**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 canbe 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 allocatedWrite-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 requestWrite-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 \* \* \* \*