**3GPP TSG-CT WG4 Meeting #125C4-244338**

**Hefei, P.R. China; 14th – 18th October 2024 *was C4-244200***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.503** | **CR** | **1340** | **rev** | **1** | **Current version:** | **19.0.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Enhancing Parameter Provisioning with Static IP address | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson, Huawei, Nokia | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI19\_IP\_SP\_EXP | | | | |  | ***Date:*** | | | 2024-09-24 |
|  |  | | | |  | |  | | |  |
| ***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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Stage-2 (TS 23.501 and TS 23.502) requires that an AF (via NEF) shall be capable of provisioning static IP address(es) for a GPSI, per-DNN, per-S-NSSAI | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add new attribute in PpData object to incorporate the static UE IP address by an AF. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Stage-2 requirements are not met. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.5.6.1, 6.5.6.2.2, 6.5.6.2.xx (new), A.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:  - TS29503\_Nudm\_PP.yaml | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

#### 6.5.6.1 General

This clause specifies the application data model supported by the API.

Table 6.5.6.1-1 specifies the data types defined for the Nudm\_PP service API.

Table 6.5.6.1-1: Nudm\_PP specific Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Clause defined | Description |
| PpData | 6.5.6.2.2 | Parameter Provision Data |
| CommunicationCharacteristics | 6.5.6.2.3 | Communication Characteristics |
| PpSubsRegTimer | 6.5.6.2.4 |  |
| PpActiveTime | 6.5.6.2.5 |  |
| 5GVnGroupConfiguration | 6.5.6.2.6 |  |
| 5GVnGroupData | 6.5.6.2.7 |  |
| ExpectedUeBehaviour | 6.5.6.2.8 | Expected UE Behaviour Parameters |
| LocationArea | 6.5.6.2.10 | Location Area |
| NetworkAreaInfo | 6.5.6.2.11 | Network Area Information |
| EcRestriction | 6.5.6.2.12 |  |
| PlmnEcInfo | 6.5.6.2.13 |  |
| PpDlPacketCountExt | 6.5.6.2.14 |  |
| PpMaximumResponseTime | 6.5.6.2.15 |  |
| PpMaximumLatency | 6.5.6.2.16 |  |
| LcsPrivacy | 6.5.6.2.17 |  |
| UmtTime | 6.5.6.2.18 |  |
| PpDataEntry | 6.5.6.2.19 | Provisioning Parameter Data Entry |
| CommunicationCharacteristicsAF | 6.5.6.2.20 | Communication Characteristics per AF |
| EcsAddrConfigInfo | 6.5.6.2.21 | ECS Address Configuration Information |
| 5MbsAuthorizationInfo | 6.5.6.2.22 | 5MBS Session Authorization Information |
| MulticastMbsGroupMemb | 6.5.6.2.23 | Multicast MBS group membership management |
| DnnSnssaiSpecificGroup | 6.5.6.2.24 | DNN and S-NSSAI specific Group |
| AfReqDefaultQoS | 6.5.6.2.25 | AF-requested default QoS |
| ExpectedUeBehaviourExtension | 6.5.6.2.26 | Expected UE Behaviour Parameters |
| MbsAssistanceInfo | 6.5.6.2.27 | MBS Assistance Information |
| AppSpecificExpectedUeBehaviour | 6.5.6.2.28 | Application Specific Expected UE Behaviour Data |
| MaxGroupDataRate | 6.5.6.2.29 | Maximum data rate for a 5G VN Group (uplink and downlink) |
| 5GVnGroupConfigurationModification | 6.5.6.2.30 | Contains the attributes to modify on the 5GVnGroupConfiguration data structure; the attributes to be deleted need to be set to the null value. |
| 5GVnGroupDataModification | 6.5.6.2.31 | Contains the attributes to modify on the 5GVnGroupData data structure; the attributes to be deleted need to be set to the null value. |
| RangingSlPrivacy | 6.5.6.2.32 |  |
| SupportedPlmn | 6.5.6.2.33 | Information about the PLMN and associated ECSPs |
| StaticUeIpAddressParams | 6.5.6.2.xx | Static IP address(es), per-DNN, per-S-NSAAI, for a UE (GPSI). |
| PpDlPacketCount | 6.5.6.3.2 |  |
| 5GVnGroupCommunicationType | 6.5.6.3.5 | The type of the 5G VN group associated with 5G VN group communication. |
| EcsAuthMethod | 6.5.6.3.6 | ECS Authentication Methods |

Table 6.5.6.1-2 specifies data types re-used by the Nudm\_PP service API from other APIs, including a reference and when needed, a short description of their use within the Nudm\_PP service API.

Table 6.5.6.1-2: Nudm\_PP re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| DurationSec | 3GPP TS 29.571 [7] | Time value in seconds |
| DurationSecRm | 3GPP TS 29.571 [7] | Time value in seconds; nullable |
| SupportedFeatures | 3GPP TS 29.571 [7] |  |
| NfInstanceId | 3GPP TS 29.571 [7] |  |
| ProblemDetails | 3GPP TS 29.571 [7] |  |
| Gpsi | 3GPP TS 29.571 [7] |  |
| PatchResult | 3GPP TS 29.571 [7] |  |
| DateTime | 3GPP TS 29.571 [7] |  |
| Ecgi | 3GPP TS 29.571 [7] | an EUTRA cell identifier |
| Ncgi | 3GPP TS 29.571 [7] | an NR cell identifier |
| GlobalRanNodeId | 3GPP TS 29.571 [7] | an identity of the NG-RAN node |
| Tai | 3GPP TS 29.571 [7] | a tracking area identity |
| GeographicArea | 3GPP TS 29.572 [34] | Identifies the geographical information of the user(s). |
| CivicAddress | 3GPP TS 29.572 [34] | Identifies the civic address information of the user(s). |
| PduSessionType | 3GPP TS 29.571 [7] |  |
| AcsInfoRm | 3GPP TS 29.571 [7] |  |
| StnSrRm | 3GPP TS 29.571 [7] | Session Transfer Number for SRVCC |
| Supi | 3GPP TS 29.571 [7] |  |
| MtcProviderInformation | 3GPP TS 29.571 [7] | MTC Provider Information |
| StationaryIndicationRm | 3GPP TS 29.571 [7] |  |
| ScheduledCommunicationTimeRm | 3GPP TS 29.571 [7] |  |
| ScheduledCommunicationTypeRm | 3GPP TS 29.571 [7] |  |
| TrafficProfileRm | 3GPP TS 29.571 [7] |  |
| BatteryIndicationRm | 3GPP TS 29.571 [7] |  |
| EcsServerAddr | 3GPP TS 29.571 [7] |  |
| Fqdn | 3GPP TS 29.571 [7] | Fully Qualified Domain Name |
| SpatialValidityCond | 3GPP TS 29.571 [7] |  |
| MbsSessionId | 3GPP TS 29.571 [7] | 5MBS Session Identifier |
| GroupId | 3GPP TS 29.571 [7] |  |
| 5Qi | 3GPP TS 29.571 [7] |  |
| Arp | 3GPP TS 29.571 [7] |  |
| 5QiPriorityLevel | 3GPP TS 29.571 [7] |  |
| BitRate | 3GPP TS 29.571 [7] |  | |
| SliceUsageControlInfo | 3GPP TS 29.571 [7] |  | |
| IpAddress | 6.1.6.2.22 | Defined in the Nudm\_SDM API.  IP address (IPv4, or IPv6, or IPv6 prefix). | |
| AppDescriptor | 6.1.6.2.40 | Defined in the Nudm\_SDM API. | |
| Lpi | 6.1.6.2.43 | Defined in the Nudm\_SDM API. | |
| ExpectedUeBehaviourData | 6.1.6.2.49 | Defined in the Nudm\_SDM API.  Expected UE Behaviour Parameters |
| AppSpecificExpectedUeBehaviourData | 6.1.6.2.99 | Application Specific Expected UE Behaviour Parameters |
| AreaUsageInd | 6.1.6.3.24 | Defined in the Nudm\_SDM API.  Area Usage Indication | |
| ReferenceId | 6.4.6.3.2 | Reference ID defined in Nudm\_EE API. It shall contain a 64-bit long integer. | |
| UpLocRepIndAf | 6.1.6.3.30 | Defined in the Nudm\_SDM API.  Indication of location reporting via user plane to an LCS client or AF | |
| SorInfo | 6.1.6.2.26 | Provisioning Parameters for SOR | |
| PlmnId | 3GPP TS 29.571 [7] | PLMN Identity | |

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

##### 6.5.6.2.2 Type: PpData

Table 6.5.6.2.2-1: Definition of type PpData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| supportedFeatures | SupportedFeatures | O | 0..1 |  |  |
| communicationCharacteristics | CommunicationCharacteristics | O | 0..1 | communication characteristics |  |
| expectedUeBehaviour | ExpectedUeBehaviour | O | 0..1 | Expected UE Behaviour Parameters.  This IE, if present, shall be ignored if the expectedUeBehaviourExtension attribute is present in ppData. |  |
| expectedUeBehaviourExtension | ExpectedUeBehaviourExtension | O | 0..1 | Expected UE Behaviour data, optionally with corresponding confidence level and/or accuracy levels. | ExpectedBehaviourMap |
| ecRestriction | EcRestriction | O | 0..1 | Enhanced Coverage Restriction Parameters |  |
| acsInfo | AcsInfoRm | O | 0..1 | Identifies the ACS Information (see TS 23.316 [37] clause 9.6.3); nullable. |  |
| stnSr | StnSrRm | O | 0..1 | Session Transfer Number for SRVCC |  |
| lcsPrivacy | LcsPrivacy | O | 0..1 | LCS Privacy Parameters (see clause 5.4.3 of 3GPP TS 23.273 [38]) |  |
| sorInfo | SorInfo | O | 0..1 | Steering of Roaming information to be conveyed to a UE (refer to clause 6.1.6.2.26).  See NOTE 1 and NOTE 2. |  |
| 5mbsAuthorizationInfo | 5MbsAuthorizationInfo | O | 0..1 | When present, this IE shall include the 5MBS Session Authorization Information as specified in 3GPP TS 23.247 [59] |  |
| dnnSnssaiSpecificGroup | DnnSnssaiSpecificGroup | O | 0..1 | This attribute is applicable only if the {ueId} within the resource URI takes the value of an external group ID.  When present, this IE shall include DNN and S-NSSAI specific Group Parameters (See clause 4.15.6.3e of TS 23.502 [3]) |  |
| mbsAssistanceInfo | MbsAssistanceInfo | O | 0..1 | When present, this IE contains the MBS Session Assistance Information for a MBS session.  (NOTE 3) |  |
| appSpecificExpectedUeBehaviour | AppSpecificExpectedUeBehaviour | O | 0..1 | Application specific expected UE Behaviour Parameters |  |
| sliceUsageControlInfos | array(SliceUsageControlInfo) | O | 1..N | Network Slice usage behaviour control Information |  |
| rangingSlPrivacy | RangingSlPrivacy | O | 0..1 | Ranging and Sidelink Positioning Privacy Parameters |  |
| staticUeIpAddressParams | array(StaticUeIpAddressParams) | O | 1..N | A list of static IP address assignment parameters, per-DNN, per-S-NSSAI, for the GPSI identified by the {ueId} within the resource URI.  (NOTE X) |  |
| NOTE 1: If the UDM is not able to immediately (after conducting integrity protection with the AUSF) convey the received Steering of Roaming information to the concerned UE for any reason (e.g. no AMF registered for the UE), it shall discard it.  NOTE 2: The behaviour of the UDM at reception of Steering of Roaming information within PpData is specified in Annexes C.3, C.4 and C.6 of 3GPP TS 23.122 [20].  NOTE 3: Before the mbsAssistanceInfo for a MBS session can be provisioned using the external group id, an external group shall be selected by the AF/NEF.  NOTE X: In the staticUeIpAddressParams array, there shall be at most one entry for a given DNN and S-NSSAI pair. | | | | | |

Editor's note: It is FFS how to handle Expected UE behaviour Parameters for multiple AFs, pending stage-2 clarification.

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

##### 6.5.6.2.xx Type: StaticUeIpAddressParams

Table 6.5.6.2.xx-1: Definition of type StaticUeIpAddressParams

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| dnn | Dnn | M | 1 | DNN for which the IP address information applies. |
| snssai | Snssai | M | 1 | S-NSSAI for which the IP address information applies. |
| ipAddresses | array(IpAddress) | M | 1..2 | Contains one static UE IPv4 address or one IPv6 prefix or both. |

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

# A.6 Nudm\_PP API

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

PpData:

type: object

properties:

communicationCharacteristics:

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

supportedFeatures:

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

expectedUeBehaviourParameters:

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

expectedUeBehaviourExtension:

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

ecRestriction:

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

acsInfo:

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

stnSr:

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

lcsPrivacy:

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

sorInfo:

$ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/SorInfo'

5mbsAuthorizationInfo:

$ref: '#/components/schemas/5MbsAuthorizationInfo'

dnnSnssaiSpecificGroup:

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

mbsAssistanceInfo:

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

appSpecificExpectedUeBehaviour:

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

sliceUsageControlInfos:

type: array

items:

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

minItems: 1

rangingSlPrivacy:

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

staticUeIpAddressParams:

type: array

items:

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

minItems: 1

nullable: true

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

5GVnGroupData:

type: object

required:

- dnn

- sNssai

properties:

dnn:

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

sNssai:

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

pduSessionTypes:

type: array

items:

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

minItems: 1

appDescriptors:

type: array

items:

$ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/AppDescriptor'

minItems: 1

secondaryAuth:

type: boolean

dnAaaIpAddressAllocation:

type: boolean

dnAaaAddress:

$ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/IpAddress'

additionalDnAaaAddresses:

type: array

items:

$ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/IpAddress'

minItems: 1

dnAaaFqdn:

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

5gVnGroupCommunicationInd:

type: boolean

5gVnGroupCommunicationType:

$ref: '#/components/schemas/5GVnGroupCommunicationType'

maxGroupDataRate:

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

5GVnGroupDataModification:

description: >

Contains the attributes to modify on the 5GVnGroupData data structure;

the attributes to be deleted need to be set to the null value.

type: object

properties:

appDescriptors:

type: array

items:

$ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/AppDescriptor'

minItems: 1

nullable: true

secondaryAuth:

type: boolean

nullable: true

dnAaaIpAddressAllocation:

type: boolean

nullable: true

dnAaaAddress:

type: object

nullable: true

allOf:

- $ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/IpAddress'

additionalDnAaaAddresses:

type: array

items:

$ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/IpAddress'

minItems: 1

nullable: true

dnAaaFqdn:

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

5gVnGroupCommunicationInd:

type: boolean

nullable: true

5gVnGroupCommunicationType:

$ref: '#/components/schemas/5GVnGroupCommunicationType'

maxGroupDataRate:

type: object

nullable: true

allOf:

- $ref: '#/components/schemas/MaxGroupDataRate'

nullable: true

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

RangingSlAppIDUnrelatedClass:

description: >

Describes Call/Session unrelated Class subscriptions for ranging and sidelink positioning

service for identified service type for UE.

type: object

required:

- rangingSlAppID

properties:

rangingSlAppID:

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

allowedGeographicArea:

type: array

items:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GeographicArea'

minItems: 1

rangingSlPrivacyCheckRelatedAction:

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

codeWordInd:

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

validTimePeriod:

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

codeWordList:

type: array

items:

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

minItems: 1

StaticUeIpAddressParams:

description: Static IP address(es), per-DNN, per-S-NSSAI, for a UE (GPSI)

type: object

required:

- dnn

- snssai

- ipAddresses

properties:

dnn:

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

sNssai:

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

ipAddresses:

type: array

items:

$ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/IpAddress'

minItems: 1

maxItems: 2

# SIMPLE TYPES:

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

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