3GPP TSG_CN **Tdoc NP-000251**
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 D & F**

Agenda item: **6.2.2**

Document for: **APPROVAL**

Introduction:

This document contains **10** 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
N2-000244	29.078	092	2	D	R99	3.3.0	3.4.0	Module IMPORT references
N2A000323	29.078	062		F	R99	3.3.0	3.4.0	Clarification of collectedDigits parameter
N2A000325	29.078	064		F	R99	3.3.0	3.4.0	SII2 CCBS treatment indicator default
N2A000326	29.078	065		F	R99	3.3.0	3.4.0	Remove of SII2 frw CCBS treatment ind
N2A000338	29.078	066		F	R99	3.3.0	3.4.0	Correction to Normative References
N2A000396	29.078	067	1	F	R99	3.3.0	3.4.0	Alignment of PDP address according to [29.060]
N2A000342	29.078	068		F	R99	3.3.0	3.4.0	Detailed specification of the Control Relationship for the ApplyChargingGPRS procedure.
N2-000235	29.078	069	4	F	R99	3.3.0	3.4.0	Various corrections and updates for 29.078
N2A000381	29.078	071		F	R99	3.3.0	3.4.0	Maximum length of cause parameter
N2A000382	29.078	072		F	R99	3.3.0	3.4.0	Maximum length of CAMEL call result

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Document N2A000323
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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29.078	**CR**	**062**	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 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	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:** 16.03.2000

Subject: Clarification of collectedDigits parameter

Work item: CAMEL phase

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

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

Reason for change: -There is not clear defined, shall the 'startDigit' parameter (1..2 digits) be included or not to the 'valid digits' when the minimum/maximum number of digits are counted and not specified shall the 'endOfReplyDigit' parameter (1..2 digits) be returned to the gsmSCF in result parameter digitResponse.

Clauses affected: 11.34.1.1

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 ******

11.34.1.1 Parameters

- collectedInfo:

- collectedDigits:

- minimumNbOfDigits:
  If this parameter is missing, the default value is defined to be 1. The "minimumNbOfDigits" specifies the minimum number of valid digits to be collected.

- maximumNbOfDigits:
  This parameter shall always be present and specifies the maximum number of valid digits to be collected. The following applies:
  "maximumNbOfDigits" ≥ "minimumNbOfDigits".

- endOfReplyDigit:
  This parameter indicates the digit(s) used to signal the end of input, and can be one or two digits.

  In case the "maximumNbOfDigits" > "minimumNbOfDigits" the following applies:

  If "endOfReplyDigit" is not present, the end of input is indicated:

  - when the inter-digit timer expires; or

  - when the number of valid digits received equals the "maximumNbOfDigits".

  If "endOfReplyDigit" is present, the end of input is indicated:

  - when the inter-digit timer expires; or

  - when the end of reply digit is received; or

  - when the number of valid digits received equals the "maximumNbOfDigits".

  When the end of input is attained, the collected digits are sent from gsmSRF to the gsmSCF, including the ‘endOfReplyDigit’ if received by the gsmSRF. In the case the number of valid digits received is less than the "minimumNbOfDigits" when the inter-digit timer expires or when the end of reply digit is received, the input is specified as being erroneous.

- cancelDigit:

  If this parameter is present, the cancel digit(s) can be entered by the user to request a possible retry. This parameter can be one or two digits. All digits already received by the gsmSRF are discarded and the same PromptAndCollectUserInformation procedure is performed again, thus e.g. the same announcement to request user information is given to the user and information is collected. If this parameter is not present, the user is not able to request a possible retry.

- startDigit:

  If this parameter is present, the start digit indicates the start of the valid digits to be collected. The digits that are received by the gsmSRF before this start digit is received, are discarded and are not considered to be valid. The startDigit itself is considered to be valid digits. This parameter can be one or two digits.

  If this parameter is not present, all received digits are considered to be valid.

  When the end of input is attained, the collected digits are sent from gsmSRF to the gsmSCF, including the ‘startDigit’ if received by the gsmSRF.

- firstDigitTimeOut:

  If this parameter is present, the first digit should be received by the gsmSRF before the first-digit timer expiration. If the first digit is not received before first-digit timer expiration, the input is regarded to be erroneous. After receipt of the first valid or invalid input digit, the corresponding first-digit timer is stopped.

If this parameter is not present, then the gsmSRF uses a default value for the first-digit timer.

If "startDigit" is present, the first-digit timer is stopped after the start digit is received.

- interDigitTimeOut:

  If this parameter is present any subsequent valid or invalid digit, should be received by the gsmSRF before the inter-digit timer expires. As a result the inter-digit timer is reset and restarted.

  If a subsequent valid or invalid digit is not received before the inter-digit timer expires and the number of received valid digits is less than the "minimumNbOfDigits", the input is regarded to be unsuccessful.

  If a subsequent valid or invalid digit is not received before the inter-digit timer expires and the number of received valid digits is greater than the "minimumNbOfDigits", and less than or equal to the "maximumNbOfDigits", the input is regarded to be successful.

  If the "interDigitTimeOut" is not present, then the gsmSRF uses a default value for the inter-digit timer.

- errorTreatment:

  This optional parameter defines what specific action should be taken by the gsmSRF in the event of error conditions occurring. The default value is stdErrorAndInfo.

- interruptableAnnInd:

  This parameter is optional, where the default value is TRUE.

  If this parameter is TRUE, the announcement is interrupted after the first valid or invalid digit is received by the gsmSRF. If the announcement is interrupted, a possible start-digit timer will not apply anymore. However, if the announcement has not been interrupted, a possible start-digit timer is started after the announcement has been finished.

  If this parameter is present and explicitly set to FALSE, the announcement will not be interrupted after the first digit is received by the gsmSRF. The received digits during the announcement are discarded and considered to be invalid. All other specified parameters ("minimumNbOfDigits", "maximumNbOfDigits", "endOfReplyDigit", etc.) do not apply before the announcement has been finished. The possible start-digit timer is started after the announcement has been finished.

- voiceInformation:

  This parameter is optional, where the default value is FALSE. If the "voiceInformation" parameter is FALSE, all valid or invalid digits are entered by DTMF.

  If this parameter is present and explicitly set to TRUE, the calling user is required to provide all valid or invalid information by speech. The gsmSRF will perform voice recognition and translation of the provided information into digits. A possible end of reply digit will also have to be provided by speech.

- voiceBack:

  This parameter is optional, where the default value is FALSE. If the "voiceBack" parameter is FALSE, no voice back information is given by the gsmSRF.

  If this parameter is present and explicitly set to TRUE, the valid input digits received by the gsmSRF will be announced back to the calling user immediately after the end of input is received. The invalid input digits will not be announced back to the calling user. A possible end of reply digit is not voiced back.

- disconnectFromIPForbidden:

  This parameter indicates whether the gsmSRF should initiate disconnection to the gsmSSF after the interaction has been completed. If the parameter is not present or set to TRUE, the gsmSRF shall not initiate disconnection.

- informationToSend:

  This parameter indicates an announcement or tone to be sent to the end user by the gsmSRF.

- inbandInfo:

  This parameter specifies the inband information to be sent.

- messageID:

  This parameter indicates the message(s) to be sent, this can be one of the following:

- elementaryMessageID:

  This parameter indicates a single announcement.

- text:

  This parameter indicates a text to be sent. The text shall be transformed to inband information (speech) by the gsmSRF. The attributes of text may consist of items such as language.

- elementaryMessageIDs:

  This parameter specifies a sequence of announcements.

- variableMessage:

  This parameter specifies an announcement with one or more variable parts.

- numberOfRepetitions:

  This parameter indicates the maximum number of times the message shall be sent to the end-user.

- duration:

  This parameter indicates the maximum time duration in seconds that the message shall be played/repeated. ZERO indicates endless repetition.

- interval:

  This parameter indicates the time interval in seconds between repetitions, i.e. the time between the end of the announcement and the start of the next repetition. This parameter can only be used when the number of repetitions is greater than one.

- tone:

  This parameter specifies a tone to be sent to the end-user.

- toneID:

  This parameter indicates the tone to be sent.

- duration:

  This parameter indicates the time duration in seconds of the tone to be sent. ZERO indicates infinite duration.

Result Parameter:

- digitsResponse:

  This parameter contains the information collected from the end-user.

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***Document* N2A000325**
e.g. for 3GPP use the format TP-99xxx
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CHANGE REQUEST

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29.078	CR	064	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: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: N2 **Date:** 15.03.2000

Subject: SII2 CCBS treatment indicator default value

Work item: CAMEL phase

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: There is contradiction between asn.1 comments and Annex A Table A-4. The default value of the CCBS treatment indicator will be corrected to value 'accept' in asn.1 comments.
The default value 'accept' allows the same call handling between CAMEL Phase2 and Phase3 in cases the CCBS treatment indicator is not explicitly set.

Clauses affected: 5.1

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 default value 'accept' is also used in the CS-2 INAP and Q.1601.

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

5.1 Data types

```
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~~ accept call completion service request
    ...
    }
```

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CHANGE REQUEST

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29.078	**CR**	**065**	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:** 15.03.2000

Subject: Corrections to SII2 CCBS treatment indicator

Work item: CAMEL phase

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

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

Reason for change: The forward CCBS treatment indicator is not nessessary in MO, because the same network functionality can be reached using backward CCBS treatment indicator.

Clauses affected: 5.1

Other specs affected:

Other 3G core specifications		→ List of CRs:	CR 23.078 130
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 ******

5.1 Data types

```
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
    ...
    }
```

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Document N2A000338
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or for SMG, use the format P-99-xxx

CHANGE REQUEST

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29.078	**CR**	**066**	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: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: N2 **Date:** 22.03.2000

Subject: Correction to Normative References

Work item: CAMEL phase

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

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

Reason for change: During stage 3 drafting phase the string 'INAP' is replaced by the string 'CAP'. This CR proposes to resume the string 'INAP' to two reference document name.

Clauses affected: 2.1

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 ******

2.1 Normative references

[1] ETR 186-2:"Intelligent Network (IN); Interaction between IN Application Protocol (~~CAP~~INAP) and Integrated Services Digital Network (ISDN) signalling protocols; Part 2: Switching signalling requirements for IN Capability Set 2 (CS2) service support in a Narrowband ISDN (N-ISDN) environment".

[11] EN 301 070-1:"Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 interactions with the Intelligent Network Application Part (~~CAP~~INAP); Part 1: Protocol specification [ITU-T Recommendation Q.1600 (1997), modified]".

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27-March 31, 2000

N2A000396
Document rev of N2A000340
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CHANGE REQUEST

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29.078	**CR**	**067r1**	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 #08	for approval	X	strategic		(for SMG use only)
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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: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: N2 **Date:** 30.03.2000

Subject: Alignment of PDP address according to [29.060]

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: Description of InitialDPGPRS procedure mentions the parameter PDP address. Definition is not according to [29.060]. This CR corrects and includes the PDP address in the PDPType.

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:

help.doc

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

— First modified section —

2.1 Normative References

[xx] 3G TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface (3G TS 29.060 version 3.2.2)"

...

— Next modified section —

5.1 Data types

...

```
PDPType {PARAMETERS-BOUND: bound}                                    ::= SEQUENCE {
        pDPTypeOrganization                     [0] OCTET STRING (SIZE(1)),
        pDPTypeNumber                           [1] OCTET STRING (SIZE(1)),
        PDPAddress                              [2] OCTET STRING (SIZE(
            bound.&minPDPAddressLength ..
            bound.&maxPDPAddressLength))    OPTIONAL
        }
-- Indicates the PDPType, refer to 3G TS 29.060 for the encoding.
-- The pDPTypeOrganization shall use the least significant 4 bits of the octet encoded.
-- The sender of this parameter shall set the most significant 4 bit of the octet to 0.
-- The receiver of this parameter shall ignore the most significant 4 bits of this octet.
```

...

— Next modified section —

5.5 Classes

...

```
PARAMETERS-BOUND ::= CLASS
{
    &minAccessPointNameLength                   INTEGER,
    &maxAccessPointNameLength                   INTEGER,
    &minAChBillingChargingLength                INTEGER,
    &maxAChBillingChargingLength                INTEGER,
    &minAttributesLength                        INTEGER,
    &maxAttributesLength                        INTEGER,
    &maxBearerCapabilityLength                  INTEGER,
    &minCalledPartyBCDNumberLength              INTEGER,
    &maxCalledPartyBCDNumberLength              INTEGER,
    &minCalledPartyNumberLength                 INTEGER,
    &maxCalledPartyNumberLength                 INTEGER,
    &minCallingPartyNumberLength                INTEGER,
    &maxCallingPartyNumberLength                INTEGER,
    &minCallResultLength                        INTEGER,
    &maxCallResultLength                        INTEGER,
    &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,
    &minPDPAddressLength                        INTEGER,
    &maxPDPAddressLength                        INTEGER,
    &minRedirectingPartyIDLength                INTEGER,
    &maxRedirectingPartyIDLength                INTEGER,
    &minScfIDLength                             INTEGER,
    &maxScfIDLength                             INTEGER,
    &minSCIBillingChargingLength                INTEGER,
    &maxSCIBillingChargingLength                INTEGER,
    &minTimeAndTimezoneLength                   INTEGER,
    &maxTimeAndTimezoneLength                   INTEGER,
    &numOfBCSMEvents                            INTEGER,
    &numOfSMSEvents                             INTEGER,
    &numOfGPRSEvents                            INTEGER,
    &numOfExtensions                            INTEGER,
    &numOfGenericNumbers                        INTEGER,
    &numOfMessageIDs                            INTEGER
    }

WITH SYNTAX
{
    MINIMUM-FOR-ACCESS-POINT-NAME               &minAccessPointNameLength
    MAXIMUM-FOR-ACCESS-POINT-NAME               &maxAccessPointNameLength
    MINIMUM-FOR-ACH-BILLING-CHARGING            &minAChBillingChargingLength
    MAXIMUM-FOR-ACH-BILLING-CHARGING            &maxAChBillingChargingLength
    MINIMUM-FOR-ATTRIBUTES                      &minAttributesLength
    MAXIMUM-FOR-ATTRIBUTES                      &maxAttributesLength
    MAXIMUM-FOR-BEARER-CAPABILITY               &maxBearerCapabilityLength
    MINIMUM-FOR-CALLED-PARTY-BCD-NUMBER         &minCalledPartyBCDNumberLength
    MAXIMUM-FOR-CALLED-PARTY-BCD-NUMBER         &maxCalledPartyBCDNumberLength
    MINIMUM-FOR-CALLED-PARTY-NUMBER             &minCalledPartyNumberLength
    MAXIMUM-FOR-CALLED-PARTY-NUMBER             &maxCalledPartyNumberLength
    MINIMUM-FOR-CALLING-PARTY-NUMBER            &minCallingPartyNumberLength
    MAXIMUM-FOR-CALLING-PARTY-NUMBER            &maxCallingPartyNumberLength
    MINIMUM-FOR-CALL-RESULT                     &minCallResultLength
    MAXIMUM-FOR-CALL-RESULT                     &maxCallResultLength
    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-PDP-ADDRESS-LENGTH              &minPDPAddressLength
    MAXIMUM-FOR-PDP-ADDRESS-LENGTH              &maxPDPAddressLength
    MINIMUM-FOR-REDIRECTING-ID                  &minRedirectingPartyIDLength
    MAXIMUM-FOR-REDIRECTING-ID                  &maxRedirectingPartyIDLength
    MINIMUM-FOR-GSMSCF-ID                       &minScfIDLength
    MAXIMUM-FOR-GSMSCF-ID                       &maxScfIDLength
    MINIMUM-FOR-SCI-BILLING-CHARGING            &minSCIBillingChargingLength
    MAXIMUM-FOR-SCI-BILLING-CHARGING            &maxSCIBillingChargingLength
    MINIMUM-FOR-TIME-AND-TIMEZONE               &minTimeAndTimezoneLength
    MAXIMUM-FOR-TIME-AND-TIMEZONE               &maxTimeAndTimezoneLength
    NUM-OF-BCSM-EVENT                           &numOfBCSMEvents
    NUM-OF-SMS-EVENTS                           &numOfSMSEvents
    NUM-OF-GPRS-EVENTS                          &numOfGPRSEvents
    NUM-OF-EXTENSIONS                           &numOfExtensions
    NUM-OF-GENERIC-NUMBERS                      &numOfGenericNumbers
    NUM-OF-MESSAGE-IDS                          &numOfMessageIDs
}


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-PDP-ADDRESS-LENGTH              1
    MAXIMUM-FOR-PDP-ADDRESS-LENGTH              63
    MINIMUM-FOR-REDIRECTING-ID                  2
    MAXIMUM-FOR-REDIRECTING-ID                  10
    MINIMUM-FOR-GSMSCF-ID                       2
    MAXIMUM-FOR-GSMSCF-ID                       10
    MINIMUM-FOR-SCI-BILLING-CHARGING            4
    MAXIMUM-FOR-SCI-BILLING-CHARGING            69
    MINIMUM-FOR-TIME-AND-TIMEZONE               8
    MAXIMUM-FOR-TIME-AND-TIMEZONE               8
    NUM-OF-BCSM-EVENT                           10
    NUM-OF-SMS-EVENTS                           10
    NUM-OF-GPRS-EVENTS                          10
    NUM-OF-EXTENSIONS                           10
    NUM-OF-GENERIC-NUMBERS                      5
    NUM-OF-MESSAGE-IDS                          16
}
```

...

— Next modified section —

8.1 gsmSCF/gprsSSF operations and arguments

...

```
InitialGPRSEventArg                 ::= SEQUENCE {
        serviceKey                      [0] ServiceKey,
        gPRSEventType                   [1] GPRSEventType,
        mSISDN                          [2] MSISDN,
        iMSI                            [2] IMSI,
        timeAndTimeZone                 [3] TimeAndTimeZone,
        gPRSMSClass                     [4] GPRSMSClass     OPTIONAL,
        pDPType                         [5] PDPType             OPTIONAL,
        qualityOfService                [1] QualityOfService        OPTIONAL,
        accessPointName                 [7] AccessPointName     OPTIONAL,
        routeingAreaIdentity            [8] RAIdentity          OPTIONAL,
        chargingID                      [9] GPRSChargingId          OPTIONAL,
        sGSNCapabilities                [10]SGSNCapabilities                OPTIONAL
        }
```

...

— Next modified section —

11.30 InitialDPGPRS procedure

11.30.1 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 session or PDP context.

11.30.1.1 Parameters

- serviceKey:

  This parameter identifies for the gsmSCF unambiguously the requested IN service. It is used to address the correct application/SLP within the gsmSCF (not for SCP addressing).

. . .

- pDPType:

  This parameter identifies the PDP type and the actual PDP address.

  - pDPTypeOrganization:

    The pDPTypeOrganisation defines the organization that is responisble for the pDPTypeNumber field and the PDP Address format ~~This parameter contains the type of PDP address~~, e.g. ETSI or an IETF type of address. For encoding see GSM 29.060.

  - pDPTypeNumber:

    The pDPTypeNumber defines the end user protocol to be used between the external packet data network and the MS related to the pDPTypeOrganization.~~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.

  - PDPAddress:

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

- qualityOfService:

  This parameter contains the negotiated quality of service for the PDP current PDP context. For encoding see 3G TS 24.008.

. . .

3GPP TSG CN N2#10
Charleston, South Carolina, USA
27-March 31, 2000

Document N2A000342
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	068	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 #08	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: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: N2 **Date:** 20.03.2000

Subject: Detailed specification of the Control Relationship for the ApplyChargingGPRS procedure.

Work item: CAMEL Phase 3

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

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

Reason for change: Because GPRS supports two FSM types, Attach/Detach FSM and PDP Context FSM, it is necessary to be more specific for the control relationship. Regarding the ApplyChargingGPRS procedure this operation shall cause generic error handling in gprsSSF if related to a FSM without an existing control relationship, e.g. in case a control relationship exists only for PDP Context FSM the ApplyChargingGPRS procedure must be related to this PDP Context FSM (parameter pDPID), and shall cause generic error handling in gprsSSF if procedure is related to a GPRS session because no control relationship for Attach/Detach FSM is existing. If applied to the wrong model it is not possible to get the report later on if this model is already deleted.

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:


help.doc

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

— First modified section —

11.5 ApplyChargingGPRS procedure

11.5.1 General description

This operation is used for interacting from the gsmSCF with the gprsSSF function: CSE control of GPRS session or PDP context duration and volume. The ApplyChargingGPRSReport operation provides the feedback from the gprsSSF to the gsmSCF. The charging scenarios supported by this operation are those given in 3G TS 22.078for CSE control of GPRS session and PDP context duration and volume.

11.5.1.1 Parameters

. . .

- pDPID:

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

11.5.2 Responding entity (gprsSSF)

11.5.2.1 Normal procedure

gprsSSF preconditions:

(1) A control relationship exists between the gprsSSF and the gsmSCF for the specific FSM to which the operation applies.

(2) The gprsSSF is in one of the following states:

"Waiting for Instructions"; or

"Monitoring"

SSF postcondition:

(1) No gprsSSF state transition

On receipt of this operation, the gprsSSF sets the charging data using the information elements included in the operation.

The gprsSSF will start monitoring for the "PDP Context Establishment Acknowledge", "PDP context deactivation" "Detach", "Change of Position session" or “Change of Position Context” event upon receipt of the ApplyChargingGPRS operation.

. . .

Joint SPAN3 & 3GPP TSG CN N2 #10
Rotenburg a.d. Fulda, Hessen, Germany
May 22 - May 26, 2000

N2-000235
Document rev N2-000218
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	069r4	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 #08	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:** 25.05.2000

Subject: Various corrections and updates for 29.078

Work item: CAMEL Phase 3

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

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

Reason for change:
Clarification and corrections of various points.
- include the nonCUGCall parameter in the ServiceInteractionIndicatorsTwo
- The NA parameters arre already defined in ITU-T and need not to be defined again.
- Restructure of the CallGapArgument
- Priority of Handling different CallGap criteria are now defined.
- Further corrections, e.g. on tag values.

Clauses affected:

Other specs affected:

Other 3G core specifications		→ List of CRs:	CR 23.078-162r2
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: Call Gapping does not define priorities on the handling in case several GapCriterias exists. Priority rules have to be defined.


help.doc

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

— 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,
    HighLayerCompatibility,
    Integer4,
    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~~ accept 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
    }

Carrier {PARAMETERS-BOUND : bound} ::= OCTET STRING (SIZE (bound.&minCarrierLength..
                    bound.&maxCarrierLength))

-- This parameter is only used for North America (na)
-- It contains the carrier selection field (first octet) followed by Carrier ID information
-- (North America (na)).

-- The Carrier selection is one octet and is encoded as:
-- 00000000     No indication
-- 00000001     Selected carrier identification code (CIC) pre subscribed and not
--              input by calling party
-- 00000010     Selected carrier identification code (CIC) pre subscribed and input by calling
party
-- 00000011     Selected carrier identification code (CIC) pre subscribed, no indication of
--              whether input by calling party (undetermined)
-- 00000100     Selected carrier identification code (CIC) not pre subscribed and input by
--              calling party
-- 00000101
--  to          Spare
-- 11111110
-- 11111111     Reserved

-- Refer to ANSI ISUP T.113 for encoding of na carrier ID information (3 octets).

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.

ChargeNumber  {PARAMETERS-BOUND : bound} ::= LocationNumber {bound}
-- Information sent in either direction indicating the chargeable number for the call and
-- consisting of the odd/even indicator, nature of address indicator, numbering plan indicator, and
-- address signals.
-- Uses the LocationNumber format which is based on the Q.763 Location Number format
-- For example, the ChargeNumber may be a third party number to which a call is billed for the 3rd
-- party billing service. In this case, the calling party may request operator assistance to charge
-- the call to, for example, their home number.

--  For NA, 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

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          [50] CalledPartyNumber          OPTIONAL,
            or-Call                     [510]   NULL                    OPTIONAL,
            forwardedCall               [521] 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          [50] CalledPartyNumber          OPTIONAL,
            or-Call                     [510]   NULL                    OPTIONAL,
            forwardedCall               [521] 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 {
    basicGapCriteria        BasicGapCriteria {bound}
    compoundGapCriteria     CompoundCriteria {bound}
                        }

CompoundCriteria {PARAMETERS-BOUND : bound} ::= SEQUENCE {
        basicGapCriteria    [0] BasicGapCriteria {bound},
        scfID               [1] ScfID {bound} OPTIONAL
                                }


BasicGapCriteria {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 {
    PDPTypeOrganization                         [0] OCTET STRING (SIZE(1)),
    PDPTypeNumber                               [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, CWA.
    backwardServiceInteractionsInd      [1] BackwardServiceInteractionInd       OPTIONAL,
    -- applicable to operations IDP, CON, CWA.
    bothwayThroughConnectionInd         [2] BothwayThroughConnectionInd         OPTIONAL,
    connectedNumberTreatmentInd         [4] ConnectedNumberTreatmentInd
                                                DEFAULT presentCalledINNumber,
    nonCUGCall                          [13] NULL                                       OPTIONAL,
    -- applicable to CON and CWA
    -- indicates that no parameters for CUG shall be used for the call (i.e. the call shall
    -- be a non-CUG call).
    -- If not present, it indicates one of three things:
    --  a) continue with modified CUG information (when one or more of either CUG Interlock Code
    --     and Outgoing Access Indicator are present), or
    --  b) continue with original CUG information (when neither CUG Interlock Code or Outgoing
    --     Access Indicator are present), i.e. no IN impact.
    --  c) continue with the original non-CUG call.
    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 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,
    &minCarrierLength                           INTEGER,
    &maxCarrierLength                           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
    MINIMUM-FOR-CARRIER                     &minCarrierLength
    MAXIMUM-FOR-CARRIER                     &maxCarrierLength
    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
    MINIMUM-FOR-CARRIER                     4
    MAXIMUM-FOR-CARRIER                     4
    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
-- for 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
```

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 {},
    Carrier,
    Cause {},
    CGEncountered,
    ControlType,
    CorrelationID {},
    DestinationRoutingAddress {},
    EventSpecificInformationBCSM {},
    EventTypeBCSM,
    ExtensionField {},
    FCIBillingChargingCharacteristics {},
```

```
    GapCriteria {},
    GapIndicators,
    GapTreatment,
    GenericNumbers {},
    HighLayerCompatibility,
    InvokeID,
    IPRoutingAddress {},
    IPSSPCapabilities {},
    leg1,
    LocationNumber {},
    MonitorMode,
    NACarrierInformation,
    NA-OLIInfo,
    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: SCF -> SSF, Timer: Tcg
-- This operation is used to request the SSF to reduce the rate at which specific service
-- requests are sent to the SCF.

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 SSF 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,
    carrier                         [11] Carrier {bound}                        OPTIONAL,
    callingPartysCategory           [28] CallingPartysCategory                  OPTIONAL,
    redirectingPartyID              [29] RedirectingPartyID {bound}             OPTIONAL,
    redirectionInformation          [30] RedirectionInformation                 OPTIONAL,
    genericNumbers                  [14] GenericNumbers {bound}                 OPTIONAL,
    serviceInteractionIndicatorsTwo [15] ServiceInteractionIndicatorsTwo        OPTIONAL,
    chargeNumber                    [19] ChargeNumber {bound}                   OPTIONAL,
    cug-Interlock                   [31] CUG-Interlock                          OPTIONAL,
    cug-OutgoingAccess              [32] NULL                                   OPTIONAL,
    suppressionOfAnnouncement       [55] SuppressionOfAnnouncement              OPTIONAL,
    oCSIApplicable                  [56] OCSIApplicable                         OPTIONAL,
    na-OliInfo                      [57] NA-OliInfo                             OPTIONAL,
    connectArgExtension             [59] ConnectArgExtension                    OPTIONAL,
    ...
```

```
    }
--  na-OliInfo 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           [5312] CallingPartysCategory                OPTIONAL,
    genericNumbers                  [5416] GenericNumbers {bound}                   OPTIONAL,
    cug-Interlock                   [17] CUG-Interlock                          OPTIONAL,
    cug-OutgoingAccess              [18] NULL                                   OPTIONAL,
    chargeNumber                    [520] ChargeNumber {boud}                       OPTIONAL,
    carrier                         [52] Carrier {bound}                        OPTIONAL,
    suppressionOfAnnouncement       [55] SuppressionOfAnnouncement              OPTIONAL,
    na-OliInfo                      [56] NA-OliInfo                             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,
    carrier                         [5] Carrier {bound}                     OPTIONAL,
    serviceInteractionIndicatorsTwo [6] ServiceInteractionIndicatorsTwo             OPTIONAL,
    na-OliInfo                          [50] NAOli-Info                             OPTIONAL,
    chargeNumber                    [51] ChargeNumber {bound}                   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,
    carrier                         [37] Carrier {bound}                            OPTIONAL,
    cug-Index                       [45] CUG-Index                                  OPTIONAL,
    cug-Interlock                   [46] CUG-Interlock                              OPTIONAL,
    cug-OutgoingAccess              [47] NULL                                       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                     [01] 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

— Next modified section —

11.9 CallGap procedure

11.9.1 General description

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

11.9.1.1 Parameters

- gapCriteria:
  This parameter identifies the criteria for a call to be subject to call gapping. It consists of the following alternatives: basicGapCriteria or compoundGapCrteria:

  - basicGapCriteria:~~,~~
    This parameter consists of:

    - calledAddressValue:
      This parameter indicates that call gapping shall be applied when the leading digits of the dialled number of a call attempt match those specified in"gapCriteria". The called address is the one received from the current call control.

    - gapOnService:
      This parameter indicates that call gapping shall be applied when the"servicekey" of a call attempt match those specified in"gapCriteria".

    - calledAddressAndService:
      This parameter indicates that call gapping shall be applied when the"serviceKey" and the leading digits of the dialled number of a call attempt match those specified in"gapCriteria". The called address is the one received from the current call control.

    - callingAddressAndService:
      This parameter indicates that call gapping shall be applied when the"serviceKey" and the leading digits of the calling party number of a call attempt match those specified in"gapCriteria". In the case of call

forwarding the calling address to be gapped is the redirecting number which would be put in the Initial DP operation.

- compoundGapCriteria:
  This parameter consists of the folllowing subparameters:

  - basicGapCriteria:
    This parameter is as described above.

  - scfID:
    The means of identification of an gsmSCF. The scfID is to convey the necessary gsmSCF address information (e.g. Global Title) in the network to the requesting SSF. See Q.713 “calling party address” parameter. The network operator has to decide about the actual mapping of this parameter on the used signalling system.
    This parameter indicates the address of the gsmSCF, which initiated the call gapping.
    When ScfID is used in an operation, which may cross an internetwork boundary, its encoding must be understood in both networks; this requires bilateral agreement on the encoding. If this parameter is not available the call gapping is not dedicated to a specific gsmSCF.
    This subparameter is restricted to include a fixed GT address string.
    Note: In the case where the GT addresses more than one SCP (e.g. a mated pair) then if one of these physical SCPs enters overload conditions and issues CallGap, then it is applied to all of them.

- gapIndicators:
  This parameter indicates the gapping characteristics.

- duration:
  Duration specifies the total time interval during which call gapping for the specified gap criteria will be active.

  A duration of 0 indicates that gapping is to be removed.

  A duration of -2 indicates a network specific duration.

  Other values indicate duration in seconds. A duration of -1 shall not be used.

- gapInterval:
  This parameter specifies the minimum time between calls being allowed through.

  An interval of 0 indicates that calls meeting the gap criteria are not to be rejected.

  An interval of -1 indicates that all calls meeting the gap criteria are to be rejected.

  Other values indicate interval in milliseconds.

- controlType:
  This parameter indicates the reason for activating call gapping.

  The"controlType" value"sCPOverloaded" indicates that an automatic congestion detection and control mechanism in the SCP has detected a congestion situation.

  The"controlType" value"manuallyInitiated" indicates that the service and or network/service management centre has detected a congestion situation, or any other situation that requires manually initiated controls.

NOTE: The controlType 'manuallyInitiated' will have priority over 'sCPOverloaded' call gap. It should be noted that also non-IN controlled traffic control mechanism can apply to an exchange with the SSF functionality. The non-IN controlled traffic control may also have some influence to the IN call. Therefore it is recommended to take measures to co-ordinate several traffic control mechanisms. The non-IN controlled traffic control and co-ordination of several traffic control mechanisms are out of the scope of INAP.

- gapTreatment:
  This parameter indicates how calls that were stopped by the call gapping mechanism shall be treated.

  - informationToSend: (This Information Element is inherited from Play Annoucement operation, only a subset is required for the Call Gap operation)
    This parameter indicates an announcement, a tone or display information to be sent to the calling party. At the end of information sending, the call shall be released.

- inbandInfo:
  This parameter specifies the inband information to be sent.

  - messageID:
    This parameter indicates the message(s) to be sent, it can be one of the following:

    - elementaryMessageID:
      This parameter indicates a single announcement.

  - duration:
    This parameter indicates the maximum time duration in seconds that the message shall be played/repeated. ZERO indicates endless repetition.

- tone:
  This parameter specifies a tone to be sent to the end-user.

  - toneID:
    This parameter indicates the tone to be sent.

    - duration:
      This parameter indicates the time duration in seconds of the tone to be sent. ZERO indicates infinite duration.

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

~~- gsmSCFAddress:~~
~~This parameter indicates the address of the gsmSCF which initiated the call gapping. If this parameter is not available the call gapping is not dedicated to a specific gsmSCFs.~~

11.9.2 Responding entity (gsmSSF)

11.9.2.1 Normal procedure

gsmSSF precondition:

(1) Call gapping for gapCriteria is not active, or
Call gapping for gapCriteria is active.

(2) The gsmSSF is in any state except "Idle" and except "Wait_For_Request".

gsmSSF postcondition:

(1) The gsm_SSME_FSM process is in the state "Active".

(2) Call gapping for gapCriteria is activated, or
Call gapping for gapCriteria is renewed, or
Call gapping for gapCriteria is removed.

(3) The gsmSSF remains in the same state.

If there is not already an existing gsm_SSME_FSM for the gap criteria and gsmSCFAddress provided, a new gsm_SSME_FSM is created. If no gsmSCFAddress is provided, this refers in general to the gsm_SSME_FSM without a gsmSCFAddress. This gsm_SSME_FSM enters the state "Active" and initializes call gapping for the specified IN calls. The parameters "gapIndicators", "controlType", "gapTreatment" and "gsmSCFAddress" for the indicated gap criteria will be set as provided by the "CallGap" operation.

In case both manually initiated and automatically initiated service request gapping are active for the same "gapCriteria"~~general~~, the manuallyInitiated call gapping prevails over automatically initiated ("sCPOverloaded"). More specifically, the following rules shall be applied in the SSF to manage the priority of different control Types associated with the same"gapCriteria":

- If a gsm-SSME-FSM already exists for the "gapCriteria" and the gsmSCFAddress provided, then:

(1) if the (new) "controlType" equals an existing "controlType", then the new parameters (i.e.,"gapIndicators" and"gapTreatment") overwrites the existing parameter values.

(2) if the (new) "controlType" is different than the existing "controlType", then the new parameters (i.e., "controlType", "gapIndicators", and "gapTreatment") shall be appended to the appropriate gsm_SSME_FSM (in addition to the existing parameters). The gsm_SSME_FSM remains in the state "Active".

If the gsmSSF meets a TDP, it checks if call gapping was initiated for the same gsmSCF as the one currently assigned to this TDP or if call gapping exists with no provided gsmSCFAddress. If ~~not~~neither call gapping was initiated nor exists, an "InitialDP" operation may be sent.

It checks if call gapping was initiated either for the "serviceKey" or for the "calledAddressValue" assigned to this TDP. If not, an "InitialDP" operation may be sent. In the case call gapping was initiated for "calledAddressAndService" or "callingAddressAndService" and the "serviceKey" matches, a check on the "calledAddressValue" and "callingAddressValue" for active call gapping shall be performed. If not, an "InitialDP" operation may be sent.

If a call to a controlled number matches only one "gapCriteria", then the corresponding control is applied. If both "manuallyInitiated" and "sCPOverload" controls are active, then only the manually initiated control shall be applied.

If a call matches several active “basicGapCriteria”, then the treatment as specified in the CallGap associated with the gapCriteria with the highest priority should be applied, with the priority being from high to low:

1. calledAddressAndService/calledAddressValue,
2. callingAddressAndService,
3. gapOnService,

For example, a call with called number 123456 and ServiceKey = NP matches two CallGaps, one with gapCriteria ‘CalledAdressValue=123’ and another with ‘gapOnService=NP’. Then the call is subject to the control of the service request CallGap with ‘CalledAdressValue=123’

In case multiple call gapping procedures are active with the same gap criteria, the "manuallyInitiated" call gapping shall prevail over automatically initiated service request gapping (“sCPOverloaded").

If a call to a controlled called number or from a controlled calling number matches several active "basicG~~g~~apCriteria" of the same type (in this context 'calledAddressAndService' and 'calledAddressValue' are seen as one type), then only the "gapCriteria" associated with the longest called party number shall be used, and the corresponding control shall be applied. For example, the codes 1234 and 12345 are under control. Then the call with 123456 is subject to the control on 12345.

If a call to a controlled called number matches calledAddressAndService and calledAddressValue with the same number length, than calledAddressAndService has priority. Furthermore, if both "manuallyInitiated" and "sCPOverloaded" "controlTypes" are active for this "gapCriteria", then the "manuallyInitiated" control shall be applied.

If call gapping is performed on a call for a particular service and triggering of this service is allowed no other gap criteria should be applied to the same service.

Active GapCriteria with assigned scfID will have higher priority than the others. In case an entry with scfID matching the current call exist all other criteria without scfID are not evaluated.

The matching entries with scfID are evaluated in accordance with the priority rules for the basic criteria listed above.

If call gapping shall be applied and there is no gap interval active, an "InitialDP" operation may be sent including the "cGEncountered" parameter according to the specified controlType. A new gap interval shall be initiated as indicated by "gapInterval".

If a gap interval is active, no "InitialDP" operation is sent and the call is treated as defined by Default Call Handling and "gapTreatment".

The call gap process is stopped if the indicated duration equals ZERO.

If call gapping proceeds then the gsm_SSME_FSM remains in the state "Active". Otherwise, the gsm_SSME_FSM moves to state "idle ".

11.9.2.2 Error handling

Operation related error handling is not applicable, due to class 4 operation.

— Next modified section —

11.14 Connect procedure

11.14.1 General description

This operation is used to request the gsmSSF to perform the call processing actions to route a call to a specific destination.

In general all parameters which are provided in a Connect operation to the gsmSSF shall replace the corresponding signalling parameter in the CCF in O-BCSM, in accordance with ES 201 296 [38] and shall be used for subsequent call processing. The CCF of the T-BCSM shall send corresponding signalling parameters to new call leg without using them in subsequent call processing. Parameters which are not provided by the Connect operation shall retain their value (if already assigned) in the CCF for subsequent call processing.

11.14.1.1 Parameters

- destinationRoutingAddress:
  This parameter contains the called party numbers towards which the call is to be routed.

- alertingPattern:
  This parameter indicates the type of alerting to be applied. It is defined in 3G TS 29.002 [13].

- serviceInteractionIndicatorsTwo:
  This parameter contains indicators which are exchanged between the gsmSSF and the gsmSCF to resolve interactions between IN based services and network based services.

- callingPartysCategory:
  This parameter indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).

- originalCalledPartyID:
  This parameter carries the dialled digits if the call is forwarded by the gsmSCF.

- redirectingPartyID:
  This parameter, if present, indicates the last directory number the call was redirected from.

- redirectionInformation:
  This parameter contains forwarding related information, such as redirecting counter.

- genericNumbers:
  This parameter allows the gsmSCF to set the Generic Number parameter used in the network. It is used for transfer of Additional Calling Party Number.

- suppressionOfAnnouncement:
  This parameter indicates that announcements and tones which are played in the exchange at non-successful call set-up attempts shall be suppressed.

- oCSIApplicable:
  This parameter indicates to the GMSC/gsmSSF that the Originating CAMEL Subscription Information, if present, shall be applied on the outgoing call leg created with the Connect operation. For the use of this parameter see 3G TS 23.078 [42].

- ~~na~~Carrier~~Information~~:
  This parameter indicates carrier information. It consists of the carrier selection field followed by the Carrier ID information ~~contains carrier identification code and carrier selection type~~ to be used by gsmSSF for routing a call to a carrier.

  It comprises the following embedded sub-parameter:

- carrierSelectionField
  This parameter indicates how the selected carrier is provided (e.g. pre-subscribed).

- carrierID
  This alternative indicates the carrier to use for the call. It contains the digits of the carrier identification code.

- naOliInfo:
  This parameter contains originating line information which identifies the charged party number type to the carrier.

- naChargeNumber:
  This parameter contains the number that identifies the entity to be charged for the call. It identifies the chargeable number for the usage of a carrier (applicable on a call sent into a North American long distance carrier). For a definition of this parameter refer to ANSI ISUP T1.113.

- cug-Info:
  This parameter contains the CUG information, altered by the gsmSCF, for the call.

- cug-Index:
  This parameter contains the CUG index passed between the user and the network. This is only significant within the context of a users subscription.

- nonCug-Call:
  This parameter when present, indicates that no parameters for CUG shall be used for the call (i.e. the call shall be a non-CUG call). This parameter when not present, indicates one of two things:

  - continue with modified CUG information (when one or more of either CUG Interlock Code and Outgoing Access Indicator are present); or

  - continue with original CUG information (when neither CUG Interlock Code or Outgoing Access Indicator are present).

11.14.2 Responding entity (gsmSSF)

11.14.2.1 Normal procedure

gsmSSF precondition:

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

(2) BCSM: Basic call processing has been suspended at a DP.

(3) The gsmSSF is in state"Waiting for Instructions".

gsmSSF postcondition:

(1) The gsmSSF performs the call processing actions to route the call to the specified destination.

(2) In the O-BCSM, call processing resumes at PIC Analyze_Information.

On receipt of this operation in the gsmSSF state"Waiting for Instructions", the gsmSSF performs the following actions:

- The gsmSSF cancels T_{SSF}.
- If no EDPs have been armed and neither a CallInformationReport nor an ApplyChargingReport has been requested, the gsmSSF goes to state"Idle". Otherwise, the gsmSSF goes to state"Monitoring".

No implicit activation or deactivation of DPs occurs.

Statistic counter(s) are not affected.

11.14.2.2 Error handling

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

— Next modified section —

11.21 ContinueWithArgument Procedure

11.21.1 General description

This operation is used to request the SSF to proceed with call processing at the DP at which it previously suspended call processing to await SCF instructions. It is also used to provide additional service related information to a User (Called Party or Calling Party) whilst the call processing proceeds.

In general all parameters which are provided in a ContinueWithArgument operation to the gsmSSF shall replace the corresponding signalling parameter in the CCF, in accordance with ES 201 296 [38] and shall be used for subsequent call processing. Parameters which are not provided by the ContinueWithArgument operation shall retain their value (if already assigned) in the CCF for subsequent call processing.

11.21.1.1 Parameters

- alertingPattern:
  This parameter indicates the type of alerting to be applied. It is defined in 3G TS 29.002 [13].

- serviceInteractionIndicatorsTwo:
  This parameter contains indicators which are exchanged between the gsmSSF and the gsmSCF to resolve interactions between IN based services and network based services.

- callingPartysCategory:
  This parameter indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).

- genericNumbers:
  This parameter allows the gsmSCF to set the Generic Number parameter used in the network. It is used for transfer of Additional Calling Party Number.

- suppressionOfAnnouncement:
  This parameter indicates that announcements and tones which are played in the exchange at non-successful call set-up attempts shall be suppressed.

- ~~na~~CarrierInformation:
  This parameter indicates carrier information. It consists of the carrier selection field followed by the Carrier ID information ~~contains carrier identification code and carrier selection type~~ to be used by gsmSSF for routing a call to a carrier.

  It comprises the following embedded sub-parameter:

  carrierSelectionField
  This parameter indicates how the selected carrier is provided (e.g. pre-subscribed).

  carrierID
  This alternative indicates the carrier to use for the call. It contains the digits of the carrier identification code.

- naOliInfo:
  This parameter contains originating line information which identifies the charged party number type to the carrier.

- ~~na~~ChargeNumber:
  This parameter contains the number that identifies the entity to be charged for the call. It identifies the chargeable number for the usage of a carrier(applicable on a call sent into a North American long distance carrier). For a definition of this parameter refer to ANSI ISUP T1.113..

- cug-Interlock:
  This parameter uniquely identifies a CUG within a network.

- cug-OutgoingAccess:
  This parameter indicates if the calling user has subscribed to the outgoing access inter-CUG accessibility subscription option.

- serviceInteractionIndicatorsTwo:
  This parameter contains indicators which are exchanged between the gsmSSF and the gsmSCF to resolve interactions between IN based services and network based services.

~~— nonCug Call:~~
~~This parameter when present, indicates that no parameters for CUG shall be used for the call (i.e. the call shall be a non-CUG call). This parameter when not present, indicates one of two things:~~

~~- — continue with modified CUG information (when one or more of either CUG Interlock Code and Outgoing Access Indicator are present); or~~

~~— continue with original CUG information (when neither CUG Interlock Code or Outgoing Access Indicator are present).~~

11.21.2 Responding entity (gsmSSF)

11.21.2.1 Normal procedure

gsmSSF precondition:

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

(2) BCSM: Basic call processing has been suspended at DP Collected_Info, DP Analysed_Info or DP Terminating_Attempt_Authorised.

(3) gsmSSF is in the state "Waiting for Instructions"

gsmSSF postcondition:

(1) BCSM: Basic call processing continues with modified information.

(2) The gsmSSF moves to the state "Monitoring" if there exist armed EDPs or outstanding reports, otherwise the gsmSSF transits to "Idle".

11.21.2.2 Error handling

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

— Next modified section —

11.24 EstablishTemporaryConnection procedure

11.24.1 General Description

This operation is used to create a connection between an initiating gsmSSF and an assisting gsmSSF as part of a service assist procedure. It can also be used to create a connection between a gsmSSF and a gsmSRF, for the case where the gsmSRF exists in a separately addressable PE.

The assistingSSPIPRoutingAddress shall contain routing digits, a correlationID and an scfID when a temporary connection is to be established between PLMNs and no bilateral agreement exists between the involved network operators to transfer correlationID and SCFiD as separate parameters.

11.24.1.1 Parameters

- assistingSSPIPRoutingAddress:
  This parameter indicates the destination address of the gsmSRF for assist procedure.
  The"assistingSSPIPRoutingAddress" may contain embedded within it, a"correlationID" and"scfID", but only if"correlationID" and"scfID" are not specified separately.

- correlationID:
  This parameter is used by the gsmSCF to associate the"AssistRequestInstructions" from the assisting gsmSSF

(or the gsmSRF) with the Request from the initiating gsmSSF. The"correlationID" is used only if the correlation id is not embedded in the"assistingSSPIPRoutingAddress". The network operators has to decide about the actual mapping of this parameter on the used signalling system.

- scfID:
  This parameter indicates the gsmSCF identifier and enables the assisting SSF to identify which gsmSCF the AssistRequestInstructions shall be sent to.
  The"scfID" is used only if the gsmSCF id is not embedded in the"assistingSSPIPRoutingAddress". The network operators has to decide about the actual mapping of this parameter on the used signalling system.
  When ScfID is used in an operation, which may cross an internetwork boundary, its encoding must be understood in both networks; this requires bilateral agreement on the encoding.

- serviceInteractionIndicatorsTwo:
  This parameter contains an indicator sent from the gsmSCF to the gsmSSF for control of the through connection to the Calling Party.

- ~~na~~Carrier~~Information~~:
  This parameter indicates carrier information. It consists of the carrier selection field followed by the Carrier ID information ~~contains carrier identification code and carrier selection type~~ to be used by gsmSSF for routing a call to a carrier.

  It comprises the following embedded sub-parameter:

  carrierSelectionField
  This parameter indicates how the selected carrier is provided (e.g. pre-subscribed).

  carrierID
  This alternative indicates the carrier to use for the call. It contains the digits of the carrier identification code.

- naOliInfo:
  This parameter contains originating line information which identifies the charged party number type to the carrier.

- ~~na~~ChargeNumber:
  This parameter contains the number that identifies the entity to be charged for the call. It identifies the chargeable number for the usage of a carrier (applicable on a call sent into a North American long distance carrier). For a definition of this parameter refer to ANSI ISUP T1.113.

11.24.2 Responding entity (gsmSSF)

11.24.2.1 Normal procedure

gsmSSF precondition:

(1) The gsmSSF is in state"Waiting for Instructions" or in state"Monitoring".

(2) The gsmSSF is not an assisting gsmSSF.

gsmSSF postcondition:

(1)The gsmSSF performs the call processing actions to route the call to the assisting gsmSSF or gsmSRF according to the"assistingSSPIPRoutingAddress" requested by the gsmSCF.

(2) The gsmSSF waits for end of temporary connection.

(3) If in state"Waiting for Instructions" the gsmSSF moves to the state"Waiting for End of Temporary Connection (WFI)". T_{SSF} is set.

(1) If in state"Monitoring" the gsmSSF moves to the state"Waiting for End of Temporary Connection (MON)". T_{SSF} is set.

On receipt of this operation in the gsmSSF state"Waiting for Instructions" or"Monitoring", the SSP has to perform the following actions:

- Reset the T_{SSF}

- Route the call to assisting gsmSSF or gsmSRF using"assistingSSPIPRoutingAddress".

- The gsmSSF goes to state"Waiting for End of Temporary Connection (WFI)" (e7).

On receipt of this operation in the gsmSSF FSM state"Monitoring", the SSP has to perform the following actions:

- Route the call to assisting gsmSSF or gsmSRF using"assistingSSPIPRoutingAddress".

11.24.2.2 Error handling

Until the connection setup has been accepted (refer to ITU-T Recommendation Q.71 [16]) by the assisting gsmSSF/gsmSRF, all received failure indications from the network on the ETC establishment shall be reported to the gsmSCF as ETC error ETCFailed (e.g., busy, congestion). Note that the operation timer for ETC shall be longer then the maximum allowed time for the signalling procedures to accept the connection.

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

— Next modified section —

11.31 InitialDP procedure

11.31.1 General description

This operation is sent by the gsmSSF after detection of a TDP-R in the BCSM, to request the gsmSCF for instructions to complete the call.

11.31.1.1 Parameters

- serviceKey:
  This parameter indicates to the gsmSCF the requested IN service. It is used to address the required application/SLP within the gsmSCF (not for SCP addressing).

- calledPartyNumber:
  This parameter contains the number used to identify the called party in the forward direction, i.e. see EN 300 356-1 [8]. This parameter shall be sent only in the Mobile Terminating and Mobile Forwarding cases.

- callingPartyNumber:
  This parameter carries the calling party number to identify the calling party or the origin of the call. See EN 300 356-1 [8] Calling Party Number signalling information.

- callingPartysCategory:
  Indicates the type of calling party (e.g. operator, pay phone, ordinary subscriber). See EN 300 356-1 [8] Calling Party Category signalling information.

- locationNumber:
  This parameter is used to convey the geographical area address for mobility services, see ITU-T Recommendation Q.762 . It is used when"callingPartyNumber" does not contain any information about the geographical location of the calling party (e.g., origin dependent routeing when the calling party is a mobile subscriber).

- originalCalledPartyID:
  This parameter carries the dialled digits if the call has met call forwarding on the route to the gsmSSF. See EN 300 356-1[8] Original Called Number signalling information.

- highlayerCompatibility:
  This parameter indicates the type of the high layer compatibility, which will be used to determine the ISDN - teleservice of a connected ISDN terminal. For encoding DSS1 (EN 300 403-1 [10]) is used. The highlayerCompatibility can also be transported by ISUP (e.g. within the ATP (see ITU-T Recommendation Q.763 [20]) parameter).

- additionalCallingPartyNumber:
  The calling party number provided by the access signalling system of the calling user, e.g. provided by a PBX.

- bearerCapability:
  This parameter indicates the type of the bearer capability connection or the transmission medium requirements to the user. It is a network option to select which of the two parameters to be used:

  - bearerCap:
    This parameter contains the value of the ISUP User Service Information parameter.

    The parameter"bearerCapability" shall only be included in the"InitialDP" operation in case the ISUP User Service Information parameter is available at the SSP.

    If User Service Information and User Service Information Prime are available at the gsmSSF the"bearerCap" shall contain the value of the User Service Information Prime parameter.

- eventTypeBCSM:
  This parameter indicates the armed BCSM DP event, resulting in the"InitialDP" operation.

- redirectingPartyID:
  This parameter indicates the last directory number the call was redirected from.

- redirectionInformation:
  It contains forwarding related information, such as redirecting counter.
  See ITU-T Recommendation Q.763 [20] Redirection Information signalling information.

- iPSSPCapabilities:
  Indicates which gsmSRF resources supported within the VMSC/GMSC the gsmSSF resides in are attached and available.

- serviceInteractionIndicatorsTwo:
  This parameter contains indicators which are exchanged between the gsmSSF and the gsmSCF to resolve interactions between IN based services and network based services.

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

- subscriberState:
  The state of the mobile subscriber for which the service is invoked. The possible states are busy, idle and not reachable. For encoding see 3G TS 29.002 [13].

- locationInformation:
  This parameter indicates the whereabouts of the MS, and the age of the information defining the whereabouts. For encoding see 3G TS 29.002 [13].

- ext-BasicServiceCode:
  Indicates the Basic Service Code. For encoding see 3G TS 29.002 [13].

- callReferenceNumber:
  This parameter gives the call reference number assigned to the call by the CCF. For encoding see 3G TS 29.002 [13].

- mscAddress:
  This parameter gives the mscId assigned to the MSC. For encoding see 3G TS 29.002 [13].

- gmscAddress:
  This parameter gives the gmscId assigned to the GMSC. For encoding see 3G TS 29.002 [13].

- calledPartyBCDNumber:
  This parameter contains the number used to identify the called party in the forward direction. It may also include service selection information, including * and # characters.

- time&Timezone:
  This parameter contains the time that the gsmSSF was triggered, and the time zone that the invoking gsmSSF resides in.

- gsm-ForwardingPending:
  This parameter indicates that a forwarded-to-number was received and the call will be forwarded due to GSM supplementary service call forwarding in the GMSC.

- ~~na~~CarrierInformation:
  This parameter indicates carrier information. It consists of the carrier selection field followed by the Carrier ID information ~~contains the carrier identification code and carrier selection type~~ associated with the calling subscriber of a mobile originating call, the called subscriber of a mobile terminating call or the forwarding subscriber of a mobile fowarded call.

  It comprises the following embedded sub-parameter:

  - carrierSelectionField
    This parameter indicates how the selected carrier is provided (e.g. pre-subscribed).

  - carrierID
    This alternative indicates the carrier to use for the call. It contains the digits of the carrier identification code.

- cug-Index
  This parameter is used to select a CUG for an outgoing call at the user, or to indicate an incoming CUG call to the user.

- cug-Interlock
  This parameter uniquely identifies a CUG within a network.

- cug-OutgoingAccess
  This parameter indicates if the calling user has subscribed to the outgoing access inter-CUG accessibility subscription option.

- cGEncountered:
  This parameter indicates the type of gapping the related call has been subjected to, if any

11.31.2 Invoking entity (gsmSSF)

11.31.2.1 Normal procedure

gsmSSF precondition:

(1) An event fulfilling the criteria for the DP being executed has been detected.

(2) Call gapping and SS7 overload are not in effect for the call.

gsmSSF postcondition:

(1) A control relationship has been established if the DP was armed as a TDP-R. The gsmSSF moves to the State"Waiting for Instructions".

The address of the gsmSCF is fetched from the valid CSI. The gsmSSF provides all available parameters. Otherwise the gsmSSF proceeds with call handling without CAMEL Service.

The gsmSSF application timer T_{SSF} is set when the gsmSSF sends"InitialDP" for requesting instructions from the gsmSCF. It is used to prevent excessive call suspension time.

11.31.2.2 Error handling

If the destination gsmSCF is not accessible then the call proceeds according to the 'default call handling' parameter in the CSI.

On expiration of T_{SSF} before receiving any operation, the gsmSSF aborts the interaction with the gsmSCF and the call continues according to the 'default call handling' parameter in the CSI.

If the calling party abandons after the sending of"InitialDP", then the gsmSSF aborts the control relationship by means of an abort to TC. Note that TC will wait until the first response message from the gsmSCF has been received before it sends an abort to the gsmSCF (see also clause 12).

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

3GPP TSG CN WG2
Charleston, U.S.A., 27-31 March 2000

Document N2A000381
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**	**071**	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:** Mar. 27th, 2000

Subject: Maximum length of cause parameter

Work item: CAMEL Phase 3

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

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

Reason for change: The maximum value for "cause" should comply with DSS 1 (Q.931) maximum value of cause information element, which is 32 octets. This correction enables the interworking transparent and the CSE to change CAMEL service based on the information coded in diagnostics field (e.g. call rejected diagnostic, CCBS indicator, condition, etc.)

Clauses affected: 5.1, 5.5

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 proposal was discussed in N2A-00065 and agreed to be in collective CR, but was missing in the collective CR.

help.doc

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

<<First modified section>>

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


<<contributor's note: partly omitted>>

Cause {PARAMETERS-BOUND : bound}            ::= OCTET STRING (SIZE (minCauseLength..
        bound.&maxCauseLength))
-- Indicates the cause for interface related information.
-- Refer to ETS 300 356-1 [4] Cause parameter for encoding.
-- For the use of cause and location values refer to ITU-T Recommendation Q.850
-- Shall always only include the cause value and shall also include the diagnostics field,
-- if available.
```

<<Last modified section>>

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

<<Contributor's note: Partly omitted>>

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                           32
    MINIMUM-FOR-DIGITS                          2
    MAXIMUM-FOR-DIGITS                          16
    MINIMUM-FOR-FCI-BILLING-CHARGING-DATA       1
    MAXIMUM-FOR-FCI-BILLING-CHARGING-DATA       160
    MINIMUM-FOR-FCI-BILLING-CHARGING            5
    MAXIMUM-FOR-FCI-BILLING-CHARGING            172
    MINIMUM-FOR-GENERIC-NUMBER                  3
    MAXIMUM-FOR-GENERIC-NUMBER                  11
    MINIMUM-FOR-IP-SSP-CAPABILITIES             1
    MAXIMUM-FOR-IP-SSP-CAPABILITIES             4
    MINIMUM-FOR-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 TSG CN WG2
Charleston, U.S.A., 27-31 March 2000

Document N2A000382
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**	**072**	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 *list expected approval meeting # here ↑*

for approval [X]
for information [ ]

strategic [ ]
non-strategic [ ]
(for SMG use only)

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

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

Source: N2 **Date:** Mar. 27th, 2000

Subject: Maximum length of CAMEL Call Result

Work item: CAMEL Phase 3

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

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

Reason for change:
In CAMEL PH3, the callReleasedAtTcpExpiry and extensions parameter was added in CAMEL Call Result. The maximum value for CAMEL Call Result should be enhanced by 162 octets (2 for callReleasedAtTcpExpiry and 160 for extensions)

Note – 160 is used in extensions for maxACHBillingChargingLength in CAMEL PH2.

Clauses affected: 5.5

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:

help.doc

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

<<First and Last modified section>>

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

<<Contributor's note: Partly omitted>>

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                     18624
    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
Rothenburg, Germany, 22-26 May 2000

Document N2-00 0244

CHANGE REQUEST

29.078	CR	092r2	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:** 25 May 2000

Subject: Specifying the source of IMPORTed definitions for CAP

Work item: CAMEL Phase 3

Category:

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

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change:

CAP IMPORTs various definitions from other modules. These modules are contained in approved specifications.

The present CR proposes to include in 29.078 a table which indicates in which formal specifications the various modules, from which CAP IMPORTs, can be found.

Such table will add designers and other readers of the CAP specification to easily find the source of the imported definitions.

The modules in the chapters 6, 7 and 8 contain a reference to this table.

Clauses affected: 2.1 (new), 6.1.1, 6.1.2.1, 6.2.1, 6.2.2.1, 7.1, 7.2.1, 8.1, 8.2.1

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 CAP internal IMPORTs are not included in the new table.

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

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] ETR 186-2: "Intelligent Network (IN); Interaction between IN Application Protocol (CAP) and Integrated Services Digital Network (ISDN) signalling protocols; Part 2: Switching signalling requirements for IN Capability Set 2 (CS2) service support in a Narrowband ISDN (N-ISDN) environment".

< … unmodified text … >

2.1 Specifications used for IMPORTs for CAP

The following table lists the modules from which CAP V3 imports. For each module, the table indicates in which formal specification this module can be found.

Module Name	**Specification**	**Ref**
CS1-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3) cs1-datatypes(2) version1(0)}	ETS 300 374-1	[9]
CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3) in-cs2-datatypes (0) version1(0)}	EN 301 140-1	[39]
MAP-CommonDataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) gsm-network(1) modules(3) map-CommonDataTypes(18) version6(6)}	3G TS 29.002	[13]
MAP-MS-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) gsm-network(1) modules(3) map-MS-DataTypes(11) version6(6)}	3G TS 29.002	[13]
MAP-CH-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) gsm-network(1) modules(3) map-CH-DataTypes(13) version6(6)}	3G TS 29.002	[13]
TCAPMessages {ccitt recommendation q 773 modules(2) messages(1) version3(3)}	ITU-T Q.773	[48]
Remote-Operations-Information-Objects {joint-iso-ccitt remote-operations(4) informationObjects(5) version1(0)}	ITU-T X.880	[37]
TC-Notation-Extensions {ccitt recommendation q 775 modules(2) notation-extension (4) version1(1)}	ETS 300 287-1	[6]

****** NEXT 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

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

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

IMPORTS

    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)}
```

…

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

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.
-- This module specifies the Operation Packages, Contracts, Application Contexts
-- and Abstract Syntaxes used for the gsmSSF – gsmSCF interface, for the control of
-- circuit switched calls.

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

IMPORTS

    PARAMETERS-BOUND,
    cAPSpecificBoundSet
FROM CAP-classes classes


...
```

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

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

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

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

IMPORTS

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

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

…

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

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.
-- This module specifies the Operation Packages, Contracts, Application Contexts
-- and Abstract Syntaxes used for the gsmSRF – gsmSCF interface, for the control of
-- circuit switched calls.

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

IMPORTS

    PARAMETERS-BOUND,
    cAPSpecificBoundSet
FROM CAP-classes classes
```

...

****** NEXT 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

-- This module contains the operations and operation arguments used for the
-- gsmSSF/gprsSSF – gsmSCF interface, for the control of MO-SMS.

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

IMPORTS

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

…

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

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.
-- This module specifies the Operation Packages, Contracts, Application Contexts
-- and Abstract Syntaxes used for the gsmSSF/gprsSSF – gsmSCF interface, for the
-- control of MO-SMS.

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

IMPORTS

    PARAMETERS-BOUND,
    cAPSpecificBoundSet
FROM CAP-classes classes
```

...

****** NEXT 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

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

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

IMPORTS

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

…

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

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.
-- This module specifies the Operation Packages, Contracts, Application Contexts
-- and Abstract Syntaxes used for the gprsSSF – gsmSCF interface, for the
-- control of GPRS.

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

IMPORTS

    PARAMETERS-BOUND,
    cAPSpecificBoundSet
FROM CAP-classes classes


...
```

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