**3GPP TSG-CT3 Meeting #115e C3-21xxxx**

**E-Meeting, 14th – 23rd April 2021 *(revision of C3-213145)***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.486** | **CR** | 0022 | **rev** | **3** | **Current version:** | **17.0.0** |  |
|  | | | | | | | | |
| *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:*** | Support Local MBMS | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eV2XAPP | | | | |  | ***Date:*** | | | 2021-04-14 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | As defined in clause 9.18 of TS 23.286, local MBMS is supported for V2X file distribution. In this case, the Local MBMS information or local MBMS activation indication is provided by the NF service consumer to the VAE server as described in table 9.5.2-1. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add local MBMS activation indication and information support for V2X file distribution. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not aligned with stage 2 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3.2.2.2, 6.2.6.1, 6.2.6.2.2, 6.2.6.2.x(new), 6.2.8, A.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | The CR introduces a backward compatible feature to the OpenAPI file of VAE\_FileDistribution service | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | C3-213145 agreed in CT3#115e is revisded:  Add Local MBMS information to support local MBMS. | | | | | | | | |

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

##### 5.3.2.2.2 Distribute File



Figure 5.3.2.2.2-1: Distribute File

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 payload body 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".

Upon receipt of the HTTP DELETE message from the NF service consumer, the VAE Server shall check if the Individual Message Delivery 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 subclause 6.2.7.

When the message delivery duration expires, the VAE server may remove the associated Individual Message Delivery resource locally.

The VAE server makes use of the xMB procedures as defined 3GPP TS 29.116 [y] 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 \* \* \* \*

#### 6.2.6.1 General

This clause specifies the application data model supported by the API.

Table 6.2.6.1-1 specifies the data types defined for the VAE\_FileDistribution API.

Table 6.2.6.1-1: VAE\_FileDistribution specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| FileStatus | 6.2.6.3.3 |  |  |
| FileDistributionData | 6.2.6.2.2 |  |  |
| LocalMbmsInfo | 6.2.6.2.x |  | LocalMBMS |

Table 6.1.6.1-2 specifies data types re-used by the VAE\_FileDistribution service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the VAE\_FileDistribution service based interface.

Table 6.2.6.1-2: VAE\_FileDistribution re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| BitRate | 3GPP TS 29.571 [11] |  |  |
| DateTime | 3GPP TS 29.571 [11] |  |  |
| DurationSec | 3GPP TS 29.571 [11] |  |  |
| GeographicArea | 3GPP TS 29.572 [20] |  |  |
| SupportedFeatures | 3GPP TS 29.571 [11] |  |  |
| Uinteger | 3GPP TS 29.571 [11] |  |  |
| V2xGroupId | 6.1.6.3.2 |  |  |

\* \* \* Next change \* \* \* \*

##### 6.2.6.2.2 Type: FileDistributionData

Table 6.2.6.2.2-1: Definition of type FileDistributionData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| groupId | V2xGroupId | O | 0..1 | Indicates a group ID for which the V2X message is addressed. |  |
| fileLists | array(FileList) | M | 1..N | File lists. |  |
| serviceClass | string | O | 0..1 | Information about the V2X application (e.g., software update, HD map download) |  |
| geoArea | GeographicArea | M | 1 | Target geographical area for the V2X Ues |  |
| maxBitrate | BitRate | M | 1 | Maximum bitrate for the V2X application. |  |
| maxDelay | Uinteger | M | 1 | Unsigned integer identifying a maximum delay in units of milliseconds for the V2X application. |  |
| duration | DateTime | O | 0..1 | Identifies the absolute time at which the related Individual File Distribution Data resource is considered to expire. When omitted in the request, it indicates the resource is requested to be valid forever by the NF service consumer. When omitted in the response, it indicates the resource is set to valid forever by the VAE server |  |
| localMbmsInfo | LocalMbmsInfo | O | 0..1 | Contains the local MBMS inforamtion. The information only can be provided by the NF service consumer in the trust domain. | LocalMBMS |
| localMbmsActInd | boolean |  | 0..1 | When this attribute is included and set to true, it indicates that the local MBMS is activated.  The default value "FALSE" shall apply, if the attribute is not present. | LocalMBMS |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the features supported by the service consumer and VAE server. It shall be included in the request and response of the Creation of Individual File Distribution Data resource.. |  |

\* \* \* Next change \* \* \* \*

##### 6.2.6.2.x Type: LocalMbmsInfo

Table 6.2.6.2.x-1: Definition of type LocalMbmsInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbmsEnbIpv4MulAddr | Ipv4Addr | O | 0..1 | Contains the M1 (transport) plane IPv4 destination multicast address used by MBMS-GW for IP multicast encapsulation of application IP multicast datagrams. |  |
| mbmsEnbIpv6MulAddr | Ipv6Prefix | O | 0..1 | Contains the M1 (transport) plane IPv6 prefix of destination multicast address used by MBMS-GW for IP multicast encapsulation of application IP multicast datagrams. |  |
| mbmsGwIpv4SsmAddr | Ipv4Addr | O | 0..1 | Contains the value of MBMS-GW's IPv4 address for Source Specific Multicasting. |  |
| mbmsGwIpv6SsmAddr | Ipv6Addr | O | 0..1 | Contains the value of MBMS-GW's IPv6 address for Source Specific Multicasting. |  |
| cteid | string | O | 0..1 | Indicates the common tunnel endpoint identifier of MBMS GW for user plane. |  |
| bmscIpv4Addr | Ipv4Addr | O | 0..1 | Indicates the destination IPv4 address of the BM‑SC for the reception of user plane data via the MB2-U or xMB‑U interface. |  |
| bmscIpv6Addr | Ipv6Addr | O | 0..1 | Indicates the destination IPv6 address of the BM‑SC for the reception of user plane data via the MB2-U or xMB‑U interface. |  |
| bmscPort | Uinteger | O | 0..1 | Indicates the destination UDP port of the BM‑SC for the reception of user plane data via the MB2-U or xMB‑U interface. |  |

\* \* \* Next change \* \* \* \*

### 6.2.8 Feature negotiation

The optional features in table 6.1.8-1 are defined for the VAE\_FileDistribution API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [2].

Table 6.1.8-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| x | LocalMBMS | Indicate the support of local MBMS transmission. |

\* \* \* Next change \* \* \* \*

# A.3 VAE\_FileDistribution API

openapi: 3.0.0

info:

version: 1.1.0-alpha.1

title: VAE\_FileDistribution

description: |

API for VAE File Distribution Service

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externalDocs:

description: 3GPP TS 29.486 V17.0.0 V2X Application Enabler (VAE) Services

url: 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.486/'

security:

- {}

- oAuth2ClientCredentials: []

servers:

- url: '{apiRoot}/vae-file-distribution/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 4.4 of 3GPP TS 29.501

paths:

/file-distributions:

post:

summary: VAE File Distributions resource create service Operation

tags:

- file distributions collection (Document)

operationId: CreateFileDistributions

requestBody:

content:

application/json:

schema:

$ref: '#/components/schemas/FileDistributionData'

required: true

responses:

'201':

description: File Distribution Resource Created

headers:

Location:

description: 'Contains the URI of the newly created resource'

required: true

schema:

type: string

content:

application/json:

schema:

$ref: '#/components/schemas/FileDistributionData'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

description: Unexpected error

/file-distributions/{distributionId}:

get:

summary: Get an existing individual file distribution resource

operationId: ReadIndividualFileDistribution

tags:

- Individual File Distribution (Document)

parameters:

- name: distributionId

in: path

description: Identifier of a file distribution resource

required: true

schema:

type: string

responses:

'200':

description: OK. Resource representation is returned

content:

application/json:

schema:

$ref: '#/components/schemas/FileDistributionData'

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29571\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

delete:

summary: VAE File Distribution resource delete service Operation

tags:

- Individual file distribution (Document)

operationId: DeleteFileDistribution

parameters:

- name: distributionId

in: path

required: true

description: Unique ID of the file distribution to be deleted

schema:

type: string

responses:

'204':

description: The subscription was terminated successfully.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

description: Unexpected error

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

FileDistributionData:

description: Represents an individual File Distribution resource for a V2X group ID.

type: object

properties:

groupId:

$ref: 'TS29486\_VAE\_MessageDelivery.yaml#/components/schemas/V2xGroupId'

fileLists:

type: array

items:

$ref: '#/components/schemas/FileList'

minItems: 1

serviceClass:

type: string

geoArea:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GeographicArea'

maxBitrate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

maxDelay:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

localMbmsInfo:

$ref: '#/components/schemas/LocalMbmsInfo'

localMbmsActInd:

type: boolean

suppFeat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

required:

- fileLists

- geoArea

- maxBitrate

- maxDelay

FileList:

description: Represents a file list.

type: object

properties:

fileUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

fileDisplayUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

fileEarFetchTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

fileLatFetchTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

fileSize:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

fileStatus:

$ref: '#/components/schemas/FileStatus'

completionTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

keepUpdateInterval:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

uniAvailability:

type: boolean

fileRepetition:

type: integer

required:

- fileUri

- fileDisplayUri

- fileEarFetchTime

- fileLatFetchTime

- fileStatus

- completionTime

- keepUpdateInterval

LocalMbmsInfo:

description: Contains the local MBMS information.

type: object

properties:

mbmsEnbIpv4MulAddr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

mbmsEnbIpv6MulAddr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

mbmsGwIpv4SsmAddr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

mbmsGwIpv6SsmAddr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

cteid:

type: string

bmscIpv4Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

bmscIpv6Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

bmscPort:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

FileStatus:

description: Represents a file status.

anyOf:

- type: string

enum:

- PENDING

- FETCHED

- PREPARED

- TRANSMITTING

- SENT

- type: string

\* \* \* End of change \* \* \* \*