**3GPP TSG-SA2 Meeting #154 Adhoc *S2-230xxxx***

**EMEETING, 16th – 22nd January, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.503** | **CR** | **-** | **rev** | **-** | **Current version:** | **18.1.0** |  |
|  | | | | | | | | |
| *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 | **X** | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Update UE policy for PIN | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | vivo | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | PIN | | | | |  | ***Date:*** | | | 2023-05-12 |
|  |  | | | |  | |  | | |  |
| ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In order to support one PIN multiple PDU Sessions of a PEGC, PIN ID is not proper to be a TD, which rule out the case.  If one PIN can have multiple PDU Sessions of a PEGC, a new Service ID can be used for mapping with PDU Session, and one PIN can be associated with multiple Service IDs to enable a PIN have multiple PDU Sessions of a PEGC. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Change “PIN ID” in TD to “Service ID” | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | One PIN multiple PDU Sessions of a PEGC is not supported | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.6.2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |

\* \* \* \* 1st change \* \* \* \*

6.6.2.1 Structure Description

The UE Route Selection Policy (URSP) includes a prioritized list of URSP rules.

**Table 6.6.2.1-1: UE Route Selection Policy**

| **Information name** | **Description** | **Category** | **PCF permitted to modify in a URSP** | **Scope** |
| --- | --- | --- | --- | --- |
| URSP rules | 1 or more URSP rules as specified in table 6.6.2.1-2 | Mandatory | Yes | UE context |

The structure of the URSP rules is described in Table 6.6.2.1-2 and Table 6.6.2.1-3.

**Table 6.6.2.1-2: UE Route Selection Policy Rule**

| **Information name** | **Description** | **Category** | **PCF permitted to modify in a UE context** | **Scope** |
| --- | --- | --- | --- | --- |
| Rule Precedence | Determines the order the URSP rule is enforced in the UE. | Mandatory (NOTE 1) | Yes | UE context |
| **Traffic descriptor** | *This part defines the Traffic descriptor components for the URSP rule.* | Mandatory (NOTE 3) |  |  |
| Application descriptors | It consists of OSId and OSAppId(s) (NOTE 2, NOTE 8). | Optional | Yes | UE context |
| IP descriptors  (NOTE 6) | Destination IP 3 tuple(s) (IP address or IPv6 network prefix, port number, protocol ID of the protocol above IP) (NOTE 8). | Optional | Yes | UE context |
| Domain descriptors | FQDN(s) or a regular expression which are used as a domain name matching criteria (NOTE 7, NOTE 8). | Optional | Yes | UE context |
| Non-IP descriptors  (NOTE 6) | Descriptor(s) for destination information of non-IP traffic (NOTE 8). | Optional | Yes | UE context |
| DNN | This is matched against the DNN information provided by the application (NOTE 8). | Optional | Yes | UE context |
| Connection Capabilities | This is matched against the information provided by a UE application when it requests a network connection with certain capabilities (NOTE 4, NOTE 8) or traffic categories (NOTE 5). | Optional | Yes | UE context |
| Service ID | Matched against a Service ID for PIN configured in the PEGC (NOTE 9). | Optional | Yes | UE context |
| **List of Route Selection Descriptors** | A list of Route Selection Descriptors. The components of a Route Selection Descriptor are described in table 6.6.2.1-3. | Mandatory |  |  |
| NOTE 1: Rules in a URSP shall have different precedence values.  NOTE 2: The information is used to identify the Application(s) that is(are) running on the UE's OS. The OSId does not include an OS version number. The OSAppId does not include a version number for the application.  NOTE 3: At least one of the Traffic descriptor components shall be present.  NOTE 4: The format and some values of Connection Capabilities, e.g. "ims", "mms", "internet", etc., are defined in TS 24.526 [19]. More than one Connection Capabilities value can be provided.  NOTE 5: The format and values of Connection Capabilities Traffic Descriptor to match against standardized traffic categories are defined in TS 24.526 [19] according to the requirements in GSMA PRD NG.135 [39]. The reserved values of Connection Capabilities to match operator-specific traffic categories are specified in TS 24.526 [19]. Traffic categories requested by the UE application are independent from the UE's Operating System. Operator-specific traffic categories values are out of scope of 3GPP specifications. Details on how UE applications indicate traffic categories to the UE's Operating System are out of scope of 3GPP specifications.  NOTE 6: A URSP rule cannot contain the combination of the Traffic descriptor components IP descriptors and Non-IP descriptors.  NOTE 7: The match of this traffic descriptor does not require successful DNS resolution of the FQDN provided by the UE Application.  NOTE 8: Not applicable for PINE traffic.  NOTE 9: Only applies to traffic to/from PINEs. Service ID and other traffic descriptor components are mutually exclusive, i.e. if Service ID is included in a URSP rule, then no other traffic descriptor components are supported in the same URSP rule. | | | | |

**Table 6.6.2.1-3: Route Selection Descriptor**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Information name** | **Description** | **Category** | **PCF permitted to modify in URSP** | **Scope** |
| Route Selection Descriptor Precedence | Determines the order in which the Route Selection Descriptors are to be applied. | Mandatory (NOTE 1) | Yes | UE context |
| **Route selection components** | *This part defines the route selection components* | Mandatory (NOTE 2) |  |  |
| SSC Mode Selection | One single value of SSC mode.  (NOTE 5) | Optional | Yes | UE context |
| Network Slice Selection | Either a single value or a list of values of S-NSSAI(s). | Optional  (NOTE 3) | Yes | UE context |
| DNN Selection | Either a single value or a list of values of DNN(s). | Optional | Yes | UE context |
| PDU Session Type Selection | One single value of PDU Session Type | Conditional  (NOTE 8) | Yes | UE context |
| Non-Seamless Offload indication | Indicates if the traffic of the matching application is to be offloaded to non-3GPP access outside of a PDU Session. | Optional  (NOTE 4) | Yes | UE context |
| ProSe Layer-3 UE-to-Network Relay Offload indication | Indicates if the traffic of the matching application is to be sent via a ProSe Layer-3 UE-to-Network Relay outside of a PDU session. | Optional  (NOTE 4) | Yes | UE context |
| ProSe Multi-path Preference | Indicates if the traffic of the matching application is preferred to be sent via a PDU Session over the Uu reference point and a ProSe Layer-3 UE-to-Network Relay outside of a PDU session. | Optional  (NOTE 9) | Yes | UE context |
| Access Type preference | Indicates the preferred Access Type (3GPP or non-3GPP or Multi-Access) when the UE establishes a PDU Session for the matching application. | Optional | Yes | UE context |
| PDU Session Pair ID | An indication shared by redundant PDU Sessions as described in clause 5.33.2.1 of TS 23.501 [2]. | Optional | Yes | UE context |
| RSN | The RSN as described in clause 5.33.2.1 of TS 23.501 [2]. | Optional | Yes | UE context |
| **Route Selection Validation Criteria**  (NOTE 6) | *This part defines the Route Validation Criteria components* | Optional |  |  |
| Time Window | The time window when the matching traffic is allowed. The RSD is not considered to be valid if the current time is not in the time window. | Optional | Yes | UE context |
| Location Criteria | The UE location where the matching traffic is allowed. The RSD rule is not considered to be valid if the UE location does not match the location criteria. | Optional | Yes | UE context |
| NOTE 1: Every Route Selection Descriptor in the list shall have a different precedence value.  NOTE 2: At least one of the route selection components shall be present.  NOTE 3: When the Subscription Information contains only one S-NSSAI in UDR, the PCF needs not provision the UE with S-NSSAI in the Network Slice Selection information. The "match all" URSP rule has one S-NSSAI at most.  NOTE 4: If this indication is present in a Route Selection Descriptor, no other components shall be included in the Route Selection Descriptor.  NOTE 5: The SSC Mode 3 shall only be used when the PDU Session Type is IP.  NOTE 6: The Route Selection Descriptor is not considered valid unless all the provided Validation Criteria are met.  NOTE 7: In this Release of specification, inclusion of the Validation Criteria in Roaming scenarios is not considered.  NOTE 8: This component shall be present when the Route Selection Component does neither include the "Non-Seamless Offload indication" nor "ProSe Layer-3 UE-to-Network Relay Offload indication".  NOTE 9: If this indication is present in a Route Selection Descriptor, ProSe Layer-3 UE-to-Network Relay Offload indication shall not be included in the Route Selection Descriptor. | | | | |

Each URSP rule contains a Traffic descriptor (containing one or more components described in Table 6.6.2.1-2) that determines when the rule is applicable. A URSP rule is determined to be applicable when every component in the Traffic descriptor (for traffic descriptors other than the Service ID) matches the corresponding information from the application or matches the information configured for a PIN (if the URSP rule contains a Service ID traffic descriptor). A URSP rule is determined not to be applicable when for any given component in the Traffic descriptor:

- No corresponding information from the application/for a PIN is available; or

- The corresponding information from the application/for a PIN does not match any of the values in the Traffic descriptor component.

NOTE 1: It is recommended to avoid listing more than two components in the Traffic descriptor of a URSP rule.

If a URSP rule is provided that contains a Traffic descriptor with two or more components, it is recommended to also provide URSP rule(s) with lower precedence and a Traffic descriptor with less components, in order to increase the likelihood of URSP rule matching for a particular application.

Each URSP rule contains a list of Route Selection Descriptors containing one or multiple Route Selection Descriptors each having a different Route Selection Descriptor Precedence value. A Route Selection Descriptor contains one or more of the following components:

- Session and Service Continuity (SSC) Mode: Indicates that the traffic of the matching application shall be routed via a PDU Session supporting the included SSC Mode.

- Network Slice Selection: Indicates that the traffic of the matching application shall be routed via a PDU Session supporting any of the included S-NSSAIs, see clause 5.15.4 in TS 23.501 [2]. It includes one or more S-NSSAI(s).

- DNN Selection: Indicates that the traffic of the matching application shall be routed via a PDU Session supporting any of the included DNNs. It includes one or more DNN(s). If a DNN Selection component is provided in the Route Selection Descriptor then the UE shall use any of the DNNs of the DNN Selection component, instead of the DNN requested by the application for the PDU Session that is used to route the traffic of the matching application. If there is no DNN Selection component in the Route Selection Descriptor, then the UE shall use the DNN requested by the application for the PDU Session that is used to route the traffic of the matching application.

NOTE 2: To provide uniform service experience for UEs from earlier Releases, when a USRP rule with a DNN in both, Traffic descriptor and Route Selection Descriptor, is provided to the UEs, the DNN(s) used in the Traffic descriptor would also need to be included in the policy for DNN replacement in the network. In addition, a lower priority Route Selection Descriptor without a DNN would also need to be provided to the UEs.

- PDU Session Type Selection: Indicates that the traffic of matching application shall be routed via a PDU Session supporting the included PDU Session Type. The possible PDU Session Types are defined in clause 5.6.10 in TS 23.501 [2].

- Non-Seamless Offload indication: Indicates that traffic of the matching application is to be offloaded to non-3GPP access outside of a PDU Session when the rule is applied. If this component is present in a Route Selection Descriptor, no other components shall be included in the Route Selection Descriptor.

- ProSe Layer-3 UE-to-Network Relay Offload indication: Indicates that the traffic of the matching application is to be sent via a ProSe Layer-3 UE-to-Network Relay outside of a PDU Session when the rule is applied. If this indication is absent and the ProSe Multipath Preference indication is absent then the traffic matching the URSP rule shall not be sent via a ProSe Layer-3 UE-to-Network Relay outside of a PDU Session. If this component is present in a Route Selection Descriptor, no other components shall be included in the Route Selection Descriptor.

- ProSe Multipath Preference indication: Indicates that the traffic of the matching application is preferred to be sent via a PDU Session over the Uu reference point and a ProSe Layer-3 UE-to-Network Relay without N3IWF outside of a PDU Session. The traffic of the matching application may be sent via a PDU session over Uu reference point or via ProSe Layer-3 UE-to-Network Relay outside of a PDU Session when e.g. one of the paths is not available. If this indication is absent and the ProSe Layer-3 UE-to-Network Relay Offload indication is absent then the traffic matching of the URSP rule shall not be sent via a ProSe Layer-3 UE-to-Network Relay outside of a PDU Session. If this component is present in a Route Selection Descriptor, other components can be included in the Route Selection Descriptor to determine the PDU Session over the Uu reference point.

- Access Type Preference: If the UE needs to establish a PDU Session when the rule is applied, this indicates the Access Type (3GPP or non-3GPP or multi-access) on which the PDU Session should be established. The type "Multi-Access" indicates that the PDU Session should be established as a MA PDU Session, using both 3GPP access and non-3GPP access.

NOTE 3: The Access Type of 3GPP also includes the use of 5G ProSe Layer-2 UE-to-Network Relay access as defined in TS 23.304 [34]. The Access Type of non-3GPP also includes the use of 5G ProSe Layer-3 UE-to-Network Relay with N3IWF as defined in TS 23.304 [34].

- PDU Session Pair ID: An indication shared by redundant PDU Sessions as described in clause 5.33.2.1 of TS 23.501 [2].

- RSN: The RSN for redundant PDU Sessions as described in clause 5.33.2.1 of TS 23.501 [2].

NOTE 4: For backward compatibility, PCF may provide a RSD with PDU Session Pair ID and RSN and a RSD without PDU Session Pair ID and RSN in the URSP rule. In this case, the RSD with PDU Session Pair ID and RSN has a lower precedence value (i.e. higher prioritised) than the one without PDU Session Pair ID. If a non-supporting UE receives the RSD containing PDU Session Pair ID, it ignores this RSD.

NOTE 5: The UE may also set the PDU Session Pair ID and RSN parameters based on UE implementation as described in clause 5.33.2.1 of TS 23.501 [2].

- Time Window: The Route Selection Descriptor is not be considered valid unless the UE is in the time window.

- Location Criteria: The Route Selection Descriptor is not be considered valid unless the UE's location matches the Location Criteria.

NOTE 6: The structure of the URSP does not define how the PCF splits the URSP when URSP cannot be delivered to the UE in a single NAS message.

NOTE 7: It is expected that UE applications will not be able to change or override the PDU Session parameters in the URSP rules. A UE application can express preferences when it requests a network connection (e.g. certain Connection Capabilities), which can be mapped into specific PDU Session parameters by the URSP rules.

NOTE 8: A Route Selection Descriptor can include a Time Window and/or a Location Criteria or neither a Time Window nor a Location Criteria. A URSP rule can include RSDs with or without validation criteria at the same time.

In the case of network rejection of the PDU Session Establishment Request, the UE may trigger a new PDU Session establishment based on the rejection cause and the URSP policy.

When the PCF provisions URSP rules to the UE, one URSP rule with a "match all" Traffic descriptor may be included.

NOTE 9: When URSP rules containing NSSP are available to the UE and the URSP rule with the "match all" Traffic descriptor is not part of them, a UE application that has no matching URSP rule and no UE Local Configuration cannot request a network connection.

The URSP rule with the "match all" Traffic descriptor is used to route the traffic of applications which do not match any other URSP rules and shall therefore be evaluated as the last URSP rule, i.e. with lowest priority. There shall be only one Route Selection Descriptor in this URSP rule. The Route Selection Descriptor in this URSP rule includes at most one value for each Route Selection Component.

NOTE 10: How to set the URSP rule with the "match all" Traffic descriptor as the URSP rule with lowest priority is defined in TS 24.526 [19].

NOTE 11: The URSP rule with the "match all" Traffic descriptor is not applicable to PINE traffic.

\* \* \* \* End of change \* \* \* \*