3GPP TSG CT Meeting #28 **CP-0500045**
1st – 3rd June 2005. Quebec, CANADA.

Source: **CT3**

Title: **CRs to Rel-6 on Work Item "Gx interface for Flow Based Charging"**

Agenda item: **9.25**

Document for: **APPROVAL**

Introduction:

This document contains 6 CRs to Rel-6 on Work Item "Gx interface for Flow Based Charging" that have been agreed by TSG CT WG3, and are forwarded to TSG CT Plenary for approval.

WG_tdoc	Spec	CR	R	Cat	Title	Rel	C_Ver	Work Item
C3-050407	29.210	010	1	F	Various Corrections	Rel-6	6.1.0	CH-FBC
C3-050418	29.210	011	3	F	Code allocation for Gx interface	Rel-6	6.1.0	CH-FBC
C3-050393	29.210	013	1	F	Flow AVP only needed when ICID present	Rel-6	6.1.0	CH-FBC
C3-050428	29.210	015	2	F	Removal of DCC sub-sessions	Rel-6	6.1.0	CH-FBC
C3-050304	29.210	016		F	Addition of the PLMN change value in the Event-Trigger AVP	Rel-6	6.1.0	CH-FBC
C3-050313	29.210	017		F	Correction of reference	Rel-6	6.1.0	CH-FBC

3GPP TSG-CT WG3 Meeting #36
Cancun, Mexico. 25th - 29th April 2005.

C3-050304

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.210** **CR** **016** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Addition of the PLMN change value in the Event-Trigger AVP
Source:	⌘	Vodafone
Work item code:	⌘	CH-FBC
Date:	⌘	07/04/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(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 one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	TS 23.125 includes a PLMN change as an eligible event that triggers the TPF to signal to the CRF that a bearer has been modified or a specific event has occurred. No such event though is listed between the values specified for the Event-Trigger AVP for the Gx interface.
Summary of change:	⌘	The PLMN change is added amongst the enumerated values of the Event-Trigger AVP.
Consequences if not approved:	⌘	Misalignment with stage 2.

Clauses affected:	⌘	5.2.7

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

********** MODIFIED CLAUSE **********

5.2.7 Event-Trigger AVP

The Event-Trigger AVP (AVP code 1006) is of type Enumerated, and it indicates an event that shall cause a re-request of charging rules. The following values are defined:

SGSN_CHANGE (0)

This value shall be used to indicate that upon the change of the serving SGSN charging rules shall be requested.

QOS_CHANGE (1)

This value shall be used to indicate that ~~the~~ upon a QoS change charging rules shall be requested.

RAT_CHANGE (2)

This value shall be used to indicate that ~~the~~ upon a RAT change charging rules shall be requested.

TFT_CHANGE (3)

This value shall be used to indicate that ~~the~~ upon a TFT change charging rules shall be requested.

PLMN_CHANGE (4)

This value shall be used to indicate that upon a PLMN change charging rules shall be requested.

3GPP TSG-CN WG3 Meeting #36 ***Tdoc ⌘C3-050418***

Cancun, Mexico. 25th - 29th April 2005.

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.210** **CR** **011** ⌘**rev** **3** ⌘ Current version: **6.1.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Code allocation for Gx interface
Source:	⌘	Nokia
Work item code:	⌘	CH-FBC
Date:	⌘	27/04/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(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 one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	CT4 has decided to use existing charging function address AVPs for the Gx interface, refer to LS from CT4 in N3-050224 / N4-050383.
Summary of change:	⌘	New charging function address AVP codes allocated earlier by CT3 to TS 29.210 are replaced with existing codes according to CT4's decision. RAT-Type AVP is moved in table 5.3 to recover the alphabetical order.
Consequences if not approved:	⌘	Mismatch between CT3's and CT4's specifications.

Clauses affected:	⌘	2, 5 and 6

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	TS 29.230, CR 050 (C4-050725)
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	CT4 will have to remove the RAT Type parameter they added in the previous meeting and align accordingly the AVP numbers after the removed AVP. (The RAT Type has already been defined earlier in 29.061 and 29.060). Consequently, there is a dependency on CT4's CR 050 for TS 29.230.

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.002: "Network architecture".

[3] 3GPP TS 23.125: "Overall high level functionality and architecture impacts of flow based charging; Stage 2".

[4] IETF RFC 3588: "Diameter Base Protocol".

[5] IETF RFC 2234: "Augmented BNF for syntax specifications: ABNF".

[6] 3GPP TS 33.210: "3G security; Network Domain Security (NDS); IP network layer security".

[7] 3GPP TS 29.207: "Policy control over Go interface".

[8] draft-ietf-aaa-diameter-cc-06.txt: "Diameter Credit-Control Application".

[9] 3GPP TS 32.299: "Telecommunication management; Charging management; Diameter charging applications".

[10] 3GPP TS 29.209: "Policy control over Gq interface".

[11] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN)".

[12] draft-ietf-aaa-diameter-nasreq-17.txt: "Diameter Network Access Server Application", work in progress.

[13] 3GPP TS 32.251: "Packet Switched (PS) domain charging".

[14] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[15] 3GPP TS 29.211: "Rx Interface and Rx/Gx signalling flows".

[16] 3GPP TS 29.229: "Cx and Dx interfaces based on the Diameter protocol; Protocol details".

5. Gx Protocol

5.1 Protocol support

The Gx reference point shall be based on Diameter as specified in RFC 3588 [4] and Diameter Credit Control Application (draft-ietf-aaa-diameter-cc-06.txt) [8] except as modified by the defined Gx specific procedures and AVPs. Unless otherwise specified, the procedures (including error handling and unrecognized information handling) are unmodified. In addition to the AVPs defined within the clause 5.2, the existing Diameter AVPs are reused as specified in sub-clause 5.3. Diameter messages from the Diameter base application (RFC 3588 [4]) and DCC (draft-ietf-aaa-diameter-cc-06.txt [8]) are reused as specified in clause 6.

With regard to the Diameter protocol defined over the Gx reference point, the CRF acts as a Diameter server, in the sense that it is the network element that handles charging rule requests for a particular realm. The TPF acts as the Diameter Client, in the sense that it is the network element requesting charging rules.

5.2 Gx specific AVPs

Table 5.2 describes the Diameter AVPs defined for the Gx reference point, their AVP Code values, types, possible flag values and whether or not the AVP may be encrypted. The Vendor-Id header of all AVPs defined in the present document shall be set to 3GPP (10415).

Table 5.2: Gx specific Diameter AVPs

				AVP Flag rules (note 1)				
Attribute Name	**AVP Code**	**Clause defined**	**Value Type (note 2)**	**Must**	**May**	**Should not**	**Must not**	**May Encr.**
Bearer-Usage	1000	5.2.1	Enumerated	M,V	P			Y
Charging-Rule-Install	1001	5.2.2	Grouped	M,V	P			Y
Charging-Rule-Remove	1002	5.2.3	Grouped	M,V	P			Y
Charging-Rule-Definition	1003	5.2.4	Grouped	M,V	P			Y
Charging-Rule-Base-Name	1004	5.2.5	OctetString	M,V	P			Y
Charging-Rule-Name	1005	5.2.6	OctetString	M,V	P			Y
Event-Trigger	1006	5.2.7	Enumerated	M,V	P			Y
Metering-Method	1007	5.2.8	Enumerated	M,V	P			Y
Offline	1008	5.2.9	Enumerated	M,V	P			Y
Online	1009	5.2.10	Enumerated	M,V	P			Y
Precedence	1010	5.2.11	Unsigned32	M,V	P			Y
~~Primary-CCF-Address~~	~~1011~~	~~5.2.12~~	~~DiameterURI~~	~~M,V~~	~~P~~			~~Y~~
~~Primary-OCS-Address~~	~~1012~~	~~5.2.13~~	~~DiameterURI~~	~~M,V~~	~~P~~			~~Y~~
Reporting-Level	1011~~3~~4	5.2.15	Enumerated	M,V	P			Y
~~Secondary-CCF-Address~~	~~1015~~	~~5.2.16~~	~~DiameterURI~~	~~M,V~~	~~P~~			~~Y~~
~~Secondary-OCS-Address~~	~~1016~~	~~5.2.17~~	~~DiameterURI~~	~~M,V~~	~~P~~			~~Y~~
TFT-Filter	1012~~6~~7	5.2.18	IPFilterRule	M,V	P			Y
TFT-Packet-Filter-Information	1013~~7~~8	5.2.19	Grouped	M,V	P			Y
ToS-Traffic-Class	1014~~8~~9	5.2.20	OctetString	M,V	P			Y
NOTE 1: The AVP header bit denoted as 'M', indicates whether support of the AVP is required. The AVP header bit denoted as 'V', indicates whether the optional Vendor-ID field is present in the AVP header. For further details, see RFC 3588 [4].								
NOTE 2: The value types are defined in RFC 3588 [4].								

5.2.1 Bearer-Usage AVP

The Bearer-Usage AVP (AVP code 1000) is of type Enumerated, and it shall indicate how the bearer is being used. If the Bearer-Usage AVP has not been previously provided, its absence shall indicate that no specific information is available. If the Bearer-Usage AVP has been provided, its value shall remain valid until it is provided the next time. The following values are defined:

GENERAL (0)

This value shall indicate no specific bearer usage information is available.

IMS_SIGNALLING (1)

This value shall indicate that the bearer is used for IMS signalling only.

5.2.2 Charging-Rule-Install AVP

The Charging-Rule-Install AVP (AVP code 1001) is of type Grouped, and it is used for installing or modifying charging rules for a bearer as instructed from the CRF to the TPF. Charging-Rule-Name AVP is a reference for activating a specific charging rule predefined at the TPF. The Charging-Rule-Base-Name AVP is a reference for activating a group of charging rules predefined at the TPF. The Charging-Rule-Definition AVP is used for installing or modifying charging rules provisioned over the Gx interface.

AVP Format:

```
Charging-Rule-Install ::= < AVP Header: 1001 >
                          *[ Charging-Rule-Definition ]
                          *[ Charging-Rule-Name ]
                          *[ Charging-Rule-Base-Name ]
                          *[ AVP ]
```

5.2.3 Charging-Rule-Remove AVP

The Charging-Rule-Remove AVP (AVP code 1002) is of type Grouped, and it is used for removing charging rules from a bearer. Charging-Rule-Name AVP is a reference for a specific charging rule at the TPF to be removed or for a specific charging rule predefined at the TPF to be deactivated.. The Charging-Rule-Base-Name AVP is a reference for a group of charging rules predefined at the TPF to be deactivated.

AVP Format:

```
Charging-Rule-Remove ::= < AVP Header: 1002 >
                          *[ Charging-Rule-Name ]
                          *[ Charging-Rule-Base-Name ]
                          *[ AVP ]
```

5.2.4 Charging-Rule-Definition AVP

The Charging-Rule-Definition AVP (AVP code 1003) is of type Grouped, and it defines the charging rule for a service flow sent by the CRF to the TPF. The Charging-Rule-Name AVP uniquely identifies the charging rule for a bearer and it is used to reference to a charging rule in communication between the TPF and the CRF. The Flow-Description AVP(s) determines the traffic that belongs to the service flow.

If optional AVP(s) within a Charging-Rule-Definition AVP are omitted, but corresponding information has been provided in previous Gx messages, the previous information remains valid. If Flow-Description AVP(s) are supplied, they replace all previous Flow-Description AVP(s). If Flows AVP(s) are supplied, they replace all previous Flows AVP(s),

AVP Format:

```
Charging-Rule-Definition ::= < AVP Header: 1003 >
                             { Charging-Rule-Name }
                             [ Service-Identifier ]
                             [ Rating-Group ]
                            *[ Flow-Description ]
                             [ Reporting-Level ]
                             [ Online ]
                             [ Offline ]
                             [ Metering-Method ]
                             [ Precedence ]
                             [ AF-Charging-Identifier ]
                            *[ Flows ]
                            *[ AVP ]
```

5.2.5 Charging-Rule-Base-Name AVP

The Charging-Rule-Base-Name AVP (AVP code 1004) is of type OctetString, and it indicates the name of a pre-defined group of charging rules residing at the TPF.

5.2.6 Charging-Rule-Name AVP

The Charging-Rule-Name AVP (AVP code 1005) is of type OctetString. For charging rules provided by the CRF it uniquely identifies a charging rule for a bearer. For charging rules pre-defined at the TPF it uniquely identifies a charging rule within the TPF.

5.2.7 Event-Trigger AVP

The Event-Trigger AVP (AVP code 1006) is of type Enumerated, and it indicates an event that shall cause a re-request of charging rules. The following values are defined:

SGSN_CHANGE (0)

This value shall be used to indicate that upon the change of the serving SGSN charging rules shall be requested.

QOS_CHANGE (1)

This value shall be used to indicate that the upon QoS change charging rules shall be requested.

RAT_CHANGE (2)

This value shall be used to indicate that the upon RAT change charging rules shall be requested.

TFT_CHANGE (3)

This value shall be used to indicate that the upon TFT change charging rules shall be requested.

5.2.8 Metering-Method AVP

The Metering-Method AVP (AVP code 1007) is of type Enumerated, and it defines what parameters shall be metered for offline charging. The following values are defined:

DURATION (0)

This value shall be used to indicate that the duration of the service flow shall be metered.

VOLUME (1)

This value shall be used to indicate that volume of the service flow traffic shall be metered.

DURATION_VOLUME (2)

This value shall be used to indicate that the duration and the volume of the service flow traffic shall be metered.

5.2.9 Offline AVP

The Offline AVP (AVP code 1008) is of type Enumerated, and it defines whether the offline charging interface from the TPF for the associated charging rule shall be enabled. The absence of this AVP indicates that the default configuration shall be used. The following values are defined:

DISABLE_OFFLINE (0)

This value shall be used to indicate that the offline charging interface for the associated charging rule shall be disabled.

ENABLE_OFFLINE (1)

This value shall be used to indicate that the offline charging interface for the associated charging rule shall be enabled.

5.2.10 Online AVP

The Online AVP (AVP code 1009) is of type Enumerated, and it defines whether the online charging interface from the TPF for the associated charging rule shall be enabled. The absence of this AVP indicates that the default configuration shall be used. The following values are defined:

DISABLE_ONLINE (0)

This value shall be used to indicate that the online charging interface for the associated charging rule shall be disabled.

ENABLE_ONLINE (1)

This value shall be used to indicate that the online charging interface for the associated charging rule shall be enabled.

5.2.11 Precedence AVP

The Precedence AVP (AVP code 1010) is of type Unsigned32, and it defines the precedence of a charging rule in case of overlapping charging rules. A charging rule with the Precedence AVP with lower value shall take the priority over a charging rule with the Precedence AVP with higher value. The Precedence AVP is also used to indicate the evaluation precedence of the TFT packet filters.

5.2.12 Void~~Primary-CCF-Address AVP~~

~~The Primary-CCF-Address AVP (AVP code 1011) is of type DiameterURI, and it defines the address of the primary offline charging system for the bearer. The absence of the protocol definition in the DiameterURI shall indicate the default protocol defined for the Gz interface.~~

5.2.13 Void~~Primary-OCS-Address AVP~~

~~The Primary-OCS-Address AVP (AVP code 1012) is of type DiameterURI, and it defines the address of the primary online charging system for the bearer. The absence of the protocol definition in the DiameterURI shall indicate the default protocol defined for the Gy interface.~~

5.2.14 Void

5.2.15 Reporting-Level AVP

The Reporting-Level AVP (AVP code ~~1014~~1011) is of type Enumerated, and it defines on what level the TPF reports the usage for the related charging rule. The following values are defined:

CHARGING_RULE_LEVEL (0)

This value shall be used to indicate that the usage shall be reported on charging rule level.

RATING_GROUP_LEVEL (1)

This value shall be used to indicate that the usage shall be reported on rating group level.

5.2.16 Void~~Secondary-CCF-Address AVP~~

~~The Secondary-CCF-Address AVP (AVP code 1015) is of type DiameterURI, and it defines the address of the secondary offline charging system for the bearer. The absence of the protocol definition in the DiameterURI shall indicate the default protocol defined for the Gz interface.~~

5.2.17 Void~~Secondary-OCS-Address AVP~~

~~The Secondary-OCS-Address AVP (AVP code 1016) is of type DiameterURI, and it defines the address of the secondary online charging system for the bearer. The absence of the protocol definition in the DiameterURI shall indicate the default protocol defined for the Gy interface.~~

5.2.18 TFT-Filter AVP

The TFT-Filter AVP (AVP code ~~1017~~1012) is of type IPFilterRule, and it contains the flow filter for one TFT packet filter. The TFT-Filter AVP is derived from the Traffic Flow Template (TFT) defined in 3GPP TS 24.008 [14]. The following information shall be sent:

- Action shall be set to "permit".
- Direction shall be set to "out".
- Protocol shall be set to the value provided within the TFT packet filter parameter "Protocol Identifier/Next Header Type". If the TFT packet filter parameter "Protocol Identifier/Next Header Type" is not provided within the TFT packet filter, Protocol shall be set to "IP".
- Source IP address (possibly masked). The source IP address shall be derived from TFT packet filter parameters "Source address" and "Subnet Mask". The source IP address shall be set to "any", if no such information is provided in the TFT packet filter.
- Source and destination port (single value, list or ranges). The information shall be derived from the corresponding TFT packet filter parameters. Source and/or destination port(s) shall be omitted if such information is not provided in the TFT packet filter.
- The Destination IP address shall be set to "assigned".

The IPFilterRule type shall be used with the following restrictions:

- No options shall be used
- Destination IP address shall be wildcarded
- The invert modifier "!" for addresses shall not be used.

The direction "out" refers to downlink direction.

5.2.19 TFT-Packet-Filter-Information AVP

The TFT-Packet-Filter-Information AVP (AVP code ~~1018~~1013) is of type Grouped, and it contains the information from a single TFT packet filter including the evaluation precedence, the filter and the Type-of-Service/Traffic Class sent from the TPF to the CRF. The TPF shall include one TFT-Packet-Filter-Information AVP for each TFT packet filters applicable at a PDP context in separate TFT-Packet-Filter-Information AVPs within each charging rule request. corresponding to that PDP context. TFT-Packet-Filter-Information AVPs are derived from the Traffic Flow Template (TFT) defined in 3GPP TS 24.008 [14]. When SBLP is used the packet filters shall be omitted.

AVP Format:

```
TFT-Packet-Filter-Information ::= < AVP Header: ~~1018~~ 1013>
                              [ Precedence ]
                              [ TFT-Filter ]
                              [ ToS-Traffic-Class ]
```

5.2.20 ToS-Traffic-Class AVP

The ToS-Traffic-Class AVP (AVP code ~~1019~~1014) is of type OctetString, and it contains the Type-of-Service/Traffic-Class of a TFT packet filter as defined in 3GPP TS 24.008 [14].

5.3 Gx re-used AVPs

The table 5.3 lists the Diameter AVPs re-used by the Gx reference point from existing Diameter Applications, reference to their respective specifications and short description of their usage within the Gx reference point. Other AVPs from existing Diameter Applications, except for the AVPs from Diameter base protocol, do not need to be supported. The AVPs from Diameter base protocol are not included in table 5.3, but they are re-used for the Gx reference point. Where 3GPP Radius VSAs are re-used, they shall be translated to Diameter AVPs as described in draft-ietf-aaa-diameter-nasreq-17.txt [12] with the exception that the 'M' flag shall be set and the "P' flag may be set.

Table 5.3: Gx re-used Diameter AVPs

Attribute Name	Reference	Description
3GPP-GPRS-Negotiated-QoS-Profile	3GPP TS 29.061 [11]	For GPRS the QoS of the PDP context
3GPP-RAT-Type	3GPP TS 29.061 [11]	Indicate which Radio Access Technology is currently serving the UE.
3GPP-SGSN-Address	3GPP TS 29.061 [11]	For GPRS the IPv4 address of the SGSN
3GPP-SGSN-IPv6-Address	3GPP TS 29.061 [11]	For GPRS the IPv6 address of the SGSN
3GPP-SGSN-MCC-MNC	3GPP TS 29.061 [11]	For GPRS the MCC and the MNC of the SGSN
AF-Charging-Identifier	3GPP TS 29.209 [10]	The AF charging identifier that may be used in charging correlation. For IMS the ICID.
Called-Station-ID	draft-ietf-aaa-diameter-nasreq-17.txt [12]	The address the user is connected to. For GPRS the APN.
CC-Request-Number	draft-ietf-aaa-diameter-cc-06.txt [8]	The number of the request for mapping requests and answers
CC-Request-Type	draft-ietf-aaa-diameter-cc-06.txt [8]	The type of the request (initial, update, termination)
CC-Sub-Session-Id	draft-ietf-aaa-diameter-cc-06.txt [8]	For GPRS each PDP context maps to a CC-Sub-Session-Id as specified in clause 6.
Charging-Information	3GPP TS 29.229 [16]	The Charging-Information AVP is of type Grouped, and contains the addresses of the charging functions in the following AVPs: • Primary-Event-Charging-Function-Name is of type DiameterURI and defines the address of the primary online charging system for the bearer. The absence of the protocol definition in the DiameterURI shall indicate the default protocol defined for the Gy interface. • Secondary-Event-Charging-Function-Name is of type DiameterURI and defines the address of the secondary online charging system for the bearer. The absence of the protocol definition in the DiameterURI shall indicate the default protocol defined for the Gy interface. • Primary-Charging-Collection-Function-Name is of type DiameterURI and defines the address of the primary offline charging system for the bearer. The absence of the protocol definition in the DiameterURI shall indicate the default protocol defined for the Gz interface. • Secondary-Charging-Collection-Function-Name is of type DiameterURI and defines the address of the secondary offline charging system for the bearer. The absence of the protocol definition in the DiameterURI shall indicate the default protocol defined for the Gz interface.
Flow-Description	3GPP TS 29.209 [10]	Defines the service flow filter parameters for a charging rule
Flows	3GPP TS 29.209 [10]	The flow identifiers of the IP flows related to a charging rule as provided by the AF. May be used in charging correlation together with AF-Charging-Identifier AVP.
Framed-IP-Address	draft-ietf-aaa-diameter-nasreq-17.txt [12]	The IPv4 address allocated for the user.
Framed-IPv6-Prefix	draft-ietf-aaa-diameter-nasreq-17.txt [12]	The IPv6 address prefix allocated for the user
Rating-Group	draft-ietf-aaa-diameter-cc-06.txt [8]	The charging key for the charging rule used for rating purposes
Service-Identifier	draft-ietf-aaa-diameter-cc-06.txt [8]	The identity of the service or service component the service data flow in a charging rule relates to.
Subscription-Id	draft-ietf-aaa-diameter-cc-06.txt [8]	The identification of the subscription (IMSI, MSISDN, etc)
User-Equipment-Info	draft-ietf-aaa-diameter-cc-06.txt [8]	The identification and capabilities of the terminal (IMEISV, etc.)
~~3GPP-RAT-Type~~	~~3GPP TS 29.061 [11]~~	~~Indicate which Radio Access Technology is currently serving the UE.~~

6 Gx Messages

Gx Messages are carried within the Diameter Application(s) described in the sub-clauses below. These Applications are defined as vendor specific Diameter applications, where the vendor is 3GPP. The vendor identifier assigned by IANA to 3GPP (http://www.iana.org/assignments/enterprise-numbers) is 10415.

The TPF and the CRF shall advertise the support of the 3GPP vendor specific Diameter Application for the Gx Application and/or the Gx over Gy Application by including the value of the appropriate application identifier(s) in the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands. The Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands are specified in the Diameter Base Protocol.

Existing Diameter command codes from the Diameter base protocol RFC 2588 [4] and the Diameter Credit Control Application (draft-ietf-aaa-diameter-cc-06.txt) [8] are used with the Gx specific AVPs specified in clause 5.2. The Diameter Credit Control Application AVPs and AVPs from other Diameter applications that are re-used are defined in clause 5.3.

In the GPRS case, the association between the PDP sessions and the Diameter Credit Control sessions shall be done in a one-to-one basis (i.e. 1 PDP session = 1 DCC session), and each PDP context (one primary and zero or more secondary PDP contexts) shall map to a Diameter sub-session (i.e. 1 PDP context = 1 DCC sub-session). The release of the last PDP Context shall be indicated by the release of the whole DCC session, whereas release of a single PDP Context, with others remaining, shall be indicated by the release of the sub-session corresponding to that PDP Context.

6.1 Gx Application

Gx reference point shall use Diameter Gx Application as described in this chapter when the CRF functionality is implemented in a standalone device. The Auth-Application-Id for the Gx Application is xxx as allocated by IANA.

Editor's note: The application id needs to be allocated from IANA.

A Gx Application specific Auth-Application-Id is used together with the command code to identify the Gx Application messages.

6.1.1 CC-Request (CCR) Command

The CCR command, indicated by the Command-Code field set to xxx (IETF suggested value 272) and the 'R' bit set in the Command Flags field, is sent by the TPF to the CRF in order to request charging rules for a bearer. The CCR command is also sent by the TPF to the CRF in order to indicate the termination of the bearer.

Message Format:

```
<CC-Request> ::= < Diameter Header: xxx (272), REQ, PXY >
                 < Session-Id >
                 { Auth-Application-Id }
                 { Origin-Host }
                 { Origin-Realm }
                 { Destination-Realm }
                 { CC-Request-Type }
                 { CC-Request-Number }
                 [ Destination-Host ]
                 [ CC-Sub-Session-Id ]
                 [ Origin-State-Id ]
                *[ Subscription-Id ]
                 [ Framed-IP-Address ]
                 [ Framed-IPv6-Prefix ]
                 [ 3GPP-RAT-Type ]
                 [ Termination-Cause ]
                 [ User-Equipment-Info ]
                 [ 3GPP-GPRS-Negotiated-QoS-Profile ]
                 [ 3GPP-SGSN-MCC-MNC ]
                 [ 3GPP-SGSN-Address ]
                 [ 3GPP-SGSN-IPv6-Address ]
```

```
                [ Called-Station-ID ]
                [ Bearer-Usage ]
               *[ TFT-Packet-Filter-Information ]
               *[ Proxy-Info ]
               *[ Route-Record ]
               *[ AVP ]
```

6.1.2 CC-Answer (CCA) Command

The CCA command, indicated by the Command-Code field set to xxx (IETF suggested value 272) and the 'R' bit cleared in the Command Flags field, is sent by the CRF to the TPF in response to the CCR command. It is used to provision charging rules and event triggers for the bearer. The primary and secondary CCF and/or primary and secondary OSC addresses may be included in the initial provisioning.

Message Format:

```
<CC-Answer> ::=  < Diameter Header: (272), PXY >
                 < Session-Id >
                 { Auth-Application-Id }
                 { Origin-Host }
                 { Origin-Realm }
                 [ Result-Code ]
                 [ Experimental-Result ]
                 { CC-Request-Type }
                 { CC-Request-Number }
                 [ CC-Sub-Session-Id ]
                *[ Event-Trigger ]
                 [ Origin-State-Id ]
                *[ Charging-Rule-Remove ]
                *[ Charging-Rule-Install ]
                 [ Primary-CCF-Address ]
                 [ Secondary-CCF-Address ]
                 [ Primary-OCS-Address ]
                 [ Secondary-OCS-Address ]
                 [ Charging-Information ]
                 [ Error-Message ]
                 [ Error-Reporting-Host ]
                *[ Failed-AVP ]
                *[ Proxy-Info ]
                *[ Route-Record ]
                *[ AVP ]
```

6.1.3 Re-Auth-Request (RAR) Command

The RAR command, indicated by the Command-Code field set to 258 and the 'R' bit set in the Command Flags field, is sent by the CRF to the TPF in order to initiate the provision of unsolicited charging rules for an existing bearer. The RAR command shall be followed by a CCR command from the TPF requesting charging rules for the bearer in question.

Message Format:

```
<RA-Request> ::= < Diameter Header: 258, REQ, PXY >
                 < Session-Id >
                 { Auth-Application-Id }
                 { Origin-Host }
                 { Origin-Realm }
                 { Destination-Realm }
                 { Destination-Host }
                 { Re-Auth-Request-Type }
                 [ CC-Sub-Session-Id ]
                 [ Origin-State-Id ]
                *[ Proxy-Info ]
                *[ Route-Record ]
                *[ AVP]
```

6.1.4 Re-Auth-Answer (RAA) Command

The RAA command, indicated by the Command-Code field set to 258 and the 'R' bit cleared in the Command Flags field, is sent by the TPF to the CRF in response to the RAR command.

Message Format:

```
<RA-Answer> ::=  < Diameter Header: 258, PXY >
                 < Session-Id >
                 { Auth-Application-Id }
                 { Origin-Host }
                 { Origin-Realm }
                 [ Result-Code ]
                 [ Experimental-Result ]
                 [ CC-Sub-Session-Id ]
                 [ Origin-State-Id ]
                 [ Error-Message ]
                 [ Error-Reporting-Host ]
                *[ Failed-AVP ]
                *[ Proxy-Info ]
                *[ AVP ]
```

6.2 Gx over Gy Application

The Gy protocol is specified as online charging application in in 3GPP TS 32.299 [9] and TS 32.251 [13]

The Gx over Gy Application allows to combine in a single message exchange (e.g. CCR-CCA) the Gx functionality of charging rule provisioning, and the Gy functionality of credit control for service data flow based online charging. This allows creating synergies and signalling savings in case the CRF and the OCS are collocated.

The Diameter Gx over Gy Application as described in this Clause should be used when the CRF functionality is co-located with the Online Charging System (OCS) and both are connected to the TPF via a single interface that comprises the Gx and Gy reference points. The Auth-Application-Id for the Gx over Gy Application is xxx as allocated by IANA.

Editor's note: The application id needs to be allocated from IANA.

A Gx over Gy Application specific Auth-Application-Id is used together with the command code to identify the Gx over Gy Application messages.

The Gx over Gy Application is based on the Diameter Credit Control Application. The Gx over Gy Application shall use Gx specific AVPs to fulfil the Gx specific requirements (charging rule provision) and, over the same message, Gy functionalities (credit authorization), as follows:

- When only charging rule provision is required the procedures and message content for Gx Application as specified in clause 6.1 shall apply.
- When only credit authorization is required the procedures and message content for Gy as specified as online charging application in 3GPP TS 32.299 [9] and TS 32.251 [13] shall apply.
- When credit authorization and charging rule provision are required simultaneously, these should be requested and provided with a single CCR-CCA message pair (e.g. credit authorization and request for charging rules). The AVPs defined in Gy interface to satisfy the credit authorization requirements and the Gx specific and Gx re-used AVPs shall be both included in the Diameter messages as needed. The common AVPs shall be included only once within the same message.

If during a Gx over Gy session, the Gy server indicates DIAMETER_CREDIT_CONTROL_NOT_APPLICABLE as defined in 3GPP TS 32.299 [9], then the session shall be maintained using the original Gx over Gy Application-id, i.e. shall not switch over to the Gx Application-id.

The Experimental-Result-Code AVP specific values of both the Gy protocol and Gx protocol apply for the Gx over Gy application.

All AVPs mandated for the Gx protocol or for the Gy protocol are also mandated for the Gx over Gy application.

Both the procedures defined for the Gx protocol and the procedures defined for the Gy protocol shall be applied for the Gx over Gy application as clarified in the subsequent Clause.

6.2.1 Simultaneous charging rule provision and credit authorization

When the CRF uses the charging rule install AVP to install new charging rule(s) or to activate predefined charging rule(s) at the TPF, the collocated OCS should simultaneously provide new quota for the related service data flows if they are online charged and no previously allocated quota are used. The OCS shall link the new service data flows

matching the new charging rules to allocated quota. Therefore, for predefined charging rules, that are activated by the CRF, the collocated OCS/CRF needs configured knowledge if they will be online charged and how they are rated.

For the predefined charging rules that are always active at the TPF and online charged, the TPF requests credit using normal Gy procedures. This request should be combined with the request for charging rules at bearer establishment.

If the TPF receives an reauthorization request message, it shall request both charging rules and credit re-authorization. The TPF should combine both requests in a single CC-request.

If during bearer modification both event and re-authorization triggers apply at the same time, the TPF shall request both charging rules and credit re-authorization. The TPF should combine both requests in a single CC-request.

3GPP TSG-CT WG3 Meeting #36 ***Tdoc ⌘ C3-050407***

Cancun, Mexico. 25th - 29th April 2005.

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.210** **CR** **010** ⌘ **rev** **1** ⌘ Current version: **6.1.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Various Corrections
Source:	⌘	Siemens
Work item code:	⌘	CH-FBC
Date:	⌘	18/04/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(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 one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	1. Wrong RFC referenced as Diameter base. 2. Gx and Gx over Gy application IDs allocated by IANA are available. See TS 29.230 V6.3.0. 3. In The Gy application, bearer specific AVPs are provided within the so-called Service-Information AVP, see TS 32.299. This also includes AVPs used on command-level for the Gx application.
Summary of change:	⌘	1. Reference corrected to RFC 3588 2. Application IDs added 3. AVPs included within the Gy Service-Information AVP do not need to be included once more on command level, as specified for the Gx application.
Consequences if not approved:	⌘	1. Incorrect reference 2. Missing application IDs and remaining editor´s note. 3. Duplicated AVP increase message size. Unclear how to handle contradicting values.

Clauses affected:	⌘	6, 6.1, 6.2

Other specs affected: ⌘	Y	N		
		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

6 Gx Messages

Gx Messages are carried within the Diameter Application(s) described in the sub-clauses below. These Applications are defined as vendor specific Diameter applications, where the vendor is 3GPP. The vendor identifier assigned by IANA to 3GPP (http://www.iana.org/assignments/enterprise-numbers) is 10415.

The TPF and the CRF shall advertise the support of the 3GPP vendor specific Diameter Application for the Gx Application and/or the Gx over Gy Application by including the value of the appropriate application identifier(s) in the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands. The Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands are specified in the Diameter Base Protocol.

Existing Diameter command codes from the Diameter base protocol RFC ~~2588~~ 3588 [4] and the Diameter Credit Control Application (draft-ietf-aaa-diameter-cc-06.txt) [8] are used with the Gx specific AVPs specified in clause 5.2. The Diameter Credit Control Application AVPs and AVPs from other Diameter applications that are re-used are defined in clause 5.3.

In the GPRS case, the association between the PDP sessions and the Diameter Credit Control sessions shall be done in a one-to-one basis (i.e. 1 PDP session = 1 DCC session), and each PDP context (one primary and zero or more secondary PDP contexts) shall map to a Diameter sub-session (i.e. 1 PDP context = 1 DCC sub-session). The release of the last PDP Context shall be indicated by the release of the whole DCC session, whereas release of a single PDP Context, with others remaining, shall be indicated by the release of the sub-session corresponding to that PDP Context.

6.1 Gx Application

Gx reference point shall use Diameter Gx Application as described in this chapter when the CRF functionality is implemented in a standalone device. The Auth-Application-Id for the Gx Application is 16777224 ~~xxx~~ as allocated by IANA.

~~Editor's note: The application id needs to be allocated from IANA.~~

A Gx Application specific Auth-Application-Id is used together with the command code to identify the Gx Application messages.

Next Modified Clause

6.2 Gx over Gy Application

The Gy protocol is specified as online charging application in in 3GPP TS 32.299 [9] and TS 32.251 [13]

The Gx over Gy Application allows to combine in a single message exchange (e.g. CCR-CCA) the Gx functionality of charging rule provisioning, and the Gy functionality of credit control for service data flow based online charging. This allows creating synergies and signalling savings in case the CRF and the OCS are collocated.

The Diameter Gx over Gy Application as described in this Clause should be used when the CRF functionality is co-located with the Online Charging System (OCS) and both are connected to the TPF via a single interface that comprises the Gx and Gy reference points. The Auth-Application-Id for the Gx over Gy Application is 16777225 ~~xxx~~ as allocated by IANA.

~~Editor's note: The application id needs to be allocated from IANA.~~

A Gx over Gy Application specific Auth-Application-Id is used together with the command code to identify the Gx over Gy Application messages.

The Gx over Gy Application is based on the Diameter Credit Control Application. The Gx over Gy Application shall use Gx specific AVPs to fulfil the Gx specific requirements (charging rule provision) and, over the same message, Gy functionalities (credit authorization), as follows:

- When only charging rule provision is required the procedures and message content for Gx Application as specified in clause 6.1 shall apply.
- When only credit authorization is required the procedures and message content for Gy as specified as online charging application in 3GPP TS 32.299 [9] and TS 32.251 [13] shall apply.
- When credit authorization and charging rule provision are required simultaneously, these should be requested and provided with a single CCR-CCA message pair (e.g. credit authorization and request for charging rules). The AVPs defined in Gy interface to satisfy the credit authorization requirements and the Gx specific and Gx re-used AVPs shall be both included in the Diameter messages as needed. The common AVPs shall be included only once within the same message. AVPs included within the Gy Service-Information AVP do not need to be included once more on command level, as specified for the Gx application.

If during a Gx over Gy session, the Gy server indicates DIAMETER_CREDIT_CONTROL_NOT_APPLICABLE as defined in 3GPP TS 32.299 [9], then the session shall be maintained using the original Gx over Gy Application-id, i.e. shall not switch over to the Gx Application-id.

The Experimental-Result-Code AVP specific values of both the Gy protocol and Gx protocol apply for the Gx over Gy application.

All AVPs mandated for the Gx protocol or for the Gy protocol are also mandated for the Gx over Gy application.

Both the procedures defined for the Gx protocol and the procedures defined for the Gy protocol shall be applied for the Gx over Gy application as clarified in the subsequent Clause.

3GPP TSG-CT WG3 Meeting #36
Cancun, Mexico. 25th - 29th April 2005.

Tdoc ⌘C3-050393

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.210** **CR** **013** ⌘**rev** **1** ⌘ Current version: **6.1.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Flow AVP only needed when ICID present
Source:	⌘	Nortel Networks, Vodafone
Work item code:	⌘	CH-FBC
Date:	⌘	29/04/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(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 one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	Flows AVP is not used for flow management, gating or anything in terms of GGSN session processing. Rather, Flows AVP in the Charging-Rule-Defintion is only used for inclusion in the GCDR along with ICID (AF-Charging-Identifier) when the GGSN supports Charging Rule level reporting. When there is per Rating-Group reporting over Gy (online) or Gz (Offline) there is little benefit of reporting ICID (AF-Charging-Identifier) and the Flow AVP For that, the inclusion of Flows AVP in the Charging-Rule-Defintion is made conditionally dependent on the inclusion of the ICID. I.e. if ICID is included then Flows AVP is included. Otherwise it's left out.
Summary of change:	⌘	The use of Flows AVP is made conditionally dependendent of the presence of AF-Charging-Identifier.
Consequences if not approved:	⌘	Not clear when Flows AVP should be included in the charging rule defintion. This information is of no use when there is rating group reporting. The Flows AVP need to be tied to the appropiate AF-Charging-Identifier

Clauses affected:	⌘	5.2.4, 5.3

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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

5.2.4 Charging-Rule-Definition AVP

The Charging-Rule-Definition AVP (AVP code 1003) is of type Grouped, and it defines the charging rule for a service flow sent by the CRF to the TPF. The Charging-Rule-Name AVP uniquely identifies the charging rule for a bearer and it is used to reference to a charging rule in communication between the TPF and the CRF. The Flow-Description AVP(s) determines the traffic that belongs to the service flow.

If optional AVP(s) within a Charging-Rule-Definition AVP are omitted, but corresponding information has been provided in previous Gx messages, the previous information remains valid. If Flow-Description AVP(s) are supplied, they replace all previous Flow-Description AVP(s). If Flows AVP(s) are supplied, they replace all previous Flows AVP(s)~~,~~.

Flows AVP may appear if and only if AF-Charging-Identifier AVP is also present.

AVP Format:

```
Charging-Rule-Definition ::= < AVP Header: 1003 >
                             { Charging-Rule-Name }
                             [ Service-Identifier ]
                             [ Rating-Group ]
                            *[ Flow-Description ]
                             [ Reporting-Level ]
                             [ Online ]
                             [ Offline ]
                             [ Metering-Method ]
                             [ Precedence ]
                             [ AF-Charging-Identifier ]
                            *[ Flows ]
                            *[ AVP ]
```

********** END OF FIRST MODIFIED SECTION **********

********** SECOND MODIFIED SECTION **********

5.3 Gx re-used AVPs

The table 5.3 lists the Diameter AVPs re-used by the Gx reference point from existing Diameter Applications, reference to their respective specifications and short description of their usage within the Gx reference point. Other AVPs from existing Diameter Applications, except for the AVPs from Diameter base protocol, do not need to be supported. The AVPs from Diameter base protocol are not included in table 5.3, but they are re-used for the Gx reference point. Where 3GPP Radius VSAs are re-used, they shall be translated to Diameter AVPs as described in draft-ietf-aaa-diameter-nasreq-17.txt [12] with the exception that the 'M' flag shall be set and the "P' flag may be set.

Table 5.3: Gx re-used Diameter AVPs

Attribute Name	Reference	Description
3GPP-GPRS-Negotiated-QoS-Profile	3GPP TS 29.061 [11]	For GPRS the QoS of the PDP context
3GPP-SGSN-Address	3GPP TS 29.061 [11]	For GPRS the IPv4 address of the SGSN
3GPP-SGSN-IPv6-Address	3GPP TS 29.061 [11]	For GPRS the IPv6 address of the SGSN
3GPP-SGSN-MCC-MNC	3GPP TS 29.061 [11]	For GPRS the MCC and the MNC of the SGSN
AF-Charging-Identifier	3GPP TS 29.209 [10]	The AF charging identifier that may be used in charging correlation. For IMS the ICID. This AVP may only be included when CHARGING_RULE_LEVEL reporting is being used.
Called-Station-ID	draft-ietf-aaa-diameter-nasreq-17.txt [12]	The address the user is connected to. For GPRS the APN.
CC-Request-Number	draft-ietf-aaa-diameter-cc-06.txt [8]	The number of the request for mapping requests and answers
CC-Request-Type	draft-ietf-aaa-diameter-cc-06.txt [8]	The type of the request (initial, update, termination)
CC-Sub-Session-Id	draft-ietf-aaa-diameter-cc-06.txt [8]	For GPRS each PDP context maps to a CC-Sub-Session-Id as specified in clause 6.
Flow-Description	3GPP TS 29.209 [10]	Defines the service flow filter parameters for a charging rule
Flows	3GPP TS 29.209 [10]	The flow identifiers of the IP flows related to a charging rule as provided by the AF. May be only used in charging correlation together with AF-Charging-Identifier AVP.
Framed-IP-Address	draft-ietf-aaa-diameter-nasreq-17.txt [12]	The IPv4 address allocated for the user.
Framed-IPv6-Prefix	draft-ietf-aaa-diameter-nasreq-17.txt [12]	The IPv6 address prefix allocated for the user
Rating-Group	draft-ietf-aaa-diameter-cc-06.txt [8]	The charging key for the charging rule used for rating purposes
Service-Identifier	draft-ietf-aaa-diameter-cc-06.txt [8]	The identity of the service or service component the service data flow in a charging rule relates to.
Subscription-Id	draft-ietf-aaa-diameter-cc-06.txt [8]	The identification of the subscription (IMSI, MSISDN, etc)
User-Equipment-Info	draft-ietf-aaa-diameter-cc-06.txt [8]	The identification and capabilities of the terminal (IMEISV, etc.)
3GPP-RAT-Type	3GPP TS 29.061 [11]	Indicate which Radio Access Technology is currently serving the UE.

********** END OF SECOND MODIFIED SECTION **********

3GPP TSG-CT WG3 Meeting #36
Cancun, Mexico. 25th - 29th April 2005.

Tdoc C3-050313

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.210** **CR** **017** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of reference
Source:	⌘	Ericsson
Work item code:	⌘	CH-FBC
Date:	⌘	29/04/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(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 one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	Diameter base protocol referenced by wrong RFC number
Summary of change:	⌘	Reference to RFC 3588 introduced
Consequences if not approved:	⌘	Misleading reference

Clauses affected:	⌘	6			
Other specs affected:	⌘	**Y**	**N**		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6 Gx Messages

Gx Messages are carried within the Diameter Application(s) described in the sub-clauses below. These Applications are defined as vendor specific Diameter applications, where the vendor is 3GPP. The vendor identifier assigned by IANA to 3GPP (http://www.iana.org/assignments/enterprise-numbers) is 10415.

The TPF and the CRF shall advertise the support of the 3GPP vendor specific Diameter Application for the Gx Application and/or the Gx over Gy Application by including the value of the appropriate application identifier(s) in the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands. The Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands are specified in the Diameter Base Protocol.

Existing Diameter command codes from the Diameter base protocol RFC 3~~2~~588 [4] and the Diameter Credit Control Application (draft-ietf-aaa-diameter-cc-06.txt) [8] are used with the Gx specific AVPs specified in clause 5.2. The Diameter Credit Control Application AVPs and AVPs from other Diameter applications that are re-used are defined in clause 5.3.

In the GPRS case, the association between the PDP sessions and the Diameter Credit Control sessions shall be done in a one-to-one basis (i.e. 1 PDP session = 1 DCC session), and each PDP context (one primary and zero or more secondary PDP contexts) shall map to a Diameter sub-session (i.e. 1 PDP context = 1 DCC sub-session). The release of the last PDP Context shall be indicated by the release of the whole DCC session, whereas release of a single PDP Context, with others remaining, shall be indicated by the release of the sub-session corresponding to that PDP Context.

3GPP TSG-CT WG3 Meeting #36
Cancun, Mexico. 25th - 29th April 2005.

C3-050428

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.210** **CR** **015** ⌘**rev** **2** ⌘ Current version: **6.1.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Removal of DCC sub-sessions
Source:	⌘	Vodafone, Nortel Networks, Siemens, Orange
Work item code:	⌘	CH-FBC
Date:	⌘	29/04/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(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 one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	Gy Application has not introduced the use of subsessions, therefore in order to achieve a correct work of the Gx over Gy Application the use of subsessions needs to be restricted in this Application
Summary of change:	⌘	The concept of mapping of PDP contexts into DCC sub-sessions is removed in Gx over Gy Application in order to align TS 29.210 with what has been agreed for Gy/Ro.
Consequences if not approved:	⌘	Misalignment of Gx over Gy application with Gy/Ro.

Clauses affected:	⌘	6.2, 6.2.1

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

********** FIRST MODIFICATION **********

6.2 Gx over Gy Application

The Gy protocol is specified as online charging application in in 3GPP TS 32.299 [9] and TS 32.251 [13]

The Gx over Gy Application allows to combine in a single message exchange (e.g. CCR-CCA) the Gx functionality of charging rule provisioning, and the Gy functionality of credit control for service data flow based online charging. This allows creating synergies and signalling savings in case the CRF and the OCS are collocated.

The Diameter Gx over Gy Application as described in this Clause should be used when the CRF functionality is co-located with the Online Charging System (OCS) and both are connected to the TPF via a single interface that comprises the Gx and Gy reference points. The Auth-Application-Id for the Gx over Gy Application is xxx as allocated by IANA.

Editor's note: The application id needs to be allocated from IANA.

A Gx over Gy Application specific Auth-Application-Id is used together with the command code to identify the Gx over Gy Application messages.

The Gx over Gy Application is based on the Diameter Credit Control Application.

For the Gx over Gy Application the association between the bearers and the Diameter Credit Control sessions shall be done in a one-to-one basis. In the GPRS case, each PDP context (either primary or secondary) shall map to a Diameter session. The release of a PDP Context shall be indicated by the release of the related DCC session.

NOTE: Note that in the Gx Application DCC sub-sessions are used, however in the Gx over Gy Application only DCC sessions are used in alignment with the Gy online charging Application.

The Gx over Gy Application shall use Gx specific AVPs to fulfil the Gx specific requirements (charging rule provision) and, over the same message, Gy functionalities (credit authorization), as follows:

- When only charging rule provision is required the procedures and message content for Gx Application as specified in clause 6.1 shall apply, except for the use of DCC subsession.
- When only credit authorization is required the procedures and message content for Gy as specified as online charging application in 3GPP TS 32.299 [9] and TS 32.251 [13] shall apply.
- When credit authorization and charging rule provision are required simultaneously, these should be requested and provided with a single CCR-CCA message pair (e.g. credit authorization and request for charging rules). The AVPs defined in Gy interface to satisfy the credit authorization requirements and the Gx specific and Gx re-used AVPs shall be both included in the Diameter messages as needed. The common AVPs shall be included only once within the same message. DCC sub-sessions shall not be used.

If during a Gx over Gy session, the Gy server indicates DIAMETER_CREDIT_CONTROL_NOT_APPLICABLE as defined in 3GPP TS 32.299 [9], then the session shall be maintained using the original Gx over Gy Application-id, i.e. shall not switch over to the Gx Application-id.

The Experimental-Result-Code AVP specific values of both the Gy protocol and Gx protocol apply for the Gx over Gy application.

All AVPs mandated for the Gx protocol or for the Gy protocol are also mandated for the Gx over Gy application.

Both the procedures defined for the Gx protocol and the procedures defined for the Gy protocol shall be applied for the Gx over Gy application as clarified in the subsequent Clause.

6.2.1 Simultaneous charging rule provision and credit authorization

When the CRF uses the charging rule install AVP to install new charging rule(s) or to activate predefined charging rule(s) at the TPF, the collocated OCS should simultaneously provide new quota for the related service data flows if they are online charged and no previously allocated quota are used. The OCS shall link the new service data flows

matching the new charging rules to allocated quota. Therefore, for predefined charging rules, that are activated by the CRF, the collocated OCS/CRF needs configured knowledge if they will be online charged and how they are rated.

For the predefined charging rules that are always active at the TPF and online charged, the TPF requests credit using normal Gy procedures. This request should be combined with the request for charging rules at bearer establishment.

If the TPF receives an reauthorization request message, it shall request both charging rules and credit re-authorization. The TPF should combine both requests in a single CC-request.

If during bearer modification both event and re-authorization triggers apply at the same time, the TPF shall request both charging rules and credit re-authorization. The TPF should combine both requests in a single CC-request.

The CC-Sub-Session-Id AVP shall not be used in the Gx over Gy Application as DCC subsessions are not used in this Application as indicated in this specification, clause 6.2, and in the Gy online charging Application 3GPP TS 32.299 [9] and TS 32.251 [13].

********** END OF LAST MODIFICATION **********