

Source: TSG CN WG 2
Title: CRs to R99 Work Item CAMEL3, 29.078
Agenda item: 7.2
Document for: APPROVAL

Introduction:

This document contains **12** CRs on **R99** Work Item "**CAMEL3**", that have been agreed by **TSG CN WG2**, and are forwarded to TSG CN Plenary meeting #10 for approval.

SPEC	CR	REV	TDoc	PHASE	SUBJECT	CAT	OLD VER
29.078	118	3	N2-000559	R99	Correction on CAMEL CF and OR	F	3.5.0
29.078	119		N2-000459	R99	Correction of Cause and GPRSCause	F	3.5.0
29.078	121	1	N2-000519	R99	Correction to CAP3 GPRS-cause	F	3.5.0
29.078	122	2	N2-000551	R99	CAMEL3 removal of duplicate RAI	F	3.5.0
29.078	125	1	N2-000516	R99	Corrections of the stage 3 inconsistencies	F	3.5.0
29.078	126		N2-000508	R99	"ElapsedTime" ASN.1 Type Correction (in ACR-GPRS)	F	3.5.0
29.078	127	1	N2-000518	R99	CAMEL3 ASN.1 reserved word "ms" replacement by "mobile"	F	3.5.0
29.078	128	3	N2-000675	R99	Correction of Apply Charging Report parameter definition	F	3.5.0
29.078	130	1	N2-000644	R99	Addition of a parameter to indicate the SAI	F	3.5.0
29.078	131		N2-000605	R99	Correction of Apply Charging Report GPRS definition	F	3.5.0
29.078	135	1	N2-000653	R99	Introduction of GGSN Address	F	3.5.0
29.078	136	1	N2-000671	R99	Introduction of ellipsis for GPRS CAPv3	F	3.5.0

CHANGE REQUEST

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

29.078 CR 119

Current Version: **3.5.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **TSG CN#10**
list expected approval meeting # here ↑

for approval
for information

strategic
non-strategic (for SMG use only)

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

Source: Siemens

Date: 9 October 2000

Subject: Correction of Cause and GPRSCause

Work item: CAMEL Phase 3

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

F Correction
A Corresponds to a correction in an earlier release
B Addition of feature
C Functional modification of feature
D Editorial modification

Release:
Phase 2
Release 96
Release 97
Release 98
Release 99
Release 00

Reason for change:

Cause For unified treatment of the value of the minimum and the maximum length, the minimum length is proposed to be defined as "&minCauseLength".
GPRSCause For flexible handling for the future change, the minimum and the maximum length of this value are proposed to be defined as "&minGPRSCauseLength" and "&maxGPRSCauseLength" respectively.

Clauses affected:

Other specs affected:

Other 3G core specifications → List of CRs:
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:

***** First change in the clause 5.1 Data Types *****

```

Cause {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE(
  bound.&minCauseLength .. bound.&maxCauseLength))
-- Indicates the cause for interface related information.
-- Refer to ETS 300 356-1 [8] Cause parameter for encoding.
-- For the use of cause and location values refer to ITU-T Recommendation Q.850 [22]
-- Shall always include the cause value and shall also include the diagnostics field,
-- if available.

GPRSCause {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE(1-bound.&minGPRSCauseLength
  .. bound.&maxGPRSCauseLength))
-- Indicates the cause for interface related information.
-- Refer to 3G TS 29.060 [43] Cause parameter for encoding.
-- Shall only include the cause value.

```

***** Next change in the clause 5.1 Data Types *****

```

-- The Definition of range of constants follows
minCauseLength INTEGER ::= 2
numOfInfoItems INTEGER ::= 4

```

***** Next change in the clause 5.5 Classes *****

```

PARAMETERS-BOUND ::= CLASS
{
  &minAccessPointNameLength          INTEGER,
  &maxAccessPointNameLength          INTEGER,
  &minAChBillingChargingLength        INTEGER,
  &maxAChBillingChargingLength        INTEGER,
  &minAttributesLength                INTEGER,
  &maxAttributesLength                INTEGER,
  &maxBearerCapabilityLength          INTEGER,
  &minCalledPartyBCDNumberLength      INTEGER,
  &maxCalledPartyBCDNumberLength      INTEGER,
  &minCalledPartyNumberLength         INTEGER,
  &maxCalledPartyNumberLength         INTEGER,
  &minCallingPartyNumberLength        INTEGER,
  &maxCallingPartyNumberLength        INTEGER,
  &minCallResultLength                INTEGER,
  &maxCallResultLength                INTEGER,
  &minCarrierLength                   INTEGER,
  &maxCarrierLength                   INTEGER,
  &minCauseLength                     INTEGER,
  &maxCauseLength                     INTEGER,
  &minDigitsLength                    INTEGER,
  &maxDigitsLength                    INTEGER,
  &minFCIBillingChargingDataLength    INTEGER,
  &maxFCIBillingChargingDataLength    INTEGER,
  &minFCIBillingChargingLength        INTEGER,
  &maxFCIBillingChargingLength        INTEGER,
  &minGenericNumberLength             INTEGER,
  &maxGenericNumberLength             INTEGER,
  &minGPRSCauseLength                 INTEGER,
  &maxGPRSCauseLength                 INTEGER,
  &minIPSSPCapabilitiesLength         INTEGER,
  &maxIPSSPCapabilitiesLength         INTEGER,
  &minLocationNumberLength            INTEGER,
  &maxLocationNumberLength            INTEGER,
  &minMessageContentLength            INTEGER,
  &maxMessageContentLength            INTEGER,
  &minOriginalCalledPartyIDLength     INTEGER,
  &maxOriginalCalledPartyIDLength     INTEGER,
  &minPDPAddressLength                INTEGER,

```

```

&maxPDPAddressLength          INTEGER,
&minRedirectingPartyIDLength  INTEGER,
&maxRedirectingPartyIDLength  INTEGER,
&minScfIDLength               INTEGER,
&maxScfIDLength               INTEGER,
&minSCIBillingChargingLength  INTEGER,
&maxSCIBillingChargingLength  INTEGER,
&minTimeAndTimezoneLength     INTEGER,
&maxTimeAndTimezoneLength     INTEGER,
&numOfBCSMEvents              INTEGER,
&numOfSMSEvents               INTEGER,
&numOfGPRSEvents              INTEGER,
&numOfExtensions               INTEGER,
&numOfGenericNumbers           INTEGER,
&numOfMessageIDs               INTEGER
}

WITH SYNTAX
{
MINIMUM-FOR-ACCESS-POINT-NAME      &minAccessPointNameLength
MAXIMUM-FOR-ACCESS-POINT-NAME      &maxAccessPointNameLength
MINIMUM-FOR-ACH-BILLING-CHARGING    &minAChBillingChargingLength
MAXIMUM-FOR-ACH-BILLING-CHARGING    &maxAChBillingChargingLength
MINIMUM-FOR-ATTRIBUTES              &minAttributesLength
MAXIMUM-FOR-ATTRIBUTES              &maxAttributesLength
MAXIMUM-FOR-BEARER-CAPABILITY       &maxBearerCapabilityLength
MINIMUM-FOR-CALLED-PARTY-BCD-NUMBER &minCalledPartyBCDNumberLength
MAXIMUM-FOR-CALLED-PARTY-BCD-NUMBER &maxCalledPartyBCDNumberLength
MINIMUM-FOR-CALLED-PARTY-NUMBER     &minCalledPartyNumberLength
MAXIMUM-FOR-CALLED-PARTY-NUMBER     &maxCalledPartyNumberLength
MINIMUM-FOR-CALLING-PARTY-NUMBER    &minCallingPartyNumberLength
MAXIMUM-FOR-CALLING-PARTY-NUMBER    &maxCallingPartyNumberLength
MINIMUM-FOR-CALL-RESULT             &minCallResultLength
MAXIMUM-FOR-CALL-RESULT             &maxCallResultLength
MINIMUM-FOR-CARRIER                 &minCarrierLength
MAXIMUM-FOR-CARRIER                 &maxCarrierLength
MINIMUM-FOR-CAUSE                    &minCauseLength
MAXIMUM-FOR-CAUSE                    &maxCauseLength
MINIMUM-FOR-DIGITS                   &minDigitsLength
MAXIMUM-FOR-DIGITS                   &maxDigitsLength
MINIMUM-FOR-FCI-BILLING-CHARGING-DATA &minFCIBillingChargingDataLength
MAXIMUM-FOR-FCI-BILLING-CHARGING-DATA &maxFCIBillingChargingDataLength
MINIMUM-FOR-FCI-BILLING-CHARGING    &minFCIBillingChargingLength
MAXIMUM-FOR-FCI-BILLING-CHARGING    &maxFCIBillingChargingLength
MINIMUM-FOR-GENERIC-NUMBER           &minGenericNumberLength
MAXIMUM-FOR-GENERIC-NUMBER           &maxGenericNumberLength
MINIMUM-FOR-IP-SSP-CAPABILITIES     &minIPSSPCapabilitiesLength
MAXIMUM-FOR-IP-SSP-CAPABILITIES     &maxIPSSPCapabilitiesLength
MINIMUM-FOR-GPRS-CAUSE-LENGTH       &minGPRSCauseLength
MAXIMUM-FOR-GPRS-CAUSE-LENGTH       &maxGPRSCauseLength
MINIMUM-FOR-LOCATION-NUMBER           &minLocationNumberLength
MAXIMUM-FOR-LOCATION-NUMBER           &maxLocationNumberLength
MINIMUM-FOR-MESSAGE-CONTENT         &minMessageContentLength
MAXIMUM-FOR-MESSAGE-CONTENT         &maxMessageContentLength
MINIMUM-FOR-ORIGINAL-CALLED-PARTY-ID &minOriginalCalledPartyIDLength
MAXIMUM-FOR-ORIGINAL-CALLED-PARTY-ID &maxOriginalCalledPartyIDLength
MINIMUM-FOR-PDP-ADDRESS-LENGTH      &minPDPAddressLength
MAXIMUM-FOR-PDP-ADDRESS-LENGTH      &maxPDPAddressLength
MINIMUM-FOR-REDIRECTING-ID          &minRedirectingPartyIDLength
MAXIMUM-FOR-REDIRECTING-ID          &maxRedirectingPartyIDLength
MINIMUM-FOR-GSMSCF-ID               &minScfIDLength
MAXIMUM-FOR-GSMSCF-ID               &maxScfIDLength
MINIMUM-FOR-SCI-BILLING-CHARGING     &minSCIBillingChargingLength
MAXIMUM-FOR-SCI-BILLING-CHARGING     &maxSCIBillingChargingLength
MINIMUM-FOR-TIME-AND-TIMEZONE        &minTimeAndTimezoneLength
MAXIMUM-FOR-TIME-AND-TIMEZONE        &maxTimeAndTimezoneLength
NUM-OF-BCSM-EVENT                   &numOfBCSMEvents
NUM-OF-SMS-EVENTS                   &numOfSMSEvents
NUM-OF-GPRS-EVENTS                   &numOfGPRSEvents
NUM-OF-EXTENSIONS                     &numOfExtensions
NUM-OF-GENERIC-NUMBERS               &numOfGenericNumbers
NUM-OF-MESSAGE-IDS                   &numOfMessageIDs
}

capSpecificBoundSet PARAMETERS-BOUND ::=
{
MINIMUM-FOR-ACCESS-POINT-NAME      1
MAXIMUM-FOR-ACCESS-POINT-NAME      100
MINIMUM-FOR-ACH-BILLING-CHARGING    5
MAXIMUM-FOR-ACH-BILLING-CHARGING    177
MINIMUM-FOR-ATTRIBUTES              2
MAXIMUM-FOR-ATTRIBUTES              10
MAXIMUM-FOR-BEARER-CAPABILITY       11
MINIMUM-FOR-CALLED-PARTY-BCD-NUMBER 1
MAXIMUM-FOR-CALLED-PARTY-BCD-NUMBER 41
}

```

MINIMUM-FOR-CALLED-PARTY-NUMBER	3
MAXIMUM-FOR-CALLED-PARTY-NUMBER	18
MINIMUM-FOR-CALLING-PARTY-NUMBER	2
MAXIMUM-FOR-CALLING-PARTY-NUMBER	10
MINIMUM-FOR-CALL-RESULT	12
MAXIMUM-FOR-CALL-RESULT	186
MINIMUM-FOR-CARRIER	4
MAXIMUM-FOR-CARRIER	4
MINIMUM-FOR-CAUSE	2
MAXIMUM-FOR-CAUSE	32
MINIMUM-FOR-DIGITS	2
MAXIMUM-FOR-DIGITS	16
MINIMUM-FOR-FCI-BILLING-CHARGING-DATA	1
MAXIMUM-FOR-FCI-BILLING-CHARGING-DATA	160
MINIMUM-FOR-FCI-BILLING-CHARGING	5
MAXIMUM-FOR-FCI-BILLING-CHARGING	172
MINIMUM-FOR-GENERIC-NUMBER	3
MAXIMUM-FOR-GENERIC-NUMBER	11
MINIMUM-FOR-IP-SSP-CAPABILITIES	1
MAXIMUM-FOR-IP-SSP-CAPABILITIES	4
MINIMUM-FOR-GPRS-CAUSE-LENGTH	1
MAXIMUM-FOR-GPRS-CAUSE-LENGTH	1
MINIMUM-FOR-LOCATION-NUMBER	2
MAXIMUM-FOR-LOCATION-NUMBER	10
MINIMUM-FOR-MESSAGE-CONTENT	1
MAXIMUM-FOR-MESSAGE-CONTENT	127
MINIMUM-FOR-ORIGINAL-CALLED-PARTY-ID	2
MAXIMUM-FOR-ORIGINAL-CALLED-PARTY-ID	10
MINIMUM-FOR-PDP-ADDRESS-LENGTH	1
MAXIMUM-FOR-PDP-ADDRESS-LENGTH	63
MINIMUM-FOR-REDIRECTING-ID	2
MAXIMUM-FOR-REDIRECTING-ID	10
MINIMUM-FOR-GSMSCF-ID	2
MAXIMUM-FOR-GSMSCF-ID	10
MINIMUM-FOR-SCI-BILLING-CHARGING	4
MAXIMUM-FOR-SCI-BILLING-CHARGING	69
MINIMUM-FOR-TIME-AND-TIMEZONE	8
MAXIMUM-FOR-TIME-AND-TIMEZONE	8
NUM-OF-BCSM-EVENT	10
NUM-OF-SMS-EVENTS	10
NUM-OF-GPRS-EVENTS	10
NUM-OF-EXTENSIONS	10
NUM-OF-GENERIC-NUMBERS	5
NUM-OF-MESSAGE-IDS	16

}
END

*****Change in the clause 5.1 Data Types *****

```
ElapsedTime ::= CHOICE {
    timeGPRSIfNoTariffSwitch [0] INTEGER (0..86400),
    timeGPRSIfTariffSwitch [1] SEQUENCE {
        timeGPRSSinceLastTariffSwitch [0] INTEGER (0..86400),
        timeGPRSTariffSwitchInterval [1] INTEGER (0..86400) OPTIONAL
    }
}
-- timeGPRSIfNoTariffSwitch is measured in seconds
-- timeGPRSSinceLastTariffSwitch and timeGPRSTariffSwitchInterval are measured in seconds
```

*****Change in the clause 11.6 (style change)*****

11.6 ApplyChargingReportGPRS procedure

11.6.1 General description

This operation is used by the gprsSSF to report charging related information to the gsmSCF as requested by the gsmSCF using the ApplyChargingGPRS operation. A report shall be made either when a PDP context deactivation, Detach event or Change in QoS is detected by the gprsSSF or when the gprsSSF detects that the transferred volume or elapsed time duration indicated in parameter transferredVolume or elapsedTime (received in ApplyChargingGPRS operation) has been reached.

That sending of ApplyChargingReportGPRS shall only be made on chargeable QoS changes, i.e. normally upon MS initiated QoS changes.

The gprsSSF shall immediately restart timing duration and measuring transferred data for the GPRS Session or PDP Context for which the report was sent.

11.6.1.1 Parameters

- chargingResult:
This parameter provides the SCF with the charging related information previously requested using the ApplyChargingGPRS operation. The "ChargingResult" is a choice, and can contain either of the following parameters:
 - transferredVolume:
This is a choice of the following parameters:
 - volumeIfNoTariffSwitch:
This parameter will be present if no tariff switch has occurred since the detection of the event that triggered volume count (e.g. PDP context activation acknowledgement) occurred. If present, then the volume transferred since that event will be reported.
 - volumeIfTariffSwitch:
This parameter will be present if a tariff switch has occurred since the detection of the event that triggered volume count (e.g. PDP context establishment acknowledgement) occurred. If present then the parameter may contain the following information:
 - volumeSinceLastTariffSwitch:
The volume since the last tariffSwitch is reported.
 - VolumeTariffSwitchInterval:
This parameter is present only if a tariff switch was detected in the current volume count period. If present, the volume between either the detection the event that triggered volume count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch is reported.
- elapsedTime: CR editor's note: Style "B2"
This is a choice of the following parameters:
 - timeGPRSIfNoTariffSwitch: CR editor's note: Style "B3"
This parameter will be present if no tariff switch has occurred since the detection of the event that triggered time count (e.g. attach) occurred. If present then the elapsed time since that event will be reported.
 - timeGPRSIfTariffSwitch: CR editor's note: Style "B3"
This parameter will be present if a tariff switch has occurred since the detection of the event that triggered time count (e.g. attach) occurred. If present then the parameter may contain the following information:
 - timeGPRSSinceLastTariffSwitch: CR editor's note: Style "B4"
The time since the last tariffSwitch is reported.

- timeGPRSTariffSwitchInterval: CR editor's note: Style "B4"
This parameter is present only if a tariff switch was detected in the current time count period. If present, the time between either the detection the event that triggered time count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch is reported.
- qualityOfService:
This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN.
This parameter is only present when the sending of Apply Charging Report GPRS operation was triggered by a change in Quality of Service.
- active:
This parameter indicates whether the GPRS session or PDP context is still active
- pDPID:
This parameter, if present, identifies the PDP Context, within the Session dialogue, for which the charging report is valid.

6.1 gsmSSF/CCF - gsmSCF Interface

```

assistRequestInstructions {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      AssistRequestInstructionsArg {bound}
  RETURN RESULT FALSE
  ERRORS        {missingCustomerRecord |
                 missingParameter |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter}
  CODE          opcode-assistRequestInstructions
}
-- Direction: gsmSSF -> gsmSCF or gsmSRF -> gsmSCF, Timer: Tari
-- This operation is used when there is an assist or a hand-off procedure and may be
-- sent by the gsmSSF or gsmSRF to the gsmSCF. This operation is sent by the
-- assisting gsmSSF to gsmSCF, when the initiating gsmSSF has set up a connection to
-- the gsmSRF or to the assisting gsmSSF as a result of receiving an
-- EstablishTemporaryConnection or Connect operation (in the case of hand-off) from
-- the gsmSCF.
-- Refer to clause 11 for a description of the procedures associated with this operation.

AssistRequestInstructionsArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  correlationID      [0] CorrelationID {bound},
  iPSSPCapabilities [2] IPSSPCapabilities {bound},
  extensions         [3] SEQUENCE SIZE(1..bound.&numOfExtensions) OF ExtensionField {bound}
                        OPTIONAL,
  ...
}
-- OPTIONAL denotes network operator specific use. The value of the correlationID may be the
-- Called Party Number supplied by the initiating gsmSSF.

callInformationReport {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      CallInformationReportArg {bound}
  RETURN RESULT FALSE
  ALWAYS RESPONDS FALSE
  CODE          opcode-callInformationReport
}
-- Direction: gsmSSF -> gsmSCF, Timer: Tcirp
-- This operation is used to send specific call information for a single call party to the gsmSCF
as
-- requested by the gsmSCF in a previous CallInformationRequest.

CallInformationReportArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  requestedInformationList [0] RequestedInformationList {bound},
  extensions               [2] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                        ExtensionField {bound} OPTIONAL,
  legID                   [3] ReceivingSideID OPTIONAL,
  ...
}

callInformationRequest {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      CallInformationRequestArg {bound}
  RETURN RESULT FALSE
  ERRORS        {missingParameter |
                 parameterOutOfRange |
                 requestedInfoError |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter |
                 unknownLegID}
  CODE          opcode-callInformationRequest
}
-- Direction: gsmSCF -> gsmSSF, Timer: Tcirq
-- This operation is used to request the gsmSSF to record specific information about a single
-- call party and report it to the gsmSCF (with a CallInformationReport operation).

CallInformationRequestArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  requestedInformationTypeList [0] RequestedInformationTypeList {bound},
  extensions                   [2] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                        ExtensionField {bound} OPTIONAL,
  legID                       [3] SendingSideID
                        OPTIONAL,
  ...
}

```

-- OPTIONAL denotes network operator optional.

.

```
connect {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      ConnectArg {bound}
  RETURN RESULT FALSE
  ERRORS        {missingParameter |
                 parameterOutOfRange |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter}
  CODE          opcode-connect
}
```

-- Direction: gsmSCF-> gsmSSF, Timer: Tcon

-- This operation is used to request the gsmSSF to perform the call processing actions
 -- to route or forward a call to a specified destination. ~~To do so, the gsmSSF may or
 -- may not use destination information from the calling party (e.g. dialed digits),
 -- depending on the information provided by the gsmSCF.
 -- Call processing resumes at the Analyzed Information PIC in the O-BCSM.~~

```
ConnectArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  destinationRoutingAddress [0] DestinationRoutingAddress {bound},
  alertingPattern           [1] AlertingPattern                       OPTIONAL,
  originalCalledPartyID    [6] OriginalCalledPartyID {bound}        OPTIONAL,
  extensions                [10] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
      ExtensionField {bound} OPTIONAL,
  carrier                   [11] Carrier {bound}                   OPTIONAL,
  callingPartysCategory    [28] CallingPartysCategory              OPTIONAL,
  redirectingPartyID       [29] RedirectingPartyID {bound}          OPTIONAL,
  redirectionInformation    [30] RedirectionInformation             OPTIONAL,
  genericNumbers           [14] GenericNumbers {bound}             OPTIONAL,
  serviceInteractionIndicatorsTwo [15] ServiceInteractionIndicatorsTwo OPTIONAL,
  chargeNumber             [19] ChargeNumber {bound}               OPTIONAL,
  cug-Interlock            [31] CUG-Interlock                      OPTIONAL,
  cug-OutgoingAccess       [32] NULL                                OPTIONAL,
  suppressionOfAnnouncement [55] SuppressionOfAnnouncement         OPTIONAL,
  oCSIApplicable           [56] OCSIApplicable                     OPTIONAL,
  naOliInfo                [57] NAOliInfo                          OPTIONAL,
  ...
}
```

-- na-Info is included at the discretion of the gsmSCF operator.

```
connectToResource {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      ConnectToResourceArg {bound}
  RETURN RESULT FALSE
  ERRORS        {missingParameter |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter+
                 unknownLegID}
  CODE          opcode-connectToResource
}
```

-- Direction: gsmSCF -> gsmSSF, Timer: Tctr

-- This operation is used to connect a call from the ~~gsmSSFP~~ to the ~~physical entity
 -- containing the~~ gsmSRF.

-- Refer to clause 11 for a description of the procedures associated with this operation.

```
ConnectToResourceArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  resourceAddress CHOICE {
    ipRoutingAddress [0] IPRoutingAddress {bound},
    none             [3] NULL
  },
  extensions [4] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
      ExtensionField {bound} OPTIONAL,
  serviceInteractionIndicatorsTwo [7] ServiceInteractionIndicatorsTwo OPTIONAL,
  ...
}
```

.

```
establishTemporaryConnection {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      EstablishTemporaryConnectionArg {bound}
  RETURN RESULT FALSE
  ERRORS        {eTCFailed |
                 missingParameter |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter+
                 unknownLegID}
  CODE          opcode-establishTemporaryConnection
}
```

```

}
-- Direction: gsmSCF -> gsmSSF, Timer: Tetc
-- This operation is used to create a connection to a resource for a limited period
-- of time (e.g. to play an announcement, to collect user information); it implies
-- the use of the assist procedure. Refer to clause 11 for a description of the
-- procedures associated with this operation.

EstablishTemporaryConnectionArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  assistingSSPIPRoutingAddress [0] AssistingSSPIPRoutingAddress {bound},
  correlationID [1] CorrelationID {bound} OPTIONAL,
  scfID [3] ScfID {bound} OPTIONAL,
  extensions [4] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
    ExtensionField {bound} OPTIONAL,
  carrier [5] Carrier {bound} OPTIONAL,
  serviceInteractionIndicatorsTwo [6] ServiceInteractionIndicatorsTwo OPTIONAL,
  naOliInfo [50] NAOliInfo OPTIONAL,
  chargeNumber [51] ChargeNumber {bound} OPTIONAL,
  ...
}

```

**** NEXT MODIFIED SECTION ****
--

6.2.1 gsmSCF/gsmSRF operations and arguments

```
CAP-gsmSCF-gsmSRF-ops-args {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-gsmSCF-gsmSRF-ops-args(103) version3(2)}
```

```
DEFINITIONS IMPLICIT TAGS ::= BEGIN
```

```
-- This module contains the operations and operation arguments used for the
-- gsmSRF - gsmSCF interface, for the control of circuit switched calls.

-- The table in section 2.1 lists the specifications that contain the modules
-- that are used by CAP.
```

```
IMPORTS
```

```
OPERATION
FROM Remote-Operations-Information-Objects ros-InformationObjects
```

```
opcode-playAnnouncement,
opcode-promptAndCollectUserInformation,
opcode-specializedResourceReport
FROM CAP-operationcodes operationcodes
```

```
CollectedInfo,
Digits {},
ExtensionField {},
InformationToSend {};
SendingSideID
FROM CAP-datatypes datatypes
```

**** NEXT MODIFIED SECTION ****

10.1.5 MissingCustomerRecord

10.1.5.1 General description

10.1.5.1.1 Error description

This error is sent by the gsmSCF to the gsmSSF, gprsSSF or the gsmSRF, if the SLP could not be found in the gsmSCF, because the required customer record does not exist, or the requested SLPI, indicated by the correlationID in "AssistRequestInstructions" does not exist anymore.

10.1.5.2 Operations gsmSSF→gsmSCF

AssistRequestInstructions

InitialDP

Procedures at invoking entity (gsmSSF)

A) Sending Operation

Precondition:	gsmSSF FSM state	Trigger processing or
	gsmSSF FSM state	Waiting for Instructions; in <u>the assistingSSP</u> case of assist/hand off .
Postcondition:	gsmSSF FSM state	Waiting for Instructions.
	gsmSSF FSM state	Waiting for Instructions; in <u>the assistingSSP</u> case of assist/hand off .

B) gsmSSF receives Error"MissingCustomerRecord"

Precondition:	gsmSSF FSM state	Waiting for Instructions or
	gsmSSF FSM state	Waiting for Instructions; in <u>the assistingSSP</u> case of assist/hand off .
Postcondition:	gsmSSF FSM state	Idle or
	gsmSSF FSM state	Idle; in <u>the assistingSSP</u> case of assist/hand off .

The GMSC/VMSC handles the call according to the Default Call Handling parameter of the valid CSI.

10.1.5.3 Operations gsmSRF→gsmSCF

AssistRequestInstructions

Procedures at invoking entity (gsmSRF)

A) Sending Operation

Precondition:	SRSM state	Connected.
Postcondition:	SRSM state	Connected.

B) gsmSRF receives Error"MissingCustomerRecord"

Precondition:	SRSM state	Connected.
Postcondition:	SRSM state	Idle.

gsmSRF initiated Disconnect.

10.1.5.4 Operations gprsSSF/gsmSSF→gsmSCF

SMS Related

InitialDPSMS

Procedures at invoking entity (gprsSSF/gsmSSF)

A) Sending Operation

Precondition: gprsSSF/gsmSSF state Waiting for Instructions.

Postcondition: gprsSSF/gsmSSF state Waiting for Instructions.

B) gprsSSF/gsmSSF receives Error"MissingCustomerRecord"

Precondition: gprsSSF/gsmSSF state Waiting for Instructions.

Postcondition: gprsSSF/gsmSSF state Idle.

10.1.5.5 Operations gprsSSF→gsmSCF

GPRS Related

InitialDPGPRS

Procedures at invoking entity (gprsSSF)

A) Sending Operation

Precondition: gprsSSF state Waiting for Instructions.

Postcondition: gprsSSF state Waiting for Instructions.

B) gprsSSF receives Error"MissingCustomerRecord"

Precondition: gprsSSF state Waiting for Instructions.

Postcondition: gprsSSF state Idle.

**** NEXT MODIFIED SECTION ****

10.1.15 UnknownLegID

10.1.15.1 General description

10.1.15.1.1 Error description

This error is used to indicate to the gsmSCF that a specific leg, indicated by the LegID parameter value in the operation, is unknown to the gsmSSF.

10.1.15.2 Operations gsmSCF→gsmSSF

Call Associated/Non Call Processing

ApplyCharging

CallInformationRequest

RequestReportBCSMEEvent

SendChargingInformation

~~Call Associated/Call Processing~~

~~ConnectToResource~~

~~EstablishTemporaryConnection~~

Refer to subclause 10.1.6 MissingParameter for the appropriate error procedures.

**** NEXT MODIFIED SECTION ****

11.8 CallGap procedure

11.8.1 General description

This operation is used to request the gsmSSF to reduce the rate at which specific service requests are sent to the gsmSCF. For CAMEL, this operation could be sent only on a dialogue that has been opened by the SSF by an InitialDP operation.

11.8.1.1 Parameters

- gapCriteria:
This parameter identifies the criteria for a call to be subject to call gapping. It consists of the following alternatives: basicGapCriteria or compoundGapCriteria:
 - basicGapCriteria:
This parameter consists of:
 - calledAddressValue:
This parameter indicates that call gapping shall be applied when the leading digits of the dialled number of a call attempt match those specified in "gapCriteria". The called address is the one received from the current call control.
 - gapOnService:
This parameter indicates that call gapping shall be applied when the "servicekey" of a call attempt match those specified in "gapCriteria".
 - calledAddressAndService:
This parameter indicates that call gapping shall be applied when the "serviceKey" and the leading digits of the dialled number of a call attempt match those specified in "gapCriteria". The called address is the one received from the current call control.
 - callingAddressAndService:
This parameter indicates that call gapping shall be applied when the "serviceKey" and the leading digits of the calling party number of a call attempt match those specified in "gapCriteria". In the case of call forwarding the calling address to be gapped is the redirecting number which would be put in the Initial DP operation.
 - compoundGapCriteria:
This parameter consists of the following subparameters:
 - basicGapCriteria:
This parameter is as described above.
 - scfID:
The means of identification of an gsmSCF. The scfID is to convey the necessary gsmSCF address information (e.g. Global Title) in the network to the requesting SSF. See Q.713 "calling party address" parameter. The network operator has to decide about the actual mapping of this parameter on the used signalling system.
This parameter indicates the address of the gsmSCF, which initiated the call gapping.
When ScfID is used in an operation, which may cross an internetwork boundary, its encoding must be understood in both networks; this requires bilateral agreement on the encoding. If this parameter is not available the call gapping is not dedicated to a specific gsmSCF.
This subparameter is restricted to include a fixed GT address string.
Note: In the case where the GT addresses more than one SCP (e.g. a mated pair) then if one of these physical SCPs enters overload conditions and issues CallGap, then it is applied to all of them.
- gapIndicators:
This parameter indicates the gapping characteristics.

- duration:
Duration specifies the total time interval during which call gapping for the specified gap criteria will be active.
A duration of 0 indicates that gapping is to be removed.
A duration of -2 indicates a network specific duration.
Other values indicate duration in seconds. A duration of -1 shall not be used.
- gapInterval:
This parameter specifies the minimum time between calls being allowed through.
An interval of 0 indicates that calls meeting the gap criteria are not to be rejected.
An interval of -1 indicates that all calls meeting the gap criteria are to be rejected.
Other values indicate interval in milliseconds.
- controlType:
This parameter indicates the reason for activating call gapping.
The "controlType" value "sCPOverloaded" indicates that an automatic congestion detection and control mechanism in the SCP has detected a congestion situation.
The "controlType" value "manuallyInitiated" indicates that the service and or network/service management centre has detected a congestion situation, or any other situation that requires manually initiated controls.

NOTE: The controlType 'manuallyInitiated' will have priority over 'sCPOverloaded' call gap. It should be noted that also non-IN controlled traffic control mechanism can apply to an exchange with the SSF functionality. The non-IN controlled traffic control may also have some influence to the IN call. Therefore it is recommended to take measures to co-ordinate several traffic control mechanisms. The non-IN controlled traffic control and co-ordination of several traffic control mechanisms are out of the scope of INAP.
- gapTreatment:
This parameter indicates how calls that were stopped by the call gapping mechanism shall be treated.
- informationToSend:
~~(This Information Element is inherited from Play Announcement operation, only a subset is required for the Call Gap operation)~~
This parameter indicates an announcement, ~~or~~ a tone ~~or display information~~ to be sent to the calling party. At the end of information sending, the call shall be released.
- inbandInfo:
This parameter specifies the inband information to be sent.
- messageID:
This parameter indicates the message(s) to be sent, it can be one of the following:
 - elementaryMessageID:
This parameter indicates a single announcement.
 - duration:
This parameter indicates the maximum time duration in seconds that the message shall be played/repeated. ZERO indicates endless repetition.
- tone:
This parameter specifies a tone to be sent to the end-user.
- toneID:
This parameter indicates the tone to be sent.
 - duration:
This parameter indicates the time duration in seconds of the tone to be sent. ZERO indicates infinite duration.

- releaseCause:
If the call is to be released, this parameter indicates a specific cause value to be sent in the release message.
See EN 300 356-1 [8]

***** End of Document *****

5 Common CAP Types

5.1 Data types

....

```
InitiatingEntity ::= ENUMERATED {  
|   mmsmobileStation (0),  
   sgsn (1),  
   hlr (2),  
   ggsn (3)  
}
```

CHANGE REQUEST

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

29.078 CR 121r1

Current Version: **3.5.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **TSG CN#10**
list expected approval meeting # here ↑

for approval
for information

strategic (for SMG use only)
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

Source:

Nokia

Date:

17th Sep 2000

Subject:

Correction to CAP3 GPRS-cause

Work item:

CAMEL phase 3

Category:

(only one category shall be marked with an X)

F Correction
A Corresponds to a correction in an earlier release
B Addition of feature
C Functional modification of feature
D Editorial modification

Release:

Phase 2	<input type="checkbox"/>
Release 96	<input type="checkbox"/>
Release 97	<input type="checkbox"/>
Release 98	<input type="checkbox"/>
Release 99	<input checked="" type="checkbox"/>
Release 00	<input type="checkbox"/>

Reason for change:

The GPRS-cause in ReleaseGPRS and EntityReleaseGPRS CAP operations should not be the "cause" parameter of the GTP. The GTP cause is used to indicate type of the request, it is not always the reason for PDPc disconnection/failure. Some GTP causes have two values, one for request and one for response, e.g. *MS refuses*. In addition, GTP causes are not applicable to GPRS detach, they apply only to PDP context. When the SGSN releases towards the GGSN, the GTP_delete_PDP_context_request has no cause field. The SGSN can also release PDP context also because of an internal reason, or due to HLR location cancel.

Clauses affected:

Other specs affected:

Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
MS test specifications	<input type="checkbox"/>	→ List of CRs:	
BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
O&M specifications	<input type="checkbox"/>	→ List of CRs:	

Other comments:

The cause code mapping to 24.008 reason codes towards the MS shall not be specified in CAP. Nokia proposes a lightweight specification work. The use of GMM and SM causes must be studied carefully by the SGSN vendor since some causes prevent retrials, some forces to retrial, and some causes are specified vague.

The following is a copy-paste from the 29.060, the GTP cause description. The causes are used in e.g. Create_Request and Create_Response operations:

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.

'IMSI 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) are indications of abnormal cases involving TFTs. The abnormal TFT cases and the use of the cause codes are defined in 3G 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.

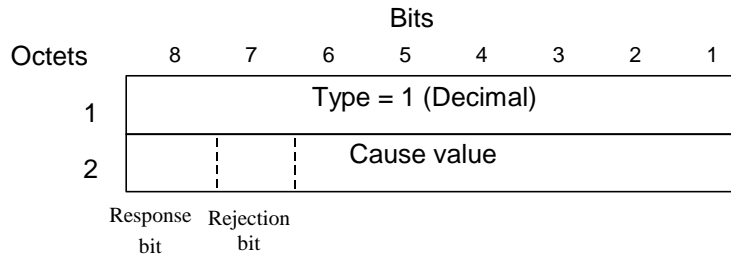


Figure 9: Cause information element

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
		Version not supported	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		
For future use	221-240		
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.

The following is a copy-paste from the 3G TS 24.008. The GMM cause values are used for GPRS mobility management purposes.

Table 10.5.147/TS 24.008: GMM cause information element

Cause value (octet 2)								
Bits								
8	7	6	5	4	3	2	1	
0	0	0	0	0	0	1	0	IMSI unknown in HLR
0	0	0	0	0	0	1	1	Illegal MS
0	0	0	0	0	1	1	0	Illegal ME
0	0	0	0	0	1	1	1	GPRS services not allowed
0	0	0	0	1	0	0	0	GPRS services and non-GPRS services not allowed
0	0	0	0	1	0	0	1	MS identity cannot be derived by the network
0	0	0	0	1	0	1	0	Implicitly detached
0	0	0	0	1	0	1	1	PLMN not allowed
0	0	0	0	1	1	0	0	Location Area not allowed
0	0	0	0	1	1	0	1	Roaming not allowed in this location area
0	0	0	1	0	0	0	0	MSC temporarily not reachable
0	0	0	1	0	0	0	1	Network failure
0	0	0	1	0	1	0	0	MAC failure
0	0	0	1	0	1	0	1	Synch failure
0	0	0	1	0	1	1	0	Congestion
0	0	1	0	1	0	0	0	No PDP context activated
0	0	1	1	0	0	0	0	}
			to					}
0	0	1	1	1	1	1	1	}
0	1	0	1	1	1	1	1	Semantically incorrect message
0	1	1	0	0	0	0	0	Invalid mandatory information
0	1	1	0	0	0	0	1	Message type non-existent or not implemented
0	1	1	0	0	0	1	0	Message type not compatible with the protocol state
0	1	1	0	0	0	1	1	Information element non-existent or not implemented
0	1	1	0	0	1	0	0	Conditional IE error
0	1	1	0	0	1	0	1	Message not compatible with the protocol state
0	1	1	0	1	1	1	1	Protocol error, unspecified

Any other value received by the mobile station shall be treated as 0110 1111, 'Protocol error, unspecified'. Any other value received by the network shall be treated as 0110 1111, 'Protocol error, unspecified'.

NOTE: The listed reject cause values are defined in Annex G.

The SM cause values are used for PDP context purposes.

Table 10.5.157/TS 24.008: SM cause information element

Cause value (octet 2)	
Bits	
8	7 6 5 4 3 2 1
00011001	LLC or SNDCP failure(GSM only)
00011010	Insufficient resources
00011011	Missing or unknown APN
00011100	Unknown PDP address or PDP type
00011101	User Authentication failed
00011110	Activation rejected by GGSN
00011111	Activation rejected, unspecified
00100000	Service option not supported
00100001	Requested service option not subscribed
00100010	Service option temporarily out of order
00100011	NSAPI already used (not sent)
00100100	Regular deactivation
00100101	QoS not accepted
00100110	Network failure
00100111	Reactivation required
00101001	Semantic error in the TFT operation
00101010	Syntactical error in the TFT operation
00101011	Unknown PDP context
00101110	PDP context without TFT already activated
00101100	Semantic errors in packet filter(s)
00101101	Syntactical errors in packet filter(s)
01010001	Invalid transaction identifier value
01011111	Semantically incorrect message
01100000	Invalid mandatory information
01100001	Message type non-existent or not implemented
01100010	Message type not compatible with the protocol state
01100011	Information element non-existent or not implemented
01100100	Conditional IE error
01100101	Message not compatible with the protocol state
01101111	Protocol error, unspecified

Any other value received by the mobile station shall be treated as 0010 0010, 'Service option temporarily out of order'. Any other value received by the network shall be treated as 0110 1111, 'Protocol error, unspecified'.

NOTE: The listed cause values are defined in Annex I

****** FIRST and LAST MODIFIED SECTION 5.1 ******

```
GPRSCause {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE(1
))
-- 00000000 Unspecified
-- All other values shall be interpreted as "Unspecified".
--
-- This parameter indicates the cause for CAP interface related information.
-- The GPRSCause mapping to/from GTP cause values specified in the 3G TS 29.060 and
-- to/from 3G TS 24.008 GMM cause and SM cause values are outside scope of this document.
-- Refer to 3G TS 29.060 [43] Cause parameter for encoding.
```


**** FIRST MODIFIED SECTION ****

5 Common CAP Types

5.1 Data types

```

LocationInformationGPRS ::= SEQUENCE {
    cellGlobalIdOrServiceAreaIdOrLAI [0] OCTET STRING (SIZE(5..7)) OPTIONAL,
    routingAreaIdentity [1] OCTET STRING (SIZE(5..7)) RAIdentity OPTIONAL,
    geographicalInformation [2] OCTET STRING (SIZE (8)) OPTIONAL,
    sgsn-Number [3] ISDN-AddressString OPTIONAL,
    selectedLSAIdentity [4] LSAIdentity OPTIONAL,
    extensionContainer [5] ExtensionContainer OPTIONAL,
    ...
}
-- CellGlobalIdOrServiceAreaIdOrLAI and LSAIdentity are coded in accordance with
-- 3G TS 29.002 [13].
-- RoutingAreaIdentity is coded in accordance with 3G TS 29.060 [43].
-- RoutingAreaCode is coded in accordance with 3G TS 23.003 [49].
-- GeographicalInformation refers to geographical Information as defined
-- in 3G TS 23.032 [44].
. . .

RAIdentity ::= OCTET STRING (SIZE (7))
-- Routing Area Identity coded according to 3G TS 29.060 [43].
. . .

```

**** NEXT MODIFIED SECTION ****

8 GPRS Control

8.1 gsmSCF/gprsSSF operations and arguments

.....

```

InitialDPGPRSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    serviceKey                [0] ServiceKey,
    gPRSEventType             [1] GPRSEventType,
    mSISDN                    [2] ISDN-AddressString,
    iMSI                      [3] IMSI,
    timeAndTimezone           [4] TimeAndTimezone {bound},
    gPRSMSCClass              [5] GPRSMSCClass                OPTIONAL,
    pDPType                   [6] PDPTYPE                    OPTIONAL,
    qualityOfService          [7] QualityOfService            OPTIONAL,
    accessPointName           [8] AccessPointName{bound}      OPTIONAL,
    routingAreaIdentity       [9] RAIdentity                  OPTIONAL,

    chargingID                [10] GPRSChargingID             OPTIONAL,
    sGSNCapabilities          [11] SGSNCapabilities           OPTIONAL,
    locationInformationGPRS    [12] LocationInformationGPRS    OPTIONAL,
    pDPInitiationType         [13] PDPInitiationType          OPTIONAL,
    extensions                 [14] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                ExtensionField {bound}        OPTIONAL,
    ...
}

```

```

-- The RoutingAreaIdentity parameter is not used.
-- The receiving entity shall ignore RoutingAreaIdentity if received.
-- The RoutingAreaIdentity is conveyed in the LocationInformationGPRS parameter.

```


Reason for change:

The description on the charging constraints between the basic optimal routing and the call forwarding in 23.079 (chapter 9.1) provides the criteria to perform the optimal routing. If none of the criteria met, no optimal routing is done (use the reference address instead).

This means the CAMEL interaction shall end and the dialogue between the gsmSSF and the gsmSCF shall also be terminated.

The latest specifications fail the above handling.

Example

Starting at the procedure Obtain_Routing_address (23.018) and assume that the procedure CAMEL_MT_GMSC_INIT (23.078) delivers the result "CAMEL_FTN", the problem occurs if DP T_Busy is armed as EDP-N, then;

- (1) the procedure Route_Permitted (23.079) delivers the output "False",
- (2) the procedure Obtains_Routing_Address (23.018) calls CAMEL_MT_GMSC_DISC4.
- (3) the procedure CAMEL_MT_GMSC_DISC4 sends Int_DP_T_Busy.
- (4) the process gsmSSF sends CAP_EventReportBCSM (T_Busy, interrupted) to the gsmSCF,
- (5) the gsmSCF may send any operation to the gsmSSF.
- (6) no matter what the destination address, if any, in the previous operation, the procedure Obtains_Routing_Address (23.018) ignores it.

(6) is ok, but the dialogue between the gsmSSF and the gsmSCF is still alive.

Especially after the step (4) the gsmSCF may try another number to connect and arm a DP, because the gsmSCF does not know no more CF is permitted.

To solve this problem, the series of CR propose;

- | | |
|--------|---|
| 23.078 | set additional IE, RouteNotPermitted, in Event Specific Information BCSM for T_Busy to indicate that the call forward shall be cancelled. |
| 29.078 | corresponding stage 3 |

First modified section in 5.1

```

EventSpecificInformationBCSM {PARAMETERS-BOUND : bound} ::= CHOICE {
  routeSelectFailureSpecificInfo [2] SEQUENCE {
    failureCause [0] Cause {bound} OPTIONAL,
    ...
  },
  oCalledPartyBusySpecificInfo [3] SEQUENCE {
    busyCause [0] Cause {bound} OPTIONAL,
    ...
  },
  oNoAnswerSpecificInfo [4] SEQUENCE {
    -- no specific info defined --
    ...
  },
  oAnswerSpecificInfo [5] SEQUENCE {
    destinationAddress [50] CalledPartyNumber {bound} OPTIONAL,
    or-Call [51] NULL OPTIONAL,
    forwardedCall [52] NULL OPTIONAL,
    ...
  },
  oDisconnectSpecificInfo [7] SEQUENCE {
    releaseCause [0] Cause {bound} OPTIONAL,
    ...
  },
  tBusySpecificInfo [8] SEQUENCE {
    busyCause [0] Cause {bound} OPTIONAL,
    callForwarded [50] NULL OPTIONAL,
    routeNotPermitted [51] NULL OPTIONAL,
    ...
  },
  tNoAnswerSpecificInfo [9] SEQUENCE {
    callForwarded [50] NULL OPTIONAL,
    ...
  },
  tAnswerSpecificInfo [10] SEQUENCE {
    destinationAddress [50] CalledPartyNumber {bound} OPTIONAL,
    or-Call [51] NULL OPTIONAL,
    forwardedCall [52] NULL OPTIONAL,
    ...
  },
  tDisconnectSpecificInfo [12] SEQUENCE {
    releaseCause [0] Cause {bound} OPTIONAL,
    ...
  }
}
-- Indicates the call related information specific to the event.

```

Next modified section in 11.24

11.24 EventReportBCSM procedure

11.24.1 General description

This operation is used to notify the gsmSCF of a call related event previously requested by the gsmSCF in a "RequestReportBCSMEvent" operation. The monitoring of more than one event could be requested with a "RequestReportBCSMEvent" operation, but each of these requested events is reported in a separate "EventReportBCSM" operation.

11.24.1.1 Parameters

- eventTypeBCSM:
This parameter specifies the type of event that is reported.
- eventSpecificInformationBCSM:
This parameter indicates the call related information specific to the event.

For "RouteSelectFailure" it will contain the "FailureCause", if available.

For "O-Busy" it will contain the "BusyCause", if available.

If the busy event is triggered by an ISUP release message, the BusyCause is a copy of the ISUP release cause, for example: Subscriber absent, 20 or User busy, 17.

If the Busy event is triggered by a MAP error, for example: Absent subscriber, received from the HLR, the MAP cause is mapped to the corresponding ISUP release cause.

NOTE 1: If no BusyCause is received, the gsmSCF shall assume busy.

For "T-Busy" it ~~may will~~ contain the following parameters "BusyCause", if available.

- CallForwarded
This parameter indicates that if the T-busy event is triggered by call forwarding at the GMSC/VMSC, the eventSpecificInformationBCSM will contain the CallForwarded indication.
- RouteNotPermitted
This parameter indicates that the T-busy event is triggered because call forwarding was not invoked in this GMSC due to the rules of basic optimal routingRoutePermitted indication.
- BusyCause
 - If the T-busy event is triggered by an ISUP release message, the BusyCause is a copy of the ISUP release cause, for example: Subscriber absent, 20 or User busy, 17.
 - If the T-bBusy event is triggered by a MAP error, for example: Absent subscriber, received from the HLR, the MAP cause is mapped to the corresponding ISUP release cause.
 - If the T-busy event is triggered by call forwarding invocation in the GMSC/VMSC the BusyCause will refer to the type of the call forwarding service according to the mapping table in 3G TS 23.078.

NOTE 2: If no BusyCause is received, the gsmSCF shall assume busy.

If the busy event is triggered by call forwarding at the GMSC, the BusyCause reflects the forwarding reason (Subscriber Absent, 20 or User busy, 17). The eventSpecificInformationBCSM will also contain the CallForwarded indication.

For O-NoAnswer it will be empty.

For T-NoAnswer it may contain the CallForwarded indication.

If the no answer event is triggered by an ISUP release message or expiry of the CAMEL timer TNRY, the eventSpecificInformationBCSM will be empty.

If the no answer event is triggered by call forwarding at the GMSC/VMSC, the eventSpecificInformationBCSM will contain the CallForwarded indication.

For O- or T-Answer it will contain the following information:

- The destination address for the call;
- The OR indicator if the call was subject to basic optimal routing as specified in 3G TS 23.079;
- The forwarding indicator if the Call Forwarding Supplementary Service was invoked.
- For O- or T-Disconnect it will contain the "releaseCause", if available.
- legID:
This parameter indicates the party in the call for which the event is reported. gsmSSF will use the option "ReceivingSideID" only.
- receivingSideID:
If not included, the following defaults are assumed:

"legID" = 1 for the events O-Abandon and T-Abandon,

"legID" = 2 for the events RouteSelectFailure, O-Busy, O-NoAnswer, O-Answer, T-Busy, T-NoAnswer, and T-Answer.

The "legID" parameter shall always be included for the events O-Disconnect and T-Disconnect.
- miscCallInfo:
This parameter indicates Detection Point (DP) related information.
- messageType:
This parameter indicates whether the message is a request, i.e. resulting from a "RequestReportBCSMEvent" with monitorMode = interrupted, or a notification, i.e. resulting from a "RequestReportBCSMEvent" with "monitorMode" = "notifyAndContinue".

CHANGE REQUEST

⌘ **29.078 CR 131** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Correction of Apply Charging Report GPRS definition		
Source:	⌘ T-Mobil		
Work item code:	⌘ CAMEL3	Date:	⌘ 09.11.00
Category:	⌘ F	Release:	⌘ R99
<p>Use <u>one</u> of the following categories:</p> <p>F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)</p>	

Reason for change:	⌘ The events that may trigger start of time or volume count are not clearly specified. Current definition of the ACR GPRS parameters does not cover the scenario where a tariff switch occurs before the event that triggers time or volume count.
Summary of change:	⌘ Definition of events that may trigger time and volume count is introduced. The definition of the parameters of the ACR GPRS are modified to cope with the scenario where an early tariff switch was detected.
Consequences if not approved:	⌘ Pre Paid Services using AC/ACR will apply in certain scenarios the wrong tariff for cost calculation.

Clauses affected:	⌘ 11.6.1		
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
Other comments:	⌘		

11.6 ApplyChargingReportGPRS procedure

11.6.1 General description

This operation is used by the gprsSSF to report charging related information to the gsmSCF as requested by the gsmSCF using the ApplyChargingGPRS operation.

~~Timing of duration and measuring of transferred data (if applicable) shall be started when either an Attach event, PDP context activation acknowledgement or an Inter SGSN routing area update acceptance is detected by the gprsSSF.~~

A report shall be made either when a PDP context deactivation, Detach event or Change in QoS is detected by the gprsSSF or when the gprsSSF detects that the transferred volume or elapsed time duration indicated in parameter transferredVolume or elapsedTime (received in ApplyChargingGPRS operation) has been reached.

That sending of ApplyChargingReportGPRS shall only be made on chargeable QoS changes, ~~i.e. normally upon MS initiated QoS changes.~~

~~The gprsSSF shall immediately restart timing duration and measuring transferred data for the GPRS Session or PDP Context for which the report was sent.~~

11.6.1.1 Parameters

- chargingResult:

This parameter provides the SCF with the charging related information previously requested using the ApplyChargingGPRS operation. The "ChargingResult" is a choice, and can contain either of the following parameters:

- transferredVolume:

This is a choice of the following parameters:

- volumeIfNoTariffSwitch:

This parameter will be present- if no tariff switch has occurred ~~for the PDP context, since the detection of the event that triggered volume count (e.g. PDP context activation acknowledgement) occurred otherwise it will be absent.~~ If present, then the volume transferred since ~~the detection of the event that triggered volume count event~~ will be reported.

- volumeIfTariffSwitch:

This parameter will be present- if a tariff switch has occurred ~~for the PDP context, since the detection of the event that triggered volume count (e.g. PDP context establishment acknowledgement) occurred otherwise it will be absent.~~ If present then the parameter may contain the following information:

- volumeSinceLastTariffSwitch:

The volume since the ~~detection of the event that triggered volume count or the~~ last tariffSwitch ~~(whichever of these events was last detected)~~ is reported.

- VolumeTariffSwitchInterval:

This parameter is present only if a tariff switch was detected ~~after the event that triggered volume count for the PDP context~~ in the current volume count period. If present, the volume between either the detection the event that triggered volume count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch is reported.

- elapsedTime:

This is a choice of the following parameters:

- timeGPRSIfNoTariffSwitch:

This parameter will be present- if no tariff switch has occurred ~~for the session or the PDP context, otherwise it will be absent~~ since the detection of the event that triggered time count (e.g. attach) occurred. If present then the elapsed time since the ~~detection of at the event that triggered time count~~ will be reported.

- timeGPRSIfTariffSwitch:

This parameter will be present- if a tariff switch has occurred ~~for the session or the PDP context, otherwise it will be absent~~ since the detection of the event that triggered time count (e.g. attach) occurred. If present then the parameter may contain the following information:

- timeGPRSSinceLastTariffSwitch:
The time since the event that triggered time count or the last tariffSwitch is reported.
- timeGPRSTariffSwitchInterval:
This parameter is present only if a tariff switch was detected after the event that triggered time count for the session or PDP context in the current time count period. If present, the time between either the detection the event that triggered time count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch is reported.
- qualityOfService:
This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN.
This parameter is only present when the sending of Apply Charging Report GPRS operation was triggered by a change in Quality of Service.
- active:
This parameter indicates whether the GPRS session or PDP context is still active
- pDPID:
This parameter, if present, identifies the PDP Context, within the Session dialogue, for which the charging report is valid.

Definition of LocationInformation in 29.002 for information

```

LocationInformation ::= SEQUENCE {
    ageOfLocationInformation      AgeOfLocationInformation      OPTIONAL,
    geographicalInformation       [0] GeographicalInformation    OPTIONAL,
    vlr-number                    [1] ISDN-AddressString        OPTIONAL,
    locationNumber                [2] LocationNumber            OPTIONAL,
    cellGlobalIdOrServiceAreaIdOrLAI [3] CellGlobalIdOrServiceAreaIdOrLAI OPTIONAL,
    extensionContainer            [4] ExtensionContainer        OPTIONAL,
    ... ,
    selectedLSA-Id                [5] LSAIdentity                OPTIONAL,
    msc-Number                    [6] ISDN-AddressString        OPTIONAL,
    geodeticInformation           [7] GeodeticInformation      OPTIONAL,
    currentLocationRetrieved      [8] NULL                      OPTIONAL,
    sai-Present                   [9] NULL                      OPTIONAL }
-- sai-Present indicates that the cellGlobalIdOrServiceAreaIdOrLAI parameter contains
-- a Service Area Identity.
-- currentLocationRetrieved shall be present
-- if the location information were retrieved after a successfull paging.

```

Proposed change in “5.1 Data types”

```

LocationInformationGPRS ::= SEQUENCE {
    cellGlobalIdOrServiceAreaIdOrLAI [0] OCTET STRING (SIZE(5..7)) OPTIONAL,
    routingAreaIdentity               [1] OCTET STRING (SIZE(5..7)) OPTIONAL,
    geographicalInformation             [2] OCTET STRING (SIZE (8))   OPTIONAL,
    sgsn-Number                       [3] ISDN-AddressString    OPTIONAL,
    selectedLSAIdentity                [4] LSAIdentity          OPTIONAL,
    extensionContainer                 [5] ExtensionContainer    OPTIONAL,
    ... ,
    sai-Present                       [6] NULL                      OPTIONAL
}
-- CellGlobalIdOrServiceAreaIdOrLAI and LSAIdentity are coded in accordance with
-- 3GPP TS 29.002 [13].
-- RouteinAreaIdentity is coded in accordance with 3GPP TS 29.060 [43].
-- RoutingAreaCode is coded in accordance with 3GPP TS 23.003 [49].
-- GeographicalInformation refers to geographical Information as defined
-- in 3GPP TS 23.032 [44].
-- sai-Present indicates that the cellGlobalIdOrServiceAreaIdOrLAI parameter contains
-- a Service Area Identity.

```

CHANGE REQUEST

⌘ **29.078 CR 135** ⌘ rev **1** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Introduction of GGSN Address		
Source:	⌘ T-Mobil		
Work item code:	⌘ CAMEL3	Date:	⌘ 14-Nov-00
Category:	⌘ F	Release:	⌘ R99
<p>Use <u>one</u> of the following categories:</p> <p>F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)</p>	

Reason for change:	⌘ The Charging ID is only unique together with the Address of the corresponding GGSN. The CAP 3 operations Initial DP GPRS and Event Report GPRS contain the charging ID but not the GGSN Address.
Summary of change:	⌘ The GGSN Address is introduced for the Initial DP GPRS and for the "Change Of Position PDP Context" and "PDP Context Establishment Acknowledge" of the Event Report GPRS.
Consequences if not approved:	⌘ The gsmSCF can not uniquely identify a PDP context by its charging ID. Correlation of PDP contexts with its corresponding CDRs is not possible. ☹

Clauses affected:	⌘ 5.1; 11.25.1; 8.1; 11.31.1		
Other specs affected:	⌘ <input checked="" type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	22.078, 23.078, 29.002
Other comments:	⌘		

5 Common CAP Types

5.1 Data types

-- The **Definition of Common Data Types** follows

```
CAP-datatypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-datatypes(52) version3(2)}
-- This module contains the type definitions for the CAP v.3 data types.
```

```
DEFINITIONS IMPLICIT TAGS ::= BEGIN
```

```
IMPORTS
```

```
    CallingPartysCategory,
    Duration,
    HighLayerCompatibility,
    Integer4,
    Interval,
    LegID,
    RedirectionInformation,
    ServiceKey
```

```
FROM CS1-DataTypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
modules(0) cs1-datatypes(2) version1(0)}
```

```
    BothwayThroughConnectionInd,
    CriticalityType,
    MiscCallInfo
```

```
FROM CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
cs2(20) modules(0) in-cs2-datatypes(0) version1(0)}
```

```
    IMSI,
    ISDN-AddressString,
    Ext-BasicServiceCode,
    NAEA-CIC
```

```
FROM MAP-CommonDataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-network(1) modules(3) map-CommonDataTypes(18) version6(6)}
```

```
    Ext-QoS-Subscribed,
    GSN-Address,
    LocationInformation,
    QoS-Subscribed,
    SubscriberState
```

```
FROM MAP-MS-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-network(1) modules(3) map-MS-DataTypes(11) version6(6)}
```

```
    CallReferenceNumber,
    SuppressionOfAnnouncement
```

```
FROM MAP-CH-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-network(1) modules(3) map-CH-DataTypes(13) version6(6)}
```

```
    tc-Messages,
    classes
```

```
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-object-identifiers(100) version3(2)}
```

```
    TCInvokeldSet
```

```
FROM TCAPMessages tc-Messages
```

```
    EXTENSION,
    PARAMETERS-BOUND,
    SupportedExtensions {}
```

```
FROM CAP-classes classes
```

```
;
```

```
AccessPointName {PARAMETERS-BOUND: bound} ::= OCTET STRING (SIZE(
    bound.&minAccessPointNameLength .. bound.&maxAccessPointNameLength))
-- Indicates the AccessPointName, refer to 3GPP TS 24.008 [12] for the encoding.
```

```

GenericNumbers {PARAMETERS-BOUND : bound} ::= SET SIZE(1..bound.&numOfGenericNumbers) OF
GenericNumber {bound}

GPRS-QoS ::= CHOICE {
    short-QoS-format [0] QoS-Subscribed,
    long-QoS-format [1] Ext-QoS-Subscribed
}
-- Short-QoS-format shall be sent for QoS in pre GSM release 99 format.
-- Long-QoS-format shall be sent for QoS in GSM release 99 (and beyond) format.
-- Which of the two QoS formats shall be sent is determined by which QoS
-- format is available in the SGSN at the time of sending.
-- Refer to 3GPP TS 29.002 [13] for encoding details of QoS-Subscribed and
-- Ext-QoS-Subscribed.

GPRSCause {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE(1))
-- Indicates the cause for interface related information.
-- Refer to 3GPP TS 29.060 [43] Cause parameter for encoding.

GPRSChargingID ::= OCTET STRING (SIZE (4))
-- The Charging ID is a unique four octet value generated by the GGSN when
--- a PDP Context is activated. A Charging ID is generated for each activated context.

GPRSEvent ::= SEQUENCE {
    gPRSEventType [0] GPRSEventType,
    monitorMode [1] MonitorMode
}
-- Indicates the GPRS event information for monitoring.

GPRSEventSpecificInformation {PARAMETERS-BOUND : bound} ::= CHOICE {
    attachChangeOfPositionSpecificInformation [0] SEQUENCE {
        locationInformationGPRS [0] LocationInformationGPRS OPTIONAL
    },
    pdp-ContextchangeOfPositionSpecificInformation [1] SEQUENCE {
        accessPointName [0] AccessPointName {bound} OPTIONAL,
        chargingID [1] GPRSChargingID OPTIONAL,
        locationInformationGPRS [2] LocationInformationGPRS OPTIONAL,
        pdPType [3] PDPTYPE OPTIONAL,
        qualityOfService [4] QualityOfService OPTIONAL,
        timeAndTimeZone [5] TimeAndTimeZone OPTIONAL,
        . . . ,
        gGSNAddress [6] GSN-Address OPTIONAL
    },
    detachSpecificInformation [2] SEQUENCE {
        inititatingEntity [0] InitiatingEntity OPTIONAL
    },
    disconnectSpecificInformation [3] SEQUENCE {
        inititatingEntity [0] InitiatingEntity OPTIONAL
    },
    pdPContextEstablishmentSpecificInformation [4] SEQUENCE {
        accessPointName [0] AccessPointName {bound} OPTIONAL,
        pdPType [1] PDPTYPE OPTIONAL,
        qualityOfService [2] QualityOfService OPTIONAL,
        locationInformationGPRS [3] LocationInformationGPRS OPTIONAL,
        timeAndTimeZone [4] TimeAndTimeZone OPTIONAL,
        pdPInitiationType [5] PDPInitiationType OPTIONAL
    },
    pdPContextEstablishmentAcknowledgementSpecificInformation [5] SEQUENCE {
        accessPointName [0] AccessPointName {bound} OPTIONAL,
        chargingID [1] GPRSChargingID OPTIONAL,
        pdPType [2] PDPTYPE OPTIONAL,
        qualityOfService [3] QualityOfService OPTIONAL,
        locationInformationGPRS [4] LocationInformationGPRS OPTIONAL,
        timeAndTimeZone [5] TimeAndTimeZone OPTIONAL,
        . . . ,
        gGSNAddress [6] GSN-Address OPTIONAL
    }
}

PDPInitiationType ::= ENUMERATED {
    mSInitiated (0),
    networkInitiated (1)
}

```

8 GPRS Control

8.1 gsmSCF/gprsSSF operations and arguments

```
CAP-gprsSSF-gsmSCF-ops-args {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-GPRS-ops-args(107) version3(2)}
```

```
DEFINITIONS IMPLICIT TAGS ::= BEGIN
```

```
-- This module contains the operations and operation arguments used for the
-- gprsSSF - gsmSCF interface, for the control of GPRS.
```

```
-- The table in section 2.1 lists the specifications that contain the modules
-- that are used by CAP.
```

```
IMPORTS
```

```
    errortypes,
    datatypes,
    operationcodes,
    classes,
    ros-InformationObjects
```

```
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-object-identifiers(100) version3(2)}
```

```
OPERATION
```

```
FROM Remote-Operations-Information-Objects ros-InformationObjects
```

```
ServiceKey
```

```
FROM CS1-DataTypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
modules(0) cs1-datatypes(2) version1(0)}
```

```
MiscCallInfo
```

```
FROM CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
cs2(20) modules(0) in-cs2-datatypes (0) version1(0)}
```

```
IMSI,
```

```
ISDN-AddressString
```

```
FROM MAP-CommonDataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-Network(1) modules(3) map-CommonDataTypes(18) version6(6)}
```

```
GSN-Address
```

```
FROM MAP-MS-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-network(1) modules(3) map-MS-DataTypes(11) version6(6)}
```

```
PARAMETERS-BOUND
```

```
FROM CAP-classes classes
```

```
opcode-activityTestGPRS,
opcode-applyChargingGPRS,
opcode-applyChargingReportGPRS,
opcode-cancelGPRS,
opcode-connectGPRS,
opcode-continueGPRS,
opcode-entityReleasedGPRS,
opcode-eventReportGPRS,
opcode-furnishChargingInformationGPRS,
opcode-initialDPGPRS,
opcode-releaseGPRS,
opcode-requestReportGPRSEvent,
opcode-resetTimerGPRS,
opcode-sendChargingInformationGPRS
```

```
FROM CAP-operationcodes operationcodes
```

```

InitialDPGPRSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    serviceKey                [0] ServiceKey,
    gPRSEventType             [1] GPRSEventType,
    mSISDN                    [2] ISDN-AddressString,
    iMSI                      [3] IMSI,
    timeAndTimeZone           [4] TimeAndTimezone {bound},
    gPRSMSCClass              [5] GPRSMSCClass                OPTIONAL,
    pdPType                   [6] PDPTYPE                    OPTIONAL,
    qualityOfService          [7] QualityOfService            OPTIONAL,
    accessPointName           [8] AccessPointName{bound}       OPTIONAL,
    routingAreaIdentity       [9] RAIdentity                  OPTIONAL,
    chargingID                [10] GPRSCchargingID             OPTIONAL,
    sGSNCapabilities          [11] SGSNCapabilities            OPTIONAL,
    locationInformationGPRS    [12] LocationInformationGPRS     OPTIONAL,
    pdPInitiationType         [13] PDPInitiationType           OPTIONAL,
    extensions                 [14] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                ExtensionField {bound}         OPTIONAL,
    ...
    gGSNAddress              [15] GSN-Address                 OPTIONAL
}

```

```

releaseGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        ReleaseGPRSArg {bound}
    RETURN RESULT FALSE
    ERRORS {
        missingParameter |
        taskRefused |
        unknownPDPID
    }
    CODE opcode-releaseGPRS
}
-- Direction: gsmSCF -> gprsSSF, Timer: Trg
-- This operation is used to tear down an existing GPRS session or PDP Context at any phase.

```

```

ReleaseGPRSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    gprsCause                 [0] GPRSCause {bound},
    pdPID                     [1] PDPID OPTIONAL
}

```

```

requestReportGPRSEvent {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        RequestReportGPRSEventArg {bound}
    RETURN RESULT FALSE
    ERRORS {
        missingParameter |
        parameterOutOfRange |
        systemFailure |
        taskRefused |
        unexpectedComponentSequence |
        unexpectedDataValue |
        unexpectedParameter |
        unknownPDPID
    }
    CODE opcode-requestReportGPRSEvent
}
-- Direction: gsmSCF -> gprsSSF, Timer: Trrqe
-- This operation is used to request the gprsSSF to monitor for an event (e.g., GPRS events
-- such as attach or PDP Context activation), then send a notification back to the
-- gsmSCF when the event is detected.

```

```

RequestReportGPRSEventArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    gPRSEvent                 [0] SEQUENCE SIZE (1..bound.&numOfGPRSEvents) OF GPRSEvent,
    pdPID                     [1] PDPID                OPTIONAL
}
-- Indicates the GPRS related events for notification.

```

11.25 EventReportGPRS procedure

11.25.1 General description

This operation is used to notify the gsmSCF of a GPRS session or PDP context event previously requested by the gsmSCF in a RequestReportGPRSEvent operation. The monitoring of more than one event can be requested with a RequestReportGPRSEvent operation, but each of these requested events is reported in a separate EventReportGPRS operation.

11.25.1.1 Parameters

- gPRSEventType:
This parameter specifies the type of event that is reported.
- gPRSEventSpecificInformation:
This parameter indicates the GPRS session or PDP context related information specific to the event.
 - For Change of Position GPRS Session it shall contain the "locationInformationGPRS", if available.
 - For Change of Position PDP context it shall contain the "accessPointName", "chargingID", "locationInformationGPRS", "pDPType", Quality of Service and "timeAndTimeZone", "gGSNAddress", if available.
 - For Detach and Disconnect it shall contain the "initiatingEntity".
 - For PDP context establishment it shall contain the "accessPointName", "pDPType", "pDPInitiationType", the Quality of Service, "locationInformationGPRS" and "timeAndTimeZone", if available.
The Quality of Service shall contain the Requested QoS and the Subscribed QoS.
 - For PDP context establishment acknowledge it shall contain the "accessPointName", "chargingID" "pDPType", the Quality of Service, "locationInformationGPRS" and "timeAndTimeZone", "gGSNAddress", if available.
The Quality of Service shall contain the Requested QoS, the Subscribed QoS and the Negotiated QoS.
 - All optional gPRSEventSpecificInformation parameters shall be sent according to 3GPP TS 23.078 subclause 6.6.1.4 and 3GPP TS 22.078 annex "GPRS Information provided to the CSE".
- miscGPRSInfo:
This parameter contains DP related information.
- messageType:
This parameter indicates whether the message is a request, i.e. resulting from a RequestReportGPRSEvent with "monitorMode" = "interrupted", or a notification, i.e. resulting from a RequestReportGPRSEvent with "monitorMode" = "notifyAndContinue".
- pDPID:
This parameter, if present, identifies the PDP Context, within the Session dialogue, for which the event is reported.

11.31 InitialDPGPRS procedure

11.31.1 General description

This operation is used by the gprsSSF after detection of a TDP-R in the GPRS session or PDP context state machine, to request the gsmSCF for instructions to complete the GPRS session or PDP context.

For a GPRS Session, the 'Attach' and 'Change of Position Session' TDP's may result in the InitialDPGPRS Procedure.

For a PDP Context, the 'PDP Context Establishment', the 'PDP Context Establishment Acknowledgement' and the 'Change of Position Context' TDP's may result in the InitialDPGPRS Procedure.

If a PDP Context related TDP is met, and there is at that moment a GPRS dialogue for the GPRS Session, then the gprsSSF shall not initiate the InitialDPGPRS Procedure for that PDP Context.

If the 'PDP Context Establishment Acknowledgement' event occurs and this event is armed as a TDP, and there is at that moment a GPRS dialogue for the PDP Context, then the gprsSSF shall not initiate a new InitialDPGPRS Procedure for that PDP Context.

11.31.1.1 Parameters

- serviceKey:
This parameter indicates to the gsmSCF the requested IN service. It is used to address the required application/SLP within the gsmSCF (not for SCP addressing).
- gPRSEventType:
This parameter indicates the armed GPRS Attach/Detach SM or PDP Context SM DP event, resulting in the InitialDPGPRS operation.
- mSISDN:
MSISDN of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3GPP TS 29.002 [13].
- iMSI:
IMSI of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3GPP TS 29.002 [13].
- timeAndTimezone:
This parameter contains the time that the gprsSSF was triggered, and the time zone that the invoking gprsSSF resides in.
- gPRSMSCClass:
This parameter contains the MS Station capabilities of the mobile subscriber for which the CAMEL service is invoked.
 - MSNetworkCapabilities:
This parameter contains the Network Capabilities of the GPRS session.
 - MSRadioAccessCapabilities:
This parameter contains the Radio Access Capabilities of the MS.
- pDPTType:
This parameter identifies the PDP type and the actual PDP address.
- pDPTTypeOrganization:
The pDPTTypeOrganisation defines the organization that is responsible for the pDPTTypeNumber field and the PDP Address format, e.g. ETSI or an IETF type of address. For encoding see 3GPP TS 29.060 [43].
- pDPTTypeNumber:
The pDPTTypeNumber defines the end user protocol to be used between the external packet data network and the MS related to the pDPTTypeOrganization. For encoding see 3GPP TS 29.060 [43].

- pDPAddress:
This parameter is the address of the PDP context of the MS for which the CAMEL service is invoked for, that identifies the MS from the external packet data network. For encoding see 3GPP TS 29.060 [43].
- qualityOfService:
This parameter contains the Quality of Service.
If the InitialDPGPRS operation is sent as a result of the 'PDP Context Establishment' TDP, then the Quality of Service parameter shall contain the Requested QoS and the Subscribed QoS.
If the InitialDPGPRS operation is sent as a result of the 'PDP Context Establishment Acknowledgement' TDP, then the Quality of Service parameter shall contain the Requested QoS, the Subscribed QoS and the Negotiated QoS.
- accessPointName:
This parameter contains the requested address that the MS for which the CAMEL service is invoked for wants to connect to. For encoding see 3GPP TS 29.060 [43].
- routingAreaIdentity:
This parameter contains the location information of the MS for which the CAMEL service is invoked from. For encoding see 3GPP TS 29.060 [43].
- chargingID:
This parameter contains the charging ID that uniquely identifies together with the gGSNAddress the PDP context for the MS for which the CAMEL service is invoked from. For encoding see 3GPP TS 32.015.
- sGSNcapabilities:
This parameter specifies the capabilities which the SGSN node can provide for the CAMEL service control.
- locationInformationInSGSN:
This parameter indicates the location of the sending MS.
- pDPInitiationType:
This parameter indicates whether a PDP context was established as a result of a network-initiated request or as a result of a subscriber request.
- gGSNAddress:
This parameter refers to the IP address of the GGSN where the PDP context terminates. It is used together with the chargingID for uniquely identification of the PDP context for which the CAMEL service is invoked from. For encoding see 3G TS 23.003.

11.31.2 Invoking entity (gprsSSF)

11.31.2.1 Normal procedure

gprsSSF preconditions:

- (1) An event has been met that is armed as TDP.
- (2) There is no GPRS dialogue active for that PDP Context or for the GPRS Session.

gprsSSF postcondition:

- (1) A control relationship has been established and the gprsSSF is in state "waiting for instructions".

The address of the gsmSCF that the InitialDPGPRS operation shall be sent to is fetched from the valid CSI. The gprsSSF provides all available parameters.

The gprsSSF shall memorise the address of the response message and use it in the future TCAP dialogues.

A control relationship is established with the gsmSCF. The gprsSSF application timer T_{SSF} is set when the gprsSSF sends InitialDPGPRS for requesting instructions from the gsmSCF. It is used to prevent from excessive GPRS session or PDP context duration or volume usage.

CR-Form-v3

CHANGE REQUEST

⌘ **29.078 CR 136** ⌘ rev **1** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Introduction of ellipsis for GPRS CAPv3		
Source:	⌘ Nokia		
Work item code:	⌘ CAMEL3	Date:	⌘ 14 th of Nov 2000
Category:	⌘ F	Release:	⌘ R99
	<i>Use one of the following categories:</i> F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘ The ellipsis ASN.1 notation allows adding of parameters and fields afterwards in a backward compatible manner. This may become important especially in CAMEL4 time frame – individual correction can be done without raising application context version. The parameters after the ellipsis are ignored by the receiving entity if not recognized. However, the parameters before / without ellipsis must be recognized by the receiving entity, otherwise rejected.
Summary of change:	⌘
Consequences if not approved:	⌘

Clauses affected:	⌘		
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
Other comments:	⌘		

5 Common CAP Types

5.1 Data types

-- The Definition of Common Data Types follows

```
CAMEL-FCIBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= CHOICE{
  fCIBCCAMELsequence1 [0] SEQUENCE {
    freeFormatData [0] OCTET STRING (SIZE(
      bound.&minFCIBillingChargingDataLength .. bound.&maxFCIBillingChargingDataLength)),
    partyToCharge [1] SendingSideID
      DEFAULT sendingSideID : leg1,
    appendFreeFormatData [2] AppendFreeFormatData DEFAULT overwrite
  }
}
```

```
CAMEL-FCIGPRSBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= SEQUENCE{
  fCIBCCAMELsequence1 [0] SEQUENCE {
    freeFormatData [0] OCTET STRING (SIZE(
      bound.&minFCIBillingChargingDataLength .. bound.&maxFCIBillingChargingDataLength)),
  pDPID [1] PDPID OPTIONAL,
  appendFreeFormatData [2] AppendFreeFormatData DEFAULT overwrite,
  ...
}
}
```

```
CAMEL-FCISMSBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= CHOICE{
  fCIBCCAMELsequence1 [0] SEQUENCE {
    freeFormatData [0] OCTET STRING (SIZE(
      bound.&minFCIBillingChargingDataLength .. bound.&maxFCIBillingChargingDataLength)),
    appendFreeFormatData [1] AppendFreeFormatData DEFAULT overwrite
  }
}
```

```
CAMEL-SCIBillingChargingCharacteristics ::= CHOICE {
  aOCBeforeAnswer [0] AOCBeforeAnswer,
  aOCAfterAnswer [1] AOCSubsequent
}
```

```
CAMEL-SCIGPRSBillingChargingCharacteristics ::= SEQUENCE {
  aOCGPRS [0] AOCGPRS,
  pDPID [1] PDPID OPTIONAL,
  ...
}
```

```
GPRSEvent ::= SEQUENCE {
  gPRSEventType [0] GPRSEventType,
  monitorMode [1] MonitorMode
}
```

-- Indicates the GPRS event information for monitoring.

```
GPRSEventSpecificInformation {PARAMETERS-BOUND : bound} ::= CHOICE {
  attachChangeOfPositionSpecificInformation [0] SEQUENCE {
    locationInformationGPRS [0] LocationInformationGPRS OPTIONAL,
    ...
  },
  pdp-ContextchangeOfPositionSpecificInformation [1] SEQUENCE {
    accessPointName [0] AccessPointName {bound} OPTIONAL,
    chargingID [1] GPRSChargingID OPTIONAL,
    locationInformationGPRS [2] LocationInformationGPRS OPTIONAL,
    pDPType [3] PDPTType OPTIONAL,
    qualityOfService [4] QualityOfService OPTIONAL,
    timeAndTimeZone [5] TimeAndTimeZone OPTIONAL,
    ...
  },
  detachSpecificInformation [2] SEQUENCE {
```

```

        inititatingEntity          [0] InitiatingEntity          OPTIONAL,
        ...
    },
    disconnectSpecificInformation  [3] SEQUENCE {
        inititatingEntity          [0] InitiatingEntity          OPTIONAL,
        ...
    },
    pdpContextEstablishmentSpecificInformation
        [4] SEQUENCE {
        accessPointName            [0] AccessPointName {bound} OPTIONAL,
        pdpType                    [1] PDPType                    OPTIONAL,
        qualityOfService           [2] QualityOfService         OPTIONAL,
        locationInformationGPRS     [3] LocationInformationGPRS  OPTIONAL,
        timeAndTimeZone            [4] TimeAndTimeZone         OPTIONAL,
        pdpInitiationType          [5] PDPInitiationType      OPTIONAL,
        ...
    },
    pdpContextEstablishmentAcknowledgementSpecificInformation
        [5] SEQUENCE {
        accessPointName            [0] AccessPointName {bound} OPTIONAL,
        chargingID                 [1] GPRSChargingID         OPTIONAL,
        pdpType                    [2] PDPType                    OPTIONAL,
        qualityOfService           [3] QualityOfService         OPTIONAL,
        locationInformationGPRS     [4] LocationInformationGPRS  OPTIONAL,
        timeAndTimeZone            [5] TimeAndTimeZone         OPTIONAL,
        ...
    }
}

PDPInitiationType ::= ENUMERATED {
    mSInitiated          (0),
    networkInitiated    (1)
}

GPRSEventType ::= ENUMERATED {
    attach                (1),
    attachChangeOfPosition (2),
    detached              (3),
    pdp-ContextEstablishment (11),
    pdp-ContextEstablishmentAcknowledgement (12),
    disonnect            (13),
    pdp-ContextChangeOfPosition (14)
}

GPRSMSCClass ::= SEQUENCE {
    mSNetworkCapability [0] MSNetworkCapability,
    mSRadioAccessCapability [1] MSRadioAccessCapability
}
-- GPRS MS class mark describes the terminal capabilities.
-- For encoding refer to 3GPP TS 24.008 [12].

LocationInformationGPRS ::= SEQUENCE {
    cellGlobalIdOrServiceAreaIdOrLAI [0] OCTET STRING (SIZE(5..7)) OPTIONAL,
    routingAreaIdentity [1] OCTET STRING (SIZE(5..7)) OPTIONAL,
    geographicalInformation [2] OCTET STRING (SIZE (8)) OPTIONAL,
    sgsn-Number [3] ISDN-AddressString OPTIONAL,
    selectedLSAIdentity [4] LSAIdentity OPTIONAL,
    extensionContainer [5] ExtensionContainer OPTIONAL,
    ...
}
-- CellGlobalIdOrServiceAreaIdOrLAI and LSAIdentity are coded in accordance with
-- 3GPP TS 29.002 [13].
-- RouteinAreaIdentity is coded in accordance with 3GPP TS 29.060 [43].
-- RoutingAreaCode is coded in accordance with 3GPP TS 23.003 [49].
-- GeographicalInformation refers to geographical Information as defined
-- in 3GPP TS 23.032 [44].

PDPType {PARAMETERS-BOUND: bound} ::= SEQUENCE {
    pdpTypeOrganization [0] OCTET STRING (SIZE(1)),
    pdpTypeNumber [1] OCTET STRING (SIZE(1)),
    PDPAddress [2] OCTET STRING (SIZE(
        bound.&minPDPAddressLength .. bound.&maxPDPAddressLength)) OPTIONAL
}
-- Indicates the PDPType, refer to 3GPP TS 29.060 for the encoding.
-- The pdpTypeOrganization shall use the least significant 4 bits of the octet encoded.

```

-- The sender of this parameter shall set the most significant 4 bit of the octet to 0.
 -- The receiver of this parameter shall ignore the most significant 4 bits of this octet.

```
QualityOfService ::= SEQUENCE {
  requested-QoS [0] GPRS-QoS OPTIONAL,
  subscribed-QoS [1] GPRS-QoS OPTIONAL,
  negotiated-QoS [2] GPRS-QoS OPTIONAL,
  ...
}
```

-- The procedure descriptions in chapter 11 indicate which one(s) of the
 -- QoS variables shall be transported.

```
RAIdentity ::= OCTET STRING (SIZE (7))
-- Routing Area Identity coded according to 3GPP TS 29.060 [43].
```

```
SCIGPRSBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE (
  bound.&minSCIBillingChargingLength .. bound.&maxSCIBillingChargingLength))
(CONSTRAINED BY {-- shall be the result of the BER-encoded value of type -
  CAMEL-SCIGPRSBillingChargingCharacteristics})
-- Indicates AOC information to be sent to a Mobile Station
-- The violation of the UserDefinedConstraint shall be handled as an ASN.1 syntax error.
```

```
TransferredVolume ::= CHOICE {
  volumeIfNoTariffSwitch [0] INTEGER (0..4294967295),
  volumeIfTariffSwitch [1] SEQUENCE {
    volumeSinceLastTariffSwitch [0] INTEGER (0..4294967295),
    volumeTariffSwitchInterval [1] INTEGER (0..4294967295) OPTIONAL
  }
}
```

-- volumeIfNoTariffSwitch, volumeSinceLastTariffSwitch and volumeTariffSwitchInterval
 -- are measured in bytes.

```
ElapsedTime ::= CHOICE {
  timeGPRSIfNoTariffSwitch [0] INTEGER (0..86400),
  timeGPRSIfTariffSwitch [1] SEQUENCE {
    timeGPRSSinceLastTariffSwitch [0] INTEGER (0..86400),
    timeGPRSTariffSwitchInterval [1] INTEGER (0..86400)
  }
}
```

-- timeGPRSIfNoTariffSwitch is measured in seconds
 -- timeGPRSSinceLastTariffSwitch and timeGPRSTariffSwitchInterval are measured in seconds

8 GPRS Control

8.1 gsmSCF/gprsSSF operations and arguments

```
CAP-gprsSSF-gsmSCF-ops-args {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-GPRS-ops-args(107) version3(2)}
```

```
DEFINITIONS IMPLICIT TAGS ::= BEGIN
```

```
-- This module contains the operations and operation arguments used for the
-- gprsSSF - gsmSCF interface, for the control of GPRS.
```

```
-- The table in section 2.1 lists the specifications that contain the modules
-- that are used by CAP.
```

```
IMPORTS
```

```
    errortypes,
    datatypes,
    operationcodes,
    classes,
    ros-InformationObjects
```

```
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-object-identifiers(100) version3(2)}
```

```
OPERATION
```

```
FROM Remote-Operations-Information-Objects ros-InformationObjects
```

```
ServiceKey
```

```
FROM CS1-DataTypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
modules(0) cs1-datatypes(2) version1(0)}
```

```
MiscCallInfo
```

```
FROM CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
cs2(20) modules(0) in-cs2-datatypes (0) version1(0)}
```

```
IMSI,
```

```
ISDN-AddressString
```

```
FROM MAP-CommonDataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-Network(1) modules(3) map-CommonDataTypes(18) version6(6)}
```

```
PARAMETERS-BOUND
```

```
FROM CAP-classes classes
```

```
opcode-activityTestGPRS,
opcode-applyChargingGPRS,
opcode-applyChargingReportGPRS,
opcode-cancelGPRS,
opcode-connectGPRS,
opcode-continueGPRS,
opcode-entityReleasedGPRS,
opcode-eventReportGPRS,
opcode-furnishChargingInformationGPRS,
opcode-initialDPGPRS,
opcode-releaseGPRS,
opcode-requestReportGPRSEvent,
opcode-resetTimerGPRS,
opcode-sendChargingInformationGPRS
```

```
FROM CAP-operationcodes operationcodes
```

```
AccessPointName {},
GPRSCause {},
ChargingCharacteristics,
ChargingResult,
FCIGPRSBillingChargingCharacteristics,
GPRSChargingID,
GPRSEventSpecificInformation {},
GPRSEvent,
GPRSEventType,
GPRSMSCClass,
```

```

PDPID,
PDPTYPE,
QualityOfService,
RAIdentity,
SCIGPRSBillingChargingCharacteristics,
SGSNCapabilities,
TimeAndTimezone {},
TimerID,
TimerValue
FROM CAP-datatypes datatypes

missingCustomerRecord,
missingParameter,
parameterOutOfRange,
systemFailure,
taskRefused,
unexpectedComponentSequence,
unexpectedDataValue,
unexpectedParameter,
unknownPDPID
FROM CAP-erroratypes erroratypes

;

activityTestGPRS OPERATION ::= {
  RETURN RESULT TRUE
  CODE opcode-activityTestGPRS }
-- Direction: gsmSCF -> gprsSSF, Timer: Tatg
-- This operation is used to check for the continued existence of a relationship between the gsmSCF
-- and gprsSSF. If the relationship is still in existence, then the gprsSSF will respond. If no
-- reply is received, then the gsmSCF will assume that the gprsSSF has failed in some way
-- and will take the appropriate action.

applyChargingGPRS OPERATION ::= {
  ARGUMENT
  ApplyChargingGPRSArg
  RETURN RESULT FALSE
  ERRORS {
    missingParameter |
    unexpectedComponentSequence |
    unexpectedParameter |
    unexpectedDataValue |
    parameterOutOfRange |
    systemFailure |
    taskRefused |
    unknownPDPID
  }
  CODE opcode-applyChargingGPRS
}
-- Direction gsmSCF -> gprsSSF, Timer Tacg
-- This operation is used for interacting from the gsmSCF with the gprsSSF CSE-controlled
-- GPRS session or PDP Context charging mechanism.

ApplyChargingGPRSArg ::= SEQUENCE {
  chargingCharacteristics [0] ChargingCharacteristics,
  tariffsSwitchInterval [1] INTEGER (1..86400) OPTIONAL,
  pDPID [2] PDPID OPTIONAL,
  ...
}
-- tariffsSwitchInterval is measured in 1 second units.

applyChargingReportGPRS OPERATION ::= {
  ARGUMENT
  ApplyChargingReportGPRSArg
  RETURN RESULT TRUE
  ERRORS {
    missingParameter |
    unexpectedComponentSequence |
    unexpectedParameter |
    unexpectedDataValue |
    parameterOutOfRange |
    systemFailure |
    taskRefused |
    unknownPDPID
  }
  CODE opcode-applyChargingReportGPRS
}

```



```

}
-- Direction gprsSSF -> gsmSCF, Timer Tacrg
-- The ApplyChargingReportGPRS operation provides the feedback from the gprsSCF to the gsmSCF
-- CSE-controlled GPRS session charging mechanism.

```

```

ApplyChargingReportGPRSArg ::= SEQUENCE {
    chargingResult          [0] ChargingResult,
    qualityOfService        [1] QualityOfService OPTIONAL,
    active                  [2] BOOLEAN          DEFAULT TRUE,
    pDPID                   [3] PDPID           OPTIONAL,
    ...
}

```

```

cancelGPRS OPERATION ::= {
    ARGUMENT
        CancelGPRSArg
    RETURN RESULT FALSE
    ERRORS {
        missingParameter |
        taskRefused |
        unknownPDPID
    }
    CODE opcode-cancelGPRS
}
-- Direction: gsmSCF -> gprsSSF, Timer: Tcag
-- This generic operation cancels all previous requests,
-- i.e. all EDPs and reports can be cancelled by the gsmSCF.

```

```

CancelGPRSArg ::= SEQUENCE {
    pDPID [0] PDPID OPTIONAL,
    ...
}

```

```

connectGPRS {PARAMETERS-BOUND: bound} OPERATION ::= {
    ARGUMENT ConnectGPRSArg {bound}
    RETURN RESULT FALSE
    ERRORS {missingParameter |
        parameterOutOfRange |
        unknownPDPID |
        systemFailure |
        taskRefused |
        unexpectedComponentSequence |
        unexpectedDataValue |
        unexpectedParameter}
    CODE opcode-connectGPRS
}
-- Direction: gsmSCF -> gprsSSF, Timer: Tcong
-- This operation is used to modify the Access Point Name used when establishing a PDP Context.

```

```

ConnectGPRSArg {PARAMETERS-BOUND: bound} ::= SEQUENCE {
    accessPointName [0] AccessPointName {bound},
    pdpID [1] PDPID OPTIONAL,
    ...
}

```

```

continueGPRS OPERATION ::= {
    ARGUMENT
        ContinueGPRSArg
    RETURN RESULT FALSE
    ERRORS {
        missingParameter |
        unknownPDPID |
        unexpectedDataValue
    }
    CODE opcode-continueGPRS
}
-- Direction: gsmSCF -> gprsSSF, Timer: Tcueg
-- This operation is used to request the gprsSSF to proceed with processing at the DP at
-- which it previously suspended processing to await gsmSCF instructions (i.e., proceed to
-- the next point in processing in the Attach/Detach state model or PDP Context
-- state model) substituting new data from the gsmSCF.

```

```

ContinueGPRSArg ::= SEQUENCE {
    pDPID [0] PDPID OPTIONAL,
    ...
}

```

```

entityReleasedGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT
    EntityReleasedGPRSArg {bound}
  RETURN RESULT TRUE
  ERRORS {
    missingParameter |
    taskRefused |
    unknownPDPID
  }
  CODE opcode-entityReleasedGPRS
}
-- Direction: gprsSSF -> gsmSCF, Timer: Terg
-- This operation is used to notify the gsmSCF that a PDP Context has been
-- terminated abnormally in the SGSN.

EntityReleasedGPRSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  gPRSCause [0] GPRSCause {bound},
  pDPID [1] PDPID OPTIONAL,
  ...
}

eventReportGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT
    EventReportGPRSArg {bound}
  RETURN RESULT TRUE
  ERRORS {
    unknownPDPID
  }
  CODE opcode-eventReportGPRS
}
-- Direction gprsSSF -> gsmSCF, Timer Tereg
-- This operation is used to notify the gsmSCF of a GPRS session or PDP context related
-- events (e.g. PDP context activation) previously requested by the gsmSCF in a
-- RequestReportGPRSEventoperation.

EventReportGPRSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  gPRSEventType [0] GPRSEventType,
  miscGPRSInfo [1] MiscCallInfo DEFAULT {messageType request},
  gPRSEventSpecificInformation [2] GPRSEventSpecificInformation {bound} OPTIONAL,
  pDPID [3] PDPID OPTIONAL,
  ...
}

furnishChargingInformationGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT FurnishChargingInformationGPRSArg {bound}
  RETURN RESULT FALSE
  ERRORS {missingParameter |
    taskRefused |
    unexpectedComponentSequence |
    unexpectedDataValue |
    unexpectedParameter |
    unknownPDPID
  }
  CODE opcode-furnishChargingInformationGPRS
}
-- Direction: gsmSCF -> gprsSSF, Timer: Tfcig
-- This operation is used to request the gprsSSF to generate, register a logical record or to
-- include some information in the default logical GPRS record.
-- The registered logical record is intended for off line charging of the GPRS session
-- or PDP Context.

FurnishChargingInformationGPRSArg {PARAMETERS-BOUND : bound} ::=
FCIGPRSBillingChargingCharacteristics{bound}

initialDPGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT
    InitialDPGPRSArg {bound}
  RETURN RESULT FALSE
  ERRORS {
    missingCustomerRecord |
    missingParameter |
    parameterOutOfRange |
    systemFailure |
    taskRefused |
    unexpectedComponentSequence |
    unexpectedDataValue |
    unexpectedParameter
  }
}

```

```

CODE opcode-initialDPGPRS
}

-- Direction gprsSSF -> gsmSCF, Timer: Tidpg
-- This operation is used by the gprsSSF when a trigger is detected at a DP in the GPRS state
-- machines to request instructions from the gsmSCF

InitialDPGPRSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    serviceKey                [0] ServiceKey,
    gPRSEventType             [1] GPRSEventType,
    mSISDN                    [2] ISDN-AddressString,
    IMSI                      [3] IMSI,
    timeAndTimeZone           [4] TimeAndTimezone {bound},
    gPRSMSCClass              [5] GPRSMSCClass                OPTIONAL,
    pDPTYPE                   [6] PDPTYPE                    OPTIONAL,
    qualityOfService          [7] QualityOfService            OPTIONAL,
    accessPointName           [8] AccessPointName{bound}      OPTIONAL,
    routingAreaIdentity       [9] RAIdentity                  OPTIONAL,
    chargingID                [10] GPRSChargingID              OPTIONAL,
    SGSNCapabilities          [11] SGSNCapabilities            OPTIONAL,
    locationInformationGPRS    [12] LocationInformationGPRS    OPTIONAL,
    pDPInitiationType         [13] PDPInitiationType           OPTIONAL,
    extensions                 [14] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                ExtensionField {bound}        OPTIONAL,
    ...
}

releaseGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        ReleaseGPRSArg {bound}
    RETURN RESULT FALSE
    ERRORS {
        missingParameter |
        taskRefused |
        unknownPDPID
    }
    CODE opcode-releaseGPRS
}

-- Direction: gsmSCF -> gprsSSF, Timer: Trg
-- This operation is used to tear down an existing GPRS session or PDP Context at any phase.

ReleaseGPRSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    gprsCause                 [0] GPRSCause {bound},
    pDPID                     [1] PDPID OPTIONAL,
    ...
}

requestReportGPRSEvent {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        RequestReportGPRSEventArg {bound}
    RETURN RESULT FALSE
    ERRORS {
        missingParameter |
        parameterOutOfRange |
        systemFailure |
        taskRefused |
        unexpectedComponentSequence |
        unexpectedDataValue |
        unexpectedParameter |
        unknownPDPID
    }
    CODE opcode-requestReportGPRSEvent
}

-- Direction: gsmSCF -> gprsSSF, Timer: Trrqe
-- This operation is used to request the gprsSSF to monitor for an event (e.g., GPRS events
-- such as attach or PDP Context activation), then send a notification back to the
-- gsmSCF when the event is detected.

RequestReportGPRSEventArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    gPRSEvent                 [0] SEQUENCE SIZE (1..bound.&numOfGPRSEvents) OF GPRSEvent,
    pDPID                     [1] PDPID                OPTIONAL,
    ...
}

-- Indicates the GPRS related events for notification.

resetTimerGPRS                OPERATION ::= {
    ARGUMENT

```

```

        ResetTimerGPRSArg
RETURN RESULT FALSE
ERRORS {
    missingParameter |
    parameterOutOfRange |
    taskRefused |
    unexpectedComponentSequence |
    unexpectedDataValue |
    unexpectedParameter |
    unknownPDPID
}
CODE opcode-resetTimerGPRS
}

-- Direction: gsmSCF -> gprsSSF, Timer: Trtg
-- This operation is used to request the gprsSSF to refresh an application timer in the gprsSSF.

ResetTimerGPRSArg ::= SEQUENCE {
    timerID [0] TimerID DEFAULT tssf,
    timervalue [1] TimerValue,
    ...
}

sendChargingInformationGPRS {PARAMETERS-BOUND: bound} OPERATION ::= {
    ARGUMENT SendChargingInformationGPRSArg { bound}
    RETURN RESULT FALSE
    ERRORS {missingParameter |
        unexpectedComponentSequence |
        unexpectedParameter |
        parameterOutOfRange |
        systemFailure |
        taskRefused |
        unexpectedDataValue |
        unknownPDPID
    }
    CODE opcode-sendChargingInformationGPRS
}

-- Direction: gsmSCF -> gprsSSF, Timer: Tscig
-- This operation is used to instruct the gprsSSF on the charging information which the
-- gprsSSF shall send to the Mobile Station by means of GSM access signalling.

SendChargingInformationGPRSArg {PARAMETERS-BOUND: bound} ::= SEQUENCE {
    sCIGPRSBillingChargingCharacteristics [0] SCIGPRSBillingChargingCharacteristics { bound},
    ...
}

END

CAP-GPRS-ReferenceNumber {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-Network(1) modules(3) cap-dialogueInformation(111) version3(2)}
DEFINITIONS ::= BEGIN

EXPORTS
    id-CAP-GPRS-ReferenceNumber ,
    CAP-GPRS-ReferenceNumber-Abstract-Syntax;

IMPORTS
    Integer4
FROM CS1-DataTypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
modules(0) cs1-datatypes(2) version1(0)}
;

id-CAP-GPRS-ReferenceNumber OBJECT IDENTIFIER ::= {ccitt(0) identified-organization(4) etsi(0)
mobileDomain(0) umts-Network(1) as-Id(1) cap-GPRS-ReferenceNumber(5) version3(2)}

CAP-GPRS-ReferenceNumber-Abstract-Syntax ABSTRACT-SYNTAX ::= {CAP-GPRS-ReferenceNumber IDENTIFIED
BY id-CAP-GPRS-ReferenceNumber}

CAP-GPRS-ReferenceNumber ::= SEQUENCE {
    destinationReference [0] Integer4 OPTIONAL,
    originationReference [1] Integer4 OPTIONAL
}
-- This IE is used to identify the relationship between SGSN and the SCP.

END -- of CAP-GPRS-ReferenceNumber

```


CHANGE REQUEST

⌘ **29.078 CR 128** ⌘ rev **3** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Correction of Apply Charging Report parameter definition		
Source:	⌘ T-Mobil		
Work item code:	⌘ CAMEL3	Date:	⌘ 08.11.00
Category:	⌘ F	Release:	⌘ R99
	<i>Use <u>one</u> of the following categories:</i> F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use <u>one</u> of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘ Current definition of the ACR parameters does not cover the scenario where a tariff switch occurs before the supervised call is answered.
Summary of change:	⌘ The definition of the sub-parameters of the timeDurationChargingResult are modified to cope with the scenario where a tariff switch was detected before answer.
Consequences if not approved:	⌘ Pre Paid Services using AC/ACR will apply in certain scenarios the wrong tariff for cost calculation.

Clauses affected:	⌘ 11.5.1.1
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
Other comments:	⌘ The modified definition of the ACR parameters conforms to the requirements of the stage 1 specification. The general behaviour of the elapsed time reports is not modified. Quote from 22.078: When the end of a call period is reached, the IPLMN/VPLMN shall report to the CSE: <ul style="list-style-type: none"> - if no tariff switch has occurred since the call is answered: - report the elapsed time since the call is answered to the CSE, - if a tariff switch has occurred since the call is answered: - report the elapsed time since the last tariff switch has applied, - report the elapsed time from when the call is answered, or from when the previous tariff switch occurred to the time when the most recent tariff switch occurred.

11.5 ApplyChargingReport procedure

11.5.1 General description

This operation is used by the gsmSSF to report charging related information to the gsmSCF as requested by the gsmSCF using the "ApplyCharging" operation.

Timing of duration shall be started if answer is detected by the gsmSSF. It shall be started independently for a connection to a Called Party, a Temporary Connection and a gsmSRF connection.

-A report is generated as specified in the 3G TS 23.078 [42].

11.5.1.1 Parameters

- callResult:
This parameter provides the gsmSCF with the charging related information previously requested using the ApplyCharging operation. The "CallResult" is a list, and can contain the following parameters:
- timeDurationChargingResult:
This is a list, and can contain the following parameters:timeInformation:
This is a choice of the following parameters:
 - timeIfNoTariffSwitch:
This parameter will be present if no tariff switch has occurred since the reception of the first ApplyCharging operation since the detection of Answer for the connection to the Called Party, Temporary Connection or gsmSRF connection, otherwise it will be absent.
If present, If Answer was detected for the connection to the Called Party, the Temporary Connection or the gsmSRF connection, then the elapsed time since detection of Answer is shall be reported. If answer was not detected, it shall be set to "0".
 - timeIfTariffSwitch:
This parameter will be present if a tariff switch has occurred since the reception of the first ApplyCharging operation since the detection of Answer for the connection to the Called Party, Temporary Connection or gsmSRF connection, otherwise it will be absent.
If present, then tThe parameter may contain the following information:
 - timeSinceLastTariffSwitch:
The elapsed time since detection of the last tariff switch is reported.If Answer was detected for the connection to the Called Party, the Temporary Connection or the gsmSRF connection, then the elapsed time since detection of Answer or the last tariff switch (whichever of these events was last detected) shall be reported. If Answer was not detected, it shall be set to "0".
 - TariffSwitchInterval:
This parameter is present only if a tariff switch ~~was detected~~ has occurred since the detection of Answer for the connection to the Called Party, the temporary connection or the gsmSRF connection in the reported call period.
If present tThe time interval between either the detection of the Answer event or the previous tariff switch (whichever of these events was last detected) and the last tariff switch is reported.
- partyToCharge:
The "partyToCharge" parameter as received in the related ApplyCharging operation or deduced from the default value, to correlate the result to the request.
- callActive:
This parameter indicates whether the call is still active or has been released.