**3GPP TSG CN**
**Nice, France, 13 - 15 December, 1999**

***Document* NP-99485**
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| 29.002 | CR | 078 | Current Version: | 3.2.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: | CN#06 | for approval | X | strategic | X | *(for SMG use only)* |
|---|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

*Form: CR cover sheet, version 2 for 3GPP and SMG* *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

**Proposed change affects:** *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

**Source:** Nokia **Date:** 3.12.1999

**Subject:** Improving GPRS charging efficiency

**Work item:** GPRS

**Category:** *(only one category shall be marked with an X)*

| | | | | | |
|---|---|---|---|---|---|
| F | Correction | | **Release:** | Phase 2 | |
| A | Corresponds to a correction in an earlier release | | | Release 96 | |
| B | Addition of feature | X | | Release 97 | |
| C | Functional modification of feature | | | Release 98 | |
| D | Editorial modification | | | Release 99 | X |
| | | | | Release 00 | |

**Reason for change:**

Normally, the SGSN and the GGSN collect charging information on MSs which they are serving. The SGSN collects charging information for each attached MS and for each active PDP context. The GGSN collects charging information for each active PDP context.

Alternative charging mechanisms, such as prepaid or flat rate billing, do not require generating charging information (CDRs) in the SGSN and in the GGSN. Sending CDRs for such MSs and/or PDP contexts to Charging Gateway Functionality increases load in the communication channel.

This CR introduces a method of decreasing the load in the communication channel. CDRs may not be sent for MSs and/or PDP contexts which are not liable for charging. If the feature is not supported in the SGSN and in the GGSN, the SGSN and the GGSN will send CDRs normally. It is operator-specific whether charging information is collected for those MSs and/or PDP contexts which are not liable for charging. For roaming subscribers, CDRs should be generated.

At attach or at inter-SGSN routing area update, the packet domain subscription data is transferred to the SGSN. The packet domain subscription data includes the subscribed charging characteristics. When creating a PDP context or when updating the PDP context, the SGSN copies the charging characteristics of the PDP context from the subscribed charging characteristics. At inter-SGSN routing area update, the subscribed charging characteristics are transferred from the old SGSN to the new SGSN in the MM context.

**Clauses affected:**

**Other specs affected:**

| | | | |
|---|---|---|---|
| Other 3G core specifications | X | → List of CRs: | 23.060, 29.060 |
| Other GSM core specifications | | → List of CRs: | |
| MS test specifications | | → List of CRs: | |
| BSS test specifications | | → List of CRs: | |

O&M specifications → List of CRs:

**Other comments:**

<--------- double-click here for help and instructions on how to create a CR.

### 7.6.3.69 IST Support Indicator

This parameter indicates the degree of IST functionality supported by the MSC (Visited MSC or Gateway MSC). It can take one of the following values:

- Basic IST functionality
- IST command service (in addition to the basic IST functionality and including the ability to terminate all calls being carried for the identified subscriber).

### 7.6.3.70 Charging Characteristics

This parameter indicates which kind of charging a subscriber is liable for. This parameter is defined in 3GPP 29.060.

*< next modified section>*

## 17.7 MAP constants and data types

### 17.7.1 Mobile Service data types

(…)

```
InsertSubscriberDataArg ::= SEQUENCE {
     imsi                                [0] IMSI                          OPTIONAL,
     COMPONENTS OF                       SubscriberData,
     extensionContainer                  [14] ExtensionContainer           OPTIONAL,
     ... ,
     naea-PreferredCI                    [15] NAEA-PreferredCI             OPTIONAL,
     -- naea-PreferredCI is included at the discretion of the HLR operator.
     gprsSubscriptionData                [16] GPRSSubscriptionData         OPTIONAL,
     roamingRestrictedInSgsnDueToUnsupportedFeature [23]                   NULL
                                                                           OPTIONAL,
     networkAccessMode                   [24] NetworkAccessMode            OPTIONAL,
     lsaInformation                      [25] LSAInformation               OPTIONAL,
     lmu-Indicator                       [21] NULL                         OPTIONAL,
     lcsInformation                      [22] LCSInformation               OPTIONAL,
     istAlertTimer                       [26] IST-AlertTimerValue          OPTIONAL
      }
     -- If the Network Access Mode parameter is sent, it shall be present only in
     -- the first sequence if the seqmentation is used
```

```
IST-AlertTimerValue ::= INTEGER (15..255)
```

```
LCSInformation ::= SEQUENCE {
     hplmn-GMLC-List                     [0]  HPLMN-GMLC-List              OPTIONAL,
     lcs-PrivacyExceptionList            [1]  LCS-PrivacyExceptionList     OPTIONAL,
...}
```

```
HPLMN-GMLC-List ::= SEQUENCE SIZE (1..maxNumOfGMLC) OF
                                         ISDN-AddressString
```

```
maxNumOfGMLC  INTEGER ::= 5
```

```
NetworkAccessMode ::= ENUMERATED {
     bothMSCAndSGSN                      (0),
     onlyMSC                             (1),
     onlySGSN                            (2),
     ...}
     -- if unknown values are received in NetworkAccessMode
     -- they shall be discarded.
```

```
GPRSDataList ::= SEQUENCE SIZE (1..maxNumOfPDP-Contexts) OF
                                         PDP-Context
```

```
maxNumOfPDP-Contexts  INTEGER ::= 50
```

```
PDP-Context ::= SEQUENCE {
     pdp-ContextId                       ContextId,
     pdp-Type                            [16] PDP-Type,
     pdp-Address                         [17] PDP-Address                  OPTIONAL,
     qos-Subscribed                      [18] QoS-Subscribed,
     vplmnAddressAllowed                 [19] NULL OPTIONAL,
     apn                                 [20] APN  ,
     extensionContainer                  [21] ExtensionContainer           OPTIONAL,
     ...}
```

```
ContextId ::= INTEGER (1..maxNumOfPDP-Contexts)
```

```
GPRSSubscriptionData ::= SEQUENCE {
     completeDataListIncluded            NULL                              OPTIONAL,

          -- If segmentation is used, completeDataListIncluded may only be present in the
          -- first segment.
     gprsDataList                        [1]  GPRSDataList,
     extensionContainer                  [2] ExtensionContainer            OPTIONAL,
     ...,
     charging-Characteristics            [22] Charging-Characteristics     OPTIONAL }
```

```
APN ::=  OCTET STRING (SIZE (2..63))
          -- Octets are coded according to TS GSM 03.03
```

```
PDP-Type ::= OCTET STRING (SIZE (2))
-- Octets are coded according to TS GSM 09.60
```

```
PDP-Address ::= OCTET STRING (SIZE (1..16))
-- Octets are coded according to TS GSM 09.60

-- The possible size values are:
-- 1-7 octets  X.25 address type
--  4  octets  IPv4 address type
-- 16  octets  Ipv6 address type
```

```
QoS-Subscribed ::= OCTET STRING (SIZE (3))
     -- Octets are coded according to TS GSM 04.08.
```

```
Charging-Characteristics ::= OCTET STRING (SIZE (1))
     -- Octets are coded according to TS 3GPP 29.060.
```

```
LSAOnlyAccessIndicator ::= ENUMERATED {
     accessOutsideLSAsAllowed  (0),
     accessOutsideLSAsRestricted (1)}
```

```
LSADataList ::= SEQUENCE SIZE (1..maxNumOfLSAs) OF
                                        LSAData
```

```
maxNumOfLSAs  INTEGER ::= 20
```

```
LSAData ::= SEQUENCE {
     lsaIdentity                        [0] LSAIdentity,
     lsaPriority                        [1] LSAPriority,
     lsaActiveModeIndicator             [2] NULL                          OPTIONAL,
     lsaActiveModeSupportIndicator      [3] NULL                          OPTIONAL,
     extensionContainer                 [4] ExtensionContainer            OPTIONAL,
     ...}
```

```
LSAInformation ::= SEQUENCE {
     completeDataListIncluded           NULL                              OPTIONAL,

          -- If segmentation is used, completeDataListIncluded may only be present in the
          -- first segment.
     lsaOnlyAccessIndicator             [1]  LSAOnlyAccessIndicator       OPTIONAL,
     lsaDataList                        [2]  LSADataList                  OPTIONAL,
     extensionContainer                 [3] ExtensionContainer            OPTIONAL,
     ...}
```

```
LSAIdentity ::= OCTET STRING (SIZE (3))
-- Octets are coded according to TS GSM 03.03
```

```
LSAPriority ::= OCTET STRING (SIZE (1))
-- Octets are coded according to TS GSM 08.08
```

```
SubscriberData ::= SEQUENCE {
     msisdn                             [1] ISDN-AddressString            OPTIONAL,
     category                           [2] Category                      OPTIONAL,
     subscriberStatus                   [3] SubscriberStatus              OPTIONAL,
     bearerServiceList                  [4] BearerServiceList             OPTIONAL,
     -- The exception handling for reception of unsupported / not allocated
     -- bearerServiceCodes is defined in section 6.8.1
     teleserviceList                    [6] TeleserviceList               OPTIONAL,
     -- The exception handling for reception of unsupported / not allocated
     -- teleserviceCodes is defined in section 6.8.1
     provisionedSS                      [7] Ext-SS-InfoList               OPTIONAL,
     odb-Data                           [8] ODB-Data                      OPTIONAL,
     roamingRestrictionDueToUnsupportedFeature  [9] NULL                  OPTIONAL,
     regionalSubscriptionData           [10] ZoneCodeList                 OPTIONAL,
     vbsSubscriptionData                [11] VBSDataList                  OPTIONAL,
     vgcsSubscriptionData               [12] VGCSDataList                 OPTIONAL,
     vlrCamelSubscriptionInfo           [13] VlrCamelSubscriptionInfo     OPTIONAL
     }
```

```
Category ::= OCTET STRING (SIZE (1))
     -- The internal structure is defined in CCITT Rec Q.763.
```

```
SubscriberStatus ::= ENUMERATED {
     serviceGranted  (0),
     operatorDeterminedBarring  (1)}
```

```
BearerServiceList ::= SEQUENCE SIZE (1..maxNumOfBearerServices) OF
                                        Ext-BearerServiceCode
```

```
maxNumOfBearerServices  INTEGER ::= 50
```

```
TeleserviceList ::= SEQUENCE SIZE (1..maxNumOfTeleservices) OF
                                        Ext-TeleserviceCode
```

```
maxNumOfTeleservices  INTEGER ::= 20
```

```
ODB-Data ::= SEQUENCE {
     odb-GeneralData                    ODB-GeneralData,
     odb-HPLMN-Data                     ODB-HPLMN-Data                  OPTIONAL,
     extensionContainer                 ExtensionContainer              OPTIONAL,
     ...}
```

```
ODB-GeneralData ::= BIT STRING {
     allOG-CallsBarred  (0),
     internationalOGCallsBarred  (1),
     internationalOGCallsNotToHPLMN-CountryBarred  (2),
     interzonalOGCallsBarred (6),
     interzonalOGCallsNotToHPLMN-CountryBarred (7),
     interzonalOGCallsAndInternationalOGCallsNotToHPLMN-CountryBarred (8),
     premiumRateInformationOGCallsBarred  (3),
     premiumRateEntertainementOGCallsBarred  (4),
     ss-AccessBarred  (5),
     allECT-Barred (9),
     chargeableECT-Barred (10),
     internationalECT-Barred (11),
     interzonalECT-Barred (12),
     doublyChargeableECT-Barred (13),
     multipleECT-Barred (14)} (SIZE (15..32))
     -- exception handling: reception of unknown bit assignments in the
     -- ODB-GeneralData type shall be treated like unsupported ODB-GeneralData
```

```
ODB-HPLMN-Data ::= BIT STRING {
     plmn-SpecificBarringType1  (0),
     plmn-SpecificBarringType2  (1),
     plmn-SpecificBarringType3  (2),
     plmn-SpecificBarringType4  (3)} (SIZE (4..32))
     -- exception handling: reception of unknown bit assignments in the
     -- ODB-HPLMN-Data type shall be treated like unsupported ODB-HPLMN-Data
```

```
Ext-SS-InfoList ::= SEQUENCE SIZE (1..maxNumOfSS) OF
                                        Ext-SS-Info
```

```
Ext-SS-Info ::= CHOICE {
     forwardingInfo                     [0] Ext-ForwInfo,
     callBarringInfo                    [1] Ext-CallBarInfo,
     cug-Info                           [2] CUG-Info,
     ss-Data                            [3] Ext-SS-Data,
     emlpp-Info                         [4] EMLPP-Info}
```

```
Ext-ForwInfo ::= SEQUENCE {
     ss-Code                            SS-Code,
     forwardingFeatureList              Ext-ForwFeatureList,
     extensionContainer                 [0] ExtensionContainer          OPTIONAL,
     ...}
```

```
Ext-ForwFeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
                                        Ext-ForwFeature
```

```
Ext-ForwFeature ::= SEQUENCE {
     basicService                       Ext-BasicServiceCode            OPTIONAL,
     ss-Status [4] Ext-SS-Status,
     forwardedToNumber                  [5] ISDN-AddressString          OPTIONAL,
     -- When this data type is sent from an HLR which supports CAMEL Phase 2
     -- to a VLR that supports CAMEL Phase 2 the VLR shall not check the
     -- format of the number
     forwardedToSubaddress              [8] ISDN-SubaddressString       OPTIONAL,
     forwardingOptions                  [6] Ext-ForwOptions             OPTIONAL,
     noReplyConditionTime               [7] Ext-NoRepCondTime           OPTIONAL,
     extensionContainer                 [9] ExtensionContainer          OPTIONAL,
     ...}
```