**3GPP TSG-SA5 Meeting #142-e *S5-222340***

**e-meeting, 4-12 April 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **28.538** | **CR** | **draftCR** | **rev** |  | **Current version:** | **17.0.0** |  |
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| *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:*** | Correct EAS lifecycle management procedure | | | | | | | | | |
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| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eECM | | | | |  | ***Date:*** | | | 2022-3-25 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | *Rel-18* |
|  | *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 can be 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)* | |
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| ***Reason for change:*** | | The current procedure for EAS LCM contains some information which is not included in ECM NRM, such as Qos. In addition, for deploy a VNF, UpdateNsRequest can also be used. | | | | | | | | |
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| ***Summary of change:*** | | Correct the EAS LCM procedure based on the ECM NRM definition and the operation supported by ETSI NFV MANO. | | | | | | | | |
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| ***Consequences if not approved:*** | | The procedure is not implementable. | | | | | | | | |
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| ***Clauses affected:*** | | 7.1.2 | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |

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| **1st Change** |

7.1.2 EAS lifecycle management

7.1.2.1 EAS deployment

Figure 7.1.2.1-1 depicts a procedure that describes how an ASP can consume provisioning MnS to instantiate the EAS. It is assumed that both ASP and ECSP consumers have subscribed to the producer of provisioning MnS to receive notifications.



**Figure 7.1.2.1-1: EAS deployment**

1. ASP consumes the provisioning MnS with *createMOI* operation (see clause 11.1.1.1. in TS 28.532 [w]) for EASRequirements IOC to request ECSP provisioning MnS producer to start the EAS VNF instantiation, where the EASRequirements IOC contains the deployment requirements, including (but not limited to) the following attributes:

- the service areas (i.e., geographical, or topological) where the UEs can access the edge computing service (see clause 7.3.3 in TS 28.558 [2]).

- Software image information and virtual resource information (e.g. software image location, minimum RAM, disk requirements) (see clause 7.1.6.5 and 7.1.9 in ETSI NFV IFA-011 [7]).

- QoS requirements (e.g. bandwidth, end-to-end latency).

- service continuity requirements (e.g. whether service continuity is required).

- Affinity/Anti-affinity: The affinity and ant-affinity requirements for the EAS with other existing EAS on the target EDN.

2. ECSP provisioning MnS producer sends a response to the ASP indicating that the instantiation operation is in progress.

3. ECSP provisioning MnS producer analyses the deployment requirements to determine which EDN and how many EAS instance(s) should be instantiated to satisfy the deployment requirements, and downloads the EAS VNF software image from the software image location. The EDN can be selected either by considering the individual requirement or by grouping the multiple requirements as single selection criteria.

4. ECSP provisioning MnS producer invokes the *InstantiateNsRequest* or UpdateNsRequest operation (see clause 7.3.3 and 7.3.5 in ETSI GS NFV-IFA 013 [6]) to request NFVO via the Os-Ma-nfvo interface to instantiate a NS instance including the EAS VNF instance.

Editor's note: which entity is responsible for creating VNFD based on the deployment requirement (e.g., softwareImageInfo and virtualResource) is FFS.

5. NFVO sends a notification to ECSP provisioning MnS producer indicating the result of instantiation procedure (see clause 7.3.3.4 and 7.3.5.4 of ETSI GS NFV-IFA 013 [6]).

6. If the VNF instantiation has been successful, ECSP provisioning MnS producer creates the MOI for EASFunction IOC.

7. If all VNF instance(s) have been successfully instantiated, then:

7.1. ECSP provisioning MnS producer creates the MOI for EASRequirements IOC.

7.2. ECSP provisioning MnS producer notifies ASP about the successful instantiation of EAS with the creation of MOIs for the EASRequirement IOC and EASFunction(s) IOC.

Otherwise:

7.3 ECSP provisioning MnS producer notifies ASP about the un-successful instantiation of the EAS.

7.1.2.2 EAS termination

Figure 7.1.2.2-1 depicts a procedure that describes how an ASP can consume provisioning MnS to terminate the EAS VNF. It is assumed that both ASP and ECSP consumers have subscribed to the producer of provisioning MnS to receive notifications.

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**Figure 7.1.2.2-1: EAS termination**

1. ASP consumes the provisioning MnS with *deleteMOI* (see clause 11.1.1.4. in TS 28.532 [5]) operation for EASFunction MOI to request ECSP provisioning MnS producer to start the EAS VNF termination.

2. ECSP provisioning MnS producer sends a response to the ASP indicating that the termination operation is in progress.

3. ECSP provisioning MnS producer invokes the *TerminateNsRequest* or UpdateNsRequest operation (see clauses 7.3.7 and 7.3.5 in ETSI GS NFV-IFA 013 [6]) to request NFVO via the Os-Ma-nfvo interface to terminate EAS VNF instance.

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

5. If the VNF termination has been successful then:

5.1. ECSP provisioning MnS producer deletes the MOI for EASFunction IOC ,if all the related EASFunction MOIs have been deleted, the EASRequirement IOC shall also be deleted.

5.2. ECSP provisioning MnS producer notifies ASP about the successful termination of the EAS.

Otherwise :

5.3. ECSP provisioning MnS producer notifies ASP about the un-successful termination of the EAS.

7.1.3 ECS lifecycle management

7.1.3.1 ECS deployment

Figure 7.1.3.1-1 shows that the PLMN operator or ECSP as the consumer requests the ECS instantiation via the provisioning MnS.

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**Figure 7.1.3.1-1: ECS deployment procedure**

1. Provisioning MnS Producer receives a request (this will use createMOI operation defined in 3GPP TS 28.532 [5]) with ECS related requirements. The following are the list of requirements, which can be provided with the request as part of attributeListIn parameter of createMOI operation.

a. ecsAddress: the URLs and/or IP Address(es) of ECS.

b. providerIdentifier: Identifying the ECSP that provides the ECS.

2. Provisioning MnS Producer returns a response indicating that the instantiation operation is in progress.

3. The NF instance creation procedure as described in clause 7.10 of [5] is reused to instantiate the ECS VNF instance with the requirements captured in the ECSFunction IOC.

4. In case of ECS VNF instantiation failure, a Notification to indicate the creation of ECSFunction instance has failed.

5. In case of ECS VNF instantiation success, the producer creates the MOI (Managed Object Instance) for ECSFunction IOC. The MOI shall contain attributes as defined in ECSFunction IOC. The Provisioning MnS Producer sends a Notification to indicate the ECSFunction instance has been created.

7.1.3.2 ECS termination

Figure 7.1.3.2-1 shows that the PLMN operator or ECSP as the consumer requests the ECS termination via the provisioning MnS.

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**Figure 7.1.3.2-1: ECS termination procedure**

1. PLMN operator or ECSP consumes the provisioning MnS with deleteMOI operation (see clause 11.1.1.4. in TS 28.532 [5]) for ECSFunction MOI to request ECSP management system provisioning MnS producer to terminate the ECS VNF instance.

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

3. ECSP management system provisioning MnS producer invokes the TerminateNsRequest or UpdateNsRequest operation (see clause 7.3.7 and 7.3.5 in ETSI GS NFV-IFA 013 [6]) to request NFVO via the Os-Ma-nfvo interface to terminate ECS VNF instance.

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

5. If the VNF termination has been successful then:

5.1. ECSP management system provisioning MnS producer deletes the MOI for ECSFunction IOC.

5.2. ECSP management system provisioning MnS producer notifies the consumer about the successful termination of the ECS.

Otherwise :

5.3. ECSP management system provisioning MnS producer notifies the consumer about the un-successful termination of the ECS.

7.1.4 EES lifecycle management

7.1.4.1 EES deployment

Figure 7.1.4.1-1 shows that the PLMN operator or ECSP as the consumer requests the EES instantiation via the provisioning MnS.

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**Figure 7.1.4.1-1: EES deployment procedure**

1. Provisioning MnS Producer receives a request (this will use createMOI operation defined in 3GPP TS 28.532 [5]) with EES related requirements. The following are the list of requirements, which can be provided with the request as part of attributeListIn parameter of createMOI operation.

a. EDN identifier: Identifying the EDN to contain the EES in.

b. EAS identifier: Identifying the list of EAS registered with the EES. This is optional depending on the availability of the EAS.

2. Provisioning MnS Producer returns a response indicating that the instantiation operation is in progress

3. The NF instance creation procedure as described in clause 7.10 of [5] is reused to instantiate the EES VNF instance with the requirements provided in the instantiation request.

4. In case of EES VNF instantiation failure, a Notification to indicate the creation of EESFunction instance has failed.

5. In case of EES VNF instantiation success, the producer creates the MOI (Managed Object Instance) for EESFunction IOC. The MOI shall contain attributes as defined in EESFunction IOC. The Provisioning MnS Producer sends a Notification to indicate the EESFunction instance has been created.

7.1.4.2 EES termination

Figure 7.1.4.2-1 shows that the PLMN operator or ECSP as the consumer requests the EES termination via the provisioning MnS.

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**Figure 7.1.4.2-1: EES termination procedure**

1. PLMN operator or ECSP consumes the provisioning MnS with deleteMOI operation (see clause 11.1.1.4. in TS 28.532 [5]) for EESFunction MOI to request ECSP management system provisioning MnS producer to terminate the EES VNF instance.

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

3. ECSP management system provisioning MnS producer invokes the TerminateNsRequest or UpdateNsRequest operation (see clauses 7.3.7 and 7.3.5 in ETSI GS NFV-IFA 013 [6]) to request NFVO via the Os-Ma-nfvo interface to terminate EES VNF instance.

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

5. If the VNF termination has been successful then:

5.1. ECSP management system provisioning MnS producer deletes the MOI for EESFunction IOC.

5.2. ECSP management system provisioning MnS producer notifies the consumer about the successful termination of the EES.

Otherwise :

5.3. ECSP management system provisioning MnS producer notifies the consumer about the un-successful termination of the EES.