Tdoc NP-010354

3GPP TSG CN Plenary Meeting #12 Stockholm, Sweden, 13th - 15th June 2001

Source:NokiaTitle:CRs on R99 Work Item "CAMEL3"Agenda item:7.2Document for:APPROVAL

Introduction:

This document contains 4 CRs on R99 and Rel-4 Work Item "CAMEL3", that have not been agreed by TSG CN WG2, but sent directly to TSG CN Plenary meeting #12 for approval.

Spec	CR	Rev	Doc-2nd-	Phase	Subject	Cat	Ver_C
23.078	306	1		R99	Correction for the CAMEL3 ACR-GPRS parameter range problem (roll-over)	F	3.8.0
29.078	187	1		R99	Correction for the CAMEL3 ACR-GPRS parameter range problem (roll-over)	F	3.7.0
23.078	307	1		Rel-4	Correction for the CAMEL3 ACR-GPRS parameter range problem (roll-over)	Α	4.0.0
29.078	188	1		Rel-4	Correction for the CAMEL3 ACR-GPRS parameter range problem (roll-over)	Α	4.0.0

	CHANGE REQUEST	CR-Form-v3
¥	29.078 CR 187 [#] rev 1 [#] C	urrent version: 3.7.0 #
Proposed change a	ffects: # (U)SIM ME/UE Radio Acce	ss Network Core Network x
Title: अ	Correction for the CAMEL3 ACR-GPRS parameter	range problem (roll-over)
Source: ೫	Nokia	
Work item code: %	CAMEL3	Date:
Category: ж	F (essential correction)	elease:
	 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. 	ese limits are regarded as very extend over 24 hours and the text may exceed 4Gbytes. Context may overflow within a tion parameters report cumulative
	The present CR present a simple and reliable prepert duration in excess of 24 hour and a cum Gbyte.	
Summary of change	e: # The rollover counters are introduced.	
Consequences if not approved:	CAMEL3 GPRS pre-paid will not work in a relia paid is the key feature of CAMEL3, this is very	
Clauses affected:	ж	
Other specs affected:	X Other core specifications X 23.078-CF Test specifications O&M Specifications	२३०६
Other comments:	¥	

5 Common CAP Types

5.1 Data types

• • •	
maxTransferredVolume	::= CHOICE { [0] INTEGER (14294967295), [1] INTEGER (186400)
<pre>} maxTransferredVolume is measured maxElapsedTime is measured in se</pre>	
ChargingResult transferredVolume elapsedTime }	::= CHOICE { [0] TransferredVolume, [1] ElapsedTime
ChargingRollOver transferredVolumeRollOver elapsedTimeRollOver	::= CHOICE { [0] TransferredVolumeRollOver, [1] ElapsedTimeRollOver
a roll-over has occurred in one of elapsedTimeRollOver shall be reported.	be reported if ApplyChargingReportGPRS reports volume and or more volume counters. Otherwise, it shall be absent. orted if ApplyChargingReportGPRS reports duration and or more duration counters. Otherwise, it shall be absent.
timeGPRSIfTariffSwitch [1] timeGPRSSinceLastTariffSwitc	::= CHOICE { INTEGER (086400), SEQUENCE { ch [0] INTEGER (086400), 1 [1] INTEGER (086400) OPTIONAL
} timeGPRSIfNoTariffSwitch is meas timeGPRSSinceLastTariffSwitch ar	sured in seconds nd timeGPRSTariffSwitchInterval are measured in seconds
<pre>- rO-tTimeGPRSIfNoTariffSwitch, rC rO-tTimeGPRSTariffSwitchInterval</pre>	<u>O-tTimeGPRSSinceLastTariffSwitch and</u> <u>1</u> number of parameter range rollovers.
chargingResult qualityOfService active pDPID 	<pre>::= SEQUENCE { [0] ChargingResult, [1] QualityOfService OPTIONAL, [2] BOOLEAN DEFAULT TRUE, [3] PDPID OPTIONAL, [4] ChargingRollOver OPTIONAL</pre>
TransferredVolume volumeIfNoTariffSwitch [0] volumeIfTariffSwitch [1] SEQUENC volumeSinceLastTariffSwitch volumeTariffSwitchInterval }	
}	inceLastTariffSwitch and volumeTariffSwitchInterval
TransferredVolumeRollOver <u>rO-+VolumeIfNoTariffSwitch</u> rO-+VolumeIfTariffSwitch	::= CHOICE { [0] INTEGER (01 255), [1] SEQUENCE {
<pre></pre>	

-- rO-+VolumeIfNoTariffSwitch, rO-+VolumeSinceLastTariffSwitch and rO-+VolumeTariffSwitchInterval -- present counters indicating the number of parameter range rollovers.

**** NEXT MODIFIED SECTION ****

11.6 ApplyChargingReportGPRS procedure

11.6.1 General description

This operation is used by the gprsSSF to report charging related information to the gsmSCF as requested by the gsmSCF using the ApplyChargingGPRS operation.

Timing of duration and measuring of transferred data (if applicable) shall be started when either an Attach event, PDP context activation acknowledgement or an Inter SGSN routeing area update acceptance is detected by the gprsSSF.

A report shall be made either when a PDP context deactivation, Detach event or Change in QoS is detected by the gprsSSF or when the gprsSSF detects that the transferred volume or elapsed time duration indicated in parameter transferredVolume or elapsedTime (received in ApplyChargingGPRS operation) has been reached. That sending of ApplyChargingReportGPRS shall only be made on chargeable QoS changes.

11.6.1.1 Parameters

- chargingResult:

This parameter provides the SCF with the charging related information previously requested using the ApplyChargingGPRS operation. The "ChargingResult" is a choice, and can contain either of the following parameters:

- transferredVolume: This is a choice of the following parameters:
 - volumeIfNoTariffSwitch:

This parameter will be present if no tariff switch has occurred for the PDP context, otherwise it will be absent. If present, then the volume transferred since the detection of the event that triggered volume count will be reported.

- volumeIfTariffSwitch:

This parameter will be present if a tariff switch has occurred for the PDP context, otherwise it will be absent. If present then the parameter may contain the following information:

- volumeSinceLastTariffSwitch:

The volume since the detection of the event that triggered volume count or the last tariffSwitch (whichever of these events was last detected) is reported.

- VolumeTariffSwitchInterval:

This parameter is present only if a tariff switch was detected after the event that triggered volume count for the PDP context in the current volume count period. If present, the volume between either the detection the event that triggered volume count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch is reported.

- elapsedTime:

This is a choice of the following parameters:

- timeGPRSIfNoTariffSwitch:

This parameter will be present if no tariff switch has occurred for the session or the PDP context, otherwise it will be absent. If present then the elapsed time since the detection of the event that triggered time count will be reported.

- timeGPRSIfTariffSwitch:

This parameter will be present if a tariff switch has occurred for the session or the PDP context, otherwise it will be absent. If present then the parameter may contain the following information:

- timeGPRSSinceLastTariffSwitch:

The time since the event that triggered time count or the last tariffSwitch is reported.

- timeGPRSTariffSwitchInterval:

This parameter is present only if a tariff switch was detected after the event that triggered time count for the session or PDP context in the current time count period. If present, the time between either the detection the event that triggered time count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch is reported.

- qualityOfService:

This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN. This parameter is only present when the sending of Apply Charging Report GPRS operation was triggered by a change in Quality of Service.

- active:

This parameter indicates whether the GPRS session or PDP context is still active

- pDPID:

This parameter, if present, identifies the PDP Context, within the Session dialogue, for which the charging report is valid.

- chargingRollOver:

This parameter indicates the possible rollovers of the "ChargingResult" parameter due to the limited parameter value ranges of the ASN.1 parameters. The "chargingRollOver" parameter is a choice, and can contain either of the following parameters:

transferredVolumeRollOver:

This is a choice of the following parameters:

- rO-V+olumeIfNoTariffSwitch:

This parameter indicates how many times the volumeIfNoTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, the parameter shallmay be absent.

rO-vVolumeIfTariffSwitch:

The parameter is present if at least one of the subparameters below is present. If present then the parameter may contain the following information:

- rO-+VolumeSinceLastTariffSwitch:

This parameter indicates how many times the volumeSinceLastTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, the parameter shallmay be absent.

- rO-VolumeTariffSwitchInterval:

This parameter indicates how many times the VolumeTariffSwitchInterval parameter of the chargingResult has rolled over. If no rollover has happened, the parameter shallmay be absent.

- elapsedTimeRollOver:

This is a choice of the following parameters:

- rO-tTimeGPRSIfNoTariffSwitch:

This parameter indicates how many times the timeGPRSIfNoTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, the parameter shallmay be absent.

- rO-tTimeGPRSIfTariffSwitch:

The parameter is present if at least one of the subparameters below is present. If present then the parameter may contain the following information:

- rO-tTimeGPRSSinceLastTariffSwitch:

This parameter indicates how many times the timeGPRSSinceLastTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, the parameter shallmay be absent.

- rO-tTimeGPRSTariffSwitchInterval:

This parameter indicates how many times the timeGPRSTariffSwitchInterval parameter of the chargingResult has rolled over. If no rollover has happened, the parameter shallmay be absent.

11.6.2 Invoking entity (gprsSSF)

11.6.2.1 Normal procedure

gprsSSF preconditions:

- (1) A relationship exists between the gsmSCF and the GPRS Session or PDP Context.
- (2) A charging event has been detected that was requested by the gsmSCF via an ApplyChargingGPRS operation

gprsSSF postconditions:

(1)If termination of the GPRS session or a PDP context has occurred:

- If there are any outstanding EDPs or pending reports then the gprsSSF shall remain in the same state, else
- If there are no outstanding EDPs or pending reports, then the gprsSSF shall transit to state 'Idle'.

11.6.2.2 Error handling

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

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															[
Proposed change	affec	ts: #	(U)S	IM	ME	/UE		Radi	io Ac	cess l	Networ	·k	Core	Net	work <mark>x</mark>
Title:	f Co	rrection	<mark>n for the</mark>	CAMEI	L3 AC	R-GF	RS	para	amete	er rang	ge prot	olem	(roll-ove	er)	
Source:	€ <mark>No</mark>	kia													
Work item code: a	€ <mark>CA</mark>	MEL3								Ľ	Date: #	3 Ju	<mark>ne 13th,</mark>	200	1
Category:	€ <mark>A</mark>									Rele	ase: #	Re Re	el-4		
Reason for chang	Deta be fo	F (corr A (corr B (Add C (Fur D (Edi iled exp bund in At pr	rection) respond dition of nctional i torial mo blanatior 3GPP T esent, t		rrection ion of t n) above y Cha	n in an feature catego rging	e) ories <mark>Rep</mark>	s can	GPR	e) I I I S CAF	2 R96 R97 R98 R99 REL-4 REL-5	(GSI (Rela (Rela (Rela (Rela (Rela		2) 96) 97) 98) 99)	ing limit
		restri amou At 30 singl Since value curre	ictive. T unt of d 3 400kt e day e the Ap es from ent para present rt durati	nd 4 Gb he durat ata trans pit/s, the oply Cha the very meter ra CR pres on in ex	tion of sferred volum beging begin anges sent a	f a PD d thro ne cou Repo nning do no	P C ugh unte ort G of th of su	Conte a PI er for PRS he es uffice	ext m DP C a PE ope stabli	ay ext ontext OP Co eration ishme	end ov t may e ntext m param nt of a	ver 24 excee hay or heters PDP that a	4 hours ed 4Gby verflow s report Contex allows t	and rtes. with cum t, the	the in a ulative e
Summary of chan	ge: Ж	The	rollover	counter	s are	<mark>introd</mark>	<mark>uce</mark>	d.							
Consequences if not approved:	Ħ			PRS pre- ey featu										RS	ore-
Clauses affected:	ж														
Other specs affected:		Τe	est spec	e specifi cification cification	s	าร	ж	23.	.078-	-CR30	7				
Other comments:	ж														

5 Common CAP Types

5.1 Data types

	CE { SER (14294967295), SER (186400)
maxTransferredVolume is measured in number maxElapsedTime is measured in seconds	er of bytes
ChargingResult ::= CHOIO transferredVolume [0] Trans elapsedTime [1] Elaps }	CE { sferredVolume, sedTime
ChargingRollOver ::= CHOId transferredVolumeRollOver [0] Trans elapsedTimeRollOver [1] Elaps }	sferredVolumeRollOver, sedTimeRollOver
a roll-over has occurred in one or more vo elapsedTimeRollOver shall be reported if i	ed if ApplyChargingReportGPRS reports volume and olume counters. Otherwise, it shall be absent. ApplyChargingReportGPRS reports duration and uration counters. Otherwise, it shall be absent.
<pre>ElapsedTime ::= CHOId timeGPRSIfNoTariffSwitch [0] INTEGER timeGPRSIfTariffSwitch [1] SEQUENCE timeGPRSSinceLastTariffSwitch [0] f timeGPRSTariffSwitchInterval [1] f }</pre>	(086400), { INTEGER (086400),
<pre> timeGPRSIfNoTariffSwitch is measured in a timeGPRSSinceLastTariffSwitch and timeGPD</pre>	seconds RSTariffSwitchInterval are measured in seconds
ElapsedTimeRollOver rO-TimeGPRSIfNoTariffSwitch [0] INTEGER rO-TimeGPRSIfTariffSwitch [1] SEQUI rO-TimeGPRSSinceLastTariffSwitch rO-TimeGPRSTariffSwitchInterval [1] : } - rO-TimeGPRSIfNoTariffSwitch, rO-TimeGPRS: - rO-TimeGPRSTariffSwitchInterval - present counters indicating the number of	(0255), ENCE { [0] INTEGER (0255) OPTIONAL, INTEGER (0255) OPTIONAL SinceLastTariffSwitch and
active [2] BOOL pDPID [3] PDPI	yingResult, ityOfService OPTIONAL, EAN DEFAULT TRUE,
<pre>volumeIfTariffSwitch [1] SEQUENCE { volumeSinceLastTariffSwitch [0] :</pre>	CE { (04294967295), INTEGER (04294967295), INTEGER (04294967295) OPTIONAL
	ariffSwitch and volumeTariffSwitchInterval
r0-VolumeIfNoTariffSwitch [0] INTEG r0-VolumeIfTariffSwitch [1] SEQUED r0-VolumeSinceLastTariffSwitch	

**** NEXT MODIFIED SECTION ****

11.6 ApplyChargingReportGPRS procedure

11.6.1 General description

This operation is used by the gprsSSF to report charging related information to the gsmSCF as requested by the gsmSCF using the ApplyChargingGPRS operation.

Timing of duration and measuring of transferred data (if applicable) shall be started when either an Attach event, PDP context activation acknowledgement or an Inter SGSN routeing area update acceptance is detected by the gprsSSF.

A report shall be made either when a PDP context deactivation, Detach event or Change in QoS is detected by the gprsSSF or when the gprsSSF detects that the transferred volume or elapsed time duration indicated in parameter transferredVolume or elapsedTime (received in ApplyChargingGPRS operation) has been reached. That sending of ApplyChargingReportGPRS shall only be made on chargeable QoS changes.

11.6.1.1 Parameters

- chargingResult:

This parameter provides the SCF with the charging related information previously requested using the ApplyChargingGPRS operation. The "ChargingResult" is a choice, and can contain either of the following parameters:

- transferredVolume: This is a choice of the following parameters:
 - volumeIfNoTariffSwitch:

This parameter will be present if no tariff switch has occurred for the PDP context, otherwise it will be absent. If present, then the volume transferred since the detection of the event that triggered volume count will be reported.

- volumeIfTariffSwitch:

This parameter will be present if a tariff switch has occurred for the PDP context, otherwise it will be absent. If present then the parameter may contain the following information:

- volumeSinceLastTariffSwitch:

The volume since the detection of the event that triggered volume count or the last tariffSwitch (whichever of these events was last detected) is reported.

- VolumeTariffSwitchInterval:

This parameter is present only if a tariff switch was detected after the event that triggered volume count for the PDP context in the current volume count period. If present, the volume between either the detection the event that triggered volume count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch is reported.

- elapsedTime:

This is a choice of the following parameters:

- timeGPRSIfNoTariffSwitch:

This parameter will be present if no tariff switch has occurred for the session or the PDP context, otherwise it will be absent. If present then the elapsed time since the detection of the event that triggered time count will be reported.

- timeGPRSIfTariffSwitch:

This parameter will be present if a tariff switch has occurred for the session or the PDP context, otherwise it will be absent. If present then the parameter may contain the following information:

- timeGPRSSinceLastTariffSwitch:

The time since the event that triggered time count or the last tariffSwitch is reported.

- timeGPRSTariffSwitchInterval:

This parameter is present only if a tariff switch was detected after the event that triggered time count for the session or PDP context in the current time count period. If present, the time between either the detection the event that triggered time count or the previous tariff switch (whichever of these events was last detected) and the last tariff switch is reported.

- qualityOfService:

This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN. This parameter is only present when the sending of Apply Charging Report GPRS operation was triggered by a change in Quality of Service.

- active:

This parameter indicates whether the GPRS session or PDP context is still active

- pDPID:

This parameter, if present, identifies the PDP Context, within the Session dialogue, for which the charging report is valid.

- chargingRollOver:

This parameter indicates possible rollovers of the "ChargingResult" parameter due to the limited value ranges of the parameters. The "chargingRollOver" parameter is a choice, and can contain either of the following parameters:

- transferredVolumeRollOver: This is a choice of the following parameters:
 - rO-VolumeIfNoTariffSwitch:

This parameter indicates how many times the volumeIfNoTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, the parameter may be absent.

rO-VolumeIfTariffSwitch:

The parameter is present if at least one of the subparameters below is present. If present then the parameter may contain the following information:

- rO-VolumeSinceLastTariffSwitch:

This parameter indicates how many times the volumeSinceLastTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, the parameter may be absent.

- rO-VolumeTariffSwitchInterval:

This parameter indicates how many times the VolumeTariffSwitchInterval parameter of the chargingResult has rolled over. If no rollover has happened, the parameter may be absent.

- elapsedTimeRollOver:

This is a choice of the following parameters:

- rO-TimeGPRSIfNoTariffSwitch:

This parameter indicates how many times the timeGPRSIfNoTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, the parameter may be absent.

- rO-TimeGPRSIfTariffSwitch:

The parameter is present if at least one of the subparameters below is present. If present then the parameter may contain the following information:

- rO-TimeGPRSSinceLastTariffSwitch:

This parameter indicates how many times the timeGPRSSinceLastTariffSwitch parameter of the chargingResult has rolled over. If no rollover has happened, the parameter may be absent.

- rO-TimeGPRSTariffSwitchInterval:

This parameter indicates how many times the timeGPRSTariffSwitchInterval parameter of the chargingResult has rolled over. If no rollover has happened, the parameter may be absent.

11.6.2 Invoking entity (gprsSSF)

11.6.2.1 Normal procedure

gprsSSF preconditions:

- (1) A relationship exists between the gsmSCF and the GPRS Session or PDP Context.
- (2) A charging event has been detected that was requested by the gsmSCF via an ApplyChargingGPRS operation

gprsSSF postconditions:

(1)If termination of the GPRS session or a PDP context has occurred:

- If there are any outstanding EDPs or pending reports then the gprsSSF shall remain in the same state, else
- If there are no outstanding EDPs or pending reports, then the gprsSSF shall transit to state 'Idle'.

11.6.2.2 Error handling

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

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	CHANGE REQUEST	CR-Form-v3
^ж 2	3.078 CR 306 [♯] rev 1 [♯] Cu	rrent version: 3.8.0 ¥
Proposed change affe	ects: # (U)SIM ME/UE Radio Access	s Network Core Network X
Title: ೫ C	Correction for the CAMEL3 ACR-GPRS parameter ra	nge problem (roll-over)
Source: ^{# N}	lokia	
Work item code: # C	CAMEL3	Date: # June 13 th , 2001
Category: % F	(essential correction) Re	lease: # R99
De	 a <u>one</u> of the following categories: U F (correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification) etailed explanations of the above categories can found in 3GPP TR 21.900. 	lse <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: 3	of 24 hour and 4 Gbytes for a PDP Context. The restrictive. The duration of a PDP Context may e amount of data transferred through a PDP Context At 3G 400kbit/s, the volume counter for a PDP C single day	ese limits are regarded as very extend over 24 hours and the ext may exceed 4Gbytes. Context may overflow within a
	Since the Apply Charging Report GPRS operation values from the very beginning of the establishm current parameter ranges do not suffice.	
	The present CR present a simple and reliable pa report duration in excess of 24 hour and a cumul Gbyte.	
Summary of change:	Herollover counters are introduced.	
Consequences if solution of approved:	CAMEL3 GPRS pre-paid will not work in a reliab paid is the key feature of CAMEL3, this is very in	
Clauses affected:	¥	
Other specs affected:	XOther core specifications%29.078-CRTest specifications0&M Specifications	187
Other comments:	×	

6.6 Description of information flows

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6.6.1 gprsSSF to gsmSCF Information Flows

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6.6.1.2 Apply Charging Report GPRS

6.6.1.2.1 Description

This IF is used by the gprsSSF to report to the gsmSCF the information requested in the Apply Charging GPRS IF. In addition, this IF is used to notify the gsmSCF of user initiated change in QoS. Note that there are several possible QoS profiles defined by the combinations of the different QoS attributes as defined in 3GPP TS 23.060 [11]. A PLMN may only support and charge on a limited subset of those QoS. It is recommended that changes in QoS are only reported in Apply Charging Report GPRS for those QoS profiles.

6.6.1.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description					
Gprs Reference Number	С	This IE consists of a number assigned by the gprsSSF and a number assigned by the gsmSCF. It is used for TCAP dialogue segmentation. Refer to 3GPP TS 29.078 [5] for the usage of this element.					
Charging Result	М	This IE contains the charging information for the PDP provided by the gsmSSF. It is a choice between elapsed time and data volume.					
Quality of Service	С	This IE is described in the table below.					
Active	М	This IE indicates if the GPRS session or PDP context is still establish or if it has been detached or deactivated.					
PDP ID	С	This IE identifies the PDP context which the Apply Charging Report is applicable for. If not present the dialogue corresponds to the GPRS session or to one single PDP context.					
Charging Roll Over	<u>C</u>	Motion Motion Motion Note: The is possible that early first-implementations of the gprsSSF maydo not support this information element.					

_M Mandatory (The IE shall always be sent).

C Conditional (The IE shall be sent, if available).

Quality of Service contains the following information element:

Information element name	Required	Description
Negotiated QoS	С	This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN, as a result of a 'Modify PDP Conext' request. This IE shall be included only if sending of the Apply Charging Report was triggered by a change in Quality of Service.

C Conditional (The IE shall be sent, if available).

			С	HAN	IGE	RE	EQ	UE	ST					CR-Fa	orm-v3
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							_								
Proposed change	affec	ts: ¥	(U)S	IM	ME	/UE		Rad	io Ac	cess Ne	etworl	k	Core N	letwor	k <mark>x</mark>
Title: #	S Co	rrectio	n for the	CAME	L3 AC	R-G	PRS	para	amete	er range	e prob	<mark>lem (r</mark>	oll-over)	
Source: #	8 No	kia													
Work item code: भ	CA	MEL3								Da	te: ೫	June	<mark>ə 13th, 2</mark>	2001	
Category: #	A									Releas	se: ೫	Rel-	4		
Reason for chang	Deta be fo	F (con A (cor B (Add C (Fur D (Edi iled exp bund in At pr		s to a co feature), modification odification is of the R 21.900 he Appl	tion of a n) above).	n in al featur categ <mark>rging</mark>	re) gories <mark>g Re</mark> l	s can port (GPR	2 ⇒) RS RS RS RS RE RE RE S CAP c	96 97 98 99 EL-4 EL-5	(GSM (Relea (Relea (Relea (Relea (Relea	ase 5) <mark>as a rep</mark>	2) 3) 7) 3) 9) orting	limit
		restr amou At 30 singl Since value curre The	ictive. T unt of d G 400kb e day e the Ap es from ent para present rt durati	he dura ata tran bit/s, the oply Cha the very meter ra CR pre	ation of sferred volun arging y begin anges esent a	f a Pl d thro ne co Rep nning do n	DP (ough ounte ort C of t of su ple a	Conte a a PI er for SPRS he es uffice	ext m DP C a PE ope stabli	These I ay exter ontext n P Conte eration p shment e param umulativ	nd over may e ext m earame of a F	er 24 i xceed ay ove eters r PDP C that al	AGbyte arflow w report c ontext,	nd the es. /ithin a umulat the e SGS	tive
Summary of chan	ge: ೫	The	rollover	counte	rs are	intro	duce	ed.							
Consequences if not approved:	ж									eliable m ery impo				S pre-	
Clauses affected:	ж														
Other specs affected:		Τe	ther cor est spec &M Spe	ificatior	าร	าร	¥	29	.078-	CR188					
Other comments:	ж														

6.6 Description of information flows

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6.6.1 gprsSSF to gsmSCF Information Flows

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6.6.1.2 Apply Charging Report GPRS

6.6.1.2.1 Description

This IF is used by the gprsSSF to report to the gsmSCF the information requested in the Apply Charging GPRS IF. In addition, this IF is used to notify the gsmSCF of user initiated change in QoS. Note that there are several possible QoS profiles defined by the combinations of the different QoS attributes as defined in 3GPP TS 23.060 [11]. A PLMN may only support and charge on a limited subset of those QoS. It is recommended that changes in QoS are only reported in Apply Charging Report GPRS for those QoS profiles.

6.6.1.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description				
Gprs Reference Number	С	This IE consists of a number assigned by the gprsSSF and a number				
		assigned by the gsmSCF. It is used for TCAP dialogue segmentation. Refer to 3GPP TS 29.078 [5] for the usage of this element.				
Charging Result	This IE contains the charging information for the PDP provided by the gsmSSF. It is a choice between elapsed time and data volume.					
Quality of Service	С	This IE is described in the table below.				
Active	M This IE indicates if the GPRS session or PDP context is still estat or if it has been detached or deactivated.					
PDP ID	С	This IE identifies the PDP context which the Apply Charging Report is applicable for. If not present the dialogue corresponds to the GPRS session or to one single PDP context.				
Charging Roll Over	<u>C</u>	This IE indicates which parameter(s) of the Charging Result have overflowed. Refer to 3GPP TS 29.078 [5] for the usage of this element. NOTE: It is possible that early implementations of the gprsSSF do not support this information element.				

_M Mandatory (The IE shall always be sent).

C Conditional (The IE shall be sent, if available).

Quality of Service contains the following information element:

Information element name	Required	Description
Negotiated QoS	С	This IE identifies the QoS which was negotiated between the user, the
		SGSN and the GGSN, as a result of a 'Modify PDP Conext' request.
		This IE shall be included only if sending of the Apply Charging Report
		was triggered by a change in Quality of Service.

C Conditional (The IE shall be sent, if available).