**3GPP TSG-SA5 Meeting #144-e *S5-224191***

**e-meeting, 27 June - 1 July 2022**

**Source: Ericsson**

**Title: Adding new trigger category solution clause 5.1**

**Document for: Approval**

**Agenda Item: 7.5.2**

# 1 Decision/action requested

**Include the proposed changes in TR 28.827.**

# 2 References

[1] 3GPP TR 28.827: "Study on 5G charging for additional roaming scenarios and actors"

# 3 Rationale

Adding a solution to charging information optimization using a new trigger category.

# 4 Detailed proposal

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| **First change** |

### 5.1.5 Solutions

#### 5.1.5.x Solution #1.x new trigger category

A possible solution for key issues 1a, 1b and 2b covering requirements REQ-CH\_INFO-01, charging information optimization.

This solution adds a third category of chargeable event, extending the current two: immediate and deferred.

For the immediate report chargeable events for which, when occurring, the current counts are closed and sent together with the charging data generated by the NF consumer towards the CHF in a Charging Data Request message. Counts indicating zero usage may be reported. New counts are started by the NF consumer.



Figure 5.1.5.x-1: Message flow for immediate triggers

**1) Service delivery ongoing:** there is a connection setup for service delivery and a charging session is established between the NF (CTF) and the CHF.

**2) Service usage:** there is usage on the service i.e., uplink and or downlink data consumption.

**3) Immediate trigger:** the NF (CTF) generates charging information related to the service delivered, due to that an immediate trigger for usage reporting or quota request is met.

**4) Charging data request [Update, Unit used, Quota requested]:** the NF (CTF) sends the request to the CHF reporting the used units and if the service is under quota management it includes a quota request for the service to continue.

**5) Account, rating, and reservation control:** The CHF performs the process related to the reported usage and if the service is under quota management it performs processes related to quota requested, it may involve the rating entity and user's account balance.

**6) Update CDR:** based on policies, the CHF updates the CDR with charging data related to the service.

**7) Charging Data Response [Update, Quota granted]:** The CHF responds and if the service is under quota management it includes a quota granted for the service to continue.

**8) Service delivery ongoing:** there is a connection for service delivery, and if there it is quota manged the usage is monitored.

**9) Immediate trigger:** the NF (CTF) generates charging information related to the service delivered, due to that an immediate trigger for usage reporting or quota request is met.

**10) Charging data request [Update, Unit used, Quota requested]:** the NF (CTF) sends the request to the CHF reporting zero used units and if the service is under quota management it includes a quota request for the service to continue.

**11) Account, rating, and reservation control:** The CHF performs the process related to the reported usage and if the service is under quota management it performs processes related to quota requested, it may involve the rating entity and user's account balance.

**12) Update CDR:** based on policies, the CHF updates the CDR with charging data related to the service.

**13) Charging Data Response [Update, Quota granted]:** The CHF responds and if the service is under quota management it includes a quota granted for the service to continue.

**14) Service delivery ongoing:** there is a connection for service delivery, and if there it is quota manged the usage is monitored.

Deferred report: chargeable events for which, when occurring, the current counts are closed and stored together with the charging data generated by the NF consumer. Counts indicating zero usage may be included. The stored counts will be sent to the CHF in next a Charging Data Request message. New counts are started by the NF consumer.



Figure 5.1.5.x-2: Message flow for deferred triggers

**1) Service delivery ongoing:** there is a connection setup for service delivery and a charging session is established between the NF (CTF) and the CHF.

**2) Service usage:** there is usage on the service i.e., uplink and or downlink data consumption.

**3) Deferred trigger:** the NF (CTF) generates charging information related to the service delivered, due to that a deferred trigger for usage reporting is met.

**4) Close counts and start new counts:** the NF (CTF) close counts related to the service and starts new, keeping the closed counts for reporting when an immediate trigger occurs.

**5) Service delivery ongoing:** there is a connection for service delivery, and if there it is quota manged the usage is monitored.

**6) Deferred trigger:** the NF (CTF) generates charging information related to the service delivered, due to that a deferred trigger for usage reporting or quota request is met.

**7) Close counts and start new counts:** the NF (CTF) close counts related to the service and starts new; depending on key issue #1a it may keep the closed counts for reporting when an immediate trigger occurs.

**8) Service delivery ongoing:** there is a connection for service delivery, and if there it is quota manged the usage is monitored.

At usage report: chargeable events for which, when occurring and there is usage, the current counts are closed and sent together with the charging data generated by the NF consumer towards the CHF in a Charging Data Request message. Counts indicating zero usage may be reported. New counts are started by the NF consumer.



Figure 5.1.5.x-1: Message flow for at usage triggers

**1) Service delivery ongoing:** there is a connection setup for service delivery and a charging session is established between the NF (CTF) and the CHF.

**2) Service usage:** there is usage on the service i.e., uplink and or downlink data consumption.

**3) At usage trigger:** the NF (CTF) generates charging information related to the service delivered, due to that an at usage trigger and that the is usage for usage reporting or quota request is met.

**4) Charging data request [Update, Unit used, Quota requested]:** the NF (CTF) sends the request to the CHF reporting the used units and if the service is under quota management it includes a quota request for the service to continue.

**5) Account, rating, and reservation control:** The CHF performs the process related to the reported usage and if the service is under quota management it performs processes related to quota requested, it may involve the rating entity and user's account balance.

**6) Update CDR:** based on policies, the CHF updates the CDR with charging data related to the service.

**7) Charging Data Response [Update, Quota granted]:** The CHF responds and if the service is under quota management it includes a quota granted for the service to continue.

**8) Service delivery ongoing:** there is a connection for service delivery, and if there it is quota manged the usage is monitored.

**9) At usage trigger:** the NF (CTF) waits for usage to be requested before generating charging information related to the service delivered.

**10) Service usage:** there is a request for usage on the service i.e., uplink and or downlink data consumption and the NF (CTF) generates charging information related to the service delivered, due to that an at usage trigger was previously and that the is usage for usage reporting or quota request is met

**11) Charging data request [Update, Unit used, Quota requested]:** the NF (CTF) sends the request to the CHF reporting used units and if the service is under quota management it includes a quota request for the service to continue.

**12) Account, rating, and reservation control:** The CHF performs the process related to the reported usage and if the service is under quota management it performs processes related to quota requested, it may involve the rating entity and user's account balance.

**13) Update CDR:** based on policies, the CHF updates the CDR with charging data related to the service.

**14) Charging Data Response [Update, Quota granted]:** The CHF responds and if the service is under quota management it includes a quota granted for the service to continue.

**15) Service delivery ongoing:** there is a connection for service delivery, and if there it is quota manged the usage is monitored.

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| **End of changes** |