**3GPP TSG-SA5 Meeting #143-e *S5-223197rev1***

e-meeting, 9 - 17 May 2022

**Source: Nokia, Nokia Shangail Bell, Ericsson**

**Title: Rel-17 pCR 28.826 ServiceID in Charging Data Request**

**Document for: Approval**

**Agenda Item: 7.5.2**

# 1 Decision/action requested

***Please approve***

# 2 References

[1] 3GPP TR 28.826 V0.3.0 Study on Nchf charging services phase 2 improvements and optimizations

# 3 Rationale

There is a need to provide accuracy on the intial Service charging. ServiceID is used in UsedUnitContainer, though its not included in RequestedUnit.

# 4 Detailed proposal

This contribution proposes to make the following changes in [1].

First change

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

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

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

[2] 3GPP TS 32.255: "5G data connectivity domain charging; stage 2".

[3] 3GPP TS 23.503: "Policy and charging control framework for the 5G System (5GS); Stage 2".

[4] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[5] 3GPP TS 32.291: "Telecommunication management; Charging management; 5G system, charging service; Stage 3"

Second change

# 4 Overview

The Nchf converged charging services was first released in Rel-15. This first iteration was to a large extent, with some minor exceptions, copying and combining its predecessors, Ro and Rf, based on Diameter to a service based interface (SBI) supporting converged charging service. The depiction of the internal architecture of the Converged Charging System (CCS) was to a large extent based on the Online Charging System (OCS).

The combination of the Diameter Ro and Rf interfaces into one converged charging service together with the move of the integration point for CDRs have led to that all the information previously reported and transported over two or more interfaces now needs to be transported over a single interface. This makes it essential that the converged charging interface is optimized in regard to the amount of information and number of reports sent, or at least allows for such an optimization if needed.

The information that may be used to assist the determine of reservation in the CCS is not defined except for the rating group. This means that for an immediate event or in an initial request the information about the event or session is limited and lacks accuracy.

Low latency requirements increased by new business cases may need enhancements to the non-blocking mechanism.

Charging of new service together with converged charging have increased the need for more information in the input to rating.

The use of event-based charging has led to a need for cancelling the charging for the chargeable event, e.g. refund, for unsuccessful scenarios or cases not possible to fulfil.

The document structure of the actual service, i.e. yaml, followed the handling of Ro and Rf, based on Diameter, which may need improvements.

Third change

### 5.3.1 General

A rating group isn’t defined in the context of SBI, it is however defined in TS 32.299 [x] as the same as the rating group of RFC 4006 [x] obsoleted by RFC 8506 [x] and linked to the charging key defined in TS 23.203 [x], the corresponding spec for SBI is 23.503 [x]. In TS 23.503 [x] the charging key is defined as “information used by the CHF for rating purposes”.

The rating group gathers a set of services that is subject to the same cost and rates. One rating group can contain several rates if all rates are applicable to all services belonging to the rating group and if quota is granted it can be consumed by all services, belonging to the rating group, equally. How a service is identified is dependent on the network function.

This means that the cost and rates can be determined by the rating group but not the consumption rate of the quota i.e., how fast quota is used by the services belonging to the same rating group, and in the extension how much quota that should be reserved for a specific request.

End of change

Fourth change

#### 5.3.2.2 Use Case #3d: Service Charging Enhancement

An End User (subscriber) subscribed to a service, once the service consumption is authorized for the End User, CHF can provide the right Rating Group to be used for service charging whilst the End User consumes it. Furthermore, this can be used for a clear improvement on the charging statistics and reporting.

As per the current specifications, the Charging Data Request [intial] message has the RequestedUnit Type which will be used by the CHF on the response, though the ServiceID type is not available. Service ID is only available in the UsedUnitContainer type (after intitial Chargind Data Request message).

End of change

Fifth change

### 5.3.3 Potential charging requirements

**REQ-3GPPCH-ER-01** The 5G system should support the enhancement of input to CHF rating based on the QoS information.

**REQ-3GPPCH-ER-02** The 5G system should support the enhancement of input to CHF rating based on the Service ID information.

End of change

Sixth change

#### 5.3.5.x Solution #3.x Enhancement of multiple unit usage with service identifier

A possible solution for key issues 3a, 3b, and 3c, enhancement of input to CHF rating.

Any information in the PCC rule could potentially be connected to a specific service identifier, this means that a specific QoS can be identified by the service identifier.

A solution could be to allow the service identifier in the MultipleUnitUsage as well as the rating group in the request for quota, to be able to allocate the right amount of quota needed at that moment for that rating group. The service identifier would in this case only be included as indicative i.e., which services that may be started. This means that both the service identifier(s) that triggered the request (if any) as well as the already started would be included in the request in the case of an update.

Table 5.3.5.x-1: Definition of type MultipleUnitUsage

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ratingGroup | RatingGroup | M | 1 | The identifier of a rating group. |  |
| serviceIdList | ServiceId | OC | 0..N | This field identity of the used service |  |
|  |  |  |  |  |  |
| requestedUnit | RequestedUnit | OC | 0..1 | This field indicates, if included, that quota management is required. It may additionally contain the amount of requested service units for a particular category. |  |
| usedUnitContainer | array(UsedUnitContainer) | OC | 0..N | This field contains the amount of used non-monetary service units measured. |  |

End of change

Seventh change

#### 5.3.5.y Solution #3.y Enhancement of requested unit with service identifier

A possible solution for key issues 3a, 3b, and 3c, enhancement of input to CHF rating.

Any information in the PCC rule could potentially be connected to a specific service identifier, this means that a specific QoS can be identified by the service identifier.

A solution could be to allow the service identifier in the requested unit, to be able to allocate the right amount of quota needed at that moment for that rating group. The service identifier would in this case only be included as indicative i.e., which services that may be started. This means that both the service identifier(s) that triggered the request (if any) as well as the already started would be included in the request in the case of an update.

Table 6.1.6.2.1.9-1: Definition of type RequestedUnit

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| serviceIdList | ServiceId | OC | 0..N | This field identity of the used service |  |
| time | Uint32 | OC | 0..1 | This field holds the amount of requested time. |  |
| totalVolume | Uint64 | OC | 0..1 | This field holds the amount of requested volume in both uplink and downlink directions. |  |
| uplinkVolume | Uint64 | OC | 0..1 | This field holds the amount of requested volume in uplink direction. |  |
| downlinkVolume | Uint64 | OC | 0..1 | This field holds the amount of requested volume in downlink direction. |  |
| serviceSpecificUnits | Uint64 | OC | 0..1 | This field holds the amount of requested service specific units. |  |
| NOTE 1: f none of them is included, "RequestedUnit": {}, the category and amount is determined by CHF for online charging with centralized unit determination and rating scenario. |

End of changes