**3GPP TSG-CT WG3 Meeting #130 *C3-234208***

**Xiamen, China, 9 - 13 October, 2023 *(Revision of C3-234xxx)***

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **29.512** | **CR** | **1139** | **rev** | **-** | **Current version:** | **18.3.0** |  |
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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:***  | Selection of traffic description for Common DNAI |
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| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | EDGE\_Ph2 |  | ***Date:*** | 2023-09-26 |
|  |  |  |  |  |
| ***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 canbe 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)* |
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| ***Reason for change:*** | In S2-2309799, SA2 clarifies that to avoide the FQDN information duplicative, if the FQDN is present in the PCC rule, the traffic description shall use FQDN instead of the application identifier for the purpose of setting traffic route and finding DNAI.Stage 2 add a NOTE in TS 23.501, clause 5.6.7.1 as follow:*NOTE X: If the FQDN is included in the AF request, the EASDF-based EAS discovery procedure will be followed as defined in TS23.548 [130] using this FQDN for the purpose of setting traffic route and finding DNAI, and Traffic Description will be ignored.* |
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| ***Summary of change:*** | Add a NOTE to clarify that if the FQDN is present, the traffic description “appId” shall shall take the the FQDN range into concern. |
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| ***Consequences if not approved:*** | Misalignment with Stage 2 and Stage 3 requirements. |
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| ***Clauses affected:*** | 4.2.6.2.6.2 |
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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 does not impact on the OpenAPI file. |
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| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

###### 4.2.6.2.6.2 Steering the traffic to a local access of the data network

This procedure is only applicable in non-roaming and visited access (i.e. LBO) scenarios.

The PCF shall determine if the ongoing PDU Session is impacted by the routing of traffic to a local access to a data network as follows:

- If the AF request includes the individual IP address/ prefix allocated to a UE or the UE MAC address, the PCF shall store the received traffic routing information and perform session binding as defined in clause 6.2 of 3GPP TS 29.513 [7] to determine the impacted PDU session.

- Otherwise, the PCF fetches from the UDR, as defined in 3GPP TS 29.519 [15], the traffic routing data information applicable for a UE, any UE or one or more Internal Group Id(s) (if received in the SMF request) and/or subscriber category(ies).

NOTE 1: If the UDR provides as part of the traffic routing data information a list of Internal Group Id(s), this information applies to all the PDU sessions related to UEs that belong to every one of these groups, i.e. a single UE needs to be a member of every group in the list of Internal Group Id(s). If the list of subscriber category(ies) is part of the traffic routing data information, this information applies to all the PDU sessions related to the UEs that belong to every one of these Subscriber Categories.

Then the PCF authorizes the request for influencing SMF routing decisions. For the impacted PDU Session that corresponds to the AF request, the PCF shall take into account, if available, the local routing indication stored in the policy data subscription information in the UDR, as defined in 3GPP TS 29.519 [15], to determine whether it is allowed to generate PCC rules with traffic routing information. When allowed, the PCC rules are generated based on the AF request as follows:

- When the request is for influencing SMF routing decisions, based on traffic routing information, operator's policy, etc., the PCF determines the traffic steering policy. The traffic steering policy indicates, for each DNAI, a traffic steering policy identifier configured in the SMF and/or if the N6 routing information associated to the application is explicitly provided by the AF, the N6 routing information (as provided by the AF). The traffic steering policy identifier is derived by the PCF from the routing profile Id provided by the AF and is related to the mechanism enabling traffic steering to the DN. Then:

- The PCF shall include within each PccRule data structure the necessary information to identify the concerned traffic within either the "flowInfos" attribute or the "appId" attribute, and include within the TrafficControlData data type that the PCC rule refers to a list of locations that the traffic shall be routed to in the "routeToLocs" attribute, and, if the "AF\_latency" feature is supported, the PCF shall include the maximum allowed user plane latency within the "maxAllowedUpLat" attribute if available. If "EASIPreplacement" feature is supported, the PCF shall include the EAS IP replacement information within the "easIpReplaceInfos" attribute if available.

- Within each RouteToLocation instance, the PCF shall include a DNAI in the "dnai" attribute to indicate the location of the application towards which the traffic routing is applied, and a traffic steering policy identifier in the "routeProfId" attribute, to indicate the traffic steering policy that applies to the indicated DNAI, and/ or the explicit N6 traffic routing information in the "routeInfo" attribute.

- If the AF provides both a routing profile Id and N6 routing information for a DNAI, the PCF may include a RouteToLocation instance with the required information or may include two RouteToLocation instances with the same DNAI within the "dnai" attribute and a traffic steering policy identifier within the "routeProfId" attribute in one instance and explicit routing information within the "routeInfo" attribute in the other instance.

NOTE 2: The N6 traffic routing requirements are related to the mechanism enabling traffic steering in the local access to the DN. The routing profile ID refers to a pre-agreed policy between the AF and the 5GC. This policy may refer to different steering policy identifier(s) sent to the SMF and e.g. based on time of the day, etc.

NOTE 3: When per DNAI both, the "routeProfId" and the "routeInfo"attributes are provided, if the pre-configured traffic steering policy referenced by the "routeProfId" attribute contains information that is overlapping with the N6 traffic routing information provided in the "routeInfo" attribute, the N6 traffic routing information takes precedence.

NOTE 4: In this release of the specification, either a traffic steering policy identifier for UL or a traffic steering policy identifier for DL can be defined per DNAI.

- When the request is for subscribing to UP path change events of the PDU session, the PCF shall include the information on AF subscription to UP path change events within the PCC rule(s) to request the SMF to create a subscription to such notifications for the AF. In order to do so, the PCF shall include within each PccRule data structure the necessary information to identify the concerned traffic within either the "flowInfos" attribute or the "appId" attribute, and include within the Traffic Control Data decision that the PCC rule refers to the information on AF subscription to events within the "upPathChgEvent" attribute. Within this "upPathChgEvent" attribute, the PCF shall include the "dnaiChgType" attribute to indicate the type of notification (i.e. early notification, late notification or both), the notification URI within the "notificationUri" attribute, the notification correlation Id within the "notifCorreId" attribute, and if the URLLC feature is supported, an indication of AF acknowledgement to be expected within the "afAckInd" attribute. In order to enable the AF to identify the AF request to which the notification corresponds when the AF receives a UP path change notification from the SMF, as defined in clause 4.2.2.2 of 3GPP TS 29.508 [12], the PCF shall set the values of the "notificationUri" attribute and "notifCorreId" attribute respectively as follows:

- If the PCF fetches the traffic routing data information from the UDR, the PCF shall set the value of the "notificationUri" attribute to the value of the "upPathChgNotifUri" attribute of the TrafficInfluData data structure and set the value of the "notifCorreId" attribute to the value of the "upPathChgNotifCorreId" attribute of the TrafficInfluData data structure as defined in 3GPP TS 29.519 [15].

- If the PCF receives the traffic routing data information from the AF via N5 interface, the PCF shall set the values of the "notificationUri" attribute and the "notifCorreId" attribute according to the "upPathChgSub" attribute within the AfRoutingRequirement data structure as defined in 3GPP TS 29.514 [17].

If the NEF/AF provided information about the feature support on Nsmf\_EventExposure service as described in 3GPP TS 29.514 [17] (AF request applies an individual UE address) or 3GPP TS 29.519[15] (AF request applies to PDU sessions not identified by a UE address), the PCF may also include this information within the "nscSuppFeats" attribute included within the PccRule data type.

- If the AF request includes an indication that application relocation is not possible, the PCF shall include within the PccRule data instance(s) the necessary information to identify the traffic within either the "flowInfos" attribute or the "appId" attribute and the "appReloc" attribute set to true. In this case, the SMF shall ensure that for the traffic related with the concerned application, no DNAI change takes place once selected initially for this application.

- If the "EASDiscovery" feature is supported and the AF request includes an indication that EAS rediscovery is required, the PCF shall include within the PccRule data instance(s) the necessary information to identify the traffic within the "appId" attribute and the "easRedisInd" attribute set to true.

- If the URLLC feature is supported and the AF request includes an indication that the UE IP address preservation should be considered, the PCF shall include within the concerned PccRule data instance(s) the "addrPreserInd" attribute set to true.

- If the AF request includes an indication that the PDU session should be correlated via a common DNAI for a given traffic, the PCF shall include within the TrafficControlData data instance provisioned for one or more PCC rule(s), the "traffCorreInd" attribute set to true.

NOTE 5: The indication of traffic correlation can be provided together with the traffic routing information by the AF for all the members of the 5G VN group. Referred to clause 5.29.4 of 3GPP TS 23.501 [2].

- If the feature "SimultConnectivity" is supported and the AF request includes an indication that the simultaneous connectivity may be temporarily maintained for the target and the source PSA during the edge re-location procedure, the PCF may include within the TrafficControlData data instance provisioned for one or more PCC rule(s) the "simConnInd" attribute set to true, as indicated by the AF. If the feature "SimultConnectivity" is supported and the AF request includes the time interval to be considered for inactivity of the traffic routed through the source PSA after which the simultaneous connectivity can be terminated, the PCF may also include the received duration within the "simConnTerm" attribute.

- If the feature "CommonEASDNAI" is supported and AF includes a traffic correlation information within "tfcCorreInfo" attribute, and

- if the AF request also includes an indication that the PDU session should be correlated via a common DNAI, the PCF shall include the TrafficControlData data instance provisioned for one or more PCC rule(s), "COMMON\_DNAI" within the "corrType" attribute and the identification of a set of UEs accessing the application identified by the service data flow template within the "tfcCorrId" attribute. If the NEF has added its information in the AF request in order to be notified with information related to UE members of the set of UEs identified by traffic correlation ID, then the PCF shall include also the "notifUri" and "notifCorrId" attributes within the "tfcCorreInfo" attribute of the TrafficControlData; or

- if the AF request also includes an indication that a common EAS for the application identified by the service data flow template should be selected, the PCF shall include the TrafficControlData data instance provisioned for one or more PCC rule(s), the "COMMON\_EAS" within the "corrType" attribute, the identification of a set of UEs accessing the application identified by the service data flow template within the "tfcCorrId" attribute, the common EAS address(s) within the "comEasIpv4Addr" attribute and/or "comEasIpv6Addr" attribute and/or the FQDN range corresponding to the application within the "fqdnRange" attribute. If the NEF has added its information in the AF request in order to be notified with information related to UE members of the set of UEs identified by traffic correlation ID, then the PCF shall include also the "notifUri" and "notifCorrId" attributes within the "tfcCorreInfo" attribute of the TrafficControlData.

NOTE 6: Common EAS selection means the common DNAI is selected.

The PCF shall provide the PCC rule(s) as defined in clause 4.2.6.2.1.

If the temporal validity condition is received, the PCF shall evaluate the temporal validity condition of the AF request and inform the SMF to install or remove the corresponding PCC rule(s) according to the evaluation result. When policies specific to the PDU Session and policies general to multiple PDU Sessions exist, the PCF gives precedence to the PDU Session specific policies over the general policies.

If the spatial validity condition is received, the PCF considers the latest known UE location to determine the PCC rules provided to the SMF. In order to do that, the PCF shall request the SMF to report the notifications about change of UE location in an area of interest (i.e. Presence Reporting Area) as defined in clauses 4.2.2.13 or 4.2.3.19. The subscribed area of interest may be the same as the one provided in spatial validity condition, or may be a subset of the spatial validity condition (e.g. a list of TAs) based on the latest known UE location. When the SMF detects that the UE entered the area of interest subscribed by the PCF, the SMF notifies the PCF and the PCF provides to the SMF the PCC rule(s) described above. When the SMF becomes aware that the UE left the area subscribed by the PCF, the SMF notifies the PCF and the PCF may remove or provide updated PCC rule(s) to the SMF.

When the PCC rules are installed, the SMF may, based on local policies, take the information in the PCC rule(s) into account to:

- if the PDU Session is of IP type and the "addrPreserInd" attribute is included and set to true in the PCC rule(s), the SMF should preserve the UE IP address and, if necessary, not reselect the related PSA UPF for the traffic identified in the PCC rule once the PSA UPF is selected; otherwise, the SMF (re)selects UPF(s) as it might be required for PDU Sessions.

- activate mechanisms for traffic multi-homing or enforcement of an UL Classifier (UL CL).

- inform the AF of the (re)selection of the UP path (change of DNAI) and/or the candidate DNAI(s) for the PDU Session if the "CommonEASDNAI" feature is supported and the "candDnaiInd" attribute was set to "true".

- determine the target DNAI(s) for the current UE location, which may imply I-SMF selection or removal to be requested to the AMF as defined in 3GPP TS 29.502 [22].

- if the "traffCorreInd" attribute set to true is included in the TrafficControlData data type referenced by a set of PCC rules, based on SMF implementation and local configuration, the SMF should select a common DNAI from the list of DNAI included in the "routeToLocs" attribute for the identified traffic of the PDU session.

- if the "simConnInd" attribute set to true is included in the TrafficControlData data type referenced by a set of PCC rules, the SMF may temporarily maintain simultaneous connectivity for the source and target PSA at edge relocation procedure, and may influence the establishment of a temporary N9 forwarding tunnel between the source UL CL and target UL CL. If the "simConnTerm" attribute is also included, the SMF may consider the indicated time interval as the minimum one to be considered for inactivity for the described traffic before the connectivity over the source PSA may be removed.

- if the "maxAllowedUpLat" attribute is received, SMF may use this value to decide whether edge relocation is needed to ensure that the user plane latency does not exceed the value and whether to relocate the PSA UPF to satisfy the user plane latency.

- if the "easIpReplaceInfos" attribute is received, the SMF may instruct the local PSA UPF with the EAS IP replacement information using "Outer Header Creation" as defined in 3GPP TS 29.244 [13] clause 8.2.56 and "Outer Header Removal" as defined in 3GPP TS 29.244 [13] clause 8.2.64. The PSA UPF shall be configured by the SMF to perform one creation and one removal of the appropriate outer header(s) both in the uplink and in the downlink direction in a way that the address information indicated by the "source" attribute (within "easIpReplaceInfos") is used in the headers of the packets towards the UE and the address information indicated by the "target" attribute (within "easIpReplaceInfos") is used in the headers of the packets towards the DN.

- if the "easRedisInd" attribute set to true is included, the SMF may indicate the UE to refresh the cached EAS information as defined in clause 6.3.2 of 3GPP TS 24.501 [20].

- if the "tfcCorreInfo" attribute is received, and,

- if the "COMMON\_DNAI" is included within the "corrType" attribute in the TrafficControlData data type referenced by a set of PCC rules, based on SMF implementation and local configuration, the SMF should select a common DNAI from the list of DNAI included in the "routeToLocs" attribute for the traffic of the PDU session which have the same traffic correlation Id within the "tfcCorrId" attribute as defined in clause 6.2.3.2.6 of TS 23.548 [62]. The SMF shall use the provided DNAI as the common DNAI when only one is included in the "routeToLocs" attribute; or

- if the "COMMON\_EAS" is included within the "corrType" attribute in the TrafficControlData data type referenced by a set of PCC rules, the SMF should use the value within the "fqdnRange" if received to match the FQDN received from the EASDF via the Neasdf\_DNSContext\_Notify request. If they are matched, the SMF may indicate the UE the common EAS address(s) received within the "comEasIpv4Addr" attribute and/or "comEasIpv6Addr" attribute.

NOTE 7: In order for the SMF to initiate the EASDF-based EAS discovery procedure, the SMF will use the FQDN information received within the "fqdnRange" attribute for setting traffic route and finding DNAI. The "flowInfos" attribute or the "appId" attribute will not be considered for that purpose.

- if the "notifUri" attribute and "notifCorrId" attribute are included, the SMF shall notify the 5GC determined information for a set of UEs identified by Traffic Correlation ID.

NOTE 8: Common EAS selection means the common DNAI is selected.

If routing of traffic to a local access to a data network policy provided in the "routeToLocs" attribute is invalid, unknown or not applicable, or the enforcement of the steering of the traffic to the indicated DNAI failed, the SMF shall return a PCC Rule Error Report, as specified in clauses 4.2.3.16 and 4.2.4.15, and set the "failureCode" attribute to "DNAI\_STEERING\_ERROR".

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