**3GPP TSG- AH SWG Meeting Post # *S4-251219***

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| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** | **4** | **Current version:** |  |  |
|  |
| *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 | **x** | Radio Access Network |  | Core Network | **x** |

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|  |
| ***Title:***  | *Target Service Area* Data Type in Service Announcement  |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | NR\_NTN\_Ph3-Core |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** |  |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | SA4 defined MBS User Service Announcement re-uses the CT4 defined MbsServiceArea, which is primarily defined for the Nmbsmf API. For the usage at Nmbsmf, presence of either Cell Ids or TAIs is mandatory to be used as routing information towards gNBs. With Rel 19, a new Intended Service Area has been introduced, which is suitable for 5G Core internal signalling but not for Service Announcement.  |
|  |  |
| ***Summary of change:*** | The *MbsServiceArea* data type is deprecated in favour of a new *TargetServiceArea* data type.  |
|  |  |
| ***Consequences if not approved:*** | Inconsistent specification, since the *MbsServiceArea* data type does not match the needs when using in Service Announcement. |
|  |  |
| ***Clauses affected:*** | 2, 5.2.1, 5.2.9, A.2.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  |  |
| ***affected:*** |  | **x** |  Test specifications |  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | S4aI250102, S4-251113, S4-251067, S4-250908 |

\*\*\*\* First 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".

…

[42] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".

[43] 3GPP TS 29.572: "Location Management Services; Stage 3".

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

### 5.2.1 General

The following description in this clause presumes a JSON encoding of the information comprising the MBS User Service Announcement as specified in clause 5.1A.

The data types in table 5.2.1-1 from other 3GPP specifications are reused in the remainder of the present document.

Table 5.2.1 1: Externally defined data types used by User Service Description schema

|  |  |  |
| --- | --- | --- |
| Data type | Comments | Reference |
| Uri | A Uniform Resource Locator | TS 29.571 [30] |
| DateTime | A date–time value. |  |
| MbsServiceArea | An MBS Service Area. |  |
| MbsFsaId | An MBS Frequency Selection Area identifier. |  |
| DurationSec | A time duration expressed in seconds. |  |
| Ncgi | A NR cell identifier. |  |
| Tai | A Tracking Area Identifier. |  |
| *PointUncertaintyCircle* | An area specified as a shape of an ellipsoid point with uncertainty circle. | TS 29 572 [43] |
| *Polygon* | An area specified as a shape of a polygon. |
| AbsoluteUrl | An absolute URL | TS 29 512 [31] |

The data types in table 5.2.1-2 are defined in the present document.

Table 5.2.1 2: User Service Description schema data types defined in the present document

|  |  |
| --- | --- |
| Data type | Clause |
| User‌Service‌Descriptions | 5.2.2 |
| User‌Service‌Description | 5.2.3 |
| Distribution‌Session‌Description | 5.2.4 |
| Application‌Service‌Description | 5.2.6 |
| Service‌Schedule‌Description | 5.2.7 |
| Object‌Repair‌Parameters | 5.2.8 |
| Availability‌Information | 5.2.9 |
| TargetServiceArea | 5.2.9 |
| NrParameterSet | 5.2.9 |
| Security‌Description | 5.2.10 |

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

### 5.2.9 Availability Information data type

The AvailabilityInformation data type provides additional information pertaining to the availability of the MBS Distribution Session within the 5G Network:

- The targetServiceAreas property declares the one or more service areas in which the MBS Session corresponding to this MBS Distribution Session is currently available. Each target service area is expressed as one of the following:

- A list of NR cell identifiers.

- A list of Tracking Area Identifiers.

- An area specified as a list of polygon or circle shapes.

- In the case of a broadcast MBS Session corresponding to this MBS Distribution Session:

- The mbsFSAId property identifies a preconfigured area within which, and in proximity to, the cell(s) announce the MBS Frequency Selection Area (FSA) ID and its associated frequency.

- The nrRedCapUEInfo property indicates which classes of UE the MBS Distribution Session is suitable for consumption by.

NOTE 1: This is used to guide frequency selection by the UE for a broadcast MBS Session.

- In the case of a broadcast MBS Session corresponding to this MBS Distribution Session, the nrParametersproperty indicates the one or more radio frequencies in the NG-RAN downlink on which the MBS Session is transmitted in the service area(s) identified by the serviceArea property.

NOTE 2: The radio frequencies may be obtained by interrogating the OAM using the value of the mbsFSAId property as a lookup key.

Table 5.2.9-1 provides the detailed semantics for the AvailabilityInformation data type.

Table 5.2.9-1: Semantics of AvailabilityInformation data type

| Property name | Type | P | Cardinality | Description |
| --- | --- | --- | --- | --- |
| mbsService‌Areas | array(Mbs‌Service‌Area) | O | 1..N | This property is deprecated. The property shall be absent in this release. |
| target‌Service‌Areas | array(Target‌Service‌Area) | O | 1..N | The *Target service areas* of this MBS Distribution Session, as defined in table 4.5.8‑1 of TS 26.502 [6]. |
| mbs‌FSA‌Id | MbsFsaId | C | 0..1 | (Broadcast MBS Distribution Session only.)The *MBS Frequency Selection Area (FSA) Identifier* of the (broadcast) MBS Distribution Session in the parent service area, as defined in table 4.5.8‑1 of TS 26.502 [6]. |
| nrParameters | array(Nr‌ParameterSet) | M | 1..N | (Broadcast MBS Distribution Session only.)The New Radio transmission parameters in the parent service areas, expressed using the data type specified in table 5.2.9-2. |
| nrRedCapUEInfo | NrRedCapUeInfo | O | 0..1 | (Broadcast MBS Distribution Session only.)Indicates whether the MBS session is suitable for consumption by NR RedCap UEs and/or non-RedCap UEs as defined by *Target UE classes* in TS 26.502 [6]. The data type and its enumerated values are specified in TS 29.571 [30].If omitted, no information is known and the value NON\_REDCAP\_UE\_ONLY may be assumed. |

Table 5.2.9-1a provides the detailed semantics for the TargetServiceArea data type.

Table 5.2.9-1a: Semantics of TargetServiceArea data type

| Property name | Type | P | Cardinality | Description |
| --- | --- | --- | --- | --- |
| ncgiList | array(Ncgi) | C | 1..N | List of NR Cell Identifiers. |
| taiList | array(Tai) | C | 1,,N | List of Tracking Area Identifiers. |
| geographic‌Area‌List | array(either Polygon or PointUncertaintyCircle) | C | 1..N | List of geographic areas in form of polygons. |

Exactly one of the following properties shall be present: ncgiList, taiList, geographicAreaList.

Table 5.2.9-2 provides the detailed semantics for the NrParameterSet data type.

Table 5.2.9-2: Semantics of NrParameterSet data type

| Property name | Type | P | Cardinality | Description |
| --- | --- | --- | --- | --- |
| freqBandIndicator | Uinteger | M | 1 | NR frequency band number, corresponding to the FreqBandIndicatorNR parameter in clause 6.3.2 of TS 38.331 [42]. |
| aRFCNValue | Uinteger | M | 1 | ARFCN applicable to a downlink NR global frequency raster, corresponding to the ARFCN-ValueNR parameter specified in clause 6.3.2 of TS 38.331 [42]. |

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

## A.2.1 MBS User Service Announcement schema

Below is the schema specifying the format of User Service Descriptions instance documents using a JSON-based representation. Documents following this schema shall be identified with the MIME type application/mbs-user-service-descriptions+json as registered in clause E.2.1. The schema filename is TS26517\_MBSUserServiceAnnouncement.yaml.

|  |
| --- |
| openapi: 3.0.0info: title: 'MBS User Service Announcement' version: 2.2.0 description: | MBS User Service Announcement Element units. © 2024, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC). All rights reserved.externalDocs: description: 3GPP TS 26.517 V18.4.0; 5G Multicast-Broadcast User Services; Protocols and Formats url: http://www.3gpp.org/ftp/Specs/archive/26\_series/26.517/paths: /user-service-descriptions: get: operationId: discoverUserServiceDescriptions summary: 'Discover User Service Descriptions' description: 'Discover User Service Descriptions that match the supplied query filter(s). At least one filter query parameter must be included in the request URL.' parameters: - in: query name: service-class schema: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri' required: true description: 'Filter for User Service Descriptions tagged with the supplied service class term identifier expressed as a fully-qualified URI string from a controlled vocabulary' responses: '200': # OK description: "Success" content: multipart/related: schema: type: string '204': # No Content (no matching User Service Descriptions) description: "No Matches Found" '500': # Internal Server Error $ref: 'TS29571\_CommonData.yaml#/components/responses/500' '503': # Service Unavailable $ref: 'TS29571\_CommonData.yaml#/components/responses/503' default: $ref: 'TS29571\_CommonData.yaml#/components/responses/default' /user-service-descriptions/{externalServiceId}: get: operationId: retrieveUserServiceDescription summary: 'Retrieve User Service Description' description: 'Retrieve the User Service Description of a single service by supplying its external service identifier.' parameters: - name: externalServiceId in: path required: true schema: type: string description: 'The external service identifier of a User Service provisioned in the MBSF.' responses: '200': # OK description: "Success" content: multipart/related: schema: type: string '404': # Not Found $ref: 'TS29571\_CommonData.yaml#/components/responses/404' '500': # Internal Server Error $ref: 'TS29571\_CommonData.yaml#/components/responses/500' '503': # Service Unavailable $ref: 'TS29571\_CommonData.yaml#/components/responses/503' default: $ref: 'TS29571\_CommonData.yaml#/components/responses/default'components: schemas: UserServiceDescriptions: description: 'A document announcing one or more MBS User Services.' type: object properties: version: type: integer minimum: 1 userServiceDescriptions: type: array items: $ref: '#/components/schemas/UserServiceDescription' minItems: 1 required: - userServiceDescriptions UserServiceDescription: description: 'A description of a single MBS User Service.' type: object properties: serviceIds: type: array items: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri' minItems: 1 class: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri' names: type: array items: type: object properties: name: type: string lang: type: string pattern: '^[a-zA-Z]{3}$' example: 'eng' required: - name - lang minItems: 1 descriptions: type: array items: type: object properties: description: type: string lang: type: string pattern: '^[a-zA-Z]{3}$' example: 'eng' required: - description - lang minItems: 1 serviceLanguage: type: string pattern: '^[a-zA-Z]{3}$' example: 'eng' distributionSessionDescriptions: type: array items: $ref: '#/components/schemas/DistributionSessionDescription' minItems: 1 serviceScheduleDescriptions: type: array items: $ref: '#/components/schemas/ServiceScheduleDescription' minItems: 1 required: - serviceIds - class - distributionSessionDescriptions DistributionSessionDescription: type: object properties: distributionMethod: $ref: '#/components/schemas/DistributionMethod' conformanceProfiles: type: array items: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri' minItems: 1 sessionDescriptionLocator: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri' applicationServiceDescriptions: type: array items: $ref: '#/components/schemas/ApplicationServiceDescription' minItems: 1 postSessionObjectRepairParameters: $ref: '#/components/schemas/ObjectRepairParameters' availabilityInfos: type: array items: $ref: '#/components/schemas/AvailabilityInformation' minItems: 1 securityDescription: $ref: '#/components/schemas/SecurityDescription' required: - distributionMethod - sessionDescriptionLocator DistributionMethod: anyOf: - type: string enum: - OBJECT - PACKET - type: string description: > This string provides forward-compatibility with future extensions to the enumeration but is not used to encode content defined in the present version of this API. ApplicationServiceDescription: type: object properties:  entryPointLocator: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri' contentType: type: string pattern: '^[a-zA-Z]+\/[a-zA-Z]+$' example: 'application/dash+xml' required: - entryPointLocator - contentType AvailabilityInformation: type: object properties: mbsServiceAreas: deprecated: true type: array items: $ref: 'TS29571\_CommonData.yaml#/components/schemas/MbsServiceArea' minItems: 1 targetServiceAreas: type: array items: $ref: '#/components/schemas/TargetServiceArea' minItems: 1 mbsFSAId: $ref: 'TS29571\_CommonData.yaml#/components/schemas/MbsFsaId' nrParameters: type: array items: $ref: '#/components/schemas/NrParameterSet' minItems: 1 nrRedCapUEInfo: $ref: 'TS29571\_CommonData.yaml#/components/schemas/NrRedCapUeInfo' TargetServiceArea: description: Target Service Area type: object oneOf: - required: [ncgiList] - required: [taiList] - required: [geographicAreaList] properties: ncgiList: type: array items: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Ncgi' minItems: 1 description: List of NR Cell Identifiers taiList: type: array items: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Tai' minItems: 1 description: List of Tracking Area Identifiers geographicAreaList: type: array items: anyOf: - $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/Polygon' - $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/PointUncertaintyCircle' minItems: 1 NrParameterSet: type: object properties: freqBandIndicator: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger' aRFCNValue: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger' required: - freqBandIndicator - aRFCNValue ObjectRepairParameters: type: object properties: backOffParameters: $ref: '#/components/schemas/BackOffParameters' objectDistributionBaseLocator: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri' objectRepairBaseLocator: $ref: 'TS26510\_CommonData.yaml#/components/schemas/AbsoluteUrl' BackOffParameters: type: object properties: offsetTime: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec' randomTimePeriod: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec' anyOf: - required: [offsetTime] - required: [randomTimePeriod] ServiceScheduleDescription: type: object properties: id: type: string version: type: integer minimum: 1 start: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime' stop: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime' repetitionRule: $ref: '#/components/schemas/RepetitionRule' required: - id - version oneOf: - required: [start, stop] - required: [repetitionRule] RepetitionRule: type: object properties: startTime: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime' duration: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec' repetitionInterval: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec' required: - startTime - duration - repetitionInterval SecurityDescription: type: object properties: mBSSFAddresses: type: array items: $ref: 'TS26510\_CommonData.yaml#/components/schemas/AbsoluteUrl' minItems: 1 mBSServiceKeyInfo: type: object properties: mBSId: type: string mBSDomainId: type: string required: - mBSId - mBSDomainId uICCKeyManagement: type: boolean 2GGBAallowed: type: boolean backOffParameters: $ref: '#/components/schemas/BackOffParameters' required: - mBSSFAddresses - mBSSessionKeyInfo |