**3GPP TSG-CT WG3 Meeting #132C3-240157r1**

**Online, 22 - 24 January, 2024**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.549** | **CR** | **0214** | **rev** | **1** | **Current version:** | **18.4.0** |  |
|  | | | | | | | | |
| *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:*** | Slice-specific application performance analytics | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Lenovo | | | | | | | | | |
| ***Source to TSG:*** | C3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ADAES | | | | |  | ***Date:*** | | | 2023-12-04 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | TS 23.436 adds stage 2 for slice specific application performance analytics for the ADAE service which is a SEAL service. Stage 3 of slice-specific application performance analytics needs to be defined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The added changes are:   * Added new SEAL service in the table. * Added SS\_ADAE\_SlicePerformanceAnalytics API | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Stage 3 of SS\_ADAE\_SlicePerformanceAnalytics API does not exist. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.1, 5.11.2 (new), 5.11.2.1 (new), 5.11.2.1.1 (new), 5.11.2.2 (new), 5.11.2.2.1 (new), 5.11.2.2.2 (new), 5.11.2.2.2.1 (new), 5.11.2.2.2.2 (new), 5.11.2.2.3 (new), 5.11.2.2.3.1 (new), 5.11.2.2.3.2 (new), 5.11.2.2.4 (new), 5.11.2.2.4.1 (new), 5.11.2.2.4.2 (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 \* \* \* \*

## 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 |
| Unsubscribe\_Location\_Info | 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\_LocationMonitoring | Subscribe\_Location\_Monitoring | Subscribe/Notify | VAL server |
| Unsubscribe\_Location\_Monitoring |
| Notify\_Location\_Monitoring\_Events |
| SS\_LocationAreaMonitoring | Subscribe\_Location\_Area\_Monitoring | Subscribe/Notify | VAL server |
| Notify\_Location\_Area\_Monitoring\_Events |
| Update\_Location\_Area\_Monitoring\_Subscribe |
| Unsubscribe\_Location\_Area\_Monitoring |
| SS\_VALServiceAreaConfiguration | Configure\_VAL\_Service\_Area | Request/Response | VAL server |
| Obtain\_VAL\_Service\_Area | Request/Response | VAL server |
| Update\_VAL\_Service\_Area | Request/Response | VAL server |
| Delete\_VAL\_Service\_Area | 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\_VALServiceData | Obtain\_VAL\_Service\_Data | Request/Response | SEAL server |
| SS\_UserProfileEvent | Subscribe\_User\_Profile\_Update | Subscribe/Notify | VAL server |
| Notify\_User\_Profile\_Update | VAL server |
| SS\_NetworkResourceAdaptation  (NOTE 3) | 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 |
| Discover\_TSC\_Stream\_Availability | Request/Response | VAL server |
| Create\_TSC\_Stream | Request/Response | VAL server |
| Delete\_TSC\_Stream | Request/Response | VAL server |
| Create\_MBS\_Resource | Request/Response | VAL server |
| Update\_MBS\_Resource | Request/Response | VAL server |
| Delete\_MBS\_Resource | Request/Response | VAL server |
| Activate\_MBS\_Resource | Request/Response | VAL server |
| Deactivate\_MBS\_Resource | Request/Response | VAL server |
| SS\_EventsMonitoring | Subscribe\_Monitoring\_Events | Subscribe/Notify | VAL server |
| Notify\_Monitoring\_Events |
| SS\_Events | Subscribe\_Event | Subscribe/Notify | VAL server |
| Notify\_Event | VAL server |
| Unsubscribe\_Event | VAL server |
| Update\_Subscription | VAL server |
| SS\_KeyInfoRetrieval | Obtain\_Key\_Info | Request/Response | VAL server |
| SS\_NetworkSliceAdaptation | Request\_Network\_Slice\_Adaptation | Request/Response | VAL server |
| SS\_NetworkResourceMonitoring | Subscribe\_Unicast\_QoS\_Monitoring\_Data | Subscribe/Notify | VAL server |
| Unsubscribe\_Unicast\_QoS\_Monitoring\_Data | VAL server |
| Notify\_Unicast\_QoS\_Monitoring\_Data | VAL server |
| Obtain\_Unicast\_QoS\_Monitoring\_Data | Request/Response | VAL server |
| Update\_Unicast\_QoS\_Monitoring\_Subscription | VAL server |
| SS\_IdmParameterProvisioning | Provide\_Configuration | Request/Response | VAL server |
| SS\_ADAE\_SlicePerformanceAnalytics API | Subscribe\_Slice\_Performance\_Analytics | Subscribe/Notify | VAL server |
| Notify\_Slice\_Performance\_Analytics |
| Unsubscribe\_Slice\_Performance\_Analytics |
| NOTE 1: The service operations of SS\_Events API are reused by the SS\_LocationInfoEvent, SS\_LocationMonitoring, SS\_LocationAreaMonitoring, SS\_GroupManagementEvent, SS\_UserProfileEvent and SS\_EventsMonitoring for events related services.  NOTE 2: The service APIs exposed by the SEALDD Server and the corresponding service operations, operation semantics and service consumers are specified in clause 5 of 3GPP TS 29.548 [35].  NOTE 3: The "Create\_MBS\_Resource", "Update\_MBS\_Resource", "Delete\_MBS\_Resource", "Activate\_MBS\_Resource" and "Deactivate\_MBS\_Resource" service operations correspond to the stage 2 "Request\_Multicast/Broadcast\_Resource", "Update\_Multicast/Broadcast\_Resource", "Delete\_Multicast/Broadcast\_Resource", "Activate\_Multicast\_Resource" and "Deactivate\_Multicast\_Resource" service operations defined in clause 14.4.2 of 3GPP TS 23.434 [2]. | | | |

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\_NetworkResourceAdaptation | 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.8 |
| SS\_NetworkSliceAdaptation | 7.7 | Network Slice Adaptation Service | TS29549\_SS\_NetworkSliceAdaptation.yaml | ss-nsa | A.9 |
| SS\_NetworkResourceMonitoring | 7.4 | Network Resource Monitoring | TS29549\_SS\_NetworkResourceMonitoring.yaml | ss-nrm | A.10 |
| SS\_VALServiceData | 7.3 | VAL Service Data Service | TS29549\_SS\_VALServiceData.yaml | ss-vsd | A.11 |
| SS\_VALServiceAreaConfiguration | 7.1 | VAL Service Area Configuration Service | TS29549\_SS\_VALServiceAreaConfiguration.yaml | ss-vsac | A.12 |
| SS\_ADAE\_SlicePerformanceAnalytics | 7.10 | ADAE slice specific application performance analytics service | TS29549\_SS\_ADAE\_SlicePerformanceAnalytics.yaml | ss-adae-sspa | A.15 |
| NOTE: The APIs exposed by the SEALDD Server are specified in clause 5 of 3GPP TS 29.548 [35]. | | | | | |

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

### 5.11.2 SS\_ADAE\_SlicePerformanceAnalytics API

#### 5.11.2.1 Service Description

##### 5.11.2.1.1 Overview

The SS\_ ADAE\_SlicePerformanceAnalytics API, as defined 3GPP TS 23.436 [38], allows the VAL server via ADAE-S reference point to subscribe to slice specific application performance analytics event to the ADAE Server.

#### 5.11.2.2 Service Operations

##### 5.11.2.2.1 Introduction

The service operation defined for SS\_ ADAE\_SlicePerformanceAnalytics API is shown in the table 5.11.2.2.1-1.

Table 5.11.2.2.1-1: Operations of the SS\_ADAE\_SlicePerformanceAnalytics API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Subscribe\_Slice\_Performance\_Analytics | This service operation is used by VAL server to subsribe to the event of the slice-specific application performance analytics. | VAL Server |
| Notify\_Slice\_Performance\_Analytics | This service operation is used by ADAE Server to notify about the slice-specific application performance analytics. | ADAE Server |
| Unsubscribe\_Slice\_Performance\_Analytics | This service operation is used by VAL server to unsubsribe from the event of the slice-specific application performance analytics. | VAL server |

##### 5.11.2.2.2 Subscribe\_Slice\_Performance\_Analytics

###### 5.11.2.2.2.1 General

This service operation is used by the VAL server for slice-specific application performance analytics event subscription to the ADAE Server.

###### 5.11.2.2.2.2 Subscribing to slice-specific application performance analytics event using Subscribe\_Slice\_Performance\_Analytics service operation

To subscribe to slice specific application performance analytics event, the VAL server shall send an HTTP POST request with a Request-URI according to the pattern "{apiRoot}/ss-adae-sspa/<apiVersion>/slice-specific-application-performance" and with a body containing data type SliceAppPerfSub as defined in clause 7.10.2.4.2.2.

Upon receipt of the HTTP POST request, the ADAE Server shall:

1. verify the identity of the VAL server and determine if the VAL server is authorized to subscribe to the slice-specific application performance analytics event; and

2. if the VAL server:

a. is not authorized, the ADAE Server shall respond to the VAL server with an appropriate error status code; or

b. is authorized, the ADAE Server shall create a new "Individual slice specific application performance event subscription" resource and respond to the VAL server with an HTTP "201 Created" status code, including a Location header field containing the URI for the created "Individual slice specific application performance event subscription" and the response body including the SliceAppPerfSub data structure containing a representation of the created resource as defined in clause 7.10.2.2.

##### 5.11.2.2.3 Notify\_Slice\_Performance\_Analytics

###### 5.11.2.2.3.1 General

This service operation is used by the ADAE Server to send notification to the VAL server with the slice-specific application performance analytics event subscription to the ADAE Server.

###### 5.11.2.2.3.2 Notifying slice-specific application performance analytics event using Notify\_Slice\_Performance\_Analytics service operation

To notify slice-specific application performance analytics event, the ADAE Server shall send an HTTP POST request with a Request-URI according to the pattern "{notiUri}" and with a body containing data type SliceAppPerfNotif as defined in clause 7.10.2.4.2.3.

Upon receipt of the HTTP POST request, the VAL server shall respond to the ADAE Server with:

1. if the request is successfully processed, a "204 No Content" status code and process the event notification; or

2. if errors occur when processing the request, an appropriate error response as specified in clause 7.10.2.5.

##### 5.11.2.2.4 Unsubscribe\_Slice\_Performance\_Analytics

###### 5.11.2.2.4.1 General

This service operation is used by the VAL server to unsubscribe from the slice-specific application performance analytics event.

###### 5.11.2.2.4.2 Unsubscribing from slice-specific application performance analytics event using Unsubscribe\_Slice\_Performance\_Analytics service operation

To unsubscribe from slice-specific application performance analytics event, the VAL server shall send an HTTP DELETE request to the resource representing the event in the ADAE Server as specified in clause 7.10.2.2.3.2.

Upon receiving the HTTP DELETE request:

1. the ADAE Server shall verify the identity of the VAL server and check if the VAL server is authorized to unsubscribe from the slice-specific application performance analytics event associated with the resource URI "{apiRoot}/ss-adae-sspa/<apiVersion>/slice-specific-application-performance/{ssAppPerfId}";

2. if the VAL server is authorized to unsubscribe from the slice-specific application performance analytics event, the ADAE Server shall delete the resource pointed by the resource URI "{apiRoot}/ss-adae-sspa/<apiVersion>/slice-specific-application-performance/{ssAppPerfId}";

3. if the request is successfully processed, the ADAE Server shall respond to the VAL server with a "204 No Content" status code; and

4. if errors occur when processing the request, the ADAE Server shall respond to the VAL Server with an appropriate error response as specified in clause 7.10.2.5.

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