3GPP TSG SA WG5 Meeting 137-e TDoc S5-215418

electronic meeting, online, 10 - 19 May 2021 **revision of S5-213134**

**Source: Ericsson, Deutsche Telekom**

**Title: DP tenant representation in 3GPP management system**

**Document for: Discussion**

**Agenda Item: 6.4.7**

# 1 Decision/action requested

***In this box give a very clear / short /concise statement of what is wanted.***

# 2 References

[1] 3GPP TS 28.541: "Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3"

[2] 3GPP TS 28.533: "Management and orchestration; Architecture framework"

[3] 3GPP TS 28.532: "Management and orchestration; Generic management services"

[4] S5-211458 TD tenant information to support multi-tenancy for network slice management

[5] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements"

[6] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)"

[7] 3GPP TR 28.804: "Telecommunication management; Study on tenancy concept in 5G networks and network slicing management (Release 16)"

[8] 3GPP TS 28.530: "Management and orchestration; Concepts, use cases and requirements"

# 3 Rationale

Editor’s Note 1: The following TS listed above do not define nor use the phrase “Tenant or tenant”; TS 28.541, TS 28.532 and TS 28.554,

Editor’s Note 2: The following TS listed above provide some descriptive text or use the phrase “Tenant or tenant”: TS 28.530, TS 28.533 and TS 28.552.

The tenant definition is studied in TR 28.504 and documented as follows [7]:

**Tenant in 3GPP management system:** A group of 3GPP management system users associated with the management capabilities they are allowed to access and consume.

Furthermore, the text in TS 28.530 [8] provides a description of the tenant information concept, which is quoted here:

### 4.1.9 Tenant information concept

Tenant information purpose is to support multiple tenant environment in 5G network management. The 3GPP management system may use tenant information for the following:

- Associating service(s) provided by 3GPP system, e.g. network slice(s), with the tenant.

- Controlling management capabilitiesaccess by the tenant.

The tenant is also identified as a potential role of a network slice customer (NSC), see quote from clause 4.8 [8] “A tenant might take the role of an NSC”.

TS 28.533 [2] provides a short description of management capability support for tenants in clause 4.8, which is quoted here.

## 4.8 Management capability support in multiple tenant environment

In 3GPP management sytem, tenant represents a group of MnS consumers associated with the management capabilities they are allowed to access and consume. The 3GPP management system provides multi-tenancy support, by associating different tenants with different sets of management capabilities. Every tenant may be authorized to access and consume those MnSs that the operator makes available to this tenant based on SLA.

TS 28.552 [2] provides a short description of performance management capability support for tenants in clause 4.1, Performance indicators, which is quoted here

When providing a communication service to a tenant, the performance indicators can be derived from corresponding performance indicators related to network slice, network slice subnet and NFs and they can be made available via the corresponding performance management service, consumed by a tenant. Tenant(s) may be associated with S-NSSAI or sNSSAIList in which case, the performance indicators are split into subcounters per S-NSSAI for individual tenant.

TS 28.541 [1] provides a short description of service profile for NSC or tenant in clause 6.3.3, which is quoted here

### 6.3.3 ServiceProfile <<dataType>>

#### 6.3.3.1 Definition

This data type represents the properties of network slice related requirement that should be supported by the NetworkSlice instance in 5G network. The network slice can be tailored based on the specific requirements adhered to SLA agreed between Network Slice Customer (NSC) and Network Slice Provider (NSP), see clause 2 of [50]. An NSP may add additional requirements not directly derived from SLA’s, associated to the NSP internal [business] goals. The GST defined by GSMA (see [50]) and the service performance requirements defined in 3GPP TS 22.261 [28] and TS 22.104 [51] are all considered as input for the network slice related requirements.

From the above descriptions the following observations can be derived:

1. A tenant represents a group of management system users.
2. A tenant performs the role of an NSC, there is no other use case for tenant presently
3. A tenant can only access management capabilities (MnS) that are pre-agreed and documented in an SLA.
4. The granularity of performance information for a tenant is per S-NSSAI.
5. A tenant (NSC) agrees an SLA with NSP based on GSMA GST (reference [50]) and the service performance requirements defined in 3GPP TS 22.261 [28] and TS 22.104 [51]. The attributes in the service profile represents the network slice requirements based on this SLA.

From the above it appears that one tenant can be associated with one or more S-NSSAI’s, and one S-NSSAI can only be associated with one tenant. It can also be noted that; the relationship is that one tenant can have multiple ServiceProfiles representing different SLA’s. Since the ServiceProfile represents the SLA between the Tenant (NSC) and the NSP one ServiceProfile can only be associated to one tenant.

In summary the relationships between tenant, S-NSSAI and ServiceProfile are as follows:

- Tenant to S-NSSAI is a one-to-many relationship, a tenant can be associated with many S-NSSAIs. An S-NSSAI to a tenant is a one-to-one relationship which means an S-NSSAI can only be associated with one tenant. More specifically the SD (24-bit optional field in the S-NSSAI) can be used to associate an S-NSSAI with one tenant.

- Tenant to ServiceProfile is a one-to-many relationship, a tenant can be associated with many ServiceProfiles. A ServiceProfile to a tenant is a one-to-one relationship which means a ServiceProfile can only be associated with one tenant.

- A ServiceProfile to S-NSSAI is a many-to-many relationship, however since both S-NSSAI and ServiceProfile are only associated with one tenant, all S-NSSAIs in a ServiceProfile must belong to the same tenant.

One NSC is connected through an SLA to one NSP, the ServiceProfileId captures the SLS, which is the technical part of the SLA, therefore the relationship with NSC already exists in the specifications as does the tenant (NSC) . The serviceProfile (including serviceProfileId) will need some further clarification to show that it may be used to describe a one-to-one relationship between the NSC and the NSP.

# 4 Detailed proposal

The group is asked to endorse the conclusion in the rational