3GPP TSG CT Meeting #28 **CP-050227**
1st – 3rd June 2005. Quebec, CANADA.

Title:	**[DRAFT]** LS on **Common solution regarding the use of DCC sub-sessions or DCC sessions for both of the applications Gx and Gx over Gy**
Response to:	
Release:	Release 6
Work Item:	Flow Based Charging
Source:	3GPP TSG-CT
To:	3GPP TSG-SA
Cc:	

Contact Person:

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Attachments: C3-050428 CR approved at CT#28
CP-050226 extension form

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1. Overall Description:

TS 29.210 specifies the Gx interface for Flow Based Charging. The Gx Application may run stand alone or together with Gy (Gx over Gy Application). The Gx Application uses Diameter Credit Control (DCC) sub-sessions, whereas the Gx over Gy Application uses only DCC sessions in alignment with the Gy online charging Application. This requires the GGSN to provide different implementations depending on how Gx is used.

Although CT3 #36 agreed on a solution that fulfils the stage 2 requirements for Gx as explained above, see CP-050045 (C3-050428) and approved by CT Plenary #28, some companies in the CT plenary challenged the solution and requested further study to be done by CT3 and SA5 SWG B.

2. Actions:

To TSG-SA group.

ACTION: TSG-CT asks TSG-SA to determine whether agreed CT3 solution in CP-050045 (C3-050428) and approved by CT Plenary #28 should remain as the final Rel-6 solution, or that CT3 and SA5 SWG B should further study the possibility of arriving to a common solution applicable for both the Gx Application and the Gx over Gy Application.

TSG-SA is kindly asked to approve the extension form in CP-050226, if latter is decided.

3. Date of Next TSG-CT Meetings:

TSG-CT Meeting #29	21st – 23rd September 2005	Tallinn, ESTONIA.
TSG-CT Meeting #30	30th Nov – 02nd Dec 2005	MALTA

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 **********

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Release 6 Submission form

Feature / Item:		**Gx Protocol for Flow Based Charging**			
Affects:	**UE/MS: No**	**CN: Yes**	**UTRAN: No**	**GERAN: No**	**Compatibility Yes: x No: Issues:**
Expected Completion Date:		**September 2005**			
Services impacted:		**Flow Based Charging.**			
Specifications affected:		**TS 29.210**			
Tasks within work which are not complete:		**Common solution regarding the use of DCC sub-sessions or DCC sessions for both of the applications Gx and Gx over Gy.**			
Consequences if not included in Release 6:		**Two different GGSN implementations.**			
Accepted by TSG# 28 for late inclusion in Release 6:					

Abstract of document:

TS 29.210 specifies the Gx interface for Flow Based Charging. The Gx Application may run stand alone or together with Gy (Gx over Gy Application). The Gx Application uses Diameter Credit Control (DCC) sub-sessions, whereas the Gx over Gy Application uses only DCC sessions in alignment with the Gy online charging Application. This requires the GGSN to provide different implementations depending on how Gx is used.

Contentious Issues:

CT3 has specified for the Gx interface the use of DCC sub-sessions. When combining Gx and Gy interfaces it became clear that this is not applicable for Gx over Gy because Gy does not use DCC sub-sessions, but uses DCC sessions only. Gy is in the responsibility of SA5 SWG B. Therefore, CT3 #36 agreed to remove the sub-sessions for Gx over Gy option, see approved CR in CP-050045 (C3-050428).