**TSG-CT WG3 Meeting #118-e *C3-215095***

**E-Meeting, 11th – 15th October 2021 (Revision of C3-215xyz)**

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **29.549** | **CR** | 0033 | **rev** | **-** | **Current version:** | **17.2.0** |  |
|  |
| *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:***  | Support Tracking UE and obtaining dynamic UE information |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | eV2XAPP, eSEAL |  | ***Date:*** | 2021-10-11 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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:*** | As defined in clause 9.3.10 of TS 23.434, VAL server can request to get UE(s) information at the LM server providing a location information and application defined proximity range. Corresponding API is defined. |
|  |  |
| ***Summary of change:*** | 1. Defines the procedure to support SS\_LocationAreaInfoRetrieval API.
2. Defines the resource, method and OpenAPI file.
 |
|  |  |
| ***Consequences if not approved:*** | Not aligned with stage 2. VAL server can’t get the UE(s) information. |
|  |  |
| ***Clauses affected:*** | 5.1, 5.2.x(new), 5.2.x.1(new), 5.2.x.1.1(new), 5.2.x.2(new), 5.2.x.2.1(new), 5.2.x.2.2(new), 5.2.x.2.2.1(new), 5.2.x.2.2.2(new), 7.1.x(new), 7.1.x.1(new), 7.1.x.2(new), 7.1.x.2.1(new), 7.1.x.2.2(new), 7.1.x.2.2.1(new) 7.1.x.2.2.2(new), 7.1.x.2.2.3(new) 7.1.x.2.2.3.1(new) 7.1.x.2.2.4(new), 7.1.x.3(new), 7.1.x.4(new), 7.1.x.4.1(new), 7.1.x.4.2(new), 7.1.x.4.3(new), 7.1.x.5(new), 7.1.x.6(new), A.x(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 introduces a new OpenAPI file of SS\_LocationAreaInfoRetrieval |
|  |  |
| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**Proposed changes:**

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

## 5.1 Introduction of SEAL services

The table 5.1-1 lists the SEAL server APIs below the service name. A service description clause for each API gives a general description of the related API.

Table 5.1-1: List of SEAL Service APIs

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Consumer(s) |
| SS\_LocationReporting | Create\_Trigger\_Location\_Reporting | Request/ Response | VAL server |
| Fetch\_Location\_Report\_Trigger | Request/Response | VAL server |
| Update\_Trigger\_Location\_Reporting | Request/ Response | VAL server |
| Cancel\_Trigger\_Location\_Reporting | Request/ Response | VAL server |
| SS\_LocationInfoEvent | Subscribe\_Location\_Info | Subscribe/Notify | VAL server |
| Notify\_Location\_Info | VAL server |
| SS\_LocationInfoRetrieval | Obtain\_Location\_Info | Request/ Response | VAL server |
| SS\_LocationAreaInfoRetrieval | Obtain\_UEs\_Info | Request/ Response | VAL server |
| SS\_GroupManagement | Query\_Group\_Info | Request/ Response | VAL server |
| Update\_Group\_Info | Request/ Response | VAL server |
| Create\_Group | Request/ Response | VAL server |
| Delete\_Group | Request/Response | VAL server |
| SS\_GroupManagementEvent | Subscribe\_Group\_Info\_Modification | Subscribe/Notify | VAL server |
| Notify\_Group\_Info\_Modification | VAL server |
| Notify\_Group\_Creation | VAL server |
| SS\_UserProfileRetrieval | Obtain\_User\_Profile | Request/ Response | VAL server |
| SS\_UserProfileEvent | Subscribe\_User\_Profile\_Update | Subscribe/Notify | VAL server |
| Notify\_User\_Profile\_Update | VAL server |
| SS\_NetworkResourceAdaptation | Reserve\_Network\_Resource | Request/Response | VAL server |
| Request\_Unicast\_Resource | Request/Response | VAL server |
| Update\_Unicast\_Resource | Request/Response | VAL server |
| Request\_Multicast\_Resource | Request/Response | VAL server |
| Notify\_UP\_Delivery\_Mode | Subscribe/Notify | VAL server |
| SS\_Events | Subscribe\_Event | Subscribe/Notify | VAL server |
| Notify\_Event | VAL server |
| Unsubscribe\_Event | VAL server |
| SS\_KeyInfoRetrieval | Obtain\_Key\_Info | Request/Response | VAL server |
| NOTE: The service operations of SS\_Events API are reused by the SS\_LocationInfoEvent, SS\_GroupManagementEvent and SS\_UserProfileEvent for events related services. |

Table 5.1-2 summarizes the corresponding APIs defined in this specification.

Table 5.1-2: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service Name** | **Clause** | **Description** | **OpenAPI Specification File** | **apiName** | **Annex** |
| SS\_LocationReporting | 7.1 | Report Location Information Service. | TS29549\_SS\_LocationReporting.yaml | ss-lr | A.2 |
| SS\_GroupManagement | 7.2 | Group Management Service | TS29549\_SS\_GroupManagement.yaml | ss-gm | A.3 |
| SS\_UserProfileRetrieval | 7.3 | User Profile Retrieval Service | TS29549\_SS\_UserProfileRetrieval.yaml | ss-upr | A.4 |
| SS\_Network\_Resource\_Adaptation | 7.4 | Network Resource Adaptation Service | TS29549\_SS\_NetworkResourceAdaptation.yaml | ss-nra | A.5 |
| SS\_Events | 7.5 | Events Notify Service | TS29549\_SS\_Events.yaml | ss-events | A.6 |
| SS\_KeyInfoRetrieval | 7.6 | Key Information Retrieval Service | TS29549\_SS\_KeyInfoRetrieval.yaml | ss-kir | A.7 |
| SS\_LocationAreaInfoRetrieval | 7.1 | Location Area Info Retrieval Service | TS29549\_SS\_LocationAreaInfoRetrieval.yaml | ss-lair | A.x |

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

### 5.2.x SS\_LocationAreaInfoRetrieval API

#### 5.2.x.1 Service Description

##### 5.2.x.1.1 Overview

The SS\_LocationAreaInfoRetrieval API, as defined 3GPP TS 23.434 [2], enables the VAL server via LM-S reference point to obtain UE(s) information in an application defined proximity range of a location.

#### 5.2.x.2 Service Operations

##### 5.2.x.2.1 Introduction

The service operation defined for SS\_LocationAreaInfoRetrieval API is shown in the table 5.2.x.2.1-1.

Table 5.2.x.2.1-1: Operations of the SS\_LocationAreaInfoRetrieval API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Obtain\_UEs\_Info | This service operation is used by VAL server to obtain UE(s) information in an application defined proximity range of a location. | VAL server |

##### 5.2.x.2.2 Obtain\_UEs\_Info

###### 5.2.x.2.2.1 General

This service operation is used by a VAL server to obtain UE(s) information in an application defined proximity range of a location.

###### 5.2.x.2.2.2 VAL server obtains UE(s) information in an application defined proximity range of a location using Obtain\_UEs\_Info service operation

To obtain the UE(s) information in an application defined proximity range of a location, the VAL server shall send HTTP GET message to the location management server, on location information collection resource representation URI as specified in the clause 7.1.x.2.2.3.1. The GET message shall include the query parameters: Location information and proximity range..

Upon receiving the HTTP GET message as described above, the location management server shall:

1. verify the identity of the VAL server and check if the VAL server is authorized to fetch the UE(s) information;

2. if the VAL server is authorized to fetch the UE(s) information, the location management server shall;

a. determine the VAL UE(s) information that are in the proximity range of the location as per the query parameters in the request message from the VAL server.

b. return HTTP "200 OK" status code with the determined VAL UE(s) information in the LMInformation data type to the VAL server..

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

### 7.1.x SS\_LocationAreaInfoRetrieval API

#### 7.1.x.1 API URI

The request URI used in each HTTP request from the VAL server towards the location management server shall have the structure as defined in clause 6.5 with the following clarifications:

- The <apiName>shall be "ss-lair".

- The <apiVersion> shall be "v1".

- The <apiSpecificSuffixes> shall be set as described in clause 7.1.x.2.

#### 7.1.x.2 Resources

##### 7.1.x.2.1 Overview



Figure 7.1.x.2.1-1: Resource URI structure of the SS\_LocationAreaInfoRetrieval API

Table 7.1.x.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 7.1.x.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| Location Information | /location-information | GET | Obtain the UE(s) information in an application defined proximity range of a location. |

##### 7.1.x.2.2 Resource: Location Information

###### 7.1.x.2.2.1 Description

The Location Information resource represents the collection of UE(s) location information at the location management server.

###### 7.1.x.2.2.2 Resource Definition

Resource URI: **{apiRoot}/ss-lair/<apiVersion>/location-information**

This resource shall support the resource URI variables defined in the table 7.1.x.2.2.2-1.

Table 7.1.x.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 6.5 |
| apiVersion | string | See clause 7.1.x.1 |

###### 7.1.x.2.2.3 Resource Standard Methods

7.1.x.2.2.3.1 GET

This operation obtains the UE(s) information in an application defined proximity range of a location. This method shall support the URI query parameters specified in table 7.1.x.2.2.3.1-1.

Table 7.1.x.2.2.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| location-info | LocationInfo | M | 1 | Location information around which the UE(s) information is requested. |
| range | Float | M | 1 | The range information over which the UE(s) information is required, expressed in meters.Minimum = 0 |

This method shall support the request data structures specified in table 7.1.x.2.2.3.1-2 and the response data structures and response codes specified in table 7.1.x.2.2.3.1-3.

Table 7.1.x.2.2.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 7.1.x.2.2.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| array(LMInformation) | O | 1..N | 200 OK | The UE(s) information in an application defined proximity range of a location  |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative location management server.Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [3]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative location management server.Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [3]. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. |

Table 7.1.x.2.2.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 7.1.x.2.2.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 7.1.x.2.2.4 Resource Custom Operations

None.

#### 7.1.x.3 Notifications

None.

#### 7.1.x.4 Data Model

##### 7.1.1x.4.1 General

This clause specifies the application data model supported by the API. Data types listed in clause 6.2 apply to this API.

Table 7.1.x.4.1-1 specifies the data types defined specifically for the SS\_LocationAreaInfoRetrieval API service.

Table 7.1.x.4.1-1: SS\_LocationAreaInfoRetrieval API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
|  |  |  |  |

Table 7.1.x.4.1-2 specifies data types re-used by the SS\_LocationAreaInfoRetrieval API service.

Table 7.1.x.4.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| Float | 3GPP TS 29.571 [21] | Used to represent number of range. |  |
| Locationinfo | 3GPP TS 29.122 [3] | Location information |  |
| LMInformation | 7.5.1.4.2.8 | The location information for a VAL User ID or a VAL UE ID. |  |

##### 7.1.x.4.2 Structured Data Types

None.

##### 7.1.x.4.3 Simple data types and enumerations

None.

#### 7.1.x.5 Error Handling

General error responses are defined in clause 6.7.

#### 7.1.x.6 Feature Negotiation

General feature negotiation procedures are defined in clause 6.8.

Table 7.1.x.6-1: Supported Features

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

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

## A.x SS\_LocationAreaInfoRetrieval API

openapi: 3.0.0

info:

 title: SS\_LocationAreaInfoRetrieval

 description: |

 API for SEAL Location Area Info Retrieval.

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 version: "1.0.0-alpha.1"

externalDocs:

 description: 3GPP TS 29.549 V17.2.0 Service Enabler Architecture Layer for Verticals (SEAL); Application Programming Interface (API) specification; Stage 3.

 url: http://www.3gpp.org/ftp/Specs/archive/29\_series/29.549/

security:

 - {}

 - oAuth2ClientCredentials: []

servers:

 - url: '{apiRoot}/ss-lair/v1'

 variables:

 apiRoot:

 default: https://example.com

 description: apiRoot as defined in clause 6.5 of 3GPP TS 29.549

paths:

 /location-retrievals:

 get:

 description: Retrieve the UE(s) information in an application defined proximity range of a location.

 parameters:

 - name: loc**ation**-info

 in: query

 description: Location information around which the UE(s) information is requested.

 required: true

 schema:

 $ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/LocationInfo'

 - name: range

 in: query

 description: The range information over which the UE(s) information is required, expressed in meters..

 required: true

 schema:

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

 responses:

 '200':

 description: The UE(s) information in an application defined proximity range of a location.

 content:

 application/json:

 schema:

 type: array

 items:

 $ref: 'TS29549\_SS\_Events.yaml#/components/schemas/LMInformation'

 minItems: 0

 description: The UE(s) information in an application defined proximity range of a location.

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '406':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

 securitySchemes:

 oAuth2ClientCredentials:

 type: oauth2

 flows:

 clientCredentials:

 tokenUrl: '{tokenUrl}'

 scopes: {}

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