**3GPP TSG-SA5 Meeting #141-e *S5-221038rev1***

**e-meeting, 17 - 26 January 2022**

**Source: Telefónica S.A.**

**Title: pCR 28.557 Add new NPN management related requirements**

**Document for: Approval**

**Agenda Item: 6.4.1**

# 1 Decision/action requested

***Discuss and approve on the proposal.***

# 2 References

[1] TS 22.261 5G; Service requirements for the 5G System, version 18.5.0

[2] TS 23.501 5G; System architecture for the 5G System, version 17.3.0

[2] TS 28.557 Management of non-public networks; Stage 1 and stage 2, version 1.2.0

# 3 Rationale

3GPP TS 22.261 [1] compiles the service and operational requirements for a 5G system, including a UE, NG-RAN and 5G Core network (5GC). In reference to non-public networks, requirements are captured in both clause 6.25 (non-public networks) and clause 6.10 (capability exposure). Some of the requirements listed in these two clauses are related to the management of non-public networks, and therefore have an impact on 3GPP management system:

* Clause 6.25 (non-public networks)
  + The 5G system shall support both physical and virtual non-public networks.
  + The 5G system shall enable an NPN to support multiple third-party service providers.
* Clause 6.10 (capability exposure)
  + The 5G system shall support APIs to allow the non-public network to be managed by the MNO’s Operations System
  + A 5G system shall have suitable APIs to enable a third party to manage its own non-public network and its private slice(s) in the PLMN in a combined manner
  + The 5G system shall support suitable APIs to allow an MNO to offer configuration services (for instance, interference management) to non-public networks deployed by third parties and connected to the MNO’s Operations System through standardized interfaces.

The above-listed requirements have an impact on 3GPP management system. Some of them need to be included in TS 28.557 [3] (some others are already included). Note that these requirements are applicable to any NPN, hence the need for their inclusion in clause 5.2.1. In this action, TS 22.261 NPN concepts (MNO, third party) needs to be translated to TS 28.557 roles (NPN-SP, NPN-SC, …).

On the other hand, 3GPP TS 23.501 [2] states that PNI-NPN are NPNs made available via PLMNs: i) by means of dedicated DNNs; or ii) by one (or more) Network Slice instances allocated for the NPN. This clarification is made in TS 28.557 [3] clause 4.5, but it is not compiled as a requirement in clause 5.2.3. This is an action to be taken as well.

# 4 Detailed proposal

This contribution proposes to take action as detailed in the rationale, by including requirements in clauses 5.2.1 and 5.2.3 from TS 28.557 [3].

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| **1st Change** |

## 5.2 Requirements

### 5.2.1 Generic requirements for management of NPN

**REQ-NPN-FUN-01** The 3GPP management system shall have the capability to monitor the performance measurements and KPIs associated with an NPN.

**REQ-NPN-FUN-02** The 3GPP management system shall have the capability to provide the performance measurements and KPIs associated with an NPN to authorized NPN-SC.

**REQ-NPN-FUN-03** The 3GPP management system shall have the capability to receive SLA requirements from authorized NPN-SC and then translating the SLA requirements into service and network resources related requirements.

**REQ-NPN-FUN-04** The 3GPP management system shall have the capability to evaluate SLS assurance related to an NPN.

**REQ-NPN-FUN-05** The 3GPP management system shall have the capability to restrict the exposure of management capabilities and corresponding managed resources to NPN-SC.

**REQ-NPN-FUN-06** The 3GPP management system shall have the capability to support management capabilities exposure, which includes management capabilities of network provisioning, fault supervision and performance assurance to the authorized NPN-SC.

**REQ-NPN-FUN-A** The 3GPP management system shall have the capability to provision both physical and virtual NPNs.

**REQ-NPN-FUN-B** The 3GPP management system shall have the capability to provision different NPNs intended to different NPN-SCs.

**REQ-NPN-FUN-C** The 3GPP management system shall have the capability to provision an NPN which serves different NPN-SCs.

**REQ-NPN-FUN-D** The 3GPP management system shall offer the NPN-SC the ability to manage its own NPN(s) and its private slice(s) in the PLMN in a combined manner.

### 5.2.2 Requirements for management of SNPN

**REQ-SNPN-FUN-01** The 3GPP management system shall have the capability to support standalone operation of an SNPN.

**REQ-SNPN-FUN-02** The 3GPP management system shall have the capability to support management of dedicated NPN identifier (i.e. combination of a PLMN ID and a Network Identifier (NID) which is used to identify an SNPN.

**REQ-SNPN-FUN-03** The 3GPP management system shall have the capability to configure NID which consists of an assignment mode and an NID value.

**REQ-SNPN-FUN-04** The 3GPP management system shall have the capability to configure an NR cell for the support of SNPN, by configuring a gNB (gNB-DU in NG-RAN split deployment scenarios) with a list of served NIDs per PLMN Identity.

**REQ-SNPN-FUN-05** The 3GPP management system shall have the capability to interwork with one or more non-3GPP management systems to support the operation of a SNPN which includes 3GPP and non-3GPP segments.

### 5.2.3 Requirements for management of PNI-NPN

**REQ-PNIN-FUN-01** The 3GPP management system shall have the capability to collect NPN UE related data which may include MDT data and trace data.

**REQ-PNIN-FUN-02** The 3GPP management system shall have the capability to provide NPN UE related data to authorized NPN-SC according to pre-defined agreements.

**REQ-PNIN-FUN-03** The 3GPP management system should have the capability to support assignment and maintenance of CAG ID which identifies the CAG cells.

**REQ-PNIN-FUN-04** The 3GPP management system shall have the capability to configure a NR cell to support PNI-NPN, by configuring a gNB (gNB-DU in NG-RAN split deployment scenarios) with a list of serving CAGs per PLMN Identity.

**REQ-PNIN-FUN-05** The 3GPP management system should have the capability to manage the list of UEs that are allowed on the corresponding CAG.

**REQ-PNIN-FUN-06** The 3GPP management system should have the capability to configure access policy of CAG cells.

NOTE: The access policy of CAG cells includes such as allowed days/time slots for NPN UEs that are allowed on the corresponding CAG cells.

**REQ-PNIN-FUN-07** The 3GPP management system shall have the capability to provision a PNI-NPN by means of dedicated DNN, or by one (or more) network slice instance(s). For the latter, the network slice instance is made available for the vertical by means of Network Slice as a Service (NSaaS) model (see clause 4.1.6 from TS 28.530 [2]).

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| **End of change** |