**3GPP TSG CT WG3 Meeting #137 *C3-245139r3***

**Hefei, CN, 14 - 18 October, 2024**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **29.522** | **CR** | **1371** | **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)*.* |
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|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | UE public address subscription resources and data model |
|  |  |
| ***Source to WG:*** | ZTE, Ericsson, Nokia |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | UPEAS\_Ph2 |  | ***Date:*** | 2024-10-07 |
|  |  |  |  |  |
| ***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 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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | Nnef\_UEAddress\_Subscribe/Unsubscribe/Notify service operations have been introduced in SA2 to support UE public Address exposure via NEF. (see SP-241306 and SP-241416) |
|  |  |
| ***Summary of change:*** | UeAddress API updated to define UE public address subscription resources and data model. |
|  |  |
| ***Consequences if not approved:*** | Non compliant with stage-2 requirements. |
|  |  |
| ***Clauses affected:*** | 5.35.2, 5.35.2.1(new), 5.35.2.2(new), 5.35.2.3(new), 5.35.4, 5.35.4.1(new), 5.35.4.2(new), 5.35.5.1, 5.35.5.2.4(new), 5.35.5.2.5(new) |
|  |  |
|  | **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 \*\*\*

### 5.35.2 Resources

#### 5.35.2.1 Overview

This clause describes the structure for the Resource URIs as shown in figure 5.6.1.1-1 and the resources and HTTP methods used for the UeAddress API.



Figure 5.35.2.1-1: Resource URI structure of the UeAddress API

Table 5.35.2.1-1 provides an overview of the resources and HTTP methods applicable for the UeAddress API.

Table 5.35.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method | Description |
| UE Address Subscriptions | /subscriptions | GET | Retrieve all the subscriptions to UE Address for a given AF. |
| POST | Create a new subscription to UE Address. |
| Individual UE Address Subscription | /subscriptions/{subscriptionId} | GET | Retrieve an existing subscription to UE Address. |
| DELETE | Delete an existing subscription to UE Address. |

#### 5.35.2.2 Resource: UE Address Subscriptions

##### 5.35.2.2.1 Introduction

This resource allows a AF to read all active UE address subscribtions for the given AF, or allows an AF to create a new Individual UE Address Subscription in the NEF.

##### 5.35.2.2.2 Resource Definition

Resource URI: **{apiRoot}/3gpp-ue-address/<apiVersion>/subscriptions**

This resource shall support the resource URI variables defined in table 5.35.2.2.2-1.

Table 5.35.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | Clause 5.2.4 of 3GPP TS 29.122 [4]. |

##### 5.35.2.2.3 Resource Methods

###### 5.35.2.2.3.1 General

The following clauses specify the resource methods supported by the resource as described in clause 5.35.2.2.2.

###### 5.35.2.2.3.2 GET

The GET method allows to read all active subscriptions for a given AF. The AF shall initiate the HTTP GET request message and the NEF shall respond to the message.

This method shall support the URI query parameters specified in table 5.35.2.2.3.2-1.

Table 5.35.2.2.3.2-1: URI query parameters supported by the GETmethod on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| supp-feat | SupportedFeatures | O | 0..1 | The features supported by the NF service consumer. |

This method shall support the request data structures specified in table 5.35.2.2.3.2-2 and the response data structures and response codes specified in table 5.35.2.2.3.2-3.

Table 5.35.2.2.3.2-2: Data structures supported by the GETRequest Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| N/A |  |  |  |

Table 5.35.2.2.3.2-3: Data structures supported by theGET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| array(UeAddrSubsc) | M | 0..N | 200 OK | The subscription information for the AF in the request URI are returned. |
| N/A |  |  | 307 Temporary Redirect | Temporary redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative NEF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
| N/A |  |  | 308 Permanent Redirect | Permanent redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative NEF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. |

Table 5.35.2.2.3.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NEF. |

Table 5.35.2.2.3.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NEF. |

###### 5.35.2.2.3.3 POST

The POST method creates a new subscription resource to UE address subscription for a given AF. The AF shall initiate the HTTP POST request message and the NEF shall respond to the message. The NEF shall construct the URI of the created resource.

This method shall support the request data structures specified in table 5.35.2.2.3.3-1 and the response data structures and response codes specified in table 5.35.2.2.3.3-2.

Table 5.35.2.2.3.3-1: Data structures supported by the POSTRequest Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| UeAddrSubsc | M | 1 | Contains the information for the creation of a new Individual UE Address Subscription resource. |

Table 5.35.2.2.3.3-2: Data structures supported by thePOST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| UeAddrSubsc | M | 1 | 201 Created | The subscription was created successfully. The URI of the created resource shall be returned in the "Location" HTTP header. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. |

Table 5.35.2.2.3.3-3: Headers supported by the 201 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure:{apiRoot}/3gpp-ue-address/<apiVersion>/subscriptions/{subscriptionId} |

#### 5.35.2.3 Resource: Individual UE Address Subscription

##### 5.35.2.3.1 Introduction

This resource allows an AF to read, update or delete an existing Individual UE Address Subscription.

##### 5.35.2.3.2 Resource Definition

Resource URI: **{apiRoot}/3gpp-ue-address/<apiVersion>/subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in table 5.35.2.3.2-1.

Table 5.35.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | Clause 5.2.4 of 3GPP TS 29.122 [4]. |
| subscriptionId | string | Identifier of the subscription resource. |

##### 5.35.2.3.3 Resource Methods

###### 5.35.2.3.3.1 General

The following clauses specify the resource methods supported by the resource as described in clause 5.35.2.3.2.

###### 5.35.2.3.3.2 GET

The GET method allows to read the active subscription for a given AF and subscription Id. The AF shall initiate the HTTP GET request message and theNEF shall respond to the message.

This method shall support the URI query parameters specified in table 5.35.2.3.3.2-1.

Table 5.35.2.3.3.2-1: URI query parameters supported by theGETmethod on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| supp-feat | SupportedFeatures | O | 0..1 | The features supported by the NF service consumer. |

This method shall support the request data structures specified in table 5.6.1.3.3.2-2 and the response data structures and response codes specified in table 5.6.1.3.3.2-3.

Table 5.35.2.3.3.2-2: Data structures supported by the GETRequest Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| N/A |  |  |  |

Table 5.35.2.3.3.2-3: Data structures supported by theGET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| UeAddrSubsc | M | 1 | 200 OK | The subscription information for the AF in the request URI are returned. |
| N/A |  |  | 307 Temporary Redirect | Temporary redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative NEF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
| N/A |  |  | 308 Permanent Redirect | Permanent redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative NEF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. |

Table 5.35.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NEF. |

Table 5.35.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NEF. |

###### 5.35.2.3.3.3 DELETE

The DELETE method deletes an existing Individual UE Address Subscription. The AF shall initiate the HTTP DELETE request message and the NEF shall respond to the message.

This method shall support the URI query parameters specified in table 5.35.2.3.3.3-1.

Table 5.35.2.3.3.3-1: URI query parameters supported by theDELETE method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| N/A |  |  |  |  |

This method shall support the request data structures specified in table 5.35.2.3.3.3-2 and the response data structures and response codes specified in table 5.35.2.3.3.3-3.

Table 5.35.2.3.3.3-2: Data structures supported by the DELETERequest Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| N/A |  |  |  |

Table 5. 35.2.3.3.3-3: Data structures supported by theDELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| N/A |  |  | 204 No Content | The subscription was terminated successfully. |
| N/A |  |  | 307 Temporary Redirect | Temporary redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative NEF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
| N/A |  |  | 308 Permanent Redirect | Permanent redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative NEF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
| NOTE: The mandatory HTTP error status codes for the DELETE method listed in table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. |

Table 5.35.2.3.3.3-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NEF. |

Table 5.35.2.3.3.3-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NEF. |

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

### 5.35.4 Notifications

#### 5.35.4.1 General

Notifications shall comply to clause 5.2.5 of 3GPP TS 29.122 [4].

Table 5.35.4.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description(service operation) |
| UE Address Notification | {notifUri} | POST | UE address information notification. |

#### 5.35.4.2 UE Address Notification

##### 5.35.4.2.1 Description

The UE Address Notification is used by the NEF to report the UE address information to the AF.

##### 5.35.4.2.2 Target URI

The Callback URI **"{**notifUri**}"** shall be used with the callback URI variables defined in table 5.35.4.2.2-1.

Table 5.35.4.2.2-1: Callback URI variables

|  |  |
| --- | --- |
| Name | Definition |
| notifUri | Callback reference provided by the AF during the creation/modification of the corresponding Individual UE Address Subscription. |

##### 5.35.4.2.3 Operation Definition

###### 5.35.4.2.3.1 Notification via HTTP POST

This method shall support the request data structures specified in table 5.35.4.2.3.1-1 and the response data structures and response codes specified in table 5.35.4.2.3.1-2.

Table 5.35.4.2.3.1-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| UeAddrNotif | M | 1 | Provides the UE address information by the NEF to the AF. |

Table 5.35.4.2.3.1-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | The event notification is successfully received. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection.The response shall include a Location header field containing an alternative URI representing the end point of an alternative AF where the notification should be sent.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection.The response shall include a Location header field containing an alternative URI representing the end point of an alternative AF where the notification should be sent.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. |

Table 5.35.4.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative AF towards which the notification should be redirected. |

Table 5.35.4.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative AF towards which the notification should be redirected. |

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

#### 5.35.5.1 General

This clause specifies the application data model supported by the UeAddress API. Table 5.35.5.1-1 specifies the data types defined for the UeAddress API.

Table 5.35.5.1-1: UeAddress service specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| UeAddressReq | 5.35.5.2.2 | Represents the parameters to request UE Address information. |  |
| UeAddressInfo | 5.35.5.2.3 | Represents UE Address information. |  |
| UeAddrSubsc | 5.35.5.2.4 | Represents the parameters to subscribe for UE Address information. |  |
| UeNatAddrSubsc | 5.35.5.2.5 | Represents the parameters to subscribe for UE NAT Address information. |  |
| UeAddrNotif | 5.35.5.2.5 | Represents UE Address information. |  |
| ueNatIpAddr | 5.35.5.2.6 | Represents UE NAT Address information. |  |

Table 5.35.5.1-2 specifies data types re-used by the UeAddress API from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the UeAddress API.

Table 5.35.5.1-2: Re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| Gpsi | 3GPP TS 29.571 [8] | Represents a GPSI. |
| IpAddr | 3GPP TS 29.571 [8] | Represents an IP address. |
| Link | 3GPP TS 29.122 [4] | Identifies a referenced resource. |
| SupportedFeatures | 3GPP TS 29.571 [8] | Represents the list of supported feature(s) and is used to negotiate the applicability of the optional features. |
| Uinteger | 3GPP TS 29.571 [8] | Unsigned integer. |
| Uri | 3GPP TS 29.122 [4] | Identifies a referenced resource. |

\*\*\* 4th Change \*\*\*

##### 5.35.2.2.4 Type: UeAddrSubsc

Table 5.35.2.2.4-1: Definition of type UeAddrSubsc

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| notifUri | Uri | M | 1 | Notification URI for ue address information reporting. |  |
| notifId | string | M | 1 | Notification Correlation ID assigned by the NF service consumer. |  |
| afId | string | M | 1 | Represents the identifier of the AF that is sending the request. |  |
| ueNatAddrReq | UeNatAddrSubsc | C | 0..1 | Contains the UE private address information and IP address information of remote end.It shall be present if the UE NAT address information is subscribed. |  |
| immRepInd | boolean | O | 0..1 | Indicates whether immediate reporting shall be included in the corresponding response if available:- "true": immediate reporting shall be included in the response if availale;- "false"(default): reporting will occur when the event is met. |  |
| immReport | UeAddrNotif | O | 0..1 | Contains the UE address information that match this subscription.It may be included only in the HTTP response of a subscription creation, and only if the "immRepInd" attribute is set to "true" in the corresponding HTTP request. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the list of Supported features used as described in clause 5.35.6.It shall be present if feature negotiation needs to take place. |  |
| self | Link | C | 0..1 | Identifies the Individual UE Address Subscription resource.Shall be present in the HTTP GET response when reading all the subscriptions for an AF. |  |

##### 5.35.2.2.5 Type: UeNatAddrSubsc

Table 5.35.2.2.5-1: Definition of type UeNatAddrSubsc

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| uePrivateIpAddr | IpAddr | M | 1 | Identifies a UE private IP Address. |  |
| ipDomain | string | O | 0..1 | The IPv4 address domain identifier.The attribute may only be present if the IPv4 address is provided in the "uePrivateIpAddr" attribute. |  |
| remoteIpAddr | IpAddr | M | 1 | The IP address of remote end. |  |
| remotePortNumber | Uinteger | O | 0..1 | Indicates the UDP or TCP port number associated with the IP address of remote end as provided in the "remoteIpAddr" attribute. |  |

Editor's Note: Whether the UE IPv6 address or IPv6 prefix can be provided in uePrivateIpAddr attribute is FFS.

##### 5.35.2.2.6 Type: UeAddrNotif

Table 5.35.2.2.6-1: Definition of type UeAddrNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| notifCorrId | string | M | 1 | Notification correlation identifier. |  |
| ueNatAddrInfo | UeNatAddrNotif | C | 0..1 | UE NAT address Information.It shall be present if the UE NAT address information needs to be reported. |  |

##### 5.35.2.2.6 Type: UeNatAddrNotif

Table 5.35.2.2.6-1: Definition of type UeNatAddrNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| ueNatIpAddr | IpAddr | M | 1 | Identifies a UE NAT IP Address. |  |
| ueNatPortNumber | Uinteger | M | 1 | Indicates the UDP or TCP port number associated with the UE NAT IP address as provided in the "ueNatIpAddr" attribute. |  |

Editor's Note: Whether the UE IPv6 address or IPv6 prefix can be provided in ueNatIpAddr attribute is FFS.

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