TSGS#28(05)0274

Source: SA5 (Telecom Management)

Title: CR 32296 Online Charging System (OCS): Applications and interfaces

Document for: Approval

Agenda Item: 7.5.3

Doc-1st-Level	Spec__#_	CR__#	R	Phase	Subject	Cat	Ver-Cur	Doc-2nd-Level	Workitem
SP-050274	32.296	0001	-	Rel-6	Correction to scope	F	6.0.0	S5-054441	CH
SP-050274	32.296	0002	-	Rel-6	Correction to references	F	6.0.0	S5-054452	CH
SP-050274	32.296	0003	-	Rel-6	Enhance rating for several services in a single transaction	C	6.0.0	S5-054278	CH

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.296** CR **0003** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

*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:	⌘	Enhance rating for several services in a single transaction
Source:	⌘	**SA5** (benni.alexander@nokia.com)
Work item code:	⌘	CH
Date:	⌘	14/03/05
Category:	⌘	**C**
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:	⌘	Several services can be ”always on” and need to be credit controlled and rated at the same time. This becomes especially problematic if tariff-changing events occur, e.g. QoS drop or location zone change. In these cases the current application need to rate each active service in a separate transaction that increases the load on all elements involved.
Summary of change:	⌘	Rating AVPs are grouped in such a manner that single or multiple services can be rated with single request.
Consequences if not approved:	⌘	Rating interface (Re) is • not aligned with online charging interface (Ro); • not optimal in respect of the number of meesages needed for rating.

Clauses affected:	⌘	6.2, 7.1.2, 7.1.3.1, 7.1.4.1, 7.1.4.2 and 7.1.4.2.46-48

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

Other comments: ⌘

Change in Clause 6.2

6.2 Re Message Flows

This subclause describes message flows for the Re Reference Point by explaining example online charging sessions (i.e. credit control sessions on the Ro interface or CAP dialogues).

On the interface towards the serving network nodes (i.e. Ro, CAP) the generic message names "online charging request" and "online charging response" are used. These generic names should be mapped to real messages depending on the type of interface as indicated in the following table.

generic name	Ro Interface	CAP Interface
online charging request	Credit Control Request (CCR)	*first message, initiating the charging dialogue:* • Initial DP, • Initial DP GPRS, • Initial DP SMS *subsequent messages:* • Apply Charging Report, Event Report BCSM, • Apply Charging Report GPRS, Event Report GPRS, • Event Report SMS
online charging response	Credit Control Answer (CCA)	• Apply Charging, Request Report BCSM Event (+ Connect / Continue), • Apply Charging GPRS, Request Report GPRS Event (+ Connect GPRS / Continue GPRS), • Request Report SMS Event, Connect SMS, Continue SMS

For details on the CAP messages and message flows, refer to 3GPP TS 23.078 [202].

It should be noted that several service requests can be included in one message using Services-Rating AVP. The basic functionality of the single or multiple requests are the same so only single request scenario is described in message flows.

In addition to the differences between a class "A" and a class "B" Rating Function as described in the previous subclause, the Re message flows of both classes differ from a principal point of view as follows:

- In class "A", a TariffRequest is sent by the ChargingFunction only when an online charging request is received from the network, *and* no valid tariff is known (i.e. at the beginning of an online charging session or after tariff expiry). Therefore, distinction between different scenarios in the following description is necessary.
- In class "B", a TariffRequest is sent by the ChargingFunction after every online charging request received from the network. Therefore, no distinction between different TariffRequest scenarios is necessary.

End of Change in Clause 6.2

Change in Clause 7.1.2

7.1.2 Methods

7.1.2.1 PriceRequest Method

This request type is used to determine the price for a given event.

The following tables indicate the contents of the PriceRequest and PriceResponse messages.

The column "Status" denotes, whether the field is 'mandatory' (M), 'optional' (O) or ‘not applicable’ (-). Optional means that this parameter shall in general be included if available; if special conditions apply in addition, then these conditions are described in the "Description" column.

The body of the **PriceRequest** message consists of the following fields.

Name	Status in class		Description	Example
	"A"	"B"		
SessionID	M	M	Session identification, used to match the request / response.	
ActualTime	M	M	Actual timestamp of the current request.	
Subscription-Id	M	M	Identifies the Charged Party. This element contains one of the following; - MSISDN (E.164 format) - IMSI (E.212 format) - SIP-URL - NAI - private ID (i.e. operator specific). The Subscription-Id is described in subclause 7.1.4.2.53. The definition is taken from Diameter Credit Control [402]. Editor’s Note: Applicability of NAI for 3GPP needs to be checked.	
Service-Rating	M	M	One or more service elements. If several services are rated with one request, this grouped element is icluded several times. The structure of Service-Rating element is described in subclause 7.1.3.1.	
~~Service-Identifier~~	~~M~~	~~M~~	~~Identifies the service for which the online charging request was sent.~~	~~"MMS"~~
~~DestinationID~~	~~O~~	~~O~~	~~The structure of an individual DestinationID element is described in subclause 7.1.3.1.~~ ~~Multiple occurrences of this element are possible.~~	
~~Service-Information~~	~~O~~	~~O~~	~~The structure of a ServiceInformation element is defined in the middle-tier documents and formally specified in TS 32.299 [50]. The content of this parameter corresponds to the service indicated by the ServiceIdentifier.~~	
~~Extension~~	~~O~~	~~O~~	~~Subscriber or operator-specific information, e.g. contract parameters. The format and content is out of scope for 3GPP standards.~~	
~~Counter~~	~~O~~	~~-~~	~~One or multiple Counter elements.~~ ~~The structure of an individual Counter element is described in subclause 7.1.3.2~~	~~{2,17,20031212},~~ ~~{5,500,NULL}~~
~~BasicPrice-TimeStamp~~	~~O~~	~~-~~	~~The timestamp of the last charging of the Basic Price, if applicable for the service indicated by the ServiceID.~~	
~~RequestSub-Type~~	~~-~~	~~M~~	~~Request sub type as described in subclause 7.1.3.3.~~	~~Reservation~~

The body of the **PriceResponse** message from the Rating Engine consists of the following fields:

Name	Status in class		Description	Example
	"A"	"B"		
SessionID	M	M	Session identification, used to match the request / response.	
Service-Rating	M	M	One or more service elements. If several services are rated with one request, this grouped element is icluded several times. The structure of Service-Rating element is described in subclause 7.1.3.1.	
~~Price~~	~~M~~	~~M~~	~~Price for the requested service.~~	
~~BillingInfo~~	~~O~~	~~O~~	~~Textual description for bill presentation.~~ ~~Editor's Note: Alternative: some ID to be mapped to text~~	~~"normal / Moonshine"~~
~~Extension~~	~~O~~	~~O~~	~~Subscriber or operator-specific information, e.g. contract parameters. The format and content is out of scope for 3GPP standards.~~	
~~BasicPrice~~	~~O~~	~~-~~	~~Basic Price for the requested service, e.g. basic fee once per day.~~	
~~Counter-Price~~	~~O~~	~~-~~	~~One or multiple CounterPrice elements. The structure of an individual CounterPrice element is described in subclause 7.1.3.2.~~	
~~ImpactOn Counter~~	~~-~~	~~O~~	~~Description of the impacted counters. This parameter is being used only in the result of a request with a debit request subtype. The structure of an individual impact on counter element is described in subclause 7.1.3.3. Multiple occurrences of this element might be used.~~	~~{17,12,-1,11}~~

7.1.2.2 TariffRequest Method

The following tables indicate the contents of the TariffRequest and TariffResponse messages.

The column "Status" denotes, whether the field is 'mandatory' (M), 'optional' (O) or ‘not applicable’ (-).Optional means that this parameter shall in general be included if available; if special conditions apply in addition, then these conditions are described in the "Description" column.

The body of the **TariffRequest** message consists of the following fields:

Name	Status in class		Description	Example
	“A”	“ B”		
SessionID	M	M	Session identification, used to match the request / response.	
FirstRequest	O	O	Indicates that this is the first TariffRequest within this rating dialogue.	
BeginTime	O	O	Event-timestamp of service activation request.	
ActualTime	M	M	Actual timestamp of the current request.	
Subscription-Id	M	M	Identifies the Charged Party. This element contains one of the following; - MSISDN (E.164 format) - IMSI (E.212 format) - SIP-URL - NAI - private ID (i.e. operator specific). The Subscription-Id is described in subclause 7.1.4.2.53. The definition is taken from Diameter Credit Control [402]. Editor’s Note: Applicability of NAI for 3GPP needs to be checked.	
Service-Rating	M	M	One or more service elements. If several services are rated with one request, this grouped element is icluded several times. The structure of Service-Rating element is described in subclause 7.1.3.1.	
~~Service-Identifier~~	~~M~~	~~M~~	~~Identifies the service for which the online charging request was sent.~~	~~"MMS"~~
~~DestinationID~~	~~O~~	~~O~~	~~The structure of an individual DestinationID element is described in subclause 7.1.3.1.~~ ~~Multiple occurrences of this element are possible.~~	
~~Service-Information~~	~~O~~	~~O~~	~~The structure of a ServiceInformation element is defined in the middle-tier documents and formally specified in TS 32.299 [50]. The content of this parameter corresponds to the service indicated by the ServiceIdentifier.~~	
~~Extension~~	~~O~~	~~O~~	~~Subscriber or operator-specific information, e.g. contract parameters. The format and content is out of scope for 3GPP standards.~~	
~~Counter~~	~~O~~	~~-~~	~~One or multiple Counter elements.~~ ~~The structure of an individual Counter element is described in subclause 7.1.3.2.~~	~~{2,17, 20031212}, { 5,500, NULL}~~
~~BasicPriceTime-Stamp~~	~~O~~	~~-~~	~~The timestamp of the last charging of the Basic Price, if applicable for the service indicated by the ServiceID.~~	
~~RequestSubType~~	~~-~~	~~M~~	~~Request sub type as described in subclause 7.1.3.3.~~	~~AoC~~
~~RequestedUnits~~	~~-~~	~~O~~	~~The number of requested units from the service. This parameter is mandatory in a request with reservation request subtype.~~	
~~ConsumedUnits~~	~~-~~	~~O~~	~~The total number of consumed units of the service since previous request.~~	
~~ConsumedUnits AfterTariffSwitch~~	~~-~~	~~O~~	~~The number of consumed units of the service since previous request after tariff switch occurred. This parameter is mandatory if the tariff switch occurred since the previous request.~~	

The body of the **TariffResponse** message from the Rating Engine consists of the following fields:

Name	Status in class		Description	Example
	"A"	"B"		
SessionID	M	M	Session identification, used to match the request / response.	
Service-Rating	M	M	One or more service elements. If several services are rated with one request, this grouped element is icluded several times. The structure of Service-Rating element is described in subclause 7.1.3.1.	
~~TariffSwitchTime~~	~~O~~	~~O~~	~~Time in Seconds from the time in parameter ActualTime of the TariffRequest until a tariff switch occurs. '0' means immediately (the second set of e-parameters is valid).~~	
~~MonetaryTariff~~	~~M~~	~~O~~	~~E-parameters that are currently valid. Eparm type is defined in subclause 7.1.3.1. Class "B": This parameter is mandatory in the response message after a request with reservation subtype.~~	
~~NextMonetary-Tariff~~	~~O~~	~~O~~	~~E-parameters after the next TariffSwitch Eparm type is defined in subclause 7.1.3.1.~~	
~~ExpiryTime~~	~~O~~	~~O~~	~~Time period in seconds from the time in parameter ActualTime of the TariffRequest until the expiration of all tariff information contained in this TariffResponse message. This field may be used e.g. if multiple TariffSwitches are foreseen, or if interworking between limited valid units and TariffSwitches needs to be ensured.~~	~~3600~~
~~ValidUnits~~	~~O~~	~~O~~	~~Defines for how many units the tariff is valid.~~	~~4~~
~~MonetaryTariff-AfterValidUnits~~	~~O~~	~~O~~	~~E-parameters after all valid units have been used. Eparm type is defined in subclause 7.1.3.1. This field may be used to optimize service availability in scenarios with limited valid units.~~	
~~BillingInfo~~	~~O~~	~~O~~	~~Textual description for bill presentation. *(Alternative: some ID to be mapped to text)*~~	~~"normal / Moonshine"~~
~~Extension~~	~~O~~	~~O~~	~~Subscriber or operator-specific information, e.g. contract parameters. The format and content is out of scope for 3GPP standards.~~	
~~CounterTariff~~	~~O~~	~~-~~	~~One or multiple CounterTariff elements. The structure of an individual CounterTariff element is described in subclause 7.1.3.2.~~	
~~Requested-Counter~~	~~O~~	~~-~~	~~One or multiple CounterIDs. Only the counters identified in this list shall be included by the SBCF in subsequent TariffRequest messages within this session. The list is valid until a modified list is received by the SBCF or until the session ends.~~	~~1,5,6~~
~~BasicPrice~~	~~O~~	~~-~~	~~Basic Price for the requested service, e.g. basic fee once per day.~~	
~~Price~~	~~-~~	~~O~~	~~Price for the requested service. This parameter is mandatory in the response to a debit request subtype.~~	
~~ImpactOn Counter~~	~~-~~	~~O~~	~~Description of the impacted counters. This parameter is being used only in the result of a request with a debit request subtype. The structure of an individual impact on counter element is described in subclause 7.1.3.3. Multiple occurrences of this element might be used.~~	~~{17,12,-3,9}~~

7.1.2.3 ServiceUsageRequest Method

The ServiceUsageRequest Method is implemented only if Class B rating function is used.

The following tables indicate the contents of the ServiceUsageRequest and ServiceUsageResponse messages.

The column "Status" denotes, whether the field is 'mandatory' (M), 'optional' (O) or ‘not applicable’ (-). Optional means that this parameter shall in general be included if available; if special conditions apply in addition, then these conditions are described in the "Description" column.

The body of the **ServiceUsageRequest** message consists of the following fields:

Name	Status in class		Description	Example
	“A”	“B”		
SessionID	-	M	Session identification, used to match the request / response.	
BeginTime	-	O	Event-timestamp of service activation request.	
ActualTime	-	M	Actual timestamp of the current request.	
Subscription-Id	-	M	Identifies the Charged Party. This element contains one of the following; - MSISDN (E.164 format) - IMSI (E.212 format) - SIP-URL - NAI - private ID (i.e. operator specific). The Subscription-Id is described in subclause 7.1.4.2.53. The definition is taken from Diameter Credit Control [402]. Editor’s Note: Applicability of NAI for 3GPP needs to be checked.	
Service-Rating	M	M	One or more service elements. If several services are rated with one request, this grouped element is icluded several times. The structure of Service-Rating element is described in subclause 7.1.3.1.	
~~Service-Identifier~~	~~-~~	~~M~~	~~Service Name~~	~~"MMS-MO"~~
~~DestinationID~~	~~-~~	~~O~~	~~The structure of an individual DestinationID element is described in subclause 7.1.3.1.~~ ~~Multiple occurrences of this element are possible.~~	
~~Service-Information~~	~~-~~	~~O~~	~~The structure of a ServiceInformation element is defined in the middle-tier documents and formally specified in TS 32.299 [50]. The content of this parameter corresponds to the service indicated by the ServiceIdentifier.~~	
~~MonetaryQuota~~	~~-~~	~~O~~	~~Number of monetary units reserved for the service usage. Mandatory in a reservation request subtype.~~	
~~Minimal RequestedUnits~~	~~-~~	~~O~~	~~The minimal number of requested units from the service. This parameter is mandatory in the first request with reservation request subtype.~~	
~~Extension~~	~~-~~	~~O~~	~~Subscriber or operator-specific information, e.g. contract parameters. The format and content is out of scope for 3GPP standards.~~	
~~RequestSubType~~	~~-~~	~~M~~	~~Request sub-type as described above.~~	~~Reservation~~
~~ConsumedUnits~~	~~-~~	~~O~~	~~The total number of consumed units of the service since previous request.~~	
~~ConsumedUnits AfterTariffSwitch~~	~~-~~	~~O~~	~~The number of consumed units of the service since previous request after tariff switch occurred. This parameter is mandatory if the tariff switch occurred since the previous request.~~	

The body of the **ServiceUsageResponse** message from the Rating Engine consists of the following fields:

Name	Status in class		Description	Example
	"A"	"B"		
SessionID	-	M	Session identification, used to match the request / response.	
Service-Rating	M	M	One or more service elements. If several services are rated with one request, this grouped element is icluded several times. The structure of Service-Rating element is described in subclause 7.1.3.1.	
~~TariffSwitch-Time~~	~~-~~	~~O~~	~~Time in Seconds from the time in parameter ActualTime of the TariffRequest until a tariff switch occurs. '0' means immediately (the second set of e-parameters is valid).~~	
~~MonetaryTariff~~	~~-~~	~~O~~	~~E-parameters that are currently valid. Eparm type is defined below. Returning the MonetaryTariff is mandatory in the AoC request subtypes.~~	
~~NextMonetary-Tariff~~	~~-~~	~~O~~	~~E-parameters after the next TariffSwitch Eparm type is defined in subclause 7.1.3.1.~~	
~~ExpiryTime~~	~~-~~	~~O~~	~~Time period in seconds from the time in parameter ActualTime of the ServiceUsageRequest until the expiration of all tariff information contained in this ServiceUsageResponse message. This field may be used e.g. if multiple TariffSwitches are foreseen, or if interworking between limited valid units and TariffSwitches needs to be ensured.~~	~~3600~~
~~AllowedUnits~~	~~-~~	~~O~~	~~Defines how many units can be granted for this monetary quota. Returning the AllowedUnits is mandatory in the reservation and AoC request subtypes.~~	~~4~~
~~Price~~	~~-~~	~~O~~	~~Price for the consumed service so far. Returning the price is mandatory for all request subtypes besides Release.~~	
~~BillingInfo~~	~~-~~	~~O~~	~~Textual description for bill presentation. *(Alternative: some ID to be mapped to text)*~~	~~"normal / Moonshine"~~
~~ImpactOn Counter~~	~~-~~	~~O~~	~~Description of the impacted counters. This parameter is being used only in the result of a request with a debit request subtype. The structure of an individual impact on counter element is described in subclause 7.1.3.3. Multiple occurrences of this element might be used.~~	~~{17,12, 3,9}~~
~~Extension~~	~~-~~	~~O~~	~~Operator- or vendor-specific information. The format and content is out of scope for 3GPP standards.~~	

End of Change in Clause 7.1.2

Change in Clause 7.1.3.1

7.1.3.1 Common Parameters

The **DestinationID** type has the following structure:

Name	Status	Description	Example
DestinationIDType	M	Type of Subscriber information contained in the DestinationIDData element. Supported are the following types: MSISDN, APN, URL, e-mail address,... Editor's note: Further types are TBD.	
DestinationIDData	M	Identifies the destination, to which the requested service is directed. This element contains one of the following; - Number (E.164 format, e.g. MSISDN) - APN - URL - e-mail address - private ID (i.e. operator specific).	

The **EParm** type has the following structure:

Name	Status	Description	Example
E-parameter_E1	M	Refer to 3GPP TS 22.024 [201].	
E-parameter_E2	M	Refer to 3GPP TS 22.024 [201].	
E-parameter_E3	M	Refer to 3GPP TS 22.024 [201].	
E-parameter_E4	M	Refer to 3GPP TS 22.024 [201].	
E-parameter_E5	M	Refer to 3GPP TS 22.024 [201].	
E-parameter_E6	M	Refer to 3GPP TS 22.024 [201].	
E-parameter_E7	M	Refer to 3GPP TS 22.024 [201].	

The **Service-Rating** type has the following structure:

Name	Status in class		Description	Available					
	"A"	"B"		PRQ	PRS	TRQ	TRS	SUQ	SUS
Service-Identifier	M	M	Identifies the service for which the online charging request was sent. If M-S-R AVP is not present, this AVP is mandatory.	X	X	X	X	X	X
DestinationID	O	O	The structure of an individual DestinationID element is described in subclause 7.1.3.1. Multiple occurrences of this element are possible.	X		X		X	
Service-Information	O	O	The structure of a ServiceInformation element is defined in the middle-tier documents and formally specified in TS 32.299 [50]. The content of this parameter corresponds to the service indicated by the ServiceIdentifier.	X		X			
Extension	O	O	Subscriber or operator-specific information, e.g. contract parameters. The format and content is out of scope for 3GPP standards.	X	X	X	X	X	X
Counter	O	-	One or multiple Counter elements. The structure of an individual Counter element is described in subclause 7.1.3.2	X		X			
BasicPriceTime-Stamp	O	-	The timestamp of the last charging of the Basic Price, if applicable for the service indicated by the ServiceID.	X		X			
RequestSub-Type	-	M	Request sub type as described in subclause 7.1.3.3.	X		X		X	
Price	M	M	Price for the requested service.		X		X		X
BillingInfo	O	O	Textual description for bill presentation.		X		X		X
BasicPrice	O	-	Basic Price for the requested service, e.g. basic fee once per day.		X		X		
CounterPrice	O	-	One or multiple CounterPrice elements. The structure of an individual CounterPrice element is described in subclause 7.1.3.2.		X				
ImpactOn Counter	-	O	Description of the impacted counters. This parameter is being used only in the result of a request with a debit request subtype. The structure of an individual impact on counter element is described in subclause 7.1.3.3. Multiple occurrences of this element might be used.		X		X		X
RequestedUnits	-	O	The number of requested units from the service. This parameter is mandatory in a request with reservation request subtype.			X			
ConsumedUnits	-	O	The total number of consumed units of the service since previous request.			X		X	
ConsumedUnits AfterTariffSwitch	-	O	The number of consumed units of the service since previous request after tariff switch occurred. This parameter is mandatory if the tariff switch occurred since the previous request.			X		X	
TariffSwitch-Time	O	O	Time in Seconds from the time in parameter ActualTime of the TariffRequest until a tariff switch occurs. '0' means immediately (the second set of e-parameters is valid).				X		X
MonetaryTariff	M	O	E-parameters that are currently valid. Eparm type is defined in subclause 7.1.3.1. Class "B": This parameter is mandatory in the response message after a request with reservation subtype.				X		X
NextMonetary-Tariff	O	O	E-parameters after the next TariffSwitch Eparm type is defined in subclause 7.1.3.1.				X		X
ExpiryTime	O	O	Time period in seconds from the time in parameter ActualTime of the TariffRequest until the expiration of all tariff information contained in this TariffResponse message. This field may be used e.g. if multiple TariffSwitches are foreseen, or if interworking between limited valid units and TariffSwitches needs to be ensured.				X		X
ValidUnits	O	O	Defines for how many units the tariff is valid.				X		

Name	Status in class		Description	Available					
	"A"	"B"		PRQ	PRS	TRQ	TRS	SUQ	SUS
MonetaryTariff-AfterValidUnits	O	O	E-parameters after all valid units have been used. Eparm type is defined in subclause 7.1.3.1. This field may be used to optimize service availability in scenarios with limited valid units.				X		
CounterTariff	O	-	One or multiple CounterTariff elements. The structure of an individual CounterTariff element is described in subclause 7.1.3.2.				X		
Requested-Counter	O	-	One or multiple CounterIDs. Only the counters identified in this list shall be included by the SBCF in subsequent TariffRequest messages within this session. The list is valid until a modified list is received by the SBCF or until the session ends.				X		
MonetaryQuota	-	O	Number of monetary units reserved for the service usage. Mandatory in a reservation request subtype.					X	
Minimal RequestedUnits	-	O	The minimal number of requested units from the service. This parameter is mandatory in the first request with reservation request subtype.					X	
AllowedUnits	-	O	Defines how many units can be granted for this monetary quota. Returning the AllowedUnits is mandatory in the reservation and AoC request subtypes.						X

End of Change in Clause 7.1.3.1

Change in Clause 7.1.4.1

7.1.4.1 Diameter Rating messages on the Re interface

The table below describes the use of messages on the Re interface. Details on the use of these messages can be found in subclause 6.2 of this document.

Command-Name	Source	Destination	Abbreviation	Command-Code
PriceRequest	EBCF	RF	PRQ	
PriceResponse	RF	EBCF	PRS	
TariffRequest	SBCF	RF	TRQ	
TariffResponse	RF	SBCF	TRS	
ServiceUsageRequest	SBCF	RF	SUQ	
ServiceUsageResponse	RF	SBCF	SUS	

Editor's Note: Command codes shall be defined by CN4, and shall be included in 3GPP TS 29.230.

Editor's Note: Do we have to include (some of the) other messages defined in the Diameter base protocol?

The following subclauses describe the structure of the individual messages on the Re interface. The descriptions are based directly on the format of the *Accounting-Request* and *Accounting-Answer* messages defined in the base Diameter protocol specification [401].

The following symbols are used in the tables:

- <AVP> indicates a mandatory AVP with a fixed position in the message.
- {AVP} indicates a mandatory AVP in the message.

- [AVP] indicates an optional AVP in the message.
- *AVP indicates that multiple occurrences of an AVP are possible.

7.1.4.1.1 PriceRequest message

The Diameter *PriceRequest* message as used on the Re interface has the following structure.

<PRQ> :: = <Diameter Header: xxx, REQ, PXY>
<Session-Id>
{Origin-Host}
{Origin-Realm}
{Destination-Realm}
[Destination-Host]
[Vendor-Specific-Application-Id]
[User-Name]
[Event-Timestamp]
{ActualTime}
{Subscription-Id}
*{Service-Rating}
~~{Service-Identifier} * [DestinationID]~~
~~[ServiceInformation]~~
~~* [Counter]~~
~~[BasicPriceTimeStamp]~~
~~[RequestSubType]~~
~~[Extension]~~

Editor's Note: Check if all included AVPs from the Diameter base protocol are needed.
Check if additional AVPs from the Diameter base protocol must be included.

7.1.4.1.2 PriceResponse message

The Diameter *PriceResponse* message as used on the Re interface has the following structure.

<PRS> :: = <Diameter Header: *xxx*, PXY>
<Session-Id>
{Origin-Host}
{Origin-Realm}
[Vendor-Specific-Application-Id]
[User-Name]
[Event-Timestamp]
*{Service-Rating}
~~{Price}~~
~~[BillingInfo]~~
~~[BasicPrice]~~
~~* [CounterPrice]~~
~~* [ImpactOnCounter]~~
~~[Extension]~~

Editor's Note: Check if all included AVPs from the Diameter base protocol are needed.
Check if additional AVPs from the Diameter base protocol must be included.

7.1.4.1.3 TariffRequest message

The Diameter *TariffRequest* message as used on the Re interface has the following structure.

<TRQ> :: = <Diameter Header: *xxx*, REQ, PXY>
<Session-Id>
{Origin-Host}
{Origin-Realm}
{Destination-Realm}
[Destination-Host]

[Vendor-Specific-Application-Id]
[User-Name]
[Event-Timestamp]
[FirstRequest]
[BeginTime]
{ActualTime}
{Subscription-Id}
*{Service-Rating}
~~{Service-Identifier}~~
~~* [DestinationID]~~
~~[ServiceInformation]~~
~~* [Counter]~~
~~[BasicPriceTimeStamp]~~
~~[RequestSubType]~~
~~[RequestedUnits]~~
~~[ConsumedUnits]~~
~~[ConsumedUnitsAfterTariffSwitch]~~
~~[Extension]~~

Editor's Note: Check if all included AVPs from the Diameter base protocol are needed.
Check if additional AVPs from the Diameter base protocol must be included.

7.1.4.1.4 TariffResponse message

The Diameter *TariffResponse* message as used on the Re interface has the following structure.

<TRS> :: = <Diameter Header: *xxx*, PXY>
<Session-Id>
{Origin-Host}
{Origin-Realm}
[Vendor-Specific-Application-Id]
[User-Name]
[Event-Timestamp]
*{Service-Rating}
~~[TariffSwitchTime]~~
~~{MonetaryTariff}~~
~~[NextMonetaryTariff]~~
~~[ExpiryTime]~~
~~[ValidUnits]~~
~~[MonetaryTariffAfterValidUnits]~~
~~[BillingInfo]~~
~~* [CounterTariff]~~
~~* [RequestedCounter]~~
~~[BasicPrice]~~
~~[Price]~~
~~* [ImpactOnCounter]~~
~~[Extension]~~

Editor's Note: Check if all included AVPs from the Diameter base protocol are needed.
Check if additional AVPs from the Diameter base protocol must be included.

7.1.4.1.5 ServiceUsageRequest message

The Diameter *ServiceUsageRequest* message as used on the Re interface has the following structure.

<SUQ> :: = <Diameter Header: xxx, REQ, PXY>
<Session-Id>
{Origin-Host}
{Origin-Realm}
{Destination-Realm}
[Destination-Host]
[Vendor-Specific-Application-Id]
[User-Name]
[Event-Timestamp]
[BeginTime]
{ActualTime}
{Subscription-Id}
*{Service-Rating}
~~{Service-Identifier} * [DestinationID]~~
~~[ServiceInformation]~~
~~{RequestSubType}~~
~~[MonetaryQuota]~~
~~[MinimalRequestedUnits]~~
~~[ConsumedUnits]~~
~~[ConsumedUnitsAfterTariffSwitch]~~
~~[Extension]~~

Editor's Note: Check if all included AVPs from the Diameter base protocol are needed.
Check if additional AVPs from the Diameter base protocol must be included.

Editor's Note: Check if the order of the AVPs is aligned with the tariff request.

7.1.4.1.6 ServiceUsageResponse message

The Diameter *ServiceUsageResponse* message as used on the Re interface has the following structure.

<SUS> :: = <Diameter Header: xxx, PXY>
<Session-Id>
{Origin-Host}
{Origin-Realm}
[Vendor-Specific-Application-Id]
[User-Name]
[Event-Timestamp]
*{Service-Rating}
~~[TariffSwitchTime]~~
~~{MonetaryTariff}~~
~~[ExpiryTime]~~
~~[NextMonetaryTariff]~~
~~[AllowedUnits]~~
~~[BillingInfo]~~
~~[Price]~~
~~* [ImpactOnCounter]~~
~~[Extension]~~

Editor's Note: Check if all included AVPs from the Diameter base protocol are needed.
Check if additional AVPs from the Diameter base protocol must be included.

Editor's Note: Check if the order of the AVPs is aligned with the tariff response.

End of Change in Clause 7.1.4.1

Change in Clause 7.1.4.2

7.1.4.2 AVPs for Rating on the Re interface

The use of the Attribute Value Pairs (AVPs) that are defined in the Diameter Base Protocol [401] is specified in subclause 7.1.4.1 for the Re interface. Detailed specification of these AVPs is available in the Diameter base protocol specification.

Editor's Note: "The 3GPP Rating Application uses the value *xxx* (3GPP) as *Vendor-Id*." – Do we need this ?

Additional AVPs which are not included in the Diameter base protocol are used for rating purposes in all messages on the Re interface. The use of these AVPs is described in subclause 7.1.4.1.

Detailed descriptions of AVPs that are used specifically for online rating are provided in the subclauses below the table. The table contains all AVPs used for the Diameter Rating application, in alphabetical order. For AVPs that are just borrowed from other applications only the reference is provided in the table below, and the detailed description is not repeated.

AVP Name	AVP Code	Data Type	Description / Reference
AVPs from Diameter base protocol			
[Destination-Host]			[401]
{Destination-Realm}			[401]
[Event-Timestamp]			[401]
{Origin-Host}			[401]
{Origin-Realm}			[401]
<Session-Id>			[401]
[User-Name]			[401]
[Vendor-Specific-Application-Id]			[401]
General Diameter Rating AVPs			
{ActualTime}	*TBD*	Time	subclause 7.1.4.2.1
[BeginTime]	*TBD*	Time	subclause 7.1.4.2.5
~~[BillingInfo]~~	~~*TBD*~~	~~UTF8String~~	~~subclause 7.1.4.2.6~~
~~* [DestinationID]~~	~~*TBD*~~	~~Grouped~~	~~subclause 7.1.4.2.29~~
~~{DestinationIDType}~~	~~*TBD*~~	~~Enumerated~~	~~subclause 7.1.4.2.31~~
~~{DestinationIDData}~~	~~*TBD*~~	~~UTF8String~~	~~subclause 7.1.4.2.30~~
~~[ExpiryTime]~~	~~*TBD*~~	~~Unsigned32~~	~~subclause 7.1.4.2.39~~
~~[Extension]~~	~~*TBD*~~	~~Grouped~~	~~subclause 7.1.4.2.40~~
[FirstRequest]	*TBD*	Enumerated	subclause 7.1.4.2.41
~~{MonetaryTariff}~~	~~*TBD*~~	~~Grouped~~	~~subclause 7.1.4.2.44~~
~~{EParameterE1}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.32~~
~~{EParameterE2}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.33~~
~~{EParameterE3}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.34~~
~~{EParameterE4}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.35~~
~~{EParameterE5}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.36~~
~~{EParameterE6}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.37~~
~~{EParameterE7}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.38~~
~~[MonetaryTariffAfterValidUnits]~~	~~*TBD*~~	~~Grouped~~	~~subclause 7.1.4.2.45~~
~~{EParameterE1}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.32~~
~~{EParameterE2}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.33~~
~~{EParameterE3}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.34~~
~~{EParameterE4}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.35~~
~~{EParameterE5}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.36~~
~~{EParameterE6}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.37~~
~~{EParameterE7}~~	~~*TBD*~~	~~Integer32~~	~~subclause 7.1.4.2.38~~
*{Service-Rating}	*TBD*	Grouped	
{Service-Identifier}	*TBD*	UTF8String	subclause 7.1.4.2.52; [402]
* [DestinationID]	*TBD*	Grouped	subclause 7.1.4.2.29
{DestinationIDType}	*TBD*	Enumerated	subclause 7.1.4.2.31
{DestinationIDData}	*TBD*	UTF8String	subclause 7.1.4.2.30
[ServiceInformation]	*TBD*	Grouped	Subclause 7.1.4.2.53
[Extension]	*TBD*	Grouped	subclause 7.1.4.2.40
[Price]	*TBD*	Unsigned32	Subclause7.1.4.2.48; mandatory in PRS, optional in TRS
[BillingInfo]	*TBD*	UTF8String	subclause 7.1.4.2.6
[TariffSwitchTime]	*TBD*	Unsigned32	subclause 7.1.4.2.58
{MonetaryTariff}	*TBD*	Grouped	subclause 7.1.4.2.44
{EparameterE1}	*TBD*	Integer32	subclause 7.1.4.2.32
{EparameterE2}	*TBD*	Integer32	subclause 7.1.4.2.33
{EparameterE3}	*TBD*	Integer32	subclause 7.1.4.2.34
{EparameterE4}	*TBD*	Integer32	subclause 7.1.4.2.35
{EparameterE5}	*TBD*	Integer32	subclause 7.1.4.2.36
{EparameterE6}	*TBD*	Integer32	subclause 7.1.4.2.37
{EparameterE7}	*TBD*	Integer32	subclause 7.1.4.2.38
[NextMonetaryTariff]	*TBD*	Grouped	subclause 7.1.4.2.47
{EparameterE1}	*TBD*	Integer32	subclause 7.1.4.2.32
{EparameterE2}	*TBD*	Integer32	subclause 7.1.4.2.33

{EparameterE3}	TBD	Integer32	subclause 7.1.4.2.34
{EparameterE4}	TBD	Integer32	subclause 7.1.4.2.35
{EparameterE5}	TBD	Integer32	subclause 7.1.4.2.36
{EparameterE6}	TBD	Integer32	subclause 7.1.4.2.37
{EparameterE7}	TBD	Integer32	subclause 7.1.4.2.38
[ExpiryTime]	TBD	Unsigned32	subclause 7.1.4.2.39
[ValidUnits]	TBD	Unsigned32	subclause 7.1.4.2.59
[MonetaryTariffAfterValidUnits]	TBD	Grouped	subclause 7.1.4.2.45
{EparameterE1}	TBD	Integer32	subclause 7.1.4.2.32
{EparameterE2}	TBD	Integer32	subclause 7.1.4.2.33
{EparameterE3}	TBD	Integer32	subclause 7.1.4.2.34
{EparameterE4}	TBD	Integer32	subclause 7.1.4.2.35
{EparameterE5}	TBD	Integer32	subclause 7.1.4.2.36
{EparameterE6}	TBD	Integer32	subclause 7.1.4.2.37
{EparameterE7}	TBD	Integer32	subclause 7.1.4.2.38
~~[NextMonetaryTariff]~~	~~TBD~~	~~Grouped~~	~~subclause 7.1.4.2.47~~
~~{EParameterE1}~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.32~~
~~{EParameterE2}~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.33~~
~~{EParameterE3}~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.34~~
~~{EParameterE4}~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.35~~
~~{EParameterE5}~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.36~~
~~{EParameterE6}~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.37~~
~~{EParameterE7}~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.38~~
~~[Price]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.48; mandatory in PRS, optional in TRS~~
~~{Service-Identifier}~~	~~TBD~~	~~UTF8String~~	~~subclause 7.1.4.2.52; [402]~~
~~[ServiceInformation]~~	~~TBD~~	~~Grouped~~	~~subclause 7.1.4.2.53~~
{Subscription-Id}	TBD	Grouped	subclause 7.1.4.2.55
{Subscription-Id-Type}	TBD	Enumerated	subclause 7.1.4.2.57
{Subscription-Id-Data}	TBD	UTF8String	subclause 7.1.4.2.56; [402]
~~[TariffSwitchTime]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.58~~
~~[ValidUnits]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.59~~
Class A specific Diameter Rating AVPs			
~~[BasicPrice]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.3~~
~~[BasicPriceTimeStamp]~~	~~TBD~~	~~Time~~	~~subclause 7.1.4.2.4~~
~~* [Counter]~~	~~TBD~~	~~Grouped~~	~~subclause 7.1.4.2.9~~
~~{CounterID}~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.20~~
~~[CounterValue]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.25~~
~~[CounterExpiryDate]~~	~~TBD~~	~~Time~~	~~subclause 7.1.4.2.19~~
~~* [CounterPrice]~~	~~TBD~~	~~Grouped~~	~~subclause 7.1.4.2.21~~
~~{CounterID}~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.20~~
~~[CounterType]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.24~~
~~[CounterChange]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.10~~
~~[SetCounterTo]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.54~~
~~[CounterExpiryDate]~~	~~TBD~~	~~Time~~	~~subclause 7.1.4.2.19~~
~~* [CounterTariff]~~	~~TBD~~	~~Grouped~~	~~subclause 7.1.4.2.22~~
~~{CounterID}~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.20~~
~~[CounterType]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.24~~
~~[CounterChangePerSession]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.16~~
~~[CounterChangePerConsumed ServiceUnit]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.15~~
~~[CounterChangeForFirst ChargeableTimeUnit]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.11~~
~~[CounterChangePerSubsequent ChargeableTimeUnit]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.17~~
~~[CounterChangePerChargeable VolumeUnit]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.13~~
~~[CounterChangeForFirst ChargeableTimeUnitAfterSwitch]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.12~~
~~[CounterChangePerSubsequent ChargeableTimeUnitAfterSwitch]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.18~~
~~[CounterChangePerChargeable VolumeUnitAfterSwitch]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.14~~
~~[CounterThreshold]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.23~~
~~[SetCounterTo]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.54~~
~~[CounterExpiryDate]~~	~~TBD~~	~~Time~~	~~subclause 7.1.4.2.19~~
*{Service-Rating}	TBD	Grouped	
* [Counter]	TBD	Grouped	subclause 7.1.4.2.9
{CounterID}	TBD	Unsigned32	subclause 7.1.4.2.20

[CounterValue]	TBD	Integer32	subclause 7.1.4.2.25
[CounterExpiryDate]	TBD	Time	subclause 7.1.4.2.19
[BasicPriceTimeStamp]	TBD	Time	subclause 7.1.4.2.4
[BasicPrice]	TBD	Unsigned32	subclause 7.1.4.2.3
* [CounterPrice]	TBD	Grouped	subclause 7.1.4.2.21
{CounterID}	TBD	Unsigned32	subclause 7.1.4.2.20
[CounterType]	TBD	Unsigned32	subclause 7.1.4.2.24
[CounterChange]	TBD	Integer32	subclause 7.1.4.2.10
[SetCounterTo]	TBD	Integer32	subclause 7.1.4.2.54
[CounterExpiryDate]	TBD	Time	subclause 7.1.4.2.19
* [CounterTariff]	TBD	Grouped	subclause 7.1.4.2.22
{CounterID}	TBD	Unsigned32	subclause 7.1.4.2.20
[CounterType]	TBD	Unsigned32	subclause 7.1.4.2.24
[CounterChangePerSession]	TBD	Integer32	subclause 7.1.4.2.16
[CounterChangePerConsumed ServiceUnit]	TBD	Integer32	subclause 7.1.4.2.15
[CounterChangeForFirst ChargeableTimeUnit]	TBD	Integer32	subclause 7.1.4.2.11
[CounterChangePerSubsequent ChargeableTimeUnit]	TBD	Integer32	subclause 7.1.4.2.17
[CounterChangePerChargeable VolumeUnit]	TBD	Integer32	subclause 7.1.4.2.13
[CounterChangeForFirst ChargeableTimeUnitAfterSwitch]	TBD	Integer32	subclause 7.1.4.2.12
[CounterChangePerSubsequent ChargeableTimeUnitAfterSwitch]	TBD	Integer32	subclause 7.1.4.2.18
[CounterChangePerChargeable VolumeUnitAfterSwitch]	TBD	Integer32	subclause 7.1.4.2.14
[CounterThreshold]	TBD	Integer32	subclause 7.1.4.2.23
[SetCounterTo]	TBD	Integer32	subclause 7.1.4.2.54
[CounterExpiryDate]	TBD	Time	subclause 7.1.4.2.19
* [RequestedCounters]	TBD	Unsigned32	subclause 7.1.4.2.49
~~* [RequestedCounters]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.49~~
Class B specific Diameter Rating AVPs			
~~[AllowedUnits]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.2~~
~~[ConsumedUnits]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.7~~
~~[ConsumedUnitsAfterTariffSwitch]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.8~~
~~* [ImpactonCounter]~~	~~TBD~~	~~Grouped~~	~~subclause 7.1.4.2.42~~
~~[CounterID]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.20~~
~~[CounterValueBegin]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.26~~
~~[CounterValueChange]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.27~~
~~[CounterValueEnd]~~	~~TBD~~	~~Integer32~~	~~subclause 7.1.4.2.28~~
~~[MinimalRequestedUnits]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.43~~
~~[MonetaryQuota]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.46~~
*{Service-Rating}	TBD	Grouped	
[RequestSubType]	TBD	Enumerated	subclause 7.1.4.2.51
[ImpactonCounter]	TBD	Grouped	subclause 7.1.4.2.42
{CounterID}	TBD	Unsigned32	subclause 7.1.4.2.20
[CounterValueBegin]	TBD	Integer32	subclause 7.1.4.2.26
[CounterValueChange]	TBD	Integer32	subclause 7.1.4.2.27
[CounterValueEnd]	TBD	Integer32	subclause 7.1.4.2.28
[RequestedUnits]	TBD	Unsigned32	subclause 7.1.4.2.50
[ConsumedUnits]	TBD	Unsigned32	subclause 7.1.4.2.7
[ConsumedUnitsAfterTariffSwitch]	TBD	Unsigned32	subclause 7.1.4.2.8
[MonetaryQuota]	TBD	Unsigned32	subclause 7.1.4.2.46
[MinimalRequestedUnits]	TBD	Unsigned32	subclause 7.1.4.2.43
[AllowedUnits]	TBD	Unsigned32	subclause 7.1.4.2.2
~~[RequestedUnits]~~	~~TBD~~	~~Unsigned32~~	~~subclause 7.1.4.2.50~~
~~[RequestSubType]~~	~~TBD~~	~~Enumerated~~	~~subclause 7.1.4.2.51~~

End of Change in Clause 7.1.4.2

Change in Clauses 7.1.4.2.46-48

7.1.4.2.46 MonetaryQuota AVP

The MonetaryQuota AVP is of type Unsigned32. It defines the amount of monetary units reserved by the charging function. The rating function calculates the amount of service units that can be consumed with this amount.

7.1.4.2.47 Service-Rating AVP

The Service-Rating AVP is of type Grouped. It is used in the all messages once if single service is rated or multiple times if several services are rated in a single transaction.

The Service-Rating AVP has the following format:

```
Service-Rating :: =          < AVP Header: TBD>
                             {Service-Identifier}
                            *[DestinationID]
                             [ServiceInformation]
                             [Extension]
                             [Price]
                             [BillingInfo]
                             [TariffSwitchTime]
                             {MonetaryTariff}
                             [NextMonetaryTariff]
                             [ExpiryTime]
                             [ValidUnits]
                             [MonetaryTariffAfterValidUnits]
                            * [Counter]
                             [BasicPriceTimeStamp]
                             [BasicPrice]
                            * [CounterPrice]
                            * [CounterTariff]
                            * [RequestedCounters]
                             [RequestSubType]
                             [ImpactonCounter]
                             [RequestedUnits]
                             [ConsumedUnits]
                             [ConsumedUnitsAfterTariffSwitch]
                             [MonetaryQuota]
                             [MinimalRequestedUnits]
                             [AllowedUnits]
```

7.1.4.2.48 NextMonetaryTariff AVP

The NextMonetaryTariff AVP is of type Grouped. It is used in the TariffResponse message, and it contains the tariff information (i.e. the e-parameters) that is valid after a tariff switch has occured (as indicated in the TariffSwitchTime AVP).

The NextMonetaryTariff AVP may only be included in a TRS message, if the TariffSwitchTime AVP is also included in the same message.

The NextMonetaryTariff AVP has the following format:

```
NextMonetaryTariff :: =    < AVP Header: TBD>
                           {EParameterE1}
                           {EParameterE2}
```

{EParameterE3}
{EParameterE4}
{EParameterE5}
{EParameterE6}
{EParameterE7}

7.1.4.2.48A Price AVP

The Price AVP is of type Unsigned32. It contains the price of the requested service.

End of Change in Clauses 7.1.4.2.46-48
End of Document

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040141	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040551	--	--	Submitted to TSG SA#25 for the 2nd time for Information	1.8.0	1.8.1
Dec 2004	S_26	SP-040774	--	--	Submitted to TSG SA#26 for Approval	2.0.0	6.0.0

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.296** **CR** **0001** ⌘**rev** **-** ⌘ Current version: **6.0.0** ⌘

*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:	⌘	Correction to scope
Source:	⌘	SA5 (benni.alexander@nokia.com)
Work item code:	⌘	CH
Date:	⌘	12/05/2005
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:	⌘	The last paragraph of text in Scope (clause 1) of TS 32.296 contains incorrect statements about the contents of TR 21.905 and the charging specifications.
Summary of change:	⌘	The paragraph has been modified to correct the above errors. Furthermore, a statement pointing to TS 22.115 for charging requirements has been added.
Consequences if not approved:	⌘	The scope of TS 32.296 remains erroneus, confusing the reader.

Clauses affected:	⌘	Clause 1

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

Other comments:	⌘	Parent CR 32.240 in S5-054466

Change in Clause 1

1 Scope

The present document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network charging architecture and principles are specified in 3GPP TS 32.240 [1], which provides an umbrella for other charging management documents that specify

- the content of the CDRs per domain and subsystem (offline charging);
- the content of real-time charging messages per domain / subsystem (online charging);
- the functionality of online and offline charging for those domains and subsystems;
- the interfaces that are used in the charging framework to transfer the charging information (i.e. CDRs or charging events).

The complete document structure for these TSs is defined in 3GPP TS 32.240 [1].

The present document covers all internal aspects of the Online Charging System (OCS). The document contains the architecture and functions of the OCS logical components and thereby derives the functionality of the OCS interfaces. A detailed specification of interfaces between the logical OCS components is also included. The functionality of the OCS, as described in the present document, applies to all charging domains (bearer, session and service).

The interfaces connecting to the OCS (e.g. Ro, CAP) are out of the scope of the present document.

NOTE: In the current release the present document is limited to the interface between the charging function and the Rating Function, namely Re.

All ~~references~~terms, definitions and abbreviations~~, definitions, descriptions, principles and requirements,~~ used in the present document, that are common across 3GPP TSs, are defined in 3GPP TR 21.905 [100]. Those that are common across charging management in GSM/UMTS domains, services, or subsystems are provided in the umbrella document 3GPP TS 32.240 [1]. Finally, those items that are specific to the present document are defined exclusively in the present document.

Furthermore, requirements that govern the charging work are specified in 3GPP TS 22.115 [102].

End of change in Clause 1
End of document

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Dec 2004	S_26	SP-040774	--	--	Submitted to TSG SA#26 for Approval	2.0.0	6.0.0

CR-Form-v7.1

CHANGE REQUEST

⌘ 32.296 CR 0002 ⌘rev - ⌘ Current version: 6.0.0 ⌘

*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:	⌘	Correction to references
Source:	⌘	SA5 (benni.alexander@nokia.com)
Work item code:	⌘	CH
Category:	⌘	F

Date: ⌘ 13/05/2005

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: ⌘ Clause 2 (References) is contradicting 3GPP TR 21.801 (Specification drafting rules).

Summary of change: ⌘ All references in clause 2 that are not explicitly cited in the TS have been removed from the list of references, and collected to a new Annex "Bibliography", which has been inserted to the TS just before the last Annex containing the change history.

The change has been done according to the instructions in 3GPP TR 21.801 listed below.

1. 3GPP TR 21.801 states (subclause 6.2.2) about the list of references as follows:
   "*The list shall not include the following:*
   …
   - documents which are not explicitly cited in the provisions of the deliverable (such documents may be listed in a bibliography (see subclause 6.4.2))."

2. 3GPP TR 21.801 states (subclause 6.4.2) about the Bibliography as follows:
   "*The Bibliography identifies documents which are not explicitly cited in the body of the 3GPP TS or 3GPP TR.*"

3. 3GPP TR 21.801 states (subclause 5.2.7) as follows:
   "*A bibliography, if present, shall appear after the penultimate annex entitled "Bibliography".*"..

Consequences if not approved: ⌘ TS 32.296 remains contradictive to 3GPP specification drafting rules..

Clauses affected: ⌘ Clause 2, Annexes

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

Other comments: ⌘ Parent CR 32.240 in S5-054467

Change in Clause 2

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*.

~~**a) 3GPP charging specifications**~~

[1] 3GPP TS 32.240: "Telecommunication management; Charging management; Charging Architecture and Principles".

[2]-[~~9~~10] Void.

~~[10] 3GPP TS 32.250: "Telecommunication management; Charging management; Circuit Switched (CS) domain charging".~~

[11] 3GPP TS 32.251: "Telecommunication management; Charging management; Packet Switched (PS) domain charging".

[12] 3GPP TS 32.252: "Telecommunication management; Charging management; Wireless Local Area Network (WLAN) charging".

[13]-[~~19~~49] Void.

~~[20] 3GPP TS 32.260: "Telecommunication management; Charging management; IP Multimedia Subsystem (IMS) charging".~~

~~[21] [29] Void.~~

~~[30] 3GPP TS 32.270: "Telecommunication management; Charging management; Multimedia Messaging Service (MMS) charging".~~

~~[31] 3GPP TS 32.271: "Telecommunication management; Charging management; Location Services (LCS) charging".~~

~~[32] [49] Void.~~

[50] 3GPP TS 32.299: "Telecommunication management; Charging management; Diameter charging application".

[51] ~~3GPP TS 32.298: "Telecommunication management; Charging management; Charging Data Record (CDR) parameter description"~~Void.

[52] 3GPP TS 32.297: "Telecommunication management; Charging management; Charging Data Records (CDR) file format and transfer".

[53]-[99] Void.

~~**b) Common 3GPP specifications**~~

[100] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[101]-[109] Void.

~~**c) Other Domain and Service specific 3GPP / ETSI specifications**~~

[200] 3GPP TR 32.815: "Online Charging System (OCS) architecture study".

[201] 3GPP TS 22.024: "Description of Charge Advice Information (CAI)".

[202] 3GPP TS 23.078: "Customized Applications for Mobile network Enhanced Logic (CAMEL) Phase 4 - Stage 2".

[203] 3GPP TS 23.003: "Numbering, addressing and identification".

[204] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[205]-[299] Void.

~~**d) Relevant ITU Recommendations**~~

[300]-[399] Void.

~~**e) Relevant IETF RFCs**~~

[400] Void.

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

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

End of change in Clause 2

Change in Annexes

Annex A (informative): Bibliography

a) 3GPP charging specifications

- 3GPP TS 32.250: "Telecommunication management; Charging management; Circuit Switched (CS) domain charging".

- 3GPP TS 32.260: "Telecommunication management; Charging management; IP Multimedia Subsystem (IMS) charging".

- 3GPP TS 32.270: "Telecommunication management; Charging management; Multimedia Messaging Service (MMS) charging".

- 3GPP TS 32.271: "Telecommunication management; Charging management; Location Services (LCS) charging".

- 3GPP TS 32.298: "Telecommunication management; Charging management; Charging Data Record (CDR) parameter description".

b) Common 3GPP specifications

-

c) Other Domain and Service specific 3GPP / ETSI specifications

-

d) Relevant ITU Recommendations

-

e) Relevant IETF RFCs

-

Annex ~~A~~ B (informative): Change history

End of change in Annexes
End of document

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040141	--	--	Submitted to TSG SA#23 for Information	1.0.0	
Sep 2004	S_25	SP-040551	--	--	Submitted to TSG SA#25 for the 2nd time for Information	1.8.0	1.8.1
Dec 2004	S_26	SP-040774	--	--	Submitted to TSG SA#26 for Approval	2.0.0	6.0.0