**SA WG2 Meeting #166 *S2-2411521***

**Orlando, FL, USA, 18-22 November 2024 (was S2-2411085)**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.502** | **CR** | **4848** | **rev** | **10** | **Current version:** | **19.1.0** |  |
|  | | | | | | | | |
| *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 of services pertaining to defining Device Identifiers | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | [Nokia, CableLabs, ZTE, Oppo, Xiaomi, Ericsson, NEC, Deutsche Telekom, Charter Communications, Samsung], Qualcomm, Apple | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | UIA\_ARC | | | | |  | ***Date:*** | | | 2024-11-18 |
|  |  | | | |  | |  | | |  |
| ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | As part of the Non-3GPP Device Identifiers, it is required to define the data keys in the UDR for the Application Data.  The study and conclusions also include provisioning of the QoS parameters for the Device Identifiers into the UDR by the NEF.  To support he optional restriction within the 5GS on max number of Device Identifiers per UE/5G-RG. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Changes as per the reason for change documented above.  It is proposed to update UDR services related to Application data for non-3GPP devices. Also included the Non-3GPP Device Identifier in services related to PCF.  Add max number of Device Identifier in Policy Data, which is used to restrict the maximum number of Device Identifiers per UE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | New feature would be missed in the specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.5.4.2, 5.2.12.2.1, 4.15.6.X | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | Reference to clause 5.X refers to the clause 5.x in CR 5750 of TS 23.501  Reference to clause 4.3.2 refers to the clause 4.3.2 in CR 4844 of TS 23.502 | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* \* First change \* \* \* \*

##### 5.2.5.4.2 Npcf\_SMPolicyControl\_Create service operation

**Service operation name:** Npcf\_SMPolicyControl\_Create.

**Description:** The NF Service Consumer can request the creation of a SM Policy Association and provides relevant parameters about the PDU Session to the PCF.

**Inputs, Required:** SUPI (or PEI in the case of emergency PDU Session without SUPI), PDU Session id, DNN, S-NSSAI and RAT Type.

**Inputs, Optional:** Information provided by the SMF, such as PDU Session Type, Request Type, Access Type, the IPv4 address and/or IPv6 prefix, PEI, GPSI, Non-3GPP Device Connection Information (as defined in clause 4.3.2), User Location Information, UE Time Zone, Serving Network identifier (PLMN ID, or PLMN ID and NID, see clause 5.34 of TS 23.501 [2]), Charging Characteristics information, Session-AMBR, subscribed default QoS information (5QI, 5QI Priority Level, ARP), UE support of reflective QoS (see TS 23.501 [2], clause 5.7.5.1), Number of supported packet filters for signalled QoS rules for the PDU Session (see TS 23.501 [2], clause 5.7.1.4), 3GPP PS Data Off status, Trace Requirements and Internal Group Identifier (see clause 5.9.7 of TS 23.501 [2]), DN Authorization Profile Index, DN authorized Session AMBR, Framed Route information (as defined in Table 5.2.3.3.1-1), MA PDU Request indication, MA PDU Network-Upgrade Allowed indication, ATSSS capabilities of the MA PDU Session, QoS constraints from the VPLMN (as defined in clause 5.7.1.11 of TS 23.501 [2]), Satellite backhaul category, list of NWDAF instance Ids (used by AMF, SMF, UPF) and corresponding Analytics ID(s), PVS IP address(es) and/or PVS FQDN(s) and Onboarding Indication in the case of ON-SNPN (see clause 5.30.2.10.4.2 of TS 23.501 [2]), URSP rule enforcement that including Connection Capability, PCF binding information (address(es) of PCF for UE, instance id of PCF for UE), HR-SBO support indication (see clause 6.2.1.2 of TS 23.503 [20]), Alternative S-NSSAI (see clause 5.15.19 of TS 23.501 [2]), URSP delivery in EPS support indication, Local Offloading Policy indication.

NOTE 1: If SMF receives the DN authorized Session AMBR from the DN-AAA at PDU Session establishment, it includes the DN authorized Session AMBR within the Session-AMBR, instead of the subscribed Session-AMBR received from the UDM, in the request.

NOTE 2: It is up to stage 3 to determine whether the corresponding supportedFeature in Npcf\_SMPolicyControl can be reused as URSP delivery in EPS support indication.

NOTE 3: When Local Offloading Management is allowed, SMF provides Local Offloading Policy indication to PCF.

Editor's note: It is FFS to further define Local Offloading Policy indication granularity.

W-5GAN specific PDU Session information provided by the SMF is specified in TS 23.316 [53].

**Outputs, Required:** SM Policy Association ID defined in TS 29.512 [57]. Success or Failure.

**Outputs, Optional:** Policy information for the PDU Session as defined in TS 23.503 [20] and Policy Control Request Trigger(s) of SM Policy Association as defined in clause 6.1.3.5 of TS 23.503 [20].

See clause 5.8.2.2 of TS 23.501 [2] for allocation of IPv4 address and IPv6 prefix. The IPv6 prefix length is /64, or is shorter than /64 when Prefix Delegation applies.

See clause 4.16.4 for the detail usage of this service operation.

See clauses 4.22.2.1 and 4.22.3 for detailed usage of this service operation for ATSSS.

\* \* \* \* Next change \* \* \* \*

##### 5.2.12.2.1 General

The operations defined for Nudr\_DM service use following set of parameters defined in this clause:

- Data Set Identifier: uniquely identifies the requested set of data within the UDR (see clause 4.2.5).

- Data Subset Identifier: it uniquely identifies the data subset within each Data Set Identifier. As specified in the procedures in clause 4, e.g. subscription data can consist of subsets particularised for specific procedures like mobility, session, etc.

- Data Keys defined in Table 5.2.12.2.1-1

For Nudr\_DM\_Subscribe and Nudr\_DM\_Notify operations:

- The Target of Event Reporting is made up of a Data Key and possibly a Data Sub Key both defined in Table 5.2.12.2.1-1. When a Data Sub Key is defined in the table but not present in the Nudr\_DM\_Subscribe this means that all values of the Data Sub Key are targeted.

- The Data Set Identifier plus (if present) the (set of) Data Subset Identifier(s) corresponds to a (set of) Event ID(s) as defined in clause 4.15.1

An NF Service Consumer may include an indicator when it invokes Nudr\_DM Query/Create/Update service operation to subscribe the changes of the data, to avoid a separate Nudr\_DM\_Subscribe service operation.

Depending on the use case, it is possible to use a Data Key and/or one or multiple Data sub keys to further identify the corresponding data, as defined in Table 5.2.12.2.1-1 below.

Table 5.2.12.2.1-1: Data keys

|  |  |  |  |
| --- | --- | --- | --- |
| Data Set | Data Subset | Data Key | Data Sub Key |
|  | Access and Mobility Subscription data | SUPI | Serving PLMN ID and optionally NID |
|  | SMF Selection Subscription data | SUPI | Serving PLMN ID and optionally NID |
|  | UE context in SMF data | SUPI | PDU Session ID or DNN |
| Subscription Data (see clause 5.2.3.3.1) | SMS Management Subscription data | SUPI | Serving PLMN ID and optionally NID |
|  | SMS Subscription data | SUPI | Serving PLMN ID and optionally NID |
|  | Session Management Subscription data | SUPI | S-NSSAI |
|  |  |  | DNN |
|  |  |  | Serving PLMN ID and optionally NID |
|  | Slice Selection Subscription data | SUPI | Serving PLMN ID and optionally NID |
|  | Group Data  (NOTE 5) | Internal Group Identifier or  External Group Identifier | - |
|  | Identifier translation | GPSI |  |
|  |  | SUPI | Application Port ID, MTC Provider Information, AF Identifier |
|  | Intersystem continuity Context | SUPI | DNN |
|  | LCS privacy | SUPI | - |
|  | LCS mobile origination | SUPI | - |
|  | UE reachability | SUPI | - |
|  | Group Identifier Translation | Internal Group Identifier or  External Group Identifier | - |
|  | UE context in SMSF data | SUPI | - |
|  | V2X Subscription data | SUPI | - |
|  | A2X Subscription data | SUPI | - |
|  | ProSe Subscription data | SUPI | - |
|  | Ranging/SL Positioning subscription data | SUPI | - |
|  | User consent | SUPI | Purpose |
|  | ECS Address Configuration Information (See Table 4.15.6.3d-1) | SUPI, Internal group identifier or external group identifier or any UE | DNN, S-NSSAI, (Serving) PLMN ID (NOTE 7) |
|  | MBS Subscription data  (see clause 6.4.3 of TS 23.247 [78]) | SUPI | - |
|  | Ranging/Sidelink Positioning Subscription data | SUPI | - |
|  | Ranging/Sidelink Positioning privacy | SUPI | - |
|  | Operator Determined Barring data (see clause 2.3 of TS 23.015 [90] and TS 29.505 [91]) | SUPI | - |
|  | Shared data | Shared Data ID | - |
| Application data | Packet Flow Descriptions (PFDs) (NOTE 11) | Application Identifier |  |
|  | AF traffic influence request information for traffic routing | AF transaction internal ID |  |
|  | (See clause 5.6.7 and clause 6.3.7.2 of TS 23.501 [2]) | For non-roaming and LBO:  S-NSSAI and DNN , accompanied with Internal Group Identifier(s) and/or Subscriber Category(s) or SUPI or "any UE" indication  For HR-SBO:  HPLMN S-NSSAI and DNN and either: HPLMN ID and IP address, or SUPI, or "any UE" indication and HPLMN ID.  (NOTE 4) (NOTE 6) (NOTE 12) |  |
|  | AF traffic influence request information for service function chaining | AF transaction internal ID |  |
|  | (See clause 5.6.16 and clause 6.3.7.2 of TS 23.501 [2]) | S-NSSAI and DNN  and  Internal Group Identifier or SUPI or "any UE" indication (NOTE 4) |  |
|  | Background Data Transfer  (NOTE 3) | Internal Group Identifier or SUPI |  |
|  | Service specific information (See clause 4.15.6.7) | S-NSSAI and DNN  or  Internal Group Identifier or SUPI or "any UE" indication (NOTE 4) or "PLMN ID(s) of inbound roamer" |  |
|  | UE ID mapping information (See clause 4.3.5 of TS 23.586 [88]) | GPSI or Application Layer ID |  |
|  | EAS Deployment Information  (See clause 7.1 of TS 23.548 [74]) | DNN and/or S-NSSAI | Application Identifier and/or Internal Group Identifier |
|  | ECS Address Configuration Information (See Table 4.15.6.3d-1)  (NOTE 13) | DNN, S-NSSAI and "any UE" indication |  |
|  | AM influence information (See clause 4.15.6.9.3) | AF transaction internal ID |  |
|  |  | S-NSSAI and DNN  and/or  Internal Group Identifier or SUPI or "any UE" indication or any inbound roaming UEs (NOTE 4, NOTE 8) |  |
|  | AF request for QoS information (See clause 4.15.6.14) | AF transaction internal ID |  |
|  |  | S-NSSAI and DNN  and/or  Internal Group Identifier or SUPI or "any UE" indication (NOTE 4) |  |
|  | Non-3GPP Device Identifier Information (5.X of TS 23.501 [2]) | SUPI | Non-3GPP Device Identifier |
| Policy Data | UE context policy control data  (See clause 6.2.1.3 of TS 23.503 [20]) | SUPI |  |
|  | PDU Session policy control data | SUPI | S-NSSAI |
|  | (See clause 6.2.1.3 of TS 23.503 [20]) |  | DNN |
|  | Policy Set Entry data  (See clause 6.2.1.3 of TS 23.503 [20]) | SUPI (for the UDR in HPLMN) |  |
|  |  | PLMN ID (for the UDR in VPLMN) |  |
|  | Remaining allowed Usage data | SUPI | S-NSSAI |
|  | (See clause 6.2.1.3 of TS 23.503 [20]) |  | DNN |
|  | Sponsored data connectivity profiles (See clause 6.2.1.6 of TS 23.503 [20]) | Sponsor Identity |  |
|  | Background Data Transfer data  (See clause 6.2.1.6 of TS 23.503 [20]) | Background Data Transfer Reference ID. (NOTE 2) |  |
|  |  | None. (NOTE 1) |  |
|  | Network Slice Specific Control Data  (See clause 6.2.1.3 of TS 23.503 [20]) | S-NSSAI |  |
|  | 5G VN Group Specific Control Data (See clause 6.2.1.3 of TS 23.503 [20]) | S-NSSAI and DNN  and/or  Internal Group Identifier |  |
|  | Operator Specific Data | SUPI or GPSI |  |
|  | Planned Data Transfer with QoS requirements data  (See clause 6.2.1.6 of TS 23.503 [20]) | PDTQ Reference ID. (NOTE 10) |  |
|  | None. (NOTE 9) |  |
| Max number of non-3GPP Device Identifiers (See clause 5.X of TS 23.501 [2]) (NOTE XX) | SUPI |  |
| Exposure Data | Access and Mobility Information | SUPI or GPSI | PDU Session ID or |
| (see clause 5.2.12.1) | Session Management information | SUPI or GPSI | UE IP address or DNN |
|  | DNAI mapping information | DNN and/or S-NSSAI |  |
| NOTE 1: Retrieval of the stored Background Data Transfer data for all ASP identifiers in the UDR requires Data Subset but no Data Key or Data Subkey(s).  NOTE 2: Update of a Background Data Transfer data in the UDR requires a Data key to refer to a Background Data Transfer data as input data.  NOTE 3: The Background Data Transfer includes the Background Data Reference ID and the ASP Identifier that requests to apply the Background Data Reference ID to the UE(s). Furthermore, the Background Data Transfer includes the relevant information received from the AF as defined in clause 6.1.2.4 of TS 23.503 [20].  NOTE 4: When the Data Key targets "any UE", then the request to UDR applies on Application data that applies on all subscribers of the PLMN. For encoding, see TS 29.519 [82].  NOTE 5: Group Data includes 5G VN group configuration, DNN and S-NSSAI specific Group Parameters and any other data related to a group stored in the UDR.  NOTE 6: If a list of Internal Group IDs is used, the AF traffic influence request information request applies to the 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 IDs.  NOTE 7: When the Data Key targets "PLMN ID", then the request to UDR applies on subscription data about subscribers roaming in this PLMN.  NOTE 8: In LBO roaming scenarios, when the AF request targets "any inbound roaming UEs", the AM influence information applies to the roaming subscribers from a PLMN or from any PLMN.  NOTE 9: Retrieval of the stored Planned Data Transfer with QoS requirements data for all ASP identifiers in the UDR requires Data Subset but no Data Key or Data Subkey(s).  NOTE 10: Update of a Planned Data Transfer with QoS requirements data in the UDR requires a Data key to refer to a Planned Data Transfer with QoS requirements data as input data.  NOTE 11: Each PFD (as defined in TS 23.503 [20]) may be complimented with a source NF type which indicates the type of NF that has generated the PFD (i.e. AF or NWDAF). Absence of a source NF type indicates that the AF is the source of the PFD.  NOTE 12: Further information about HR-SBO case and how these keys are used, see clause 4.3.6.1.  NOTE 13: The ECS Address Configuration Information as part of application data is used for HR roaming case as defined in clause 6.5.2.6 of TS 23.548 [74].  NOTE XX: The parameter is used to restrict the maximum number of configured Device Identifiers per UE. | | | |

The content of the UDR storage for (Data Set Id= Application Data, Data Subset Id = AF TrafficInfluence request information) is specified in clause 5.6.7, Table 5.6.7-1 of TS 23.501 [2]. This information is written by the NEF and read by the PCF(s). PCF(s) may also subscribe to changes onto this information.

\* \* \* \* Next change \* \* \* \*

#### 4.15.6.X Provisioning of Non-3GPP Device Identifier(s) Information

This clause describes the procedures to allow an AF to provision QoS information for the non-3GPP device(s) (as defined in clause 5.X of TS 23.501 [2]) that require differentiated QoS treatment for a UE subscription to the 5G system via NEF. The AF may belong to the operator or to an external party.

To provision QoS information for the non-3GPP device(s) that require differentiated QoS treatment, the procedure defined in clause 4.15.6.7 is performed with the following considerations:

1) Service Description as described in clause 4.15.6.7.1.

2) Service Parameters.

Provisioning QoS information would involve capturing Non-3GPP Device Identifier(s) and other parameters for a UE subscription that enables 5GS to implement differentiated QoS for each of the non-3GPP device(s). Below are the parameters that may be used:

- Non-3GPP Device Identifier is a generic string, which uniquely identifies a non-3GPP device behind a specific UE subscription.

- (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.

- Flow description information as specified in clause 6.1.3.6 of TS 23.503 [20].

- QoS Reference or Individual QoS parameters as described in clause 6.1.3.22 of TS 23.503 [20].

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.

The NEF sets the value of Data Subset Identifier to “Non-3GPP Device Identifier Information” in Nudr\_DM\_Create/Update/Delete service operations when storing/updating/deleting the data. NEF determines this based on the presence of Non-3GPP Device Identifier in the AF request.

If the number of configured non-3GPP Device Identifiers associated with the UE reaches the maximum allowed (i.e., Max number of non-3GPP Device Identifiers as defined in Table 5.2.12.2.1-1), the NEF will reject any new AF requests for additional non-3GPP Device Identifier configurations.

NOTE X: Provisioning by the AF/NEF into the UDR (including change of status like add, delete, update of the Non-3GPP Device Identifier Information) can trigger the PCF to implement policies as specified in clause 4.15.6.7 based on operator policies.

\* \* \* \* End of changes \* \* \* \*