**3GPP TSG-CT WG3 Meeting #130 *C3-234254r1***

**Xiamen, China, 9 - 13 October, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.521** | **CR** | **0192** | **rev** | **1** | **Current version:** | **18.2.0** |  |
|  | | | | | | | | |
| *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:*** | feature naming for network slice replacement | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNS\_Ph3 | | | | |  | ***Date:*** | | | 2023-9-29 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Name the feature for network slice replacement as "NetSliceRepl" to align with TS 29.507 and 29.512, and remove the related ENs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Update of feature name and description, and removal of related ENs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Unresovled ENs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.2.5.2, 5.6.2.3, 5.8 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 have any impact in the OpenAPI specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

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

#### 4.2.5.2 Update an existing PCF for a PDU Session binding information



Figure 4.2.5.2-1: NF service consumer update an existing PCF for a PDU Session binding information

If the feature "BindingUpdate" is supported, the NF service consumer shall invoke the Nbsf\_Management\_Update service operation to update PCF for a PDU the session binding information for a UE in the BSF. The NF service consumer shall send an HTTP PATCH request with "{apiRoot}/nbsf-management/<apiVersion>/pcfBindings/{bindingId}" as Resource URI, where "{bindingId}" is the "Individual PCF for a PDU Session Binding" resource identifier that is to be updated, as shown in figure 4.2.5.2-1, step 1. The "PcfBindingPatch" data structure provided in the request body shall contain the information to be updated as follows.

The "PcfBindingPatch" data structure:

- for the IP address information of the served UE:

a) shall contain the "ipv4Addr" attribute if the IPv4 address is modified, or if the "ExtendedSamePcf" feature is supported, if the IPv4 address was not previously provided, and may contain the "ipDomain" attribute if the IPv4 address domain is modified or if the "ExtendedSamePcf" feature is supported, if the IPv4 address domain was not previously provided and applies. To remove the IPv4 address the "ipv4Addr" attribute shall be set to "null" and if applicable, the "ipDomain" attribute shall be set to "null"; and/or

b) shall contain the "ipv6Prefix" attribute if the IPv6 address information is modified, or if the "ExtendedSamePcf" feature is supported, if the IPv6 address information was not previously provided. The "ipv6Prefix" attribute shall be set to "null" if the IPv6 address information is removed; and/or

c) if the "MultiUeAddr" feature is supported, shall contain:

1) the "addIpv6Prefixes" attribute containing the new complete list of additional IPv6 Address Prefixes if the additional IPv6 address information is modified, or if the "ExtendedSamePcf" feature is supported, the current list of IPv6 address prefixes if it was not previously provided; or

2) the "addIpv6Prefixes" attribute set to "null" if all additional IPv6 Address Prefixes are removed; or

- for the MAC address information of the served UE:

a) shall contain the "macAddr48" attribute if the MAC address is modified, or if the "ExtendedSamePcf" feature is supported, if the MAC address was not previously provided. The "macAddr48" attribute shall be set to "null" if the MAC address is removed; and/or

b) if the "MultiUeAddr" feature is supported, shall contain:

1) the "addMacAddrs" attribute containing the new complete list of additional MAC addresses if the additional MAC address information is modified, or if the "ExtendedSamePcf" feature is supported, the current list of MAC address(es) if it was not previously provided; or

2) the "addMacAddrs" attribute set to "null" if all additional MAC addresses are removed; or

- for the PCF instance and the associated PCF address information of the PCF holding the SM policy association, should contain if a new PCF instance is selected:

a) the PCF instance ID encoded as "pcfId" attribute;

b) if the PCF supports the Npcf\_PolicyAuthorization service:

1) the FQDN of the PCF encoded as "pcfFqdn" attribute; and/or

2) a description of IP endpoints at the PCF hosting the Npcf\_PolicyAuthorization service encoded as "pcfIpEndPoints" attribute; and/or

c) if the PCF supports the Rx interface:

1) the Diameter host id of the PCF encoded as "pcfDiamHost"; and

2) the Diameter realm of the PCF and "pcfDiamRealm" attributes; and/or

- for the S-NSSAI of the PDU session, if the S-NSSAI has been replaced:

a) shall contain the "snssai" attribute containing the alternate S-NSSAI used to replace the existing S-NSSAI if the "NetSliceRepl" feature is supported.

If the BSF cannot successfully fulfil the received HTTP PATCH request due to the internal BSF error or due to the error in the HTTP PATCH request, the BSF shall send the HTTP error response as specified in clause 5.7.

Otherwise, upon the reception of the HTTP PATCH request with: "{apiRoot}/nbsf-management/<apiVersion>/pcfBindings/{bindingId}" as Resource URI and the "PcfBindingPatch" data structure as request body, the BSF shall update the binding information.

If the BSF successfully updated an "Individual PCF for a PDU Session Binding" resource, the BSF shall respond with "200 OK" status code with the message body containing the resource representation with the updated PCF for a PDU session binding information in the "PcfBinding" data structure, as shown in figure 4.2.5.2-1, step 2.

If errors occur when processing the HTTP PATCH request, the BSF shall send an HTTP error response as specified in clause 5.7.

If the feature "ES3XX" is supported, and the BSF determines the received HTTP PATCH request needs to be redirected, the BSF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [6].

\*\*\* 2nd Change \*\*\*

#### 5.6.2.3 Type PcfBindingPatch

Table 5.6.2.3-1: Definition of type PcfBindingPatch

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Attribute name | | Data type | | P | | Cardinality | | Description | | Applicability | |
| ipv4Addr | | Ipv4AddrRm | | O | | 0..1 | | The IPv4 Address of the served UE. (NOTE 2) | |  | |
| ipDomain | | string | | O | | 0..1 | | IPv4 address domain identifier. (NOTE 1) | |  | |
| ipv6Prefix | | Ipv6PrefixRm | | O | | 0..1 | | The IPv6 Address Prefix of the served UE. (NOTE 2) (NOTE 3) | |  | |
| addIpv6Prefixes | | array(Ipv6Prefix) | | O | | 1..N | | The additional IPv6 Address Prefixes of the served UE. (NOTE 2) (NOTE 3) | | MultiUeAddr | |
| macAddr48 | | MacAddr48Rm | | O | | 0..1 | | The MAC Address of the served UE. | |  | |
| addMacAddrs | | array(MacAddr48) | | O | | 1..N | | The additional MAC Addresses of the served UE. | | MultiUeAddr | |
| pcfId | | NfInstanceId | | O | | 0..1 | | PCF instance identifier | |  | |
| pcfFqdn | | Fqdn | | O | | 0..1 | | FQDN of the PCF hosting the Npcf\_PolicyAuthorization service. | |  | |
| pcfIpEndPoints | | array(IpEndPoint) | | O | | 1..N | | IP end points of the PCF hosting the Npcf\_PolicyAuthorization service. | |  | |
| pcfDiamHost | | DiameterIdentity | | O | | 0..1 | | The diameter host for an individual PCF. | |  | |
| pcfDiamRealm | | DiameterIdentity | | O | | 0..1 | | The diameter realm for an individual PCF. | |  | |
| snssai | | Snssai | | O | | 0..1 | | The updated S-NSSAI. | | NetSliceRepl | |
| NOTE 1: If applicable, the consumer (e.g. PCF) shall also request to remove the ipDomain attribute if the ipv4Addr attribute is requested to be removed.  NOTE 2: 5G-RG and FN-RG replaces UE for wireline access support. See 3GPP TS 23.316 [19].  NOTE 3: IPv6 prefix(es) shorter than /64, according to 3GPP TS 23.501 [2], clause 5.8.2.2 and 3GPP TS 23.316 [19], clause 8.3.1, or full IPv6 address(es) with a /128 prefix, according to 3GPP TS 23.316 [19], clause 8.3.1, can be encoded as the "ipv6Prefix" and "addIpv6Prefixes" attributes. | | | | | | | | | | | |

\*\*\* 3rd Change \*\*\*

## 5.8 Feature negotiation

The optional features in table 5.8-1 are defined for the Nbsf\_Management Service API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [6].

Table 5.8-1: Supported Features

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Feature number | | Feature Name | | Description | |
| 1 | | MultiUeAddr | | This feature indicates the support of multiple UE addresses (IPv6 prefixes or MAC addresses) in the same binding information. | |
| 2 | | BindingUpdate | | The consumer can use this feature for updating the session binding information. | |
| 3 | | SamePcf | | This feature indicates the support of same PCF selection for the indicated combination. (NOTE) | |
| 4 | | ES3XX | | Extended Support for 3xx redirections. This feature indicates the support of redirection for any service operation, according to Stateless NF procedures as specified in clauses 6.5.3.2 and 6.5.3.3 of 3GPP TS 29.500 [6] and according to HTTP redirection principles for indirect communication, as specified in clause 6.10.9 of 3GPP TS 29.500 [6]. | |
| 5 | | ExtendedSamePcf | | This feature extends the support of same PCF selection for the indicated combination. This feature requires the support of SamePcf feature. (NOTE) | |
| 6 | | AddSnssaiDnnPair | | This feature indicates the support of additional S-NSSAI and DNN pair(s) for which the binding event report(s) apply. | |
| 7 | | NetSliceRepl | | This feature indicates the support of the network slice replacement functionality introduced in this specification as part of the end-to-end network slicing functionality.  The following functionalities are supported:  - Support the reporting of the network slice replacement information to the BSF. | |
| NOTE: The "SamePcf" feature is applicable to the deployments where the N5 and/or Rx interface apply and the UE address is available in the PCF at the creation of the SM Policy Association. The "ExtendedSamePcf" feature is applicable for any PCF deployment, regardless of UE address availability at the creation of SM Policy association and/or N5 and/or Rx applicability. | | | | | |

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