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

**Xiamen, China, 9th – 13th October 2023 was C3-234134**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.486** | **CR** | **0093** | **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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | |
| ***Title:*** | Define the service description clauses of the VAE\_ServiceAndQoSControlInfo 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 9.20 and 10.2 of TS 23.286, in order to support the "Monitoring and control of QoS for eV2X communications" functionality, the VAE\_ServiceAndQoSControlInfo 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\_ServiceAndQoSControlInfo Service API. | | | | | | |
|  | | |  | | | | | | |
| ***Consequences if not approved:*** | | | * The support of the "Monitoring and control of QoS for eV2X communications" functionality is not defined in stage 3. | | | | | | |
|  | |  | | | | | | | |
| ***Clauses affected:*** | | 3.3, 4, 5.1, 5.11 (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 \* \* \* \*

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

CAPIF Common API Framework

NRM Network Resource Management

V2X Vehicle-to-Everything

VASS V2X Application Specific Server

VAE V2X Application Enabler

\* \* \* \* Next 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\_ServiceAndQoSControlInfo

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\_ServiceAndQoSControlInfo | Subscribe\_ServiceAndQoSControlInfo | Subscribe/Notify | VASS |
| Notify\_ServiceAndQoSControlInfo |

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\_ServiceAndQoSControlInfo | 6.10 | VAE Service And QoS Control Information | TS29486\_VAE\_ServiceAndQoSControlInfo.yaml | vae-sqci | A.11 |

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

## 5.11 VAE\_ServiceAndQoSControlInfo Service

### 5.11.1 Service Description

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

- create/update/delete a Service Adaptation And QoS Control Subscription; and

- receive Service Requirements And QoS Adaptation Notifications.

### 5.11.2 Service Operations

#### 5.11.2.1 Introduction

The service operations defined for the VAE\_ServiceAndQoSControlInfo service are shown in table 5.11.2.1-1.

Table 5.11.2.1-1: VAE\_ServiceAndQoSControlInfo Service Operations

|  |  |  |
| --- | --- | --- |
| Service Operation Name | Description | Initiated by |
| Subscribe\_ServiceAndQoSControlInfo | This service operation enables a service consumer to create/update/delete a Service Adaptation And QoS Control Subscription. | e.g., VASS |
| Notify\_ServiceAndQoSControlInfo | This service operation enables a service consumer to receive Service Requirements And QoS Adaptation Notifications. | VAE Server |

#### 5.11.2.2 Subscribe\_ServiceAndQoSControlInfo

##### 5.11.2.2.1 General

This service operation is used by a service consumer (e.g., VASS) to request the creation/update/deletion of a Service Adaptation And QoS Control Subscription at the VAE Server.

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

- Service Adaptation And QoS Control Subscription Creation.

- Service Adaptation And QoS Control Subscription Update.

- Service Adaptation And QoS Control Subscription Deletion.

##### 5.11.2.2.2 Service Adaptation And QoS Control Subscription Creation

Figure 5.11.2.2.2-1 depicts a scenario where a a service consumer (e.g., VASS) sends a request to the VAE Server to request the creation of a Service Adaptation And QoS Control Subscription (see also clause 9.20 of 3GPP°TS°23.286°[4]).

 Figure 5.11.2.2.2-1: Procedure for Service Adaptation And QoS Control Subscription Creation

1. In order to subscribe to Service Adaptation And QoS Control reporting, the service consumer (e.g., VASS) shall send an HTTP POST request to the VAE Server targeting the URI of the "Service Adaptation And QoS Control Subscriptions" collection resource, with the request body including the ServAdaptQoSCtrlSubsc 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 Service Adaptation And QoS Control Subscription" resource within the ServAdaptQoSCtrlSubsc 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 6.10.7.

##### 5.11.2.2.3 Service Adaptation And QoS Control Subscription Update

Figure 5.11.2.2.3-1 depicts a scenario where a service consumer (e.g., VASS) sends a request to the VAE Server to request the update of an existing Service Adaptation And QoS Control Subscription (see also clause 9.20 of 3GPP°TS°23.286°[4]).



Figure 5.11.2.2.3-1: Procedure for Service Adaptation And QoS Control Subscription Update

1. In order to update an existing Service Adaptation And QoS Control 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 Service Adaptation And QoS Control Subscription" resource, with the request body including either:

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

- the requested modifications to the resource within the ServAdaptQoSCtrlSubscPatch 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 Service Adaptation And QoS Control Subscription" resource accordingly and respond with either:

- an HTTP "200 OK" status code with the response body containing a representation of the updated "Individual Service Adaptation And QoS Control Subscription" resource within the ServAdaptQoSCtrlSubsc 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 6.10.7.

##### 5.11.2.2.4 Service Adaptation And QoS Control Subscription Deletion

Figure 5.11.2.2.4-1 depicts a scenario where a service consumer (e.g., VASS) sends a request to the VAE Server to request the deletion an existing Service Adaptation And QoS Control Subscription (see also clause 9.20 of 3GPP°TS°23.286°[4]).



Figure 5.11.2.2.4-1: Procedure for Service Adaptation And QoS Control Subscription Deletion

1. In order to request the deletion of an existing Service Adaptation And QoS Control subscription, the service consumer (e.g., VASS) shall send an HTTP DELETE request to the VAE Server targeting the corresponding "Individual Service Adaptation And QoS Control 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 6.10.7.

#### 5.11.2.3 Notify\_ServiceAndQoSControlInfo

##### 5.11.2.3.1 General

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

- Service Requirements And QoS Adaptation.

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

- Service Requirements And QoS Adaptation Notification.

##### 5.11.2.3.2 Service Requirements And QoS Adaptation Notification

Figure 5.11.2.3.2-1 depicts a scenario where the VAE Server sends a request to notify a previously subscribed service consumer (e.g., VASS) on Service Requirements Adaptation (see also clause 9.20 of 3GPP°TS°23.286°[4]).



Figure 5.11.2.3.2-1: Procedure for Service Requirements And QoS Adaptation Notification

1. In order to notify a previously subscribed service consumer (e.g., VASS) on Service Requirements And QoS Adaptation, 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 Service Adaptation And QoS Control Subscription using the procedures defined in clause 5.11.2.2, and the request body including the AdaptNotif data structure.

2a. Upon success, the service consumer (e.g., VASS) shall respond with either:

- an HTTP "200 OK" status code with the response body containing acknowledgment related information within the AdaptNotifResp 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 POST response body, as specified in clause 6.10.7.

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