**3GPP TSG-SA5 Meeting #143-eS5-223625**

**e-meeting, 09 - 17 May 2022**

**Source: Ericsson, Deutsche Telekom, Telefónica**

**Title: Add procedure for consumption of exposed MnS after service order completed**

**Document for: Approval**

**Agenda Item: 6.5.22.3**

# 1 Decision/action requested

***The group is asked to agree the detailed propsal.***

# 2 References

[1] 3GPP [TS 28.533](https://www.3gpp.org/DynaReport/28533.htm) Management and orchestration; Architecture framework

[2] 3GPP [TS 23.501](https://www.3gpp.org/DynaReport/23501.htm) System architecture for the 5G System (5GS)

[3] 3GPP [TS 23.502](https://www.3gpp.org/DynaReport/23502.htm) Procedures for the 5G System (5GS)

[4] 3GPP [TS 23.222](https://www.3gpp.org/DynaReport/23222.htm) Common API Framework for 3GPP Northbound APIs

[5] 3GPP [TS 23.434](https://www.3gpp.org/DynaReport/23434.htm) Service Enabler Architecture Layer for Verticals (SEAL); Functional architecture and information flows

[6] 3GPP [TS 33.122](https://www.3gpp.org/DynaReport/33122.htm) Security aspects of Common API Framework (CAPIF) for 3GPP northbound APIs

[7] 3GPP [TS 33.501](https://www.3gpp.org/dynareport/33501.htm) Security architecture and procedures for 5G System

[8] 3GPP [TS 28.530](https://www.3gpp.org/DynaReport/28530.htm) Management and orchestration; Concepts, use cases and requirements

# 3 Rationale

The procedures described in clause 4.1.4 show the interaction between an NSC and an NSP when NSC orders a product/service and the NSP accepts and completes the order. After the product order and service order have been completed, the ordered service may be consumed by the NSC using the CAPIF (Common API Framework).

There is no description in the study what happens after the service order is completed nor how CAPIF may be used.

It is proposed to add a concept description in clause 4 and a solution description in clause 7.

# 4 Detailed proposal

***1st Change***

#### 4.1.4.X Procedure for consumption of exposed MnS after service order is completed

The procedure for consumption of an exposed MnS after the product and service order are completed is shown in figure 4.1.4.X.1. The MnS is produced by the MnS producer located in the OSS of the NSP, depending on deployment scenario the MnS provider resides in OSS\_SML or OSS\_NML.

An MnS may already be produced before CAPIF 1 service is requested. The CAPIF 2/2e service is a filtered, enriched and/or converted version of the MnS. The transformation, filtering, enrichment, or conversion of MnS APIs into service APIs is optional. The details of how this transformation, filtering and/or enrichment is to be done is out of scope of SA5. An example can be found in the CAMARA project where they translate the standard APIs to a customized version. Filtering is removing of information elements (attributes and classes), enrichment is adding information elements from other MnS or other sources outside OAM, converting is changing information elements through for example combining or mapping information elements. The CAPIF 2/2e service is provided by the API\_Provider and consumed by the NSC\_Application. The API\_Provider uses the MnS(s) produced to provide the CAPIF 2/2e service.



Figure 4.1.4.X.1 Procedure for consumption of exposed MnS after service order is completed

NOTE1: For simplicity reasons the CAPIF Core function and API Provider domain function defined in TS 23.222 are combined and any communication between them is also not included.

NOTE2: The procedure is only applicable to “Exposure via CAPIF alternative 1” described in clause 7.9.1.

1) The CAPIF\_Core receives an authenticating and authorization request from the NSC\_Application based on the identity and other information required for authentication and authorization of the NSC\_Application.

2) The CAPIF\_Core processes the authentication and authorization request.

3) The CAPIF\_Core provides the appropriate response to the NSC\_Application.

4) The CAPIF\_Core receives a request for the discovery of service APIs information.

5) The CAPIF\_Core processes the discovery.request.

6) The CAPIF\_Core provides the appropriate response to the NSC\_Application.

7) The API\_Provider receives an authorization request from the NSC\_Application based on the identity and other information required for authorization of the NSC\_Application.

8) The API\_Provider processes the authorization request.

9) The API\_Provider provides the appropriate response to the NSC\_Application

10) The API\_Provider receives a request for the invocation of the service API(s) from the NSC\_Application.

11) The API\_Provider processes (and optionally may filter, enrich and/or convert) the invocation request.

12) The OSS receives request from API\_Provider for MnS.

13) The OSS provides the appropriate response to the API\_Provider.

14) The API\_Provider processes (and optionally may filter, enrich and/or convert) the response from the OSS

15) The API\_Provider the provides the appropriate response to the NSC\_Application.

***2nd Change***

## 7.X Potential solution for consumption of exposed MnS after service order completed

This clause describes a solution for the procedure for consumption of exposed MnS after service order completed described which is described in clause 4.1.4.X. For each step in the procedure Table 7.X.1 identifies the following:

- if an interface is Internal to an operator, i.e. internal to the NSP or External between a NSC and NSP, or None in case the step is an internal process and there is no interface requirement,

- which operation or notification is used by that step, and

- which specification describes the interface (stage 2 and stage 3).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Step** | **Description in step** | **Interface** | **Reference** | **Description in reference** |
| 1 | Authentication and authorization request | Internal | 3GPP TS 23.222[14], clause 6.4.2 | CAPIF-1 |
| 2 |  | None | - | - |
| 3 | Authentication and authorization response | Internal | 3GPP TS 23.222[14], clause 6.4.2 | CAPIF 1 |
| 4 | Discovery request | Internal | 3GPP TS 23.222[14], clause 6.4.2 | CAPIF-1 |
| 5 |  | None | - | - |
| 6 | Discovery response | Internal | 3GPP TS 23.222[14], clause 6.4.2 | CAPIF-1 |
| 7 | Authentication and authorization request |  |  | CAPIF-2 |
| 8 |  | None |  |  |
| 9 | Authentication and authorization response |  |  | CAPIF-2 |
| 10 | API invocation request | Internal | 3GPP TS 23.222[14], clause 6.4.2 | CAPIF-2 |
| 11 |  | None |  |  |
| 12 | MnS request | Internal | 3GPP TS 28.532 | MnS |
| 13 | MnS response | Internal | 3GPP TS 28.532 | MnS |
| 14 |  | None |  |  |
| 15 | API invocation response | Internal | 3GPP TS 23.222[14], clause 6.4.2 | CAPIF 2 |

Table 7.X.1 Solution for consumption of exposed MnS within the operator trusted domain (NSC\_Application is inside operator trusted domain)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Step** | **Description in step** | **Interface** | **Reference** | **Description in reference** |
| 1 | Authentication and authgorizationrequest | External | 3GPP TS 23.222[4], clause 6.4.2 | CAPIF-1e |
| 2 |  | None | - | - |
| 3 | Authentication and authorization response | External | 3GPP TS 23.222[4], clause 6.4.2 | CAPIF 1e |
| 4 | Discovery reqeust | External | 3GPP TS 23.222[4], clause 6.4.2 | CAPIF-1e |
| 5 |  | None | - | - |
| 6 | Discovery response | External | 3GPP TS 23.222[4], clause 6.4.2 | CAPIF-1e |
| 7 | Authentication and authorization request |  |  | CAPIF-2e |
| 8 |  | None |  |  |
| 9 | Authentication and authorization response |  |  | CAPIF-2e |
| 10 | API invocation request | External | 3GPP TS 23.222[4], clause 6.4.2 | CAPIF-2e |
| 11 |  | None |  |  |
| 12 | MnS request | Internal | 3GPP TS 28.532 | MnS/ |
| 13 | MnS response | Internal | 3GPP TS 28.532 | MnS/ |
| 14 |  | None |  |  |
| 15 | API invocation response | External | 3GPP TS 23.222[4], clause 6.4.2 | CAPIF 2e |

Table 7.X.2 Solution for consumption of exposed MnS outside operator trusted domain (NSC\_Application is outside operator trusted domain)

***3rd Change***

# Annex A UML code of the diagrams

### A.x Figure: Procedure for consumption of exposed MnS after service order is completed

@startuml

skinparam sequence {

ArrowColor Black

ActorBorderColor Black

ActorBackgroundColor White

ParticipantBorderColor Black

ParticipantBackgroundColor White

LifeLineBorderColor Black

}

skinparam NoteBackgroundColor White

skinparam NoteBorderColor White

skinparam NoteColor White

skinparam shadowing false

hide footbox

autonumber

participant NSC\_Application

box "CAPIF core and API provider domain functions" #white

 participant "CAPIF\_Core\_\nfunction" as CAPIF\_Core

 participant "API\_Provider\_\ndomain\_function" as API\_Provider

end box

participant MnS\_Producers

NSC\_Application --> CAPIF\_Core : Authentication and authorization request

CAPIF\_Core -> CAPIF\_Core: process request

NSC\_Application <-- CAPIF\_Core : Authentication and authorization response

NSC\_Application --> CAPIF\_Core : Discovery request

CAPIF\_Core -> CAPIF\_Core: process request

NSC\_Application <-- CAPIF\_Core : Discovery response

NSC\_Application --> API\_Provider : Authentication and authorization request

API\_Provider -> API\_Provider: process request

NSC\_Application <-- API\_Provider : Authentication and authorization response

NSC\_Application --> API\_Provider : API Invocation request

API\_Provider -> API\_Provider: process request

API\_Provider --> MnS\_Producers: MnS request

API\_Provider <-- MnS\_Producers: MnS response

API\_Provider -> API\_Provider: process response

NSC\_Application <-- API\_Provider : API Invocation response

@enduml

***End of Changes***