**3GPP TSG-SA5 Meeting #131e *S5-203229***

**e-meeting 25th May-3rd June 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **32.290** | **CR** | **0123** | **rev** | **-** | **Current version:** | **16.3.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Flows for switch to offline | | | | | | | | | |
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| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | CHFCQM | | | | |  | ***Date:*** | | | 2020-05-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **C** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change 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](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | There are no flows for the switch from offline to online. | | | | | | | | |
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| ***Summary of change:*** | | Adding flows for both permanent and temporary switch from online to offline. | | | | | | | | |
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| ***Consequences if not approved:*** | | The flows for switching between online and offline won’t be described | | | | | | | | |
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| ***Clauses affected:*** | | 5.3.2.x (new) | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First change** |

#### 5.3.2.x Switch between online and offline

When converged charging is used for a service delivery it is possible to switch from online charging (with quota management) to offline charging (without quota management), and in some cases back again. The triggering for reporting the charging information can be any triggers of the offline charging or online charging (deferred or immediate triggers).

Figure 5.3.2.x.1 shows a scenario for Session based charging (SCUR) with permanent change to offline changing.



Figure 5.3.2.x.1: SCUR - Session based charging with permanent switch to offline charging

**1) Request for resource usage:** A request for session establishment is received in the NF (CTF). The service is configured to be authorized by the CHF to start.

**2) Units Determination:** the NF (CTF)) determines the number of units depending on the service requested by the UE in "Decentralized Units determination" scenario.

**3) Charging Data Request [Initial, Quota Requested]:** The NF (CTF) sends the request to the CHF for the service to be granted authorization to start, and to reserve the number of units if determined in item 2.

**4) Account, Rating, Reservation Control:** the CHF rates the requests and checks need for quota management. If not needed for the service a switch from online to offline type of charging is to be performed.

**5) Open CDR:** based on policies, the CHF opens a CDR related to the service.

**6) Charging Data Response [Initial, Result Code]:** The CHF grants authorization to NF (CTF) for the service to start, with a result code indicating quota management not applicable.

**7) Content/Service Delivery:** the NF (CTF) delivers the content/service.

**8) Usage Reporting Trigger:** the NF (CTF) generates charging data related to the service delivered that is now not under quota management, based on a trigger for usage reporting is met.

**9) Charging Data Request [Update, Unit Used]:** the NF (CTF) sends the request for reporting the related charging data, including the used units, to the CHF.

**10) Account, Rating Control:** The CHF performs the reported usage process involving rating entity and user's account balance.

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

**12) Charging Data Response [Update]:** The CHF informs the NF (CTF) on the result of the request.

**13) Content/Service Delivery:** the NF (CTF) delivers the content/service.

**14) Service release:** the session is released.

**15) Charging Data Request [Termination, Used Units]:** the NF (CTF) sends the request to the CHF, for charging data related to the service termination with the final consumed units.

**16) Account, Rating Control:** The CHF performs the service termination process involving rating entity and user's account balance.

**17) Close CDR:** based on policies, the CHF closes the CDR with charging data related to the service termination and the last reported units.

**18) Charging Data Response [Termination]:** The CHF informs the NF (CTF) on the result of the request.

Figure 5.3.2.x.2 shows a scenario for Session based charging (SCUR) with a change to not quota managed and back to quota manged.



Figure 5.3.2.x.2: SCUR - Session based charging with switch from quota managed to not quota managed and back.

**1) Request for resource usage:** A request for session establishment is received in the NF (CTF). The service is configured to be authorized by the CHF to start.

**2) Units Determination:** the NF (CTF)) determines the number of units depending on the service requested by the UE in "Decentralized Units determination" scenario.

**3) Charging Data Request [Initial, Quota Requested]:** The NF (CTF) sends the request to the CHF for the service to be granted authorization to start, and to reserve the number of units if determined in item 2.

**4) Account, Rating, Reservation Control:** the CHF rates the requests and checks need for quota management. If not needed for the service at the moment a switch from online to offline type of charging is to be performed.

**5) Open CDR:** based on policies, the CHF opens a CDR related to the service.

**6) Charging Data Response [Initial, Quota Management Indication]:** The CHF grants authorization to NF (CTF) for the service to start, with **Quota Management Indication** stating quota management is temporarily not applicable.

**7) Content/Service Delivery:** the NF (CTF) delivers the content/service.

**8) Usage Reporting Trigger:** the NF (CTF) generates charging data related to the service delivered that is not under quota management, based on a trigger for usage reporting is met.

**9) Charging Data Request [Update, Unit Used, Quota Requested]:** the NF (CTF) sends the request to the CHF, for units to be granted for the service to continue and reporting the used units with an indication that these were used with quota management temporary not applicable.

**10) Account, Rating, Reservation Control:** The CHF performs the process related to the reported usage and checks need for quota management. If needed for the service, CHF checks if corresponding funds can be reserved on the user's account balance.

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

**12) Charging Data Response [Update, Quota Granted]:** The CHF grants quota to NF (CTF) for the service to continue, with the reserved number of units.

**13) Content/Service Delivery:** the NF (CTF) delivers the content/service based on the granted quota.

**14) Session released:** the session is released.

**15) Charging Data Request [Termination]:** the NF (CTF) sends the request to the CHF, for charging data related to the service termination with the final consumed units.

**16) Account, Rating Control:** The CHF performs the service termination process involving rating entity and user's account balance.

**17) Close CDR:** based on policies, the CHF closes the CDR with charging data related to the service termination and the last reported units.

**18) Charging Data Response [Termination]:** The CHF informs the NF (CTF) on the result of the request.

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| **End of changes** |