**3GPP TSG-CT WG3 Meeting #130 *C3-234213***

**Xiamen, China, 9 - 13 October, 2023 *(Revision of C3-234xxx)***

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.486** | **CR** | **0099** | **rev** | **-** | **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:*** | Updating the obsoleted IETF HTTP RFCs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NBI18 | | | | |  | ***Date:*** | | | 2023-09-20 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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 per the discussion paper in C4-233140 and the agreed CR C4-233140 to TS 29.500 in CT4, in addition to the received LS from CT4 on the same topic in C3-234018, the obsoleted IETF HTTP RFCs need to be updated in this specification. And, replace the terms "payload" and "payload body" with the term "content" in the HTTP messages. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Update the obsoleted IEFT HTTP RFCs in a similar way to the agreed CR C4-233140 to TS 29.500 in CT4. 2. Replace the terms "payload" and "payload body" with the term "content" in the HTTP messages. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Obsolete IEFT HTTP RFCs remain referenced and used in this specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 5.2.2.2.2, 5.2.2.4.2, 5.3.2.2.2, 5.4.2.2.2, 5.5.2.2.2, 5.7.2.2.2, 5.8.2.2.2, 5.8.2.4.2, 5.9.2.2.2, 5.10.2.2.2, 6.1.2.1, 6.2.2.1, 6.3.2.1, 6.4.2.1, 6.5.2.1, 6.6.2.1, 6.7.2.1, 6.8.2.1, 6.9.2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 on the OpenAPI file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[3] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[4] 3GPP TS 23.286: "Application layer support for Vehicle-to-Everything (V2X) services; Functional architecture and information flows".

[5] IETF RFC 9113: "HTTP/2".

[6] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[7] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[8] 3GPP TR 21.900: "Technical Specification Group working methods".

[11] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[12] IETF RFC 9112: "HTTP/1.1".

[13] IETF RFC 9110: "HTTP Semantics".

[14] Void.

[15] Void.

[16] IETF RFC 9111: "HTTP Caching".

[17] Void.

[18] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

[19] 3GPP TS 29.116: "Representational state transfer over xMB reference point between Content Provider and BM-SC".

[20] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[21] IETF RFC 6455: "The Websocket Protocol".

[22] 3GPP TS 29.122: "T8 reference point for Northbound APIs".

[23] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[24] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

[25] 3GPP TS 23.222: "Common API Framework for 3GPP Northbound APIs; Stage 2".

[26] 3GPP TS 29.222: "Common API Framework for 3GPP Northbound APIs; Stage 3".

[27] 3GPP TS 33.122: "Security Aspects of Common API Framework for 3GPP Northbound APIs".

[28] 3GPP TS 24.486: "Vehicle-to-Everything (V2X) Application Enabler (VAE) layer; Protocol aspects; stage 3".

[29] 3GPP TS 29.549: "Service Enabler Architecture Layer for Verticals (SEAL); Application Programming Interface (API) specification; Stage 3".

[30] 3GPP TS 23.287: "Architecture enhancements for 5G System (5GS) to support Vehicle-to-Everything (V2X) services".

[31] 3GPP TS 33.536: "Security aspects of 3GPP support for advanced Vehicle-to-Everything (V2X) services".

[32] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

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

##### 5.2.2.2.2 Message Delivery Subscribe



Figure 5.2.2.2.2-1: Message delivery subscribe

When the NF service consumer (e.g. V2X application specific server) needs to receive the message from the V2X UE and/or send the message to the V2X UE, the NF service consumer shall send the POST method as step 1of the figure 5.2.2.2.2-1 to request to create an "Individual Message Delivery Subscription".

The NF service consumer shall include MessageDeliverySubscriptionData data structure in the content of the HTTP POST to request a creation of representation of the "Individual Message Delivery Subscription" resource. The "Individual Message Delivery Subscription" resource is created as described below.

The NF service consumer within MessageDeliverySubscriptionData data structure shall include:

- The identity of the V2X application specific server within the "appSerId" attribute;

- The V2X service ID within the "serviceId" attribute;

- The notification URI within the "notifUri" attribute; and

- The supported features with the "suppFeat" attribute;

and may include

- The geographical area identifier within the "geoId" attribute.

When the VAE Server receives the HTTP POST request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall create a new resource, which represents "Individual Message Delivery Subscription", addressed by a URI as defined in clause 6.1.3.3.2 and contains a VAE Server created resource identifier. The VAE Server shall respond to the NF service consumer with a 201 Created message, including Location header field containing the URI for the created resource.

If errors occur when processing the HTTP POST request, the VAE server shall apply error handling procedures as specified in clause 6.1.7.

The NF service consumer shall use the URI received in the Location header in subsequent requests to the VAE Server to refer to the "Individual Message Delivery Subscription".

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

##### 5.2.2.4.2 Downlink Message Delivery



Figure 5.2.2.4.2-1: Downlink Message Delivery

When the NF service consumer (e.g. V2X application specific server) needs to send the message to the V2X UE, the NF service consumer shall send the HTTP POST method as step 1of the figure 5.2.2.4.2-1 to request to create an "Individual Downlink Message Delivery".

The NF service consumer shall include DownlinkMessageDeliveryData data structure in the content of the HTTP POST to request a creation of representation of the "Individual Downlink Message Delivery" resource. The "Individual Downlink Message Delivery" resource is created as described below.

The NF service consumer within the DownlinkMessageDeliveryData data structure shall include:

- Either the V2X UE ID within the "ueId" attribute or the V2X Group ID within the "groupId" attribute;

- V2X message payload carried by the V2X message within the "payload" attribute;

and may include:

- The duration within the "duration" attribute; and

- The geographical area identifier within the "geoId" attribute.

When the VAE Server receives the HTTP POST request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall create a new resource, which represents "Individual Downlink Message Delivery", addressed by a URI as defined in clause 6.1.3.5.2 and contains a VAE Server created resource identifier. The VAE Server shall respond to the NF service consumer with a 201 Created message, including Location header field containing the URI for the created resource.

The NF service consumer shall use the URI received in the Location header in subsequent requests to the VAE Server to refer to the "Individual Downlink Message Delivery".

If errors occur when processing the HTTP POST request, the VAE Server shall apply error handling procedures as specified in clause 6.1.7.

After the VAE Server responded to the NF service consumer, the VAE Server shall invoke the procedure defined in clause 6.5.2.4 or 6.5.2.5 of 3GPP TS 24.486 [28] to send the message to the VAE Client.

When the VAE Server received the reception report from the VAE Client as defined in clause 6.5.2.2 of 3GPP TS 24.486 [28], the VAE Server shall send an HTTP POST message to the NF service consumer identified by the notification URI received during the message delivery subscribed if the "ReceptionReport" feature is supported. Upon receipt of the request, the SCS/AS shall acknowledge the notification with an HTTP 204 No Content response.

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

##### 5.3.2.2.2 File Distribution



Figure 5.3.2.2.2-1: File Distribution

When the NF service consumer (e.g. V2X application specific server) needs to distribute the file to the V2X UEs, the NF service consumer shall send the POST method as step 1 of the figure 5.3.2.2.2-1 to request to create an "Individual File Distribution".

The NF service consumer shall include FileDistributionData data structure in the content of the HTTP POST to request a creation of representation of the "Individual File Distribution" resource. The "Individual File Distribution" resource is created as described below.

The NF service consumer within the FileDistributionData data structure shall include:

- The file lists within the "fileLists" attribute;

- The geographical area within the "geoArea" attribute;

- maximum bitrate for the V2X application within the "maxBitrate" attribute; and

- maximum delay for the V2X application within the "maxDelay" attribute;

and may include:

- The V2X Group ID within the "groupId" attribute;

- The serving class within the "serviceClass" attribute;

- The duration within the "duration" attribute; and

- The local MBMS information within the "localMbmsInfo" attribute or the "localMbmsActInd" set to true if the "LocalMBMS" feature is supported.

When the VAE Server receives the HTTP POST request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall create a new resource, which represents "Individual File Distribution", addressed by a URI as defined in clause 6.2.3.3.2 and contains a VAE Server created resource identifier. The VAE Server shall respond to the NF service consumer with a 201 Created message, including Location header field containing the URI for the created resource.

The VAE Server shall use the URI received in the Location header in subsequent requests to the VAE Server to refer to the "Individual File Distribution".

If errors occur when processing the HTTP POST or DELETE request, the VAE Server shall apply error handling procedures as specified in clause 6.2.7.

The VAE server makes use of the xMB procedures as defined 3GPP TS 29.116 [19] to create MBMS sessions whose type is set to "files" and to request the delivery of files over these sessions. Before provisioning files to the BM‑SC, the VAE server prepares the file for distribution, which may include partition of large files into smaller files or encryption.

The VAE server is responsible for translating the parameters related to the V2X application triggering the file delivery into corresponding xMB parameters. Table 5.3.2.2.2-1 describes the mapping between the VAE\_FileDistribution API attribute and the xMB API properties specified in 3GPP TS 29.116 [19].

Table 5.3.2.2.2-1: Mapping between VAE\_FileDistribution API and xMB API

|  |  |
| --- | --- |
| V2X parameter | Corresponding xMB API property |
| serviceClass | service-class |
| fileLists | file-list |
| geoArea | geographical-area |
| maxBitrate | max-bitrate |
| maxDelay | max-delay |
| localMbmsInfo or localMbmsActInd | local-mbms-delivery-information |

NOTE: The list of V2X parameters needed for file delivery is not exhaustive and can be updated based on the specific V2X application requirements.

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

##### 5.4.2.2.2 Network Resource Reservation



Figure 5.4.2.2.2-1: Network Resource Reservation

When the NF service consumer (e.g. V2X application specific server) needs to provide V2X application requirement to the underlying 3GPP network, the NF service consumer shall send the POST method as step 1 of the figure 5.4.2.2.2-1 to request to create an "Individual Application Requirement".

The NF service consumer shall include ApplicationRequirementData data structure in the content of the HTTP POST to request a creation of representation of the "Individual Application Requirement" resource. The "Individual Application Requirement" resource is created as described below.

The NF service consumer within the ApplicationRequirementData data structure shall include:

- Either the V2X Group ID within the "groupId" attribute or the V2X UE ID within the "ueId" attribute;

- notification URI within the "notifUri" attribute;

- The service Id within the "serviceId" attribute; and

- V2X application requirement within the "appRequirement" attribute;

and may include:

- The duration within the "duration" attribute.

When the VAE Server receives the HTTP POST request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall create a new resource, which represents "Individual Application Requirement", addressed by a URI as defined in clause 6.3.3.3.2 and contains a VAE Server created resource identifier. The VAE Server shall respond to the NF service consumer with a 201 Created message, including Location header field containing the URI for the created resource. The VAE Server shall interact with the SEAL NRM server as specified in the 3GPP TS 29.549 [29] for the V2X application requirement received in step 1.

The NF service consumer shall use the URI received in the Location header in subsequent requests to the VAE Server to refer to the "Individual Application Requirement".

If errors occur when processing the HTTP POST or DELETE request, the VAE Server shall apply error handling procedures as specified in clause 6.3.7.

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

##### 5.5.2.2.2 Dynamic Group Configuration



Figure 5.5.2.2.2-1: Dynamic Group Configuration

When the NF service consumer (e.g. V2X application specific server) needs to configures the dynamic group information at the VAE server, the NF service consumer shall send the POST method as step 1 of the figure 5.5.2.2.2-1 to request to create an "Individual Group Configuration".

The NF service consumer shall include GroupConfigurationData data structure in the content of the HTTP POST to request a creation of representation of the "Individual Group Configuration" resource. The "Individual Group Configuration" resource is created as described below.

The NF service consumer within GroupConfigurationData data structure shall include:

- The dynamic Group ID within the "groupId" attribute;

- The group definition within the "definition" attribute;

- The group leader Id within the "leaderId" attribute; and

- The notification URI within the "notifUri" attribute.

and may include:

- The duration within the "duration" attribute.

When the VAE Server receives the HTTP POST request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall create a new resource, which represents "Individual Group Configuration", addressed by a URI as defined in clause 6.4.3.2.2 and contains a VAE Server created resource identifier. The VAE Server shall respond to the NF service consumer with a 201 Created message, including Location header field containing the URI for the created resource. Then the VAE Server shall interact with the VAE Client to notify the dynamic group information as specified in the 3GPP TS 24.486 [28].

The NF service consumer shall use the URI received in the Location header in subsequent requests to the VAE Server to refer to the "Individual Group Configuration".

If errors occur when processing the HTTP POST or DELETE request, the VAE Server shall apply error handling procedures as specified in clause 6.4.7.

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

##### 5.7.2.2.2 Subscribe HD Map Dynamic Information



Figure 5.7.2.2.2-1: Subscribe HD Map Dynamic Information

When the NF service consumer (e.g. V2X application specific server) needs to subscribe for the HD map dynamic information, the NF service consumer shall send the POST method as step 1 of the figure 5.7.2.2.2-1 to request to create an "Individual HdMap DynamicInfo Subscription".

The NF service consumer shall include HdMapDynamicInfoData data structure in the content of the HTTP POST to request a creation of representation of the "Individual HdMap DynamicInfo Subscription" resource. The "Individual HdMap DynamicInfo Subscription" resource is created as described below.

The NF service consumer within the HdMapDynamicInfoData data structure shall include:

- notification URI within the "notifUri" attribute;

- the V2X UE ID within the "ueId" attribute; and

- application defined proximity range information within the "range" attribute.

When the VAE Server receives the HTTP POST request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall create a new resource, which represents "Individual HdMap DynamicInfo\_Subscription", addressed by a URI as defined in clause 6.6.3.3.2 and contains a VAE Server created resource identifier. The VAE Server shall respond to the NF service consumer with a 201 Created message, including Location header field containing the URI for the created resource.

The NF service consumer shall use the URI received in the Location header in subsequent requests to the VAE Server to refer to the "Individual HdMap DynamicInfo Subscription".

Upon receipt of the HTTP DELETE message from the NF service consumer, the VAE Server shall check if the Individual HdMap DynamicInfo Subscription resource identified by the URI already exists. If the resource exists, the VAE Server shall delete the resource and respond to the NF service consumer with a 204 No Content success message.

If errors occur when processing the HTTP POST or DELETE request, the VAE Server shall apply error handling procedures as specified in clause 6.6.7.

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

##### 5.8.2.2.2 Establish Session



Figure 5.8.2.2.2-1: Establish Session

When the NF service consumer (e.g. V2X application specific server) needs to trigger the establishment of the session-oriented service by the VAE server, the NF service consumer shall send the POST method as step 1 of the figure 5.8.2.2.2-1 to request to create an "Individual Session Oriented Service Subscription".

The NF service consumer shall include SessionOrientedData data structure in the content of the HTTP POST to request a creation of representation of the "Individual Session Oriented Service Subscription" resource. The "Individual Session Oriented Service Subscription" resource is created as described below.

The NF service consumer within the SessionOrientedData data structure shall include:

- notification URI within the "notifUri" attribute;

- the remote V2X UE ID within the "ueId" attribute;

- the V2X service ID within the "serviceId" attribute;

- the identity of the V2X application specific server within the "appSerId" attribute; and

- application QoS requirements for the session within the "appQosReq" attribute.

When the VAE Server receives the HTTP POST request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall create a new resource, which represents "Individual Session Oriented Service Subscription", addressed by a URI as defined in clause 6.7.3.3.2 and contains a VAE Server created resource identifier. The VAE Server shall respond to the NF service consumer with a 201 Created message, including Location header field containing the URI for the created resource.

The NF service consumer shall use the URI received in the Location header in subsequent requests to the VAE Server to refer to the "Individual Session Oriented Service Subscription".

After the VAE Server responded to the NF service consumer, the VAE Server shall invoke the procedure defined in 3GPP TS 24.486 [28] to establish a session-oriented service with VAE client.

If errors occur when processing the HTTP POST request, the VAE Server shall apply error handling procedures as specified in clause 6.7.7.

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

##### 5.8.2.4.2 Update Session



Figure 5.8.2.4.2-1: Update Session

When the NF service consumer (e.g. V2X application specific server) needs to trigger the update to the session-oriented service by the VAE server, the NF service consumer shall send the PUT method as step 1 of the figure 5.8.2.4.2-1 to request to update the "Individual Session Oriented Service Subscription".

The NF service consumer shall include SessionOrientedData data structure in the content of the HTTP PUT to update the "Individual Session Oriented Service Subscription" resource. The remote V2X UE ID, the V2X service ID and the identity of the V2X application specific server shall remain unchanged from previous values.

When the VAE Server receives the HTTP PUT request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall update the "Individual Session Oriented Service Subscription" and respond to the NF service consumer with a 200 OK or 204 No Content status code.

After the VAE Server responded to the NF service consumer, the VAE Server shall invoke the procedure defined in 3GPP TS 24.486 [28] to update the session-oriented service with VAE client.

If errors occur when processing the HTTP PUT request, the VAE Server shall apply error handling procedures as specified in clause 6.7.7.

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

##### 5.9.2.2.2 Request V2V Configuration Requirement



Figure 5.9.2.2.2-1: Request\_V2VConfigRequirement

When the NF service consumer (e.g. V2X application specific server) needs to provide a V2V configuration requirement, the NF service consumer shall send the POST method as step 1 of the figure 5.9.2.2.2-1 to request to create an "Individual V2V Configuration".

The NF service consumer shall include V2vConfigurationData data structure in the content of the HTTP POST to request a creation of representation of the "Individual V2V Configuration" resource. The "Individual V2V Configuration" resource is created as described below.

The NF service consumer within the V2vConfigurationData data structure shall include:

- either the V2X group ID within the "groupId" attribute or the V2X service ID within the "serviceId" attribute;

and may include:

- candidate Relay V2X-UE ID list within the "canUeIds" attribute; and

- application QoS requirements for the session within the "appQosReq" attribute.

When the VAE Server receives the HTTP POST request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall create a new resource, which represents "Individual V2V Configuration" resource, addressed by a URI as defined in clause 6.8.3.3.2 and contains a VAE Server created resource identifier. The VAE Server shall respond to the NF service consumer with a 201 Created message, including Location header field containing the URI for the created resource.

The NF service consumer shall use the URI received in the Location header in subsequent requests to the VAE Server to refer to the "Individual Session Oriented Service Subscription".

After the VAE Server responded to the NF service consumer, the VAE Server shall invoke the procedure defined in 3GPP TS 24.486 [28] to provide the V2V configuration infomation to the VAE client. The VAE server may also provide the list of V2X-UEs to serve as application layer relays based on the candidate list of relay V2X-UEs received form the NF service consumer.

The NF service consumer may include the V2vConfigurationData data structure in the content of the HTTP PUT to update the "Individual V2V Configuration" resource. The V2X group ID and the V2X service ID shall remain unchanged from previous values. When the VAE Server receives the HTTP PUT request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall update the "Individual V2V Configuration" and respond to the NF service consumer with a 200 OK or 204 No Content status code. After the VAE Server responded to the NF service consumer, the VAE Server shall invoke the procedure defined in 3GPP TS 24.486 [28] to provide the upated infomation to the VAE client.

Upon receipt of the HTTP DELETE message from the NF service consumer, the VAE Server shall check if the "Individual V2V Configuration" resource identified by the URI already exists. If the resource exists, the VAE Server shall delete the resource and respond to the NF service consumer with a 204 No Content success message. After the VAE Server responded to the NF service consumer, the VAE Server shall invoke the procedure defined in 3GPP TS 24.486 [28] to delete the V2V configuration information from the VAE client.

If errors occur when processing the HTTP POST, HTTP PUT or HTTP DELETE request, the VAE Server shall apply error handling procedures as specified in clause 6.8.7.

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

##### 5.10.2.2.2 Config\_PC5ProvisioningRequirement



Figure 5.10.2.2.2-1: Config\_PC5ProvisioningRequirement

When the NF service consumer (e.g. V2X application specific server) needs to provide a V2X PC5 provisioning requirement to the VAE server, the NF service consumer shall send the POST method as step 1 of the figure 5.10.2.2.2-1 to request to create an "Individual PC5 Provisioning Requirement Subscription".

The NF service consumer shall include ProvisioningRequirement data structure in the content of the HTTP POST to request a creation of representation of the "Individual PC5 Provisioning Requirement Subscription" resource. The "Individual PC5 Provisioning Requirement Subscription" resource is created as described below.

The NF service consumer within the ProvisioningRequirement data structure shall include:

- notification URI within the "notifUri" attribute;

- either the remote V2X UE ID within the "ueId" attribute or the V2X group ID within the "groupId" attribute;

- the V2X service ID within the "serviceId" attribute;

- application QoS requirements for the session within the "appQosReq" attribute;

and may include:

- the PLMN ID list within the "plmnList" attribute.

When the VAE Server receives the HTTP POST request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall create a new resource, which represents "Individual PC5 Provisioning Requirement Subscription", addressed by a URI as defined in clause 6.9.3.3.2 and contains a VAE Server created resource identifier. The VAE Server shall respond to the NF service consumer with a 201 Created message, including Location header field containing the URI for the created resource.

The NF service consumer shall use the URI received in the Location header in subsequent requests to the VAE Server to refer to the "Individual PC5 Provisioning Requirement Subscription".

After the VAE Server responded to the NF service consumer, the VAE Server may invoke the procedure defined in 3GPP TS 24.486 [28] to send a PC5 provisioning status request to VAE client(within the multi-operator V2X service) to receive up-to-date information on the per PLMN provisioning policies/ parameters.

The NF service consumer may include the ProvisioningRequirement data structure in the content of the HTTP PUT to update the "Individual PC5 Provisioning Requirement Subscription" resource. The remote V2X UE ID, the V2X service ID and the V2X service ID shall remain unchanged from previous values When the VAE Server receives the HTTP PUT request from the NF service consumer, the VAE server shall make an authorization based on the information received from the NF service consumer. If the authorization is successful, the VAE Server shall update the "Individual PC5 Provisioning Requirement Subscription" and respond to the NF service consumer with a 200 OK or 204 No Content status code. After the VAE Server responded to the NF service consumer, the VAE Server shall invoke the procedure defined in 3GPP TS 24.486 [28] to provide the upated infomation to the VAE client.

Upon receipt of the HTTP DELETE message from the NF service consumer, the VAE Server shall check if the "Individual PC5 Provisioning Requirement Subscription" resource identified by the URI already exists. If the resource exists, the VAE Server shall delete the resource and respond to the NF service consumer with a 204 No Content success message. After the VAE Server responded to the NF service consumer, the VAE Server shall invoke the procedure defined in 3GPP TS 24.486 [28] to delete the PC5 provisioning status request from the VAE client.

If errors occur when processing the HTTP POST, HTTP PUT or HTTP DELETE request, the VAE Server shall apply error handling procedures as specified in clause 6.9.7.

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

#### 6.1.2.1 General

Support of HTTP/1.1 (IETF RFC 9112 [12], IETF RFC 9110 [13], IETF RFC 9111 [16]) over TLS is mandatory and support of HTTP/2 as specified in clause 5 of 3GPP TS 29.500 [2] is recommended. TLS shall be used as specified in 3GPP TS 33.536 [31] and 3GPP TS 33.501 [32]. A V2X application specific server desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [5].

HTTP/2, shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [2].

An OpenAPI [6] specification of HTTP messages and content bodies for the VAE\_MessageDelivery is contained in Annex A.2.

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

#### 6.2.2.1 General

Support of HTTP/1.1 (IETF RFC 9112 [12], IETF RFC 9110 [13], IETF RFC 9111 [16]) over TLS is mandatory and support of HTTP/2 as specified in clause 5 of 3GPP TS 29.500 [2] is recommended. TLS shall be used as specified in 3GPP TS 33.536 [31] and 3GPP TS 33.501 [32]. A V2X application specific server desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [5].

HTTP/2, shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [2].

An OpenAPI [6] specification of HTTP messages and content bodies for the VAE\_FileDistribution is contained in Annex A.3.

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

#### 6.3.2.1 General

Support of HTTP/1.1 (IETF RFC 9112 [12], IETF RFC 9110 [13], IETF RFC 9111 [16]) over TLS is mandatory and support of HTTP/2 as specified in clause 5 of 3GPP TS 29.500 [2] is recommended. TLS shall be used as specified in 3GPP TS 33.536 [31] and 3GPP TS 33.501 [32]. A V2X application specific server desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [5].

HTTP/2, shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [2].

An OpenAPI [6] specification of HTTP messages and content bodies for the VAE\_ApplicationRequirement is contained in Annex A.4.

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

#### 6.4.2.1 General

Support of HTTP/1.1 (IETF RFC 9112 [12], IETF RFC 9110 [13], IETF RFC 9111 [16]) over TLS is mandatory and support of HTTP/2 as specified in clause 5 of 3GPP TS 29.500 [2] is recommended. TLS shall be used as specified in 3GPP TS 33.536 [31] and 3GPP TS 33.501 [32]. A V2X application specific server desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [5].

HTTP/2, shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [2].

An OpenAPI [6] specification of HTTP messages and content bodies for the VAE\_DynamicGroup is contained in Annex A.5.

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

#### 6.5.2.1 General

Support of HTTP/1.1 (IETF RFC 9112 [12], IETF RFC 9110 [13], IETF RFC 9111 [16]) over TLS is mandatory and support of HTTP/2 as specified in clause 5 of 3GPP TS 29.500 [2] is recommended. TLS shall be used as specified in 3GPP TS 33.536 [31] and 3GPP TS 33.501 [32]. A V2X application specific server desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [5].

HTTP/2, shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [2].

An OpenAPI [6] specification of HTTP messages and content bodies for the VAE\_ServiceContinuity is contained in Annex A.6.

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

#### 6.6.2.1 General

Support of HTTP/1.1 (IETF RFC 9112 [12], IETF RFC 9110 [13], IETF RFC 9111 [16]) over TLS is mandatory and support of HTTP/2 as specified in clause 5 of 3GPP TS 29.500 [2] is recommended. TLS shall be used as specified in 3GPP TS 33.536 [31] and 3GPP TS 33.501 [32]. A V2X application specific server desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [5].

HTTP/2, shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [2].

An OpenAPI [6] specification of HTTP messages and content bodies for the VAE\_HDMapDynamicInfo is contained in Annex A.4.

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

#### 6.7.2.1 General

Support of HTTP/1.1 (IETF RFC 9112 [12], IETF RFC 9110 [13], IETF RFC 9111 [16]) over TLS (IETF RFC 5246 [18]) is mandatory and support of HTTP/2 as specified in clause 5 of 3GPP TS 29.500 [2] is recommended. A V2X application specific server desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [5].

HTTP/2, shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [2].

An OpenAPI [6] specification of HTTP messages and content bodies for the VAE\_SessionOrientedService is contained in Annex A.8.

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

#### 6.8.2.1 General

Support of HTTP/1.1 (IETF RFC 9112 [12], IETF RFC 9110 [13], IETF RFC 9111 [16]) over TLS (IETF RFC 5246 [18]) is mandatory and support of HTTP/2 as specified in clause 5 of 3GPP TS 29.500 [2] is recommended. A V2X application specific server desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [5].

HTTP/2, shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [2].

An OpenAPI [6] specification of HTTP messages and content bodies for the VAE\_V2VConfigRequirement is contained in Annex A.9.

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

#### 6.9.2.1 General

Support of HTTP/1.1 (IETF RFC 9112 [12], IETF RFC 9110 [13], IETF RFC 9111 [16]) over TLS (IETF RFC 5246 [18]) is mandatory and support of HTTP/2 as specified in clause 5 of 3GPP TS 29.500 [2] is recommended. A V2X application specific server desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [5].

HTTP/2, shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [2].

An OpenAPI [6] specification of HTTP messages and content bodies for the VAE\_PC5ProvisioningRequirement is contained in Annex A.10.

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