**SA WG2 Meeting #164 S2-240XXXX**

**19 - 23 August 2024, Maastricht, Netherlands**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.502** | **CR** | **XXXX** | **rev** | **-** | **Current version:** | **19.0.0** |  |
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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:*** | Addition of Network Slice Replacement triggered by the service specific parameter provisioning | | | | | | | | | |
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| ***Source to WG:*** | KDDI, ZTE? | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI-19 | | | | |  | ***Date:*** | | | 2024-08-08 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | This CR introduces text to enable the PCF for the UE to subscribe the service parameters from the UDR and trigger Network Slice Replacement for PDU Session which S-NSSAI does not match the service parameters.  This CR defines new procedure to enable the PCF to trigger a policy-based Network Slice Replacement based on inputs from AF,  **Outcome from CC on 8th Aug 2024;**  It was discussed whether proposed solution options could be included in this TEI.  Option 1: AF -> (NEF->) UDM -> AMF  Option 2: AF -> (NEF->) UDR/UDM -> PCF -> AMF  This CR introduces text changes for option 2 in clause 4.15.6.10 and 4.15.6.10a. | | | | | | | | |
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| ***Summary of change:*** | | * Introduce new procedure of Network Slice Replacement triggered by the service specific parameter provisioning | | | | | | | | |
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| ***Consequences if not approved:*** | | Lack of the PCF triggering a policy-based Network Slice Replacement based on inputs from AF, | | | | | | | | |
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| ***Clauses affected:*** | | 4.15.6.10, 4.15.6.10a | | | | | | | | |
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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:*** | |  | | | | | | | | |

\* \* \* Start of Change \* \* \*

#### 4.15.6.10 Application guidance for URSP determination

This clause describes the procedures to allow an AF to provide guidance for URSP determination to 5G system via NEF. The AF may belong to the operator or to an external party. The PCF may be in the Home PLMN, as it is the PCF that determines the URSP for the UE, or in the VPLMN and then the Application guidance for URSP determination is provided to the PCF in the HPLMN via the PCF of the VPLMN. The PCF in the VPLMN translates the Service Parameters values provided by the AF for inbound roamer to values applicable to the HPLMN, e.g. S-NSSAI as described in TS 23.503 [20].

NOTE 1: The operator can negotiate with external party (typically a Corporate represented by an AF) dedicated DNN(s) and/or S-NSSAI(s) for the traffic of UE(s) of this external party. UE(s) of the external party can be identified by a group identifier.

The guidance for URSP determination may be used to provide 5GC with guidance for the URSPs depending on the UE location. This is further described in TS 23.548 [74].

For providing guidance for URSP determination, the procedure defined in clause 4.15.6.7 is performed with the following considerations:

1) Service Description indicates an AF Identifier.

2) Service Parameters.

Information on the AF guidance for URSP determination which consists of a list of URSP rules that associate an application traffic descriptor with requested features for the candidate PDU sessions the application traffic may use:

- An application traffic descriptor, whose definition corresponds to that of the URSP Traffic Descriptors (as defined for the URSP rule in TS 23.503 [20] Table 6.6.2.1-2). When AF provides application guidance for URSP determination for PIN, the application traffic descriptor shall include PIN ID.

- one or more sets of Route selection parameters, each parameter may correspond to:

- (DNN, S-NSSAI). This may be provided by the AF or determined by the NEF based on the AF Identifier when it is not provided by the AF and the AF provides only one instance of AF guidance for URSP determination. In the case of AF guidance for URSP determination for PIN, this shall be provided by the AF.

- Requested PDU session type.

- a default Route selection precedence value to be used for the application traffic when Route selection precedence with a corresponding spatial validity condition is not provided.

- Route selection precedence with a corresponding spatial validity condition that indicates where the Route selection parameters apply. This may correspond to a geographical area (e.g. a civic address or shapes).

NOTE 2: The different sets of Route selection parameters indicate different sets of PDU Session information (DNN, S-NSSAI) that can be associated with applications matching the application traffic descriptor. Each set is meant to apply for a specific (set of) spatial validity condition. Each set is associated with a Route selection precedence to cope with the case where multiple spatial validity conditions overlap.

- VPLMN ID(s) that indicates the PLMN(s) where the AF guidance on URSP determination and all its RSD(s), applies.

If the AF provides a geographical area as spatial validity condition, it is up to the NEF to transform this information into 3GPP identifiers (e.g. TAI(s)).

An AF sets the Requested PDU session type if the AF requests to change the PDU session type of the URSP rules.

NEF may, based on local configuration, complement missing service parameters. Additionally, based on operator's local policy, NEF may request UDM for service specific authorization for the service parameters for an individual UE (e.g. to authorize the Corporate or MTC provider represented by the AF and the requested DNN, S-NSSAI for the related UE) before storing the service parameters into the UDR. If the request is targeting a group of UEs, NEF may also request UDM for service specific authorization for the group related data (see table 4.15.6.3b-1), i.e. the DNN, S-NSSAI associated to the group. If the request is targeting any UE (all UEs), NEF authorizes the request based on local policy (e.g. based on AF Id) without requesting for any service specific authorization from UDM. NEF requests UDM for service specific authorization for the service parameters provisioned via the Nudm\_ServiceSpecificAuthorisation\_Create service operation as defined in clause 4.15.6.7a.

If a group of UEs or any UE is requested, each individual UE authorization is performed at a later stage by PCF.

NOTE 3: The operator needs to ensure the consistency between the group related data and the UE group members subscription data, i.e. if a group is authorized for a given DNN/S-NSSAI as defined in the group related data, it needs to be ensured that all UE members of the group are provisioned with such DNN/S-NSSAI, since no individual UE check is required to be done by NEF against UDM.

NOTE 4: AF guidance for application traffic is not related with 5G VN group.

3) The Target UE identifier(s) that may be a specific UE, identified by a GPSI, or a group of UE(s), identified by an External-Group-ID, or any UE of the PLMN of the NEF, or the PLMN ID(s) of inbound roamers that the AF request may be associated with.

The information on the AF guidance for URSP determination provided by the AF may be associated to:

a) UEs of the PLMN (of the NEF) when roaming in other PLMNs. In this case, the AF guidance for URSP determination targets to a specific UE, a group of UEs or any UE of the PLMN. In this case, the AF guidance for URSP determination associated to a specific UE, a group of UEs or any UE of the PLMN shall be also associated with the corresponding VPLMN(s) where the AF guidance for URSP determination shall be applied if the UE roams to that VPLMN(s). The list of VPLMN ID(s) is included in the Service Parameters.

b) An inbound roamer from one or more PLMN(s). In this case, the AF targets the AF guidance for URSP determination only with the inbound roamers of corresponding PLMN(s). The PLMN ID is included in the Service Parameters.

NOTE 5: Wildcarding of "PLMN ID of inbound roamers" will be handled by stage 3.

4) Subscription to events.

The AF may subscribe to notifications about the outcome of the UE Policies delivery due to application guidance for URSP determination.

The usage of the AF guidance for application traffic is described in clause 6.6 of TS 23.548 [74].

##### The PCF for the UE may also subscribe the service parameters from the UDR and trigger Network Slice Replacement for PDU Session which S-NSSAI does not match the service parameters. This is described in clause 4.15.6.10a.4.15.6.10a Network Slice Replacement triggered by the service specific parameter provisioning

Figure 4.15.6.7.4-1 shows procedure for Network Slice Replacement for PDU Session which S-NSSAI does not match the service parameters provisioned by the AF.



Figure 4.15.6.7.4-1: Network Slice Replacement triggered by the service specific parameter provisioning

0a. The AMF establishes AM Policy Association as specified in clause 4.16.1.1.

0b. PCF for the UE requests notifications from the UDR on changes in UE policy information.

1-5. Same as steps 1-5 of Figure 4.15.6.7 with the consideration in clause 4.15.6.10.

6. Steps 2 to 10 in Figure 4.16.14.2.1-1 apply if access and mobility management policies depend on application in use, with the following differences:

- In step 9, the PCF for the session provides the S-NSSAI and DNN of the PDU Session, and the PDU Session ID to the PCF for the UE.

Or steps 2 to 5 in Figure 4.16.14.2.2-1 applies if access and mobility management policies depend on SM Policy Association establishment and termination for a DNN, S-NSSAI combination, with the following differences:

- In step 5, the BSF provides the S-NSSAI and DNN of the PDU Session, and the PDU Session ID to the PCF for the UE.

7. The PCF for the UE checks whether the S-NSSAI of the PDU Session received from the PCF for the session matches the UE policy information received in step 0b. If it is not matched, the PCF for the UE initiates an AM Policy Association Modification procedure to replace the S-NSSAI of the PDU Session with the S-NSSAI matching the UE policy information.

8. The AMF initiates PDU Session Modification procedure for Network Slice Replacement as described in clause 4.3.3.2.

\* \* \* End of Change \* \* \*