Source:	**SA WG5**								

Source: **SA WG5**

Title: **CRs to Telecommunications Management; Charging and billing; 3G call and event data for the Circuit Switched (CS) domain (32.005)**

Document for: **Approval**

Agenda Item: **7.5.3**

Doc-1st-	Doc-	Spec	CR	Rev	Phase	Subject	Cat	Version-	Version-	Workitem
SP-010023	S5-010121	32.005	005		R99	**Correction/completion of ASN.1 module**	F	3.3.0	3.4.0	OAM-CH
SP-010023	S5-010123	32.005	006		R99	**Correction for bulk transfer**	F	3.3.0	3.4.0	OAM-CH

CR-Form-v3

CHANGE REQUEST

⌘	**32.005** CR **005**	⌘	rev	**-**	⌘	Current version:	**3.3.0**	⌘

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

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

Title:	⌘	**Correction/completion of ASN.1 module**
Source:	⌘	SA5
Work item code:	⌘	OAM-CH *Date:* ⌘ **02/03/2001**
Category:	⌘	**F** *Release:* ⌘ R99

Use <u>one</u> of the following categories:
F (essential correction)
A (corresponds to a correction in an earlier release)
B (Addition of feature),
C (Functional modification of feature)
D (Editorial modification)
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use <u>one</u> of the following releases:
2   (GSM Phase 2)
R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
REL-4   (Release 4)
REL-5   (Release 5)

Reason for change:	⌘	Object identifiers are missing. Consequently, distinction between 2G/3G radio access is impossible.
Summary of change:	⌘	Added "SystemType", indicating the use of a UMTS air-interface for the provision of service. In the case of service provided by a GSM air-interface, the field is not present. Added ASN.1 object identifier for "CS-Charging-DataTypes" module. Added module identifier from 32.015 (PS charging) in import statement.
Consequences if not approved:	⌘	Offence against existing requirements for service aspects and no homogenous CDR treatment in CS and PS domains for billing purposes (e.g. SMS). Technically incomplete ASN.1 definition.

Clauses affected:	⌘	A9, B2 and B3

Other specs Affected:	⌘	☐ Other core specifications	⌘	
		☐ Test specifications		
		☐ O&M Specifications		

Other comments:	⌘	During CS handover the proceeding anchor MSC closes the existing record with the used system type and will open a new partial record which may no longer support the system type, if the anchor MSC is not the terminating MSC.

A.9   Abstract syntax

CS-Charging-DataTypes {ccitt (0) identified-organization (4) etsi (0) mobileDomain (0) umts-Operation-Maintenance (3) ts-32-005 (5) informationModel (0) asn1Module (2) version1 (1)}

~~GSM1205 DataTypes { ccitt (0) identified-organization (4) etsi (0) mobileDomain (0) gsm Operation Maintenance (3) gsm-12-05 (5) informationModel (0) asn1Module (2) 1 }~~

DEFINITIONS IMPLICIT TAGS   ::=

BEGIN

-- EXPORTS everything

IMPORTS

...

SystemType
FROM GPRS-Charging-DataTypes. {ccitt (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Operation-Maintenance (3) ts-32-015 (15) informationModel (0) asn1Module (2) version1 (1)}

```
MOCallRecord    ::= SET
{
    recordType           [0] CallEventRecordType,
    servedIMSI           [1] IMSI OPTIONAL,
    servedIMEI           [2] IMEI OPTIONAL,
    servedMSISDN         [3] MSISDN OPTIONAL,
    callingNumber        [4] CallingNumber OPTIONAL,
    calledNumber         [5] CalledNumber OPTIONAL,
    translatedNumber     [6] TranslatedNumber OPTIONAL,
    connectedNumber      [7] ConnectedNumber OPTIONAL,
    roamingNumber        [8] RoamingNumber OPTIONAL,
    recordingEntity      [9] RecordingEntity,
    mscIncomingTKGP      [10] TrunkGroup OPTIONAL,
    mscOutgoingTKGP      [11] TrunkGroup OPTIONAL,
    location             [12] LocationAreaAndCell OPTIONAL,
    changeOfLocation     [13] SEQUENCE OF LocationChange OPTIONAL,
    basicService         [14] BasicServiceCode OPTIONAL,
    transparencyIndicator   [15] TransparencyInd OPTIONAL,
    changeOfService      [16] SEQUENCE OF ChangeOfService OPTIONAL,
    supplServicesUsed    [17] SEQUENCE OF  SuppServiceUsed OPTIONAL,
    aocParameters        [18] AOCParameters OPTIONAL,
    changeOfAOCParms     [19] SEQUENCE OF AOCParmChange OPTIONAL,
    msClassmark          [20] Classmark OPTIONAL,
    changeOfClassmark    [21] ChangeOfClassmark OPTIONAL,
    seizureTime          [22] TimeStamp OPTIONAL,
    answerTime           [23] TimeStamp OPTIONAL,
    releaseTime          [24] TimeStamp OPTIONAL,
    callDuration         [25] CallDuration,
    dataVolume           [26] DataVolume OPTIONAL,
    radioChanRequested   [27] RadioChanRequested OPTIONAL,
    radioChanUsed        [28] TrafficChannel OPTIONAL,
    changeOfRadioChan    [29] ChangeOfRadioChannel OPTIONAL,
    causeForTerm         [30] CauseForTerm,
    diagnostics          [31] Diagnostics OPTIONAL,
    callReference        [32] CallReference,
    sequenceNumber       [33] INTEGER OPTIONAL,
    additionalChgInfo    [34] AdditionalChgInfo OPTIONAL,
    recordExtensions     [35] ManagementExtensions OPTIONAL,
    gsm-SCFAddress       [36] Gsm-SCFAddress OPTIONAL,
    serviceKey           [37] ServiceKey OPTIONAL,
    networkCallReference  [38] NetworkCallReference OPTIONAL,
    mSCAddress            [39] MSCAddress OPTIONAL,
    cAMELInitCFIndicator  [40] CAMELInitCFIndicator OPTIONAL,
    defaultCallHandling   [41] DefaultCallHandling OPTIONAL,
    hSCSDChanRequested    [42] NumOfHSCSDChanRequested OPTIONAL,
    hSCSDChanAllocated    [43] NumOfHSCSDChanAllocated OPTIONAL,
    changeOfHSCSDParms    [44] SEQUENCE OF HSCSDParmsChange OPTIONAL,
    fnur                  [45] Fnur OPTIONAL,
    aiurRequested         [46] AiurRequested OPTIONAL,
    chanCodingsAcceptable [47] SEQUENCE OF ChannelCoding OPTIONAL,
    chanCodingUsed        [48] ChannelCoding OPTIONAL,
    speechVersionSupported [49] SpeechVersionIdentifier OPTIONAL,
```

```
    speechVersionUsed        [50] SpeechVersionIdentifier OPTIONAL,
    numberOfDPEncountered    [51] INTEGER OPTIONAL,
    levelOfCAMELService      [52] LevelOfCAMELService OPTIONAL,
    freeFormatData           [53] FreeFormatData OPTIONAL,
    cAMELCallLegInformation  [54] SEQUENCE OF CAMELInformation OPTIONAL,
    freeFormatDataAppend     [55] BOOLEAN OPTIONAL,
    defaultCallHandling_2    [56] DefaultCallHandling OPTIONAL,
    gsm-SCFAddress_2         [57] Gsm-SCFAddress OPTIONAL,
    serviceKey_2             [58] ServiceKey OPTIONAL,
    freeFormatData_2         [59] FreeFormatData OPTIONAL,
    freeFormatDataAppend_2   [60] BOOLEAN OPTIONAL,
    systemType               [61] SystemType OPTIONAL
}


MTCallRecord             ::= SET
{
    recordType           [0] CallEventRecordType,
    servedIMSI           [1] IMSI,
    servedIMEI           [2] IMEI OPTIONAL,
    servedMSISDN         [3] CalledNumber OPTIONAL,
    callingNumber        [4] CallingNumber OPTIONAL,
    connectedNumber      [5] ConnectedNumber OPTIONAL,
    recordingEntity      [6] RecordingEntity,
    mscIncomingTKGP      [7] TrunkGroup OPTIONAL,
    mscOutgoingTKGP      [8] TrunkGroup OPTIONAL,
    location             [9] LocationAreaAndCell OPTIONAL,
    changeOfLocation     [10] SEQUENCE OF LocationChange OPTIONAL,
    basicService         [11] BasicServiceCode OPTIONAL,
    transparencyIndicator [12] TransparencyInd OPTIONAL,
    changeOfService      [13] SEQUENCE OF ChangeOfService OPTIONAL,
    supplServicesUsed    [14] SEQUENCE OF SuppServiceUsed OPTIONAL,
    aocParameters        [15] AOCParameters OPTIONAL,
    changeOfAOCParms     [16] SEQUENCE OF AOCParmChange OPTIONAL,
    msClassmark          [17] Classmark OPTIONAL,
    changeOfClassmark    [18] ChangeOfClassmark OPTIONAL,
    seizureTime          [19] TimeStamp OPTIONAL,
    answerTime           [20] TimeStamp OPTIONAL,
    releaseTime          [21] TimeStamp OPTIONAL,
    callDuration         [22] CallDuration,
    dataVolume           [23] DataVolume OPTIONAL,
    radioChanRequested   [24] RadioChanRequested OPTIONAL,
    radioChanUsed        [25] TrafficChannel OPTIONAL,
    changeOfRadioChan    [26] ChangeOfRadioChannel OPTIONAL,
    causeForTerm         [27] CauseForTerm,
    diagnostics          [28] Diagnostics OPTIONAL,
    callReference        [29] CallReference,
    sequenceNumber       [30] INTEGER OPTIONAL,
    additionalChgInfo    [31] AdditionalChgInfo OPTIONAL,
    recordExtensions     [32] ManagementExtensions OPTIONAL,
    networkCallReference  [33] NetworkCallReference OPTIONAL,
    mSCAddress           [34] MSCAddress OPTIONAL,
    hSCSDChanRequested   [35] NumOfHSCSDChanRequested OPTIONAL,
    hSCSDChanAllocated   [36] NumOfHSCSDChanAllocated OPTIONAL,
    changeOfHSCSDParms   [37] SEQUENCE OF HSCSDParmsChange OPTIONAL,
    fnur                 [38] Fnur OPTIONAL,
    aiurRequested        [39] AiurRequested OPTIONAL,
    chanCodingsAcceptable [40] SEQUENCE OF ChannelCoding OPTIONAL,
    chanCodingUsed       [41] ChannelCoding OPTIONAL,
    speechVersionSupported [42] SpeechVersionIdentifier OPTIONAL,
    speechVersionUsed    [43] SpeechVersionIdentifier OPTIONAL,
    gsm-SCFAddress       [44] Gsm-SCFAddress OPTIONAL,
    serviceKey           [45] ServiceKey OPTIONAL,
    networkCallReference  [46] NetworkCallReference OPTIONAL,
    mSCAddress           [47] MSCAddress OPTIONAL,
    defaultCallHandling  [48] DefaultCallHandling OPTIONAL,
    freeFormatData       [49] FreeFormatData OPTIONAL,
    freeFormatDataAppend [50] BOOLEAN OPTIONAL,
    systemType           [51] SystemType OPTIONAL
}

MOSMSRecord              ::= SET
{
    recordType                    [0] CallEventRecordType,
    servedIMSI                    [1] IMSI,
    servedIMEI                    [2] IMEI OPTIONAL,
    servedMSISDN                  [3] MSISDN OPTIONAL,
    msClassmark                   [4] Classmark,
    serviceCentre                 [5] AddressString,
    recordingEntity               [6] RecordingEntity,
    location                      [7] LocationAreaAndCell OPTIONAL,
```

```
    messageReference                        [8] MessageReference,
    originationTime                         [9] TimeStamp,
    smsResult                               [10] SMSResult OPTIONAL,
    recordExtensions                        [11] ManagementExtensions OPTIONAL,
    destinationNumber                       [12] CalledNumber OPTIONAL,
    cAMELSMSInformation                     [13] CAMELSMSInformation OPTIONAL,
    systemType                              [14] SystemType OPTIONAL
}

MTSMSRecord             ::= SET
{
    recordType          [0] CallEventRecordType,
    serviceCentre       [1] AddressString,
    servedIMSI          [2] IMSI,
    servedIMEI          [3] IMEI OPTIONAL,
    servedMSISDN        [4] MSISDN OPTIONAL,
    msClassmark         [5] Classmark,
    recordingEntity     [6] RecordingEntity,
    location            [7] LocationAreaAndCell OPTIONAL,
    deliveryTime        [8] TimeStamp,
    smsResult           [9] SMSResult OPTIONAL,
    recordExtensions    [10] ManagementExtensions OPTIONAL,
    systemType          [11] SystemType OPTIONAL
}

SSActionRecord          ::= SET
{
    recordType          [0] CallEventRecordType,
    servedIMSI          [1] IMSI,
    servedIMEI          [2] IMEI OPTIONAL,
    servedMSISDN        [3] MSISDN OPTIONAL,
    msClassmark         [4] Classmark,
    recordingEntity     [5] RecordingEntity,
    location            [6] LocationAreaAndCell OPTIONAL,
    basicServices       [7] BasicServices OPTIONAL,
    supplService        [8] SS-Code OPTIONAL,
    ssAction            [9] SSActionType OPTIONAL,
    ssActionTime        [10] TimeStamp,
    ssParameters        [11] SSParameters OPTIONAL,
    ssActionResult      [12] SSActionResult OPTIONAL,
    callReference       [13] CallReference,
    recordExtensions    [14] ManagementExtensions OPTIONAL,
    systemType          [15] SystemType OPTIONAL
}
```

B.2.1   Mobile originated call attempt

If the generation of these records is enabled then an MOC record shall be created for each outgoing call attempt made by a mobile station. These MOC records shall be produced in the originating MSC.

Table B.1: MOC record

Field		Description
Record Type	M	Mobile originated.
Served IMSI	M	IMSI of the calling party.
Served IMEI	C	IMEI of the calling ME, if available.
Served MSISDN	O	The primary MSISDN of the calling party.
Called Number	M	The address of the called party e.g. the number dialled by the calling sub.
Translated Number	O	The called number after digit translation within the MSC (if applicable)
Connected Number	O	The number of the connected party if different to the Called Number
Roaming Number	O	The Mobile Station Roaming Number employed to route this connection, if applicable.
Recording Entity	M	The E.164 number of the visited MSC producing the record.
Incoming TKGP	O	The MSC trunk group on which the call originated , usually from the BSS
Outgoing TKGP	O	The trunk group on which the call left the MSC
Location	M	The identity of the cell in which the call originated including the location area code.
Change of Location	O	A list of changes in Location Area Code / Cell Id. each time-stamped.
Basic service	M	Bearer or teleservice employed.
Transparency Indicator	C	Only provided for those teleservices which may be employed in both transparent and non-transparent mode.
ChangeOfService	O	A list of changes of basic service during a connection each time-stamped.
Supp. Services	C	Supplementary services invoked as a result of this connection.
AOC Parameters	O	The charge advice parameters sent to the MS on call set-up
Change of AOC Parms	O	New AOC parameters sent to the MS e.g. as a result of a tariff switch over, including the time at which the new set was applied.
MS Classmark	M	The mobile station classmark employed on call set-up.
Change of Classmark	O	A list of changes to the classmark during the connection each time-stamped
Event time stamps:	C C O	Seizure of incoming traffic channel (for unsuccessful call attempts) Answer (for successful calls) Release of traffic channel
Call duration	M	The chargeable duration of the connection for successful calls, the holding time for call attempts.
Radio Chan. Requested	O	The type of radio traffic channel (full / half etc.) requested by the MS.
Radio Chan. Used	M	The type of radio channel actually used (full or half rate).
Change of Rad. Chan.	O	A list of changes each time stamped
Cause for termination	M	The reason for the release of the connection.
Diagnostics	O	A more detailed reason for the release of the connection.
Data volume	C	The number of data segments transmitted if available at the MSC
Sequence no.	C	Partial record sequence number, only present in case of partial records.
Call reference	M	A local identifier distinguishing between transactions on the same MS
Additional Chg. Info	O	Charge/no charge indicator and additional charging parameters
Record extensions	O	A set of network/ manufacturer specific extensions to the record.
gsmSCF address	C	Identifies the CAMEL server serving the subscriber.
Service key	C	The CAMEL service logic to be applied.
Network call reference	C	An identifier to correlate transactions on the same call taking place in different network nodes, shall be present if CAMEL is applied.
MSC Address	C	This field contains the E.164 number assigned to the MSC that generated the network call reference.
Default call handling	O	Indicates whether or not a CAMEL call encountered default call handling. This field shall be present only if default call handling has been applied.
Number of HSCSD Channels Requested	C	The maximum number of HSCSD channels requested as received from the MS at call set-up
Number of HSCSD Channels Allocated	C	The number of HSCSD channels allocated to the MS at call set-up
Change of HSCSD Parameters	C	A list of network or user initiated changes of number of HSCSD channels during a connection each timestamped. Shall only be present in case of an HSCSD call, if the basic HSCSD parameters are modified due the user or network initiated modification procedure.
Fixed Network User Rate	O	May be present for HSCSD connections.
Air Interface User Rate Requested	C	The total Air Interface User Rate Requested by the MS at call setup. Shall only be present for non-transparent HSCSD connections.
Channel Coding Accepted	C	A list of the traffic channels codings accepted by the MS. Shall only be present for HSCSD connections.
Channel Coding Used	C	The traffic channels codings negotiated between the MS and the network at call setup. Shall only be present for HSCSD connections.
Speech Version Used	O	Speech version used for that call

Speech Version Supported	O	Speech version supported by the MS with highest priority indicated by MS
Number of DP encountered	O	Number that counts how often armed detection points (TDP and EDP) were encountered.
Level of CAMEL service	O	Indicator for the complexity of the CAMEL feature used.
Free format Data	C	This field contains data sent by the gsmSCF in the FCI message(s). The data can be sent either in one FCI message or several FCI messages with append indicator.
CAMEL call leg information	C	Set of CAMEL information IEs. Each of these IEs contains information related to one outgoing CAMEL call leg.
Free format data append indicator	C	Indicator if free format data from this CDR is to be appended to free format data in previous partial CDR.
Free format Data	C	This field contains data sent by the gsmSCF in the FCI messages. The data can be sent either in one FCI message or several FCI messages with append indicator.
CAMEL call leg information	C	Set of CAMEL information IEs. Each of these IEs contains information related to one outgoing CAMEL call leg.
Free format data append indicator	C	Indicator if free format data from this CDR is to be appended to free format data in previous partial CDR.
Default call handling 2	O	Indicates whether or not a CAMEL call encountered default call handling for 2nd service such as dialled service. This field shall be present only if default call handling has been applied.
GsmSCF address 2	C	Identifies the CAMEL server serving the subscriber for 2nd service such as dialled service.
Service key 2	C	The CAMEL service logic to be applied for 2nd service such as dialled service.
Free format Data 2	C	This field contains data sent by the gsmSCF in the FCI message(s) for 2nd service such as dialled service. The data can be sent either in one FCI message or several FCI messages with append indicator.
Free format data append indicator 2	C	Indicator if free format data for 2nd service from this CDR is to be appended to free format data in previous partial CDR.
System Type	C	Indicates 3G-UMTS System; Not present for GSM.

B.2.2   Mobile originated emergency call attempt

If the generation of MOC records is enabled then an MOC emergency record shall be created for each outgoing emergency call attempt made by a mobile station. These records shall be produced in the originating MSC.

Table B.2: MOC emergency record

Field		Description
Record Type	M	Mobile originated.
Served IMSI	C	IMSI of the calling party in case of an emergency call with a SIM card.
Served IMEI	C	IMEI of the calling mobile equipment if available.
Served MSISDN	O	The primary MSISDN of the calling party.
Translated Number	O	The called number after digit translation within the MSC (if applicable)
Recording Entity	M	The E.164 number of the visited MSC producing the record.
Incoming TKGP	O	The MSC trunk group on which the call originated, usually from the BSS
Outgoing TKGP	O	The trunk group on which the call left the MSC
Location	M	The identity of the cell in which the call originated including the location area code.
Change of Location	O	A list of changes in Location Area Code / Cell Id. each time-stamped.
Basic service	M	Teleservice 'emergency call'.
AOC Parameters	O	The charge advice parameters sent to the MS on call set-up
Change of AOC Parms	O	New AOC parameters sent to the MS e.g. as a result of a tariff switch over, including the time at which the new set was applied.
MS Classmark	M	The mobile station classmark employed on call set-up.
Change of classmark	O	A list of changes to the classmark during the connection each time-stamped
Event time stamps:	C C O	Seizure of incoming traffic channel (for unsuccessful call attempts) Answer (for successful calls) Release of traffic channel
Call duration	M	The chargeable duration of the connection for successful calls, the holding time for call attempts.
Radio Chan. Requested	O	The type of radio traffic channel (full / half etc.) requested by the MS.
Radio Chan. Used	M	The type of radio channel used (full or half rate).
Change of Rad. Chan.	O	A list of changes each time stamped
Cause for termination	M	The reason for the release of the connection.
Diagnostics	O	A more detailed reason for the release of the connection.
Sequence no.	C	Partial record sequence number, only present in case of partial records.
Call reference	M	A local identifier distinguishing between transactions on the same MS
Record extensions	O	A set of network/ manufacturer specific extensions to the record.
System Type	C	Indicates 3G-UMTS System; Not present for GSM.

B.2.4 Mobile terminated call attempt

If the generation of these records is enabled, then an MTC record shall be created for each incoming call attempt made for a mobile station. The MTC records shall be produced in the terminating MSC.

Table B.4: MTC record

Field		Description
Record Type	M	Mobile Terminated.
Served IMSI	M	IMSI of the called party.
Served IMEI	O	IMEI of the called ME.
Served MSISDN	O	The MSISDN of the called party.
Calling Number	C	The number of the calling party if available.
Connected Number	O	Only relevant in case of call forwarding where the "forwarded-to" number is recorded.
Recording Entity	M	The E.164 number of the visited (terminating) MSC
Incoming TKGP	O	The MSC trunk group on which the call originated.
Outgoing TKGP	O	The trunk group on which the call left the MSC, usually to the BSS
Location	C	The identity of the cell occupied by the called party when the call was set up including the location area code.
Change of Location	O	A list of changes in Location Area Code / Cell Id. each time-stamped.
Basic Service	M	Bearer or teleservice employed
Transparency Indicator	C	Only provided for those teleservices which may be employed in both transparent and non-transparent mode.
Change of Service	O	A list of changes of basic service during a connection each time-stamped.
Supp. services	C	Supplementary services invoked as a result of this connection.
AOC Parameters	O	The charge advice parameters sent to the MS on call set-up
Change of AOC Parms.	O	New AOC parameters sent to the MS e.g. as a result of a tariff switch-over, including the time at which the new set was applied.
MS Classmark	M	The mobile station class mark
Change of Classmark	O	A list of changes to the classmark during the connection each time-stamped
Event time stamps:	C C O	Seizure of traffic channel for unsuccessful call attempts Answer time for successful calls Release of traffic channel
Call duration	M	The chargeable duration of the connection if successful, the holding time of the call if unsuccessful.
Radio Chan. Requested	O	The type of radio traffic channel (full / half etc.) requested by the MS.
Radio Chan. Used	M	The type of radio channel used (full or half rate).
Change of Rad. Chan	O	A list of changes each time stamped
Cause for term.	M	The reason for the release of the call.
Diagnostics	O	A more detailed reason for the release of the connection.
Data volume	C	The number of data segments transmitted, if available at the MSC
Sequence no.	C	Partial record sequence number, only present in case of partial records.
Call reference	M	A local identifier distinguishing between transactions at the same MS
Additional Chg. Info	O	Charge/no charge indicator and additional charging parameters
Record extensions	O	A set of network/ manufacturer specific extensions to the record.
Network call reference	C	An identifier to correlate transactions on the same call taking place in different network nodes, shall be present if CAMEL is applied.
MSC Address	C	This field contains the E.164 number assigned to the MSC that generated the network call reference.
Number of HSCSD Channels Requested	O	The maximum number of HSCSD channels requested as received from the MS at call set-up
Number of HSCSD Channels Allocated	O	The number of HSCSD channels allocated to the MS at call set-up
Change of HSCSD Parameters	O	A list of network or user initiated changes of number of HSCSD channels during a connection each timestamped. Shall only be present in case of an HSCSD call, if the basic HSCSD parameters are modified due the user or network initiated modification procedure.
Fixed Network User Rate	O	May be present for HSCSD connections.
Air Interface User Rate Requested	C	The total Air Interface User Rate Requested by the MS at call setup. Shall only be present for non-transparent HSCSD connections.
Channel Coding Accepted	C	A list of the traffic channels codings accepted by the MS. Shall only be present for HSCSD connections.
Channel Coding Used	C	The traffic channels codings negotiated between the MS and the network at call setup. Shall only be present for HSCSD connections.
Speech Version Used	O	Speech version used for that call

Speech Version Supported	O	Speech version supported by the MS with highest priority indicated by MS
GsmSCF address	C	Identifies the CAMEL server serving the subscriber.
Service Key	C	The CAMEL service logic to be applied.
Default Call handling	O	Indicates whether or not a CAMEL call encountered defeault call handling. This field shall be present only if default call handling has been applied.
Free format Data	C	Indicator if free format data from this CDR is to be appended to free format data in previous partial CDR.
Free format data append indicator	C	Indicator if free format data from this CDR is to be appended to free format data in previous partial CDR.
System Type	C	Indicates 3G-UMTS System; Not present for GSM.

B.2.9　Supplementary service actions

A supplementary service record may be produced in the NEF of the appropriate MSC or HLR for each supplementary service action (activation, deactivation, invocation etc.) performed or initiated by the subscriber.

There are two basic types of SS-actions:

- Call related i.e. as a result of a connection e.g. Invocation of CLIP / CLIR / AOC etc.

- Non-call related i.e. as a result of subscriber controlled input (SCI) e.g. Registration of call forwarding

Each supplementary service action shall be performed on one or more basic service groups. If the action applies to all tele and all bearer services (i.e. to all basic services) then the basic services field shall be omitted.

SCI actions may be recorded in individual SS-action records. Call related actions may be recorded in either the appropriate call record (MOC/MTC) or in separate SS-action records. For further details concerning the generation of supplementary service records see subclause 8.2.1.1.3.

Additional non-standard supplementary service actions may be made available within some networks in the form of Unstructured Supplementary Service Data (USSD). These actions may also be recorded in SS-action records. However, as these actions are non-standard they may not include an appropriate action type, supplementary service code or basic service code.

Table B.9: SS-action record

Field		Description
Record Type	M	Supplementary service action.
Served IMSI	M	The IMSI of the MS performing the action.
Served IMEI	O	The IMEI of the ME performing the action.
Served MSISDN	O	The primary MSISDN of the party performing the action.
MS Classmark	M	The mobile station classmark.
Recording Entity	M	The E.164 number of the visited MSC / HLR.
Location	O	The Location Area Code and Cell Identity from which the request originated.
Supp. Service	C	The supplementary service or group of supplementary services for which the request was made. May not be available in case of USSD.
Basic Services	C	The basic service group(s) to which the supplementary service applies. This field is not provided if the action applies to all basic services.
SS Action	C	Activation, deactivation, interrogation etc. May not be available in case of USSD.
SS Action time stamp	M	The time at which the action was requested.
SS Parameters	C	Service dependent parameters or unstructured suppl. service data.
SS Action Result	C	Result of the requested transaction if unsuccessful.
Call Reference	M	A local identifier distinguishing between transactions at the same MS.
Record extensions	O	A set of network/ manufacturer specific extensions to the record.
System Type	C	Indicates 3G-UMTS System; Not present for GSM.

B.2.13 Short message service, mobile originated

If enabled, an SMS-MO record shall be produced, within the originating MSC, for each short message sent by a mobile subscriber.

Table B.13: SMS-MO record

Field		Description
Record Type	M	SMS-Mobile originated.
Served IMSI	M	The IMSI of the subscriber sending the short message.
Served IMEI	O	The IMEI of the ME sending the message, if available.
Served MSISDN	O	The primary MSISDN of the subscriber sending the message.
MS Classmark	M	The mobile station classmark.
Service Centre	M	The address (E.164) of the SMS-service centre.
Recording Entity	M	The E.164 number of the visited MSC
Location	O	The Location Area Code and Cell Identity from which the message originated.
Event Time stamp	M	The time at which the message was received by the MSC from the subscriber.
Message Reference	M	A reference, provided by the MS uniquely identifying this message.
SMS Result	C	The result of the attempted delivery if unsuccessful.
Record extensions	O	A set of network/ manufacturer specific extensions to the record.
Destination number	O	The destination short message subscriber number.
CAMELSMSInformation	C	Set of CAMEL information IEs. Each of these IEs contains information related to CAMEL call leg related for the SMS.
System Type	C	Indicates 3G-UMTS System; Not present for GSM.

B.2.14 Short message service, mobile terminated

If enabled, an SMS-MT record shall be produced, within the terminating MSC, for each short message received by a mobile subscriber.

Table B.14: SMS-MT record

Field		Description
Record Type	M	SMS-Mobile Terminated.
Service Centre	M	The E.164 address of the SMS service centre.
Served IMSI	M	The IMSI of the receiving party.
Served IMEI	O	The IMEI of the receiving party, if available.
Served MSISDN	O	The MSISDN of the receiving party.
MS Classmark	M	The mobile station classmark.
Recording Entity	M	The E.164 number of the visited MSC.
Location	O	The Location Area Code and Cell Identity to which the message was delivered.
Event time stamp	M	Delivery time stamp, time at which message was sent to the MS by the MSC.
SMS Result	C	The result of the attempted delivery if unsuccessful.
Record extensions	O	A set of network/ manufacturer specific extensions to the record.
System Type	C	Indicates 3G-UMTS System; Not present for GSM.

B.2.18 Reduced partial records

In order to minimise the amount of data transferred, the contents of partial record may be reduced to those fields required to uniquely identify the connection and those fields that actually change. Table B.18 contains an example of such a record for a mobile originated call attempt. Reduced partial records may be generated for any of the relevant call records.

Table B.18: Reduced partial (MOC) record

Field		Description
Record Type	M	Mobile originated.
Served IMSI	C	IMSI of the calling party, if available
Called Number	C	If available.
Recording Entity	M	The E.164 number of the visited MSC producing the record.
Change of Location	C	A list of changes in Location Area Code / Cell Id. each time-stamped.
ChangeOfService	C	A list of changes of basic service during a connection each time-stamped.
Change of AOC Parms	C	New AOC parameters sent to the MS e.g. as a result of a tariff switch over, including the time at which the new set was applied.
Change of Classmark	C	A list of changes to the classmark during the connection each time-stamped
Event time stamps:	M	Answer time, start of this partial record.
Call duration	M	The chargeable duration of this partial record.
Change of Rad. Chan.	C	A list of changes each time stamped
Cause for termination	M	The reason for the release of the connection.
Diagnostics	O	Only relevant for the last record in the sequence.
Data volume	C	The number of data segments transmitted during this partial output
Sequence no.	M	Partial record sequence number, only present in case of partial records.
Call reference	M	A local identifier distinguishing between transactions on the same MS
System Type	C	Indicates 3G-UMTS System; Not present for GSM.

B.3   Description of record fields

This subclause contains a brief description of each field of the call and event records described in the previous subclause.

B.3.46a System type

This field is present conditionally, indicating the use of a 3G air-interface for the provision of service recorded by this CDR.

In the case of service provided by a GSM air-interface, the field is not present.

CR-Form-v3

CHANGE REQUEST

| ⌘ | **32.005** CR **006** | ⌘ rev | **-** | ⌘ Current version: | **3.3.0** | ⌘ |

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

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

Title:	⌘	**Correction for bulk transfer**
Source:	⌘	SA5
Work item code:	⌘ OAM-CH	*Date:* ⌘ **02/03/2001**
Category:	⌘ **F**	*Release:* ⌘ R99

Use <u>one</u> of the following categories: **F** (essential correction) **A** (corresponds to a correction in an earlier release) **B** (Addition of feature), **C** (Functional modification of feature) **D** (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘	To correct the types of protocols used for CDR bulk transfer
Summary of change:	⌘	The missing protocol types for the CDR transfer to Billing System (BS) with the appropriate interface protocol stack is added where needed.
Consequences if not approved:	⌘	Offence against existing requirements specified in 32.101 ("... formal description of the call and event data records in ASN.1 and definition of a file transfer mechanism" and "The valid Application Layer Protocols for Bulk Transfer are: - FTAM, - FTP, - TFTP"). That is, it limits those using 32.005 to only implementing OSI protocol stacks.

Clauses affected:	⌘	2, 4, 8.2 and A.9

Other specs affected:	⌘ ☐	Other core specifications	⌘
	☐	Test specifications	
	☐	O&M Specifications	

Other comments:	⌘	

2   References

[27]   IETF RFC 959: "File Transfer Protocol (FTP)"; October 1985, J. Postel, J. Reynolds, ISI.
            (Status: Standard)

[28]   IETF RFC 783: "Trivial File Transfer Protocol (TFTP)"; rev. 2, June 1981, K.R. Sollins MIT.
            (Status: Unknown)

4   Abbreviations

FTP   File Transfer Protocol

TFTP   Trivial File Transfer Protocol

8.2   Data collection

The data collection management service component employs both the event report function (ITU-T X.734 [10]) and log control function (ITU-T X.735 [11]). The conceptual model is illustrated in figure 4. The call recording function collects internal telecommunication events within the NEF and formats them into potential call and event records. The record generation control functions determine which of these potential records are actually stored in the local NEF record filestore. The records within the filestore are collected by the OSF via file transfer (FTAM protocol on X.25 or TCP/IP, and FTP or TFTP over TCP/IP.

). The record classes of the record generation control function also determine which of the records produced are transmitted to the OSF in the form of event reports.

Similarly, the log control function determines which of the potential records are stored locally as log records. Once stored the log records may be individually accessed by the OSF via the appropriate object management functions. Care should be taken in the selection of filter criteria for the call and event record logs to avoid unnecessary overheads.

Finally, the potential call and event records are also passed to the event forwarding discriminators of the event reporting function. The EFDs determine which of the potential records are transmitted to the OSF in the form of event reports. Whereas the record classes are intended to produce event reports on a semi-permanent basis for day to day operation, the EFDs are intended for short term event reporting and with more complex filter constructs.

8.2.2.2   Bulk record transfer

This group of TMN functions is concerned with the bulk transfer of call and event records from the NEF record filestore to the NEF.

The call and event records shall be transferred from the NEF to the OSF by the use of FTAM protocol on X.25 or TCP/IP, and FTP or TFTP over TCP/IPservices. For further details of the use of FTAM see GSM 12.01 [19] and of the use of FTP see [27] and TFTP see [28].

In addition to the simple file transfer services provided by FTAM, peer-to-peer application process communication may be also be supported. The use of CMIS services for the uploading of files from the NEF to the OSF is specified in GSM 12.00 [18].

A.9   Abstract syntax

```
-------------------------------------------------------------------------
--
--  FTAM / FTP / TFTP FILE CONTENTS
--
-------------------------------------------------------------------------
```