**3GPP TSG-SA5 Meeting #157  *S5-245976d2***

**Hyderabad, india, 14th Oct 2024 – 18th Oct 2024**

**Title:** LS reply to SA6 LS on API availability support

**Response to:** S5-245379 (LS on API availability support)

**Release:** 3GPP Rel-19

**Work Item:**

**Source:** 3GPP SA5

**To:** 3GPP SA6

**Contact Person:**

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**Attachments:** None

# 1 Overall description

SA5 thanks SA6 for the LS on API availability support.

SA5 would like to provide the following answer to the following SA6 questions.

**Question#1:** In CAPIF, SA6 considers the two status of service APIs provided by AEF, including active and inactive. Is there any other possible status of service APIs?

**Answer to Question #1**: The AEF is played by a Network Function (NF) instance. This NF can be either a 5GC NF interacting with Application Function (AF) or a SA6 defined function in the application layer.

* Scenario A: NF is a 5GC NF interacting with AF. This corresponds to the Network Exposure Function (NEF). In 3GPP management system, a NEF instance is represented with NEFFunction IOC (see clause 5.3.65 in TS 28.541). NEFFunction IOC inherits from ManagedFunction IOC (see clause 4.3.4 in TS 28.622). A NEF instance contains one or more NEF service instances.
* Scenario B: NF is a 3GPP SA6 defined function. The SA6 defined functions that can be managed with 3GPP management system are limited to these two edge computing functions: ECS and EES. In 3GPP management system, an ECS instance is represented with ECSFunction IOC (see clauses 6.3.5 in TS 28.538), whereas an EES instance is represented with EESFunction IOC (see clause 6.3.13 in TS 28.538). Both IOCs inherit from ManagedFunction IOC.

A NF instance contains one or more NF service instances, each offering a service API. A NEF service instance is represented with ManagedNFService IOC (see clause 5.3.236 in TS 28.541), whereas ECS/EES service instance is represented with ManagedEdgeNFService IOC (see attached CR in the LS reply). Both IOCs are name-contained by ManagedFunction IOC.

ManagedNFService IOC (represent service API when scenario A) and ManagedEdgeNFService IOC (represents service API when scenario B have different attributes related to state, including:

* administrativeState. It describes the permission to use or prohibition against using the NEF/ECS/EES service instance. This attribute can be set (by the MnS consumer) with one of the following values: LOCKED, UNLOCKED, SHUTTING DOWN.
* operationalState. It describes if the NEF/ECS/EES service instance is operable or inoperable. This attribute can be set (by the MnS producer) with one of the following values: ENABLED, DISABLED”
* usageState. It describes whether the NEF/ECS/EES service instance is actively in use at a specific instant, and if so, whether or not it has spare capacity for additional users at that instance. This attribute can be set (by the MnS producer) with one of the following values: IDLE, ACTIVE, BUSY

SA5 understanding is that the ACTIVE/INACTIVE status defined by SA6 for service API corresponds to ENABLED/DISABLED status defined in operationalState.

**Question #2:** In CAPIF, SA6 considers that the API status can be changed from inactive to active, and vice versa (for e.g. to reduce load of the instance or resource waste of the instance), Is there a mechanism available to activate or deactivate certain service APIs.

**Answer to Question #2**: Yes, there exists a mechanism enabling this feature. The MnS producer can change value of operationalState attribute (from ENABLED to DISABLED, or viceversa) in either:

* ManagedNFService instance (i.e. representation of NEF service instance), when scenario A.
* ManagedEdgeNFService instance (i.e. representation of ECS/EES service instance), when scenario B.

**Question#3:** Is the service API activation performed at per API granularity by management system? Does it mean that the one or more service API(s) of API provider instance can be activated? Or is the API activation performed at per instance granularity by management system? Or Does it mean that the all service API(s) of API provider instance can be only instantiated together?

**Answer to Question #3**: The 3GPP management system can activate one or more service APIs (i.e. NF service instances) of API provider instance (i.e., NF instance). The fact that one or more ManagedNFService instances (or ManagedEdgeNFService instances) can be contained under the same XXXFunction IOC allows the 3GPP management system to have per API granularity. The operations supported in each service API are listed in the operations attribute in ManagedNFService(or ManagedEdgeNFService).

**Question#4:** Are there mechanisms exposed by Management System which enables Consumer entities of Management System to instantiate service API(s) or instantiate AEF(s)? If yes, please share details of its usage.

**Answer to Question #4**: Yes, these mechanisms are available for consumer entities of 3GPP management system for the proposed use case.

Use case #1: AEF instantiation. It is needed to create a XXXFunction instance. This instance represents the NF instance providing service APIs (i.e. the NF instance behaving AEF). To that end, the following applies:

* The consumer entity needs to become Network Function MnS Consumer.
* The consumer sends a createMOI request for XXXFunction IOC to Network Function MnS Producer. This request contains either:
	+ the 5GC NF related requirements (see information model for 5GC NRM in clause 5 from TS 28.541), when use case A.
	+ the EES/ECS related requirements (see information model for Edge NRM in clause 6 from TS 28.538), when use case B.
* The producer fulfils the request, by following the NF creation procedure described in clause 7.19 from TS 28.531.
* Upon fulfilment, the producer sends back to the consumer a createMOI response. This response contains the DN that uniquely identifies the XXXFunction instance.

Use case #2: Service API instantiation within the AEF. It is needed to create one or more ManagedNFService instances(ManagedEdgeNFService instances. These instances are to be name-contained by XXXXFunction instance resulting from use case #1.

The answers provided to questions #1-#4 are related to OAM aspects. SA5 would like also to clarify that here are no charging requirements, nor solutions, nor architecture aspects identified by the charging group that shall be evaluated for taking in account the above questions.

Nevertheless, there is currently the Service API Activation/Deactivation that may trigger the charging service, though, no specific question is point out on a clarification of a specific Charging mechanism, this can be evaluated within the scope of the study TR 28.849 (as already stated based on the SA6 study in TR 23.700-22).

# 2 Actions

**To SA6**

**ACTION:** SA5 kindly request SA6 to take the above responses into consideration, to provide any necessary further feedback.

# 3 Dates of next TSG SA WG 5 meetings

SA5#158 Nov. 18 - 22, 2024 Orlando, USA

SA5#159 Feb. 17 - 21, 2025 Sophia-Antipolis, France