**3GPP TSG-CT WG4 Meeting #105-eC4-214xyz**

**E-Meeting, 17th – 27th August 2021 (was C4-214362)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.503** | **CR** | **0690** | **rev** | **1** | **Current version:** | **17.3.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Re-Registration Required | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SBIProtoc17 | | | | |  | ***Date:*** | | | 2021-08-01 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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:*** | | DeregistrationReason in DeregistationNotification sent by UDM to AMF for operator-determined purposes can support "SUBSCRIPTION\_WITHDRAWN" and "REREGISTRATION\_REQUIRED" but UDM is not able to decide which of them could be sent to AMF when handling the notification from UDR. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the new attribute "reRegistrationRequired" in types Amf3GppAccessRegistration and AmfNon3GppAccessRegistration for use on Nudr. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | UDM is able to send only either "SUBSCRIPTION\_WITHDRAWN" or "REREGISTRATION\_REQUIRED" value for DeregistrationReason towards AMF for operator-determined purposes. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2.6.2.2, 6.2.6.2.3, 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 corrections with impacts on the following APIs:  - TS29503\_Nudm\_UECM.yaml | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

##### 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 or "UE\_REACHABILITY\_FOR\_DATA" event for One-Time UE Activity notification (i.e. Max Number Of reports =1) with configuration "INDIRECT\_REPORT" 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 | Uri | | C | | 0..1 | | Shall be present if urrpIndicator is true and the UDM has subscribed (e.g. on behalf of NEF) to ReachabilityReport event for "UE Reachability for DL Traffic" at the AMF to receive One-Time UE Activity notification. It contains the subscription Id URI allocated by the AMF as received by the UDM in 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 | |
| noEeSubscriptionInd | boolean | | O | | 0..1 | | This IE shall be absent on Nudr and may be present on Nudm. This indication is used by UDM to restore any possible ongoing subscription lost, as specified in clause 5.3.2.2.2.  When present, this IE shall indicate whether AMF does not have event exposure subscriptions in UE Context:  - true: No Event Exposure subscription existing in UE Context in AMF.  - false (default): Event Exposure subscription(s) exist in UE Context in AMF. | |
| supi | | Supi | | C | | 0..1 | | This IE may be included by the AMF in registration requests and should be included by UDM in GET responses when the corresponding GET request provided a GPSI UE identity. |
| ueReachableInd | | UeReachableIndication | | C | | 0..1 | | This IE shall be present if the UE is currently not reachable (e.g. in not allowed areas) or the UE reachability is unknown (e.g. service restriction area of the UE is not received at the AMF during initial registration).  When the UE is not reachable (and based on operator policy when the UE reachability is unknown), the UDM shall keep the urrpIndicator and amfEeSubscriptionId attributes and not generate Reachability Report for the UE.  Absence of this IE shall be interpreted as "REACHABLE". |
| reRegistrationRequired | | boolean | | C | | 0..1 | | This IE is only applicable to Nudr interface and shall not be included over the Nudm interface.  This attribute shall only be set to true in notifications sent by UDR to UDM, and if purgeFlag is also set to true in the same notification.  When Nudr Data Change Notification is sent including this attribute and purgeFlag, both set to true, the UDM uses "REREGISTRATION\_REQUIRED" as DeregistrationReason towards AMF.  Otherwise, if only purgeFlag is set to true in the notification, the UDM uses "SUBSCRIPTION\_WITHDRAWN".  Absence of this IE shall be interpreted as false. |
| 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 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 | 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 or "UE\_REACHABILITY\_FOR\_DATA" event for One-Time UE Activity notification (i.e. Max Number Of reports =1) with configuration "INDIRECT\_REPORT" 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 | Uri | C | 0..1 | Shall be present if urrpIndicator is true and the UDM has subscribed (e.g. on behalf of NEF) to Reachability-Report event for "UE Reachable for DL Traffic" at the AMFto receive One-Time UE Activity notification. It contains the subscription Id URI allocated by the AMF as received by the UDM in 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. |
| noEeSubscriptionInd | boolean | O | 0..1 | This IE shall be absent on Nudr and may be present on Nudm. This indication is used by UDM to restore any possible ongoing subscription lost, as specified in clause 5.3.2.2.3.  When present, this IE shall indicate whether AMF does not have event exposure subscriptions in UE Context:  - true: No Event Exposure subscription existing in UE Context in AMF.  - false (default): Event Exposure subscription(s) exist in UE Context in AMF. |
| supi | Supi | C | 0..1 | This IE may be included by the AMF in registration requests and should be included by UDM in GET responses when the corresponding GET request provided a GPSI UE identity. |
| reRegistrationRequired | boolean | C | 0..1 | This IE is only applicable to Nudr interface and shall not be included over the Nudm interface.  When Nudr Data Change Notification is sent including this attribute and purgeFlag set to true, the UDM uses "REREGISTRATION\_REQUIRED" as DeregistrationReason towards AMF.  Otherwise, the UDM uses "SUBSCRIPTION\_WITHDRAWN".  Absence of this IE shall be interpreted as false. |
| NOTE: The urrpIndicator attribute shall only be exposed over the Nudr SBI, and it shall not be included by the AMF. | | | | |

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

## A.3 Nudm\_UECM API

*(... 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:

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

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'

noEeSubscriptionInd:

type: boolean

default: false

supi:

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

ueReachableInd:

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

reRegistrationRequired:  
 type: boolean

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

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:

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

registrationTime:

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

vgmlcAddress:

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

contextInfo:

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

noEeSubscriptionInd:

type: boolean

default: false

supi:

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

reRegistrationRequired:  
 type: boolean

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

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