**3GPP TSG-SA5 Meeting #142-e *S5-222246***

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

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **28.531** | **CR** | **draftCR** | **rev** | **3** | **Current version:** | **17.2.0** |  |
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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 | **X** | Core Network | **X** |

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| ***Title:***  | Rel-17 CR TS 28.531 Update procedure of reservation and checking feasibility of network slice subnet |
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| ***Source to WG:*** | Huawei,China Unicom, Deutsche Telekom,China Mobile |
| ***Source to TSG:*** | S5 |
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| ***Work item code:*** | eNETSLICE\_PRO |  | ***Date:*** | 2022-01-04 |
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| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *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)* |
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| ***Reason for change:*** | The procedure of reservation and checking feasibility of network slice subnet defined in TS 28.531 are not aligned with Network Slice Subnet feasibility check use case is described in clause 5.1.21 in TS 28.531. Also it is not clear for how to implement the network slice subnet feasibility check procedure. |
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| ***Summary of change:*** | Update the procedure of reservation and checking feasibility of network slice subnet. |
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| ***Consequences if not approved:*** |  |
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| ***Clauses affected:*** | 7.2, 7.14,7.6 |
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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 ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** | 1. S5-215088 is the revision of S5-214202
2. S5-216206 is the revision of S5-215088
3. S5-221151 is the revision of S5-216206
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| **1st Change** |

## 7.2 Procedure of Network Slice Instance Allocation

The Figure 7.2-1 illustrates the procedure of creating a new NSI or using an existing NSI to satisfy the required network slice related requirements.



Figure 7.2-1: Network Slice Instance Allocation Request procedure

1) Network Slice Management Service Provider (NSMS\_Provider) receives an AllocateNsi request (see AllocateNsi operation defined in clause 6.5.1) from Network Slice Management Service Consumer (NSMS\_Consumer) with network slice related requirements (the network slice related requirements are defined as the attributes in the ServiceProfile see clause 6.3.3 in TS 28.541 [6]).

2) Based on the network slice related requiremen and the knowledge of the capabilities of existing deployed network slices, the NSMS\_Provider compare/match the provided requirements against all the candidate NetworkSlice instances, and then decides whether to use an existing NSI or create a new NSI. If the network slice related requirements allow the requested NSI to be shared and if an existing suitable NSI can be reused, the NSMS\_Provider may decide to use the existing NSI.

3a) If using an existing NSI and the existing NSI needs to be modified to satisfy the network slice related requirements, the NSMS\_Provider invokes the procedure to modify the existing NSI as described in clause 7.6.

3b-1) If creating a new NSI, the NSMS\_Provider derives the network slice subnet related requirements from the received network slice related requirements. Before NSMS\_Provider derives the network slice subnet related requirements, NSMS\_Provider may invoke corresponding network slice subnet capability information querying procedure as described in clause 7.8.

3b-2) The NSMS\_Provider invokes the NSSI allocation procedure as described in clause 7.3. Before NSMS\_Provider invokes the NSSI allocation procedure, NSMS\_Provider may invoke corresponding network slice subnet feasibility check procedure as described in clause 7.14.

3b-3) The NSMS\_Provider creates the MOI for NSI and configures the MOI with the DN of MOI for the NSSI, other configuration information may be configured for the created MOI.

Note: The detailed configuration information is described in network slice NRM (see NetworkSlice IOC defined in clause 6.3.1 in TS 28.541 [6]).

4) The NSMS\_Provider sends NSI allocation result (see AllocateNsi operation defined in clause 6.5.1) to the NSMS\_Consumer. If an existing NSI is modified or a new NSI is created successfully to satisfy the network slice related requirements, the result includes the relevant network slice instance information (see NetworkSlice IOC defined in clause 6.3.1 in TS 28.541 [6]):

- DN of the MOI for NSI.

Otherwise the result may include the reason of failure, for example, the required latency or user number cannot be satisfied, or the physical resource is not enough.

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| **3rd Change** |

## 7.6 Procedure of Network Slice Instance Modification

The Figure 7.6-1 illustrates the procedure of modifying an existing NSI.



Figure 7.6-1: Network Slice Instance Modification Request procedure

1) Network Slice Management Service Provider (NSMS\_P) receives a ModifyNsi request (see modifyMOIAttributes operation defined in TS 28.532 [8]) from Network Slice Management Service Consumer (NSMS\_C) with the management identifier of NSI and the new network slice related requirements (see ServiceProfile defined in clause 6.3.3 in TS 28.541[6]).

2) Based on the new network slice related requirements, NSMS\_P invokes the feasibility check procedure. If the modification requirements can be satisfied, go to step 3), else go to step 5).

3) NSMS\_P decomposes the NSI modification request into NSSI modification request(s), i.e., generating the new network slice subnet related requirements for each NSSI if needed.

4) NSMS\_P, as the role of Network Slice Subnet Management Service Consumer (NSSMS\_C), invokes the NSSI modification procedure. Before NSMS\_P invokes the NSSI modification procedure, NSMS\_Provider may invoke corresponding network slice subnet feasibility check procedure as described in clause 7.14.

5) NSMS\_P sends NSI modification result (see modifyMOIAttributes operation defined in TS 28.532 [8]) to NSMS\_C.

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| **3rd Change** |

## 7.14 Procedure of reservation and checking feasibility of network slice subnet



Figure 7.14-2 Network slice subnet feasibility check and resource reservation procedure

1) Network Slice Subnet Management Service Provider (NSSMS\_Provider) receives a feasibility check job creation request (see createMOI operation defined in TS 28.532 [8]) from Network Slice Subnet Management Service Consumer (NSSMS\_Consumer) with feasibility check requirements (see FeasibilityCheckJob IOC defined in TS 28.541[6]). The request is to check whether the network slice subnet related requirements (i.e. SliceProfile) can be satisfied.

2) NSSMS\_Provider creates the FeasibilityCheckJob instance and configures the attribute "SliceProfile". NSSMS\_Provider starts the executing the feasibility check process. NSSMS\_Provider may request other MnS producer to check the feasibility for the network slice subnet constituent with same network slice subnet feasibility check procedure.

3) NSSMS\_Provider sends the feasibility check job creation response (see createMOI operation defined in TS 28.532 [8]) requests to NSSMS\_Consumer.

4) During the feasibility check process execution time, the NSSMS\_Provider receives a feasibility check job progress and result query request (see getMOIAttributes defined in TS 28.532 [8]) from NSSMS\_Consumer to query the value for attribute "processMonitor" and "feasibilityResult" for the FeasibilityCheckJob instance specified.

5) NSSMS\_Provider read the value of the attribute "processMonitor" and "feasibilityResult" for the specified FeasibilityCheckJob instance.

6) NSSMS\_Provider sends feasibility check job progress and result query response (see getMOIAttributes operation defined in TS 28.532 [8]) to NSSMS\_Consumer with the values of the attribute “processMonitor” and “f feasibilityResult” for the specified FeasibilityCheckJob instance.

Note: the step 4) – step6) maybe be executed repeatedly until the feasibility check job is deleted or other specified conditions.

Following step 7) – step9) need to be executed when resourceReservationIndicator is True and feasibilityCheckResult is feasible

7）NSSMS\_Provider reserves the resources for the corresponding network slice subnet related requirements (i.e. SliceProfile) which is feasible.

8）NSSMS\_Provider receives the resource reservation result query request (see getMOIAttributes defined in TS 28.532 [8]) from NSSMS\_Consumer to query the value for attribute "resourceReservationStatus " for the FeasibilityCheckJob instance specified.

9) NSSMS\_Provider read the value of the attribute "resourceReservationStatus " for the specified FeasibilityCheckJob instance.

10) NSSMS\_Provider sends the resource reservation result query response (see getMOIAttributes operation defined in TS 28.532 [8]) to NSSMS\_Consumer with the values of the attribute "resourceReservationStatus" for the specified FeasibilityCheckJob instance.

11) When NSSMS\_Consumer decides to delete the feasibility check job (e.g. obtained the feasibility check result), the NSSMS\_Provider receives a feasibility check job deletion request (sees deleteMOI operation defined in TS 28.532 [8]) for the FeasibilityCheckJob instance specified.

12) NSSMS\_Provider delete the specified FeasibilityCheckJob instance.

13) NSSMS\_Provider sends a feasibility check job deletion response (sees deleteMOI operation defined in TS 28.532 [8]) for the deleted FeasibilityCheckJob instance.

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| **End of Change** |