**3GPP TSG-CT WG4 Meeting #101eC4-205abc**

**E-Meeting, 03rd – 13th November 2020 *was* C4-205116**

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **29.503** | **CR** | **0502** | **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)*.* |
|  |

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

|  |
| --- |
|  |
| ***Title:***  | Remove Network Slices in AMF registrations |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | CT4 |
|  |  |
| ***Work item code:*** | SBIProtoc16 |  | ***Date:*** | 2020-10-23 |
|  |  |  |  |  |
| ***Category:*** | **A** |  | ***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 canbe 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:*** | C4-204441 (CR0472) was agreed in CT4 because 28.554 indicated that UDM should be enabled to count the total number of subscribers registered to a given Network Slice Instance. But the counter mention above was removed in S5 TS 28.554 CR0061 which wa agreed in S5 133e meeting remove in R17.For agliment with stage 2, Network Slices in AMF registrations should be removed. |
|  |  |
| ***Summary of change:*** | Removed the singleNssais in data model Amf3GppAccessRegistration, AmfNon3GppAccessRegistration, Amf3GppAccessRegistrationModification, AmfNon3GppAccessRegistrationModification |
|  |  |
| ***Consequences if not approved:*** | The implementation stage 3 is not aligned with that in stage 2. |
|  |  |
| ***Clauses affected:*** | 6.2.6.2.2, 6.2.6.2.3, 6.2.6.2.7, 6.2.6.2.8, A.3 |
|  |  |
|  | **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:- TS 29.503 Nudm\_UECM- TS 29.504 Nudr\_DataRepository |
|  |  |
| ***This CR's revision history:*** | Rev1:1. Change ***Work item code: from*** SBIProtoc17 to SBIProtoc16 and change ***Category: from F to A.***
 |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The start of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

##### 6.2.6.2.2 Type: Amf3GppAccessRegistration

Table 6.2.6.2.2-1: Definition of type Amf3GppAccessRegistration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| amfInstanceId | NfInstanceId | M | 1 | The identity the AMF uses to register in the NRF. |
| deregCallbackUri | Uri | M | 1 | A URI provided by the AMF to receive (implicitly subscribed) notifications on deregistration.The deregistration callback URI shall have unique information within AMF set to identify the UE to be deregistered. |
| guami | Guami | M | 1 | This IE shall contain the serving AMF's GUAMI. |
| ratType | RatType | M | 1 | This IE shall indicate the current RAT type of the UE. |
| supportedFeatures | SupportedFeatures | O | 0..1 | See clause 6.2.8 These are the features supported by the AMF. |
| purgeFlag | PurgeFlag | O | 0..1 | This flag indicates whether or not the AMF has deregistered. It shall not be included in the Registration service operation. |
| pei | Pei | O | 0..1 | Permanent Equipment Identifier.Absence of PEI indicates that the PEI is not available at the AMF. In this case the UDM/UDR shall not delete the PEI value stored from a previous registration. |
| imsVoPs | ImsVoPs | O | 0..1 | Indicates per UE if "IMS Voice over PS Sessions" is homogeneously supported in all TAs in the serving AMF, or homogeneously not supported, or if support is non-homogeneous/unknown. Absence of this attribute shall be interpreted as "non homogenous or unknown" support. |
| amfServiceNameDereg | ServiceName | O | 0..1 | When present, this IE shall contain the name of the AMF service to which the Deregistration Notification is to be sent (see clause 6.5.2.2 of 3GPP TS 29.500 [4]). |
| pcscfRestorationCallbackUri | Uri | O | 0..1 | A URI provided by the AMF to receive (implicitly subscribed) notifications on the need for P-CSCF Restoration. |
| amfServiceNamePcscfRest | ServiceName | O | 0..1 | When present, this IE shall contain the name of the AMF service to which P-CSCF Restoration Notifications are to be sent (see clause 6.5.2.2 of 3GPP TS 29.500 [4]). This IE may be included if pcscfRestorationCallbackUri is present. |
| initialRegistrationInd | boolean | C | 0..1 | This IE shall be included by the AMF and set to true if the UE performs an Initial Registration. If the UE does not perform initial registration it shall be absent or set to false. When present and true, the UDM+HSS is requested to cancel previous registration in SGSN, if any.Not applicable for Nudr and Nudm\_UECM GET operation.(NOTE 2) |
| backupAmfInfo | array(BackupAmfInfo) | C | 1..N | This IE shall be included if the NF service consumer is an AMF and the AMF supports the AMF management without UDSF for the first interaction with UDM.The UDM uses this attribute to do an NRF query in order to invoke later services in a backup AMF, e.g. Namf\_EventExposure. |
| drFlag | DualRegistrationFlag | O | 0..1 | Dual Registration flag. When present and true, this flag indicates that the UDM+HSS is requested not to send S6a-CLR to the registered MME/SGSN (if any). Otherwise, the registered MME (if any) shall be cancelled.Not applicable for Nudr and Nudm\_UECM GET operation. |
| urrpIndicator | boolean | O | 0..1 | This IE indicates whether "UE\_REACHABILITY\_FOR\_SMS" event for this user has been subscribed or not:- true: the event has been subscribed- false, or absence of this attribute: the event for this user is currently not subscribed(NOTE 1) |
| amfEeSubscriptionId | string | C | 0..1 | Shall be present if urrpIndicator is true and the UDM has subscribed to ReachabilityReport event for "UE Reachability for DL Traffic" at the AMF to receive One-Time UE Activity notification. It contains the subscription Id allocated by the AMF as received by the UDM as part of the HTTP "Location" header of the Namf\_EventExposure\_Subscribe response.The UDM shall make use of the Nudr\_DataRepository Update service operation (see 3GPP TS 29.504 [9]) to store the amfEeSubscription Id in the UDR. |
| epsInterworkingInfo | EpsInterworkingInfo | C | 0..1 | This IE shall be included if the AMF has determined per APN/DNN which PGW-C+SMF is selected for EPS interworking with N26 and the AMF supports EPS interworking of non-3GPP access. For each APN/DNN, only one PGW-C+SMF shall be selected by the AMF for EPS interworking. |
| ueSrvccCapability | boolean | O | 0..1 | This IE indicates whether the UE supports 5G SRVCC:- true: 5G SRVCC is supported by the UE and AMF;- false, or absence of this attribute: 5G SRVCC is not supported. |
| registrationTime | DateTime | C | 0..1 | Time of Amf3GppAccessRegistration. Shall be present when used on Nudr. |
| vgmlcAddress | VgmlcAddress | O | 0..1 | Address of the VGMLC |
| contextInfo | ContextInfo | C | 0..1 | This IE if present may contain e.g. the headers received by the UDM along with the 3GppAccessRegistration.Shall be absent on Nudm and may be present on Nudr |
|  |  |  |  |  |
| NOTE 1: The urrpIndicator attribute shall only be exposed over the Nudr SBI, and it shall not be included by the AMF.NOTE 2: Regardless of the Dual Registration Flag, the SGSN, if any, is required to be cancelled (see 3GPP TS 23.502 [3] clause 4.11.5.2) |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

##### 6.2.6.2.3 Type: AmfNon3GppAccessRegistration

Table 6.2.6.2.3-1: Definition of type AmfNon3GppAccessRegistration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| amfInstanceId | NfInstanceId | M | 1 | The identity the AMF uses to register in the NRF. |
| deregCallbackUri | Uri | M | 1 | A URI provided by the AMF to receive (implicitly subscribed) notifications on deregistration.The deregistration callback URI shall have unique information within AMF set to identify the UE to be deregistered. |
| guami | Guami | M | 1 | This IE shall contain the serving AMF's GUAMI. |
| ratType | RatType | M | 1 | This IE shall indicate the current RAT type of the UE. |
| supportedFeatures | SupportedFeatures | O | 0..1 | See clause 6.2.8 These are the features supported by the AMF. |
| purgeFlag | PurgeFlag | O | 0..1 | This flag indicates whether or not the AMF has deregistered. It shall not be included in the Registration service operation. |
| pei | Pei | O | 0..1 | Permanent Equipment IdentifierAbsence of PEI indicates that the PEI is not available at the AMF. In this case the UDM/UDR shall not delete the PEI value stored from a previous registration. |
| imsVoPs | ImsVoPs | M | 1 | Indicates per UE if "IMS Voice over PS Sessions" is supported, or not supported.The value NON\_HOMOGENEOUS\_OR\_UNKNOWN is not applicable. |
| amfServiceNameDereg | ServiceName | O | 0..1 | When present, this IE shall contain the name of the AMF service to which the Deregistration Notification is to be sent (see clause 6.5.2.2 of 3GPP TS 29.500 [4]). |
| pcscfRestorationCallbackUri | Uri | O | 0..1 | A URI provided by the AMF to receive (implicitly subscribed) notifications on the need for P-CSCF Restoration. |
| amfServiceNamePcscfRest | ServiceName | O | 0..1 | When present, this IE shall contain the name of the AMF service to which P-CSCF Restoration Notifications are to be sent (see clause 6.5.2.2 of 3GPP TS 29.500 [4]). This IE may be included if pcscfRestorationCallbackUri is present. |
| backupAmfInfo | array(BackupAmfInfo) | C | 1..N | This IE shall be included if the NF service consumer is an AMF and the AMF supports the AMF management without UDSF for the first interaction with UDM.The UDM uses this attribute to do an NRF query in order to invoke later services in a backup AMF, e.g. Namf\_EventExposure. |
| urrpIndicator | boolean | O | 0..1 | This IE indicates whether "UE\_REACHABILITY\_FOR\_SMS" event for this user has been subscribed or not:- true: the event has been subscribed- false, or absence of this attribute: the event for this user is currently not subscribed |
| amfEeSubscriptionId | string | C | 0..1 | Shall be present if urrpIndicator is true and the UDM has subscribed to Reachability-Report event for "UE Reachable for DL Traffic" at the AMFto receive One-Time UE Activity notification. It contains the subscription Id allocated by the AMF as received by the UDM as part of the HTTP "Location" header of the Namf\_EventExposure\_Subscribe response. The UDM shall make use of the Nudr\_DataRepository Update service operation (see 3GPP TS 29.504 [9]) to store the amfEeSubscription Id in the UDR. |
| registrationTime | DateTime | C | 0..1 | Time of AmfNon3GppAccessRegistration. Shall be present when used on Nudr. |
| vgmlcAddress | VgmlcAddress | O | 0..1 | Address of the VGMLC |
| contextInfo | ContextInfo | C | 0..1 | This IE if present may contain e.g. the headers received by the UDM along with AmfNon3GppRegistration.Shall be absent on Nudm and may be present on Nudr. |
|  |  |  |  |  |
| NOTE: The urrpIndicator attribute shall only be exposed over the Nudr SBI, and it shall not be included by the AMF. |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

##### 6.2.6.2.7 Type: Amf3GppAccessRegistrationModification

This type is derived from the type Amf3GppAccessRegistration by deleting all attributes that are not subject to modification by means of the HTTP PATCH method.

Table 6.2.6.2.7-1: Definition of type Amf3GppAccessRegistrationModification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| guami | Guami | M | 1 | Guami of the AMF requesting the modification. If the MCC, MNC, AMF Region ID and AMF Set ID within the guami do not match the stored value, the modification request shall be rejected. |
| purgeFlag | PurgeFlag | O | 0..1 | This flag indicates whether or not the AMF has deregistered. It shall be included in the Deregistration service operation with a value of "TRUE".  |
| pei | Pei | O | 0..1 | Permanent Equipment Identifier.  |
| imsVoPs | ImsVoPs | O | 0..1 | Indicates per UE if "IMS Voice over PS Sessions" is homogeneously supported in all TAs in the serving AMF, or homogeneously not supported, or if support is non-homogeneous/unknown |
| backupAmfInfo | array(BackupAmfInfo) | C | 0..N | This IE shall be included if the NF service consumer is an AMF and the AMF supports the AMF management without UDSF for the Modification of the BackupAmfInfo.The UDM uses this attribute to do an NRF query in order to invoke later services in a backup AMF, e.g. Namf\_EventExposure |
| epsInterworkingInfo | EpsInterworkingInfo | C | 0..1 | This IE shall be included if the AMF has determined per APN/DNN which PGW-C+SMF is selected for EPS interworking with N26 and the AMF supports EPS interworking of non-3GPP access. This IE shall also be included to update the PGW-C+SMF information if the AMF selects another PGW-C+SMF for EPS interworking with N26 for the same DNN. For each APN/DNN, only one PGW-C+SMF shall be selected by the AMF for EPS interworking. |
| ueSrvccCapability | boolean | O | 0..1 | This IE indicates whether the UE supports 5G SRVCC:- true: 5G SRVCC is supported by the UE and AMF;- false: 5G SRVCC is not supported. |
|  |  |  |  |  |
| Note: Absence of optional attributes indicates: no modification. Attributes of this type are not marked "nullable: true" in the OpenAPI file as deletion of these attributes is not applicable. |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

##### 6.2.6.2.8 Type: AmfNon3GppAccessRegistrationModification

This type is derived from the type AmfNon3GppAccessRegistration by deleting all attributes that are not subject to modification by means of the HTTP PATCH method.

Table 6.2.6.2.8-1: Definition of type AmfNon3GppAccessRegistrationModification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| guami | Guami | M | 1 | Guami of the AMF requesting the modification. If the MCC, MNC, AMF Region ID and AMF Set ID within the guami do not match the stored value, the modification request shall be rejected. |
| purgeFlag | PurgeFlag | O | 0..1 | This flag indicates whether or not the AMF has deregistered. It shall be included in the Deregistration service operation with a value of "TRUE". |
| pei | Pei | O | 0..1 | Permanent Equipment Identifier |
| imsVoPs | ImsVoPs | O | 0..1 | If present indicates per UE that support of "IMS Voice over PS Sessions" has been modified to supported or not supported".The value NON\_HOMOGENEOUS\_OR\_UNKNOWN is not applicable. |
| backupAmfInfo | array(BackupAmfInfo) | C | 0..N | This IE shall be included if the NF service consumer is an AMF and the AMF supports the AMF management without UDSF for the Modification of the BackupAmfInfo.The UDM uses this attribute to do an NRF query in order to invoke later services in a backup AMF, e.g. Namf\_EventExposure |
|  |  |  |  |  |
| Note: Absence of optional attributes indicates: no modification. Attributes of this type are not marked "nullable: true" in the OpenAPI file as deletion of these attributes is not applicable. |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## A.3 Nudm\_UECM API

openapi: 3.0.0

info:

 version: '1.2.0.alpha-1'

 title: 'Nudm\_UECM'

 description: |

 Nudm Context Management Service.

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

 Amf3GppAccessRegistration:

 type: object

 required:

 - amfInstanceId

 - deregCallbackUri

 - guami

 - ratType

 properties:

 amfInstanceId:

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

 supportedFeatures:

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

 purgeFlag:

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

 pei:

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

 imsVoPs:

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

 deregCallbackUri:

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

 amfServiceNameDereg:

 $ref: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/ServiceName'

 pcscfRestorationCallbackUri:

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

 amfServiceNamePcscfRest:

 $ref: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/ServiceName'

 initialRegistrationInd:

 type: boolean

 guami:

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

 backupAmfInfo:

 type: array

 items:

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

 minItems: 1

 drFlag:

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

 ratType:

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

 urrpIndicator:

 type: boolean

 amfEeSubscriptionId:

 type: string

 epsInterworkingInfo:

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

 ueSrvccCapability:

 type: boolean

 registrationTime:

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

 vgmlcAddress:

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

 contextInfo:

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

 Amf3GppAccessRegistrationModification:

 type: object

 required:

 - guami

 properties:

 guami:

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

 purgeFlag:

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

 pei:

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

 imsVoPs:

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

 backupAmfInfo:

 type: array

 items:

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

 epsInterworkingInfo:

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

 ueSrvccCapability:

 type: boolean

 nullable: true

 EpsInterworkingInfo:

 type: object

 properties:

 epsIwkPgws:

 description: A map (list of key-value pairs where Dnn serves as key) of EpsIwkPgws

 type: object

 additionalProperties:

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

 EpsIwkPgw:

 type: object

 required:

 - pgwFqdn

 - smfInstanceId

 properties:

 pgwFqdn:

 type: string

 smfInstanceId:

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

 AmfNon3GppAccessRegistration:

 type: object

 required:

 - amfInstanceId

 - imsVoPs

 - deregCallbackUri

 - guami

 - ratType

 properties:

 amfInstanceId:

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

 supportedFeatures:

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

 purgeFlag:

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

 pei:

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

 imsVoPs:

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

 deregCallbackUri:

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

 amfServiceNameDereg:

 $ref: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/ServiceName'

 pcscfRestorationCallbackUri:

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

 amfServiceNamePcscfRest:

 $ref: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/ServiceName'

 guami:

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

 backupAmfInfo:

 type: array

 items:

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

 minItems: 1

 ratType:

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

 urrpIndicator:

 type: boolean

 amfEeSubscriptionId:

 type: string

 registrationTime:

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

 vgmlcAddress:

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

 contextInfo:

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

 AmfNon3GppAccessRegistrationModification:

 type: object

 required:

 - guami

 properties:

 guami:

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

 purgeFlag:

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

 pei:

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

 imsVoPs:

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

 backupAmfInfo:

 type: array

 items:

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

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

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The end of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*