**3GPP TSG-CT WG3 Meeting #108-eC3-201077**

[**E-Meeting**](https://www.3gpp.org/ftp/tsg_ct/WG3_interworking_ex-CN3/TSGC3_108_Sophia_Antipolis/)**, 19th -28th February 2020 (Revision of C3-200xyz)**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.512** | **CR** | **0402** | **rev** | **-** | **Current version:** | **16.3.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Update of the same PCF selection | | | | | | | | | |
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| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | en5GPccSer | | | | |  | ***Date:*** | | | 2020-02-28 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The PCF instance id is optional parameter in the current TS. So it can’t be always available at the BSF.  Moreover in current solution, it requires the PCF to retrieve the FQDN and/or IP endpoints of the existing PCF from the NRF based on the returned the PCF instance id.  In order to avoid additional signalling, we propose that the PCF stores the FQDN and/or IP endpoints of the PCF hosting the Npcf\_SMPolicyControl service if the "SamePcf" feature is supported and the PCF determines that the same PCF shall be selected for the SM Policy associations to the parameter combination in the non-roaming or home-routed scenario based on operator's policies and configuration.  Then the PCF receives the FQDN and/or IP endpoints of the PCF hosting the Npcf\_SMPolicyControl service from the BSF directly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The PCF receives the FQDN and/or IP endpoints of the PCF hosting the Npcf\_SMPolicyControl service from the BSF directly and replies to the SMF. | | | | | | | | |
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| ***Consequences if not approved:*** | | Additional signalling. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.2.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | This CR does not impact the OpenAPI file. | | | | | | | | |

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

#### 4.2.2.2 SM Policy Association establishment



Figure 4.2.2.2-1: SM Policy Association establishment

When the SMF receives the Nsmf\_PDUSession\_CreateSMContext Request as defined in subclause 5.2.2.2 of 3GPP TS 29.502 [22], if the SMF was requested not to interact with the PCF, the SMF shall not interact with the PCF; otherwise, the SMF shall send the POST method as step 1of the figure 4.2.2.2-1 to request to create an "Individual SM Policy".

NOTE 1: The decision to not interact with PCF applies for the life time of the PDU session.

NOTE 2: The indicator to not interact with PCF is configured in the UDM. It is delivered by the UDM to the SMF within the Charging Characteristics using the Session Management Subscription Data Retrieval service operation as described in 3GPP TS 29.503 [34]. The indicator is operator specific, therefore it can only be used in non-roaming and home routed roaming cases.

The SMF shall include SmPolicyContextData data structure in the payload body of the HTTP POST to request a creation of representation of the "Individual SM Policy" resource. The "Individual SM Policy" resource is created as described below.

The SMF shall include (if available) in SmPolicyContextData data structure:

- SUPI of the user within the "supi" attribute;

- PDU Session Id within the "pduSessionId" attribute;

- DNN within the "dnn" attribute;

- URL identifying the recipient of SM policies update notification within the "notificationUri" attribute;

- PDU Session Type within the "pduSessionType" attribute;

- PEI within the "pei" attribute;

- Internal Group Id(s) within the "InterGrpIds" attribute;

- type of access within the "accessType" attribute;

- type of the radio access technology within the "ratType" attribute;

- the UE Ipv4 address within the "ipv4Address" attribute and/or the UE Ipv6 prefix within the "ipv6AddressPrefix" attribute;

- the UE time zone information within "ueTimeZone" attribute;

- the UDM subscribed Session-AMBR or, if the "DN-Authorization" feature is supported, the DN-AAA authorized Session-AMBR within "subsSessAmbr" attribute;

NOTE 3: When both, the UDM subscribed Session-AMBR and the DN-AAA authorized Session-AMBR are available in the SMF, the SMF includes the DN-AAA authorized Session-AMBR.

- if the "DN-Authorization" feature is supported, the DN-AAA authorization profile index within the "authProfIndex" attribute;

- subscribed Default QoS Information within "subsDefQos" attribute;

- the number of supported packet filters for signalled QoS rules within the "numOfPackFilter";

- the online charging status within "online" attribute;

- the offline charging status within "offline" attribute;

- the charging characteristics within "chargingCharacteristics" attribute;

- access network charging identifier within the "accNetChId" attribute;

- the address of the network entity performing charging within the "chargEntityAddr" attribute;

- 3GPP PS data off status within the "3gppPsDataOffStatus" attribute;

- indication of UE supporting reflective QoS within the "refQosIndication" attribute;

- user location information within the "userLocationInfo" attribute;

- the S-NSSAI corresponding to the network slice the PDU session is allocated within the "sliceInfo" attribute;

- the QoS flow usage required of the default QoS flow within the "qosFlowUsage" attribute;

- identifier of the serving network, for SNPN also including the NID, within the "servingNetwork" attribute;

- serving network function identifier within the "servNfId" attribute; and

- trace control and configuration parameters information encoded as "traceReq" attribute.

Editor's note: It is FFS whether a new attribute "maPduInd" to indicate MA PDU request is needed.

Editor's note: In stage 2, the ATSSS Capability is not provided to the PCF. But if it is not provided to the PCF, the PCF can’t determine the ATSSS functionality. It is FFS whether the ATSSS Capability needs to be provided the PCF.

The SMF may include in "SmPolicyContextData" data structure the IPv4 address domain identity within the "ipDomain" attribute.

NOTE 4: The "ipDomain" attribute is helpful when within a network slice instance, there are several separate IP address domains, with SMF/UPF(s) that allocate Ipv4 IP addresses out of the same private address range to UE PDU Sessions. The same IP address can thus be allocated to UE PDU sessions served by SMF/UPFs in different IPv4 address domains. If one PCF controls several SMF/UPFs in different IP address domains, the UE IP address is thus not sufficient for the AF session binding procedure, as described in 3GPP TS 29.514 [17]. The SMF assists the PCF in the session binding supplying an "ipDomain" attribute denoting the IPv4 address domain identity of the allocated UE IPv4 address.

When the PCF receives the HTTP POST request from the SMF, the PCF shall make an authorization based on the information received from the SMF and, if available, AMF, CHF, AF, UDR, NWDAF and operator policy pre-configured at the PCF. If the authorization is successful, the PCF shall create a new resource, which represents "Individual SM Policy", addressed by a URI as defined in subclause 5.3.3.2 and contains a PCF created resource identifier. The PCF shall respond to the SMF with a 201 Created message, including:

- Location header field containing the URI for the created resource; and

- a response body providing session management related policies, e.g. provisioning of PCC rules as defined in subclause 4.2.6.2, provisioning of policy control request triggers as defined in subclause 4.2.6.4.

The SMF shall use the URI received in the Location header in subsequent requests to the PCF to refer to the "Individual SM Policy".

It the PCF received a "traceReq" attribute, it shall perform trace procedures as defined in 3GPP TS 32.422 [24].

If errors occur when processing the HTTP POST request, the PCF shall apply error handling procedures as specified in subclause 5.7.

If the user information received within the "supi" attribute is unknown, the PCF shall reject the request and include in an HTTP "400 Bad Request" response message the "cause" attribute of the ProblemDetails data structure set to "USER\_UNKNOWN".

If the PCF is, due to incomplete, erroneous or missing information (e.g. QoS, RAT type, subscriber information) not able to provision a policy decision as response to the request for PCC rules by the SMF, the PCF may reject the request and include in an HTTP "400 Bad Request" response message the "cause" attribute of the ProblemDetails data structure set to "ERROR\_INITIAL\_PARAMETERS".

If the PCF, based on local configuration and/or operator policies, denies the creation of the Individual SM Policy resource, the PCF may reject the request and include in an HTTP "403 Forbidden" response message the "cause" attribute of the ProblemDetails data structure set to "POLICY\_CONTEXT\_DENIED". Based on configured failure action, the SMF at reception of this error code may reject the PDU session establishment or allow the PDU session establishment applying local policies.

If the SMF receives HTTP response with these codes, the SMF shall reject the PDU session establishment that initiated the HTTP POST Request.

If the "SamePcf" feature as defined in subclause 5.8 is supported, when the PCF determines that the same PCF shall be selected for the SM Policy associations to the same UE ID, S-NSSAI and DNN combination in the non-roaming or home-routed scenario, the PCF shall request the BSF to check if there is an existing PCF binding information for the same UE ID, S-NSSAI and DNN combination as defined in subclause 4.2.2.2 of 3GPP TS 29.521 [39]. If the PCF receives the "403 Forbidden" status code with the "cause" attribute of the ProblemDetails data structure set to "EXISTING\_BINDING\_INFO\_FOUND" and the FQDN or the description of IP endpoints hosting Npcf\_SMPolicyControl serviceof the existing PCF binding information from the BSF within the "pcfFqdnSm" attribute or "pcfIpEndPointsSm" attribute of BindingResp data structure respectively as defined in subclause 4.2.2.2 of 3GPP TS 29.251 [39], the PCF shall reply with an HTTP "308 Permanent Redirect" error response and the Location header containing the URI with the FQDN or IP endpoint as {apiRoot} defined in subclause 5.3.2.2 to the SMF. Upon reception of the response, the SMF shall initiate a new HTTP POST request to the returned URI.

The forwarding of the Origination Time Stamp parameter shall apply as described hereafter, if the SMF supports the detection and handling of late arriving requests as specified in subclause 5.2.3.3 of 3GPP TS 29.502 [22] and the procedure is enabled by the operator. If the SMF receives a request to create an SM Context or a PDU session context, which includes the 3gpp-Sbi-Origination-Timestamp header as defined in subclause 5.2.3.2, the SMF shall forward this header to the PCF as HTTP custom header. See also subclause 4.2.7 for the handling at the PCF, when the PCF receives the 3gpp-Sbi-Origination-Timestamp header.

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