**3GPP TSG- Meeting #**

**e-meeting, 9 - 17 May 2022**

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** |  | **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 |  | Radio Access Network | **X** | Core Network | **X** |

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| --- |
|  |
| ***Title:***  | Rel-18 DraftCR 28.538 for eECM |
|  |  |
| ***Source to WG:*** | Samsung |
| ***Source to TSG:*** | SA5 |
|  |  |
| ***Work item code:*** | eECM |  | ***Date:*** | 4 |
|  |  |  |  |  |
| ***Category:*** |  |  | ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | DraftCR for eECM |
|  |  |
| ***Summary of change:*** | This draftCR includes inputs from the following contributions1. S5-222607 R18 TS 28.538 add modification procedures.docx
2. S5-222608 R18 TS 28.538 add query procedures.docx
3. S5-223564 Rel-18 InputTodraftCR 28.538 EASFunction IOC
 |
|  |  |
| ***Consequences if not approved:*** | The WI eECM cannot progress. |
|  |  |
| ***Clauses affected:*** | 7.1.2.x (new), 7.1.3.x (new), 7.1.4.x (new) |
|  |  |
|  | **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's revision history:*** |  |

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

## 6.3 Class definition

### 6.3.1 EASFunction

6.3.1.1 Definition

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

6.3.1.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| eASIdentifier | M | T | T | F | T |
| eASAddress | M | T | T | F | T |
| eESAddress | M | T | T | F | T |
| registrationInfo | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| eASRequirementsRef | M | T | T | F | T |
| eESfunctionRef | M | T | T | F | T |
|  |  |  |  |  |  |

#### 6.3.1.3 Attribute constraints

#### 6.3.1.4 Notifications

TBD.

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| **Next modification** |

### 6.3.X RegistrationInfo <<dataType>>

#### 6.3.X.1 Definition

This datatype represents the EAS registration infomration.

#### 6.3.X.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| registrationExpiry | M | T | F | F | T |
| registrationID | M | T | F | F | T |
| secCredential | M | T | T | F | T |
|  |  |  |  |  |  |

#### 6.3.X.3 Attribute constraints

None

#### 6.3.X.4 Notifications

The subclause 5.5, in 3GPP TS 28.541[3], of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

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| **Next modification** |

### 6.3.13 EESFunction

#### 6.3.13.1 Definition

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

#### 6.3.13.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| eESIdentifier | M | T | T | F | T |
| eESServingLocation | M | T | T | F | T |
| eESAddress | M | T | T | F | T |
| softwareImageInfo | M | T | T | F | T |
| serviceContinuitySupport | M | T | T | F | T |
| registrationInfo | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| eASFunctonRef | M | T | T | F | T |

Editors notes: The list of attributes is not complete.

#### 6.3.13.3 Attribute constraints

None.

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| **Next modification** |

## 6.4 Attribute definition

### 6.4.1 Attribute Properties

Editor's Note: The definition of attributes are not complete, and are subject to changes.

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| eASIdentifier | It refers to EASID that identifies a particular application (e.g. SA6Video, SA6Game, … etc.) (see clause 7.2.4 in TS 23.558 [2]). | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| easAddress | One or more URLs and/or IP Address(es) of EAS(s) (See TS 23.558 [2]). allowedValues: N/A | type: Stringmultiplicity: 1..\*isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| eASREquirementsRef | This is the DN of EASRequirements. allowedValues: Not applicable | type: DNmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eESFunctionRef | This is the DN of EESFunction. allowedValues: DN of the EESFunction MOI. | type: DNmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| registrationInfo | This refers to the registration information (e.g. registrationExpiry, registrationID and secCredential) (see clause see clause 8.4.3 and 8.4.4 in TS 23.558[2]). It is defined as a datatype (see clause 6.3.X).allowedValues: N/A | type: registrationInfomultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| registrationExpiry | This specifies the expiration time of the EAS and EES Registration (see clause 8.4.3 and 8.4.4 in TS 23.558[2]) | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| registrationID | This identifies particular EAS and EES registration. (see clause 8.4.3 and 8.4.4 in TS 23.558[2]) | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| secCredential | This specifies the security credentials of the EAS and EES Registration (see clause 8.4.3 and 8.4.4 in TS 23.558[2]) | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| EESFunction.edgeDataNetworkRef | This specifies the EDN EES is deployed in. This holds a list of DN of EdgeDataNetwork. | type: DNmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| ECSFunction.edgeDataNetworkRef | This specifies the EDN ECS is deployed in. This holds a list of DN of EdgeDataNetwork. | type: DNmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| requiredEASservingLocation | It defines the location where the EAS service should be available (see clause 7.3.3.6 in TS 23.558 [2]). | type: ServingLocationmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| geographicalLocation | This refers to the Geographical Service Area, (see clause 7.3.3.3 in TS 23.558 [2] that is defined as a datatype (see clause 6.3.4).allowedValues: N/A | type: GeoLocmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| latitude | This defines the single latitude coordinate. | type: Floatmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| longitude | This defines the single longitude coordinate. | type: Floatmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| civicLocation | This defines the civic locations, such as: a well-known buildings, parks, arenas, civic addresses, or ZIP code etc (see clause 7.3.3.3 in TS 23.558 [2]). | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| topologicalLocation | This refers to the Topological Service Area, (see clause 7.3.3.2 in TS 23.558 [2]) that is defined as a datatype (see clause 6.3.7). allowedValues: N/A | type: TopologicalServiceAreamultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| geographicalCoordinates | This refers to the Topological Service Area, (see clause 7.3.3.2 in TS 23.558 [2]) that is defined as a datatype (see clause 6.3.8). allowedValues: N/A | type: GeographicalCoordinatesmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| softwareImageInfo | This refers to the software image information (e.g. software image location, minimum RAM, disk requirements) (see clause 7.1.6.5 in ETSI NFV IFA-011 [7]). It is defined as a datatype (see clause 6.3.9).allowedValues: N/A | type: SoftwareImageInfomultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| swImageRef | It indicates the reference to the actual software image that is represented by URL (see clause 7.1.6.5 in ETSI NFV IFA-011 [7]). | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| minimumDisk | It indicates the minimum disk size requirement for the EAS software (see clause 7.1.6.5 in ETSI NFV IFA-011 [7]).The unit is Megabyte. | type: Integermultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| minimumRAM | It indicates the minimum RAM size requirement for the EAS software (see clause 7.1.6.5 in ETSI NFV IFA-011 [7]).The unit is Megabyte. | type: Integermultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| cellIDList | It represents the list of NR cells. The cell ID, together with the gNB Identifier (using gNBId of the parent GNBCUCPFunction or GNBDUFunction or ExternalCUCPFunction), identifies a NR cell within a PLMN. This is the NR Cell Identity (NCI). See subclause 8.2 of TS 38.300 [13]. AllowedValues: Not applicable | type: Integermultiplicity: \*isOrdered: N/AisUnique: YesdefaultValue: NoneisNullable: True |
| trackingAreaIdList | It represents the list of tracking areas within a PLMN.  | type: TAImultiplicity: 1..\*isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| servingPLMN | It specifies the PLMN to be served. | type: PLMNIdmultiplicity: 1isOrdered: FisUnique: N/AdefaultValue: NoneisNullable: True |
| ecsAddress | One or more URLs and/or IP Address(es) of ECS(s) (See TS 23.558 [2]). allowedValues: N/A | type: Stringmultiplicity: 1..\*isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| providerIdentifier | The identifier of the ECSP that provides the ECS (See TS 23.558 [2]).allowedValues: N/A | type: stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| eDNConnectionInfo | It defines the set of information needed to connect to an EDN. | type: EDNConnectionInfomultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eDNServiceArea | This parameter defines the service location for the EDN (see clause 7.3.3.4 in TS 23.558 [2]). | type: ServingLocationmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| ednIdentifier | The identifier of the edge data network (See TS 23.558 [2]).allowedValues: N/A | type: stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| affinityAntiAffinity | This parameter defines the affinity and anti-requirements of the EAS with other EAS on the same EDN. | type: AffinityAntiAffinitymultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| affinityEAS | This parameter defines the EAS identifier with which the affinity is required. | type: Stringmultiplicity: 1...\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| antiAffinityEAS | This parameter defines the EAS identifier with which the anti-affinity is required. | type: Stringmultiplicity: 1...\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| serviceContinuity | This parameter defines if the service continuity is required by the EAS. If the value is TRUE, the EAS will be deployed with an EES supporting service continuity. | type: Booleanmultiplicity: 1...\*isOrdered: N/AisUnique: TruedefaultValue: FalseisNullable: False |
| virtualResource | This parameter defines the virtual resource requirements of an EAS. | type: VirtualResourcemultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| virtualMemory | It indicates the minimum virtual memory size requirements for EAS in megabytes. (see clause 7.1.9.3.2.2 in ETSI NFV IFA-011 [7]). | type: Integermultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| virtualDisk | It indicates the minimum virtual disk storage requirement for the EAS (see clause 7.1.9.4.3.2 in ETSI NFV IFA-011 [7]). | type: Integermultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eESAddress | One or more URLs and/or IP Address(es) of EES(s) (See TS 23.558 [2]). allowedValues: N/A | type: Stringmultiplicity: 1..\*isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| eESIdentifier | It identifies the EES, see 3GPP TS 23.558. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eASFunctionRef | This is the DN of EASFunction. allowedValues: DN of the EASFunction MOI. | type: DNmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| serviceContinuitySupport | This parameter defines whether the EES supports service continuity, see 3GPP TS 23.558 | type: Boolenmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eESservingLocation | It defines the serving location for an EES. | type: ServingLocationmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| eESAddress | One or more URLs and/or IP Address(es) of EES(s) (See TS 23.558 [2]). allowedValues: N/A | type: Stringmultiplicity: 1..\*isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |

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| **Next modification** |

# 7 Procedural Flows

## 7.1 Lifecycle management

### 7.1.1 Description

The clause contains procedures associated with lifecycle management.

### 7.1.2 EAS lifecycle management

7.1.2.X EAS VNF modification

Figure 7.1.2.x -1 depicts a procedure that describes how an ASP can consume provisioning MnS to modify the EAS. It is assumed that both ASP and ECSP consumers have subscribed to the producer of provisioning MnS to receive notifications.



Figure 7.1.2.X-1: EAS modification procedure

1. ASP consumes the provisioning MnS with modifyMOIAttributes operation (see clause 11.1.1.3. in TS 28.532 [5]) for EASFunction MOI to request ECSP management system provisioning MnS producer to modify the EAS VNF instance.

2. ECSP management system provisioning MnS producer sends a response to the consumer indicating that the modification operation is in progress.

3. If EAS instance to be modification contains virtualized part, checks whether corresponding VNF instance needs to be modified to satisfy the modification related requirements.

4. If corresponding VNF instance needs to be modified, ECSP provisioning MnS producer invokes theUpdateNsRequest operation (see clause 7.3.5 in ETSI GS NFV-IFA 013 [6]) to request NFVO via the Os-Ma-nfvo interface to modify the virtualized resource of the EAS VNF instance.

5. NFVO sends the NS Lifecycle Change notification to ECSP provisioning MnS producer indicating the result of modification procedure (see clause 7.3.12 of ETSI GS NFV-IFA 013 [6]).

6. ECSP provisioning MnS producer modifies the MOI for EASFunction IOC.

7. ECSP management system provisioning MnS producer response the consumer about the modification of the EAS.

### 7.1.3 ECS lifecycle management

7.1.3.X ECS modification

Figure 7.1.3.X-1 shows that the PLMN operator or ECSP as the consumer requests the ECS modification via the provisioning MnS.



Figure 7.1.3.X-1: ECS modification procedure

1. PLMN operator or ECSP consumes the provisioning MnS with modifyMOIAttributes operation (see clause 11.1.1.3. in TS 28.532 [5]) for ECSFunction MOI to request ECSP management system provisioning MnS producer to modify the ECS VNF instance.

2. ECSP management system provisioning MnS producer sends a response to the consumer indicating that the modification operation is in progress.

3. If ECS instance to be modification contains virtualized part, checks whether corresponding VNF instance needs to be modified to satisfy the modification related requirements.

4. If corresponding VNF instance needs to be modified, ECSP management system provisioning MnS producer invokes the updateNsRequest operation (see clause 7.3.5 in ETSI GS NFV-IFA 013 [6]) to request NFVO via the Os-Ma-nfvo interface to modify the virtualized resource of ECS VNF instance.

5. NFVO sends the NS Lifecycle Change notification to ECSP provisioning MnS producer indicating the result of modification procedure (see clause 7.3.12 of ETSI GS NFV-IFA 013 [6]).

6. ECSP management system provisioning MnS producer modifies the MOI for ECSFunction IOC.

7. ECSP management system provisioning MnS producer response to consumer about the modification of the ECS instance.

### 7.1.4 EES lifecycle management

7.1.4.X EES modification

Figure 7.1.4.X-1 shows that the PLMN operator or ECSP as the consumer requests the EES modification via the provisioning MnS.



Figure 7.1.4.X-1: EES modification procedure

1. PLMN operator or ECSP consumes the provisioning MnS with modifyMOIAttributes operation (see clause 11.1.1.3. in TS 28.532 [5]) for EESFunction MOI to request ECSP management system provisioning MnS producer to modify the EES VNF instance.

2. ECSP management system provisioning MnS producer sends a response to the consumer indicating that the modification operation is in progress.

3. If EES instance to be modification contains virtualized part, checks whether corresponding VNF instance needs to be modified to satisfy the modification related requirements.

4. If corresponding VNF instance needs to be modified, ECSP management system provisioning MnS producer invokes the updateNsRequest operation (see clause 7.3.5 in ETSI GS NFV-IFA 013 [6]) to request NFVO via the Os-Ma-nfvo interface to modify the virtualized resource of EES VNF instance.

5. NFVO sends the NS Lifecycle Change notification to ECSP provisioning MnS producer indicating the result of modification procedure (see clause 7.3.12 of ETSI GS NFV-IFA 013 [6]).

6. ECSP management system provisioning MnS producer modifies the MOI for EESFunction IOC.

7. ECSP management system provisioning MnS producer response to consumer about the modification of the EES instance.

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| **Next modification** |

7 Procedural Flows

7.1 Lifecycle management

7.1.1 Description

The clause contains procedures associated with lifecycle management.

7.1.2 EAS lifecycle management

7.1.2. Y EAS VNF query

Figure 7.1.2.Y-1 depicts a procedure that describes how an ASP can consume provisioning MnS query the EAS. It is assumed that both ASP and ECSP consumers have subscribed to the producer of provisioning MnS to receive notifications.



Figure 7.1.2.Y-1: EAS query procedure

1. ECSP provisioning MnS Producer receives a query request (this will use getMOIAttributes operation defined in 3GPP TS 28.532[5]) with objectInstance of the existing EASFunction MOI, scope, and list of attributes of EASFunction IOC. The list of attributes identifies the attributes to be returned by this operation.

2. Based on the request, ECSP provisioning MnS producer queries the concrete EASFunction MOI

3. MnS Producer sends a response to the MnS consumer with objectClass, objectInstance, status (e.g. succeed or failed), and list of [Attribute, Value] related to EAS instance as defined in clause 6.4 (e.g. eASAddress).

7.1.3 ECS lifecycle management

7.1.3.Y ECS query

Figure 7.1.3.Y-1 shows that the PLMN operator or ECSP as the consumer requests the ECS query via the provisioning MnS.



Figure 7.1.3.Y-1: ECS query procedure

1. ECSP provisioning MnS Producer receives a query request (this will use getMOIAttributes operation defined in 3GPP TS 28.532[5]) with objectInstance of the existing ECSFunction MOI, scope, and list of attributes of ECSFunction IOC. The list of attributes identifies the attributes to be returned by this operation.

2. Based on the request, ECSP provisioning MnS producer queries the concrete ECSFunction MOI

3. MnS Producer sends a response to the MnS consumer with objectClass, objectInstance, status (e.g. succeed or failed), and list of [Attribute, Value] related to ECS instance which is defined in clause 6.4(e.g. providerIdentifier).

### 7.1.4 ECS lifecycle management

7.1.4.Y EES query

Figure 7.1.4.Y-1 shows that the PLMN operator or ECSP as the consumer requests the EES query via the provisioning MnS.



Figure 7.1.4.Y-1: EES query procedure

1. ECSP provisioning MnS Producer receives a query request (this will use getMOIAttributes operation defined in 3GPP TS 28.532[5]) with objectInstance of the existing EESFunction MOI, scope, and list of attributes of EESFunction IOC. The list of attributes identifies the attributes to be returned by this operation.

2. Based on the request, ECSP provisioning MnS producer queries the concrete EESFunction MOI

3. MnS Producer sends a response to the MnS consumer with objectClass, objectInstance, status (e.g. succeed or failed), and list of [Attribute, Value] related to EES instance which is defined in clause 6.4(e.g. eESservingLocation).

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| **Next modification** |

openapi: 3.0.1

info:

  title: 3GPP Edge NRM

  version: 17.0.0

  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-----------------------------------------------------

    ServingLocation:

      type: object

      properties:

        geographicalLocation:

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

        topologicalLocation:

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

    TopologicalServiceArea:

      type: object

      properties:

        cellIdList:

          type: integer

        trackingAreaIdList:

          $ref: 'nrNrm.yaml#/components/schemas/Tai'

        servingPLMN:

          $ref: 'nrNrm.yaml#/components/schemas/PlmnId'

    GeoLoc:

      type: object

      properties:

        geographicalCoordinates:

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

        civicLocation:

          type: string

    GeographicalCoordinates:

      type: object

      properties:

        lattitude:

          type: integer

        longitude:

          type: integer

    EDNConnectionInfo:

      type: object

      properties:

        dNN:

          type: string

        eDNServiceArea:

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

    AffinityAntiAffinity:

      type: object

      properties:

        affinityEAS:

          type: string

        antiAffinityEAS:

          type: string

    VirtualResource:

      type: object

      properties:

        virtualMemory:

          type: integer

        virtualDisk:

          type: integer

    SoftwareImageInfo:

      type: object

      properties:

        minimumDisk:

          type: integer

        minimumRAM:

          type: integer

        swImageRef:

          type: string

    RegistrationInfo:

      type: object

      properties:

        registrationExpiry:

          type: string

        registrationID:

          type: string

        secCredential:

          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'

        - type: object

          properties:

            Subnetwork:

              $ref: '#/components/schemas/SubNetwork-Multiple'

            ECSFunction:

              $ref: '#/components/schemas/ECSFunction-Multiple'

            EdgeDataNetwork:

              $ref: '#/components/schemas/EdgeDataNetwork-Multiple'

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

    EdgeDataNetwork-Single:

      allOf:

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

        - type: object

          properties:

            ednIdentifier:

              type: string

            eDNConnectionInfo:

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

        - type: object

          properties:

            EASFunction:

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

            EESFunction:

              $ref: '#/components/schemas/EESFunction-Multiple'

    EASFunction-Single:

      allOf:

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

        - type: object

          properties:

            attributes:

              allOf:

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

                - type: object

                  properties:

                    eASIdentifier:

                      type: string

                    eESAddress:

                      type: string

                    eASRequirementsRef:

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

                    eESFunctionRef:

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

                    eASAddress:

                      type: string

                    registrationInfo:

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

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

    EESFunction-Single:

      allOf:

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

        - type: object

          properties:

            attributes:

              allOf:

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

                - type: object

                  properties:

                    eESIdentifier:

                      type: string

                    eESServingLocation:

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

                    eESAddress:

                      type: string

                    softwareImageInfo:

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

                    serviceContinuitySupport:

                      type: boolean

                    eASFunctonRef:

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

                    registrationInfo:

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

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

    ECSFunction-Single:

      allOf:

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

        - type: object

          properties:

            attributes:

              allOf:

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

                - type: object

                  properties:

                    eCSAddress:

                      type: string

                    providerIdentifier:

                      type: string

                    edgeDataNetworkRef:

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

                    eESFuncitonRef:

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

                    softwareImageInfo:

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

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

    EASRequirements-Single:

      allOf:

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

        - type: object

          properties:

            requiredEASservingLocation:

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

            affinityAntiAffinity:

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

            serviceContinuity:

              type: boolean

            virtualResource:

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

            softwareImageInfo:

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

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

    SubNetwork-Multiple:

      type: array

      items:

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

    EASFunction-Multiple:

      type: array

      items:

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

    ECSFunction-Multiple:

      type: array

      items:

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

    EESFunction-Multiple:

      type: array

      items:

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

    EdgeDataNetwork-Multiple:

      type: array

      items:

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

#--------------------------------- Definition ------------------------------------

    resources-edgeNrm:

      oneOf:

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

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

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

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

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

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

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| --- |
| **Next modification** |

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| **Next modification** |