the GGSN has restarted recently and the new Restart Counter value has not yet been indicated to the SGSN. The SGSN receiving the Recovery information element shall handle it as when an Echo Response message is received but shall consider the PDP context being created as active if the response indicates successful context activation at the GGSN.

The Charging ID is used to identify all charging records produced in SGSN(s) and the GGSN for this PDP context. The Charging ID is generated by the GGSN and shall be unique within the GGSN.

The Charging Gateway Address is the IP address of the recommended Charging Gateway Functionality to which the SGSN should transfer the Charging Detail Records (CDR) for this PDP Context.

The optional Private Extension contains vendor or operator specific information.



**Table 6: Information Elements in a Create PDP Context Response**

| Information element                      | Presence requirement | Reference          |
|--|----------------------|--------------------|
| Cause                                    | Mandatory            | 7.7.1              |
| Reordering required                      | Conditional          | 7.7.6              |
| Recovery                                 | Optional             | 7.7.11             |
| Tunnel Endpoint Identifier Data I        | Conditional          | 7.7.13             |
| Tunnel Endpoint Identifier Control Plane | Conditional          | 7.7.14             |
| Charging ID                              | Conditional          | 7.7.26             |
| End User Address                         | Conditional          | 7.7.27             |
| Protocol Configuration Options           | Optional             | 7.7.31             |
| GGSN Address for Control Plane           | Conditional          | GSN Address 7.7.32 |
| GGSN Address for user traffic            | Conditional          | GSN Address 7.7.32 |
| Quality of Service Profile               | Conditional          | 7.7.34             |
| Charging Gateway Address                 | Optional             | 7.7.43             |
| Private Extension                        | Optional             | 7.7.44             |

\*\*\*\*\* *Next section to be changed* \*\*\*\*\*

## 7.7.1 Cause

In a request, the Cause Value indicates the reason for the request. The Cause shall be included in the request message.

In a response, the Cause Value indicates the acceptance or the rejection of the corresponding request. In addition, the Cause Value may indicate what was the reason for the corresponding request. The Cause value shall be included in the response message.

'Request accepted' is returned when a GSN has accepted a control plane request.

'Non-existent' indicates a non-existent or an inactive PDP context.

'TMSI not known' indicates a non-existent MM context.

'MS is GPRS Detached' indicates an idle MM context.

'MS is not GPRS Responding' and 'MS Refuses' may be used by SGSN to reject a Network-Requested PDP Context Activation.

'Version not supported' is returned when the recipient does not recognise the version number in the request message.

'Request IMSI', 'Request IMEI', 'Request IMSI and IMEI' and 'No identity needed' are used by GGSN to notify SGSN what to do.

'No resources available' is a generic temporary error condition e.g. all dynamic PDP addresses occupied or no memory available.

'Service not supported' is a generic error indicated that the GSN do not support the requested service.

'User authentication failed' indicates that the external packet network has rejected the user's service request.

'System failure' is a generic permanent error condition.

'Roaming restriction' indicates that the SGSN cannot activate the requested PDP context because of the roaming restrictions.

'P-TMSI Signature mismatch' is returned if either:

- the P-TMSI Signature stored in the old SGSN does not match the value sent by the MS via the new SGSN
- or the MS does not provide the P-TMSI Signature to the new SGSN while the old SGSN has stored the P-TMSI Signature for that MS.



**Table 38: Cause Values**

| Cause  |                           | Value (Decimal)  |         |
|--|---------------------------|--|---------|
| request  | Request IMSI              | 0  |         |
|  | Request IMEI              | 1  |         |
|  | Request IMSI and IMEI     | 2  |         |
|  | No identity needed        | 3  |         |
|  | MS Refuses                | 4  |         |
|  | MS is not GPRS Responding | 5  |         |
|  | For future use            | 6-48   |         |
| Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15) |                           | 49-63  |         |
| For future use   |                           | 64-127   |         |
| response   | acc                       | Request accepted   | 128     |
|  |                           | For future use   | 129-176 |
|  |                           | Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15) | 177-191 |
|  | rej                       | Non-existent   | 192     |
|  |                           | Invalid message format   | 193     |
|  |                           | IMSI not known   | 194     |
|  |                           | MS is GPRS Detached  | 195     |
|  |                           | MS is not GPRS Responding  | 196     |
|  |                           | MS Refuses   | 197     |
|  |                           | For future use   | 198     |
|  |                           | No resources available   | 199     |
|  |                           | Service not supported  | 200     |
|  |                           | Mandatory IE incorrect   | 201     |
|  |                           | Mandatory IE missing   | 202     |
|  |                           | Optional IE incorrect  | 203     |
|  |                           | System failure   | 204     |
|  |                           | Roaming restriction  | 205     |
|  |                           | P-TMSI Signature mismatch  | 206     |
|  |                           | GPRS connection suspended  | 207     |
|  |                           | Authentication failure   | 208     |
|  |                           | User authentication failed   | 209     |
|  |                           | Context not found  | 210     |
|  |                           | All dynamic PDP addresses are occupied                                       | 211     |
|  |                           | No memory is available   | 212     |
|  |                           | Relocation failure   | 213     |
|  |                           | Unknown mandatory extension header   | 214     |
|  |                           | Semantic error in the TFT operation  | 215     |
|  |                           | Syntactic error in the TFT operation   | 216     |
|  |                           | Semantic errors in packet filter(s)  | 217     |
|  |                           | Syntactic errors in packet filter(s)   | 218     |
|  |                           | Missing or unknown APN   | 219     |
|  |                           | Unknown PDP address or PDP type  | 220     |
|  |                           | PDP context without TFT already activated                                    | 221     |
|  |                           | For future use   | 222-240 |
| Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15) |                           | 241-255  |         |

NOTE: With this coding, bits 8 and 7 of the Cause Value respectively indicate whether the message was a request or a response, and whether the request was accepted or rejected.

**Table 39: Use of the Cause Values**

| Cause 8 | value bits 7 | Result                |
|---------|--------------|-----------------------|
| 0       | 0            | Request               |
| 0       | 1            | For future use (Note) |
| 1       | 0            | Acceptance            |
| 1       | 1            | Rejection             |

NOTE: The value '01' is for future use and shall not be sent. If received in a response, it shall be treated as a rejection.

## CHANGE REQUEST

⌘ **29.060 CR 346** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|                        |   |  |   |
|------------------------|---|--|---|
| <b>Title:</b>          | ⌘ | No equivalent Cause Code in GTP to 'PDP context without TFT already activated'   |   |
| <b>Source:</b>         | ⌘ | CN4  |   |
| <b>Work item code:</b> | ⌘ | GTP enhancements   | <b>Date:</b> ⌘ 18/07/2002   |
| <b>Category:</b>       | ⌘ | <b>A</b>   | <b>Release:</b> ⌘ Rel-4   |
|                        |   | Use <u>one</u> of the following categories:<br><b>F</b> (correction)<br><b>A</b> (corresponds to a correction in an earlier release)<br><b>B</b> (addition of feature),<br><b>C</b> (functional modification of feature)<br><b>D</b> (editorial modification)<br>Detailed explanations of the above categories can be found in 3GPP TR 21.900. | Use <u>one</u> of the following releases:<br>2 (GSM Phase 2)<br>R96 (Release 1996)<br>R97 (Release 1997)<br>R98 (Release 1998)<br>R99 (Release 1999)<br>Rel-4 (Release 4)<br>Rel-5 (Release 5)<br>Rel-6 (Release 6) |

|                                      |   |  |
|--------------------------------------|---|--|
| <b>Reason for change:</b>            | ⌘ | <p>Within 24.008, cause code <i>PDP context without TFT already activated</i> is used to report to the MS that a PDP Context could not be activated without a TFT, because there is already a PDP Context without a TFT active for that MS. 29.060 does not include an equivalent cause code, so it could be assumed that the SGSN is expected to determine when this condition exists. This requires that the SGSN track which contexts have TFT and which do not. However, 23.060 implies that the SGSN should not be doing anything in relation to TFT. For example in section 9.2.2.1.1 (Secondary PDP Context Activation) it is stated that</p> <p style="padding-left: 20px;"><i>"TFT is sent <b>transparently</b> through the SGSN to the GGSN to enable packet classification for downlink data transfer."</i></p> <p>Further, during an IRAU event, the old SGSN does not inform the new SGSN which PDP contexts have TFT. As a result, the new SGSN cannot reliably track which contexts have TFTs associated with them.</p> <p>Thus, the SGSN can never send the <i>PDP context without TFT already activated</i> cause code to the MS.</p> <p>This is a critical correction.</p> |
| <b>Summary of change:</b>            | ⌘ | Introduce a cause code into 29.060 to map onto <i>PDP context without TFT already activated</i> in 24.008.   |
| <b>Consequences if not approved:</b> | ⌘ | <i>PDP context without TFT already activated</i> can not ever be sent to the MS, denying the MS useful diagnostic information. Also the SGSN can not accurately interpret error causes for Create Context Requests.  |

|                              |                     |   |   |   |  |   |  |   |  |   |                           |   |
|------------------------------|---------------------|---|---|---|--|---|--|---|--|---|---------------------------|---|
| <b>Clauses affected:</b>     | ⌘                   | 7.3.2, 7.7.1  |   |   |  |   |  |   |  |   |                           |   |
| <b>Other specs affected:</b> | ⌘                   | <table border="1"><tr><td>Y</td><td>N</td></tr><tr><td></td><td>X</td></tr><tr><td></td><td>X</td></tr><tr><td></td><td>X</td></tr></table> | Y | N |  | X |  | X |  | X | Other core specifications | ⌘ |
|                              |                     | Y   | N |   |  |   |  |   |  |   |                           |   |
|                              |                     |   | X |   |  |   |  |   |  |   |                           |   |
|                              | X                   |   |   |   |  |   |  |   |  |   |                           |   |
|                              | X                   |   |   |   |  |   |  |   |  |   |                           |   |
|                              | Test specifications |   |   |   |  |   |  |   |  |   |                           |   |
|                              | O&M Specifications  |   |   |   |  |   |  |   |  |   |                           |   |
| <b>Other comments:</b>       | ⌘                   |   |   |   |  |   |  |   |  |   |                           |   |

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### 7.3.2 Create PDP Context Response

The message shall be sent from a GGSN node to a SGSN node as a response of a Create PDP Context Request. When the SGSN receives a Create PDP Context Response with the Cause value indicating 'Request Accepted', the SGSN activates the PDP context and may start to forward T-PDUs to/from the MS from/to the external data network.

The Cause value indicates if a PDP context has been created in the GGSN or not. A PDP context has not been created in the GGSN if the Cause differs from 'Request accepted'. Possible Cause values are:

- "Request Accepted".
- "No resources available".
- "All dynamic PDP addresses are occupied".
- "No memory is available".
- "Missing or unknown APN".
- "Unknown PDP address or PDP type".
- "User authentication failed".
- "System failure".
- "Semantic error in the TFT operation".
- "Syntactic error in the TFT operation".
- "Semantic errors in packet filter(s)".
- "Syntactic errors in packet filters(s)".
- "Mandatory IE incorrect".
- "Mandatory IE missing".
- "Optional IE incorrect".
- \_\_\_—"Invalid message format".
- "PDP context without TFT already activated"

'No resources available' indicates e.g. that all dynamic PDP addresses are occupied or no memory is available. 'Missing or unknown APN' indicates e.g. when the GGSN does not support the Access Point Name. 'Unknown PDP address or PDP type' indicates e.g. when the GGSN does not support the PDP type or the PDP address.

'User authentication failed' indicates that the external packet network has rejected the service requested by the user.

'PDP context without TFT already activated' indicates that a PDP context has already been activated without a TFT for that MS.

Only the Cause information element, optionally Protocol Configuration Options and optionally the Recovery information element shall be included in the response if the Cause contains another value than 'Request accepted'.

All information elements, except Recovery, Protocol Configuration Options, Charging Gateway Address, Tunnel Endpoint Identifier Control Plane and Private Extension, are mandatory if the Cause contains the value 'Request accepted'.

The Tunnel Endpoint Identifier for Data (I) field specifies an uplink Tunnel Endpoint Identifier for G-PDUs that is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink G-PDUs which are related to the requested PDP context.

The Tunnel Endpoint Identifier Control Plane field specifies an uplink Tunnel Endpoint Identifier for control plane messages, which is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink-control plane messages, which are related to the requested PDP context. If the GGSN has already

confirmed successful assignment of its Tunnel Endpoint Identifier Control Plane to the peer SGSN, this field shall not be present. The GGSN confirms successful assignment of its Tunnel Endpoint Identifier Control Plane to the SGSN when it receives any message with its assigned Tunnel Endpoint Identifier Control Plane in the GTP header from the SGSN.

The GGSN shall include a GGSN Address for control plane and a GGSN address for user traffic, which may differ from that provided by the underlying network service (e.g. IP). The SGSN shall store these GGSN Addresses and use them when sending control plane on this GTP tunnel or G-PDUs to the GGSN for the MS.

If the MS requests a dynamic PDP address with the PDP Type IPv4 or IPv6 and a dynamic PDP address is allowed, then the End User Address information element shall be included and the PDP Address field in the End User Address information element shall contain the dynamic PDP Address allocated by the GGSN.

If the MS requests a static PDP address with the PDP Type IPv4 or IPv6, or a PDP address is specified with PDP Type PPP, then the End User Address information element shall be included and the PDP Address field shall not be included.

The PDP address in End User Address IE and in the Protocol configuration options IE shall be the same, if both IEs are present in the create PDP context response.

The QoS values supplied in the Create PDP Context Request may be negotiated downwards by the GGSN. The negotiated values or the original values from SGSN are inserted in the Quality of Service Profile information element of the Create PDP Context Response message.

The GGSN may start to forward T-PDUs after the Create PDP Context Response has been sent. The SGSN may start to forward T-PDUs when the Create PDP Context Response has been received. In this case the SGSN shall also be prepared to receive T-PDUs from the GGSN after it has sent a Create PDP Context Request but before a Create PDP Context Response has been received.

The Reordering Required value supplied in the Create PDP Context Response indicates whether the end user protocol benefits from packet in sequence delivery and whether the SGSN and the GGSN therefore shall perform reordering or not. In other words, if reordering is required by the GGSN, the SGSN and the GGSN shall perform reordering of incoming T-PDUs on this path. When the Quality of Service (QoS) Profile is Release 99 the receiving entity shall ignore the Reordering Required.

The GGSN shall include the Recovery information element into the Create PDP Context Response if the GGSN is in contact with the SGSN for the first time or the GGSN has restarted recently and the new Restart Counter value has not yet been indicated to the SGSN. The SGSN receiving the Recovery information element shall handle it as when an Echo Response message is received but shall consider the PDP context being created as active if the response indicates successful context activation at the GGSN.

The Charging ID is used to identify all charging records produced in SGSN(s) and the GGSN for this PDP context. The Charging ID is generated by the GGSN and shall be unique within the GGSN.

The Charging Gateway Address is the IP address of the recommended Charging Gateway Functionality to which the SGSN should transfer the Charging Detail Records (CDR) for this PDP Context.

The optional Private Extension contains vendor or operator specific information.



**Table 6: Information Elements in a Create PDP Context Response**

| Information element                      | Presence requirement | Reference          |
|--|----------------------|--------------------|
| Cause                                    | Mandatory            | 7.7.1              |
| Reordering required                      | Conditional          | 7.7.6              |
| Recovery                                 | Optional             | 7.7.11             |
| Tunnel Endpoint Identifier Data I        | Conditional          | 7.7.13             |
| Tunnel Endpoint Identifier Control Plane | Conditional          | 7.7.14             |
| Charging ID                              | Conditional          | 7.7.26             |
| End User Address                         | Conditional          | 7.7.27             |
| Protocol Configuration Options           | Optional             | 7.7.31             |
| GGSN Address for Control Plane           | Conditional          | GSN Address 7.7.32 |
| GGSN Address for user traffic            | Conditional          | GSN Address 7.7.32 |
| Quality of Service Profile               | Conditional          | 7.7.34             |
| Charging Gateway Address                 | Optional             | 7.7.43             |
| Private Extension                        | Optional             | 7.7.44             |

\*\*\*\*\* *Next section to be changed* \*\*\*\*\*

## 7.7.1 Cause

In a request, the Cause Value indicates the reason for the request. The Cause shall be included in the request message.

In a response, the Cause Value indicates the acceptance or the rejection of the corresponding request. In addition, the Cause Value may indicate what was the reason for the corresponding request. The Cause value shall be included in the response message.

'Request accepted' is returned when a GSN has accepted a control plane request.

'Non-existent' indicates a non-existent or an inactive PDP context.

'TMSI not known' indicates a non-existent MM context.

'MS is GPRS Detached' indicates an idle MM context.

'MS is not GPRS Responding' and 'MS Refuses' may be used by SGSN to reject a Network-Requested PDP Context Activation.

'Version not supported' is returned when the recipient does not recognise the version number in the request message.

'Request IMSI', 'Request IMEI', 'Request IMSI and IMEI' and 'No identity needed' are used by GGSN to notify SGSN what to do.

'No resources available' is a generic temporary error condition e.g. all dynamic PDP addresses occupied or no memory available.

'Service not supported' is a generic error indicated that the GSN do not support the requested service.

'User authentication failed' indicates that the external packet network has rejected the user's service request.

'System failure' is a generic permanent error condition.

'Roaming restriction' indicates that the SGSN cannot activate the requested PDP context because of the roaming restrictions.

'P-TMSI Signature mismatch' is returned if either:

- the P-TMSI Signature stored in the old SGSN does not match the value sent by the MS via the new SGSN
- or the MS does not provide the P-TMSI Signature to the new SGSN while the old SGSN has stored the P-TMSI Signature for that MS.

'Semantic error in the TFT operation', 'Syntactic error in the TFT operation', 'Semantic errors in packet filter(s)', ~~and~~ 'Syntactic errors in packet filters(s)' and 'PDP context without TFT already activated' are indications of abnormal cases involving TFTs. The abnormal TFT cases and the use of the cause codes are defined in 3GPP TS 24.008.

'Invalid message format', 'Mandatory IE incorrect', 'Mandatory IE missing' and 'Optional IE incorrect' are indications of protocol errors described in the section Error handling.

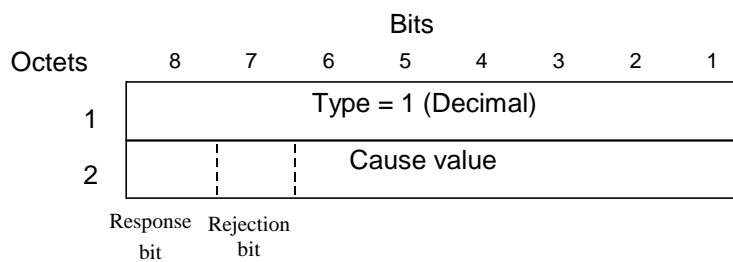
'GPRS connection suspended' indicates that the GPRS activities of the mobile station are suspended.

'Authentication failure' indicates that the user authentication failed in the new SGSN.

'Context not found' indicates that the PDP Context referenced in an Active Secondary Context Request message was not found in the receiving GGSN.

'Relocation failure' indicates that the SRNS relocation failed in the new SGSN side.

'Unknown mandatory extension header' signals in a response message that the corresponding request included an extension header for which comprehension was required but unknown to the receiving end.



**Figure 9: Cause information element**

**Table 38: Cause Values**

| Cause  |                           | Value (Decimal)  |         |
|--|---------------------------|--|---------|
| request  | Request IMSI              | 0  |         |
|  | Request IMEI              | 1  |         |
|  | Request IMSI and IMEI     | 2  |         |
|  | No identity needed        | 3  |         |
|  | MS Refuses                | 4  |         |
|  | MS is not GPRS Responding | 5  |         |
|  | For future use            | 6-48   |         |
| Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15) |                           | 49-63  |         |
| For future use   |                           | 64-127   |         |
| response   | acc                       | Request accepted   | 128     |
|  |                           | For future use   | 129-176 |
|  |                           | Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15) | 177-191 |
|  | rej                       | Non-existent   | 192     |
|  |                           | Invalid message format   | 193     |
|  |                           | IMSI not known   | 194     |
|  |                           | MS is GPRS Detached  | 195     |
|  |                           | MS is not GPRS Responding  | 196     |
|  |                           | MS Refuses   | 197     |
|  |                           | For future use   | 198     |
|  |                           | No resources available   | 199     |
|  |                           | Service not supported  | 200     |
|  |                           | Mandatory IE incorrect   | 201     |
|  |                           | Mandatory IE missing   | 202     |
|  |                           | Optional IE incorrect  | 203     |
|  |                           | System failure   | 204     |
|  |                           | Roaming restriction  | 205     |
|  |                           | P-TMSI Signature mismatch  | 206     |
|  |                           | GPRS connection suspended  | 207     |
|  |                           | Authentication failure   | 208     |
|  |                           | User authentication failed   | 209     |
|  |                           | Context not found  | 210     |
|  |                           | All dynamic PDP addresses are occupied                                       | 211     |
|  |                           | No memory is available   | 212     |
|  |                           | Relocation failure   | 213     |
|  |                           | Unknown mandatory extension header   | 214     |
|  |                           | Semantic error in the TFT operation  | 215     |
|  |                           | Syntactic error in the TFT operation   | 216     |
|  |                           | Semantic errors in packet filter(s)  | 217     |
|  |                           | Syntactic errors in packet filter(s)   | 218     |
|  |                           | Missing or unknown APN   | 219     |
|  |                           | Unknown PDP address or PDP type  | 220     |
|  |                           | PDP context without TFT already activated                                    | 221     |
|  |                           | For future use   | 222-240 |
| Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15) |                           | 241-255  |         |

NOTE: With this coding, bits 8 and 7 of the Cause Value respectively indicate whether the message was a request or a response, and whether the request was accepted or rejected.

**Table 39: Use of the Cause Values**

| Cause 8 | value bits 7 | Result                |
|---------|--------------|-----------------------|
| 0       | 0            | Request               |
| 0       | 1            | For future use (Note) |
| 1       | 0            | Acceptance            |
| 1       | 1            | Rejection             |

NOTE: The value '01' is for future use and shall not be sent. If received in a response, it shall be treated as a rejection.

## CHANGE REQUEST

⌘ **29.060 CR 347** ⌘ rev **-** ⌘ Current version: **5.2.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

|   |   |   |  |
|---|---|---|--|
| <b>Title:</b>   | ⌘ No equivalent Cause Code in GTP to 'PDP context without TFT already activated'  |   |  |
| <b>Source:</b>  | ⌘ CN4   |   |  |
| <b>Work item code:</b>  | ⌘ GTP enhancements  |   |  |
|   | <b>Date:</b> ⌘ 18/07/2002   |   |  |
| <b>Category:</b>  | ⌘ <b>A</b>  |   |  |
|   | <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Use <u>one</u> of the following categories:</p> <p><b>F</b> (correction)</p> <p><b>A</b> (corresponds to a correction in an earlier release)</p> <p><b>B</b> (addition of feature),</p> <p><b>C</b> (functional modification of feature)</p> <p><b>D</b> (editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a>.</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>Rel-4 (Release 4)</p> <p>Rel-5 (Release 5)</p> <p>Rel-6 (Release 6)</p> </td> </tr> </table> | <p>Use <u>one</u> of the following categories:</p> <p><b>F</b> (correction)</p> <p><b>A</b> (corresponds to a correction in an earlier release)</p> <p><b>B</b> (addition of feature),</p> <p><b>C</b> (functional modification of feature)</p> <p><b>D</b> (editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a>.</p> | <p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>Rel-4 (Release 4)</p> <p>Rel-5 (Release 5)</p> <p>Rel-6 (Release 6)</p> |
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|   | <b>Release:</b> ⌘ Rel-5   |   |  |

|                                      |  |
|--------------------------------------|--|
| <b>Reason for change:</b>            | <p>⌘ Within 24.008, cause code <i>PDP context without TFT already activated</i> is used to report to the MS that a PDP Context could not be activated without a TFT, because there is already a PDP Context without a TFT active for that MS. 29.060 does not include an equivalent cause code, so it could be assumed that the SGSN is expected to determine when this condition exists. This requires that the SGSN track which contexts have TFT and which do not. However, 23.060 implies that the SGSN should not be doing anything in relation to TFT. For example in section 9.2.2.1.1 (Secondary PDP Context Activation) it is stated that</p> <p style="padding-left: 20px;"><i>"TFT is sent <b>transparently</b> through the SGSN to the GGSN to enable packet classification for downlink data transfer."</i></p> <p>Further, during an IRAU event, the old SGSN does not inform the new SGSN which PDP contexts have TFT. As a result, the new SGSN cannot reliably track which contexts have TFTs associated with them.</p> <p>Thus, the SGSN can never send the <i>PDP context without TFT already activated</i> cause code to the MS.</p> <p>This is a critical correction.</p> |
| <b>Summary of change:</b>            | <p>⌘ Introduce a cause code into 29.060 to map onto <i>PDP context without TFT already activated</i> in 24.008.</p>  |
| <b>Consequences if not approved:</b> | <p>⌘ <i>PDP context without TFT already activated</i> can not ever be sent to the MS, denying the MS useful diagnostic information. Also the SGSN can not accurately interpret error causes for Create Context Requests.</p>   |

|                              |                     |   |   |   |  |   |  |   |  |   |                           |   |
|------------------------------|---------------------|---|---|---|--|---|--|---|--|---|---------------------------|---|
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|                              |                     | Y   | N |   |  |   |  |   |  |   |                           |   |
|                              |                     |   | X |   |  |   |  |   |  |   |                           |   |
|                              | X                   |   |   |   |  |   |  |   |  |   |                           |   |
|                              | X                   |   |   |   |  |   |  |   |  |   |                           |   |
|                              | Test specifications |   |   |   |  |   |  |   |  |   |                           |   |
|                              | O&M Specifications  |   |   |   |  |   |  |   |  |   |                           |   |
| <b>Other comments:</b>       | ⌘                   |   |   |   |  |   |  |   |  |   |                           |   |

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The message shall be sent from a GGSN node to a SGSN node as a response of a Create PDP Context Request. When the SGSN receives a Create PDP Context Response with the Cause value indicating 'Request Accepted', the SGSN activates the PDP context and may start to forward T-PDUs to/from the MS from/to the external data network.

The Cause value indicates if a PDP context has been created in the GGSN or not. A PDP context has not been created in the GGSN if the Cause differs from 'Request accepted'. Possible Cause values are:

- "Request Accepted".
- "No resources available".
- "All dynamic PDP addresses are occupied".
- "No memory is available".
- "Missing or unknown APN".
- "Unknown PDP address or PDP type".
- "User authentication failed".
- "System failure".
- "Semantic error in the TFT operation".
- "Syntactic error in the TFT operation".
- "Semantic errors in packet filter(s)".
- "Syntactic errors in packet filters(s)".
- "Mandatory IE incorrect".
- "Mandatory IE missing".
- "Optional IE incorrect".
- \_\_\_—"Invalid message format".
- "PDP context without TFT already activated"

'No resources available' indicates e.g. that all dynamic PDP addresses are occupied or no memory is available. 'Missing or unknown APN' indicates e.g. when the GGSN does not support the Access Point Name. 'Unknown PDP address or PDP type' indicates e.g. when the GGSN does not support the PDP type or the PDP address.

'User authentication failed' indicates that the external packet network has rejected the service requested by the user.

'PDP context without TFT already activated' indicates that a PDP context has already been activated without a TFT for that MS.

Only the Cause information element, optionally Protocol Configuration Options and optionally the Recovery information element shall be included in the response if the Cause contains another value than 'Request accepted'.

All information elements, except Recovery, Protocol Configuration Options, Charging Gateway Address, Tunnel Endpoint Identifier Control Plane and Private Extension, are mandatory if the Cause contains the value 'Request accepted'.

The Tunnel Endpoint Identifier for Data (I) field specifies an uplink Tunnel Endpoint Identifier for G-PDUs that is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink G-PDUs which are related to the requested PDP context.

The Tunnel Endpoint Identifier Control Plane field specifies an uplink Tunnel Endpoint Identifier for control plane messages, which is chosen by the GGSN. The SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent uplink-control plane messages, which are related to the requested PDP context. If the GGSN has already

confirmed successful assignment of its Tunnel Endpoint Identifier Control Plane to the peer SGSN, this field shall not be present. The GGSN confirms successful assignment of its Tunnel Endpoint Identifier Control Plane to the SGSN when it receives any message with its assigned Tunnel Endpoint Identifier Control Plane in the GTP header from the SGSN.

The GGSN shall include a GGSN Address for control plane and a GGSN address for user traffic, which may differ from that provided by the underlying network service (e.g. IP). The SGSN shall store these GGSN Addresses and use them when sending control plane on this GTP tunnel or G-PDUs to the GGSN for the MS.

If the MS requests a dynamic PDP address with the PDP Type IPv4 or IPv6 and a dynamic PDP address is allowed, then the End User Address information element shall be included and the PDP Address field in the End User Address information element shall contain the dynamic PDP Address allocated by the GGSN.

If the MS requests a static PDP address with the PDP Type IPv4 or IPv6, or a PDP address is specified with PDP Type PPP, then the End User Address information element shall be included and the PDP Address field shall not be included.

The PDP address in End User Address IE and in the Protocol configuration options IE shall be the same, if both IEs are present in the create PDP context response.

The QoS values supplied in the Create PDP Context Request may be negotiated downwards by the GGSN. The negotiated values or the original values from SGSN are inserted in the Quality of Service Profile information element of the Create PDP Context Response message.

The GGSN may start to forward T-PDUs after the Create PDP Context Response has been sent. The SGSN may start to forward T-PDUs when the Create PDP Context Response has been received. In this case the SGSN shall also be prepared to receive T-PDUs from the GGSN after it has sent a Create PDP Context Request but before a Create PDP Context Response has been received.

The Reordering Required value supplied in the Create PDP Context Response indicates whether the end user protocol benefits from packet in sequence delivery and whether the SGSN and the GGSN therefore shall perform reordering or not. In other words, if reordering is required by the GGSN, the SGSN and the GGSN shall perform reordering of incoming T-PDUs on this path. When the Quality of Service (QoS) Profile is Release 99 the receiving entity shall ignore the Reordering Required.

The GGSN shall include the Recovery information element into the Create PDP Context Response if the GGSN is in contact with the SGSN for the first time or the GGSN has restarted recently and the new Restart Counter value has not yet been indicated to the SGSN. The SGSN receiving the Recovery information element shall handle it as when an Echo Response message is received but shall consider the PDP context being created as active if the response indicates successful context activation at the GGSN.

The Charging ID is used to identify all charging records produced in SGSN(s) and the GGSN for this PDP context. The Charging ID is generated by the GGSN and shall be unique within the GGSN.

The Charging Gateway Address is the IP address of the recommended Charging Gateway Functionality to which the SGSN should transfer the Charging Detail Records (CDR) for this PDP Context.

The optional Private Extension contains vendor or operator specific information.



**Table 6: Information Elements in a Create PDP Context Response**

| Information element                      | Presence requirement | Reference          |
|--|----------------------|--------------------|
| Cause                                    | Mandatory            | 7.7.1              |
| Reordering required                      | Conditional          | 7.7.6              |
| Recovery                                 | Optional             | 7.7.11             |
| Tunnel Endpoint Identifier Data I        | Conditional          | 7.7.13             |
| Tunnel Endpoint Identifier Control Plane | Conditional          | 7.7.14             |
| Charging ID                              | Conditional          | 7.7.26             |
| End User Address                         | Conditional          | 7.7.27             |
| Protocol Configuration Options           | Optional             | 7.7.31             |
| GGSN Address for Control Plane           | Conditional          | GSN Address 7.7.32 |
| GGSN Address for user traffic            | Conditional          | GSN Address 7.7.32 |
| Quality of Service Profile               | Conditional          | 7.7.34             |
| Charging Gateway Address                 | Optional             | 7.7.43             |
| Private Extension                        | Optional             | 7.7.44             |

\*\*\*\*\* *Next section to be changed* \*\*\*\*\*

## 7.7.1 Cause

In a request, the Cause Value indicates the reason for the request. The Cause shall be included in the request message.

In a response, the Cause Value indicates the acceptance or the rejection of the corresponding request. In addition, the Cause Value may indicate what was the reason for the corresponding request. The Cause value shall be included in the response message.

'Request accepted' is returned when a GSN has accepted a control plane request.

'Non-existent' indicates a non-existent or an inactive PDP context.

'TMSI not known' indicates a non-existent MM context.

'MS is GPRS Detached' indicates an idle MM context.

'MS is not GPRS Responding' and 'MS Refuses' may be used by SGSN to reject a Network-Requested PDP Context Activation.

'Version not supported' is returned when the recipient does not recognise the version number in the request message.

'Request IMSI', 'Request IMEI', 'Request IMSI and IMEI' and 'No identity needed' are used by GGSN to notify SGSN what to do.

'No resources available' is a generic temporary error condition e.g. all dynamic PDP addresses occupied or no memory available.

'Service not supported' is a generic error indicated that the GSN do not support the requested service.

'User authentication failed' indicates that the external packet network has rejected the user's service request.

'System failure' is a generic permanent error condition.

'Roaming restriction' indicates that the SGSN cannot activate the requested PDP context because of the roaming restrictions.

'P-TMSI Signature mismatch' is returned if either:

- the P-TMSI Signature stored in the old SGSN does not match the value sent by the MS via the new SGSN
- or the MS does not provide the P-TMSI Signature to the new SGSN while the old SGSN has stored the P-TMSI Signature for that MS.

'Semantic error in the TFT operation', 'Syntactic error in the TFT operation', 'Semantic errors in packet filter(s)', ~~and~~ 'Syntactic errors in packet filters(s)' and 'PDP context without TFT already activated' are indications of abnormal cases involving TFTs. The abnormal TFT cases and the use of the cause codes are defined in 3GPP TS 24.008.

'Invalid message format', 'Mandatory IE incorrect', 'Mandatory IE missing' and 'Optional IE incorrect' are indications of protocol errors described in the section Error handling.

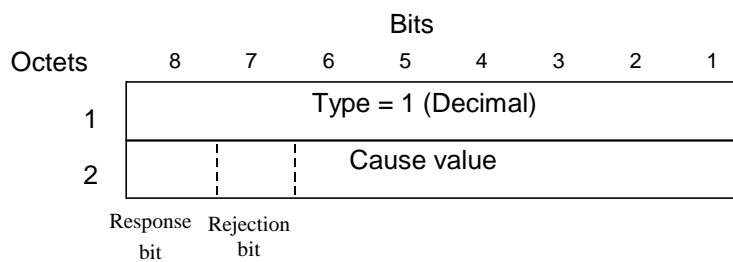
'GPRS connection suspended' indicates that the GPRS activities of the mobile station are suspended.

'Authentication failure' indicates that the user authentication failed in the new SGSN.

'Context not found' indicates that the PDP Context referenced in an Active Secondary Context Request message was not found in the receiving GGSN.

'Relocation failure' indicates that the SRNS relocation failed in the new SGSN side.

'Unknown mandatory extension header' signals in a response message that the corresponding request included an extension header for which comprehension was required but unknown to the receiving end.



**Figure 9: Cause information element**

**Table 38: Cause Values**

| Cause  |                           | Value (Decimal)  |         |
|--|---------------------------|--|---------|
| request  | Request IMSI              | 0  |         |
|  | Request IMEI              | 1  |         |
|  | Request IMSI and IMEI     | 2  |         |
|  | No identity needed        | 3  |         |
|  | MS Refuses                | 4  |         |
|  | MS is not GPRS Responding | 5  |         |
|  | For future use            | 6-48   |         |
| Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15) |                           | 49-63  |         |
| For future use   |                           | 64-127   |         |
| response   | acc                       | Request accepted   | 128     |
|  |                           | For future use   | 129-176 |
|  |                           | Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15) | 177-191 |
|  | rej                       | Non-existent   | 192     |
|  |                           | Invalid message format   | 193     |
|  |                           | IMSI not known   | 194     |
|  |                           | MS is GPRS Detached  | 195     |
|  |                           | MS is not GPRS Responding  | 196     |
|  |                           | MS Refuses   | 197     |
|  |                           | For future use   | 198     |
|  |                           | No resources available   | 199     |
|  |                           | Service not supported  | 200     |
|  |                           | Mandatory IE incorrect   | 201     |
|  |                           | Mandatory IE missing   | 202     |
|  |                           | Optional IE incorrect  | 203     |
|  |                           | System failure   | 204     |
|  |                           | Roaming restriction  | 205     |
|  |                           | P-TMSI Signature mismatch  | 206     |
|  |                           | GPRS connection suspended  | 207     |
|  |                           | Authentication failure   | 208     |
|  |                           | User authentication failed   | 209     |
|  |                           | Context not found  | 210     |
|  |                           | All dynamic PDP addresses are occupied                                       | 211     |
|  |                           | No memory is available   | 212     |
|  |                           | Relocation failure   | 213     |
|  |                           | Unknown mandatory extension header   | 214     |
|  |                           | Semantic error in the TFT operation  | 215     |
|  |                           | Syntactic error in the TFT operation   | 216     |
|  |                           | Semantic errors in packet filter(s)  | 217     |
|  |                           | Syntactic errors in packet filter(s)   | 218     |
|  |                           | Missing or unknown APN   | 219     |
|  |                           | Unknown PDP address or PDP type  | 220     |
|  |                           | PDP context without TFT already activated                                    | 221     |
|  |                           | For future use   | 222-240 |
| Cause values reserved for GPRS charging protocol use (see GTP' in GSM 12.15) |                           | 241-255  |         |

NOTE: With this coding, bits 8 and 7 of the Cause Value respectively indicate whether the message was a request or a response, and whether the request was accepted or rejected.

**Table 39: Use of the Cause Values**

| Cause 8 | value bits 7 | Result                |
|---------|--------------|-----------------------|
| 0       | 0            | Request               |
| 0       | 1            | For future use (Note) |
| 1       | 0            | Acceptance            |
| 1       | 1            | Rejection             |

NOTE: The value '01' is for future use and shall not be sent. If received in a response, it shall be treated as a rejection.

CR-Form-v7

## CHANGE REQUEST

# 29.060 CR 349 # rev - # Current version: 4.4.0 #

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

**Proposed change affects:** UICC apps#  ME  Radio Access Network  Core Network

|                        |   |                 |   |  |  |
|------------------------|---|-----------------|---|--|--|
| <b>Title:</b>          | # Incorrect references  |                 |   |  |  |
| <b>Source:</b>         | # CN4   |                 |   |  |  |
| <b>Work item code:</b> | # TEI4  | <b>Date:</b>    | # 30/07/2002                              |  |  |
| <b>Category:</b>       | # <b>F</b>  | <b>Release:</b> | # Rel-4                                   |  |  |
|                        | Use <u>one</u> of the following categories:                                   |                 | Use <u>one</u> of the following releases: |  |  |
|                        | <b>F</b> (correction)   |                 | 2 (GSM Phase 2)                           |  |  |
|                        | <b>A</b> (corresponds to a correction in an earlier release)                  |                 | R96 (Release 1996)                        |  |  |
|                        | <b>B</b> (addition of feature),   |                 | R97 (Release 1997)                        |  |  |
|                        | <b>C</b> (functional modification of feature)                                 |                 | R98 (Release 1998)                        |  |  |
|                        | <b>D</b> (editorial modification)   |                 | R99 (Release 1999)                        |  |  |
|                        | Detailed explanations of the above categories can be found in 3GPP TR 21.900. |                 | Rel-4 (Release 4)                         |  |  |
|                        |   |                 | Rel-5 (Release 5)                         |  |  |
|                        |   |                 | Rel-6 (Release 6)                         |  |  |

|                                      |   |
|--------------------------------------|---|
| <b>Reason for change:</b>            | # Incorrect references.   |
| <b>Summary of change:</b>            | # Referenced TS corrected, i.e. 32.015 => 32.215.<br>This is an essential correction. |
| <b>Consequences if not approved:</b> | # The wrong charging specification is referenced.                                     |

|                              |  |   |   |                          |                                     |
|------------------------------|--|---|---|--------------------------|-------------------------------------|
| <b>Clauses affected:</b>     | # 7.7.23   |   |   |                          |                                     |
| <b>Other specs affected:</b> | #  |   |   |                          |                                     |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Y                            | N  |   |   |                          |                                     |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Test specifications       | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Y                            | N  |   |   |                          |                                     |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |
|                              | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> O&M Specifications        | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Y                            | N  |   |   |                          |                                     |
| <input type="checkbox"/>     | <input checked="" type="checkbox"/>  |   |   |                          |                                     |
| <b>Other comments:</b>       | #  |   |   |                          |                                     |

### How to create CRs using this form:

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

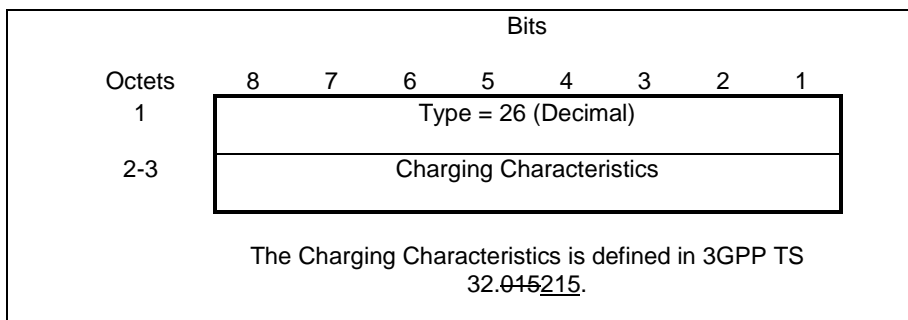
- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

**\*\*\*\* START OF MODIFICATION \*\*\*\***

### 7.7.23 Charging Characteristics

The charging characteristics information element is a way of informing both the SGSN and GGSN of the rules for producing charging information based on operator configured triggers. For the encoding of this information element see ~~TS-3GPP TS 32.045~~TS 32.045.



**Figure 31: Charging Characteristics Information Element**

**\*\*\*\* END OF MODIFICATION \*\*\*\***