**3GPP TSG- WG3 Meeting #C3-23XXXX**

**Chicago, United States, 13 - 17 November, 2023**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.549** | **CR** | **0189** | **rev** | **1** | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Location accuracy API | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Lenovo | | | | | | | | | |
| ***Source to TSG:*** | C3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ADAES | | | | |  | ***Date:*** | | | 2023-10-27 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Stage 2 has created a new feature i.e. application data analytics enablement (ADAE) service with a new interface towards the SEAL server. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | This CR defines a new API, SS\_ADAE\_LocationAccuracyAnalytics, for the reference point with the new ADAE service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | An API for location accuracy analytics service for the new reference point with the ADAE service does not exist. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 7.X.4 (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's revision history:*** | |  | | | | | | | | |

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

### 7.X.4 SS\_ADAE\_LocationAccuracyAnalytics

#### 7.X.4.1 API URI

The SS\_ADAE\_LocationAccuracyAnalytics service shall use the SS\_ADAE\_LocationAccuracyAnalytics API.

The request URIs used in HTTP requests from the VAL server towards the ADAE server shall have the Resource URI structure as defined in clause 6.5 with the following clarifications:

- The <apiName>shall be "ss-adae-laa".

- The <apiVersion> shall be "v1".

- The <apiSpecificSuffixes> shall be set as described in clause 7.X.4.2.

#### 7.X.4.2 Resources

##### 7.X.4.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 7.X.4.2.1-1 depicts the resource URIs structure for the SS\_ADAE\_LocationAccuracyAnalytics API.



Figure 7.X.4.2.1-1: Resource URI structure of the SS\_ADAE\_LocationAccuracyAnalytics API

Table 7.X.4.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 7.X.4.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method | Description |
| Location accuracy event subscription | /location-accuracy | POST | Subscription to the event of the location accuracy performance analytics |
| Location accuracy analytics | /location-accuracy-log | GET | Request for location accuracy historical analytics |

##### 7.X.4.2.2 Resource: Location accuracy event subscription

###### 7.X.4.2.2.1 Description

Location accuracy event subscription to the event of the location accuracy analytics.

###### 7.X.4.2.2.2 Resource Definition

Resource URI: **{apiRoot}/ss-adae-laa/<apiVersion>/location-accuracy**

This resource shall support the resource URI variables defined in the table 7.X.4.2.2.2-1.

Table 7.X.4.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 6.5 |

###### 7.X.4.2.2.3 Resource Standard Methods

7.X.4.2.2.3.1 POST

This method to subscribe to the event of the location accuracy analytics and shall support the URI query parameters specified in table 7.X.4.2.2.3.1-1.

Table 7.X.4.2.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 7.X.4.2.2.3.1-2 and the response data structures and response codes specified in table 7.X.4.2.2.3.1-3.

Table 7.X.4.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocAccurAnalyticsSubs | M | 1 | Subscription to the location accuracy analytics event. |

Table 7.X.4.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 201 (Created) | Subscription to the location accuracy analytics is created. |
| n/a |  |  | 401 (Unauthorized) | The requester for the subscription to the location accuracy analytics has failed the authorization and cannot subscribe to the event. |

###### 7.X.4.2.2.4 Resource Custom Operations

None.

##### 7.X.4.2.3 Resource: Location accuracy analytics

###### 7.X.4.2.3.1 Description

Request for the location accuracy data.

###### 7.X.4.2.3.2 Resource Definition

Resource URI: **{apiRoot}/ss-adae-laa/<apiVersion>/location-accuracy-log**

This resource shall support the resource URI variables defined in the table 7.X.4.2.3.2-1.

Table 7.X.4.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 6.5 |

###### 7.X.4.2.3.3 Resource Standard Methods

7.X.4.2.3.3.1 GET

This method retrieves the location accuracy historic data and shall support the URI query parameters specified in table 7.X.4.2.3.3.1-1.

Table 7.X.4.2.3.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 7.X.4.2.3.3.1-2 and the response data structures and response codes specified in table 7.X.4.2.3.3.1-3.

Table 7.X.4.2.3.3.1-2: Data structures supported by the GET Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocAccurLogReq | M | 1 | Retrieval of to the location accuracy data |

Table 7.X.4.2.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| LocAccurLogResp |  |  | 200 (OK) | The retrieval of the location accuracy data is successful and returned in the response. |
| n/a |  |  | 401 (Unauthorized) | The requester for the location accuracy data has failed the authorization and cannot subscribe to the event. |
| n/a |  |  | 404 (Not Found) | The location accuracy log data was not found. |

###### 7.X.4.2.3.4 Resource Custom Operations

None.

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

#### 7.X.4.3 Notifications

7.X.4.3.1 General

Table 7.X.4.3.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| Location accuracy event notification | {notificationUri} | POST | Notification on the location accuracy analytics |

##### 7.X.4.3.2 Location accuracy event notification

###### 7.X.4.3.2.1 Description

Location accuracy event notification is to notify on the event of the location accuracy analytics.

###### 7.X.4.3.2.2 Notification definition

The POST method shall be used for the event notification and the callback URI shall be the one provided by the consumer during the subscription to the event.

Callback URI: **{notificationUri}**

This method shall support the URI query parameters specified in table 7.X.4.3.2.2-1.

Table 7.X.4.3.2.2-1: URI query parameters supported by the POST method on this resource

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

If the notification is on the location accuracy analytics, this method shall support the request data structures specified in table 7.X.4.3.2.2-2 and the response data structures and response codes specified in table 7.X.4.3.2.2-3.

Table 7.X.4.3.2.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocAccurAnalyticsNotif | M | 1 | Notification information of the location accuracy analytics. |

Table 7.X.4.3.2.2-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 (No Content) | Notification for the location accuracy analytics event is accepted. |
| n/a |  |  | 401 (Unauthorized) | The notifier of the location accuracy analytics event has failed the authorization. |

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

#### 7.X.4.4 Data Model

##### 7.X.4.4.1 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.X.4.4.1-1 specifies the data types defined specifically for the SS\_ADAE\_LocationAccuracyAnalytics API service.

Table 7.X.4.4.1-1\_SS\_ADAE\_LocationAccuracyAnalytics API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| LocAccurAnalyticsSubs | 7.X.4.4.2.2 | Subscription to the location accuracy analytics event |  |
| LocAccurAnalyticsNotif | 7.X.4.4.2.3 | Notification information of the location accuracy analytics event |  |
| LocAccurLogReq | 7.X.4.4.2.4 | Retrieval request of the location accuracy log data |  |
| LocAccurLogResp | 7.X.4.4.2.5 | Retrieval response of the location accuracy log data |  |

Table 7.X.4.4.1-2 specifies data types re-used by the SS\_ADAE\_LocationAccuracyAnalytics API service:

Table 7.X.4.4.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
|  |  |  |  |
| Accuracy | 3GPP TS 29.122 [3] | Represent the desired level of accuracy of the requested location information. |  |
| AnalyticsType | Clause 7.X.1.4.3.3 | Type of analytics for the event of the VAL application performance analytics. |  |
| ConfidenceLevel | 3GPP TS 29.122 [3] | Presents confidence level |  |
| DurationSec | 3GPP TS 29.122 [3] | Represents a period of time in units of seconds. |  |
| LocationArea | 3GPP TS 29.122 [3] | Represents location information. |  |
| LocationReportConfiguration | Clause 7.1.1.4.2.2 | Represents the location reporting configuration information. |  |
| UeMobility | 3GPP TS 29.520 [33] | Represents UE Mobility and route information |  |
| ValTargetUe | Clause 7.3.1.4.2.3 | Indicate either VAL User ID or VAL UE ID. |  |

##### 7.X.4.4.2 Structured data types

###### 7.X.4.4.2.1 Introduction

This clause defines the structures to be used in resource representations.

###### 7.X.4.4.2.2 Type: LocAccurAnalyticsSubs

Table 7.X.4.4.2.2-1: Definition of type LocAccurAnalyticsSubs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| analytics-type | AnalyticsType | M | 1 | Identity the type of the location accuracy analytics |  |
| val-ue-list | array(ValTargetUe) | M | 1..N | A list of identities of one or more VAL UEs, whose location accuracy analytics are subscribed to. |  |
| accuracy | Accuracy | M | 1 | Represents the desired level of accuracy of the requested location information. |  |
| val-service-id | string | O | 1 | The identifier of the VAL service for which location accuracy analytics is requested. |  |
| confidence-level | ConfidenceLevel | O | 1 | Defines the accuracy level for the location analytics analytics if the location accuracy analytics is for prediction. |  |
| area | LocationArea | O | 1 | The geographical or service area, to which the location accuracy analytics subscription is applied. |  |
| time-interval | DurationSec | O | 1 | The time interval as the start and the end time, to which the location accuracy analytics subscription is applied. |  |
| ue-mobs | array(UeMobility) | O | 1..N | Mobility and route information on the one or more target VAL UE. |  |

###### 7.X.4.4.2.3 Type: LocAccurAnalyticsNotif

Table 7.X.4.4.2.3-1: Definition of type LocaAccurAnalyticsNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| analytics-output | array(string) | M | 1..N | Location accuracy analytics for prediction or statistics depending on the type. |  |
| analytics-type | AnalyticsType | O | 1 | Identity the type of the location accuracy analytics |  |
| confidence-level | ConfidenceLevel | O | 1 | Provides accuracy level if the location accuracy analytics is prediction. |  |

###### 7.X.4.4.2.4 Type: LocAccurLogReq

Table 7.X.4.4.2.4-1: Definition of type LocAccurLogReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| val-ue-list | array(ValTargetUe) | M | 1..N | A list of identities of one or more VAL UEs, whose location accuracy logs are applied. |  |
| val-service-id | string | O | 1 | The identifier of the VAL service for which location accuracy historic log is requested. |  |
| report | LocationReportConfiguration | O | 1 | Configuration of the location data reporting |  |
| area | LocationArea | O | 1 | The geographical or service area, to which the location accuracy analytics subscription is applied. |  |
| time-interval | DurationSec | O | 1 | The time interval as the start and the end time, to which the location accuracy historic log data is applied. |  |

###### 7.X.4.4.2.5 Type: LocAccurLogResp

Table 7.X.4.4.2.5-1: Definition of type LocAccurLogResp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| analytics-id | string | M | 1 | The identifier of the location accuracy analytics event. |  |
| val-ue-list | array(ValTargetUe) | M | 1..N | A list of identities of one or more VAL UEs, whose location accuracy logs are applied. |  |
| analytics-output | array(string) | M | 1..N | Location accuracy analytics for historical log data |  |
| val-service-id | string | O | 1 | The identifier of the VAL service for which location accuracy historic log is requested. |  |

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

#### 7.X.4.5 Error Handling

##### 7.X.4.5.1 General

HTTP error handling shall be supported as specified in clause 6.7.

In addition, the requirements in the following clauses shall apply.

##### 7.X.4.5.2 Protocol Errors

In this release of the specification, there are no additional protocol errors applicable for the SS\_ADAE\_LocationAccuracyAnalytics API.

##### 7.X.4.5.3 Application Errors

The application errors defined for SS\_ADAE\_LocationAccuracyAnalytics API are listed in table 7.X.4.5.3-1.

Table 7.X.4.5.3-1: Application errors

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

Editor's note: The application errors for the SS\_ADAE\_LocationAccuracyAnalytics API are FFS.

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

#### 7.X.4.6 Feature Negotiation

General feature negotiation procedures are defined in clause 6.8. Table 7.X.4.6-1 lists the supported features for SS\_ADAE\_LocationAccuracyAnalytics API.

Table 7.X.4.6-1: Supported Features

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

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