**3GPP TSG-CT WG4 Meeting #102-eC4-211xyz**

**E-Meeting, 24th Feb – 5th Mar 2021 (was C4-211240)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.510** | **CR** | **0445** | **rev** | **1** | **Current version:** | **17.0.0** |  |
|  | | | | | | | | |
| *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:*** | UPF TAI Ranges | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson, AT&T | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SBIProtoc17 | | | | |  | ***Date:*** | | | 2021-02-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In the current specification, the TAIs served by a UPF instance can only be configured by means of a list (array) of individual TAIs. It is more convenient to allow the configuration by means of several ranges of TAIs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Include a "taiRangeList" attribute in the UpfInfo data type. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Configuration of an UPF instance serving large number of TAIs is very inefficient. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.1.6.2.13, A.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 introduces backwards compatible new features, with impacts on the following APIs:  - TS29510\_Nnrf\_NFManagement.yaml  - TS29510\_Nnrf\_NFDiscovery.yaml | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

##### 6.1.6.2.13 Type: UpfInfo

Table 6.1.6.2.13-1: Definition of type UpfInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| sNssaiUpfInfoList | array(SnssaiUpfInfoItem) | M | 1..N | List of parameters supported by the UPF per S-NSSAI (NOTE 1) |
| smfServingArea | array(string) | O | 1..N | The SMF service area(s) the UPF can serve.  If not provided, the UPF can serve any SMF service area. |
| interfaceUpfInfoList | array(InterfaceUpfInfoItem) | O | 1..N | List of User Plane interfaces configured on the UPF. When this IE is provided in the NF Discovery response, the NF Service Consumer (e.g. SMF) may use this information for UPF selection. |
| iwkEpsInd | boolean | O | 0..1 | Indicates whether interworking with EPS is supported by the UPF.  true: Supported false (default): Not Supported |
| pduSessionTypes | array(PduSessionType) | O | 1..N | List of PDU session type(s) supported by the UPF. The absence of this attribute indicates that the UPF can be selected for any PDU session type. |
| atsssCapability | AtsssCapability | C | 0..1 | If present, this IE shall indicate the ATSSS capability of the UPF.  If not present, the UPF shall be regarded with no ATSSS capability. |
| ueIpAddrInd | boolean | O | 0..1 | Indicates whether the UPF supports allocating UE IP addresses/prefixes.  true: supported false (default): not supported |
| taiList | array(Tai) | O | 1..N | The list of TAIs the UPF can serve. It may contain the non-3GPP access TAI.  If not provided, the UPF can serve the whole SMF service area defined by the smfServingArea attribute. |
| taiRangeList | array(TaiRange) | O | 1..N | The range of TAIs the UPF can serve. It may contain the non-3GPP access' TAI. The absence of this attribute and the taiList attribute indicate that the UPF can serve the whole SMF service area defined by the smfServingArea attribute.  (NOTE X) |
| wAgfInfo | WAgfInfo | C | 0..1 | If present, this IE shall indicate that the UPF is collocated with W-AGF.  If not present, the UPF is not collocated with W-AGF. |
| tngfInfo | TngfInfo | C | 0..1 | If present, this IE shall indicate that the UPF is collocated with TNGF.  If not present, the UPF is not collocated with TNGF. |
| twifInfo | TwifInfo | C | 0..1 | If present, this IE shall indicate that the UPF is collocated with TWIF.  If not present, the UPF is not collocated with TWIF. |
| priority | integer | O | 0..1 | Priority (relative to other NFs of the same type) in the range of 0-65535, to be used for NF selection for a service request matching the attributes of the UpfInfo; lower values indicate a higher priority.  See the precedence rules in the description of the priority attribute in NFProfile, if Priority is also present in NFProfile.  The NRF may overwrite the received priority value when exposing an NFProfile with the Nnrf\_NFDiscovery service.  (NOTE 2) |
| redundantGtpu | boolean | O | 0..1 | Indicates whether the UPF supports redundant GTP-U path.  true: supported false (default): not supported |
| ipups | boolean | O | 0..1 | Indicates whether the UPF is configured for IPUPS. (NOTE 3)  true: the UPF is configured for IPUPS.  false (default): the UPF is not configured for IPUPS. |
| dataForwarding | boolean | O | 0..1 | Indicates whether the UPF is configured for data forwarding. (NOTE 4)  When present, this IE shall be set as following:  - true: the UPF is configured for data forwarding  - false (default): the UPF is not configured for data forwarding  If the UPF is configured for data forwarding, it shall support UP network interface with type "DATA\_FORWARDING". |
| supportedPfcpFeatures | string | O | 0..1 | Supported PFCP Features.  A string used to indicate the PFCP features supported by the UPF, which encodes the "UP Function Features" IE as specified in Table 8.2.25-1 of 3GPP TS 29.244 [21] (starting from Octet 5), in hexadecimal representation.  Each character in the string shall take a value of "0" to "9", "a" to "f" or "A" to "F" and each two characters shall represent one octet of "UP Function Features" IE (starting from Octet 5, to higher octets). For each two characters representing one octet, the first character representing the 4 most significant bits of the octet and the second character the 4 least significant bits of the octet.  (NOTE 5) |
| NOTE 1: If this S-NSSAIs is present in the UpfInfo and in the NFprofile, the S-NSSAIs from the UpfInfo shall prevail.  NOTE 2: An UPF profile may e.g. contain multiple UpfInfo entries, with each entry containing a different list of TAIs and a different priority, to differentiate the priority to select the UPF based on the user location. The priority in UpfInfo has the least precedence, i.e. it applies between UPFs with the same priority.  NOTE 3: Any UPF can support the IPUPS functionality. In network deployments where specific UPFs are used to provide IPUPS, UPFs configured for providing IPUPS services shall be selected to provide IPUPS.  NOTE 4: Based on operator policies, if dedicated UPFs are preferred to be used for indirect data forwarding during handover scenarios, when setting up the indirect data forwarding tunnel,  the SMF should preferably select a UPF configured for data forwarding and use the network instance indicated in the Network Instance ID associated to the DATA\_FORWARDING interface type in the interfaceUpfInfoList attribute.  NOTE 5: The supportedPfcpFeatures shall be provisioned in addition and be consistent with the existing UPF features (atsssCapability, ueIpAddrInd, redundantGtpu and ipups) in the upfInfo, e.g. if the ueIpAddrInd is set to "true", then the UEIP flag shall also be set to "1" in the supportedPfcpFeatures.  NOTE X: This attribute should only be used if the SMFs in the same PLMN have all been upgraded to support this feature (i.e. to understand the definition of TAIs in the UPF profile based on ranges of TAIs). | | | | |

\* \* \* Next Change \* \* \* \*

## A.2 Nnrf\_NFManagement API

*(... text not shown for clarity ...)*

UpfInfo:

description: Information of an UPF NF Instance

type: object

required:

- sNssaiUpfInfoList

properties:

sNssaiUpfInfoList:

type: array

items:

$ref: '#/components/schemas/SnssaiUpfInfoItem'

minItems: 1

smfServingArea:

type: array

items:

type: string

minItems: 1

interfaceUpfInfoList:

type: array

items:

$ref: '#/components/schemas/InterfaceUpfInfoItem'

minItems: 1

iwkEpsInd:

type: boolean

default: false

pduSessionTypes:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSessionType'

minItems: 1

atsssCapability:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AtsssCapability'

ueIpAddrInd:

type: boolean

default: false

taiList:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Tai'

minItems: 1

taiRangeList:

type: array

items:

$ref: '#/components/schemas/TaiRange'

minItems: 1

wAgfInfo:

$ref: '#/components/schemas/WAgfInfo'

tngfInfo:

$ref: '#/components/schemas/TngfInfo'

twifInfo:

$ref: '#/components/schemas/TwifInfo'

priority:

type: integer

minimum: 0

maximum: 65535

redundantGtpu:

type: boolean

default: false

ipups:

type: boolean

default: false

dataForwarding:

type: boolean

default: false

supportedPfcpFeatures:

type: string

*(... text not shown for clarity ...)*

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