**3GPP TSG-CT WG3 Meeting #127eC3-231433**

**E-meeting, 17th – 21st, April, 2023 (revision of C3-231xxx)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.522** | **CR** | **0911** | **rev** | **-** | **Current version:** | **18.1.0** |  |
|  | | | | | | | | |
| *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:*** | UEMemberSelectionAssistance API, API definition | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | AIMLsys | | | | |  | ***Date:*** | | | 2023-03-20 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In order to enable 5GC to assist the Application AI/ML AF to preform candidate member selection, a new NEF northbound serivce (i.e. Nnef\_UEMemberSelectionAssistance service) is specifed in TS 23.502 to enable the AF request the NEF to provide a list of recommended UEs based on the member selection filtering criteria requested by the AF.  It is proposed to define a new API for the new service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Define a new API for the new service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Misalignment between stage 2 and stage 3. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.39 (new), A.28 (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 impact the OpenAPI file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

## 5.39 UEMemberSelectionAssistance API

### 5.39.1 Introduction

The UEMemberSelectionAssistance service shall use the UEMemberSelectionAssistance API.

The API URI of UEMemberSelectionAssistance API shall be:

{apiRoot}/<apiName>/<apiVersion>

The request URIs used in HTTP requests shall have the Resource URI structure defined in clause 5.2.4 of 3GPP TS 29.122 [2], i.e.:

{apiRoot}/<apiName>/<apiVersion>/<apiSpecificSuffixes>

with the following components:

- "apiRoot" is set as defined in clause 5.2.4 of 3GPP TS 29.122 [4].

- "apiName" shall be set to "3gpp-umsa".

- "apiVersion" shall be set to "v1" for the current version defined in the present document.

All resource URIs in the clauses below are defined relative to the above API URI.

### 5.39.2 Resources

This clause describes the structure for the Resource URIs as shown in Figure 5.39.2-1 and the resources and HTTP methods used for the UEMemberSelectionAssistance API.



Figure 5.39.2-1: Resource URI structure of the UEMemberSelectionAssistance API

Table 5.39.2-1 provides an overview of the resources and applicable HTTP methods.

Table 5.39.2-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI (relative path under API URI) | HTTP method or custom operation | Description  (service operation) |
| UE Member Selection Assistance Subscriptions | /{afId}/subscriptions | POST | Create a new subscription to UE Member Selection Assistance. |
| Individual UE Member Selection Assistance Subscription | /{afId}/subscriptions/{subscriptionId} | GET | Retreive an existing Individual UE Member Selection Assistance Subscription resource. |
| PUT | Update an existing Individual UE Member Selection Assistance Subscription resource. |
| DELETE | Delete an existing Individual UE Member Selection Assistance Subscription resource. |

Editor's note: Whether PATCH method is needed is FFS.

#### 5.39.2.2 Resource: UE Member Selection Assistance Subscriptions

##### 5.39.2.2.1 Introduction

This resource allows an AF to create a new UE Member Selection Assistance subscription resource for a given AF.

##### 5.39.2.2.2 Resource definition

Resource URL: **{apiRoot}/3gpp-umsa/v1/{afId}/subscriptions**

This resource shall support the resource URL variables defined in table 5.39.2.2.2-1.

Table 5.39.2.2.2-1: Resource URL variables for this resource

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

##### 5.39.2.2.3 Resource Methods

###### 5.39.2.2.3.1 POST

This method enables an AF to request the creation of a new UE Member Selection Assistance subscription at the NEF.

This method shall support the URI query parameters specified in table 5.39.2.2.3.1-1.

Table 5.39.2.2.3.1-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| n/a |  |  |  |  |  |

This method shall support the request data structures specified in table 5.39.2.2.3.1-2 and the response data structures and response codes specified in table 5.39.2.2.3.1-3.

Table 5.39.2.2.3.1-2: Data structures supported by the POST request body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| UeMemSelectAssistSubsc | M | 1 | Representation of UE Member Selection Assistance to be created in the NEF. |

Table 5.39.2.2.3.1-3: Data structures supported by the POST response body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| UeMemSelectAssistSubsc | M | 1 | 201 Created | Successful case. A representation of the created Individual UE Member Selection Assistance subscription is returned.  The URI of the created resource shall be returned in an HTTP "Location" 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 5.39.2.2.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP response header | Data type | P | Cardinality | Description |
| Location | string | M | 1 | The URI of the newly created resource, according to the structure: {apiRoot}/3gpp-umsa/v1/{afId}/subscriptions/{subscriptionId} |

#### 5.39.2.3 Resource: Individual UE Member Selection Assistance Subscription

##### 5.39.2.3.1 Introduction

This resource represents an Individual Data Reporting Session managed bythe NEF.

This resource is modelled with the Document resource archetype (see clause C.1 of 3GPP TS 29.501 [3]).

##### 5.39.2.3.2 Resource Definition

Resource URL: **{apiRoot}/3gpp-umsa/v1/{afId}/subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in table 5.39.2.3.2-1.

Table 5.39.2.3.2-1: Resource URL variables for this resource

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

##### 5.39.2.3.3 Resource standard methods

###### 5.39.2.3.3.1 GET

This method enables an AF to retrieve an existing Individual UE Member Selection Assistance Subscription resource at the NEF.

This method shall support the URI query parameters specified in table 5.39.2.3.3.1-1.

Table 5.39.2.3.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| n/a |  |  |  |  |  |

This method shall support the request data structures specified in table 5.39.2.3.3.1-2 and the response data structures and response codes specified in table 5.39.2.3.3.1-3.

Table 5.39.2.3.3.1-2: Data structures supported by the GET Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 5.39.2.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| UeMemSelectAssistSubsc | M | 1 | 200 OK | Successful case. The requested Individual UE Member Selection Assistance Subscription resource is returned to the AF. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI 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 target URI 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 code for the GET method listed in table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. | | | | |

Table 5.39.2.3.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 5.39.2.3.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 5.39.2.3.3.2 PUT

This method enables an AF to update an existing UE Member Selection Assistance Subscription resource at the NEF.

This method shall support the URI query parameters specified in table 5.39.2.3.3.2-1.

Table 5.39.2.3.3.2-1: URI query parameters supported by the PUT method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 5.39.2.3.3.2-2 and the response data structures and response codes specified in table 5.39.2.3.3.2-4.

Table 5.39.2.3.3.2-2: Data structures supported by the PUT request body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| UeMemSelectAssistSubsc | M | 1 | Parameters to update the Individual UE Member Selection Assistance Subscription resource. |

Table 5.39.2.3.3.2-3: Data structures supported by the PUT response body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| UeMemSelectAssistSubsc | M | 1 | 200 OK | The Individual UE Member Selection Assistance Subscription resource was updated successfully and a representation of the created resource is returned in the response body. |
| n/a |  |  | 204 No Content | The Individual UE Member Selection Assistance Subscription resource was successfully updated and no content is to be returned in the response body. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI 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 target URI 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 code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. | | | | |

Table 5.39.2.3.3.2-4: 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 5.39.2.3.3.2-5: 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. |

###### 5.39.2.3.3.3 DELETE

This method enables an AF to request the deletion of an Individual UE Member Selection Assistance Subscription resource at the NEF.

This method shall support the URI query parameters specified in table 5.39.2.3.3.3-1.

Table 5.39.2.3.3.3-1: URI query parameters supported by the DELETE method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

This method shall support the request data structures specified in table 5.39.2.3.3.3-2 and the response data structures and response codes specified in table 5.39.2.3.3.3-3.

Table 5.39.2.3.3.3-2: Data structures supported by the DELETE request body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 5.39.2.3.3.3-3: Data structures supported by the DELETE response body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  Codes | Description |
| n/a |  |  | 204 No Content | Successful response. The Individual UE Member Selection Assistance Subscription resource was successfully deleted. |
|  |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative NEF.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
|  |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative NEF.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. |
| NOTE 1: The mandatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. | | | | |

Table 5.39.2.3.3.3-4: 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 5.39.2.3.3.3-5: 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. |

Editor's note: Whether PATCH method is needed or not is FFS.

### 5.39.3 Custom Operations without associated resources

There are no custom operations without associated resources defined for this API in this release of the specification.

### 5.39.4 Notifications

5.39.4.1 General

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

**Table 5.39.4.1-1: Notifications overview**

|  |  |  |  |
| --- | --- | --- | --- |
| **Notification** | **Callback URI** | **HTTP method or custom operation** | **Description**  **(service operation)** |
| UE Member Selection Assistance Notification | {notifUri} | POST | Enable the NEF to notify an AF of UE Member Selection Assistance information. |

5.39.4.2 UE Member Selection Assistance Notification

5.39.4.2.1 Description

This Notification is used by the NEF to report UE Member Selection Assistance information to a previously subscribed AF.

5.39.4.2.2 Target URI

The Callback URI **“{notifUri}”** shall be used with the callback URI variables defined in table 5.39.4.2.2-1.

**Table 5.39.4.2.2-1: Callback URI variables**

|  |  |
| --- | --- |
| **Name** | **Definition** |
| notifUri | Callback URI provided by the AF during UE Member Selection Assistance creation/modification. |

5.39.4.2.3 Operation Definition

This method shall support the request data structures specified in table 5.39.4.2.3-1 and the response data structures and response codes specified in table 5.39.4.2.3-2.

**Table 5.39.4.2.3-1: Data structures supported by the POST Request Body on this resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Description** |
| UeMemSeletAssistNotif | M | 1 | Represents the notification on UE Member Selection Assistance information. |

**Table 5.39.4.2.3-2: Data structures supported by the POST Response Body on this resource**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Response**  **codes** | **Description** |
| n/a |  |  | 204 No Content | The 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 towards which 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 towards which 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 5.39.4.2.3-3: 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 5.39.4.2.3-4: 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. |

### 5.39.5 Data Model

#### 5.39.3.1 General

This clause specifies the application data model supported by the UEMemberSelectionAssistance API. Table 5.39.5.1-1 specifies the data types defined for the UEMemberSelectionAssistance API.

Table 5.39.3.1-1: UEMemberSelectionAssistance API specific Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Clause defined | Description |
| UeMemSeletAssistNotif | 5.39.3.3.3 |  |
| UeMemSelectAssistSubsc | 5.39.3.3.2 |  |

Table 5.39.3.1-2 specifies data types re-used by the UEMemberSelectionAssistance API from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the UEMemberSelectionAssistance API.

Table 5.39.3.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| DateTime | 3GPP TS 29.122 [4] | Represents a date and a time. |  |
| DurationSec | 3GPP TS 29.122 [4] | Indicates the time window. |  |
| Gpsi | 3GPP TS 29.571 [8] | Identifies a GPSI. |  |
| Uri | 3GPP TS 29.571 [8] | Identifies a referenced resource. |  |

#### 5.39.3.2 Structured data types

##### 5.39.3.2.1 Introduction

This clause defines the structured data types to be used in resource representations.

##### 5.39.3.2.2 Type: UeMemSelectAssistSubsc

Table 5.39.3.2.2-1: Definition of type UeMemSelectAssistSubsc

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| tgtUes | array(Gpsi) | M | 1..N | Identifies the list of UEs for Member Selection Assistance Reporting. |  |
| notifUri | Uri | M | 1 | Notification URI for reporting. |  |
| notifId | string | M | 1 | Notification Correlation ID assigned by the AF. |  |
| filterCriters | string | M | 1..N | List of filtering criteria |  |
| appId | string | O | 0..1 | Identifies an application. |  |
| expTime | DateTime | O | 0..1 | Indicates the expiry time. |  |
| timeWins | array(DurationSec) | O | 1..N | Indicates the time window for selecting the candidate UEs. |  |

Editor's note: The data type of "filterCriters" attribute is FFS.

Editor's note: The term "UE member selection" is FFS.

Editor's note: The data model definitions needs to align with the stage 2 requirement once stable.

##### 5.39.3.2.3 Type: UeMemSeletAssistNotif

Table 5.39.3.2.3-1: Definition of type UeMemSeletAssistNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| notifId | string | M | 1 | Notification Correlation ID assigned by the AF. |  |
| remdUes | array(Gpsi) | M | 1..N | Identifies the list of recommended UEs |  |

### 5.39.6 Used Features

The table below defines the features applicable to the UEMemberSelectionAssistance API. Those features are negotiated as described in clause 5.2.7 of 3GPP TS 29.122 [4].

Table 5.39.6-1: Features used by UEMemberSelectionAssistance API

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
|  |  |  |

### 5.39.7 Error handling

#### 5.39.7.1 General

HTTP error handling shall be supported as specified in clause 5.2.6 of 3GPP TS 29.122 [4]. In addition, the requirements in the following clauses shall apply.

#### 5.39.7.2 Protocol Errors

In this Release of the specification, there are no additional protocol errors applicable for the UEMemberSelectionAssistance API.

#### 5.39.7.3 Application Errors

The application errors defined for the UEMemberSelectionAssistance API are listed in table 5.39.7.3-1.

Table 5.39.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
|  |  |  |

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

# A.28 UEMemberSelectionAssistance API

Editor’s Note: The OpenAPI spec will be updated once the main body is stable enough.

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