**3GPP TSG-CT WG4 Meeting #111-eC3-224060\_v3**

**E-Meeting, 18th – 26th August 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.571** | **CR** | **0366** | **rev** | **1** | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *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:*** | Defining the MBS Service Requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBS | | | | |  | ***Date:*** | | | 2022-08-10 |
|  |  | | | |  | |  | | |  |
| ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The MBS service requirements (e.g. QoS requirements) have not yet been defined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | This CR proposes to:   * Define MBS service requirement as per TS 23.247. * Apply various editorial corrections to improve the clarity of the requirements and align with the drafting rules. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | * MBS service requirements are not specified, and hence, cannot be provided by an AF. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.9.4.6, 5.9.4.15, 5.9.4.16 (new clause), 5.9.4.17 (new clause), 5.9.4.18 (new clause), 5.9.4.19 (new clause), A.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 introduces backwards compatible feature to the OpenAPI description of the CommonData API defined in this specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

#### 5.9.4.6 Type: MbsSession

Table 5.9.4.6-1: Definition of type MbsSession

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| mbsSessionId | MbsSessionId | C | 0..1 | MBS session identifier (TMGI and/or SSM, and NID for an SNPN)  (NOTE 1) |
| tmgiAllocReq | boolean | C | 0..1 | TMGI allocation request indication.  This IE shall be present if the mbsSessionId IE is absent. This IE may also be present if the mbsSessionId IE is present and it does not contain a TMGI.  When present, it shall be set as follows:  - true: a TMGI is requested to be allocated  - false (default): no TMGI is requested to be allocated  Write-Only: true  (NOTE 1) |
| tmgi | Tmgi | C | 0..1 | This IE shall be present in an MBS session creation response if the tmgiAllocReq IE was present and set to "true" in the MBS session creation request.  When present, it shall indicate the TMGI allocated to the MBS session.  Read-Only: true |
| expirationTime | DateTime | C | 0..1 | This IE shall be present in an MBS session creation response if the tmgiAllocReq IE was present and set to "true" in the in the MBS session creation request.  When present, it shall indicate the expiration time for the TMGI allocated to the MBS session.  Read-Only: true |
| serviceType | MbsServiceType | M | 1 | Service Type (either multicast or broadcast service)  Write-Only: true |
| locationDependent | boolean | C | 0..1 | Location dependent MBS session indication.  This IE shall be present and set to true for a Location dependent MBS session. It may be present otherwise.  When present, it shall be set as follows:  - true: this is a Location dependent MBS session  - false (default): this is not a Location dependent MBS session |
| areaSessionId | AreaSessionId | C | 0..1 | This IE shall be present in a successful response to a request to create a Location dependent MBS session.  When present, it shall contain the Area Session ID assigned by the MB-SMF to the location dependent MBS session in the MBS Service Area.  Read-Only: true |
| ingressTunAddrReq | boolean | O | 0..1 | Ingress transport address request indication (for unicast transport over N6mb/Nmb9).  When present, it shall be set as follows:  - true: an ingress transport address is requested  - false (default): no request  Write-Only: true |
| ingressTunAddr | array(TunnelAddress) | C | 1..N | Ingress tunnel address (UDP/IP tunnel).  This IE shall be present in an MBS session creation response if the ingressTunAddrReq IE was present and set to "true" in the in the MBS session creation request.  When present, it shall indicate the allocated ingress tunnel address(es).  Read-Only: true  (NOTE 2) |
| ssm | Ssm | C | 0..1 | Source specific IP multicast address  This IE shall be present if multicast transport applies over N6mb/Nmb9 and the MBS session is not identified by the SSM, e.g. for a location-dependent MBS session with multicast transport over N6mb/Nmb9.  Write-Only: true |
| mbsServiceArea | MbsServiceArea | O | 0..1 | MBS Service Area  Write-Only: true |
| extMbsServiceArea | ExternalMbsServiceArea | O | 0..1 | This IE may be present only over the N33 and Nmb10 interfaces; it shall not be present over other interfaces.  When present, it shall indicate the MBS Service Area information which shall either be geographical area information or civic address information.  Write-Only: true |
| dnn | Dnn | O | 0..1 | DNN  Write-Only: true |
| snssai | Snssai | O | 0..1 | S-NSSAI  Write-Only: true |
| activationTime | DateTime | O | 0..1 | MBS session activation time |
| terminationTime | DateTime | O | 0..1 | MBS session termination time |
| mbsServInfo | MbsServiceInfo | O | 0..1 | Contains the MBS Service Information for the MBS session. |
| mbsSessionSubsc | MbsSessionSubscription | O | 0..1 | Subscription to one or more MBS session events |
| activityStatus | MbsSessionActivityStatus | O | 0..1 | Session activity status (active or inactive)  This IE may be provided if the serviceType indicates a multicast MBS session. |
| anyUeInd | Boolean | O | 0..1 | Indication that any UE may join the MBS session.  This IE may be provided if the serviceType indicates a multicast MBS session.  When present, it shall be set as follows:  - true: any UE may join the MBS session  - false (default): the MBS session is not open to any UE  Write-Only: true |
| mbsFsaIdList | array(MbsFsaId) | O | 1..N | List of MBS Frequency Selection Area Identifiers, for a broadcast MBS session. |
| NOTE 1: At least one of the mbsSessionId IE and tmgiAllocReq IE shall be present. Both may be present if the mbsSessionId IE does not contain a TMGI (i.e. if it only contains a SSM).  NOTE 2: In a scenario when an MB-UPF covers a small service area (i.e. a list of TAIs that is a subset of the MBS service area), the MB-SMF needs to find another MB-UPF(s) to cover the whole MBS service area for the MBS session. In such scenarios, multiple ingress addresses of all MB-UPFs need to be allocated for an MBS session. These multiple ingress tunnel addresses are used to receive the same copy of the MBS session data from the AF/MBSTF. In such scenarios, the MBS service area served by an MB-UPF shall be larger than the MBS service area served by an AMF (set), i.e. an AMF in an AMF set shall receive only one MBS Session Information Request Transfer for an MBS session in the MBS Session Context Create/Update Request message. | | | | |

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

#### 5.9.4.15 Type: MbsServiceAreaInfo

Table 5.9.4.15-1: Definition of type MbsServiceAreaInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| areaSessionId | AreaSessionId | M | 1 | Area Session Identifier used for MBS session with location dependent content. |
| mbsServiceArea | MbsServiceArea | M | 1 | MBS Service Area for MBS session with location dependent content. |

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

#### 5.9.4.16 Type: MbsServiceInfo

Table 5.9.4.16-1: Definition of type MbsServiceInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| mbsMediaComps | map(MbsMediaCompRm) | M | 1..N | Contains the information of one or several media component(s).  The key of the map is the "medCompN" attribute of the corresponding MbsMediaComRm data structure provided as a map entry. |
| mbsSdfResPrio | ReservPriority | O | 0..1 | Indicates the reservation priority of the MBS service data flow(s) identified by the "mbsMediaComps" attribute. |
| afAppId | AfAppId | O | 0..1 | Contains the AF application identifier. |
| mbsSessionAmbr | BitRate | O | 0..1 | Contains the required MBS Session-AMBR. |

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

#### 5.9.4.17 Type: MbsMediaComp

Table 5.9.4.17-1: Definition of type MbsMediaComp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsMedCompNum | integer | M | 1 | Contains the ordinal number of the MBS media component. |  |
| mbsFlowDescs | array(FlowDescription) | O | 1..N | Contains the flow description for the MBS Downlink IP flow(s). |  |
| mbsSdfResPrio | ReservPriority | O | 0..1 | Indicates the reservation priority for the MBS service data flow(s) identified by the "mbsFlowDescs" attribute.  (NOTE 2) |  |
| mbsMediaInfo | MbsMediaInfo | O | 0..1 | Indicates the MBS media information.  (NOTE 1) |  |
| qosRef | string | O | 0..1 | Contains the identifier to pre-defined MBS QoS.  (NOTE 1) |  |
| mbsQoSReq | MbsQoSReq | O | 0..1 | Contains the MBS QoS requirements.  (NOTE 1) |  |
| NOTE 1: Only one of these attributes may be present.  NOTE 2: When present, the value of this attribute shall apply for the MBS service data flow(s) identified by this MBS Media Component within the "mbsFlowDescs" attribute. | | | | | |

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

#### 5.9.4.18 Type: MbsMediaCompRm

This data type is defined in the same way as the MediaComponent data type defined in clause 5.9.4.17, but with the OpenAPI "nullable: true" property.

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

#### 5.9.4.19 Type: MbsQoSReq

Table 5.9.4.19-1: Definition of type MbsQoSReq

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| 5qi | 5Qi | M | 1 | Represents the required 5QI. |  |
| guarBitRate | BitRateRm | O | 0..1 | Contain the required 5GS guaranteed bit rate. |  |
| maxBitRate | BitRateRm | O | 0..1 | Contain the required 5GS maximum bit rate. |  |
| averWindow | AverWindow | C | 0..1 | Indicates the averaging window.  This attribute shall be present only for a GBR QoS flow or a Delay Critical GBR QoS flow. |  |
| reqMbsArp | Arp | O | 1 | Indicates the requested allocation and retention priority. |  |

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

#### 5.9.4.20 Type: MbsMediaInfo

Table 5.9.4.20-1: Definition of type MbsMediaInfo

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| mbsMedType | MediaType | O | 0..1 | Indicates the MBS media type. |  |
| maxReqMbsBwDl | BitRate | O | 0..1 | Contains the Maximum requested bandwidth. |  |
| minReqMbsBwDl | BitRate | O | 0..1 | Contains the Minimum requested bandwidth. |  |
| codecs | array(CodecData) | O | 1..2 | Indicates the codec data. |  |

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

# A.2 Data related to Common Data Types

openapi: 3.0.0

info:

version: '1.3.0'

title: 'Common Data Types'

description: |

Common Data Types for Service Based Interfaces.

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externalDocs:

description: 3GPP TS 29.571 Common Data Types for Service Based Interfaces, version 17.6.0

url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.571/'

paths: {}

components:

schemas:

#

**(…)**

#

# Data Types related to MBS as defined in clause 5.9

#

#

# SIMPLE DATA TYPES

#

#

AreaSessionId:

$ref: '#/components/schemas/Uint16'

MbsFsaId:

description: MBS Frequency Selection Area Identifier

type: string

pattern: '^[A-Fa-f0-9]{6}$'

#

# Enumerations

#

#

MbsServiceType:

description: Indicates the type of an MBS session

anyOf:

- type: string

enum:

- MULTICAST

- BROADCAST

- type: string

MbsSessionActivityStatus:

description: Indicates the MBS session's activity status

anyOf:

- type: string

enum:

- ACTIVE

- INACTIVE

- type: string

MbsSessionEventType:

description: MBS Session Event Type

anyOf:

- type: string

enum:

- MBS\_REL\_TMGI\_EXPIRY

- BROADCAST\_DELIVERY\_STATUS

- INGRESS\_TUNNEL\_ADD\_CHANGE

- type: string

BroadcastDeliveryStatus:

description: Broadcast MBS Session's Delivery Status

anyOf:

- type: string

enum:

- ACTIVATED

- TERMINATED

- type: string

#

# STRUCTURED DATA TYPES

#

MbsSessionId:

description: MBS Session Identifier

type: object

properties:

tmgi:

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

ssm:

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

nid:

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

Tmgi:

description: Temporary Mobile Group Identity

type: object

properties:

mbsServiceId:

type: string

pattern: '^[A-Fa-f0-9]{6}$'

description: MBS Service ID

plmnId:

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

required:

- mbsServiceId

- plmnId

Ssm:

description: Source specific IP multicast address

type: object

properties:

sourceIpAddr:

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

destIpAddr:

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

required:

- sourceIpAddr

- destIpAddr

MbsServiceArea:

description: MBS Service Area

type: object

properties:

ncgiList:

type: array

items:

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

minItems: 1

description: List of NR cell Ids

taiList:

type: array

items:

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

minItems: 1

description: List of tracking area Ids

NcgiTai:

description: List of NR cell ids, with their pertaining TAIs

type: object

properties:

tai:

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

cellList:

type: array

items:

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

minItems: 1

description: List of List of NR cell ids

required:

- tai

- cellList

MbsSession:

description: Individual MBS session

type: object

properties:

mbsSessionId:

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

tmgiAllocReq:

type: boolean

default: false

writeOnly: true

tmgi:

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

readOnly: true

expirationTime:

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

readOnly: true

serviceType:

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

writeOnly: true

locationDependent:

type: boolean

default: false

areaSessionId:

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

readOnly: true

ingressTunAddrReq:

type: boolean

default: false

writeOnly: true

ingressTunAddr:

type: array

items:

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

minItems: 1

readOnly: true

ssm:

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

writeOnly: true

mbsServiceArea:

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

writeOnly: true

extMbsServiceArea:

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

writeOnly: true

dnn:

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

writeOnly: true

snssai:

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

writeOnly: true

activationTime:

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

terminationTime:

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

mbsServInfo:

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

mbsSessionSubsc:

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

activityStatus:

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

anyUeInd:

type: boolean

default: false

writeOnly: true

mbsFsaIdList:

type: array

items:

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

minItems: 1

required:

- serviceType

anyOf:

- required: [ mbsSessionId ]

- required: [ tmgiAllocReq ]

MbsSessionSubscription:

description: MBS session subscription

type: object

properties:

mbsSessionId:

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

areaSessionId:

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

eventList:

type: array

items:

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

minItems: 1

notifyUri:

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

notifyCorrelationId:

type: string

expiryTime:

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

nfcInstanceId:

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

mbsSessionSubscUri:

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

readOnly: true

required:

- eventList

- notifyUri

MbsSessionEventReportList:

description: MBS session event report list

type: object

properties:

eventReportList:

type: array

items:

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

minItems: 1

notifyCorrelationId:

type: string

required:

- eventReportList

MbsSessionEvent:

description: MBS session event

type: object

properties:

eventType:

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

required:

- eventType

MbsSessionEventReport:

description: MBS session event report

type: object

properties:

eventType:

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

timeStamp:

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

ingressTunAddrInfo:

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

broadcastDelStatus:

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

required:

- eventType

ExternalMbsServiceArea:

description: List of geographic area or list of civic address info for MBS Service Area

type: object

properties:

geographicAreaList:

type: array

items:

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

minItems: 1

civicAddressList:

type: array

items:

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

minItems: 1

oneOf:

- required: [ geographicAreaList ]

- required: [ civicAddressList ]

MbsSecurityContext:

type: object

properties:

keyList:

description: A map (list of key-value pairs) where a (unique) valid JSON string serves as key of MbsSecurityContext

type: object

additionalProperties:

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

minProperties: 1

required:

- keyList

MbsKeyInfo:

description: MBS Security Key Data Structure

type: object

properties:

keyDomainId:

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

mskId:

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

msk:

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

mskLifetime:

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

mtkId:

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

mtk:

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

required:

- keyDomainId

- mskId

IngressTunAddrInfo:

description: Ingress Tunnel Address Information

type: object

properties:

ingressTunAddr:

type: array

items:

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

minItems: 1

required:

- ingressTunAddr

MbsServiceAreaInfo:

description: MBS Service Area Information for location dependent MBS session

type: object

properties:

areaSessionId:

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

mbsServiceArea:

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

required:

- areaSessionId

- mbsServiceArea

MbsServiceInfo:

description: Represent MBS Service Information.

type: object

properties:

mbsMediaComps:

type: object

additionalProperties:

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

minProperties: 1

mbsSdfResPrio:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ReservPriority'

afAppId:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/AfAppId'

mbsSessionAmbr:

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

required:

- mbsMediaComps

MbsMediaComp:

description: Represents an MBS Media Component.

type: object

properties:

mbsMedCompNum:

type: integer

mbsFlowDescs:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowDescription'

minItems: 1

mbsSdfResPrio:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ReservPriority'

mbsMediaInfo:

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

qosReference:

type: string

mbsQoSReq:

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

required:

- mbsMedCompNum

MbsMediaCompRm:

description: >

This data type is defined in the same way as the MbsMediaComp data type, but with the

OpenAPI nullable property set to true.

anyOf:

- $ref: '#/components/schemas/MbsMediaComp'

- $ref: '#/components/schemas/NullValue'

MbsQoSReq:

description: Represent MBS QoS requirements.

type: object

properties:

5qi:

$ref: '#/components/schemas/5Qi'

guarBitRate:

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

maxBitRate:

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

averWindow:

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

reqMbsArp:

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

required:

- 5qi

MbsMediaInfo:

description: Represent MBS Media Information.

type: object

properties:

mbsMedType:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/MediaType'

maxReqMbsBwDl:

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

minReqMbsBwDl:

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

codecs:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/CodecData'

minItems: 1

maxItems: 2

#

**(…)**

#

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