**3GPP TSG SA WG5 Meeting #138e S5-214461**

**Online, , 23 Aug 2021- 31 Aug 2021**

**Source: Samsung, Huawei**

**Title: pCR 28.538 Edge NRM**

**Document for: Approval**

**Agenda Item: 6.4.21**

# 1 Decision/action requested

***The group is asked to discuss and approve the proposals.***

# 2 References

None

# 3 Rationale

The NRM fragment for edge need to be defined as depicted in 28.814. This is the introduction of edge NRM fragment

# 4 Detailed proposal

|  |
| --- |
| **First modification** |

Y. Edge NRM

Y.1 Information Model definitions for Edge NRM

## Y.1 Imported information entities and local labels

|  |  |
| --- | --- |
| Label reference | Local label |
| TS 28.622 [30], IOC, Top | Top |
| TS 28.622 [30], IOC, SubNetwork | SubNetwork |
| TS 28.622 [30], IOC, ManagedFunction | ManagedFunction |
|  |  |

## Y.2 Class diagram

### Y.2.1 Relationships



### Figure Y.2.1-2 Edge NRM containment/naming relationship

### Y.2.2 Inheritance



### Figure Y.2.2-1 Edge Inheritance Relationship

## Y.3 Class definition

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Y.3.1 EASFunction

Y.3.1.1 Definition

This IOC represent the properties of a EAS in a 3GPP network. For more information about EAS, see 3GPP TS 23.558.

Y.3.1.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| eASRequirements | M | T | T | F | T |
|  |  |  |  |  |  |
| eASProfile | M | T | T | F | T |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

#### Y.3.1.3 Attribute constraints

#### Y.3.1.4 Notifications

The common notifications defined in subclause Y.3 are valid for this IOC, without exceptions or additions.

Y.3.2 EASRequirements <<datatype>>

Y.3.2.1 Definition

This datatype represent the deployment requirements of an EAS which need to be considered during EASFunction instantiation.

Y.3.2.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| requiredEASservingLocation | M | T | F | F | T |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

#### Y.3.2.3 Attribute constraints

#### Y.3.2.4 Notifications

The common notifications defined in subclause Y.3 are valid for this IOC, without exceptions or additions.

Y.3.3 ServingLocation <<datatype>>

Y.3.3.1 Definition

This datatype represent the location which is to be served by the node.

Y.3.3.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| geographicalLocation | CM | T | F | F | T |
| topologicalLocation | CM | T | F | F | T |
|  |  |  |  |  |  |

#### Y.3.3.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| geographicalLocation Support Qualifier | Condition: either geographicalLocation or topologicalLocation shall be present. |
| topologicalLocation Support Qualifier | Condition: either geographicalLocation or topologicalLocation shall be present. |

#### Y.3.3.4 Notifications

The common notifications defined in subclause Y.3 are valid for this IOC, without exceptions or additions.

Y.3.4 EASProfile <<datatype>>

Y.3.1.1 Definition

This IOC represent the EAS profile, see 3GPP TS 23.558.

Y.3.1.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| eASservingLocation | M | T | T | F | T |
| eASProvider | O | T | T | F | T |
| eASType | O | T | T | F | T |
| eASDescription | O | T | T | F | T |
|  |  |  |  |  |  |

#### Y.3.1.3 Attribute constraints

#### Y.3.1.4 Notifications

The common notifications defined in subclause Y.3 are valid for this IOC, without exceptions or additions.

Y.3.5 GeoLoc <<datatype>>

Y.3.5.1 Definition

This datatype represent the geographical location.

Y.3.5.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| geoPoint | CM | T | T | F | T |
| civicAddress | CM | T | T | F | T |

#### Y.3.5.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| geoPoint Support Qualifier | Condition: either geoPoint or civicAddress shall be present. |
| civicAddress Support Qualifier | Condition: either geoPoint or civicAddress shall be present. |

#### Y.3.5.4 Notifications

The common notifications defined in subclause Y.3 are valid for this IOC, without exceptions or additions.

Y.3.6 GeoP <<datatype>>

Y.3.6.1 Definition

This datatype represent the geographical location.

Y.3.6.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| lat | M | T | T | F | T |
| long | M | T | T | F | T |

#### Y.3.6.3 Attribute constraints

#### Y.3.6.4 Notifications

The common notifications defined in subclause Y.3 are valid for this IOC, without exceptions or additions.

Y.3.7 TopoLoc <<datatype>>

Y.3.7.1 Definition

This datatype represent the topological location.

Y.3.7.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| cellID | O | T | T | F | T |
| tAI | O | T | T | F | T |
| pLMNID | O | T | T | F | T |

#### Y.3.7.3 Attribute constraints

#### Y.3.7.4 Notifications

The common notifications defined in subclause Y.3 are valid for this IOC, without exceptions or additions.

## Y.2 Attribute definition

Y.2.1 Attribute Properties

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
|  |  |  |
| eASREquirements | It defines the deployment requirement of an EAS. | type: EASRequirementsmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eASservingLocation | It defines the serving location for an EAS. | type: ServingLocationmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eASProvider | It defines the EAS Provider Identifier, see 3GPP TS 23.558. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eASType | It defines the EAS Type, see 3GPP TS 23.558. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eASDescription | It defines the EAS description, see 3GPP TS 23.558. | type: Stingmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| requiredEASservingLocation | It defines the location where the EAS service should be available. | type: ServingLocationmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
|  |  |  |
| topologicalLocation | This refers to the Topological Service Area, see 3GPP TS 23.558. | type: TopoLocmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| geographicalLocation | This refers to the Geographical Service Area, see 3GPP TS 23.558. | type: GeoLocmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eASProfile | This refers to the EAS profile, see 3GPP TS 23.558 | type: EASProfilemultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| geoPoint | This defines the location in terms of latitude and longitude. | type: geoPmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| lat | This defines the single latitude coordinate. | type: Floatmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| long | This defines the single longtitude coordinate. | type: Floatmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| civicAddress | This defines the location in terms of a civic address | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| cellID | The list of cell IDs defining the topological service area | type: Stringmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| tAI | The list of Tracking Area IDs defining the topological service area | type: Stringmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| pLMNID | The list of PLMN IDs defining the topological service area | type: Stringmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
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| **End of first modification** |

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| **End of second modification** |

# B.1 General

This annex contains the OpenAPI definition of the Edge NRM in YAML format.

The Information Service (IS) of the Edge NRM is defined in clause 6.

Mapping rules to produce the OpenAPI definition based on the IS are defined in TS 32.160 [10].

# B.2 Solution Set (SS) definitions

## B.2.1 OpenAPI document "edgeNrm.yml"

openapi: 3.0.1

info:

 title: 3GPP Edge NRM

 version: 17.1.0

 description: >-

 OAS 3.0.1 specification of the Edge NRM

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externalDocs:

 description: 3GPP TS 28.538; Edge NRM

 url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.538/

paths: {}

components:

 schemas:

#-------- Definition of types-----------------------------------------------------

 EASRequirements:

 type: object

 properties:

 requiredEASservingLocation:

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

 ServingLocation:

 type: object

 properties:

 geographicalLocation:

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

 topologicalLocation:

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

 GeoLoc:

 type: object

 properties:

 geoPoint:

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

 civicAddress:

 Type: String

 GeoP:

 type: object

 properties:

 lat:

 type: float

 long:

 type: float

 TopoLoc:

 type: object

 properties:

 cellID:

 Type: string

 tAI:

 Type: string

 pLMNID:

 Type: string

 EASProfile:

 type: object

 properties:

 eASservingLocation:

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

 eASProvider:

 Type: string

 eASType:

 Type: string

 eASDescription:

 Type: string

#-------- Definition of concrete IOCs --------------------------------------------

 SubNetwork-Single:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 attributes:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/SubNetwork-Attr'

 - $ref: 'genericNrm.yaml#/components/schemas/SubNetwork-ncO'

 - type: object

 properties:

 DNFunction:

 $ref: '5GCNrm.yaml#/components/schemas/DNFunction'

 DNFunction-Single:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 attributes:

 type: object

 properties:

 EASFunction:

 $ref: 'comDefs.yaml#/components/schemas/OperationalState'

 EESFunction:

 $ref: 'comDefs.yaml#/components/schemas/AdministrativeState'

 EASFunction-Single:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction'

 - type: object

 properties:

 attributes:

 allOf:

 - type: object

 properties:

 eASRequirements:

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

 eASProfile:

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

#-------- Definition of JSON arrays for name-contained IOCs ----------------------

 DNFunction -Multiple:

 type: array

 items:

 $ref: '#/components/schemas/DNFunction-Single'

 EASFunction-Single:

 type: array

 items:

 $ref: '#/components/schemas/EASFunction-Single'

|  |
| --- |
| **End of second modification** |