**3GPP TSG-SA5 Meeting #156 *S5-244220***

**Maastricht, Netherlands, 19th Aug 2024 - 23rd Aug 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **28.538** | **CR** | **0084** | **rev** | **-** | **Current version:** | **19.0.0** |  |
|  |
| *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)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Rel-19 CR 28.538 EAS Bundle Stage 2 and Stage 3 |
|  |  |
| ***Source to WG:*** | Samsung R&D Institute UK |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | AdNRM\_Ph3 |  | ***Date:*** | 2024-08-09 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-19 |
|  | *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:*** | EAS Bundle functionality is defined by SA6 in 23.228 |
|  |  |
| ***Summary of change:*** | Provind content to support EAS bundle management |
|  |  |
| ***Consequences if not approved:*** | Incomplete SA5 specification |
|  |  |
| ***Clauses affected:*** | 6.2.1, 6.2.2, 6.3.1, 6.3.x, 6.3.y, 6.4 |
|  |  |
|  | **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:*** | https://forge.3gpp.org/rep/sa5/MnS/-/tree/Rel\_19\_CR\_28\_538\_EAS\_Bundle\_Stage\_2\_and\_Stage\_3 |
|  |  |
| ***This CR's revision history:*** |  |

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| **First Modified Section** |

## 6.2 Class diagram

### 6.2.1 Relationships



Figure 6.2.1-1: Edge NRM relationship diagram

Figure 6.2.1-2: Void

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| **Next Modified Section** |

### 6.2.2 Inheritance



Figure 6.2.2-1: Edge Inheritance Relationship



Figure 6.2.2-2: EASProfile Inheritance

Figure6.2.2-3 EASBundle Inheritance

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| **Next Modified Section** |

### 6.3.1 EASFunction

#### 6.3.1.1 Definition

This IOC represents the properties of a EAS in a 3GPP network. For more information about EAS, see 3GPP TS 23.558 [2] and 3GPP TS 23.548 [16].

#### 6.3.1.2 Attributes

The EASFunction IOC includes attributes inherited from ManagedFunction IOC (defined in TS 28.622 [4]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| eASIdentifier | M | T | T | F | T |
| eASAddress | O | T | T | F | T |
| eESAddress | O | T | T | F | T |
| registrationInfo | O | T | T | F | T |
| relocationTriggerInfo | M | T | T | F | T |
| relocationRejectByASP | M | T | T | F | T |
| eASBundleInfo | CM | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| eASRequirementsRef | M | T | T | F | T |
| eASBundleRef | CM | T | T | F | T |

#### 6.3.1.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| eASBundleInfo | Condition: Only when the EAS Bundle functionality is supported. |
| eASBundleRef | Condition: Only when the EAS Bundle functionality is supported. |

#### 6.3.1.4 Notifications

The common notifications defined in clause 5.5 of TS 28.541 [3] are valid for this IOC, without exceptions or additions.

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| **Next Modified Section** |

### 6.3.13 EESFunction

#### 6.3.13.1 Definition

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

#### 6.3.13.2 Attributes

The EESFunction IOC includes attributes inherited from ManagedFunction IOC (defined in TS 28.622 [4]) and the following 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** |  |  |  |  |  |
| eASFunctionRef | M | T | T | F | T |
| eASBundleRef | CM | T | T | F | T |

#### 6.3.13.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| eASBundleRef | Condition: Only when the EAS Bundle functionality is supported. |

#### 6.3.13.4 Notifications

The common notifications defined in clause 5.5 of TS 28.541 [3] are valid for this IOC, without exceptions or additions.

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| **Next Modified Section** |

### 6.3.x EASBundle

#### 6.3.x.1 Definition

This IOC represent an EAS Bundle [2].

ASP decides to use EAS bundle functionality due to internal policies. ASP would first like to know the available EAS bundles. ASP sends getMOIAttributes request to ECMS (ECSP Management System) in order to read the available EASBundle MOI. Based on the available EAS bundle, ASP may either decide to use an existing bundle or create a new one.

The creation of new bundle starts with creating the constituents EAS. ASP send createMOI request for EASRequirements IOC. After all the EASs are instantiated, ASP sends a createMOI request for EASBundle IOC. The attribute eASFunctionRef will include DN of all the EAS instantiated as part of this bundle.

The ASP may decide to use an existing bundle. It send modifyMOIAttributes for EASBundle IOC in order to update the existing bundle. This update may include updating any of the attribute of EASBundle IOC.

#### 6.3.x.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| bundleIdentifier | M | T | F | F | T |
| bundledEASIdentifier | O | T | T | F | T |
| bundleType | M | T | T | F | T |
| mainEASIdentifier | O | T | T | F | T |
| coordinatedEASDiscovery | O | T | T | F | T |
| coordinatedACR | O | T | T | F | T |
| eDNAffinity | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| eASFunctionRef | O | T | F | F | T |
| eESFunctionRef | O | T | F | F | T |
| eASRequirementsRef | O | T | T | F | T |

#### 6.3.x.3 Attribute constraints

None.

#### 6.3.x.4 Notifications

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

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| **Next Modified Section** |

### 6.3.y EASBundleInfo <<dataType>>

#### 6.3.y.1 Definition

This datatype represent the consumer opinion on whether the EAS can be part of a bundle. ASP decides to use EAS bundle functionality due to internal policies. Post EAS deployment, ASP decideds whether the EAS should be part of any or some of the bundle. ASP may decide that a particular EAS shall never be part of any of the bundle or it can be part of some of the available bundle only. According it send modifyMOIAttribute request for EASFunction MOI to update the value of the attribute present in this <<datatype>>.

#### 6.3.y.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| isBundlingAllowed | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| allowedBundleref | O | T | T | F | T |
|  |  |  |  |  |  |

#### 6.3.y.3 Attribute constraints

None.

#### 6.3.y.4 Notifications

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

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| **Next Modified Section** |

## 6.4 Attribute definitions

### 6.4.1 Attribute Properties

| 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: N/AdefaultValue: 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: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| eASREquirementsRef | This is the DN of EASRequirements. allowedValues: Not applicable | type: DNmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eESFunctionRef | This is the DN of EESFunction. allowedValues: DN of the EESFunction MOI. | type: DNmultiplicity: 1..\*isOrdered: FalseisUnique: 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 6.3.14).allowedValues: N/A | type: RregistrationInfomultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: 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: N/AdefaultValue: 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: N/AdefaultValue: 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: N/AdefaultValue: NoneisNullable: False |
| edgeDataNetworkRef | This holds a list of DN of EdgeDataNetwork. | type: DNmultiplicity: 1..\*isOrdered: FalseisUnique: 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: N/AdefaultValue: 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: N/AdefaultValue: NoneisNullable: False |
| latitude | This defines the single latitude coordinate. | type: Floatmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| longitude | This defines the single longitude coordinate. | type: Floatmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: 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: N/AdefaultValue: 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: N/AdefaultValue: 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: N/AdefaultValue: 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: N/AdefaultValue: 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: N/AdefaultValue: 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: N/AdefaultValue: 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: N/AdefaultValue: NoneisNullable: False |
| diskFormat | It indicates the disk format requirement for the EAS software (see clause 7.1.6.5 in ETSI NFV IFA-011 [7]). | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| operatingSystem | It indicates the operating system requirement for the EAS software (see clause 7.1.6.5 in ETSI NFV IFA-011 [7]). | type: Stringmultiplicity: 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: FalseisUnique: YesdefaultValue: NoneisNullable: False |
| trackingAreaIdList | It represents the list of tracking areas within a PLMN.  | type: TAImultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| servingPLMN | It specifies the PLMN to be served. | type: PLMNIdmultiplicity: 1isOrdered: N/AisUnique: 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: FalseisUnique: TruedefaultValue: NoneisNullable: 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: NoneisNullable: False |
| eDNConnectionInfo | It defines the set of information needed to connect to an EDN. | type: EDNConnectionInfomultiplicity: 1..\*isOrdered: FalseisUnique: 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: N/AdefaultValue: 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: NoneisNullable: 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: defaultValue: NoneisNullable: False |
| affinityEAS | This parameter defines the EAS identifier with which the affinity is required. | type: Stringmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| antiAffinityEAS | This parameter defines the EAS identifier with which the anti-affinity is required. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: 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: FalseisUnique: TruedefaultValue: FalseisNullable: False |
| virtualResource | This parameter defines the virtual resource requirements of an EAS. | type: VirtualResourcemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: 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: N/AdefaultValue: 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: N/AdefaultValue: NoneisNullable: False |
| virtualCPU | It indicates the virtual CPU requirement for the EAS (see clause 7.1.9.2.3.2 in ETSI NFV IFA-011 [7]).  | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: 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: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| eESIdentifier | It identifies the EES, see 3GPP TS 23.558. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eASFunctionRef | This is the DN of EASFunction. allowedValues: DN of the EASFunction MOI. | type: DNmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| serviceContinuitySupport | This parameter defines whether the EES supports service continuity, see 3GPP TS 23.558 | type: Boolenmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eESservingLocation | It defines the serving location for an EES. | type: ServingLocationmultiplicity: 1..\*isOrdered: FalseisUnique: 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: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| eESFunctionRef | This is the DN of EESFunction. allowedValues: DN of the EESFunction MOI. | type: DNmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| aCID | Identifies the AC(s) that can be served by the EAS (See TS 23.558 [2]).allowedValues: N/A | type: Stringmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| eASProvider | The identifier of the ASP that provides the EAS (See TS 23.558 [2]).allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eASdescription | Human-readable description of the EAS (See TS 23.558 [2]).allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eASSchedule | The availability schedule of the EAS (e.g. time windows) (See TS 23.558 [2]).allowedValues: N/A | type: Durationmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| startTime | It defines the start time of the duration for which the EAS is available.allowedValues: N/A | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| endTime | It defines the send time of the duration for which the EAS is available.allowedValues: N/A | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eASGeographicalServiceArea | The geographical service area that the EAS serves. ACs in UEs that are located outside that area shall not be served (See TS 23.558 [2]).allowedValues: N/A | type: GeoLocmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| eASTopologicalServiceArea | The EAS serves UEs that are connected to the Core Network from one of the cells included in this service area. ACs in UEs that are located outside this area shall not be served. (See TS 23.558 [2]).allowedValues: N/A | type: TopologicalServiceAreamultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| eASServicePermissionLevel | Level of service permissions e.g. trial, gold-class supported by the EAS (See TS 23.558 [2]).Allowed Values: TRIAL, SILVER, GOLD | type: StringENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eASFeature | Service features e.g. single vs. multi-player gaming service supported by the EAS (See TS 23.558 [2]).Allowed Value: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eASServiceContinuitySupport | Indicates if the EAS supports service continuity or not. This IE also indicates which ACR scenarios are supported by the EAS (See TS 23.558 [2]).Default value: FALSEallowedValues: FALSE, TRUE | type: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| eASDNAI | DNAI(s) associated with the EAS. This IE is used as Potential Locations of Applications. It is a subset of the DNAI(s) associated with the EDN where the EAS resides.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eASAvailabilityReportingPeriod | The availability reporting period (i.e. heartbeat period) that indicates to the EES how often it needs to check the EAS's availability after a successful registration (See TS 23.558 [2]).allowedValues: N/A | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eASStatus | The status of the EAS (e.g. enabled, disabled, etc.) (See TS 23.558 [2]). Allowed values: ENABLED, DISABLED | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reservationLocation | This parameter defines the location where the resource needs to be reserved | type: ServingLocationmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| resourceReservationRequirement | This parameter defines the resource requirements that needs to be reserved.  | type: ResourceReservationRequirementmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| computeRequirement | This parameter defines the compute requirement for reservation (see VirtualComputeDesc in clause 7.1.9.2.2 in ETSI NFV IFA-011 [7]). | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| storageRequirement | This parameter defines the storaget requirement for reservation (see VirtualStorageDesc in clause 7.1.9.2.2 in ETSI NFV IFA-011 [7]). | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| networtkingRequirement | This parameter defines the networking requirement for reservation. It is described as the connection bandwidth in Kbit/s reserved for EAS to use. | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| requestedReservationExpiration | This parameter defines the MnS consumer's requirememts for the validity period of the resource reservation. allowedValues: N/A | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| resourceReservationStatus | This parameter defines the status for the reserved resources.  | type: ResourceReservationStatusmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| resourceId | It identifies a reserved resource.  | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reservationStatus | This parameter defines the status for a reserved resource. This attribute is configured by MnS producer and can be read by MnS consumer.Allowed Value: RESERVED: which means the specified resources is reserved and available to be used by the ASP.USED: which means the reserved resource is used by ASP. | type: Enummultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| relocationTriggerInfo | This attributes dictates the relocation trigger for the EAS. It is a complex type which include the following attributes.allowedValues: N/A | type: RelocationTriggerInfomultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: LOCKEDisNullable: False |
| relocationType | This attribute defines if the EAS is to be relocated immediately or at a future point of time.AllowedValue: “IMMEDIATE”, “FUTURE”, “NO-RELOCATION” | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: Not isNullable: False |
| futuristicTriggerTime | This attribute defines a time stamp in future at which the EAS relocation will be initiated.allowedValues: N/A | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| relocationRejectByASP | A Boolean attribute which can be updated by the ASP to indicate its disagreement with the relocation. The value TRUE indicate that the ASP do not agree with the relocation. Allowed Values: NA | type: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FALSEisNullable: False |
| relocationPolicy | This attribute described the EAS relocation policies from the ASP.YES: This dictates that an EAS can be relocated as and when requiredNO: This dictates an EAS cannot be relocated at allYESwNOTIFY: This indicates that an EAS can be relocated with a prior notification allowedValues: "YES", "NO", “YESwNOTIFY”Editors Note: The notification mechanism in FFS. | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| availableEdgeVirtualResources | This parameter defines the available edge virtual resources managed by an EDN (see NfviCapacityInfo in clause 10.5.2.3 of ETS NFV SOL-005 [17]). | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| vnfdId | It indicates the identifier of the VNFD which contains the virtual resource requirements of an EAS. (see clause 7.1 in ETSI NFV IFA-011 [7]).  | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| participatingOPiD | This identifies the PO.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| leadingOPiD | This identifies the LO.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| federationID | This identifies the particular federation created.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| FederationExpiry | This defines the time post which the federation relationship shall expire.allowedValues: N/A | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| initiationTime | Date and time of the federation initiated by the Leading operator.allowedValues: N/A | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| acceptedEDNList | It provides the list of EDN that are accepted by the LO.allowedValues: N/A | type: DNmultiplicity: 1…\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| resourceQuota | This defines the virtual resource quota assigned to the LO by the PO as per the federation relationship. This may be the subset of available virtual resource (indicate with attribute availableVirtualResource) in the EDN. The LO will only be authorized to reserve and use this amount of resources.allowedValues: N/A | type: VirtualResourcemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| availableEASResource | This defines the available EAS in the shared EDN. This will be the DN of EASProfile.allowedValues: N/A | type: DNmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| avaibleEDNList | This defines information related with offered EDN available with PO.allowedValues: N/A | type: AvailableEDNListmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| federationID | This defines the federation ID provided by the PO to LO at the time of federation establishment.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reservationID | This identifies the reserved block of resources. This will be the DN of EASResourceReservationJob.allowedValues: N/A | type: DNmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| federateECSIdentifier | This defines the ECS that is to be shared as part of edge federation. This will be a DN of the ECS deployed in the participating operator domain for edge services. | type: DNmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| federatedPOPIdentifier | The identifier of the participating operator | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| federatedECSProfile | The information related with ECS Profile. See clause 8.2.12 of [2]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| servedEASList | This defines the list of EAS(s) available with the partner ECS. This specifies the will a DN of EASFunction instance. | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| servedEESList | This defines the list of EES(s) available with the partner ECS. This specifies the will a DN of EESFunction instance. | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| sharedECSInfo | This defines the ECS(s) belonging to P-OP that can be used in case of roaming and federation | type: FederatedECSInfomultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| federatedECSInfo | This defines the information related with shared ECS | type: FederatedECSInfomultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| availableEDN | This defines the available EDN. | type: DNmultiplicity: 1isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| eASDeploymentMonitor | Provides monitoring for the process of deployment of EAS(s). The data type of this attribute is the "ProcessMonitor" as defined in TS 28.622[4].allowedValues: N/A | type: ProcessMonitormultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| bundleIdentifier | Identifier of the bundle. See clause 8.2.2 [2] | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| bundledEASIdentifier | List of EAS identifier associated with the EAS bundle. See clause 8.2.2 [2]. | type: Stringmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| bundleType | Type of the EAS bundle. See clause 8.2.2 [2].Allowed Values: DIRECT, PROXY | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mainEASIdentifier | Indicate which EAS in a bundle takes the main EAS service role. See clause 8.2.2 [2]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| coordinatedEASDiscovery | Indicates if coordinated EAS discovery is required i.e., if EAS discovery request for one of the bundled EAS is processed, then EAS discovery response should include information of all the EASs belonging to the bundle. See clause 8.2.10 [2]. | type: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| coordinatedACR | Indicates if coordinated ACR is required i.e., if EAS ACR is initiated for one of the bundled EAS, then ACR should be initiated for all the EASs belonging to the bundle.The IE may further indicate what actions must be taken if ACR for one or more bundled EAS fails e.g. ACR for all other EAS that are part of the bundle must be cancelled or not. See clause 8.2.10 [2]. | type: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eDNAffinity | Indicates the affinity requirement of the EAS bundle. The IE can be set to "strong" indicating that the EASs must be in the same EDN, "preferred" indicating that it is nice to have EASs in the same EDN but not essential or "weak" indicating that it’s not essential for EASs to be in the same EDN. See clause 8.2.10 [2].Allowed Values: “STRONG”, “WEAK”, “PREFERRED” | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| EASBundle.eASFunctionRef | This indicates the constituent EAS of the EAS bundle. | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| EASBundle.EESFunctionRef | This indicate the related EES with the EAS bundle | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| EASBundle. eASRequirementsRef | This indicate the requirements for each constituent EAS in the bundle. | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| EASFunction. eASBundleRef | This indicates the EAS bundles in which the EAS is included. See clause 8.2.2 [2]. | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| EESFunction. eASBundleRef | This indicates the related EAS bundles with the EES. See clause 8.2.2 [2].  | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| eASBundleInfo | This defines the bundle relation information for the EAS | type: EASBundleInfomultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue:TrueisNullable: False |
| isBundlingAllowed | This defines whether the EAS should be put in a bundle. The FALSE value indicate that this EAS shall not be part of any bundle. | type: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue:TrueisNullable: False |
| allowedBundelref | This defines the EAS bundles where this EAS can be placed.  | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |

|  |
| --- |
| **Next Modified Section** |

### E.1.x Figure 6.2.2-3: EASBundle Inheritance

@startuml

skinparam backgroundColor white

skinparam classBackgroundColor white

skinparam classBorderColor black

skinparam Shadowing false

skinparam noteBackgroundColor white

skinparam noteBorderColor white

skinparam arrowColor black

skinparam ClassStereotypeFontStyle normal

hide circle

hide members

class Top  <<InformationObjectClass>>

class EASBundle <<InformationObjectClass>>

Top <|-- EASBundle

@enduml

|  |
| --- |
| **Next Modified Section** |

### E.1.1 Figure 6.2.1-1: Edge NRM relationship diagram

@startuml

skinparam backgroundColor white

skinparam classBackgroundColor white

skinparam classBorderColor black

skinparam Shadowing false

skinparam noteBackgroundColor white

skinparam noteBorderColor white

skinparam arrowColor black

skinparam ClassStereotypeFontStyle normal

hide circle

hide members

class SubNetwork <<InformationObjectClass>>

class ECSFunction <<InformationObjectClass>>

class EdgeDataNetwork <<InformationObjectClass>>

class EASRequirements <<InformationObjectClass>>

class EASFunction <<InformationObjectClass>>

class EESFunction <<InformationObjectClass>>

class EASProfile <<InformationObjectClass>>

class EASBundle <<InformationObjectClass>>

SubNetwork “1” \*-- "\*" EdgeDataNetwork: <<names>>

SubNetwork “1” \*-- "\*" ECSFunction: <<names>>

EdgeDataNetwork “1” \*-- "\*" EESFunction: <<names>>

EdgeDataNetwork “1” \*-- "\*" EASFunction: <<names>>

EASFunction “1” \*-- "1" EASProfile: <<names>>

ECSFunction "\*" --> "\*" EdgeDataNetwork

ECSFunction "1" --> "\*" EESFunction

EESFunction "1" --> "\*" EASFunction

EASFunction "\*" --> "1" EASRequirements

SubNetwork “1” \*-- "\*" EASBundle: <<names>>

EASBundle "\*" -- "\*" EASFunction

EASBundle "\*" -- "1" EESFunction

EASBundle "1" --> "\*" EASRequirements

@enduml

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| **Next Modified Section** |

Forge MR link: <https://forge.3gpp.org/rep/sa5/MnS/-/merge_requests/1228> at commit 39dc12f5f9bc9175b46e9579ba7132b1d0023675

\*\*\* START OF CHANGE 1 \*\*\*

\*\*\* OpenAPI/TS28538\_EdgeNrm.yaml \*\*\*

<CODE BEGINS>

openapi: 3.0.1

info:

 title: 3GPP Edge NRM

 version: 18.7.0

 description: >-

 OAS 3.0.1 specification of the Edge NRM

 © 2024, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

 All rights reserved.

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: array

 items:

 type: integer

 trackingAreaIdList:

 $ref: 'TS28541\_NrNrm.yaml#/components/schemas/TaiList'

 servingPLMN:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/PlmnId'

 GeoLoc:

 type: object

 properties:

 geographicalCoordinates:

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

 civicLocation:

 type: string

 GeographicalCoordinates:

 type: object

 properties:

 latitude:

 type: integer

 longitude:

 type: integer

 EDNConnectionInfo:

 type: object

 properties:

 dNN:

 type: string

 eDNServiceArea:

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

 AffinityAntiAffinity:

 type: object

 properties:

 affinityEAS:

 type: array

 items:

 type: string

 antiAffinityEAS:

 type: array

 items:

 type: string

 VirtualResource:

 type: object

 properties:

 virtualMemory:

 type: integer

 virtualDisk:

 type: integer

 virtualCPU:

 type: string

 vnfdId:

 type: string

 SoftwareImageInfo:

 type: object

 properties:

 minimumDisk:

 type: integer

 minimumRAM:

 type: integer

 discFormat:

 type: string

 operatingSystem:

 type: string

 swImageRef:

 type: string

 Duration:

 type: object

 properties:

 startTime:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

 endTime:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

 EASServicePermission:

 type: string

 description: any of enumerated value

 enum:

 - TRIAL

 - SILVER

 - GOLD

 EASFeature:

 type: string

 EASStatus:

 type: string

 description: any of enumerated value

 enum:

 - ENABLED

 - DISABLED

 ResourceReservationRequirement:

 type: object

 properties:

 computeRequirement:

 type: string

 storageRequirement:

 type: string

 networkingRequirement:

 type: integer

 ResourceReservationStatus:

 type: object

 properties:

 resourceId:

 type: string

 reservationStatus:

 type: string

 description: any of enumrated value

 enum:

 - RESERVED

 - USEd

 RelocationTriggerInfo:

 type: object

 properties:

 triggerType:

 type: string

 description: any of enumrated value

 enum:

 - IMMEDIATE

 - FUTURE

 futuristicTriggerTime:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

 AvailableEDNList:

 type: object

 properties:

 resourceQuota:

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

 FederatedECSInfo:

 type: object

 properties:

 federateECSIdentifier:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

 federatedECSProfile:

 type: integer

 servedEASList:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

 servedEESList:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

#-------- Definition of types for name-containments ------

 SubNetwork-ncO-EdgeNrm:

 type: object

 properties:

 ECSFunction:

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

 EdgeDataNetwork:

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

 EASBundle:

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

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

 EdgeDataNetwork-Single:

 allOf:

 - $ref: 'TS28623\_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'

 availableEdgeVirtualResources:

 type: string

 EASFunction-Single:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 attributes:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/ManagedFunction-Attr'

 - type: object

 properties:

 eASIdentifier:

 type: string

 eESAddress:

 type: array

 items:

 type: string

 eASRequirementsRef:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

 eASAddress:

 type: array

 items:

 type: string

 relocationTriggerInfo:

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

 relocationRejectByASP:

 type: boolean

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/ManagedFunction-ncO'

 EASProfile-Single:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 aCID:

 type: string

 eASProvider:

 type: string

 eASdescription:

 type: string

 eASSchedule:

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

 eASGeographicalServiceArea:

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

 eASTopologicalServiceArea:

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

 eASServicePermissionLevel:

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

 eASFeature:

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

 eASServiceContinuitySupport:

 type: boolean

 eASDNAI:

 type: string

 eASAvailabilityReportingPeriod:

 type: integer

 eASStatus:

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

 EESFunction-Single:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 attributes:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/ManagedFunction-Attr'

 - type: object

 properties:

 eESIdentifier:

 type: string

 eESServingLocation:

 type: array

 items:

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

 eESAddress:

 type: array

 items:

 type: string

 softwareImageInfo:

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

 serviceContinuitySupport:

 type: boolean

 eASFunctionRef:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/ManagedFunction-ncO'

 ECSFunction-Single:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 attributes:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/ManagedFunction-Attr'

 - type: object

 properties:

 eCSAddress:

 type: string

 providerIdentifier:

 type: string

 edgeDataNetworkRef:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

 eESFuncitonRef:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

 softwareImageInfo:

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

 sharedECSInfo:

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

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/ManagedFunction-ncO'

 EASRequirements-Single:

 allOf:

 - $ref: 'TS28623\_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'

 eASSchedule:

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

 eASFeature:

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

 relocationPolicy:

 type: string

 description: any of enumrated value

 enum:

 - YES

 - NO

 - YESwNOTIFY

 federationID:

 type: string

 eASDeploymentMonitor:

 $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/ProcessMonitor'

 reservationJobRef:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

 EASResourceReservationJob-Single:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 reservationLocation:

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

 resourceReservationRequirement:

 type: array

 items:

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

 requestedReservationExpiration:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

 resourceReservationStatus:

 type: array

 items:

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

 EdgeFederation-Single:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 participatingOPiD:

 type: string

 leadingOPiD:

 type: string

 federatedECSInfo:

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

 OperatorEdgeFederation-Single:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 federationID:

 type: string

 FederationExpiry:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

 leadingOPiD:

 type: string

 avaibleEDNList:

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

 acceptedEDN:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

 OperatorEdgeDataNetwork-Single:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 availableEASResource:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

 edgeDataNetworkRef:

 $ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

 EASBundle-Single:

 allOf:

 - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 bundleIdentifier:

 type: string

 bundledEASIdentifier:

 type: string

 bundleType:

 type: string

 mainEASIdentifier:

 type: string

 coordinatedEASDiscovery:

 type: boolean

 coordinatedACR:

 type: boolean

 eDNAffinity:

 type: string

 description: any of enumrated value

 enum:

 - STRONG

 - WEAK

 - PREFERRED

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

 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'

 EASProfile-Multiple:

 type: array

 items:

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

 EdgeFederation-Multiple:

 type: array

 items:

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

 OperatorEdgeFederation-Multiple:

 type: array

 items:

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

 OperatorEdgeDataNetwork-Multiple:

 type: array

 items:

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

 EASBundle-Multiple:

 type: array

 items:

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

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

 resources-edgeNrm:

 oneOf:

 - $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'

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

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

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

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

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

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

<CODE ENDS>

\*\*\* END OF CHANGE 1 \*\*\*

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| --- |
| **End Of Modified Section** |