**3GPP TSG SA WG2 Meeting #164S2-2408966**

**Maastricht, Aug 19 – 23, 2024**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.502** | **CR** | **4943** | **rev** | **1** | **Current version:** | **18.6.0** |  |
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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:*** | R18 AIMLsys\_ 23502\_CR for clarification on PDTQ procedures | | | | | | | | | |
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| ***Source to WG:*** | Nokia | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | AIMLsys | | | | |  | ***Date:*** | | | 2024-08-09 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | 1. When more than one PDTQ policy is provided to the AF (step 8), the process assumes the AF will select one and notify the NEF (step 9). However, it is also possible that the AF does not select any of them, which is not addressed in the current text. 2. In the current procedure, it is not clear why step 3 and 4 are performed when the AF initiates a PDTQ policy creation request. It is assumed that the UDR retrieval procedure is not necessary for the creation procedure. 3. In step 5, it is not clear what all available information would be. 4. In step 5, it is understood as if H-PCF can only request the NW performance or DN performance analytics, while in fact it can also subsribe those analytics. | | | | | | | | |
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| ***Summary of change:*** | | 1. In the general section, the language for the AF selection part has been changed from ‘will’ to ‘can.’ Steps 9 to 12 have been updated accordingly. 2. Step 3 and 4 are removed.. 3. In step 5, additional information is removed. 4. In step 5, the wording has been improved to eliminate ambiguity. | | | | | | | | |
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| ***Consequences if not approved:*** | | The PDTQ procedure cannot be adequately specified, which may lead readers to misinterpret the specification. | | | | | | | | |
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| ***Clauses affected:*** | | 4.16.15 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **x** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*FIRST CHANGE*

### 4.16.15 Negotiations for planned data transfer with QoS requirements

#### 4.16.15.1 General

The intent of this clause is to specify generic service procedures to enable the AF to negotiate viable time window for the planned application data transfer with specific QoS requirements and operational conditions via the support of the NEF.

The PDTQ policies are defined for a specific ASP and each PDTQ policy includes a recommended time window for the traffic transfer for each of the AF sessions involved.

The Network Performance analytics or DN Performance analytics for NWDAF as described in TS 23.288 [50] will be subscribed by the PCF in order to assist its decision to derive the PDTQ policies.

One or more negotiated PDTQ policies could be provided by PCF to AF via NEF together with the PDTQ Reference ID. If the AF receives more than one PDTQ policies from the PCF, the AF can select one of them and inform the PCF about the selected PDTQ policy which will then be stored in the UDR. The selected PDTQ policy might be renegotiated, i.e. due to the degradation of the network performance. In this case, the PCF may determine a new list of candidate PDTQ policies and notify the AF via NEF. The AF may select one of the new PDTQ polices or not accept any of the PDTQ policies, it then notifies the PCF of the corresponding decision. Prior to the start of the selected time window for the planned data transfer, the AF requests the PCF to set up the AF session with required QoS. The PCF will then determine the appropriate PCC rules according to the AF request.

#### 4.16.15.2 Procedures

##### 4.16.15.2.1 Procedures for negotiation of planned data transfer with QoS requirements

This clause describes the PDTQ procedures to negotiate viable time window for the planned application data transfer via the support of the NEF.



Figure 4.16.15.2.1-1: Negotiation for planned data transfer with QoS requirements

Prior to the transmission of the Application AI/ML data, the AF negotiates with the 5G Core for the PDTQ policies that provide assistance for the application data transfer. The AF discovers its serving NEF, if it has not done so before, by using the mechanism described in clause 6.3.14 of TS 23.501 [2].

1a. The AF invokes the Nnef\_PDTQPolicyNegotiation\_Create Request (ASP Identifier, Number of UEs, list of Desired time windows, QoS Reference or individual QoS parameters, Alternative Service Requirements (optional), Network Area Information, Request for notification, Application Identifier). The Request for notification is an indication that PDTQ warning notification can be sent to the AF.

NOTE 1: Based on AF's internal logic (policy), the AF may determine the minimum QoS requirements by considering the UEs expected to participate in the Desired time windows, the network input data and the trigger conditions for group application data transfer.

1b-1c. The NEF may authenticate the AF and authorize the PDTQ request from the AF. If the authentication/authorization of the AF's request has failed, the NEF will respond to the AF's request through the Nnef\_PDTQPolicyNegotiation\_Create Response with a failure result and the following steps are skipped.

The NEF may map the ASP ID into DNN and S-NSSAI to be used in step 2.

NOTE 2: The Application ID provided by the AF and the Application ID provided to NWDAF can be different, and in such a case, a mapping is performed by the PCF.

2. Based on an AF request, the NEF may translate the information provided by the AF (e.g. Network Area Information, etc.) based on the local policy and invokes the Npcf\_PDTQPolicyControl\_Create (ASP Identifier, Number of UEs, list of Desired time windows, QoS Reference or individual QoS parameters, Alternative Service Requirements (optional), Network Area Information, Request for notification, Application Identifier) with the H-PCF to authorize the creation of the policy regarding the PDTQ. If the PCF was provided with Request for notification, then PCF will send PDTQ warning notification to the AF as specified in clause 4.16.15.2.2 to notify the AF when the network performance or DN Performance in the area of interest reaches the Reporting Threshold set by the PCF based on operator configuration or the PCF determines to update the previously selected PDTQ policy based on the latest periodic reported network performance or DN Performance analytics as described in clause 6.1.2.7 of TS 23.503 [20].

The PCF may be configured to map the ASP identifier to a target DNN and S-NSSAI if the NEF did not provide the DNN, S-NSSAI to the PCF.

3. H-PCF queries the UDR to retrieve all existing PDTQ polices for all the ASPs using Nudr\_DM\_Query (Policy Data, Planned Data Transfer with QoS requirements) service operation.

4. The UDR provides all the stored PDTQ policies and corresponding related information (e.g. the Number of UEs, the list of Desired time windows) to the H-PCF.

5. Based on information provided by the AF, the H-PCF requests or subcribes to the NWDAF as defined in clause 6.6.4 or clause 6.14.4 of TS 23.288 [50] to receive the Network Performance analytics or the DN Performance analytics. When requesting the Network Performance analytics or the DN performance analytics, if "any UE" is used, then the AoI information is used to identify the target gNB(s) for the prediction of the availability of the network resources.

The DNN, S-NSSAI and Application ID may be provided by H-PCF as Analytics Filter Information when requesting or subscribing to the relevant Analytic ID.

6. By referring to the outcome of the analytics report as described in clause 6.1.2.7 of TS 23.503 [20], H-PCF determines one or more PDTQ policies. Each PDTQ policy includes a recommended time window for the traffic transfer for each of the AF sessions for each of the UEs involved.

NOTE 3: The existing PDTQ policies for all ASPs retrieved from the UDR in step 4 can be considered by the PCF when determining PDTQ policies for the requested ASP (e.g., the PCF can avoid selecting time windows that are already allocated to many other ASPs).

7. The PCF sends one or more PDTQ policies to NEF in Npcf\_PDTQPolicyControl\_Create Response including the PDTQ Reference ID.

8. The NEF sends a Nnef\_PDTQPolicyNegotiation\_Create response to the AF to provide one or more PDTQ policies together with the PDTQ Reference ID. If the NEF received only one PDTQ policy from the PCF, steps 9-12 are not executed and the flow proceeds to step 13. Otherwise, the flow proceeds to step 9.

9. If more than one PDTQ policies were provided to the AF, the AF can select one of the PDTQ policies and notifiy NEF for the selected PDTQ policy via Nnef\_PDTQPolicyNegotiation\_Update request together with the PDTQ Reference ID. The AF can store the PDTQ Reference ID for the future interaction with the PCF.

10-12. If the selected PDTQ policy is received, the NEF notifies H-PCF about the selected PDTQ policy by the AF. The H-PCF acknowledges NEF. The NEF responds to the AF request with a Nnef\_PDTQPolicyNegotiation\_Update Response.

13-14. The H-PCF stores the PDTQ Reference ID together with the new PDTQ policy in the UDR by invoking Nudr\_DM\_Update (PDTQ Reference ID, Policy Data, Planned Data Transfer with QoS requirements). The UDR sends a response to the H-PCF as acknowledgement.

*END OF CHANGES*