**3GPP TSG-SA WG2 Meeting #160 S2-2312044**

**13 – 17 November, 2023, Chicago, IL, USA (revision of S2-xxx)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.503** | **CR** | **1193** | **rev** |  | **Current version:** | 18.3.0 |  |
|  | | | | | | | | |
| *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:*** | Miscellaneous corrections on corrections on PDTQ | | | | | | | | | |
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| ***Source to WG:*** | Samsung | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | AIMLsys | | | | |  | ***Date:*** | | | 2022-10-31 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In TS 23.502, ‘Number of UEs’ is used as an input parameter in all of the PDTQ related descriptions and services. For example, *5.2.5.9.2 Npcf\_PDTQPolicyControl\_Create service operation* ***Inputs, Required:*** *ASP identifier, Number of UEs, list of Desired time windows,…*  However, in TS 23.503, ‘expected amount of UEs’ or ‘expected number of UEs’ are used. The misalignments of the terminologies between 502 and 503 should be fixed.  Unclear text is clarified. | | | | | | | | |
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| ***Summary of change:*** | | * Replace ‘expected amount of UEs’ or ‘expected number of UEs’ by ‘Number of UEs’ in PDQT related descriptions. * Clarification of text. | | | | | | | | |
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| ***Consequences if not approved:*** | | Unclear specification. Misalignment of terminologies between 23.502 and 23.503. | | | | | | | | |
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| ***Clauses affected:*** | | 6.1.2.7, 6.2.1.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\* \* \*Start of Changes \* \* \*

#### 6.1.2.7 Negotiation for planned data transfer with QoS requirements

The AF may contact the PCF via the NEF by invoking Npcf\_PDTQPolicyControl\_Create service operation to request a time window for planned data transfer with QoS requirements (PDTQ).

NOTE 1: The NEF may contact any PCF in the operator network.

The AF request shall contain an ASP identifier, either a QoS Reference or individual QoS parameters, the expected number of UEs, the list of desired time windows and, if the AF can adjust to different QoS parameter combinations, the AF may, in addition, provide Alternative Service Requirements in a prioritized order as defined in clause 6.1.3.22, Network Area Information, and request for notification. As Network Area Information, the AF may provide either a geographical area (e.g. a civic address or shapes), or an area of interest that includes a list of TAs and/or a list of NG-RAN nodes or a list of cell identifiers. When the AF provides a geographical area, the NEF maps it, based on local configuration, into an area of interest (i.e. a list of TAs or NG-RAN nodes list or cells identifiers list) and provides it to the PCF. The request for notification can be included in the AF request to indicate that the ASP accepts that the PDTQ policy can be re-negotiated using the PDTQ warning notification procedures described in clause 4.16.15.2 of TS 23.502 [3].

NOTE 2: A third party application server is typically not able to provide any specific network area information and if so, the AF request is for the whole operator network.

The PCF shall firstly retrieve all existing PDTQ policies stored for any ASP from the UDR. Then the PCF subscribes to "Network Performance" analytics or "DN Performance" analytics from NWDAF following the procedures and services described in TS 23.288 [24]. The PCF may request threshold reporting or periodic reporting. Afterwards, the PCF shall determine one or more PDTQ policies, based on the information provided by the AF, the analytics on "Network Performance" or "DN Performance" and other available information (e.g. network policy and existing PDTQ policies).

NOTE 3: Whether the PCF subscribes to "Network Performance" analytics or "DN Performance" analytics is based on PCF configuration. PCF implementation has to ensure that analytics information is available for the list of desired time windows and Network Area Information requested by the AF.

A PDTQ policy consists of a recommended time window for the traffic transfer for each of the AF sessions for each of the UEs involved.

Finally, the PCF shall provide the candidate list of PDTQ policies to the AF via NEF together with the PDTQ Reference ID(s). If the AF received more than one PDTQ policy, the AF shall select one of them and inform the PCF about the selected PDTQ policy. The selected PDTQ policy together with the PDTQ Reference ID, the network area information (if provided by the AF), ASP identifier, the list of desired time windows, the QoS Reference or individual QoS parameters, the Alternative Service Requirements in a prioritized order (if provided by the AF), the expected number of UEs and the request for notification of PDTQ policy re-negotiation (if provided by the AF) are stored by the PCF in the UDR as Data Set "Policy Data" and Data Subset "Planned Data Transfer with QoS requirements data". The same or a different PCF can retrieve this PDTQ policy and the corresponding related information from the UDR and take them into account for future decisions about PDTQ policies related to the same or other ASPs.

When the recommended time window is about to start, and the AF needs to make use of the PDTQ policy for existing or new sessions, the AF invokes the Nnef\_AFsessionWithQoS\_Create/Npcf\_PolicyAuthorization\_Create in order to set up the AF session with the required QoS.

NOTE 4: It is expected that the AF requests the same QoS (or at least a similar one) that has been provided during the PDTQ policy negotiation as otherwise, the time window recommendation in the negotiated PDTQ policy loses the baseline on which it has been derived.

The PCF may subscribe to analytics on "Network Performance" or "DN Performance" from NWDAF for the area of interest and time window of a PDTQ policy following the procedure and services described in TS 23.288 [24] indicating a Reporting Threshold or periodic reporting in the Analytics Reporting information. The value for the Reporting Threshold is set by the PCF based on operator configuration. When the NWDAF determines that the Network Performance or DN Performance reaches the Reporting Threshold, the NWDAF notifies the PCF with the Network Performance analytics or DN Performance analytics for the requested area of interest and time window. When the PCF gets the notification from the NWDAF, the PCF may try to re-negotiate the affected PDTQ policies with AFs that accept PDTQ policy re-negotiation. If periodic reporting is received, the PCF shall determine, based on the latest analytics information and previously selected PDTQ policy, whether the PDTQ policy should be updated or not. If the PCF determines to update the PDTQ policy, the PCF may try to re-negotiate the affected PDTQ policies with AFs that accepted PDTQ policy re-negotiation. To do this, the PCF retrieves all the PDTQ policies together with the corresponding AF provided information (e.g. the corresponding list of desired time windows) from the UDR, identifies the PDTQ policies that are not desirable anymore due to the degradation of the Network Performance or DN Performance and calculates new candidate PDTQ policies for the ASP(s). If the PCF cannot determine any new candidate PDTQ policy or the related AF has indicated it does not accept PDTQ policy re-negotiation, the previously negotiated PDTQ policy shall be kept and no interaction with the ASP shall occur. If the PCF determines one or more new candidate PDTQ policies, the PCF notifies the related ASP(s) of both the PDTQ policy that should be updated and the candidate PDTQ policies for the related ASP(s) via NEF.

When the AF receives the notification, the AF may select one of the PDTQ policies included in the candidate list, and then inform the PCF about the selected PDTQ policy. The PCF stores the newly selected PDTQ policy into the UDR for the corresponding PDTQ Reference ID and removes the PDTQ policy that is no longer valid.

If the AF does not select any of the PDTQ policies included in the candidate list, the previously negotiated PDTQ policy shall be kept.

\* \* \*Next Change \* \* \*

6.2.1.6 Application specific policy information management

The application specific information used for policy control includes:

- Negotiation of BDT information stored in the UDR as Data Set "Policy Data" and Data Subset "Background Data Transfer data": It contains an ASP identifier, Non-IP information or IP 3-tuple to identify the Application server, a transfer policy together with the Background Data Transfer Reference ID, the volume of data to be transferred per UE, the expected amount of UEs and optionally, the subscription to notifications when the BDT policy needs to renegotiated;

- Sponsored data connectivity profile information stored in the UDR as Data Set "Policy Data" and Data Subset "Sponsored data connectivity profile data": It contains a list of ASP identifiers and their applications per sponsor identity;

- Application Function request information for multiple UEs (per group of UEs or all UEs) stored in the UDR as Data Set "Application Data" and Data Subset "AF request information for multiple UEs";

- PDTQ information stored in the UDR as Data Set "Policy Data" and Data Subset "Planned Data Transfer with QoS requirements data". It contains an ASP identifier, a PDTQ policy together with the PDTQ Reference ID, the requested QoS Reference or individual QoS parameters, optionally Alternative Service Requirements, the list of desired time windows, the expected number of UEs, the network area information provided by the AF (mapped by NEF) and the subscription to notifications of PDTQ policy re-negotiation.

The application specific policy information may be requested/updated by the PCF per AF request.

The management of Application Function request information for multiple UEs is defined in clause 6.3.7.2 of TS 23.501 [2], the management of policies for the negotiation of BDT is defined in clause 6.1.2.4, the management of policies for the negotiation of PDTQ is defined in clause 6.1.2.7 and the provision and usage of sponsored data connectivity profile is defined in clause 6.2.1.1.

\* \* \*End of Changes \* \* \*