**3GPP TSG-CT3 Meeting #130C3-234xxx**

**Xiamen, China, 9th – 13th October 2023 was C3-234137**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.486** | **CR** | **0096** | **rev** | **1** | **Current version:** | **18.0.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | |
| ***Title:*** | Define the service description clauses of the VAE\_VRUZoneManagement API | | | | | | | | |
|  |  | | | | | | | | |
| ***Source to WG:*** | Huawei, Nokia, Nokia Shanghai Bell | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | |
|  |  | | | | | | | | |
| ***Work item code:*** | V2XAPP\_Ph3 | | | | |  | ***Date:*** | | 2023-09-29 |
|  |  | | | |  | |  | |  |
| ***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:*** | | | As specified in clauses 9.21 and 10.2 of TS 23.286, in order to enable the "Support for VRU zone configuration and operation" functionality, the VAE\_VRUZoneManagement API was defined.  The stage 3 definition of this API in this specification needs hence to be started. | | | | | | |
|  | | |  | | | | | | |
| ***Summary of change:*** | | | This CR proposes to:   * Start the definition of the service description clauses of the new VAE\_VRUZoneManagement Service API. | | | | | | |
|  | | |  | | | | | | |
| ***Consequences if not approved:*** | | | * The "Support for VRU zone configuration and operation" functionality is not defined in stage 3. | | | | | | |
|  | |  | | | | | | | |
| ***Clauses affected:*** | | 4, 5.1, 5.12 (new clause) | | | | | | | |
|  | |  | | | | | | | |
|  | | **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 descriptions of the APIs defined in this specification. | | | | | | | |
|  | |  | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | |

\* \* \* \* Start of changes \* \* \* \*

# 4 Overview

The Vs interface is between the V2X application specific server and the VAE Server. It specifies RESTful APIs that allow the V2X application specific server to access the services and capabilities provided by VAE Server.

The stage 2 level requirements and signalling flows for the Vs interface are defined in 3GPP TS 23.286 [4].

The Vs interface supports the following APIs:

- VAE\_MessageDelivery

- VAE\_FileDistribution

- VAE\_ApplicationRequirement

- VAE\_DynamicGroup

- VAE\_HDMapDynamicInfo

- VAE\_SessionOrientedService

- VAE\_V2VConfigRequirement

- VAE\_PC5ProvisioningRequirement

- VAE\_VRUZoneManagement

The VAE-E interface is between VAE Servers. It specifies RESTful APIs that allow the VAE server to access the services and capabilities provided by other VAE Server.

The stage 2 level requirements and signalling flows for the VAE-E interface are defined in 3GPP TS 23.286 [4].

The VAE-E interface supports the following APIs:

- VAE\_ServiceContinuity

\* \* \* \* Next changes \* \* \* \*

## 5.1 Introduction

The table 5.1-1 shows the services provided by the VAE server and corresponding Service Operations:

Table 5.1-1 List of services provided by the VAE Server

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation  Semantics | Example Consumer(s) |
| VAE\_MessageDelivery | Deliver\_DL\_Message | Request/Response | V2X application specific server |
| Deliver\_UL\_Message | Subscribe/Notify | V2X application specific server |
| V2X\_MessageDelivery\_Subscribe | V2X application specific server |
| V2X\_MessageDelivery\_Unsubscribe | V2X application specific server |
| VAE\_FileDistribution | Distribute\_File | Request/ Response | V2X application specific server |
| VAE\_ApplicationRequirement | Reserve\_NetworkResource | Subscribe/Notify | V2X application specific server |
| Notify\_NetworkResource |
| VAE\_DynamicGroup | Configure\_DynamicGroup | Subscribe/Notify | V2X application specific server |
| VAE\_ServiceContinuity | Query\_ServiceContinuity | Request/Response | VAE server |
| VAE\_HDMapDynamicInfo | Subscribe\_HDMapDynamicInfo | Subscribe/Notify | V2X application specific server |
| VAE\_SessionOrientedService | Establish\_Session | Subscribe/Notify | V2X application specific server |
| Notify\_Establish\_Session |
| Update\_Session |
| Notify\_Update\_Session |
| Terminate\_Session |
| Notify\_Terminate\_Session |
| VAE\_V2VConfigRequirement | Request\_V2VConfigRequirement | Request/Response | V2X application specific server |
| VAE\_PC5ProvisioningRequirement | Config\_PC5ProvisioningRequirement | Subscribe/Notify | V2X application specific server |
| Notify\_PC5ProvisioningRequirement |
| VAE\_VRUZoneManagement | Subscribe\_VRUZoneManagement | Subscribe/Notify | VASS |
| Notify\_VRUZoneManagement |

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** |
| VAE\_MessageDelivery | 6.1 | VAE Message Delivery Service | TS29486\_VAE\_MessageDelivery.yaml | vae-message-delivery | A.2 |
| VAE\_FileDistribution | 6.2 | VAE File Distribution Service | TS29486\_VAE\_FileDistribution.yaml | vae-file-distribution | A.3 |
| VAE\_ApplicationRequirement | 6.3 | VAE Application Requirement Provision Service | TS29486\_VAE\_ApplicationRequirement.yaml | vae-app-req | A.4 |
| VAE\_DynamicGroup | 6.4 | VAE Configure Dynamic Group Information Service | TS29486\_VAE\_DynamicGroup.yaml | vae-dynamic-group | A.5 |
| VAE\_ServiceContinuity | 6.5 | VAE Service Continuity Service | TS29486\_VAE\_ServiceContinuity.yaml | vae-service-continuity | A.6 |
| VAE\_HDMapDynamicInfo | 6.6 | VAE\_HDMapDynamicInfo Service | TS29486\_VAE\_HDMapDynamicInfo.yaml | vae-hdmap-dynamic-info | A.7 |
| VAE\_SessionOrientedService API | 6.7 | VAE\_SessionOrientedService | TS29486\_VAE\_SessionOrientedService.yaml | vae-session-oriented-service | A.8 |
| VAE\_V2VConfigRequirement | 6.8 | VAE\_SessionOrientedService | TS29486\_VAE\_V2VConfigRequirement.yaml | vae-v2v-config-req | A.9 |
| VAE\_PC5ProvisioningRequirement | 6.9 | VAE\_PC5ProvisioningRequirement | TS29486\_VAE\_PC5ProvisioningRequirement.yaml | vae-pc5-prov-req | A.19 |
| VAE\_VRUZoneManagement | 6.11 | VAE VRU Zone Management | TS29486\_VAE\_VRUZoneManagement.yaml | vae-vzm | A.12 |

\* \* \* \* Next changes \* \* \* \*

## 5.12 VAE\_VRUZoneManagement Service

### 5.12.1 Service Description

The VAE\_VRUZoneManagement service exposed by the VAE Server enables a service consumer (e.g., VASS) to:

- create/update/delete a VRU Zone Management Subscription; and

- receive VRU Zone Management notifications.

### 5.12.2 Service Operations

#### 5.12.2.1 Introduction

The service operations defined for the VAE\_VRUZoneManagement service are shown in table 5.12.2.1-1.

Table 5.12.2.1-1: VAE\_VRUZoneManagement Service Operations

|  |  |  |
| --- | --- | --- |
| Service Operation Name | Description | Initiated by |
| Subscribe\_VRUZoneManagement | This service operation enables a service consumer to create/update/delete a VRU Zone Management Subscription. | e.g., VASS |
| Notify\_VRUZoneManagement | This service operation enables a service consumer to receive VRU Zone Management notifications. | VAE Server |

#### 5.12.2.2 Subscribe\_VRUZoneManagement

##### 5.12.2.2.1 General

This service operation is used by a service consumer (e.g., VASS) to request the creation/update/deletion of a VRU Zone Management Subscription at the VAE Server.

The following procedures are supported by the "Subscribe\_VRUZoneManagement" service operation:

- VRU Zone Management Subscription Creation.

- VRU Zone Management Subscription Update.

- VRU Zone Management Subscription Deletion.

##### 5.12.2.2.2 VRU Zone Management Subscription Creation

Figure 5.12.2.2.2-1 depicts a scenario where a a service consumer (e.g., VASS) sends a request to the VAE Server to request the creation of a VRU Zone Management Subscription (see also clause 9.21 of 3GPP°TS°23.286°[4]).

 Figure 5.12.2.2.2-1: Procedure for VRU Zone Management Subscription Creation

1. In order to subscribe to VRU Zone Management event(s) reporting, the service consumer (e.g., VASS) shall send an HTTP POST request to the VAE Server targeting the URI of the " VRU Zone Management Subscriptions" collection resource, with the request body including the VRUZoneMngtSubsc data structure.

2a. Upon success, the VAE Server shall respond with an HTTP "201 Created" status code with the response body containing a representation of the created "Individual VRU Zone Management Subscription" resource within the VRUZoneMngtSubsc data structure.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body, as specified in clause 6.11.7.

##### 5.12.2.2.3 VRU Zone Management Subscription Update

Figure 5.12.2.2.3-1 depicts a scenario where a service consumer (e.g., VASS) sends a request to the VAE Server to request the update of an existing VRU Zone Management Subscription (see also clause 9.21 of 3GPP°TS°23.286°[4]).



Figure 5.12.2.2.3-1: Procedure for VRU Zone Management Subscription Update

1. In order to update an existing VRU Zone Management subscription, the service consumer (e.g., VASS) shall send an HTTP PUT/PATCH request to the VAE Server, targeting the URI of the corresponding "Individual VRU Zone Management Subscription" resource, with the request body including either:

- the updated representation of the resource within the VRUZoneMngtSubsc data structure, in case the HTTP PUT method is used; or

- the requested modifications to the resource within the VRUZoneMngtSubscPatch data structure, in case the HTTP PATCH method is used.

NOTE: An alternative Service Consumer (i.e. other than the one that requested the creation of the targeted resource) can initiate this request.

2a. Upon success, the VAE Server shall update the targeted "Individual VRU Zone Management Subscription" resource accordingly and respond with either:

- an HTTP "200 OK" status code with the response body containing a representation of the updated "Individual VRU Zone Management Subscription" resource within the VRUZoneMngtSubsc data structure; or

- an HTTP "204 No Content" status code.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP PUT/PATCH response body, as specified in clause 6.11.7.

##### 5.12.2.2.4 VRU Zone Management Subscription Deletion

Figure 5.12.2.2.4-1 depicts a scenario where a service consumer (e.g., VASS) sends a request to the VAE Server to request the deletion an existing VRU Zone Management Subscription (see also clause 9.21 of 3GPP°TS°23.286°[4]).



Figure 5.12.2.2.4-1: Procedure for VRU Zone Management Subscription Deletion

1. In order to request the deletion of an existing VRU Zone Management subscription, the service consumer (e.g., VASS) shall send an HTTP DELETE request to the VAE Server targeting the corresponding "Individual VRU Zone Management Subscription" resource.

NOTE: An alternative Service Consumer (i.e. other than the one that requested the creation of the targeted resource) can initiate this request.

2a. Upon success, the VAE Server shall respond with an HTTP "204 No Content" status code.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP DELETE response body, as specified in clause 6.11.7.

#### 5.12.2.3 Notify\_VRUZoneManagement

##### 5.12.2.3.1 General

This service operation is used by a VAE Server to notify a previously subscribed service consumer (e.g., VASS) on:

- VRU Zone Management event(s).

The following procedures are supported by the "Notify\_VRUZoneManagement" service operation:

- VRU Zone Management Notification.

##### 5.12.2.3.2 VRU Zone Management Notification

Figure 5.12.2.3.2-1 depicts a scenario where the VAE Server sends a request to notify a previously subscribed service consumer (e.g., VASS) on VRU Zone Management event(s) (see also clause 9.21 of 3GPP°TS°23.286°[4]).



Figure 5.12.2.3.2-1: Procedure for VRU Zone Management Notification

1. In order to notify a previously subscribed service consumer (e.g., VASS) on VRU Zone Management event(s), the VAE Server shall send an HTTP POST request to the service consumer (e.g., VASS) with the request URI set to "{notifUri}", where the "notifUri" variable set to the value received from the service consumer (e.g., VASS) during the creation/update of the corresponding VRU Zone Management Subscription using the procedures defined in clause 5.12.2.2, and the request body including the VRUZoneMngtNotif data structure.

2a. Upon success, the service consumer (e.g., VASS) shall respond with an HTTP "204 No Content" status code.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body, as specified in clause 6.11.7.

\* \* \* \* End of changes \* \* \* \*