3GPP TSG_CN **Tdoc NP-000250**
Plenary Meeting #8, Dusseldorf, Germany
21st – 23rd June 2000.

Source: **TSG_N WG 2**

Title: **CRs to 3G Work Item CAMEL phase 3 - Stage 3, Category F (2)**

Agenda item: **6.2.2**

Document for: **APPROVAL**

Introduction:

This document contains **8** CRs on **Work Item CAMEL phase 3,** that have been agreed by **TSG_N WG 2,** and are forwarded to **TSG_N Plenary** meeting #8 for approval.

Tdoc	Spec	CR	Rev	CAT	Rel.	Old Ver	New Ver	Subject
N2-000155	29.078	086		F	R99	3.3.0	3.4.0	Reset Timer GPRS
N2-000168	29.078	088		F	R99	3.3.0	3.4.0	Corrections to MO-SMS
N2-000170	29.078	089		F	R99	3.3.0	3.4.0	Corrections to Common CAP types
N2-000171	29.078	090		F	R99	3.3.0	3.4.0	Corrections to CAP for circuit switched calls
N2-000210	29.078	091	1	F	R99	3.3.0	3.4.0	Corrections to CAP for GPRS
N2-000211	29.078	094	1	F	R99	3.3.0	3.4.0	General enhancements of GPRS Event Specific Information
N2-000256	29.078	097	1	F	R99	3.3.0	3.4.0	two changes in the class
N2-000189	29.078	098		F	R99	3.3.0	3.4.0	Addition of Location Information to Initial DP GPRS

3GPP TSG CN N2#10
Rotenburg, Germany, 22-26 May 2000

Document* *N2-000155

CHANGE REQUEST

29.078	CR	086	Current Version:	3.3.0

For submission to: CN #08 — for approval [X] / for information [ ] — strategic [ ] / non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: N2 **Date:** 10-05-2000

Subject: Reset Timer GPRS

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
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	[X]
Release 00	[ ]

Reason for change:

The gprsSSF state «Waiting for Instructions» is guarded by the Tssf application timer. Purpose of the ResetTimerGPRS operation is to reset this Tssf application timer in order to avoid the Tssf time-out at the gprsSSF.

The Tssf application timer is only related to this specific state in the gprsSSF. It is not related to a monitoring/control relationship concerning the attach/detach FSM or individual PDP context FSMs.

Therefore the parameter PDP-ID shall be deleted in operation ResetTimerGPRS.

Clauses affected:

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	CR 23.078-165r1
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 MODIFIED SECTION ******

8 GPRS Control

8.1 gsmSCF/gprsSSF operations and arguments

…

```
--  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,
        pDPID                       [2] PDPID OPTIONAL
        }
```

…

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

11 Detailed operation procedures

…

11.43 ResetTimerGPRS procedure

11.43.1 General description

This class 2 operation is used by the gsmSCF to refresh the T_{SSF} application timer, in order to avoid the T_{SSF} time-out at the gprsSSF.

11.43.1.1 Parameters

- timerValue:
  This parameter specifies the value to which the T_{SSF} timer is to be set.

- timerID:
  This parameter has a default value identifying the T_{SSF} timer.

- pDPID:
  This parameter if present specifies the identifier of a PDP context within a control relationship.

11.43.2 Responding entity (gprsSSF)

…

****** END OF DOCUMENT ******

3GPP N2 Meeting
Rothenburg, Germany, 22-26 May 2000

Document N200 0168

CHANGE REQUEST

29.078 CR 088 Current Version: 3.3.0

For submission to: CN#8 for approval [X] strategic [ ]
for information [ ] non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: N2 **Date:**

Subject: Corrections to syntax and procedure for MO-SMS

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
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	[X]
Release 00	[ ]

Reason for change:

In the MO-SMS specification, the following corrections are required

(1) (sect 7.1) If an operation has not defined a RESULT, then the line 'RETURN RESULT FALSE' shall be included in the operation description.

(2) (sect 7.1) If an operation has not defined a RESULT nor any ERRORs, then the line 'ALWAYS RESPONDS FALSE' shall be included in the operation description.

(3) (sect 7.2.1) An error is present in the definition of 'cap3SMS CONTRACT'.

(4) (sect 7.2.1) an error is present in the definition of 'SmsReturnable'. Operation 'releaseSMS' is not bound. It has a fixed length argument.

(5) (sect 11.33) A number of information elements is missing from the InitialDPSMS procedure description.

(6) (sect 11.41) It is erroneously indicated that RequestReportSMSEvent may be sent during state 'Monitoring'. Refer to the SDL's in 23.078. RequestReportSMSEvent may only be sent during waiting for Instruction.

(7) (sect 12.1.6.2.6) The incorrect AC definition for SMS is quoted. The AC definition to be used for SMS is 'cap3-sms-AC'.

Clauses affected: 7.1, 7.2.1, 11.33, 11.41, 12.1.6.2.6

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 MODIFIED SECTION ******

7 MO SMS Control

This clause defines the operations, arguments, packages and appliaction contexts used for CSE control of MO SMS over the gsmSCF – gprsSSF and gsmSCF – gsmSSF interfaces.

7.1 SMS operations and arguments

```
CAP-SMS-ops-args {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cAP-SMS-ops-args(22) version3(2)}

DEFINITIONS IMPLICIT TAGS::= BEGIN

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(17) version3(2)}

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

    tc-Messages,
    classes
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-object-identifiers(17) version3(2)}

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

    MiscCallInfo
FROM CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
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)}

    LocationInformation
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-activityTestSMS,
    opcode-connectSMS,
    opcode-continueSMS,
    opcode-eventReportSMS,
    opcode-furnishChargingInformationSMS,
    opcode-initialDPSMS,
    opcode-releaseSMS,
    opcode-requestReportSMSEvent,
    opcode-resetTimerSMS
FROM CAP-operationcodes operationcodes

    CalledPartyBCDNumber {},
    EventSpecificInformationSMS,
    EventTypeSMS,
    ExtensionField {},
    FCISMSBillingChargingCharacteristics,
    LocationInformationGPRS,
    RPCause,
    SMSEvent,
    TimeAndTimezone {},
    TimerID,
    TimerValue,
    TPDataCodingScheme,
    TPProtocolIdentifier,
```

```
    TPShortMessageSubmissionInfo,
    TPValidityPeriod
FROM CAP-datatypes datatypes

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

;

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

connectSMS {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        ConnectSMSArg {bound}
    RETURN RESULT   FALSE
    ERRORS {
        MissingParameter |
        ParameterOutOfRange |
        SystemFailure |
        TaskRefused |
        UnexpectedComponentSequence |
        UnexpectedDataValue |
        unexpectedParameter
        }
    CODE opcode-connectSMS
    }
--  Direction: gsmSCF -> gsmSSF or gprsSSF, Timer: Tconsms
--  This operation is used to request the gsmSSF/gprsSSF to perform the SMS processing
--  actions to route
--  or forward a short message to a specified destination.

ConnectSMSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    callingPartysNumber                 [0] ISDN-AddressString                  OPTIONAL,
    destinationSubscriberNumber         [1] CalledPartyBCDNumber {bound}        OPTIONAL,
    sMSCAddress                         [2] ISDN-AddressString                  OPTIONAL,
    extensions                          [10] SEQUENCE SIZE(1..bound.&numOfExtensions)   OF
                                                ExtensionField {bound}      OPTIONAL,
    ...
    }

continueSMS OPERATION ::= {
    RETURN RESULT   FALSE
    ALWAYS RESPONDS FALSE
    CODE            opcode-continueSMS
    }
-- Direction: gsmSCF -> gsmSSF/gprsSMS, Timer: Tcuesms
-- This operation is used to request the gsmSSF/gprsSSF to proceed with
-- Short Message processing at the DP at which it previously suspended
-- Short Message processing to await gsmSCF instructions (i.e. proceed
-- to the next Point in Association in the SMS FSM). The gsmSSF/gprsSSF
-- continues SMS processing without substituting new data from gsmSCF.

eventReportSMS {PARAMETERS-BOUND : bound}  OPERATION ::= {
    ARGUMENT
        EventReportSMSArg {bound}
    RETURN RESULT   FALSE
    ALWAYS RESPONDS FALSE
    CODE opcode-eventReportSMS
    }

--  Direction: gsmSSF or gprsSSF -> gsmSCF, Timer: Terbsms
--  This operation is used to notify the gsmSCF of a SM related event (e.g., FSM events such
--  as submission or failure) previously requested by the gsmSCF in a RequestReportSMSEvent
--  operation.

EventReportSMSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    eventTypeSMS                        [0] EventTypeSMS,
```

```
    eventSpecificInformationSMS         [1] EventSpecificInformationSMS         OPTIONAL,
    miscCallInfo                        [2] MiscCallInfo    DEFAULT {messageType request },
    extensions                          [10] SEQUENCE SIZE(1..bound.&numOfExtensions)   OF
                                                    ExtensionField {bound}      OPTIONAL,
    ...
    }

furnishChargingInformationSMS {PARAMETERS-BOUND : bound}        OPERATION ::= {
    ARGUMENT
        FurnishChargingInformationSMSArg {bound}
    RETURN RESULT   FALSE
    ERRORS {
        MissingParameter |
        TaskRefused |
        UnexpectedComponentSequence |
        UnexpectedDataValue |
        unexpectedParameter
        }
    CODE opcode-furnishChargingInformationSMS
    }
--  Direction: gsmSCF -> gsmSSF or gprsSSF, Timer: Tfcisms
--  This operation is used to request the gsmSSF to generate, register a charging record or to
--  include some information in the default SM record. The registered charging record is intended
--  for off line charging of the SM.

FurnishChargingInformationSMSArg {PARAMETERS-BOUND : bound}        ::=
FCISMSBillingChargingCharacteristics {bound}

initialDPSMS {PARAMETERS-BOUND : bound}  OPERATION ::= {
    ARGUMENT
        InitialDPSMSArg {bound}
    RETURN RESULT   FALSE
    ERRORS {
        MissingCustomerRecord |
        MissingParameter |
        ParameterOutOfRange |
        SystemFailure |
        TaskRefused |
        UnexpectedComponentSequence |
        UnexpectedDataValue |
        unexpectedParameter
        }
    CODE opcode-initialDPSMS
    }
--  Direction: gsmSSF or gprsSSF -> gsmSCF, Timer: Tidpsms
--  This operation is used after a TDP to indicate request for service.

InitialDPSMSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    serviceKey                          [0] ServiceKey,
    destinationSubscriberNumber         [1] CalledPartyBCDNumber {bound}            OPTIONAL,
    callingPartyNumber                  [2] ISDN-AddressString                  OPTIONAL,
    eventTypeSMS                        [3] EventTypeSMS                        OPTIONAL,
    iMSI                                [4] IMSI                                OPTIONAL,
    locationInformationMSC              [5] LocationInformation                 OPTIONAL,
    locationInformationGPRS             [6] LocationInformationGPRS             OPTIONAL,
    sMSCAddress                         [7] ISDN-AddressString                  OPTIONAL,
    timeAndTimezone                     [8] TimeAndTimezone {bound}                 OPTIONAL,
    tPShortMessageSubmissionSpecificInfo [9] TPShortMessageSubmissionInfo       OPTIONAL,
    tPProtocolIdentifier                [10] TPProtocolIdentifier               OPTIONAL,
    tPDataCodingScheme                  [11] TPDataCodingScheme             OPTIONAL,
    tPValidityPeriod                    [12] TPValidityPeriod                   OPTIONAL,
    extensions                          [13] SEQUENCE SIZE(1..bound.&numOfExtensions)   OF
                                                    ExtensionField {bound}      OPTIONAL,
    ...
    }

releaseSMS                      OPERATION ::= {
    ARGUMENT
        ReleaseSMSArg
    RETURN RESULT   FALSE
    ALWAYS RESPONDS FALSE
    CODE opcode-releaseSMS
    }
--  Direction: gsmSCF -> gsmSSF or gprsSSF, Timer: Trcsms
--  This operation is used to prevent an attempt to submit a short message.

ReleaseSMSArg                       ::= RPCause

requestReportSMSEvent {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        RequestReportSMSEventArg {bound}
    RETURN RESULT   FALSE
```

```
    ERRORS {
        missingParameter |
        ParameterOutOfRange |
        SystemFailure |
        TaskRefused |
        UnexpectedComponentSequence |
        UnexpectedDataValue |
        unexpectedParameter
        }
    CODE opcode-requestReportSMSEvent
    }
--  Direction: gsmSCF -> gsmSSF or gprsSSF, Timer: Trrbsms
--  This operation is used to request the gsmSSF or gprsSSF to monitor for a
--  SM related event (e.g., FSM events such as submission or failure), then
--  send a notification back to the gsmSCF when the event is detected.

RequestReportSMSEventArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    sMSEvents                           [0] SEQUENCE SIZE (1..bound.&numOfSMSEvents)    OF SMSEvent,
    extensions                          [10] SEQUENCE SIZE (1..bound.&numOfExtensions)  OF
                                                            ExtensionField {bound}      OPTIONAL,
    ...
    }
--  Indicates the SM related events for notification.

resetTimerSMS {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        ResetTimerSMSArg {bound}
    RETURN RESULT   FALSE
    ERRORS          {missingParameter |
                    parameterOutOfRange |
                    taskRefused |
                    unexpectedComponentSequence |
                    unexpectedDataValue |
                    unexpectedParameter}
    CODE            opcode-resetTimerSMS
    }
-- Direction: gsmSCF -> gsmSSF/gprsSSF, Timer: Trtsms
-- This operation is used to request the gsmSSF/gprsSSF to refresh an application
-- timer in the gsmSSF.

ResetTimerSMSArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    timerID         [0] TimerID DEFAULT tssf,
    timervalue      [1] TimerValue,
    extensions      [2] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                                            ExtensionField {bound}  OPTIONAL,
    ...
    }

END
```

7.1.1 Operation timers

The following value ranges apply for operation specific timers in CAP:

short:	1 to 20 seconds;
medium:	1 to 60 seconds;
long:	1 second to 30 minutes

Table 7-1 lists all operation timers and the value range for each timer. The definitive value for each operation timer may be network specific and has to be defined by the network operator.

Table 7-1: Operation timers and their value range

Operation Name	Timer	value range
ActivityTestSMS	T_{atsms}	short
ConnectSMS	T_{consms}	Short
ContinueSMS	T_{cuesms}	short
EventReportSMS	T_{erbsms}	Long
FurnishChargingInformationSMS	Tfcisms	Short
InitialDPSMS	T_{idpsms}	Short
ReleaseSMS	T_{rcsms}	Short
RequestReportSMSEvent	T_{rrbsms}	Short
ResetTimerSMS	T_{rtsms}	short

7.2 SMS contracts, packages and ACs

7.2.1 SMS ASN.1 module

```
CAP-smsSSF-gsmSCF-pkgs-contracts-acs {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-smsSSF-gsmSCF-pkgs-contracts-acs(23) version3(2)}

DEFINITIONS ::= BEGIN

-- This module describes the operation-packages, contracts and application-contexts used
-- over the gsmSSF/gprsSSF-gsmSCF interface.

IMPORTS

    PARAMETERS-BOUND,
    cAPSpecificBoundSet
FROM CAP-classes classes


    ROS-OBJECT-CLASS,
    CONTRACT,
    OPERATION-PACKAGE,
    OPERATION
FROM Remote-Operations-Information-Objects ros-InformationObjects

    TCMessage {}
FROM TCAPMessages tc-Messages

    APPLICATION-CONTEXT,
    dialogue-abstract-syntax
FROM TC-Notation-Extensions tc-NotationExtensions

    activityTestSMS,
    connectSMS{},
    continueSMS,
    eventReportSMS{},
    furnishChargingInformationSMS{},
    initialDPSMS{},
    releaseSMS,
    requestReportSMSEvent{},
    resetTimerSMS{}
FROM CAP-SMS-ops-args sms-Operations

    sms-Operations,
    tc-NotationExtensions,
    tc-Messages,
    ros-InformationObjects,
    classes,
    id-as-sms-AS
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-object-identifiers (17) version3(2)}

;

-- Application Contexts

cap3-sms-AC APPLICATION-CONTEXT ::= {
    CONTRACT                    cap3SMS
    DIALOGUE MODE               structured
```

```
    ABSTRACT SYNTAXES           {dialogue-abstract-syntax |
                                gprsSSF-scfAbstractSyntax}
    APPLICATION CONTEXT NAME    id-ac-cap3-sms-AC}


-- Contracts

cap3SMS CONTRACT ::= {
-- dialogue initiated by gprsSSF or gsmSSF with InitialDPSMS Operation
    INITIATOR CONSUMER OF
            {smsActivationPackage {cAPSpecificBoundSet}}
    RESPONDER CONSUMER OF
            {smsConnectPackage {cAPSpecificBoundSet} |
            smsReleasePackage {cAPSpecificBoundSet} |
            smsEventHandlingPackage {cAPSpecificBoundSet} |
            smsTimerPackage {cAPSpecificBoundSet} |
            smsBillingPackage {cAPSpecificBoundSet} |
            smsProcessingPackage {cAPSpecificBoundSet} |
            smsActivityTestPackage {cAPSpecificBoundSet}
cAPSpecificBoundSetcAPSpecificBoundSet}
    ID      id-cap3GprsSsfToScf
    }


-- Operation Packages

smsActivationPackage {PARAMETERS-BOUND : bound}  OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {initialDPSMS {bound}}
    ID      id-package-smsActivation}
smsConnectPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {connectSMS {bound}}
    ID      id-package-smsConnect}
smsProcessingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {continueSMS}
    ID      id-package-smsContinue}
smsReleasePackage  {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {releaseSMS}
    ID      id-package-smsRelease}
smsEventHandlingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {requestReportSMSEvent {bound}}
    SUPPLIER INVOKES    {eventReportSMS {bound}}
    ID      id-package-smsEventHandling}
smsBillingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {furnishChargingInformationSMS {bound}}
    ID      id-package-smsBilling}
smsActivityTestPackage OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {activityTestSMS}
    ID      id-package-smsActivityTest}
smsTimerPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {resetTimerSMS {bound}}
    ID      id-package-smsTimer}


-- Abstract Syntaxes

sms-AbstractSyntax ABSTRACT-SYNTAX ::= {
    Generic-sms-PDUs
    IDENTIFIED BY   id-as-sms-AS}

Generic-sms-PDUs ::= TCMessage {{SmsInvokable},
            {SmsReturnable}}

SmsInvokable OPERATION ::= {
    activityTestSMS |
    connectSMS {cAPSpecificBoundSet} |
    eventReportSMS {cAPSpecificBoundSet} |
    furnishChargingInformationSMS {cAPSpecificBoundSet} |
    initialDPSMS {cAPSpecificBoundSet} |
    requestReportSMSEvent {cAPSpecificBoundSet} |
    resetTimerSMS {cAPSpecificBoundSet}
    }

SmsReturnable OPERATION ::= {
    activityTestSMS |
    connectSMS {cAPSpecificBoundSet} |
    continueSMS |
    furnishChargingInformationSMS {cAPSpecificBoundSet}|
    initialDPSMS {cAPSpecificBoundSet}|
        releaseSMS {cAPSpecificBoundSet}|
        requestReportSMSEvent {cAPSpecificBoundSet}|
        resetTimerSMS {cAPSpecificBoundSet}
        }
```

END

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

11.33 InitialDPSMS procedure

11.33.1 General description

This operation is sent by the gsmSSF or gprsSSF after detection of a TDP-R in the FSM, to request the gsmSCF for instructions to complete the MO SMS submission.

11.33.1.1 Parameters

- destinationSubscriberNumber:
  This IE contains a number to identify the Destination short message entity.

- callingPartyNumber:
  This parameter carries the MSISDN of the sending MS.

- eventType:
  This parameter indicates the armed FSM DP event, resulting in the InitialDPSMS operation.

- iMSI:
  IMSI of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3G TS 29.002 [13].

- locationInformationInMSC:
  This parameter indicates the location of the sending MS when the SM is sent via MSC.

- locationInformationInSGSN:
  This parameter indicates the location of the sending MS when the SM is sent via GPRS SGSN.

- 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 gsmSCF addressing).

- timeAndTimeZone:
  This parameter contains the time that the gsmSSF/gprsSSF was triggered, and the time zone that the invoking gsmSSF/gprsSSF resides in.

- tPDataCodingScheme:
  This IE indicates the data coding scheme of the TP-User Data field, and may indicate a message class. The message class may indicate e.g. the originator of Short Message.

- tPShortMessageSubmissionSpecificInfo:
  This IE contains the 1st octect of the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [46].

- tPProtocolIdentifier:
  This IE indicates the protocol used above SM-Transfer Layer.

- tPValidityPeriod:
  This IE indicates the length of the validity period or the absolute time of the validity period termination.

- sMSCAddress:
  This I.E defines the address of the SMSC to which the MO short message is intended to be submitted.

11.33.2 Invoking entity (gsmSSF or gprsSSF)

11.33.2.1 Normal procedure

gsmSSF/gprsSSF preconditions:

(1) A MO SMS submission attempt has been initiated.

(2) An event has been detected at a DP.

gsmSSF/gprsSSF postcondition:

(1) A control relationship has been established and the gsmSSF/gprsSSF waits for instructions from the gsmSCF.

The address of the gsmSCF the InitialDPSMS operation shall be sent to is fetched from the SMS-CSI. The gsmSSF or gprsSSF provides all available parameters.

A control relationship is established to the gsmSCF. The gsmSSF/gprsSSF application timer T_{SSF} is set when the gsmSSF/gprsSSF sends InitialDPSMS for requesting instructions from the gsmSCF. It is used to prevent from excessive SMS delivery suspension time.

11.33.2.2 Error handling

If the destination gsmSCF is not accessible then the gsmSSF/gprsSSF instructs the MSC/SGSN to handle the SM according to the Default SMS Handling parameter of the SMS-CSI.

On expiration of T_{SSF} before receiving any operation, the gsmSSF/gprsSSF aborts the interaction with the gsmSCF and instructs the VMSC/SGSN to handle the SM according to the Default SMS Handling parameter of the SMS-CSI.

If the sending mobile party abandons after the sending of InitialDPSMS, then the gsmSSF/gprsSSF closes the control relationship after the first answer message from the gsmSCF has been received, and after the SMSC has responded or a timer has expired.

Generic error handling for the operation related errors is described in clause 10 and the TCAP services which are used for reporting operation errors are described in clause 12.

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

11.41 RequestReportSMSEvent procedure

11.41.1 General description

This operation is used to request the gsmSSF or gprsSSF to monitor for a SM related event (e.g., FSM events such as failure or successful delivery), then send a notification back to the gsmSCF when the event is detected.

11.41.1.1 Parameters

- smsEvents:

  This parameter specifies the event or events of which a report is requested.

  - eventTypeSMS:

    This parameter specifies the type of event of which a report is requested. Value SMSCollectedInfo is not valid for the RequestReportSMSEvent operation.

- monitorMode:

  This parameter indicates how the event shall be reported. When the "monitorMode" is "interrupted", the event shall be reported as a request, if the "monitorMode" is "notifyAndContinue", the event shall be reported as a notification, if the "monitorMode" is "transparent", the event shall not be reported.

11.41.2 Responding entity (gsmSSF or gprsSSF)

11.41.2.1 Normal procedure

gsmSSF/gprsSSF precondition:

(1) A control relationship exists between the gsmSSF/gprsSSF and the gsmSCF.

(2) The gsmSSF/gprsSSF is in ~~either~~ the state "Waiting for Instructions".

~~NOTE: In state "monitoring" only requests to disarm detection points (with MonitorMode set to "Transparent") or send notifications of events (with MonitorMode set to "NotifyAndContinue") shall be accepted.~~

gsmSSF/gprsSSF postconditions:

(1) The requested EDPs have been armed or disarmed as indicated.

(2) Previously requested events are monitored until ended by a transparent monitor mode, until the end of the SM submission, until the EDPs are detected or until the SM submission fails.

(3) The gsmSSF/gprsSSF remains in the same state. ~~If no EDPs are armed after the operation, then the gsmSSF/gprsSSF transits to state IDLE.~~

11.41.2.2 Error handling

Generic error handling for the operation related errors is described in clause 10 and the TCAP services which are used for reporting operation errors are described in clause 12.

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

12.1.6 gsmSSF/gprsSSF-to-gsmSCF SMS related messages

Operation errors and rejection of TCAP components shall be transmitted to the gsmSCF according to the following rules:

- the dialogue shall be maintained when the preceding message, which contained the erroneous component, indicated that the dialogue shall be maintained. I.e. the error or reject shall be transmitted with a TC-CONTINUE request primitive if the erroneous component was received with a TC-CONTINUE indication primitive;

- on receipt of an ERROR or REJECT component the gsmSCF decides on further processing. It may either continue, explicitly end or abort the dialogue;

If the error processing in the gsmSSF/gprsSSF leads to the case where the gsmSSF/gprsSSF is not able to process further gsmSCF operations while the dialogue is to be maintained, the gsmSSF/gprsSSF aborts the dialogue with a TC-U-ABORT request primitive.

The gsmSSF/gprsSSF aborts a dialogue with a TC-U-ABORT request primitive if release is initiated by any other entity than the gsmSCF and the gsmSSF/gprsSSF has no armed EDPs to notify the gsmSCF.

12.1.6.1 Use of dialogue handling services

On receipt of a TC-U-REJECT.ind in the FE, this primitive should be ignored. It is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 12.1.1.2. This is also applicable for invoke problems related to a class 4 linked operation.

A TC-U-REJECT.req should be sent followed by a TC-CONTINUE.req.

On receipt of a TC-R-REJECT.ind in the FE, this primitive should be ignored. It is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 12.1.1.2. This is also applicable for invoke problems related to a class 4 linked operation.

On receipt of a TC-L-REJECT indication primitive (i.e. when a protocol error has been detected by the local TC entity) which cannot be related to an active operation, it is up to the application process to continue or to terminate the dialogue and implicitly trigger the transmission of the reject component or to abort the dialogue.

On receipt of a TC-NOTICE indication the TC-USER is informed that a message cannot be delivered by the Network Layer. It occurs if the Return Option has been set (see subclause 12.1.1.3.7). It is for the application process to decide whether to terminate the dialogue or retry.

The application-process is the sole user of the TC-P-ABORT service and TC-NOTICE service.

The receipt of a TC-U-ABORT-Ind or TC-P-ABORT-Ind on a dialogue terminates all request processing.

12.1.6.2 Dialogue handling

12.1.6.2.1 Dialogue establishment

12.1.6.2.2 Dialogue continuation

12.1.6.2.3 Dialogue termination

12.1.6.2.4 User abort

12.1.6.2.5 Provider abort

12.1.6.2.6 Mapping to TC dialogue primitives

The gsmSSF-gsmSCF IN services can be mapped onto TC services. This subclause defines the mapping of the gsmSSF-gsmSCF IN services onto the services of the TC dialogue handling services defined in ETS 300 287-1 [6].

a) The TC-BEGIN service is used to invoke the operations of the gsmSCF-gsmSSF connection packages as defined in clause 6.

b) The TC-CONTINUE service is used to report the success of the operations invoked in a TC-BEGIN service and to invoke or respond to any other operations.

c) The TC-U-ABORT service is used to report the failure of operations of the connection packages as defined in clause 6.

The mapping of the parameters onto the TC-BEGIN primitive is defined in subclause 12.1.1.3.6 with the following qualifications:

- The AC Name parameter shall take the value of the application-context-name field of the cap3-sms-AC ~~**capgsmssf-scfGenericAC** or **capgsmssf-scfAssistHandoffAC**~~ object if the initiating AE is a gsmSSF.

The mapping of the parameters onto the TC-CONTINUE primitive is defined in subclause 12.1.1.3.6.

The mapping of the parameters onto the TC-U-ABORT primitive is defined in subclause 12.1.1.3.6 with the following qualifications:

- The Application-Context-Name parameter shall be used as specified in ETS 300 287-1 [6]. When the responding AE refuses a dialogue because the application-context-name it receives is not supported, this parameter shall have the value of the application-context-name field of the cap3-sms-AC~~capgsmssf-scfGenericAC or capgsmssf-scfAssistHandoffAC~~, object if the responding AE is a gsmSCF.

The use of the parameters of the TC-END service is defined in subclause 12.1.1.3.6.

12.1.6.3 Component Handling

12.1.6.3.1 Procedures for CAP operations

The CAP ASEs are users of the TC component handling services except for the TC-L-REJECT and TC-L-CANCEL services which are used by the application-process. Receipt of a TC-L-REJECT-Ind leads the application-process to abandon the dialogue (i.e. it issues a TC-U-ABORT-Request primitive).

The TC-U-CANCEL service is never used.

12.1.6.3.2 Mapping to TC component parameters

The gsmSSF-gsmSCF IN ASE services are mapped onto the TC component handling services. The mapping of operations and errors onto TC services is defined in subclause 12.1.1.4.2 with the following qualifications:

The timeout parameter of the TC-INVOKE-Req primitives is set according to clause 6.

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Document N2-00 0170

CHANGE REQUEST

29.078	CR	089	Current Version:	3.3.0

For submission to: CN#8 — for approval [X] / for information [ ] — strategic [ ] / non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: N2 **Date:** 17 May 2000

Subject: Corrections to CAP V3 common data types (chapter 5)

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
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	[X]
Release 00	[ ]

Reason for change: The present CR proposes various corrections to the CAP V3 syntax, in chapter 5 (Common CAP Types).

See 'other comments' for an overview of the changes.

Clauses affected: 5

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:

The following changes have been made:

(1) 'Interval' and 'Duration' shall be imprted from CS1, not from CS2.

(2) In oAnswerSpecificInfo, CalledPartyNumber data type shall be marked as '{bound}'

(3) The name used for an instance of a data type shall start with lower case. This has been corrected in various places.

(4) The names of the elements of a ENUMERATED data type shall start with lower case.

(5) The name of the instance of data type 'backwardServiceInteractionsInd' has been changed into 'backwardServiceInteractionInd'.

(6) In data type definition of 'SMSEvent' a square bracket was missing.

(7) In the definition of 'requestedInfoError' the text 'other values For Further Study' has been removed. This text does not belong in the specification.

(8) In section 5.5, the definitions of CONTRACT, Code and OPERATION don't have to be imported. They are not used in this section.

(9) In section 5.5, the importing of emptyBind and emptyUnbind is not needed. These data items are not used in this section.

(10) In section 5.5, the definition of 'ros-UsefulDefinitions' and 'datatypes' is not needed. These data items are not used in this section.

(11) In section 5.5, CriticalityType shall be imported from CS2, not from CAP datatypes.

(12) In section 5.6, an editorial change is proposed to indicate that the Modules, Packages, Contracts etc., for which OI names are defined in this section, are not specific for CAP, but only used by CAP.

(13) In sect. 5.6, the definition of 'id-cap3GgsmSCFTogprsSSF' has been corrected to 'id-cap3GsmSCFTogprsSSF'.

(14) In sect. 5.6, the definition of 'id-cap3GprsSsfTogsmScf' appeared twice. The second definition shall be removed.

****** FIRST MODIFIED SECTION ******

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(50) version3(2)}
--  This module contains the type definitions for the CAP v.3 data types.

DEFINITIONS IMPLICIT TAGS ::= BEGIN


IMPORTS

-- CS1 Parameters

    CallingPartysCategory,
    Duration,
    HighLayerCompatibility,
    Integer4,
    Interval,
    LegID,
    RedirectionInformation,
    ServiceKey
FROM CS1-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cs1-datatypes(2) version1(0)}

    BothwayThroughConnectionInd,
    CriticalityType,
    MiscCallInfo,
    Duration,
    Interval
FROM CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) 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)}

    LocationInformation,
    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(17) 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 3G TS 24.008 [12] for the encoding.

AChBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE
    (bound.&minAChBillingChargingLength..bound.&maxAChBillingChargingLength))
```

```
    (CONSTRAINED BY {-- shall be the result of the BER-encoded value of the type --
    CAMEL-AchBillingChargingCharacteristics {bound}})
-- The AChBillingChargingCharacteristics parameter specifies the charging related information
-- to be provided by the gsmSSF and the conditions on which this information has to be reported
-- back to the gsmSCF with the ApplyChargingReport operation. The value of the
-- AchBillingChargingCharacteristics of type OCTET STRING carries a value of the ASN.1 data type:
-- CAMEL-AchBillingChargingCharacteristics. The normal encoding rules are used to encode this
-- value.
-- The violation of the UserDefinedConstraint shall be handled as an ASN.1 syntax error.

AdditionalCallingPartyNumber {PARAMETERS-BOUND : bound}     ::= Digits {bound}
-- Indicates the Additional Calling Party Number.

AlertingPattern                                          ::= OCTET STRING (SIZE(3))
-- Indicates a specific pattern that is used to alert a subscriber
-- (e.g. distinctive ringing, tones, etc.).
-- The encoding of the last octet of this parameter is as defined in 3G TS 29.002 [13].
-- Only the trailing OCTET is used, the remaining OCTETS shall be sent as NULL (zero)
-- The receiving side shall ignore the leading two OCTETS.

AOCBeforeAnswer                     ::= SEQUENCE {
    aOCInitial                          [0] CAI-GSM0224,
    aOCSubsequent                       [1] AOCSubsequent                       OPTIONAL
    }

AOCGPRS                             ::= SEQUENCE {
    aOCInitial                          [0] CAI-GSM0224,
    aOCSubsequent                       [1] AOCSubsequent                       OPTIONAL
    }

AOCSubsequent                       ::= SEQUENCE {
    cAI-GSM0224                         [0] CAI-GSM0224 ,
    tariffSwitchInterval                [1] INTEGER (1..86400)                  OPTIONAL
    }
-- tariffSwitchInterval is measured in 1 second units

AppendFreeFormatData    ::= ENUMERATED {
        overwrite       (0),
        append          (1)
        }

ApplicationTimer                                         ::=INTEGER (0..2047)
-- Used by the gsmSCF to set a timer in the gsmSSF. The timer is in seconds.

AssistingSSPIPRoutingAddress {PARAMETERS-BOUND : bound}     ::= Digits {bound}
-- Indicates the destination address of the gsmSRF for the assist procedure.

BackwardServiceInteractionInd       ::= SEQUENCE {
    conferenceTreatmentIndicator        [1] OCTET STRING (SIZE(1))  OPTIONAL,
    -- acceptConferenceRequest  'xxxx xx01'B
    -- rejectConferenceRequest  'xxxx xx10'B
    -- network default is accept conference request
    callCompletionTreatmentIndicator    [2] OCTET STRING (SIZE(1))  OPTIONAL,
    -- acceptCallCompletionServiceRequest   'xxxx xx01'B,
    -- rejectCallCompletionServiceRequest   'xxxx xx10'B
    -- network default is reject call completion service request
    ...
    }

BCSMEvent {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    eventTypeBCSM       [0] EventTypeBCSM,
    monitorMode         [1] MonitorMode,
    legID               [2] LegID                                   OPTIONAL,
    dpSpecificCriteria  [30] DpSpecificCriteria {bound}             OPTIONAL
    }
-- Indicates the BCSM Event information for monitoring.

BearerCapability {PARAMETERS-BOUND : bound} ::= CHOICE {
    bearerCap               [0] OCTET STRING (SIZE(2..bound.&maxBearerCapabilityLength))
    }
-- Indicates the type of bearer capability connection to the user. For bearerCap, the ISUP User
-- Service Information, ETS 300 356-1 [8]
-- encoding shall be used.

CAI-GSM0224                         ::= SEQUENCE {
    e1                                  [0] INTEGER (0..8191)                   OPTIONAL,
    e2                                  [1] INTEGER (0..8191)                   OPTIONAL,
    e3                                  [2] INTEGER (0..8191)                   OPTIONAL,
    e4                                  [3] INTEGER (0..8191)                   OPTIONAL,
    e5                                  [4] INTEGER (0..8191)                   OPTIONAL,
    e6                                  [5] INTEGER (0..8191)                   OPTIONAL,
    e7                                  [6] INTEGER (0..8191)                   OPTIONAL
    }
```

```
--  Indicates Charge Advice Information to the Mobile Station. For information regarding
--  parameter usage, refer to 3G TS 22.040 [26].

CalledPartyBCDNumber {PARAMETERS-BOUND : bound}     ::= OCTET STRING (SIZE(
            bound.&minCalledPartyBCDNumberLength ..
            bound.&maxCalledPartyBCDNumberLength))
-- Indicates the Called Party Number, including service selection information.
-- Refer to 3G TS 24.008 [12]
-- for encoding. This data type carries only the"type of number","numbering plan
-- identification" and"number digit" fields defined in 3G TS 24.008 [12];
-- it does not carry the"called party
-- BCD number IEI" or"length of called party BCD number contents".

CalledPartyNumber {PARAMETERS-BOUND : bound}    ::= OCTET STRING (SIZE
        (bound.&minCalledPartyNumberLength..bound.&maxCalledPartyNumberLength))
-- Indicates the Called Party Number. Refer to ITU-T Q.763 [20] for encoding.

CallingPartyNumber {PARAMETERS-BOUND : bound}   ::= OCTET STRING (SIZE (
            bound.&minCallingPartyNumberLength..
            bound.&maxCallingPartyNumberLength))
-- Indicates the Calling Party Number. Refer to ETS 300 356-1 [8] for encoding.

CallResult {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE (bound.&minCallResultLength ..
    bound.&maxCallResultLength))
    (CONSTRAINED BY {-- shall be the result of the BER-encoded value of type -
    CAMEL-CallResult {bound}})

-- The violation of the UserDefinedConstraint shall be handled as an ASN.1 syntax error.

-- This parameter provides the gsmSCF with the charging related information previously requested
-- using the ApplyCharging operation. This shall include the partyToCharge parameter as
-- received in the related ApplyCharging operation to correlate the result to the request


CAMEL-AChBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= CHOICE {
    timeDurationCharging                    [0] SEQUENCE {
            maxCallPeriodDuration               [0] INTEGER (1..864000),
            releaseIfdurationExceeded           [1]BOOLEAN DEFAULT FALSE,
            tariffSwitchInterval                [2] INTEGER (1..86400)          OPTIONAL,
            tone                                [3] BOOLEAN DEFAULT FALSE,
            extensions                          [4] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                                        ExtensionField  {bound} OPTIONAL,
            ...
        }
    }
--  tariffSwitchInterval is measured in 1 second units.
--  maxCallPeriodDuration is measured in100 millisecond units

CAMEL-CallResult {PARAMETERS-BOUND : bound}     ::= CHOICE {
    timeDurationChargingResult              [0] SEQUENCE {
        partyToCharge                           [0] ReceivingSideID,
        timeInformation                         [1] TimeInformation,
        callActive                              [2] BOOLEAN                 DEFAULT TRUE,
        callReleasedAtTcpExpiry                 [3] NULL                    OPTIONAL,
        extensions                              [4] SEQUENCE SIZE(1..bound.&numOfExtensions)    OF
                                                        ExtensionField  {bound}     OPTIONAL,
        ...
        }
    }

CAMEL-FCIBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= CHOICE{
    fCIBCCCAMELsequence1            [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{
    gPRS-ReferenceNumber                    [0] GPRS-ReferenceNumber,
    fCIBCCCAMELsequence1                    [1] 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{
```

```
    fCIBCCCAMELsequence1        [0] SEQUENCE {
        freeFormatData              [0] OCTET STRING (SIZE (bound.&minFCIBillingChargingDataLength..

    bound.&maxFCIBillingChargingDataLength)),
        appendFreeFormatData        [1] AppendFreeFormatData DEFAULT overwrite
        }
    }

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

CAMEL-SCIGPRSBillingChargingCharacteristics ::= SEQUENCE {
    gPRS-ReferenceNumber                    [0] GPRS-ReferenceNumber,
    aOCGPRS                                 [1] AOCGPRS,
    pDPID                                   [2] PDPID       OPTIONAL
    }

Cause {PARAMETERS-BOUND : bound}            ::= OCTET STRING (SIZE (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 only include the cause value.

CGEncountered                               ::= ENUMERATED {
    noCGencountered         (0),
    manualCGencountered     (1),
    scpOverload             (2)
    }
-- Indicates the type of automatic call gapping encountered, if any.

ChargingCharacteristics             ::= CHOICE {
        maxTransferredVolume            [0] INTEGER (1..4294967295),
        maxElapsedTime                  [1] INTEGER (1..86400)
        }
--  maxTransferredVolume is measured in number of bytes
--  maxElapsedTime is measured in seconds

ChargingResult                      ::= CHOICE {
        transferredVolume               [0] TransferredVolume,
        elapsedTime                     [1] ElapsedTime
        }

CollectedDigits                             ::= SEQUENCE {
    minimumNbOfDigits       [0] INTEGER (1..30) DEFAULT 1,
    maximumNbOfDigits       [1] INTEGER (1..30),
    endOfReplyDigit         [2] OCTET STRING (SIZE (1..2))  OPTIONAL,
    cancelDigit             [3] OCTET STRING (SIZE (1..2))  OPTIONAL,
    startDigit              [4] OCTET STRING (SIZE (1..2))  OPTIONAL,
    firstDigitTimeOut       [5] INTEGER (1..127)            OPTIONAL,
    interDigitTimeOut       [6] INTEGER (1..127)            OPTIONAL,
    errorTreatment          [7] ErrorTreatment              DEFAULT stdErrorAndInfo,
    interruptableAnnInd     [8] BOOLEAN                     DEFAULT TRUE,
    voiceInformation        [9] BOOLEAN                     DEFAULT FALSE,
    voiceBack               [10] BOOLEAN                    DEFAULT FALSE
    }
-- The use of voiceBack and the support of voice recognition via voiceInformation
-- is network operator specific.
-- The endOfReplyDigit, cancelDigit, and startDigit parameters have been
-- designated as OCTET STRING, and are to be encoded as BCD, one digit per octet
-- only, contained in the four least significant bits of each OCTET. The usage is service dependent.
-- firstDigitTimeOut and interDigitTimeOut are measured in seconds.

CollectedInfo                               ::= CHOICE {
    collectedDigits         [0] CollectedDigits
    }

ConnectedNumberTreatmentInd                 ::= ENUMERATED {
    noINImpact                  (0),
    presentationRestricted      (1),
    presentCalledINNumber       (2),
    presentCallINNumberRestricted   (3)
}
-- This parameter is used to suppress or to display the connected number.

ControlType                                 ::= ENUMERATED {
    sCPOverloaded               (0),
    manuallyInitiated           (1)
    }

CorrelationID {PARAMETERS-BOUND : bound}    ::= Digits {bound}
```

```
-- used by gsmSCF for correlation with a previous operation.

DateAndTime                                ::= OCTET STRING (SIZE(7))
--  DateAndTime is BCD encoded. The year digit indicating millenium occupies bits
--  0-3 of the first octet, and the year digit indicating century occupies bits
--  4-7 of the first octet.
--  The year digit indicating decade occupies bits 0-3 of the second octet,
--  whilst the digit indicating the year within the decade occupies bits 4-7 of
--  the second octet.
--  The most significant month digit occupies bits 0-3 of the third octet,
--  and the least  significant month digit occupies bits 4-7 of the third octet.
--  The most significant day digit occupies bits 0-3 of the fourth octet,
--  and the least significant day digit occupies bits 4-7 of the fourth octet.
--  The most significant hours digit occupies bits 0-3 of the fifth octet,
--  and the least significant digit occupies bits 4-7 of the fifth octet.
--  The most significant minutes digit occupies bits 0-3 of the sixth octet,
--  and the least significant digit occupies bits 4-7 of the sixth octet.
--  The most significant seconds digit occupies bits 0-3 of the seventh octet,
--  and the least seconds significant digit occupies bits 4-7 of the seventh octet.
--  For the encoding of digits in an octet, refer to the timeAndtimezone parameter.

DestinationRoutingAddress {PARAMETERS-BOUND : bound} ::= SEQUENCE SIZE(1) OF
                                                                    CalledPartyNumber {bound}
-- Indicates the Called Party Number.

Digits {PARAMETERS-BOUND : bound}                  ::= OCTET STRING (SIZE
                                                   (bound.&minDigitsLength..bound.&maxDigitsLength))
-- Indicates the address signalling digits.
-- Refer to ETS 300 356-1 [8] Generic Number & Generic Digits parameters for encoding.
-- The digits may also include the '#', '*', a, b and c digits.
-- The coding of the subfields 'NumberQualifier' in Generic Number and 'TypeOfDigits' in
-- Generic Digits are irrelevant to the CAP;
-- the ASN.1 tags are sufficient to identify the parameter.
-- The ISUP format does not allow to exclude these subfields,
-- therefore the value is network operator specific.
-- The following parameters should use Generic Number:
-- AdditionalCallingPartyNumber for InitialDP
-- AssistingSSPIPRoutingAddress for EstablishTemporaryConnection
-- CorrelationID for AssistRequestInstructions
-- CalledAddressValue for all occurrences, CallingAddressValue for all occurrences.
--
-- The following parameters should use Generic Digits:
-- CorrelationID in EstablishTemporaryConnection
-- number in VariablePart
-- digitsResponse in ReceivedInformationArg

-- Note that when CorrelationID is transported in Generic Digits, then the digits shall
-- always be BCD encoded.

DpSpecificCriteria {PARAMETERS-BOUND : bound}      ::= CHOICE {
    applicationTimer        [1] ApplicationTimer
    }
--  The gsmSCF may set a timer in the gsmSSF for the No Answer event.
--  If the user does not answer the call within the allotted time,
--  the gsmSSF reports the event to the gsmSCF

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

ErrorTreatment                                     ::= ENUMERATED {
    stdErrorAndInfo         (0),
    help                    (1),
    repeatPrompt            (2)
    }
-- stdErrorAndInfomeans returning the"ImproperCallerResponse" error in the event of an error
-- condition during collection of user info.

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          CalledPartyNumber {bound},
            or-Call                     [0] NULL                    OPTIONAL,
            forwardedCall               [1] NULL                    OPTIONAL,
            ...
            },
    oDisconnectSpecificInfo         [7] SEQUENCE {
            releaseCause                [0] Cause {bound}           OPTIONAL,
             ...
            },
    tBusySpecificInfo               [8] SEQUENCE {
            busyCause                   [0] Cause {bound}           OPTIONAL,
            callForwarded               [50] NULL                   OPTIONAL,
             ...
            },
    tNoAnswerSpecificInfo           [9] SEQUENCE {
            callForwarded               [50] NULL                   OPTIONAL,
             ...
            },
    tAnswerSpecificInfo             [10] SEQUENCE {
            destinationAddress          CalledPartyNumber {bound},
            or-Call                     [0] NULL                    OPTIONAL,
            forwardedCall               [1] NULL                    OPTIONAL,
            ...
            },
    tDisconnectSpecificInfo         [12] SEQUENCE {
            releaseCause                [0] Cause {bound}           OPTIONAL,
             ...
            }
    }
-- Indicates the call related information specific to the event.

EventSpecificInformationSMS     ::=  CHOICE {
    o-smsFailureSpecificInfo        [0] SEQUENCE {
        failureCause                    [0] SMSCause                        OPTIONAL,
        ...
        },
    o-smsSubmittedSpecificInfo      [1] SEQUENCE {
        -- no specific info defined—
        ...
        }
    }

EventTypeBCSM                                       ::= ENUMERATED {
    collectedInfo               (2),
    analyzedInformation         (3),
    routeSelectFailure          (4),
    oCalledPartyBusy            (5),
    oNoAnswer                   (6),
    oAnswer                     (7),
    oDisconnect                 (9),
    oAbandon                    (10),
    termAttemptAuthorized       (12),
    tBusy                       (13),
    tNoAnswer                   (14),
    tAnswer                     (15),
    tDisconnect                 (17),
    tAbandon                    (18)
    }

-- Indicates the BCSM detection point event.
-- Values collectedInfo, analyzedInformation and termAttemptAuthorized can only be used for TDPs

EventTypeSMS                    ::= ENUMERATED {
    sms-CollectedInfo               (1),
    o-smsFailure                    (2),
    o-smsSubmitted                  (3)
    }
-- Value sms-CollectedInfo can only be used for TDPs.

ExtensionField {PARAMETERS-BOUND : bound}           ::= SEQUENCE {
    type    EXTENSION.&id ({SupportedExtensions {bound}}),
            -- shall identify the value of an EXTENSION type
    criticality CriticalityType                             DEFAULT ignore,
    value                   [1] EXTENSION.&ExtensionType
              ({SupportedExtensions {bound}}{@type}),
    ...
    }
-- This parameter indicates an extension of an argument data type.
```

```
-- Its content is network operator specific

FCIBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE
    (bound.&minFCIBillingChargingLength..bound.&maxFCIBillingChargingLength))
    (CONSTRAINED BY {-- shall be the result of the BER-encoded value of type --
    CAMEL-FCIBillingChargingCharacteristics {bound}})
-- This parameter indicates the billing and/or charging characteristics.
-- The violation of the UserDefinedConstraint shall be handled as an ASN.1 syntax error.

FCIGPRSBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE
    (bound.&minFCIBillingChargingLength..bound.&maxFCIBillingChargingLength))
    (CONSTRAINED BY {-- shall be the result of the BER-encoded value of type -
    CAMEL-FCIGPRSBillingChargingCharacteristics {bound}})
-- This parameter indicates the GPRS billing and/or charging characteristics.
-- The violation of the UserDefinedConstraint shall be handled as an ASN.1 syntax error.

FCISMSBillingChargingCharacteristics {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE
    (bound.&minFCIBillingChargingLength..bound.&maxFCIBillingChargingLength))
    (CONSTRAINED BY {-- shall be the result of the BER-encoded value of type -
    CAMEL-FCISMSBillingChargingCharacteristics {bound}})
-- This parameter indicates the SMS billing and/or charging characteristics.
-- The violation of the UserDefinedConstraint shall be handled as an ASN.1 syntax error.

ForwardServiceInteractionInd                        ::= SEQUENCE {
    conferenceTreatmentIndicator    [1] OCTET STRING (SIZE(1))          OPTIONAL,
    -- acceptConferenceRequest  'xxxx xx01'B
    -- rejectConferenceRequest  'xxxx xx10'B
    -- network default is accept conference request
    callDiversionTreatmentIndicator [2] OCTET STRING (SIZE(1))      OPTIONAL,
    -- callDiversionAllowed     'xxxx xx01'B
    -- callDiversionNotAllowed  'xxxx xx10'B
    -- network default is Call Diversion allowed
    callCompletionTreatmentIndicator    [53]    OCTET STRING (SIZE(1))  OPTIONAL,
    -- acceptCallCompletionServiceRequest   'xxxx xx01'B,
    -- rejectCallCompletionServiceRequest   'xxxx xx10'B
    -- network default is reject call completion service request
    callingPartyRestrictionIndicator [4] OCTET STRING (SIZE(1))     OPTIONAL,
    -- noINImpact               'xxxx xx01'B
    -- presentationRestricted   'xxxx xx10'B
    -- network default is noINImpact
    ...
    }

GapCriteria {PARAMETERS-BOUND : bound}                  ::= CHOICE {
    calledAddressValue          [0] Digits {bound},
    gapOnService                [2] GapOnService,
    calledAddressAndService     [29] SEQUENCE {
        calledAddressValue          [0] Digits {bound},
        serviceKey                  [1] ServiceKey
        },
    callingAddressAndService    [30] SEQUENCE {
        callingAddressValue         [0] Digits {bound},
        serviceKey                  [1] ServiceKey
        }
    }
-- Both calledAddressValue and callingAddressValue can be
-- incomplete numbers, in the sense that a limited amount of digits can be given.
-- For the handling of numbers starting with the same digit string refer to the detailed
-- procedure of the CallGap operation

GapOnService                                            ::= SEQUENCE {
    serviceKey                  [0] ServiceKey,
    ...
    }

GapIndicators                                           ::= SEQUENCE {
    duration                    [0] Duration,
    gapInterval                 [1] Interval,
    ...
    }
-- Indicates the gapping characteristics.
-- No gapping when gapInterval equals 0.

GapTreatment {PARAMETERS-BOUND : bound}                 ::= CHOICE {
    informationToSend           [0] InformationToSend {bound},
    releaseCause                [1] Cause {bound}
    }
-- The default value for Cause is the same as in ISUP.


GenericNumber {PARAMETERS-BOUND : bound}            ::= OCTET STRING (SIZE(
                bound.&minGenericNumberLength..
                bound.&maxGenericNumberLength))
--  Indicates a generic number. Refer to ETS 300 356-1 [8] Generic number for encoding.
```

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

GPRSCause {PARAMETERS-BOUND : bound}           ::= OCTET STRING (SIZE (minCauseLength..
        bound.&maxCauseLength))
-- Indicates the cause for interface related information.
-- Refer to 3G TS 29.060 [43] Cause parameter for encoding.
-- For the use of cause and location values refer to ITU-T Recommendation Q.850 [22]
-- Shall only include the cause value.

GPRSChargingID                          ::= INTEGER (0..4294967295)
--  The Charging ID is a counter which value is allocated by the GGSN during PDP context
--  establishment.

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

GPRSEventSpecificInformation {PARAMETERS-BOUND : bound}                ::= CHOICE {
        attachChangeOfPositionSpecificInformation
                                        [0] SEQUENCE {
                newRoutingAreaIdentity      [0] RAIdentity
                },
        pdp-ContextchangeOfPositionSpecificInformation
                                        [1] SEQUENCE {
                newRoutingAreaIdentity      [0] RAIdentity,
                chargingID                  [1] GPRSChargingID
                },
        detachSpecificInformation       [2] SEQUENCE {
                inititatingEntity           [0] InitiatingEntity
                },
        disconnectSpecificInformation   [3] SEQUENCE {
                inititatingEntity           [0] InitiatingEntity
                },
        pDPContextEstablishmentSpecificInformation
                                        [4] SEQUENCE {
                accessPointName             [0] AccessPointName {bound}
                },
        pDPContextEstablishmentAcknowledgementSpecificInformation
                                        [5] SEQUENCE {
                chargingID                  [0] GPRSChargingID
                }
        }
--  For the encoding of NewRoutingAreaIdentity refer to 3G TS 29.060 [43]

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

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

GPRS-ReferenceNumber                ::= SEQUENCE {
    gPRS-Reference                      [0] Integer4,
    gprsSSF-Address                     [1] ISDN-AddressString
    }
--  Indicates the software instance that takes care of the FSM in the SCP.
--  This Ie is used to identify the relationship between SGSN and the SCP.

InbandInfo {PARAMETERS-BOUND : bound}               ::= SEQUENCE {
    messageID               [0] MessageID {bound},
    numberOfRepetitions     [1] INTEGER (1..127)                            OPTIONAL,
    duration                [2] INTEGER (0..32767)                          OPTIONAL,
    interval                [3] INTEGER (0.. 32767)                         OPTIONAL,
    ...
    }
-- Interval is the time in seconds between each repeated announcement. Duration is the total
-- amount of time in seconds, including repetitions and intervals.
-- The end of announcement is either the end of duration or numberOfRepetitions,
-- whatever comes first.
```

```
-- duration with value 0 indicates infinite duration

InformationToSend {PARAMETERS-BOUND : bound}        ::= CHOICE {
    inbandInfo              [0] InbandInfo {bound},
    tone                    [1] Tone
    }

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

InvokeID        ::= TCInvokeldSet

IPRoutingAddress {PARAMETERS-BOUND : bound}             ::= CalledPartyNumber {bound}
-- Indicates the routing address for the IP.

IPSSPCapabilities {PARAMETERS-BOUND : bound}        ::= OCTET STRING (SIZE (
            bound.&minIPSSPCapabilitiesLength..bound.&maxIPSSPCapabilitiesLength))
--  Indicates the gsmSRF resources available. The parameter has two parts, a standard and a
--  bilateral part. The standard part indicates capabilities defined as optional in CAP V.2
--  that shall be recognised (but not necessarily supported)  by a CAP V.2 gsmSCF. The bilateral
--  part contains further information that is not specified in this standard, but which is set
--  according to bilateral agreements between network operators and/or equipment vendors.
--  The last octet of the standard part is indicated by bit 7 being set to 0, otherwise Bit 7 of
--  a standard part octet is set to 1 indicating that the standard part continues in the following
--  octet. Coding  is as follows:
--

--  Octet 1                 Standard Part for CAP V.3
--  Bit Value               Meaning
--  0   0                   IPRoutingAddress not supported
--      1                   IPRoutingAddress supported
--  1   0                   VoiceBack not supported
--      1                   VoiceBack supported
--  2   0                   VoiceInformation not supported, via speech recognition
--      1                   VoiceInformation supported, via speech recognition
--  3   0                   VoiceInformation not supported, via voice recognition
--      1                   VoiceInformation supported, via voice recognition
--  4   0                   Generation of voice announcements from Text not supported
--      1                   Generation of voice announcements from Text supported
--  5   -                   Reserved
--  6   -                   Reserved
--  7   0                   End of standard part
--      1                   This value is reserved in CAP V.3
--
--  Octets 2 to 4           Bilateral Part: Network operator / equipment vendor specific


LegType                                             ::= OCTET STRING (SIZE(1))
leg1 LegType                                        ::= '01'H
leg2 LegType                                        ::= '02'H

LocationInformationGPRS     ::= SEQUENCE {
        cellGlobalIdOrServiceAreaIdOrLAI    [0] OCTET STRING (SIZE(5..7))   OPTIONAL,
        geographicalInformation             [1] OCTET STRING (SIZE (8))         OPTIONAL,
        sgsn-Number                         [2] ISDN-AddressString          OPTIONAL
}
-- CellGlobalIdOrServiceAreaIdOrLAI is coded in accordance with 3G TS 29.002 [13].
-- GeographicalInformation refers to geographical Information as defined
-- in 3G TS 23.032 [44].

LocationNumber {PARAMETERS-BOUND : bound}            ::= OCTET STRING (SIZE (
            bound.&minLocationNumberLength..
            bound.&maxLocationNumberLength))
-- Indicates the Location Number for the calling party.
-- Refer to ETS 300 356-1 [8] for encoding.

MessageID {PARAMETERS-BOUND : bound}                ::= CHOICE {
    elementaryMessageID     [0] Integer4,
    text                    [1] SEQUENCE {
        messageContent          [0] IA5String (SIZE
                                 (bound.&minMessageContentLength..bound.&maxMessageContentLength)),
        attributes              [1] OCTET STRING (SIZE
                                 (bound.&minAttributesLength..bound.&maxAttributesLength)) OPTIONAL
    },
    elementaryMessageIDs    [29] SEQUENCE SIZE (1.. bound.&numOfMessageIDs) OF Integer4,
    variableMessage         [30] SEQUENCE {
        elementaryMessageID     [0] Integer4,
        variableParts           [1] SEQUENCE SIZE (1..5) OF VariablePart {bound}
        }
```

```
    }
-- Use of the text parameter is  network operator/equipment vendor specific.

MonitorMode                                         ::= ENUMERATED {
    interrupted                (0),
    notifyAndContinue          (1),
    transparent                (2)
    }
-- Indicates the event is relayed and/or processed by the SSP.
-- Transparent means that the gsmSSF or gprsSSF does not notify the gsmSCF of the event.
-- For the use of this parameter refer to the procedure descriptions in clause 11.

MSNetworkCapability                             ::= OCTET STRING (SIZE (3))
--  MS Network Capability describes the GPRS terminal capabilites related to the network, i.e. SMS
--  point to point service over packet data channels. For encoding refer to 3G TS 24.008 [12].

MSRadioAccessCapability                 ::= OCTET STRING (SIZE (3..32))
-- MS Radio Access Capability describes the terminal capabilites relevant for the radio network,
-- which may affect the way the network handles the mobile.
-- For encoding refer to 3G TS 24.008 [12].

NACarrierInformation                ::= SEQUENCE {
        naCarrierId                     [0] NAEA-CIC                                OPTIONAL,
        naCICSelectionType              [1] NACarrierSelectionInfo                  OPTIONAL,
        ...}

NACarrierSelectionInfo              ::= OCTET STRING (SIZE (1))
--  NA carrier selection information octet carries the same values as ANSI
--  ISUP T1.113:        '00'H - not indicated or not explicitly provided
--                      '01'H - subscribed not dialed
--                      '02'H - subscribed and dialed
--                      '03'H - subscribed with dialing undetermined
--                      '04'H - dialed CIC not subscribed

NAOliInfo                           ::= OCTET STRING (SIZE (1))
--  NA Oli information takes the same value as defined in ANSI ISUP T1.113
--  e.g.     '3D'H  – Decimal value 61 - Cellular Service (Type 1)
--           '3E'H  – Decimal value 62 - Cellular Service (Type 2)
--           '3F'H  – Decimal value 63 - Cellular Service (roaming)

NAChargeNumber                      ::= OCTET STRING (SIZE (2..7))
--  This parameter uniquely identifies the chargeable number for a call sent into a North American
-- long distance carrier. It transports the ChargeNumber Parameter Field
--  as defined in ANSI ISUP T1.113. This provides
--  - 1 octet for the nature of address indicator field, plus
--  - 1 octet for a numbering plan field, plus
--  - up to 5 octets for the address signal (up to 10 digits)

--  The Charge Number in ANSI T1.113 normally contains a 10 digit national number within the North
--  American Numbering Plan (NANP); longer (e.g. international) charge numbers are not supported in
--  T1.113

NA-Info                         ::= SEQUENCE {
    naCarrierInformation                [0] NACarrierInformation                OPTIONAL,
    naOliInfo                           [1] NAOliInfo                           OPTIONAL,
    naChargeNumber                      [2] NAChargeNumber                      OPTIONAL,
    ...
    }

OriginalCalledPartyID {PARAMETERS-BOUND : bound}                ::= OCTET STRING (SIZE
                                (bound.&minOriginalCalledPartyIDLength ..
                                 bound.&maxOriginalCalledPartyIDLength))

--  Indicates the original called number. Refer to ETS 300 356-1 [8] Original Called Number
--  for encoding.

OCSIApplicable                                  ::= NULL
--  Indicates that the Originating CAMEL Subscription Information, if present, shall be
--  applied on the outgoing call leg created with a Connect operation. For the use of this
--  parameter see 3G TS 23.078 [42].

PDPID                                       ::= OCTET STRING (SIZE (1))
--  PDP Identifier is a counter used to identify a specific PDP context within a control
--  relationship between gprsSSF and gsmSCF.

PDPType                                     ::= SEQUENCE {
    PdDPTypeOrganization                            [0] OCTET STRING (SIZE(1)),
    PdDPTypeNumber                              [1] OCTET STRING (SIZE(1))
        }

QualityOfService                            ::= OCTET STRING (SIZE (5))
--  Quality of Service according to 3G TS 24.008 [12].
--  The gprsSSF shall send the Quality of Service to the gsmSCF when a chargable change in Quality
```

```
--  of Service has been detected.

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

ReceivingSideID                     ::= CHOICE {receivingSideID [1] LegType}

-- used to identify LegID  in operations sent from gsmSSF to gsmSCF

RedirectingPartyID {PARAMETERS-BOUND : bound}       ::= OCTET STRING (SIZE (
            bound.&minRedirectingPartyIDLength.. bound.&maxRedirectingPartyIDLength))
-- Indicates redirecting number.
-- Refer to ETS 300 356-1 [8] Redirecting number for encoding.

RequestedInformationList {PARAMETERS-BOUND : bound}     ::= SEQUENCE SIZE (1.. numOfInfoItems) OF
RequestedInformation {bound}

RequestedInformationTypeList {PARAMETERS-BOUND : bound} ::= SEQUENCE SIZE (1.. numOfInfoItems) OF
RequestedInformationType

RequestedInformation {PARAMETERS-BOUND : bound}         ::= SEQUENCE {
    requestedInformationType    [0] RequestedInformationType,
    requestedInformationValue   [1] RequestedInformationValue {bound},
    ...
    }

RequestedInformationType                                ::= ENUMERATED {
    callAttemptElapsedTime      (0),
    callStopTime                (1),
    callConnectedElapsedTime    (2),
    releaseCause                (30)
    }

RequestedInformationValue {PARAMETERS-BOUND : bound} ::= CHOICE {
    callAttemptElapsedTimeValue     [0] INTEGER (0..255),
    callStopTimeValue               [1] DateAndTime,
    callConnectedElapsedTimeValue   [2] Integer4,
    releaseCauseValue               [30] Cause {bound}
    }
-- The callAttemptElapsedTimeValue is specified in seconds. The unit for the
-- callConnectedElapsedTimeValue is 100 milliseconds

RPCause             ::= OCTET STRING (SIZE (1))
-- RP cause according to 3G TS 24.011 [45].
-- GsmSCF shall send this cause in the ReleaseSMS operation.
-- The received cause is sent to the originating MS by the VMSC/SGSN.

ScfID {PARAMETERS-BOUND : bound}                    ::= OCTET STRING (SIZE
            (bound.&minScfIDLength..bound.&maxScfIDLength))
-- defined by network operator.
-- Indicates the gsmSCF identity.

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

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.

SendingSideID                       ::= CHOICE {sendingSideID  [0] LegType}
-- used to identify LegID in operations sent from gsmSCF to gsmSSF

ServiceInteractionIndicatorsTwo                         ::= SEQUENCE {
    forwardServiceInteractionInd        [0] ForwardServiceInteractionInd        OPTIONAL,
    -- applicable to operations IDP, CON.
    backwardServiceInteractionsInd      [1] BackwardServiceInteractionInd       OPTIONAL,
    -- applicable to operations IDP, CON.
    bothwayThroughConnectionInd         [2] BothwayThroughConnectionInd         OPTIONAL,
    connectedNumberTreatmentInd         [4] ConnectedNumberTreatmentInd
                                                DEFAULT presentCalledINNumber,
    holdTreatmentIndicator              [50] OCTET STRING (SIZE(1))             OPTIONAL,
    -- acceptHoldRequest    'xxxx xx01'B
    -- rejectHoldRequest    'xxxx xx10'B
    -- network default is accept hold request
    cwTreatmentIndicator                [51]    OCTET STRING (SIZE(1))          OPTIONAL,
    -- acceptCw 'xxxx xx01'B
```

```
    -- rejectCw 'xxxx xx10'B
    -- network default is accept cw
    ectTreatmentIndicator               [52]    OCTET STRING (SIZE(1))          OPTIONAL
    -- acceptEctRequest 'xxxx xx01'B
    -- rejectEctRequest 'xxxx xx10'B
    -- network default is accept ect request

    }
SGSNCapabilities                            ::= OCTET STRING (SIZE (1))

--  Indicates the SGSN capabilities. The coding of the parameter is as follows:
--  Bit Value               Meaning
--  0   0                   AoC not supported by SGSN
--      1                   AoC supported by SGSN
--  1   -                   This bit is reserved in CAP V.3
--  2   -                   This bit is reserved in CAP V.3
--  3   -                   This bit is reserved in CAP V.3
--  4   -                   This bit is reserved in CAP V.3
--  5   -                   This bit is reserved in CAP V.3
--  6   -                   This bit is reserved in CAP V.3
--  7   -                   This bit is reserved in CAP V.3

SMSCause    ::= ENUMERATED {
    systemFailure               (0),
    unexpectedDataValue         (1),
    facilityNotSupported        (2),
    sM-DeliveryFailure          (3),
    releaseFromRadioInterface   (4)
    }
-- MO SMS error values which are reported to gsmSCF.
-- Most of these values are received from the SMSC as a response to
-- MO-ForwardSM operation.

SMSEvent                            ::= SEQUENCE {
    eventTypeSMS                        [0] EventTypeSMS,
    monitorMode                         [1] MonitorMode
    }

TimeInformation                     ::= CHOICE {
    timeIfNoTariffSwitch                [0] TimeIfNoTariffSwitch,
    timeIfTariffSwitch                  [1] TimeIfTariffSwitch
    }
-- Indicates call duration information

TimeIfNoTariffSwitch                ::= INTEGER(0..864000)
-- TimeIfNoTariffSwitch is measured in 100 millisecond intervals

TimeIfTariffSwitch                  ::= SEQUENCE {
    timeSinceTariffSwitch               [0] INTEGER(0..864000),
    tariffSwitchInterval                [1] INTEGER(1..864000)                  OPTIONAL
    }
-- timeSinceTariffSwitch and tariffSwitchInterval are measured in 100 millisecond intervals

TimerID                             ::= ENUMERATED {
    tssf                                (0)
    }
-- Indicates the timer to be reset.

TimerValue                          ::= Integer4
-- Indicates the timer value (in seconds).

TimeAndTimezone {PARAMETERS-BOUND : bound}::= OCTET STRING (SIZE(bound.&minTimeAndTimezoneLength..
                                                                bound.&maxTimeAndTimezoneLength))
--  Indicates the time and timezone, relative to GMT. This parameter BCD encoded.
--  The year digit indicating millenium occupies bits 0-3 of the first octet, and the year
--  digit indicating century occupies bits 4-7 of the first octet.
--  The year digit indicating decade occupies bits 0-3 of the second octet, whilst the digit
--  indicating the year within the decade occupies bits 4-7 of the second octet.
--  The most significant month digit occupies bits 0-3 of the third octet, and the least
--  significant month digit occupies bits 4-7 of the third octet.
--  The most significant day digit occupies bits 0-3 of the fourth octet, and the least
--  significant day digit occupies bits 4-7 of the fourth octet.
--  The most significant hours digit occupies bits 0-3 of the fifth octet, and the least
--  significant hours digit occupies bits 4-7 of the fifth octet.
--  The most significant minutes digit occupies bits 0-3 of the sixth octet, and the least
--  significant minutes digit occupies bits 4-7 of the sixth octet.
--  The most significant seconds digit occupies bits 0-3 of the seventh octet, and the least
--  significant seconds digit occupies bits 4-7 of the seventh octet.
--
--  The timezone information occupies the eigth octet. For the encoding of Timezone refer to
--  Reference [29], 3G TS 23.040 [46].
--
--  The BCD digits are packed and encoded as follows:
```

```
--
--  Bit  7  6  5   4  |  3  2  1  0
--       2nd digit    | 1st digit          Octet 1
--       3rd digit    | 4th digit          Octet 2
--                      ..                   ..
--       nth digit    | n-1th digit        Octet m
--
--       0000       digit 0
--       0001       digit 1
--       0010       digit 2
--       0011       digit 3
--       0100       digit 4
--       0101       digit 5
--       0110       digit 6
--       0111       digit 7
--       1000       digit 8
--       1001       digit 9
--       1010       spare
--       1011       spare
--       1100       spare
--       1101       spare
--       1110       spare
--       1101       spare
--
-- where the leftmost bit of the digit is either bit 7 or bit 3 of the octet.

Tone                                        ::= SEQUENCE {
    toneID              [0] Integer4,
    duration            [1] Integer4            OPTIONAL,
    ...
    }
-- The duration specifies the length of the tone in seconds, value 0 indicates infinite duration.

TPDataCodingScheme                  ::= OCTET STRING (SIZE (1))
-- TP Data Coding Scheme according to 3G TS 23.040 [46]

TPProtocolIdentifier                ::= OCTET STRING (SIZE (1))
-- indicates the protocol used above SM-Transfer Layer as specified in 3G TS 23.040 [46].

TPShortMessageSubmissionInfo        ::= OCTET STRING (SIZE (1))
-- contains the 1st octect of the SMS-SUBMIT TPDU as specified in 3G TS 23.040 [46].

TPValidityPeriod                    ::= OCTET STRING (SIZE (1..7))
-- indicates the length of the validity period or the absolute time of the validity
-- period termination as specified in 3G TS 23.040 [46].
-- the length of ValidityPeriod is either 1 octet or 7 octets

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.

UnavailableNetworkResource ::= ENUMERATED {
    unavailableResources            (0),
    componentFailure                (1),
    basicCallProcessingException    (2),
    resourceStatusFailure           (3),
    endUserFailure                  (4)
    }
-- Indicates the network resource that failed.

VariablePart {PARAMETERS-BOUND : bound}                     ::= CHOICE {
    integer             [0] Integer4,
    number              [1] Digits {bound}, -- Generic digits
    time                [2] OCTET STRING (SIZE(2)), -- HH: MM, BCD coded
    date                [3] OCTET STRING (SIZE(4)), -- YYYYMMDD, BCD coded
    price               [4] OCTET STRING (SIZE(4))
    }
--  Indicates the variable part of the message. Time is BCD encoded.
--  The most significant hours digit occupies bits 0-3 of the first octet, and the least
--  significant digit occupies bits 4-7 of the first octet. The most significant minutes digit
--  occupies bits 0-3 of the second octet, and the least significant digit occupies bits 4-7
--  of the second octet.
--
--  Date is BCD encoded. The year digit indicating millenium occupies bits 0-3 of the first octet,
--  and the year digit indicating century occupies bits 4-7 of the first octet. The year digit
--  indicating decade occupies bits 0-3 of the second octet, whilst the digit indicating the year
--  within the decade occupies bits 4-7 of the second octet.
```

```
--  The most significant month digit occupies bits 0-3 of the third octet, and the least
--  significant month digit occupies bits 4-7 of the third octet. The most significant day digit
--  occupies bits 0-3 of the fourth octet, and the least significant day digit occupies bits 4-7
--  of the fourth octet.
--  Price is BCD encoded. The digit indicating hundreds of thousands occupies bits 0-3 of the
--  first octet, and the digit indicating tens of thousands occupies bits 4-7 of the first octet.
--  The digit indicating thousands occupies bits 0-3 of the second octet, whilst the digit
--  indicating hundreds occupies bits 4-7 of the second octet. The digit indicating tens occupies
--  bits 0-3 of the third octet, and the digit indicating 0 to 9 occupies bits 4-7 of the third
--  octet. The tenths digit occupies bits 0-3 of the fourth octet, and the hundredths digit
--  occupies bits 4-7 of the fourth octet.
--
--  For the encoding of digits in an octet, refer to the timeAndtimezone parameter

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

END
```

5.2 Error types

```
CAP-errortypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cAP-errortypes(51) version3(2)}
-- This module contains the type definitions for the IN CS2 errors.
-- Where a parameter of type CHOICE is tagged with a specific tag value, the tag is automatically
-- replaced with an EXPLICIT tag of the same value.

DEFINITIONS IMPLICIT TAGS ::= BEGIN


IMPORTS

    ros-InformationObjects,
    datatypes,
    errorcodes
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-object-identifiers(17) version3(2)}

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

    InvokeID,
    UnavailableNetworkResource
FROM CAP-datatypes datatypes

    errcode-canceled,
    errcode-cancelFailed,
    errcode-eTCFailed,
    errcode-improperCallerResponse,
    errcode-missingCustomerRecord,
    errcode-missingParameter,
    errcode-parameterOutOfRange,
    errcode-requestedInfoError,
    errcode-systemFailure,
    errcode-taskRefused,
    errcode-unavailableResource,
    errcode-unexpectedComponentSequence,
    errcode-unexpectedDataValue,
    errcode-unexpectedParameter,
    errcode-unknownLegID,
    errcode-unknownPDPID,
    errcode-unknownGPRSReference,
    errcode-overlappingDialogue
FROM CAP-errorcodes errorcodes

;

-- TYPE DEFINITION FOR CAP ERRORS FOLLOWS

canceled ERROR              ::= {
    CODE    errcode-canceled
    }
-- The operation has been canceled.

cancelFailed ERROR          ::= {
    PARAMETER   SEQUENCE {
        problem                 [0] ENUMERATED {
            unknownOperation        (0),
            tooLate                 (1),
            operationNotCancellable (2)
```

```
            },
        operation               [1] InvokeID,
        ...
        }
    CODE    errcode-cancelFailed
    }
-- The operation failed to be canceled.

eTCFailed ERROR             ::= {
    CODE    errcode-eTCFailed
    }
-- The establish temporary connection failed.

improperCallerResponse ERROR ::= {
    CODE    errcode-improperCallerResponse
    }
-- The caller response was not as expected.

missingCustomerRecord ERROR ::= {
    CODE    errcode-missingCustomerRecord
    }
-- The Service Logic Program could not be found in the gsmSCF.

missingParameter ERROR      ::= {
    CODE    errcode-missingParameter
    }
-- An expected optional parameter was not received.

parameterOutOfRange ERROR   ::= {
    CODE    errcode-parameterOutOfRange
    }
-- The parameter was not as expected (e.g. missing or out of range).

requestedInfoError ERROR    ::= {
    PARAMETER    ENUMERATED {
            unknownRequestedInfo        (1),
            requestedInfoNotAvailable   (2)
            -- other values FOR FURTHER STUDY
            }
    CODE    errcode-requestedInfoError
    }
-- The requested information cannot be found.

systemFailure ERROR         ::= {
    PARAMETER   UnavailableNetworkResource
    CODE    errcode-systemFailure
    }
-- The operation could not be completed due to a system failure at the serving physical entity.

taskRefused ERROR           ::= {
    PARAMETER   ENUMERATED {
            generic                     (0),
            unobtainable                (1),
            congestion                  (2)
            -- other values FOR FURTHER STUDY
            }
    CODE    errcode-taskRefused
    }
-- An entity normally capable of the task requested cannot or chooses not to perform the task at
-- this time. This includes error situations like congestion and unobtainable address as used in
-- e.g. the connect operation.)

unavailableResource ERROR   ::= {
    CODE    errcode-unavailableResource
    }
-- A requested resource is not available at the serving entity.

unexpectedComponentSequence ERROR ::= {
    CODE    errcode-unexpectedComponentSequence
    }
-- An incorrect sequence of Components was received (e.g."DisconnectForwardConnection"
-- followed by"PlayAnnouncement").

unexpectedDataValue ERROR ::= {
    CODE    errcode-unexpectedDataValue
    }
-- The data value was not as expected (e.g. routing number expected but billing number received)

unexpectedParameter ERROR ::= {
    CODE    errcode-unexpectedParameter
    }
-- A parameter received was not expected.
```

```
unknownLegID ERROR      ::= {
    CODE    errcode-unknownLegID
    }
-- Leg not known to the gsmSSF.

unknownPDPID ERROR      ::= {
    CODE    errcode-unknownPDPID
    }
-- PDPID not known by the receiving entity.

unknownGPRSReference ERROR      ::= {
    CODE    errcode-unknownGPRSREference
    }
-- GPRS Reference not known by the receiving entity.

overlappingDialogue ERROR       ::= {
    CODE    errcode-overlappingDialogue
    }
-- A dialogue exists already for the same relationship.

END
```

5.3 Operation codes

```
CAP-operationcodes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cAP-operationcodes(53) version3(2)}


DEFINITIONS ::= BEGIN

IMPORTS

    ros-InformationObjects
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-object-identifiers(17) version3(2)}

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

;

-- the operations are grouped by the identified operation packages.

-- gsmSCF activation Package
    opcode-initialDP                        Code ::= local: 0
-- gsmSCF/gsmSRF activation of assist Package
    opcode-assistRequestInstructions        Code ::= local: 16
-- Assist connection establishment Package
    opcode-establishTemporaryConnection     Code ::= local: 17
-- Generic disconnect resource Package
    opcode-disconnectForwardConnection      Code ::= local: 18
-- Non-assisted connection establishment Package
    opcode-connectToResource                Code ::= local: 19
-- Connect Package (elementary gsmSSF function)
    opcode-connect                          Code ::= local: 20
-- Call handling Package (elementary gsmSSF function)
    opcode-releaseCall                      Code ::= local: 22
-- BCSM Event handling Package
    opcode-requestReportBCSMEvent           Code ::= local: 23
    opcode-eventReportBCSM                  Code ::= local: 24
-- gsmSSF call processing Package
    opcode-continue                         Code ::= local: 31
    opcode-continueWithArgument             Code ::= local: 56
-- Timer Package
    opcode-resetTimer                       Code ::= local: 33
-- Billing Package
    opcode-furnishChargingInformation       Code ::= local: 34
-- Charging Package
    opcode-applyCharging                    Code ::= local: 35
    opcode-applyChargingReport              Code ::= local: 36
-- Traffic management Package
    opcode-callGap                          Code ::= local: 41
-- Call report Package
    opcode-callInformationReport            Code ::= local: 44
    opcode-callInformationRequest           Code ::= local: 45
-- Signalling control Package
    opcode-sendChargingInformation          Code ::= local: 46
-- Specialized resource control Package
    opcode-playAnnouncement                 Code ::= local: 47
    opcode-promptAndCollectUserInformation  Code ::= local: 48
    opcode-specializedResourceReport        Code ::= local: 49
```

```
-- Cancel Package
    opcode-cancel                           Code ::= local: 53
-- Activity Test Package
    opcode-activityTest                     Code ::= local: 55

-- Sms Activation Package
    opcode-initialDPSMS                     Code ::= local: 60
-- Sms Activity Test Package
    opcode-activityTestSMS                  Code ::= local: 61
-- Sms Billing Package
    opcode-furnishChargingInformationSMS    Code ::= local: 62
-- Sms Connect Package
    opcode-connectSMS                       Code ::= local: 63
-- Sms Event Handling Package
    opcode-requestReportSMSEvent            Code ::= local: 64
    opcode-eventReportSMS                   Code ::= local: 65
-- Sms Processing Package
    opcode-continueSMS                      Code ::= local: 66
-- Sms Release Package
    opcode-releaseSMS                       Code ::= local: 67
-- Sms Timer Package
    opcode-resetTimerSMS                    Code ::= local: 68

-- Gprs Activity Test Package
    opcode-activityTestGPRS                 Code ::= local: 70
-- Gprs Charging Package
    opcode-applyChargingGPRS                Code ::= local: 71
    opcode-applyChargingReportGPRS          Code ::= local: 72
-- Gprs Cancel Package
    opcode-cancelGPRS                       Code ::= local: 73
-- Gprs Connect Package
    opcode-connectGPRS                      Code ::= local: 74
-- Gprs Processing Package
    opcode-continueGPRS                     Code ::= local: 75
-- Gprs Exception Information Package
    opcode-entityReleasedGPRS               Code ::= local: 76
-- Gprs Billing Package
    opcode-furnishChargingInformationGPRS   Code ::= local: 77
-- Gprs Scf Activation Package
    opcode-initialDPGPRS                    Code ::= local: 78
-- Gprs Release Package
    opcode-releaseGPRS                      Code ::= local: 79
-- Gprs Event Handling Package
    opcode-eventReportGPRS                  Code ::= local: 80
    opcode-requestReportGPRSEvent           Code ::= local: 81
-- Gprs Timer Package
    opcode-resetTimerGPRS                   Code ::= local: 82
-- Gprs Charge Advice Package
    opcode-sendChargingInformationGPRS      Code ::= local: 83

END
```

5.4 Error codes

```
CAP-errorcodes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cAP-errorcodes(57) version3(2)}


DEFINITIONS ::= BEGIN

IMPORTS

    ros-InformationObjects
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-object-identifiers(17) version3(2)}

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

;

errcode-canceled                    Code ::= local: 0
errcode-cancelFailed                Code ::= local: 1
errcode-eTCFailed                   Code ::= local: 3
errcode-improperCallerResponse      Code ::= local: 4
errcode-missingCustomerRecord       Code ::= local: 6
errcode-missingParameter            Code ::= local: 7
errcode-parameterOutOfRange         Code ::= local: 8
errcode-requestedInfoError          Code ::= local: 10
errcode-systemFailure               Code ::= local: 11
errcode-taskRefused                 Code ::= local: 12
```

```
errcode-unavailableResource                Code ::= local: 13
errcode-unexpectedComponentSequence        Code ::= local: 14
errcode-unexpectedDataValue                Code ::= local: 15
errcode-unexpectedParameter                Code ::= local: 16
errcode-unknownLegID                       Code ::= local: 17
errcode-unknownPDPID                       Code ::= local: 18
errcode-unknownGPRSReference               Code ::= local: 19
errcode-overlappingDialogue                Code ::= local: 20

END
```

5.5 Classes

```
CAP-classes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cAP-classes(54) version3(2)}

DEFINITIONS ::= BEGIN

IMPORTS

    ROS-OBJECT-CLASS,
    CONTRACT,
    OPERATION-PACKAGE,
    Code,
    OPERATION
FROM Remote-Operations-Information-Objects ros-InformationObjects

    emptyBind,
    emptyUnbind
FROM Remote-Operations-Useful-Definitions ros-UsefulDefinitions

    id-rosObject-gsmSRF,
    id-rosObject-gsmSSF,
    ros-InformationObjects,
    ros-UsefulDefinitions,
    gsmSSF-gsmSCF-Protocol,
    gsmSCF-gsmSRF-Protocol,
    datatypes
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-object-identifiers(17) version3(2)}

    capSsfToScfGeneric,
    capAssistHandoffssfToScf
FROM CAP-gsmSSF-gsmSCF-pkgs-contracts-acs gsmSSF-gsmSCF-Protocol

    gsmSRF-gsmSCF-contract
FROM CAP-gsmSCF-gsmSRF-pkgs-contracts-acs gsmSCF-gsmSRF-Protocol

    CriticalityType
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)}
FROM CAP-datatypes datatypes

;

gsmSSF ROS-OBJECT-CLASS ::= {
    INITIATES   {capSsfToScfGeneric|
                 capAssistHandoffssfToScf}
    RESPONDS    {capSsfToScfGeneric}
    ID          id-rosObject-gsmSSF
    }

gsmSRF ROS-OBJECT-CLASS ::= {
    INITIATES   {gsmSRF-gsmSCF-contract}
    ID          id-rosObject-gsmSRF
    }

EXTENSION ::= CLASS {
    &ExtensionType,
    &criticality    CriticalityType DEFAULT ignore,
    &id Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType
    CRITICALITY         &criticality
    IDENTIFIED BY       &id
    }
```

```
-- Example of addition of an extension named 'Some Network Specific Indicator' of type
-- BOOLEAN, with criticality 'abort' and to be identified as extension number 1
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator EXTENSION ::= {
--  EXTENSION-SYNTAX    BOOLEAN
--  CRITICALITY         abort
--  IDENTIFIED BY       local: 1
--  }

-- Example of transfer syntax, using the ExtensionField datatype as specified in subclause 5.
-- Assuming the value of the extension is set to TRUE, the extensions parameter
-- becomes a Sequence of type INTEGER ::= 1, criticality ENUMERATED ::= 1 and value [1]
-- EXPLICIT BOOLEAN ::= TRUE.
--
-- Use of Q.1400 [28] defined Extension is for further study.
-- In addition the extension mechanism marker is used to identify the future minor additions
-- to CAP.

firstExtension EXTENSION ::= {
    EXTENSION-SYNTAX    NULL
    CRITICALITY         ignore
    IDENTIFIED BY       local: 1
    }
-- firstExtension is just an example.

SupportedExtensions {PARAMETERS-BOUND : bound} EXTENSION ::= {firstExtension, ...
-- full set of network operator extensions --
}
-- SupportedExtension is the full set of the network operator extensions.

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,
    &maxCauseLength                             INTEGER,
    &minDigitsLength                            INTEGER,
    &maxDigitsLength                            INTEGER,
    &minFCIBillingChargingDataLength            INTEGER,
    &maxFCIBillingChargingDataLength            INTEGER,
    &minFCIBillingChargingLength                INTEGER,
    &maxFCIBillingChargingLength                INTEGER,
    &minGenericNumberLength                     INTEGER,
    &maxGenericNumberLength                     INTEGER,
    &minIPSSPCapabilitiesLength                 INTEGER,
    &maxIPSSPCapabilitiesLength                 INTEGER,
    &minLocationNumberLength                    INTEGER,
    &maxLocationNumberLength                    INTEGER,
    &minMessageContentLength                    INTEGER,
    &maxMessageContentLength                    INTEGER,
    &minOriginalCalledPartyIDLength             INTEGER,
    &maxOriginalCalledPartyIDLength             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
    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-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-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
}


networkSpecificBoundSet PARAMETERS-BOUND ::=
{
    MINIMUM-FOR-ACCESS-POINT-NAME               2
    MAXIMUM-FOR-ACCESS-POINT-NAME               10
    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                     24
    MAXIMUM-FOR-CAUSE                           2
    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-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-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
```

5.6 Object IDentifiers (IDs)

```
CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cAP-object-identifiers(17) version3(2)}


DEFINITIONS ::= BEGIN

-- This module assigns object identifiers for Modules, Packages, Contracts and AC's
-- used byfor CAP

-- For Modules from TCAP, ROS,
tc-Messages                     OBJECT IDENTIFIER ::=
    {ccitt  recommendation q 773 modules(2) messages(1) version3(3)}
tc-NotationExtensions           OBJECT IDENTIFIER ::=
    {ccitt  recommendation q 775 modules(2) notation-extension (4) version1(1)}
ros-InformationObjects          OBJECT IDENTIFIER ::=
    {joint-iso-ccitt remote-operations(4) informationObjects(5) version1(0)}
ros-genericPDUs                 OBJECT IDENTIFIER ::=
    {joint-iso-ccitt remote-operations(4) generic-ROS-PDUs(6) version1(0)}
ros-UsefulDefinitions           OBJECT IDENTIFIER ::=
    {joint-iso-ccitt remote-operations(4) useful-definitions(7) version1(0)}
sese-APDUs                      OBJECT IDENTIFIER ::=
    {joint-iso-ccitt genericULS(20) modules(1) seseAPDUs(6)}
guls-Notation                   OBJECT IDENTIFIER ::=
    {joint-iso-ccitt genericULS (20) modules (1) notation (1)}
guls-SecurityTransformations    OBJECT IDENTIFIER ::=
    {joint-iso-ccitt genericULS (20) modules (1) gulsSecurityTransformations (3)}
ds-UsefulDefinitions            OBJECT IDENTIFIER ::=
    {joint-iso-ccitt ds(5) module(1) usefulDefinitions(0) 3}
spkmGssTokens                   OBJECT IDENTIFIER ::=
    {iso(1) identified-organization(3) dod(6) internet(1) security(5) mechanisms(5) spkm(1)
spkmGssTokens(10)}


-- For CAP Modules
datatypes                       OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-datatypes(52) version3(2)}

errortypes                      OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-errortypes(51) version3(2)}

operationcodes                  OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-operationcodes(53) version3(2)}

errorcodes                      OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-errorcodes(57) version3(2)}

classes                         OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-classes(54) version3(2)}

gsmSSF-gsmSCF-Operations        OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-gsmSSF-gsmSCF-ops-args(58) version3(2)}

gsmSSF-gsmSCF-Protocol          OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-gsmSSF-gsmSCF-pkgs-contracts-acs(6) version3(0)}
```

```
gsmSCF-gsmSRF-Operations        OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-gsmSCF-gsmSRF-ops-args (7) version3(0)}

gsmSCF-gsmSRF-Protocol          OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-gsmSCF-gsmSRF-pkgs-contracts-acs (8) version3(0)}

sms-Operations                  OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-SMS-ops-args (22) version3(0)}

smsSSF-gsmSCF-Protocol          OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-smsSSF-gsmSCF-pkgs-contracts-acs (23) version3(0)}

gprsSSF-gsmSCF-Operations       OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-GPRS-ops-args (24) version3(1)}

gprsSSF-gsmSCF-Protocol         OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cAP-gprsSSF-gsmSCF-pkgs-contracts-acs (25) version3(0)}

id-CAP                          OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
    umts-network(1) cAP3(20)}
id-CAP0E                        OBJECT IDENTIFIER ::=
    {ccitt(0) identified-organization(4) ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
    umts-network(1) cAP3OE(21)}
id-ac                                   OBJECT IDENTIFIER ::= {id-CAP       ac(3)}
id-acE                                  OBJECT IDENTIFIER ::= {id-CAP0E     ac(3)}
id-as                                   OBJECT IDENTIFIER ::= {id-CAP       as(5)}
id-asE                                  OBJECT IDENTIFIER ::= {id-CAP0E     as(5)}
id-rosObject                            OBJECT IDENTIFIER ::= {id-CAP       rosObject(25)}
id-contract                             OBJECT IDENTIFIER ::= {id-CAP       contract(26)}
id-contractE                            OBJECT IDENTIFIER ::= {id-CAP0E     contract(26)}
id-package                              OBJECT IDENTIFIER ::= {id-CAP       package(27)}
id-packageE                             OBJECT IDENTIFIER ::= {id-CAP0E     package(27)}

-- for ac, as, rosObject, contract and package, the values are identical to Q.1218

-- ROS Objects

id-rosObject-gsmSCF                     OBJECT IDENTIFIER ::= {id-rosObject 4}
id-rosObject-gsmSSF                     OBJECT IDENTIFIER ::= {id-rosObject 5}
id-rosObject-gsmSRF                     OBJECT IDENTIFIER ::= {id-rosObject 6}

-- gsmSSF/gsmSCF AC
id-ac-CAP-gsmSSF-scfGenericAC           OBJECT IDENTIFIER ::= {id-acE 4}
id-ac-CAP-gsmSSF-scfAssistHandoffAC     OBJECT IDENTIFIER ::= {id-acE 6}

-- gsmSRF/gsmSCF AC
id-ac-gsmSRF-gsmSCF                     OBJECT IDENTIFIER ::= {id-ac 14}

-- gprsSSF/gsmSCF AC
id-ac-CAP-gprsSSF-gsmSCF-AC             OBJECT IDENTIFIER ::= {id-acE 50}
id-ac-CAP-gsmSCF-gprsSSF-AC             OBJECT IDENTIFIER ::= {id-acE 51}

-- gprsSSF/gsmSCF or gsmSSF/gsmSCF AC
id-ac-cap3-sms-AC                       OBJECT IDENTIFIER ::= {id-acE 61}

-- gsmSSF/gsmSCF Contracts
id-CAPSsfToScfGeneric                   OBJECT IDENTIFIER ::= {id-contractE 3}
id-CAPAssistHandoffssfToScf             OBJECT IDENTIFIER ::= {id-contractE 5}

-- gsmSRF/gsmSCF Contracts
id-contract-gsmSRF-gsmSCF               OBJECT IDENTIFIER ::= {id-contract 13}

-- gprsSSF/gsmSCF Contracts
id-cap3GprsSsfTogsmScf                  OBJECT IDENTIFIER ::= {id-contract 14}
id-cap3GgsmSCFTogprsSSF                 OBJECT IDENTIFIER ::= {id-contract 15}

-- gprsSSF/gsmSCF or gsmSSF/gsmSCF Contracts
id-cap3GprsSsfTogsmScf                  OBJECT IDENTIFIER ::= {id-acE 15}

-- gsmSSF/gsmSCF Operation Packages
id-package-scfActivation                OBJECT IDENTIFIER ::= {id-package 11}
id-package-gsmSRF-scfActivationOfAssist  OBJECT IDENTIFIER ::= {id-package 15}
id-package-assistConnectionEstablishment OBJECT IDENTIFIER ::= {id-package 16}
id-package-genericDisconnectResource    OBJECT IDENTIFIER ::= {id-package 17}
id-package-nonAssistedConnectionEstablishment
                                        OBJECT IDENTIFIER ::= {id-package 18}
```

```
id-package-connect                          OBJECT IDENTIFIER ::= {id-package 19}
id-package-callHandling                     OBJECT IDENTIFIER ::= {id-packageE 20}
id-package-bcsmEventHandling                OBJECT IDENTIFIER ::= {id-package 21}
id-package-ssfCallProcessing                OBJECT IDENTIFIER ::= {id-packageE 24}
id-package-timer                            OBJECT IDENTIFIER ::= {id-package 26}
id-package-billing                          OBJECT IDENTIFIER ::= {id-package 27}
id-package-charging                         OBJECT IDENTIFIER ::= {id-package 28}
id-package-trafficManagement                OBJECT IDENTIFIER ::= {id-package 29}
id-package-callReport                       OBJECT IDENTIFIER ::= {id-package 32}
id-package-signallingControl                OBJECT IDENTIFIER ::= {id-package 33}
id-package-activityTest                     OBJECT IDENTIFIER ::= {id-package 34}
id-package-cancel                           OBJECT IDENTIFIER ::= {id-packageE 36}

-- gsmSRF/gsmSCF Operation Packages
id-package-specializedResourceControl       OBJECT IDENTIFIER ::= {id-package 42}
id-package-gsmSRF-scfCancel                 OBJECT IDENTIFIER ::= {id-package 43}

-- gprsSSF/gsmSCF Operation Packages
id-package-gprsSCFActivationPackage         OBJECT IDENTIFIER ::= {id-package 51}
id-package-gprsConnectPackage               OBJECT IDENTIFIER ::= {id-package 52}
id-package-gprsReleasePackage               OBJECT IDENTIFIER ::= {id-package 53}
id-package-gprsEventHandlingPackage         OBJECT IDENTIFIER ::= {id-package 54}
id-package-gprsSCFTimerPackage              OBJECT IDENTIFIER ::= {id-package 55}
id-package-gprsSCFBillingPackage            OBJECT IDENTIFIER ::= {id-package 56}
id-package-gprsSCFChargingPackage           OBJECT IDENTIFIER ::= {id-package 57}
id-package-gprsSCFActivityTestPackage       OBJECT IDENTIFIER ::= {id-package 58}
id-package-gprsSCFCancelPackage             OBJECT IDENTIFIER ::= {id-package 59}
id-package-gprsSCFChargeAdvicePackage       OBJECT IDENTIFIER ::= {id-package 60}
id-package-gprsContinue                     OBJECT IDENTIFIER ::= {id-package 49}
id-package-gprsExceptionInformation         OBJECT IDENTIFIER ::= {id-package 50}

-- gprsSSF/gsmSCF or gsmSSF/gsmSCF Operation Packages
id-package-smsActivation                    OBJECT IDENTIFIER ::= {id-package 61}
id-package-smsConnect                       OBJECT IDENTIFIER ::= {id-package 62}
id-package-smsContinue                      OBJECT IDENTIFIER ::= {id-package 63}
id-package-smsRelease                       OBJECT IDENTIFIER ::= {id-package 64}
id-package-smsEventHandling                 OBJECT IDENTIFIER ::= {id-package 65}
id-package-smsBilling                       OBJECT IDENTIFIER ::= {id-package 66}
id-package-smsActivityTest                  OBJECT IDENTIFIER ::= {id-package 67}
id-package-smsTimer                         OBJECT IDENTIFIER ::= {id-package 68}

-- gsmSSF/gsmSCF Abstract Syntaxes
id-as-gsmSSF-scfGenericAS                   OBJECT IDENTIFIER ::= {id-asE 4}
id-as-assistHandoff-gsmSSF-scfAS            OBJECT IDENTIFIER ::= {id-asE 6}

-- gsmSRF/gsmSCF Abstract Syntaxes
id-as-basic-gsmSRF-gsmSCF                   OBJECT IDENTIFIER ::= {id-as 14}

-- gprsSSF/gsmSCF Abstract Syntaxes
id-as-gprsSSF-gsmSCF-AS                     OBJECT IDENTIFIER ::= {id-as 50}
id-as-gsmSCF-gprsSSF-AS                     OBJECT IDENTIFIER ::= {id-as 51}

-- gprsSSF/gsmSCF or gsmSSF/gsmSCF Abstract Syntaxes
id-as-sms-AS                                OBJECT IDENTIFIER ::= {id-as 61}

END
```

****** END OF DOCUMENT ******

3GPP N2 Meeting
Rothenburg, Germany, 22-26 May 2000

Document* *N2-00 0171

CHANGE REQUEST

29.078	**CR**	**090**	Current Version:	3.3.0

For submission to: CN#8 — for approval [X] — for information [ ] — strategic [ ] — non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: N2 **Date:** 17 May 2000

Subject: Corrections to CAP V3 syntax for circuit switched calls (chapter 6)

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
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	[X]
Release 00	[ ]

Reason for change:

The present CR proposes various corrections to the CAP V3 syntax, in chapter 6 (Circuit Switched Calls).

See 'other comments' for an overview of the changes.

Clauses affected: 6

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:

The following changes have been made.

(1) In various places, 'SCF' has been corrected into 'gsmSCF' and 'SSF' into 'gsmSSF'.

(2) The left column in the tables with ***timer value range*** values has been aligned.

(3) In sect. 6.1.2.1 and 6.2.2.1, the definition of ROS-OBJECT-CLASS shall be not be imported. This data item is not used in these section.

(4) In some places, a 'Hard Return' has been inserted in the fuul name of an Object identifier, to improve readability.

****** FIRST MODIFIED SECTION ******

6 Circuit Switched Call Control

6.1 gsmSSF/CCF - gsmSCF Interface

6.1.1 Operations and arguments

```
CAP-gsmSSF-gsmSCF-ops-args {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-gsmSSF-gsmSCF-ops-args(5) version3(2)}

DEFINITIONS IMPLICIT TAGS::= BEGIN

IMPORTS

    errortypes,
    datatypes,
    operationcodes,
    classes,
    tc-Messages,
    ros-InformationObjects
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-object-identifiers(17) version3(2)}

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

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

    MiscCallInfo
FROM CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
in-network(1) cS2(20) modules(0) in-cs2-datatypes (0) version1(0)}

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

    CUG-Index,
    CUG-Interlock,
    CUG-Info,
    LocationInformation,
    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)}

    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-activityTest,
    opcode-applyCharging,
    opcode-applyChargingReport,
    opcode-assistRequestInstructions,
    opcode-callGap,
    opcode-callInformationReport,
    opcode-callInformationRequest,
    opcode-cancel,
    opcode-connect,
    opcode-connectToResource,
    opcode-continue,
    opcode-continueWithArgument,
    opcode-disconnectForwardConnection,
    opcode-establishTemporaryConnection,
    opcode-eventReportBCSM,
```

```
    opcode-furnishChargingInformation,
    opcode-initialDP,
    opcode-releaseCall,
    opcode-requestReportBCSMEvent,
    opcode-resetTimer,
    opcode-sendChargingInformation
FROM CAP-operationcodes operationcodes

    AChBillingChargingCharacteristics {},
    AdditionalCallingPartyNumber {},
    AlertingPattern,
    AssistingSSPIPRoutingAddress {},
    BCSMEvent {},
    BearerCapability {},
    CalledPartyNumber {},
    CalledPartyBCDNumber {},
    CallingPartyNumber {},
    CallingPartysCategory,
    CallResult {},
    Cause {},
    CGEncountered,
    ControlType,
    CorrelationID {},
    DestinationRoutingAddress {},
    EventSpecificInformationBCSM {},
    EventTypeBCSM,
    ExtensionField {},
    FCIBillingChargingCharacteristics {},
    GapCriteria {},
    GapIndicators,
    GapTreatment,
    GenericNumbers {},
    HighLayerCompatibility,
    InvokeID,
    IPRoutingAddress {},
    IPSSPCapabilities {},
    leg1,
    LocationNumber {},
    MonitorMode,
    NACarrierInformation,
    NA-Info,
    OCSIApplicable,
    OriginalCalledPartyID {},
    ReceivingSideID,
    RedirectingPartyID {},
    RedirectionInformation,
    RequestedInformationList {},
    RequestedInformationTypeList {},
    ScfID {},
    SCIBillingChargingCharacteristics {},
    SendingSideID,
    ServiceInteractionIndicatorsTwo,
    TimeAndTimezone {},
    TimerID,
    TimerValue
FROM CAP-datatypes datatypes

    cancelFailed,
    eTCFailed,
    missingCustomerRecord,
    missingParameter,
    parameterOutOfRange,
    requestedInfoError,
    systemFailure,
    taskRefused,
    unexpectedComponentSequence,
    unexpectedDataValue,
    unexpectedParameter,
    unknownLegID
FROM CAP-errortypes errortypes

;

activityTest OPERATION ::= {
    RETURN RESULT TRUE
    CODE    opcode-activityTest
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Tat
-- This operation is used to check for the continued existence of a relationship
-- between the gsmSCF and gsmSSF, assistSSF or gsmSRF. If the relationship is
-- still in existence, then the gsmSSF will respond. If no reply is received,
-- then the gsmSCF will assume that the gsmSSF, assistSSF or grmSRF has failed
-- in some way.
```

```
applyCharging {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        ApplyChargingArg {bound}
    RETURN RESULT   FALSE
    ERRORS          {missingParameter |
                    unexpectedComponentSequence |
                    unexpectedParameter |
                    unexpectedDataValue |
                    parameterOutOfRange |
                    systemFailure |
                    taskRefused|
                    unknownLegID}
    CODE            opcode-applyCharging
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Tac
-- This operation is used for interacting from the gsmSCF with the gsmSSF charging mechanisms.
-- The ApplyChargingReport operation provides the feedback from the gsmSSF to the gsmSCF.

ApplyChargingArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    aChBillingChargingCharacteristics   [0] AChBillingChargingCharacteristics {bound},
    partyToCharge                       [2] SendingSideID   DEFAULT sendingSideID : leg1,
    extensions                          [3] SEQUENCE SIZE (1..bound.&numOfExtensions) OF
                                                          ExtensionField {bound}  OPTIONAL,
    ...
    }

-- The partyToCharge parameter indicates the party in the call to which the ApplyCharging operation
-- shall be applied.

applyChargingReport {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        ApplyChargingReportArg {bound}
    RETURN RESULT   FALSE
    ERRORS          {missingParameter |
                    unexpectedComponentSequence |
                    unexpectedParameter |
                    unexpectedDataValue |
                    parameterOutOfRange |
                    systemFailure |
                    taskRefused}
    CODE            opcode-applyChargingReport
    }
-- Direction: gsmSSF -> gsmSCF, Timer: Tacr
-- This operation is used by the gsmSSF to report to the gsmSCF the occurrence of a
-- specific charging event as requested by the gsmSCF using the ApplyCharging operation.

ApplyChargingReportArg {PARAMETERS-BOUND : bound} ::= CallResult {bound}

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.

callGap {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        CallGapArg {bound}
    RETURN RESULT   FALSE
    ALWAYS RESPONDS FALSE
    CODE            opcode-callGap
```

```
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Tcg
-- This operation is used to request the gsmSSF to reduce the rate at which specific service
-- requests are sent to the gsmSCF.

CallGapArg {PARAMETERS-BOUND : bound}::= SEQUENCE {
    gapCriteria     [0] GapCriteria {bound},
    gapIndicators   [1] GapIndicators,
    controlType     [2] ControlType                                                 OPTIONAL,
    gapTreatment    [3] GapTreatment {bound}                                        OPTIONAL,
    extensions      [4] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                                    ExtensionField {bound}          OPTIONAL,
    gsmSCFAddress   [50] ISDN-AddressString OPTIONAL,
    ...
    }
-- OPTIONAL denotes network operator optional. If gapTreatment is not present, the gsmSSF will
-- use a default treatment depending on network operator implementation.

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 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 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.

cancel {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        CancelArg {bound}
    RETURN RESULT   FALSE
    ERRORS          {cancelFailed |
                     missingParameter |
                     taskRefused}
    CODE            opcode-cancel
    }
-- Direction: gsmSCF -> gsmSSF, or gsmSCF -> gsmSRF, Timer: Tcan
-- This operation cancels the correlated previous operation or all previous requests. The following
-- operations can be canceled: PlayAnnouncement, PromptAndCollectUserInformation.

CancelArg {PARAMETERS-BOUND : bound}::= CHOICE {
    invokeID            [0] InvokeID,
    allRequests         [1] NULL
    }
-- The InvokeID has the same value as that which was used for the operation to be cancelled.

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,
    callingPartysCategory           [28] CallingPartysCategory                  OPTIONAL,
    redirectingPartyID              [29] RedirectingPartyID {bound}             OPTIONAL,
    redirectionInformation          [30] RedirectionInformation                 OPTIONAL,
    genericNumbers                  [14] GenericNumbers {bound}                 OPTIONAL,
    serviceInteractionIndicatorsTwo [15] ServiceInteractionIndicatorsTwo        OPTIONAL,
    suppressionOfAnnouncement       [55] SuppressionOfAnnouncement              OPTIONAL,
    oCSIApplicable                  [56] OCSIApplicable                         OPTIONAL,
    na-Info                         [57] NA-Info                                OPTIONAL,
    connectArgExtension             [59] ConnectArgExtension                    OPTIONAL,
    ...
    }
--  na-Info is included at the discretion of the gsmSCF operator.

ConnectArgExtension                 ::= SEQUENCE {
    cug-Interlock                   [0] CUG-Interlock                           OPTIONAL,
    cug-OutgoingAccess              [1] NULL                                    OPTIONAL,
    nonCug-Call                     [2] NULL                                    OPTIONAL,
    ...
    }

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 SSP 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,
    ...
    }

continue OPERATION ::= {
    RETURN RESULT   FALSE
    ALWAYS RESPONDS FALSE
    CODE            opcode-continue
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Tcue
-- This operation is used to request the gsmSSF to proceed with call processing at the
-- DP at which it previously suspended call processing to await gsmSCF instructions
-- (i.e. proceed to the next point in call in the BCSM). The gsmSSF continues call
-- processing without substituting new data from gsmSCF.
```

```
continueWithArgument {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        ContinueWithArgumentArg {bound}
    RETURN RESULT   FALSE
    ERRORS          {missingParameter |
                     parameterOutOfRange |
                     unexpectedComponentSequence |
                     unexpectedDataValue |
                     unexpectedParameter}
    CODE            opcode-continueWithArgument
    }

-- Direction: gsmSCF -> gsmSSF, Timer: Tcwa
-- This operation is used to request the gsmSSF to proceed with call processing at the
-- DP at which it previously suspended call processing to await gsmSCF instructions
-- (i.e. proceed to the next point in call in the BCSM). The gsmSSF continues call
-- processing with the modified call setup information as received from the gsmSCF.

ContinueWithArgumentArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    alertingPattern                 [1] AlertingPattern                          OPTIONAL,
    extensions                      [6] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                        ExtensionField {bound}                   OPTIONAL,
    serviceInteractionIndicatorsTwo [7] ServiceInteractionIndicatorsTwo          OPTIONAL,
    callingPartysCategory           [53] CallingPartysCategory                   OPTIONAL,
    genericNumbers                  [54] GenericNumbers {bound}                  OPTIONAL,
    suppressionOfAnnouncement       [55] SuppressionOfAnnouncement               OPTIONAL,
    na-Info                         [56] NA-Info                                 OPTIONAL,
    cug-Interlock                   [57] CUG-Interlock                           OPTIONAL,
    cug-OutgoingAccess              [58] NULL                                    OPTIONAL,
    continueWithArgumentArgExtension [59] ContinueWithArgumentArgExtension      OPTIONAL,
    ...
    }

ContinueWithArgumentArgExtension    ::= SEQUENCE {
    nonCug-Call                     [0] NULL                                     OPTIONAL,
    ...
    }

disconnectForwardConnection OPERATION ::= {
    RETURN RESULT   FALSE
    ERRORS          {systemFailure |
                     taskRefused |
                     unexpectedComponentSequence}
    CODE            opcode-disconnectForwardConnection
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Tdfc
-- This operation is used to disconnect a forward temporary connection or a connection to a
-- resource. Refer to clause 11 for a description of the procedures associated with this operation.

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,
    serviceInteractionIndicatorsTwo [6] ServiceInteractionIndicatorsTwo          OPTIONAL,
    na-Info                         [50] NA-Info                                 OPTIONAL,
    ...
    }
--  na-info is included at the discretion of the gsmSCF operator.

eventReportBCSM {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        EventReportBCSMArg {bound}
    RETURN RESULT   FALSE
    ALWAYS RESPONDS FALSE
```

```
    CODE            opcode-eventReportBCSM
    }
-- Direction: gsmSSF -> gsmSCF, Timer: Terb
-- This operation is used to notify the gsmSCF of a call-related event (e.g. BCSM
-- events such as busy or no answer) previously requested by the gsmSCF in a
-- RequestReportBCSMEvent operation.

EventReportBCSMArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    eventTypeBCSM                   [0] EventTypeBCSM,
    eventSpecificInformationBCSM    [2] EventSpecificInformationBCSM {bound}            OPTIONAL,
    legID                           [3] ReceivingSideID                                 OPTIONAL,
    miscCallInfo                    [4] MiscCallInfo                DEFAULT {messageType request},
    extensions                      [5] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                                        ExtensionField {bound}  OPTIONAL,
    ...
    }

furnishChargingInformation {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        FurnishChargingInformationArg {bound}
    RETURN RESULT   FALSE
    ERRORS      {missingParameter |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter}
    CODE        opcode-furnishChargingInformation
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Tfci
-- This operation is used to request the gsmSSF to generate, register a call record
-- or to include some information in the default call record.
-- The registered call record is intended for off line charging of the call.

FurnishChargingInformationArg {PARAMETERS-BOUND : bound} ::=
FCIBillingChargingCharacteristics{bound}

initialDP {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        InitialDPArg {bound}
    RETURN RESULT   FALSE
    ERRORS      {missingCustomerRecord |
                 missingParameter |
                 parameterOutOfRange |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter}
    CODE        opcode-initialDP
    }
-- Direction: gsmSSF -> gsmSCF, Timer: Tidp
-- This operation is used after a TDP to indicate request for service.

InitialDPArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    serviceKey                      [0] ServiceKey  ,
    calledPartyNumber               [2] CalledPartyNumber {bound}               OPTIONAL,
    callingPartyNumber              [3] CallingPartyNumber {bound}              OPTIONAL,
    callingPartysCategory           [5] CallingPartysCategory                   OPTIONAL,
    cGEncountered                   [7] CGEncountered                           OPTIONAL,
    iPSSPCapabilities               [8] IPSSPCapabilities {bound}               OPTIONAL,
    locationNumber                  [10] LocationNumber {bound}                 OPTIONAL,
    originalCalledPartyID           [12] OriginalCalledPartyID {bound}          OPTIONAL,
    extensions                      [15] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                                        ExtensionField {bound}  OPTIONAL,
    highLayerCompatibility          [23] HighLayerCompatibility OPTIONAL,
    additionalCallingPartyNumber    [25] AdditionalCallingPartyNumber {bound}   OPTIONAL,
    bearerCapability                [27] BearerCapability {bound}               OPTIONAL,
    eventTypeBCSM                   [28] EventTypeBCSM                          OPTIONAL,
    redirectingPartyID              [29] RedirectingPartyID {bound}             OPTIONAL,
    redirectionInformation          [30] RedirectionInformation                 OPTIONAL,
    cause                           [17] Cause {bound}                          OPTIONAL,
    serviceInteractionIndicatorsTwo [32] ServiceInteractionIndicatorsTwo        OPTIONAL,
    iMSI                            [50] IMSI                                   OPTIONAL,
    subscriberState                 [51] SubscriberState                        OPTIONAL,
    locationInformation             [52] LocationInformation                    OPTIONAL,
    ext-basicServiceCode            [53] Ext-BasicServiceCode                   OPTIONAL,
    callReferenceNumber             [54] CallReferenceNumber                    OPTIONAL,
    mscAddress                      [55] ISDN-AddressString                     OPTIONAL,
    calledPartyBCDNumber            [56] CalledPartyBCDNumber {bound}           OPTIONAL,
    timeAndTimezone                 [57] TimeAndTimezone {bound}                OPTIONAL,
    gsm-ForwardingPending           [58] NULL                                   OPTIONAL,
    initialDPArgExtension           [59] InitialDPArgExtension                  OPTIONAL,
    ...
    }
```

```
InitialDPArgExtension               ::= SEQUENCE {
    naCarrierInformation                [0] NACarrierInformation                OPTIONAL,
    gmscAddress                         [1] ISDN-AddressString                  OPTIONAL,
    cug-Index                           [2] CUG-Index                           OPTIONAL,
    cug-Interlock                       [3] CUG-Interlock                       OPTIONAL,
    cug-OutgoingAccess                  [4] NULL                                OPTIONAL,
    ...
}
-- If iPSSPCapabilities is not present then this denotes that a colocated gsmSRF is not
-- supported by the gsmSSF. If present, then the gsmSSF supports a colocated gsmSRF capable
-- of playing announcements via elementaryMessageIDs and variableMessages, the playing of
-- tones and the collection of DTMF digits. Other supported capabilities are explicitly
-- detailed in the IPSSPCapabilities parameter itself.
-- naCarrierInformation is included at the discretion of the gsmSSF operator.

releaseCall {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        ReleaseCallArg {bound}
    RETURN RESULT   FALSE
    ALWAYS RESPONDS FALSE
    CODE            opcode-releaseCall
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Trc
-- This operation is used to tear down an existing call at any phase of the call for all parties
-- involved in the call.

ReleaseCallArg {PARAMETERS-BOUND : bound} ::= Cause {bound}
-- A default value of decimal 31 (normal unspecified) shall be given .

requestReportBCSMEvent {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        RequestReportBCSMEventArg {bound}
    RETURN RESULT   FALSE
    ERRORS          {missingParameter |
                     parameterOutOfRange |
                     systemFailure |
                     taskRefused |
                     unexpectedComponentSequence |
                     unexpectedDataValue |
                     unexpectedParameter |
                     unknownLegID}
    CODE            opcode-requestReportBCSMEvent
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Trrb
-- This operation is used to request the gsmSSF to monitor for a call-related event
-- (e.g. BCSM events such as busy or no answer), then send a notification back to the gsmSCF when
-- the event is detected.
-- NOTE:
--       Every EDP must be explicitly armed by the gsmSCF via a RequestReportBCSMEvent operation.
--       No implicit arming of EDPs at the gsmSSF after reception of any operation (different
--       from RequestReportBCSMEvent) from the gsmSCF is allowed.

RequestReportBCSMEventArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    bcsmEvents  [0] SEQUENCE SIZE(1..bound.&numOfBCSMEvents) OF  BCSMEvent {bound},
    extensions  [2] SEQUENCE SIZE(1..bound.&numOfExtensions) OF ExtensionField {bound}  OPTIONAL,
    ...
    }
-- Indicates the BCSM related events for notification.

resetTimer {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        ResetTimerArg {bound}
    RETURN RESULT   FALSE
    ERRORS          {missingParameter |
                     parameterOutOfRange |
                     taskRefused |
                     unexpectedComponentSequence |
                     unexpectedDataValue |
                     unexpectedParameter}
    CODE            opcode-resetTimer
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Trt
-- This operation is used to request the gsmSSF to refresh an application timer in the gsmSSF.

ResetTimerArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    timerID         [0] TimerID DEFAULT tssf,
    timervalue      [1] TimerValue,
    extensions      [2] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                                            ExtensionField {bound}  OPTIONAL,
    ...
    }

sendChargingInformation {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        SendChargingInformationArg {bound}
```

```
    RETURN RESULT   FALSE
    ERRORS          {missingParameter |
                    unexpectedComponentSequence |
                    unexpectedParameter |
                    parameterOutOfRange |
                    systemFailure |
                    taskRefused |
                    unexpectedDataValue |
                    unknownLegID}
    CODE            opcode-sendChargingInformation
    }
-- Direction: gsmSCF -> gsmSSF, Timer: Tsci
-- This operation is used to instruct the gsmSSF on the charging information to send by the gsmSSF.
-- The charging information can either be sent back by means of signalling or internal
-- if the gsmSSF is located in the local exchange. In the local exchange
-- this information may be used to update the charge meter or to create a standard call record.

SendChargingInformationArg {PARAMETERS-BOUND : bound}::= SEQUENCE {
    sCIBillingChargingCharacteristics   [0] SCIBillingChargingCharacteristics {bound},
    partyToCharge                       [1] SendingSideID,
    extensions                          [2] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
                                                ExtensionField {bound}  OPTIONAL,
    ...
    }
END
```

The following value ranges apply for operation specific timers in CAP:

short:	1 s - 10 s
medium:	1 s - 60 s
long:	1 s - 30 minutes

Table 6-1 lists all operation timers and the value range for each timer. The definitive value for each operation timer may be network specific and has to be defined by the network operator.

Table 6-1: Timer value ranges

Operation Name	Timer	value range
ActivityTest	T_{at}	short
ApplyCharging	T_{ac}	short
ApplyChargingReport	T_{acr}	short
AssistRequestInstructions	T_{ari}	short
CallInformationReport	T_{cirp}	short
CallInformationRequest	T_{cirq}	short
Cancel	T_{can}	short
CallGap	T_{cg}	short
Connect	T_{con}	short
ConnectToResource	T_{ctr}	short
Continue	T_{cue}	short
ContinueWithArgument	T_{cwa}	short
DisconnectForwardConnection	T_{dfc}	short
EstablishTemporaryConnection	T_{etc}	medium
EventReportBCSM	T_{erb}	short
FurnishChargingInformation	T_{fci}	short
InitialDP	T_{idp}	short
ReleaseCall	T_{rc}	short
RequestReportBCSMEvent	T_{rrb}	short
ResetTimer	T_{rt}	short
SendChargingInformation	T_{sci}	short

NOTE to MCC: The left column has been left-aligned in this CR.

6.1.2 gsmSSF/gsmSCF packages, contracts and ACs

6.1.2.1 gsmSSF/gsmSCF ASN.1 module

```
CAP-gsmSSF-gsmSCF-pkgs-contracts-acs {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-gsmSSF-gsmSCF-pkgs-contracts-acs (6) version3(2)}

DEFINITIONS ::= BEGIN

-- This module describes the operation-packages, contracts and application-contexts used
-- over the gsmSSF-gsmSCF interface.

IMPORTS

    PARAMETERS-BOUND,
    cAPSpecificBoundSet
FROM CAP-classes classes

    ROS-OBJECT-CLASS,
    CONTRACT,
    OPERATION-PACKAGE,
    OPERATION
FROM Remote-Operations-Information-Objects ros-InformationObjects

    TCMessage {}
FROM TCAPMessages tc-Messages

    APPLICATION-CONTEXT,
    dialogue-abstract-syntax
FROM TC-Notation-Extensions tc-NotationExtensions

    activityTest,
    applyCharging {},
    applyChargingReport {},
    assistRequestInstructions {},
    callGap {},
    callInformationReport {},
    callInformationRequest {},
    cancel {},
    connect {},
    connectToResource {},
    continue,
    continueWithArgument {},
    disconnectForwardConnection,
    establishTemporaryConnection {},
    eventReportBCSM {},
    furnishChargingInformation {},
    initialDP {},
    releaseCall {},
    requestReportBCSMEvent {},
    resetTimer {},
    sendChargingInformation {}
FROM CAP-gsmSSF-gsmSCF-ops-args gsmSSF-gsmSCF-Operations

    playAnnouncement {},
    promptAndCollectUserInformation {},
    specializedResourceReport
FROM CAP-gsmSCF-gsmSRF-ops-args gsmSCF-gsmSRF-Operations

    specializedResourceControlPackage {}
FROM CAP-gsmSCF-gsmSRF-pkgs-contracts-acs gsmSCF-gsmSRF-Protocol

    id-ac-CAP-gsmSSF-scfGenericAC,
    id-ac-CAP-gsmSSF-scfAssistHandoffAC,
    id-CAPSsfToScfGeneric,
    id-CAPAssistHandoffssfToScf,
    id-as-gsmSSF-scfGenericAS,
    id-as-assistHandoff-gsmSSF-scfAS,
    id-package-scfActivation,
    id-package-gsmSRF-scfActivationOfAssist,
    id-package-assistConnectionEstablishment,
    id-package-genericDisconnectResource,
    id-package-nonAssistedConnectionEstablishment,
    id-package-connect,
    id-package-callHandling,
    id-package-bcsmEventHandling,
    id-package-ssfCallProcessing,
    id-package-timer,
    id-package-billing,
    id-package-charging,
    id-package-trafficManagement,
```

```
    id-package-callReport,
    id-package-signallingControl,
    id-package-activityTest,
    id-package-cancel,
    classes,
    ros-InformationObjects,
    tc-Messages,
    tc-NotationExtensions,
    gsmSSF-gsmSCF-Operations,
    gsmSCF-gsmSRF-Operations,
    gsmSCF-gsmSRF-Protocol
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-
network(1) modules(3) cAP-object-identifiers (17) version3(2)}

;

-- Application Contexts

capssf-scfGenericAC APPLICATION-CONTEXT ::= {
    CONTRACT                    capSsfToScfGeneric
    DIALOGUE MODE               structured
    ABSTRACT SYNTAXES           {dialogue-abstract-syntax |
                                gsmSSF-scfGenericAbstractSyntax}
    APPLICATION CONTEXT NAME    id-ac-CAP-gsmSSF-scfGenericAC}

capssf-scfAssistHandoffAC APPLICATION-CONTEXT ::=   {
    CONTRACT                    capAssistHandoffssfToScf
    DIALOGUE MODE               structured
    ABSTRACT SYNTAXES           {dialogue-abstract-syntax |
                                assistHandoff-gsmSSF-scfAbstractSyntax}
    APPLICATION CONTEXT NAME    id-ac-CAP-gsmSSF-scfAssistHandoffAC}


-- Contracts

capSsfToScfGeneric CONTRACT ::= {
-- dialogue initiated by gsmSSF with InitialDP Operation
    INITIATOR CONSUMER OF
            {           scfActivationPackage {cAPSpecificBoundSet}}
    RESPONDER CONSUMER OF
            {activityTestPackage|
            assistConnectionEstablishmentPackage {cAPSpecificBoundSet} |
            bcsmEventHandlingPackage {cAPSpecificBoundSet} |
            billingPackage {cAPSpecificBoundSet} |
            callHandlingPackage {cAPSpecificBoundSet} |
            callReportPackage {cAPSpecificBoundSet} |
            cancelPackage {cAPSpecificBoundSet} |
            chargingPackage {cAPSpecificBoundSet} |
            connectPackage {cAPSpecificBoundSet} |
            genericDisconnectResourcePackage {cAPSpecificBoundSet} |
            nonAssistedConnectionEstablishmentPackage {cAPSpecificBoundSet} |
            signallingControlPackage {cAPSpecificBoundSet} |
            specializedResourceControlPackage {cAPSpecificBoundSet} |
            ssfCallProcessingPackage {cAPSpecificBoundSet} |
            timerPackage {cAPSpecificBoundSet} |
            trafficManagementPackage {networkSpecificBoundSet}
            }
    ID      id-CAPSsfToScfGeneric
    }

capAssistHandoffssfToScf CONTRACT ::= {
-- dialogue initiated by gsmSSF with AssistRequestInstructions
    INITIATOR CONSUMER OF
            {gsmSRF-scfActivationOfAssistPackage {cAPSpecificBoundSet}}
    RESPONDER CONSUMER OF
            {activityTestPackage|
            callHandlingPackage {cAPSpecificBoundSet} |
            cancelPackage {cAPSpecificBoundSet} |
            genericDisconnectResourcePackage {cAPSpecificBoundSet} |
            nonAssistedConnectionEstablishmentPackage {cAPSpecificBoundSet} |
            specializedResourceControlPackage {cAPSpecificBoundSet} |
            timerPackage {cAPSpecificBoundSet}
            }
    ID      id-CAPAssistHandoffssfToScf
    }


-- Operation Packages

scfActivationPackage {PARAMETERS-BOUND : bound}  OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {initialDP {bound}}
    ID      id-package-scfActivation}
gsmSRF-scfActivationOfAssistPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
```

```
    CONSUMER INVOKES    {assistRequestInstructions {bound}}
    ID      id-package-gsmSRF-scfActivationOfAssist}
assistConnectionEstablishmentPackage {PARAMETERS-BOUND : bound}   OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {establishTemporaryConnection {bound}}
    ID      id-package-assistConnectionEstablishment}
genericDisconnectResourcePackage {PARAMETERS-BOUND : bound}   OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {disconnectForwardConnection}
    ID      id-package-genericDisconnectResource}
nonAssistedConnectionEstablishmentPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {connectToResource {bound}}
    ID      id-package-nonAssistedConnectionEstablishment}
connectPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {connect {bound}}
    ID      id-package-connect}
callHandlingPackage  {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {releaseCall {bound}}
    ID      id-package-callHandling}
bcsmEventHandlingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {requestReportBCSMEvent {bound}}
    SUPPLIER INVOKES    {eventReportBCSM {bound}}
    ID      id-package-bcsmEventHandling}
ssfCallProcessingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {continueWithArgument {bound} | continue}
    ID      id-package-ssfCallProcessing}
timerPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {resetTimer {bound}}
    ID      id-package-timer}
billingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {furnishChargingInformation {bound}}
    ID      id-package-billing}
chargingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {applyCharging {bound}}
    SUPPLIER INVOKES    {applyChargingReport {bound}}
    ID      id-package-charging}
trafficManagementPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES {callGap {bound}}
    ID id-package-trafficManagement}
callReportPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {callInformationRequest {bound}}
    SUPPLIER INVOKES    {callInformationReport {bound}}
    ID      id-package-callReport}
signallingControlPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {sendChargingInformation {bound}}
    ID      id-package-signallingControl}
activityTestPackage OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {activityTest}
    ID      id-package-activityTest}
        cancelPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {cancel {bound}}
    ID      id-package-cancel}



-- Abstract Syntaxes

gsmSSF-scfGenericAbstractSyntax ABSTRACT-SYNTAX ::= {
    GenericSSF-gsmSCF-PDUs
    IDENTIFIED BY   id-as-gsmSSF-scfGenericAS}
GenericSSF-gsmSCF-PDUs ::= TCMessage {{SsfToScfGenericInvokable},
            {SsfToScfGenericReturnable}}
SsfScfGenericInvokable OPERATION ::= {
            activityTest |
            applyCharging {cAPSpecificBoundSet} |
            applyChargingReport {cAPSpecificBoundSet} |
            callInformationReport {cAPSpecificBoundSet} |
            callInformationRequest {cAPSpecificBoundSet} |
            cancel {cAPSpecificBoundSet} |
            connect {cAPSpecificBoundSet} |
            continueWithArgument {cAPSpecificBoundSet} |
            connectToResource {cAPSpecificBoundSet} |
            disconnectForwardConnection |
            establishTemporaryConnection {cAPSpecificBoundSet} |
            eventReportBCSM {cAPSpecificBoundSet} |
            furnishChargingInformation {cAPSpecificBoundSet} |
            initialDP {cAPSpecificBoundSet} |
            releaseCall {cAPSpecificBoundSet} |
            requestReportBCSMEvent {cAPSpecificBoundSet} |
            resetTimer {cAPSpecificBoundSet} |
            sendChargingInformation {cAPSpecificBoundSet} |
            playAnnouncement {cAPSpecificBoundSet} |
            promptAndCollectUserInformation {cAPSpecificBoundSet} |
            specializedResourceReport
            }
```

```
SsfScfGenericReturnable OPERATION ::= {
            activityTest |
            applyCharging {cAPSpecificBoundSet} |
            applyChargingReport {cAPSpecificBoundSet} |
            callGap {networkSpecificBoundSet} |
            callInformationRequest {cAPSpecificBoundSet} |
            cancel {cAPSpecificBoundSet} |
            connect {cAPSpecificBoundSet} |
            connectToResource {cAPSpecificBoundSet} |
            continue |
            continueWithArgument {cAPSpecificBoundSet} |
            disconnectForwardConnection |
            establishTemporaryConnection {cAPSpecificBoundSet}|
            furnishChargingInformation {cAPSpecificBoundSet}|
            initialDP {cAPSpecificBoundSet}|
            releaseCall {cAPSpecificBoundSet}|
            requestReportBCSMEvent {cAPSpecificBoundSet}|
            resetTimer {cAPSpecificBoundSet}|
            sendChargingInformation {cAPSpecificBoundSet}|
            playAnnouncement {cAPSpecificBoundSet}|
            promptAndCollectUserInformation {cAPSpecificBoundSet}
            }

assistHandoff-gsmSSF-scfAbstractSyntax ABSTRACT-SYNTAX ::= {
    AssistHandoffsSF-gsmSCF-PDUs
    IDENTIFIED BY   id-as-assistHandoff-gsmSSF-scfAS}
AssistHandoffsSF-gsmSCF-PDUs ::= TCMessage {{AssistHandoffssfToScfInvokable},
            {AssistHandoffssfToScfReturnable}}
AssistHandoffssfToScfInvokable OPERATION ::= {
            activityTest |
            assistRequestInstructions {cAPSpecificBoundSet}|
            cancel {cAPSpecificBoundSet}|
            connectToResource {cAPSpecificBoundSet}|
            disconnectForwardConnection |
            playAnnouncement {cAPSpecificBoundSet}|
            promptAndCollectUserInformation {cAPSpecificBoundSet}|
            resetTimer {cAPSpecificBoundSet}|
            specializedResourceReport
            }
AssistHandoffssfToScfReturnable OPERATION ::= {
            activityTest |
            assistRequestInstructions {cAPSpecificBoundSet}|
            cancel {cAPSpecificBoundSet}|
            connectToResource {cAPSpecificBoundSet}|
            disconnectForwardConnection |
            playAnnouncement {cAPSpecificBoundSet}|
            promptAndCollectUserInformation {cAPSpecificBoundSet}|
            resetTimer {cAPSpecificBoundSet}
            }

END
```

6.2 gsmSCF/gsmSRF interface

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(7) version3(2)}

DEFINITIONS IMPLICIT TAGS ::= BEGIN

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
```

```
    canceled,
    improperCallerResponse,
    missingParameter,
    parameterOutOfRange,
    systemFailure,
    taskRefused,
    unavailableResource,
    unexpectedComponentSequence,
    unexpectedDataValue,
    unexpectedParameter
FROM CAP-errortypes errortypes

    PARAMETERS-BOUND
FROM CAP-classes classes

    ros-InformationObjects,
    operationcodes,
    datatypes,
    errortypes,
    classes
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-object-identifiers(17) version3(2)}

;

playAnnouncement {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        PlayAnnouncementArg {bound}
    RETURN RESULT   FALSE
    ERRORS          {canceled |
                     missingParameter |
                     parameterOutOfRange |
                     systemFailure |
                     taskRefused |
                     unexpectedComponentSequence |
                     unexpectedDataValue |
                     unexpectedParameter |
                     unavailableResource}
    LINKED          {specializedResourceReport}
    CODE            opcode-playAnnouncement
    }
-- Direction: gsmSCF -> gsmSRF, Timer: Tpa
-- This operation is to be used after Establish Temporary Connection (assist procedure
-- with a second gsmSSF) or a Connect to Resource (no assist) operation. It may be used
-- for inband interaction with a mobile station, or for interaction with an ISDN user.
-- In the former case, the gsmSRF is usually collocated with the gsmSSF for standard
-- tones (congestion tone...) or standard announcements.
-- In the latter case, the gsmSRF is always collocated with the gsmSSF in the switch.
-- Any error is returned to the gsmSCF. The timer associated with this operation must
-- be of a sufficient duration to allow its linked operation to be correctly correlated.

PlayAnnouncementArg {PARAMETERS-BOUND : bound}::= SEQUENCE {
    informationToSend           [0] InformationToSend {bound},
    disconnectFromIPForbidden   [1] BOOLEAN DEFAULT TRUE,
    requestAnnouncementComplete [2] BOOLEAN DEFAULT TRUE,
    extensions                  [3] SEQUENCE SIZE(1..bound.&numOfExtensions)    OF
                                                            ExtensionField  {bound} OPTIONAL,
    ...
    }

promptAndCollectUserInformation {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT    PromptAndCollectUserInformationArg {bound}
    RESULT      ReceivedInformationArg {bound}
    ERRORS      {canceled |
                 improperCallerResponse |
                 missingParameter |
                 parameterOutOfRange |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unavailableResource |
                 unexpectedDataValue |
                 unexpectedParameter
                 }
    CODE        opcode-promptAndCollectUserInformation
    }
-- Direction: gsmSCF ->  gsmSRF, Timer: Tpc
-- This operation is used to interact with a user to collect information.

PromptAndCollectUserInformationArg {PARAMETERS-BOUND : bound}::= SEQUENCE {
    collectedInfo               [0] CollectedInfo,
    disconnectFromIPForbidden   [1] BOOLEAN DEFAULT TRUE,
    informationToSend           [2] InformationToSend {bound}   OPTIONAL,
    extensions                  [3] SEQUENCE SIZE(1..bound.&numOfExtensions) OF
```

```
                                                        ExtensionField  {bound}   OPTIONAL,
    ...
    }

ReceivedInformationArg {PARAMETERS-BOUND : bound}::= CHOICE {
    digitsResponse              [0] Digits {bound}
    }


specializedResourceReport OPERATION ::= {
    ARGUMENT        SpecializedResourceReportArg
    RETURN RESULT   FALSE
    ALWAYS RESPONDS FALSE
    CODE            opcode-specializedResourceReport
    }
-- Direction: gsmSRF -> gsmSCF, Timer: Tsrr
-- This operation is used as  the response to a PlayAnnouncement operation when the announcement
-- completed report indication is set.

SpecializedResourceReportArg ::=   NULL

END
```

The following value ranges apply for operation specific timers in CAP:

short:	1 s - 10 s
medium:	1 s - 60 s
long:	1 s - 30 minutes

Table 6-2 lists all operation timers and the value range for each timer. The definitive value for each operation timer may be network specific and has to be defined by the network operator.

Table 6-2: Operation timers and their value range

Operation Name	Timer	value range
PlayAnnouncement	T_{pa}	long
PromptAndCollectUserInformation	T_{pc}	long
SpecializedResourceReport	T_{srr}	short

NOTE to MCC: The left column has been left-aligned in this CR.

6.2.2 gsmSRF/gsmSCF contracts, packages and ACs

6.2.2.1 gsmSRF/gsmSCF ASN.1 modules

```
CAP-gsmSCF-gsmSRF-pkgs-contracts-acs {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1)  modules(3) cAP-gsmSCF-gsmSRF-pkgs-contracts-acs(8) version3(2)}

DEFINITIONS ::= BEGIN

-- This module describes the operation-packages, contracts and application-contexts used
-- over the gsmSCF-gsmSRF interface.

IMPORTS

    PARAMETERS-BOUND,
    cAPSpecificBoundSet
FROM CAP-classes classes

    ROS-OBJECT-CLASS,
    CONTRACT,
    OPERATION-PACKAGE,
    OPERATION
FROM Remote-Operations-Information-Objects ros-InformationObjects

    TCMessage {}
FROM TCAPMessages tc-Messages

    APPLICATION-CONTEXT,
    dialogue-abstract-syntax
FROM TC-Notation-Extensions tc-NotationExtensions
```

```
    playAnnouncement {},
    promptAndCollectUserInformation {},
    specializedResourceReport
FROM CAP-gsmSCF-gsmSRF-ops-args gsmSCF-gsmSRF-Operations

    activityTest,
    cancel {},
    assistRequestInstructions {}
FROM CAP-gsmSSF-gsmSCF-ops-args gsmSSF-gsmSCF-Operations

    gsmSRF-scfActivationOfAssistPackage {}
FROM CAP-gsmSSF-gsmSCF-pkgs-contracts-acs gsmSSF-gsmSCF-Protocol

    id-package-specializedResourceControl,
    id-ac-gsmSRF-gsmSCF,
    id-contract-gsmSRF-gsmSCF,
    id-package-gsmSRF-scfCancel,
    id-as-basic-gsmSRF-gsmSCF,
    classes,
    ros-InformationObjects,
    tc-Messages,
    tc-NotationExtensions,
    gsmSCF-gsmSRF-Operations,
    gsmSSF-gsmSCF-Operations,
    gsmSSF-gsmSCF-Protocol
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-
network(1) modules(3)  cAP-object-identifiers (17) version3(2)}

;

-- Application Contexts

gsmSRF-gsmSCF-ac APPLICATION-CONTEXT ::= {
    CONTRACT                    gsmSRF-gsmSCF-contract
    DIALOGUE MODE               structured
    TERMINATION                 basic
    ABSTRACT SYNTAXES           {dialogue-abstract-syntax |
                                gsmSRF-gsmSCF-abstract-syntax}
    APPLICATION CONTEXT NAME    id-ac-gsmSRF-gsmSCF}

-- Contracts

gsmSRF-gsmSCF-contract CONTRACT ::= {
    INITIATOR CONSUMER OF       {gsmSRF-scfActivationOfAssistPackage {cAPSpecificBoundSet} }
    RESPONDER CONSUMER OF       {specializedResourceControlPackage {cAPSpecificBoundSet}|
                                activityTestPackage {cAPSpecificBoundSet}|
                                gsmSRF-scfCancelPackage {cAPSpecificBoundSet}}
    ID                          id-contract-gsmSRF-gsmSCF}

-- Operation Packages

specializedResourceControlPackage {PARAMETERS-BOUND : bound}  OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {playAnnouncement {bound} |
                        promptAndCollectUserInformation {bound}
    }
    SUPPLIER INVOKES    {specializedResourceReport}
    ID                  id-package-specializedResourceControl}

gsmSRF-scfActivationOfAssistPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {assistRequestInstructions {bound}}
    ID      id-package-gsmSRF-scfActivationOfAssist}


gsmSRF-scfCancelPackage {PARAMETERS-BOUND : bound}   OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {cancel {bound}}
    ID                  id-package-gsmSRF-scfCancel}

activityTestPackage {PARAMETERS-BOUND : bound}   OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {activityTest}
    ID                  id-package-activityTest}

-- Abstract Syntaxes

gsmSRF-gsmSCF-abstract-syntax ABSTRACT-SYNTAX ::= {
    BASIC-gsmSRF-gsmSCF-PDUs
    IDENTIFIED BY   id-as-basic-gsmSRF-gsmSCF}

BASIC-gsmSRF-gsmSCF-PDUs ::= TCMessage {{GsmSRFgsmSCFInvokable},{GsmSRFgsmSCFReturnable}}

GsmSRFgsmSCFInvokable OPERATION ::= {
        activityTest |
        assistRequestInstructions  {cAPSpecificBoundSet}|
        cancel  {cAPSpecificBoundSet}|
```

```
        playAnnouncement  {cAPSpecificBoundSet}|
        promptAndCollectUserInformation  {cAPSpecificBoundSet}|
        specializedResourceReport
        }

GsmSRFgsmSCFReturnable OPERATION ::= {
        activityTest |
        assistRequestInstructions  {cAPSpecificBoundSet}|
        cancel  {cAPSpecificBoundSet}|
        playAnnouncement  {cAPSpecificBoundSet}|
        promptAndCollectUserInformation  {cAPSpecificBoundSet}
        }

END
```

****** END OF DOCUMENT ******

3GPP N2 Meeting
Rothenburg, Germany, 22-26 May 2000

Document N2-00 0210

CHANGE REQUEST

29.078	**CR**	**091r1**	Current Version:	3.3.0

For submission to: CN#8 — for approval [X] — for information [ ] — strategic [ ] — non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: N2 **Date:** 23 May 2000

Subject: Corrections to CAP V3 syntax for GPRS (chapter 8)

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
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	[X]
Release 00	[ ]

Reason for change:

The present CR proposes various corrections to the CAP V3 syntax, in chapter 8 (GPRS).

See 'other comments' for an overview of the changes.

Clauses affected: 8

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:

The following changes have been made.

(1) Sect. 8.1, a space shall be placed between 'TAGS' and '::='.

(2) In some places, a 'Hard Return' has been inserted in the full name of an Object identifier, to improve readability.

(3) Missing comma's have been added to the syntax.

(4) 'ActivityTestGPRSArg' shall not be marked as '{bound}', assuming that it will consist of two fixed-length integers.

(5) In the description of ActivityTestGPRSArg, gsmSSF has been corrected in gprsSSF.

(6) The name used for an instance of a data type shall start with lower case. This has been corrected in various places.

(7) The OPERATION descriptions may specify the ReturnResult type, with the

qualifier ‘RETURN RESULT’, which may have value TRUE or FALSE.
ITU-T X.880 (‘remote operations: concepts, model and notation’), sect. 8.2.4, specifies the following:

‘The &returnResult field specifies whether a result is returned in the event that the operation is performed successfully, taking the value TRUE if it is, and FALSE otherwise.’

Operations that do not return a result in the case of successful execution shall therefore be qualified as RETURN RESULT FALSE’.

Note. RETURN RESULT has default value TRUE. Omission of this qualifier therefore implies that that operation would return a result in the case of successful execution.

(8) The operation CancelGPRS can not be used for cancelling previous operations. The description shall be corrected.

(9) PDPId in EntityReleasedGPRSArg shall be OPTIONAL. Reason is that this operation shall also be used within the PDP Context dialogue, in which case there is no PDP Id available and it shall also be used in a Session dialogue, to indicate the release of the Session; in that case no PDP Id shal be used.

(10) Operation ReleaseGPRS contains the ‘CancelFailed’ error. ‘CancelFailed’ is not applicable for this operation and shall be removed.

(11) The left column in the table with **timer value range** values has been left-aligned.

(12) In sect. 8.2.1 (module ‘CAP-gprsSSF-gsmSCF-pkgs-contracts-acs’), ROS-OBJECT-CLASS is not used in this module and shall therefore not be imported.

(13) In sect. 8.2.1, ‘id-cap3GsmScfToGprsSsf’ is used, so it shall be imported in this module.

(14) The ID of cap3GsmScfToGprsSsf CONTRACT has been corrected from ‘id-cap3GprsSsfTogsmScf’ into ‘id-cap3GsmScfToGprsSsf’.

(15) Operation imer names have been corrected.

(16) ‘GPRS-Reference’ has been moved from the operation argument to the TCAP dialogue portion. This parameter shall therefore be removed from the operation arguments.

(17) The definition of ‘eventReportGPRS’ operation has been moved to the correct alphabetical position. The same for the eventReportGPRS operation timer in table 8-1 and the opcode-eventReportGPRS IMPORT in sect. 8.1.

(18) The SGSN Address information element has been added to the InitialDPGPRS operation.

(19) ‘Attach/Detach FSM’ has been replaced by ‘Attach/Detach state model’; ‘PDP Context FSM’ has been replaced by ‘PDP Context state model’.
This change is in line with general agreement on this terminology.

****** FIRST MODIFIED SECTION ******

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(24) version3(2)}

DEFINITIONS IMPLICIT TAGS ::= BEGIN

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(17) version3(2)}

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

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

    MiscCallInfo
FROM CS2-datatypes { ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
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-eventReportGPRS,
    opcode-requestReportGPRSEvent,
    opcode-resetTimerGPRS,
    opcode-sendChargingInformationGPRS
FROM CAP-operationcodes operationcodes

    AccessPointName {},
    GPRSCause {},
    ChargingCharacteristics,
    ChargingResult,
    FCIGPRSBillingChargingCharacteristics,
    GPRSChargingID,
    GPRSEventSpecificInformation {},
    GPRSEvent,
    GPRSEventType,
    GPRSMSClass,
    GPRS-ReferenceNumber,
    PDPID,
    PDPType,
    QualityOfService,
    RAIdentity,
    SCIGPRSBillingChargingCharacteristics,
    SGSNCapabilities,
    TimeAndTimezone {},
    TimerID,
```

```
    TimerValue
FROM CAP-datatypes datatypes

    missingCustomerRecord,
    missingParameter,
    parameterOutOfRange,
    systemFailure,
    taskRefused,
    unexpectedComponentSequence,
    unexpectedDataValue,
    unexpectedParameter,
    unknownPDPID,
    unknownGPRSReference,
    overlappingDialogue
FROM CAP-errortypes errortypes

;


activityTestGPRS OPERATION ::= {
    ARGUMENT
        ActivityTestGPRSArg {bound}
    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 gprsSSFgsmSSF has failed in some way and
will
-- take the appropriate action.

ActivityTestGPRSArg             ::= SEQUENCE {
    gPRS-ReferenceNumber            [0] GPRS-ReferenceNumber
    }

applyChargingGPRS                   OPERATION ::= {
    ARGUMENT
        ApplyChargingGPRSArg
    RETURN RESULT   TRUEFALSE
    ERRORS {
        missingParameter |
        unexpectedComponentSequence |
        unexpectedParameter |
        unexpectedDataValue |
        parameterOutOfRange |
        systemFailure |
        taskRefused |
        unknownPDPID |
        uUnknownGPRSReference |
        oOverlappingDialogue
        }
    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 {
        gPRS-ReferenceNumber            [0] GPRS-ReferenceNumber,
        chargingCharacteristics         [01] ChargingCharacteristics,
        tariffSwitchInterval            [12]    INTEGER (1..86400)          OPTIONAL,
        pDPID                           [23]    PDPID                       OPTIONAL
        }
--  tariffSwitchInterval is measured in 1 second units.

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

```
--  Direction gprsSSF -> gsmSCF,Timer T~~agcr~~acrg
--  The ApplyChargingReportGPRS operation provides the feedback from the gprsSCF to the gsmSCF
--  CSE-controlled GPRS session charging mechanism.

ApplyChargingReportGPRSArg          ::= SEQUENCE {
        ~~gPRS-ReferenceNumber~~            ~~[0] GPRS-ReferenceNumber,~~
        chargingResult                  [~~1~~0] ChargingResult,
        qualityOfService                [1~~2~~] QualityOfService       OPTIONAL,
        active                          [2~~3~~] BOOLEAN                    DEFAULT TRUE,
        pDPID                           [3~~4~~]    PDPID   OPTIONAL
        }
--  For the encoding of qualityOfService refer to 3G TS 24.008 [12].

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

CancelGPRSArg                           ::= SEQUENCE {
    ~~gPRS-ReferenceNumber~~                ~~[0] GPRS-ReferenceNumber,~~
    pDPID                               [0~~1~~]    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 ~~FSM~~ state model or PDP Context ~~FSM~~state
--  model) without 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 |
        ~~U~~unknownGPRSReference
        }
    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 {
        gPRS-ReferenceNumber            [0] GPRS-ReferenceNumber,
        gPRSCause                       [1] GPRSCause {bound},
        pDPID                           [2] PDPID                    OPTIONAL
        }

eventReportGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        EventReportGPRSArg {bound}
    RETURN RESULT   TRUE
    ERRORS {
        unknownGPRSReference |
        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   ~~TRUE~~FALSE
    ERRORS      {missingParameter |
                taskRefused |
                unexpectedComponentSequence |
                unexpectedDataValue |
                unexpectedParameter |
                unknownPDPID |
                unknownGPRSReference |
                overlappingDialogue
                }
    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 T~~d~~idpg
--  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 {
        gPRS-ReferenceNumber            [0] GPRS-ReferenceNumber,
        sgsnAddress                     [0] ISDN-AddressString,
        serviceKey                      [1] ServiceKey,
        gPRSEventType                   [2] GPRSEventType,
        mSISDN                          [3] ISDN-AddressString,
        iMSI                            [4] IMSI,
        timeAndTimeZone                 [5] TimeAndTimezone {bound},
        gPRSMSClass                     [6] GPRSMSClass                 OPTIONAL,
        pDPType                         [7] PDPType                     OPTIONAL,
        qualityOfService                [8] QualityOfService            OPTIONAL,
        accessPointName                 [9] AccessPointName{bound}      OPTIONAL,
        routeingAreaIdentity            [10] RAIdentity                 OPTIONAL,
        chargingID                      [11] GPRSChargingID             OPTIONAL,
        sGSNCapabilities                [12] SGSNCapabilities           OPTIONAL,
        extensions                      [13] SEQUENCE SIZE(1..bound.&numOfExtensions)   OF
                                            ExtensionField {bound}      OPTIONAL,
        ...
        }

releaseGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        ReleaseGPRSArg {bound}
    RETURN RESULT   TRUEFALSE
    ERRORS {
        cancelFailed |
        missingParameter |
        taskRefused |
        unknownPDPID |
        uUnknownGPRSReference |
        oOverlappingDialogue
        }
    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 {
        gPRS-ReferenceNumber            [0] GPRS-ReferenceNumber,
        gprsCause                       [01] GPRSCause {bound},
        pDPID                           [12]    PDPID OPTIONAL
        }

eventReportGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        EventReportGPRSArg {bound}
    RETURN RESULT   TRUEFALSE
    ERRORS {
        uUnknownGPRSReference |
        unknownPDPID
        }
    CODE opcode-eventReportGPRS
    }
--  Direction gprsSSF -> gsmSCF,Timer Trge
--  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 {
        gPRS-ReferenceNumber            [0] GPRS-ReferenceNumber,
        gPRSEventType                   [1] GPRSEventType,
        miscGPRSInfo                    [2] MiscCallInfo DEFAULT {messageType request},
        gPRSEventSpecificInformation    [3] GPRSEventSpecificInformation {bound}    OPTIONAL,
        pDPID                           [4] PDPID OPTIONAL
        }

requestReportGPRSEvent {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        RequestReportGPRSEventArg {bound}
    RETURN RESULT   TRUEFALSE
    ERRORS {
        missingParameter |
        parameterOutOfRange |
        systemFailure |
        taskRefused |
        unexpectedComponentSequence |
        unexpectedDataValue |
        unexpectedParameter |
        unknownPDPID |
        UunknownGPRSReference |
        OoverlappingDialogue
```

```
        }
    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 activiation), then send a notification back to the
-- gsmSCF when the event is detected.

RequestReportGPRSEventArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
        gPRS-ReferenceNumber        [0] GPRS-ReferenceNumber,
        gPRSEvent                   [01] SEQUENCE SIZE (1..bound.&numOfGPRSEvents)  OF GPRSEvent,
        pDPID                       [12] 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,
        pDPID                       [2] PDPID OPTIONAL
        }

sendChargingInformationGPRS {PARAMETERS-BOUND: bound} OPERATION ::= {
    ARGUMENT    SendChargingInformationGPRSArg { bound}
    RETURN RESULT   TRUEFALSE
    ERRORS  {missingParameter |
             unexpectedComponentSequence |
             unexpectedParameter |
             parameterOutOfRange |
             systemFailure |
             taskRefused |
             unexpectedDataValue |
             unknownPDPID |
             Uunknown GPRSReference |
             Ooverlappingdialogue
             }
    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
```

8.1.1 Operation timers

The following value ranges apply for operation specific timers in CAP:

short:	1 to 20 seconds;
medium:	1 to 60 seconds;
long:	1 second to 30 minutes

Table 8-1 lists all operation timers and the value range for each timer. The definitive value for each operation timer may be network specific and has to be defined by the network operator.

Table 8-1: Operation timers and their value range

Operation Name	Timer	value
ActivityTestGPRST	T_{atg}	short
ApplyChargingGPRS	T_{acg}	short
ApplyChargingReportGPRS	T_{acrg}	short
CancelGPRS	T_{cag}	short
ConnectGPRS	T_{cong}	short
ContinueGPRS	T_{cueg}	short
EntityReleasedGPRS	T_{erg}	short
EventReportGPRS	T_{ereg}	short
FurnishChargingInformationGPRS	T_{fcig}	short
InitialDPGPRS	T_{idpg}	short
ReleaseGPRS	T_{rg}	short
~~EventReportGPRS~~	~~T_{ereg}~~	~~short~~
RequestReportGPRSEvent	T_{rrqe}	short
ResetTimerGPRS	T_{rtg}	Short
SendChargingInformationGPRS	T_{scig}	short

NOTE to MCC: The left column has been left-aligned in this CR.

8.2 gsmSCF/gprsSSF contracts, packages and ACs

8.2.1 gprsSSF/gsmSCF ASN.1 module

```
CAP-gprsSSF-gsmSCF-pkgs-contracts-acs {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-gprsSSF-gsmSCF-pkgs-contracts-acs (25) version3(2)}

DEFINITIONS ::= BEGIN

-- This module describes the operation-packages, contracts and application-contexts used
-- over the gprsSSF-gsmSCF interface.

IMPORTS

    PARAMETERS-BOUND,
    cAPSpecificBoundSet
FROM CAP-classes classes

    ~~ROS-OBJECT-CLASS,~~
    CONTRACT,
    OPERATION-PACKAGE,
    OPERATION
FROM Remote-Operations-Information-Objects ros-InformationObjects

    TCMessage {}
FROM TCAPMessages tc-Messages

    APPLICATION-CONTEXT,
    dialogue-abstract-syntax
FROM TC-Notation-Extensions tc-NotationExtensions

    aActivityTestGPRS {},
    applyChargingGPRS {},
    applyChargingReportGPRS {},
    cancelGPRS {},
    connectGPRS {},
    continueGPRS {},
    entityReleasedGPRS {},
    furnishChargingInformationGPRS {},
    initialDPGPRS {},
    releaseGPRS {},
    eventReportGPRS {},
    requestReportGPRSEvent {},
    resetTimerGPRS {},
```

```
    sendChargingInformationGPRS {}
FROM CAP-gprsSSF-gsmSCF-ops-args gprsSSF-gsmSCF-Operations

    id-ac-CAP-gprsSSF-gsmSCF-AC,
    id-cap3GprsSsfTogsmScf,
    id-cap3GsmScfToGprsSsf,
    id-as-gprsSSF-gsmSCF-AS,
    id-as-gsmSCF-gprsSSF-AS,
    classes,
    ros-InformationObjects,
    tc-Messages,
    tc-NotationExtensions,
    gprsSSF-gsmSCF-Operations
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cAP-object-identifiers (17) version3(2)}

;


-- Application Contexts

cap3-gprssf-scfAC APPLICATION-CONTEXT ::= {
    CONTRACT                    cap3GprsSsfToScf
    DIALOGUE MODE               structured
    ABSTRACT SYNTAXES           {dialogue-abstract-syntax |
                                gprsSSF-fgsmSCFAbstractSyntax}
    APPLICATION CONTEXT NAME    id-ac-CAP-gprsSSF-gsmSCF-AC}

cap3-gsmscf-gprssfAC APPLICATION-CONTEXT ::= {
    CONTRACT                    cap3GsmScfToGprsSsf
    DIALOGUE MODE               structured
    ABSTRACT SYNTAXES           {dialogue-abstract-syntax |
                                gsmSCF-gprsSSFAbstractSyntax}
    APPLICATION CONTEXT NAME    id-ac-CAP-gsmSCF-gprsSSF-AC}


-- Contracts

cap3GprsSsfToScf CONTRACT ::= {
-- dialogue initiated by gprsSSF with InitialDPGPRS, ApplyChargingReportGPRS,
-- EntityReleaseGPRS and EventReportGPRS Operations
    INITIATOR CONSUMER OF
            {
            gprSscfActivationPackage {cAPSpecificBoundSet} |
            gprsEventHandlingPackage {cAPSpecificBoundSet} |
            gprsChargingPackage {cAPSpecificBoundSet} |
            gprsExceptionInformationPackage
            }
    RESPONDER CONSUMER OF
            {
            gprsConnectPackage {cAPSpecificBoundSet} |
            gprsProcessingPackage {cAPSpecificBoundSet} |
            gprsReleasePackage {cAPSpecificBoundSet} |
            gprsEventHandlingPackage {cAPSpecificBoundSet} |
            gprsTimerPackage {cAPSpecificBoundSet} |
            gprsBillingPackage {cAPSpecificBoundSet} |
            gprsChargingPackage {cAPSpecificBoundSet} |
            gprsCancelPackage {cAPSpecificBoundSet} |
            gprsChargeAdvicePackage {cAPSpecificBoundSet}
            }
    ID      id-cap3GprsSsfTogsmScf
    }

cap3GsmScfToGprsSsf CONTRACT ::= {
-- dialogue initiated by gsmSCF with ApplyCharginGPRS, ActivityTestGPRS,
-- CancelGPRS, FurnishChargingInformationGPRS, ReleaseGPRS,
-- RequestReportGPRSEvent and SendChargingInformationGPRS Operations
    INITIATOR CONSUMER OF
    {
            gprsReleasePackage {networkSpecificBoundSet} |
            gprsEventHandlingPackage {networkSpecificBoundSet} |
            gprsTimerPackage {networkSpecificBoundSet} |
            gprsBillingPackage {networkSpecificBoundSet} |
            gprsChargingPackage {networkSpecificBoundSet} |
            gprsActivityTestPackage {networkSpecificBoundSet} |
            gprsCancelPackage {networkSpecificBoundSet} |
            gprsChargeAdvicePackage {networkSpecificBoundSet}
    }
    RESPONDER CONSUMER OF
    {
    }
    ID      id-cap3GsmScfToGprsSsfid-cap3GprsSsfTogsmScf
    }
```

```
-- Operation Packages

gprsScfActivationPackage {PARAMETERS-BOUND : bound}  OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    { initialDPGPRS {bound}}
    ID      id-package-gprsScfActivation}
gprsConnectPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {connectGPRS {bound}}
    ID      id-package-gprsConnect}
gprsProcessingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {continueGPRS {bound}}
    ID      id-package-gprsContinue}
gprsReleasePackage  {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {releaseGPRS {bound}}
    ID      id-package-gprsRelease}
gprsEventHandlingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {requestReportGPRSEvent {bound}}
    SUPPLIER INVOKES    {eventReportGPRS {bound}}
    ID      id-package-gprsEventHandling}
gprsExceptionInformationPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {entityReleasedGPRS {bound}}
    ID      id-package-gprsExceptionInformation}
gprsTimerPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {resetTimerGPRS {bound}}
    ID      id-package-gprsTimer}
gprsBillingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {furnishChargingInformationGPRS {bound}}
    ID      id-package-gprsBilling}
gprsChargingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {applyChargingGPRS {bound}}
    SUPPLIER INVOKES    {applyChargingReportGPRS {bound}}
    ID      id-package-gprsCharging}
gprsChargeAdvicePackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {sendChargingInformationGPRS {bound}}
    ID      id-package-gprsChargeAdvice}
gprsActivityTestPackage OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {activityTestGPRS {bound}}
    ID      id-package-gprsActivityTest}
gprsCancelPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
    CONSUMER INVOKES    {cancelGPRS {bound}}
    ID      id-package-gprsCancel}



-- Abstract Syntaxes

gprsSSF-gsmSCFAbstractSyntax ABSTRACT-SYNTAX ::= {
    GenericGprsSSF-gsmSCF-PDUs
    IDENTIFIED BY   id-as-gprsSSF-gsmSCF-AS}

GenericGprsSSF-gsmSCF-PDUs ::= TCMessage {{GprsSsfToGsmScfInvokable},
            {GprsSsfToGsmScfReturnable}}

GprsSsfToGsmScfGenericInvokable OPERATION ::= {
            activityTestGPRS {networkSpecificBoundSet} |
            applyChargingGPRS {cAPSpecificBoundSet} |
            applyChargingReportGPRS {cAPSpecificBoundSet} |
            cancelGPRS {cAPSpecificBoundSet} |
            connectGPRS {cAPSpecificBoundSet} |
            entityReleasedGPRS {cAPSpecificBoundSet} |
            eventReportGPRS {cAPSpecificBoundSet} |
            furnishChargingInformationGPRS {cAPSpecificBoundSet} |
            initialDPGPRS {cAPSpecificBoundSet} |
            releaseGPRS {cAPSpecificBoundSet} |
            requestReportGPRSEvent {cAPSpecificBoundSet} |
            resetTimerGPRS {cAPSpecificBoundSet} |
            sendChargingInformationGPRS {cAPSpecificBoundSet}
            }

GprsSsfToGsmScfReturnable OPERATION ::= {
            activityTestGPRS {networkSpecificBoundSet} |
            applyChargingGPRS {cAPSpecificBoundSet} |
            applyChargingReportGPRS {cAPSpecificBoundSet} |
            cancelGPRS {cAPSpecificBoundSet} |
            connectGPRS {cAPSpecificBoundSet} |
            continueGPRS {cAPSpecificBoundSet} |
            entityReleasedGPRS {cAPSpecificBoundSet} |
            furnishChargingInformationGPRS {cAPSpecificBoundSet}|
            initialDPGPRS {cAPSpecificBoundSet}|
            releaseGPRS {cAPSpecificBoundSet}|
            requestReportGPRSEvent {cAPSpecificBoundSet}|
            resetTimerGPRS {cAPSpecificBoundSet}|
```

```
            sendChargingInformationGPRS {cAPSpecificBoundSet}
            }

gsmSCF-gprsSSFGenericAbstractSyntax ABSTRACT-SYNTAX ::= {
    GenericGsmSCF-gprsSSF-PDUs
    IDENTIFIED BY   id-as-gsmSCF-gprsSSF-AS}

GenericGsmSCF-gprsSSF-PDUs ::= TCMessage {{GsmScfToGprsSsfInvokable}, {GsmScfToGprsSsfReturnable}}

GsmScfToGprsSsfInvokable OPERATION ::= {
            activityTestGPRS {networkSpecificBoundSet} |
            applyChargingGPRS {cAPSpecificBoundSet}|
            cancelGPRS {cAPSpecificBoundSet}|
            furnishChargingInformationGPRS {cAPSpecificBoundSet}|
            releaseGPRS {cAPSpecificBoundSet}|
            requestReportGPRSEvent {cAPSpecificBoundSet}|
            sendChargingInformationGPRS {cAPSpecificBoundSet}
            }

GsmScfToGprsSsfReturnable OPERATION ::= {
            activityTestGPRS {networkSpecificBoundSet} |
            applyChargingGPRS {cAPSpecificBoundSet}|
            cancelGPRS {cAPSpecificBoundSet}|
            furnishChargingInformationGPRS {cAPSpecificBoundSet}|
            releaseGPRS {cAPSpecificBoundSet}|
            requestReportGPRSEvent {cAPSpecificBoundSet}|
            sendChargingInformationGPRS {cAPSpecificBoundSet}
            }

END
```

3GPP TSG CN N2#10
Rotenburg, Germany, 22-26 May 2000

Document ***N2-000211***
rev N2-000175

CHANGE REQUEST

29.078 **CR** **094r1** Current Version: 3.3.0

For submission to: CN #08 for approval [X] for information [ ] strategic [ ] non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: N2 **Date:** 31-05-2000

Subject: Enhancement of GPRS Event Specific Information

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
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	[X]
Release 00	[ ]

Reason for change:

In order to minimize usage of resources it was already described to individually detect and control multiple PDP Contexts during one single GPRS dialogue ("super" dialogue) by a dynamically armed generic EDP (scenario 1).

A generic EDP has similar functionality of a initial service event from reported parameters point of view.

This scenario shall be also supported for the Inter SGSN Routing Area Update.

In the old SGSN the GPRS dialogue will be closed.

In the new SGSN the CSE will be triggered at DP Change of Position session. In order to get information about the successful updated PDP contexts the CSE shall arm the generic EDP for Change of Position context and instruct to continue.

Now all successful updated PDP contexts shall be reported.

During the GPRS dialogue an activation event of a PDP Context will be monitored and if detected eg. charging activities may be performed.

Missing so far in operation Event Report GPRS are specific parameters usally set up for initial service events in order to report necessary parameters to the CSE.

Therefore it is proposed to include these specific parameters as specified in 3G TS 22.078 annex in gPRSEventSpecificInformation.

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 MODIFIED SECTION ******

5 Common CAP Types

5.1 Data types

…

```
GPRSEventSpecificInformation {PARAMETERS-BOUND : bound}                ::= CHOICE {
        attachChangeOfPositionSpecificInformation
                                            [0] SEQUENCE {
                newRoutingAreaIdentity          [0] RAIdentity
                },
        pdp-ContextchangeOfPositionSpecificInformation
                                            [1] SEQUENCE {
                accessPointName                 [0] AccessPointName {bound} OPTIONAL,
                chargingID                      [1] GPRSChargingID,
                newRoutingAreaIdentity          [20] RAIdentity,
                chargingID                      [1] GPRSChargingID
                pDPType                         [3] PDPType                 OPTIONAL,
                qualityOfService                [4] QualityOfService,
                timeAndTimeZone                 [5] TimeAndTimeZone         OPTIONAL
                },
        detachSpecificInformation           [2] SEQUENCE {
                inititatingEntity               [0] InitiatingEntity
                },
        disconnectSpecificInformation       [3] SEQUENCE {
                inititatingEntity               [0] InitiatingEntity
                },
        pDPContextEstablishmentSpecificInformation
                                            [4] SEQUENCE {
                accessPointName                 [0] AccessPointName {bound},
                pDPType                         [1] PDPType                 OPTIONAL,
                qualityOfService                [2] QualityOfService,
                routingAreaIdentity             [3] RAIdentity              OPTIONAL,
                timeAndTimeZone                 [4] TimeAndTimeZone         OPTIONAL
                },
        pDPContextEstablishmentAcknowledgementSpecificInformation
                                            [5] SEQUENCE {
                accessPointName                 [0] AccessPointName {bound} OPTIONAL,
                chargingID                      [10] GPRSChargingID,
                pDPType                         [2] PDPType                 OPTIONAL,
                qualityOfService                [3] QualityOfService,
                routingAreaIdentity             [4] RAIdentity              OPTIONAL,
                timeAndTimeZone                 [5] TimeAndTimeZone         OPTIONAL
                }
        }
--  For the encoding of NewRoutingAreaIdentity refer to 3G TS 29.060 [43]


…
```

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

11 Detailed operation procedures

…

11.26 EventReportGPRS procedure

…

11.26.1.1 Parameters

- gPRS-ReferenceNumber:
  This parameter identifies the instance of the gprsSSF. Each gprsSSF instance is uniquely related to a gsmSCF instance in the SCP.

- 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 it will contain the "newRoutingAreaIdentity", if available.

  For Detach and Disconnect it will contain the "initiatingEntity".

  For PDP context establishment it will contain the "accessPointName".

  For PDP context establishment acknowledge it will contain the "chargingID".

  All optional gPRSEventSpecificInformation parameters shall be sent according to 3G TS 22.078 annex "GPRS Information provided to the CSE".

- miscGPRSInfo:
  This parameter indicates 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 control relationship for which the event is reported.

11.26.2 Invoking entity (gprsSSF)

…

****** END OF DOCUMENT ******

3GPP N2 Meeting
Rotenburg, Germany, 22-26 May 2000

***Document* N2-000256**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

29.078	CR	097r1	Current Version:	3.3.0

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

For submission to:	CN#8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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

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

Source: N2 **Date:** 26 May 2000

Subject: Two changes in the class

Work item: CAMEL Phase 3

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

F	Correction	X
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	X
Release 00	

Reason for change: (1)"networkSpecificBoundSet" was simply taken from IN CS-2. Since this name is used for the INAP protocol, it is proposed to rename to "capSpecificBoundSet".
(2)As specified in 24.008, the parameter length of the access point name is recommended to be between 1 to 100 octets.

Clauses affected: 5.5 (networkSpecificBoundSet)

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:

```
capSpecificBoundSetnetworkSpecificBoundSet PARAMETERS-BOUND ::=
{
    MINIMUM-FOR-ACCESS-POINT-NAME               12
    MAXIMUM-FOR-ACCESS-POINT-NAME               10010
    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                     24
    MAXIMUM-FOR-CAUSE                           2
    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-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-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
```

3GPP N2 Meeting
Rotenburg, Germany, 22-26 May 2000

***Document* N2-000189**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

29.078	CR	098	Current Version:	3.3.0

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

For submission to:	CN#8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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

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

Source: N2 **Date:** 21 May 2000

Subject: Addition of Location Information to Initial DP GPRS

Work item: CAME Phase 3

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

F	Correction	X
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	X
Release 00	

Reason for change: Location information in Initial DP GPRS is currently missing.

Clauses affected: 6

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.078-
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 modified part in 8.1 *****

```
initialDPGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        InitialDPGPRSArg {bound}
    ERRORS {
        missingCustomerRecord |
        missingParameter |
        parameterOutOfRange |
        systemFailure |
        taskRefused |
        unexpectedComponentSequence |
        unexpectedDataValue |
        unexpectedParameter
        }
    CODE opcode-initialDPGPRS
    }

--  Direction gprsSSF -> gsmSCF,Timer Tdpg
--  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 {
        gPRS-ReferenceNumber            [0] GPRS-ReferenceNumber,
        serviceKey                      [1] ServiceKey,
        gPRSEventType                   [2] GPRSEventType,
        mSISDN                          [3] ISDN-AddressString,
        iMSI                            [4] IMSI,
        timeAndTimeZone                 [5] TimeAndTimezone {bound},
        gPRSMSClass                     [6] GPRSMSClass                 OPTIONAL,
        pDPType                         [7] PDPType                     OPTIONAL,
        qualityOfService                [8] QualityOfService                OPTIONAL,
        accessPointName                 [9] AccessPointName{bound}              OPTIONAL,
        routeingAreaIdentity            [10] RAIdentity                     OPTIONAL,
        chargingID                      [11] GPRSChargingID             OPTIONAL,
        sGSNCapabilities                [12] SGSNCapabilities               OPTIONAL,
        locationInformationGPRS         [13] LocationInformationGPRS                OPTIONAL,
        extensions                      [14~~13~~] SEQUENCE SIZE(1..bound.&numOfExtensions)     OF
                                                    ExtensionField {bound}      OPTIONAL,
        ...
        }

releaseGPRS {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT
        ReleaseGPRSArg {bound}
    RETURN RESULT   TRUE
    ERRORS {
        cancelFailed |
        missingParameter |
        taskRefused |
        unknownPDPID |
        UnknownGPRSReference |
        OverlappingDialogue
        }
    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.
```

***** First modified part in 8.1 *****

11.32 InitialDPGPRS procedure

11.32.1 General description

This operation is sent 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.

11.32.1.1 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 3G TS 29.002 [13].

- iMSI:
  IMSI of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3G 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.

- gPRSMSClass:
  This parameter contains the MS Station capabilites 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.

- pDPType:
  This parameter identifies the PDP type and the actual PDP address.

- pDPTypeOrganization:
  This parameter contains the type of PDP address, e.g. ETSI or an IETF type of address. For encoding see 3G TS 29.060 [43].

- pDPTypeNumber:
  This parameter is the address that the PDP context of the MS for which the CAMEL service is invoked for, that identifies the MS from the externa packet data network. For encoding see 3G TS 29.060 [43].

- qualityOfService:
  This parameter contains the negotiated quality of service for the PDP current PDP context. For encoding see 3G TS 24.008 [12].

- 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 3G TS 29.060 [43].

- routeingAreaIdentity:
  This parameter contains the location information of the MS for which the CAMEL service is invoked from. For encoding see 3G TS 29.060 [43].

- chargingID:
  This parameter contains the charging ID that uniquely identifies the PDP context for the MS for which the CAMEL service is invoked from. For encoding see 3G TS 32.015.

- sGSNcapabilities:
  This parameter specifies the capabilities which the SGSN node can provide for the CAMEL service control.

- gPRS-ReferenceNumber:
  This parameter identifies the instance of the gprsSSF. Each gprsSSF instance is uniquely related to a gsmSCF instance in the SCP.

- locationInformationInSGSN:
  This parameter indicates the location of the sending MS.

11.32.2 Invoking entity (gprsSSF)