**3GPP TSG-SA2 Meeting #154 Adhoc *S2-22xxxxx***

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

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.503** | **CR** | **-** | **rev** | **-** | **Current version:** | **18.0.0** |  |
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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 | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Skeleton of PIN - 23.503 | | | | | | | | | |
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| ***Source to WG:*** | vivo | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | PIN | | | | |  | ***Date:*** | | | 2023-01-16 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | 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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | |  | | | | | | | | |
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| ***Consequences if not approved:*** | |  | | | | | | | | |
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| ***Clauses affected:*** | |  | | | | | | | | |
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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:*** | | 1st: Definations and abbreviations for PIN, e.g., PIN Routing Selection Policy  2nd: PIN Routing Selection Policy  3rd: PIN policy management exposure, e.g., URSP, PRSP, etc., which are non-session related  4th: (FFS) Charging requirements, e.g., PINE ID, PINE IP, etc.  5th: QoS applied to PIN  6th: PIN session management exposure, e.g., activation/deactivation/create…  7th: **New sub-clause** for AF providing information for PRSP generation, which is under “6.1.2.6 AF influence on Access and Mobility related policy control” clause (which is under “6.1.2 Non-session management related policy control”)  8th: AF providing QoS information for PIN  9th: Application data related to PIN  10th: Application function description related to PIN policy generation  11th: NEF functionality for PIN related to policy  12th: **New sub-clause** for description of PIN Routing Selection Policy, which is under “6.6 UE policy information” clause | | | | | | | | |
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\* \* \* \* 1st change \* \* \* \*

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1], TS 23.501 [2], TS 23.502 [3] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

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**TBD:** TBD

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1], TS 23.501 [2], TS 23.502 [3], TS 23.316 [27] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

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TBD TBD

\* \* \* \* 2cn change \* \* \* \*

4.2.2 UE policy control requirements

The 5GC shall be able to provide policy information from the PCF to the UE. Such UE policy information includes:

- Access Network Discovery & Selection Policy (ANDSP): It is used by the UE for selecting non-3GPP accesses network.

- UE Route Selection Policy (URSP): This policy is used by the UE to determine how to route outgoing traffic. Traffic can be routed to an established PDU Session, can be offloaded to non-3GPP access outside a PDU Session, can be routed via a ProSe Layer-3 UE-to-Network Relay outside a PDU session, or can trigger the establishment of a new PDU Session.

- V2X Policy (V2XP): This policy provides configuration parameters to the UE for V2X communication over PC5 reference point or over Uu reference point or both. V2X Policies are defined in TS 23.287 [28].

- ProSe Policy (ProSeP): This policy provides configuration parameters to the UE for ProSe Direct Discovery, ProSe Direct Communication, ProSe UE-to-Network Relay and Remote UE. ProSe Policies are defined in TS 23.304 [34].

- PIN Routing Selection Policy (PRSP): TBD.

\* \* \* \* 3rd change \* \* \* \*

4.2.6 Support for non-session management related network capability exposure

Support for network capability exposure enables an AF (e.g. an external ASP) to request the following non-session management related policy control functionality from the NEF:

- Management of PFDs as defined in clause 4.2.4 and in clause 4.18 of TS 23.502 [3];

- Negotiations for future background data transfer as defined in clause 6.1.2.4 and in clause 4.16.7 of TS 23.502 [3];

- Applying a previously negotiated background data transfer policy to a UE or group of UEs as defined in clause 6.1.2.4 and in clause 4.15.6.8 of TS 23.502 [3];

- Traffic steering control for AF influenced traffic diversion, as defined in clause 4.3.7 and in clause 5.6.7 of TS 23.501 [2];

- Service specific parameter provisioning for V2X communication (see clause 5.20 of TS 23.501 [2] and clause 4.15.6.7 of TS 23.502 [3]);

- 5G VN group management (see clause 5.29 of TS 23.501 [2] and clause 4.15.6 of TS 23.502 [3]);

- Service specific parameter provisioning for ProSe Direct Discovery, ProSe Direct Communication, ProSe Relay Discovery and ProSe Relay Communications (see clause 5.20 of TS 23.501 [2] and clause 4.15.6.7 of TS 23.502 [3]).

- Service specific parameter provisioning for time synchronization service (see clause 5.27.1.8 of TS 23.501 [2] and clause 4.15.9 of TS 23.502 [3]).

- Service specific parameter provisioning for PIN (see clause 5.XX of TS 23.501 [2] and clause 4.XX of TS 23.502 [3]);

\* \* \* \* 4th change (FFS) \* \* \* \*

4.3.2.3 Charging requirements

It shall be possible to apply different rates and charging models depending on a UE's roaming status.

It shall be possible to apply different rates based on the location of a UE.

It shall be possible to apply different rates for specific part of a service, e.g. allow the UE to download a certain volume for one rate, and after this volume has been reached continue with a different rate.

It shall be possible to apply different rates based on the time of day.

It shall be possible to enforce per service data flow, identified by PCC Rule, usage limits on a per UE basis.

It shall be possible to apply different rates depending on the access used to carry a Service Data Flow

It shall be possible to apply an online charging action upon Application Start/Stop events.

It shall be possible to indicate to the SMF that interactions with the CHF are not required for a PCC rule, i.e. to not perform accounting, credit control or recording of usage for the service data flow, in this case no charging information is generated.

It shall be possible to apply TBD for PIN.

\* \* \* \* 5th change \* \* \* \*

4.3.3.2 QoS control requirements

4.3.3.2.1 QoS control at service data flow level

It shall be possible to apply QoS control on a per service data flow basis in the SMF, applicable for service data flows of both IP type and Ethernet type.

QoS control per service data flow allows the PCC framework to provide the SMF with the authorized QoS to be enforced for each specific service data flow. Criteria such as the QoS subscription information may be used together with policy rules such as, service-based, subscription-based, or predefined PCF internal policies to derive the authorized QoS to be enforced for a service data flow.

It shall be possible to apply multiple PCC rules, without application provided information, using different authorised QoS within a single PDU Session and within the limits of the Subscribed QoS profile.

TBD for PIN.

4.3.3.2.2 QoS control at QoS Flow level

It shall be possible for the PCC framework to support control of QoS reservation procedures (UE-initiated or network-initiated). It shall be possible to determine the QoS to be applied in QoS reservation procedures (QoS control) based on the authorised QoS of the service data flows that are applicable to the QoS Flow and on criteria such as the QoS subscription information, service based policies, and/or predefined PCF internal policies.

It shall be possible for the SMF to determine the authorized QoS of a QoS Flow using the PCC rules associated to the QoS Flow, and the SMF shall be able to notify the PCF if the QoS Flow is removed or the GFBR of a QoS Flow can no longer (or can again) be guaranteed.

It shall be possible for the PCC framework to support control of QoS for the packet traffic of the PDU Session.

The PCC framework shall be able to provide policy control in the presence of NAT devices. This may be accomplished by providing appropriate address and port information to the PCF.

The enforcement of the control for QoS reservation procedures for a QoS Flow shall allow for a downgrading or an upgrading of the requested QoS as part of a UE-initiated QoS Flow establishment and modification. The PCC framework shall be able to provide a mechanism to initiate QoS Flow establishment and modification as part of the QoS control.

The PCC framework shall be able to handle QoS Flows that require a guaranteed bitrate (GBR bearers) and QoS Flows for which there is no guaranteed bitrate (non-GBR bearers).

TBD for PIN.

4.3.3.2.3 QoS control at PDU Session level

It shall be possible for the PCF to provide the authorized Session-AMBR values, default 5QI/ARP combination for PDU Session of IP type, Ethernet type and unstructured type unconditionally or conditionally, i.e. per PDU Session type and/or RAT type.

It shall be possible for the PCF to request a change of the unconditional or conditional authorized Session-AMBR value(s) at a specific point in time.

TBD for PIN.

\* \* \* \* 6th change \* \* \* \*

4.3.6 Support for session management related network capability exposure

Support for network capability exposure enables an AF (e.g. an external ASP) to request the following session management related policy control functionality from the NEF:

- Set or change a chargeable party at AF session setup (see clause 4.15.6.4 and 4.15.6.5 of TS 23.502 [3]);

- Set up an AF session with required QoS (see clause 6.1.3.22 and clause 4.15.6.6 of TS 23.502 [3]);

- Transfer of traffic characteristics of Time Sensitive Communication from the TSN AF (see clause 6.1.3.23) or from the TSCTSF (see clause 6.1.3.23a).

- Set up a time synchronization service from the TSCTSF (see clauses 5.27.1.8 and 6.1.3.23a of TS 23.501 [2] and clause 4.15.9 of TS 23.502 [3]).

- Set up a PIN session management from (PIN) AF (see clauses 5.X of TS 23.501 [2] and clause 4.X of TS 23.502 [3]).

\* \* \* \* 7th change \* \* \* \*

6.1.2.6.x AF request to influence on PIN Routing Selection Policy Control

TBD

\* \* \* \* 8th change \* \* \* \*

6.1.3.22 AF session with required QoS

The AF may request that a data session to a UE is set up with a specific QoS (e.g. low latency or jitter) and priority handling. The AF can request the network to provide QoS for the AF session based on the service requirements with the help of a QoS Reference parameter that refers to pre-defined QoS information. Instead of the QoS Reference, the AF may provide individual QoS parameters associated to the Flow Description.

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TBD for PIN.

\* \* \* \* 9th change \* \* \* \*

6.2.1.6 Application specific policy information management

The application specific information used for policy control includes:

- Negotiation of BDT information stored in the UDR as Data Set "Policy Data" and Data Subset "Background Data Transfer data": It contains an ASP identifier, Non-IP information or IP 3-tuple to identify the Application server, a transfer policy together with the Background Data Transfer Reference ID, the volume of data to be transferred per UE, the expected amount of UEs and optionally, the subscription to notifications when the BDT policy needs to renegotiated;

- Sponsored data connectivity profile information stored in the UDR as Data Set "Policy Data" and Data Subset "Sponsored data connectivity profile data": It contains a list of ASP identifiers and their applications per sponsor identity;

- Application Function request information for multiple UEs (per group of UEs or all UEs) stored in the UDR as Data Set "Application Data" and Data Subset "AF request information for multiple UEs".

- Application Function request information for PIN session stored in the UDR as Data Set "Application Data" and Data Subset "AF request information for multiple UEs".

The application specific policy information may be requested/updated by the PCF per AF request.

The management of Application Function request information for multiple UEs is defined in clause 6.3.7.2 of TS 23.501 [2], the management of policies for the negotiation of BDT is defined in clause 6.1.2.4 of this specification and the provision and usage of sponsored data connectivity profile is defined in clause 6.2.1.1 of this specification.

\* \* \* \* 10th change \* \* \* \*

6.2.3 Application Function (AF)

The Application Function (AF) is an element offering applications that require dynamic policy and/or charging control over the user plane behaviour and/or an element requesting non-session based network capability exposure. In this specification, the functionality of the AF is only defined with respect to the interaction with the 5G Core Network.

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The AF may send guidance to PCF for the determination of proper URSP rules for the UE. Details of the AF guidance are described in clause 6.6 of TS 23.548 [33] and in clause 4.15.6.10 of TS 23.502 [3].

The AF may send guidance to PCF for the determination of proper PRSP rules for the UE. Details of the AF guidance are described in clause 5.XX of TS 23.501 [2] and in clause 4.XX of TS 23.502 [3].

For Time Sensitive Communication and Time synchronization as specified in clause 5.27 of TS 23.501 [2] and in clause 6.1.3.23a, the AF interacts with the TSCTSF (directly or via NEF) and the TSCTSF is interacting with the PCF. Based on operator deployment, an AF considered to be trusted by the operator can be allowed to interact directly with the TSCTSF. AFs not allowed by the operator to directly interact with the TSCTSF shall use the network capability exposure framework (see clause 7.3 of TS 23.501 [2]) to interact with the TSCTSF via the NEF.

\* \* \* \* 11th change \* \* \* \*

6.2.7 Network Exposure Function (NEF)

The Network Exposure Function (NEF) is defined in TS 23.501 [2] and additionally supports the following policy related functionalities:

- Service specific policy and charging control;

- Management of packet flow descriptions;

- Sponsor data connectivity including usage monitoring (as defined in clause 6.2.1.1);

- Negotiations for future BDT.

- TBD for PIN.

\* \* \* \* 12th change \* \* \* \*

6.6.X PIN Routing Selection Policy information

TBD.