**3GPP TSG-SA5 Meeting #133e *S5-205233rev5***

**e-meeting 12th - 21st October 2020**

**Source: Telefónica S.A.**

**Title: Add use case on SNPN provisioning**

**Document for: Approval**

**Agenda Item: 6.4.1**

# 1 Decision/action requested

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

# 2 References

[1] TS 28.557 Management of non-public networks; Stage 1 and stage 2 v0.0.0

[2] TR 28.807 Study on management aspects of non-public networks v16.0.0

[x] TR 28.531 Management and orchestration; Provisioning v16.6.0

# 3 Rationale

It is proposed to add use case on the provisioning of stand-alone non-public networks in draft TS 28.557 [1], leveraging the use case originally proposed in TR 28.807 [2].

# 4 Detailed proposal

This document proposes the following changes in TS 28.557 [1].

Rev1:

* For UC description, replace “table” with “plain text” for UC description
* Simplify description, making it less solution-oriented
* Ommit the presence of non-3GPP sub-networks, e.g. TSN. To decide if touchpoints between 3GPP and non-3GPP subnetworks is within SA5 scope is FFS.

Rev2:

* Address comments from E///.

Rev4:

* Keep the following as Editor’s note: *To decide if touchpoints between 3GPP subnetworks and non-3GPP (e.g. IEEE TSN, IEEE 802.11 WiFi) subnetworks is within SA5 scope for SNPN management is FFS”.* This is to clarify if management of non-3GPP subnetworks taking part in SNPN should be handled somehow.
* Address comments from Orange.

Rev5:

* Re-wording NOTE: from “To allow UEs to access public network services from the SNPN, the UEs also have to be registered in the PLMN UDM as sort of roamers” to “To allow UEs to access public network services from the SNPN, the UEs also have to be registered in the PLMN UDM”.

|  |
| --- |
| **1st Change** |

## 5.1.x Use cases related to SNPN management

### 5.1.x.y Create a SNPN

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

This use case describes a scenario where a mobile network operator (playing the role of NPN-SP) decides to provision an NPN for use by an enterprise (playing the role of NPN-SC) in the form of SNPN. This SNPN consists of network resources decoupled from PLMN resources, including:

* RAN NE(s)
* 5GC network functions
* Transport network.

*Editor’s note: “To decide if touchpoints between 3GPP subnetworks and non-3GPP (e.g. IEEE TSN, IEEE 802.11 WiFi) subnetworks is within SA5 scope for NPNs is FFS”.*

In this scenario, the NPN-SC sends to the NPN-SP a request for the provision of an NPN. This request contains the NPN related SLS requirements. To fulfil the SLS of requested NPN, the NPN-SP decides to create a new SNPN.

The NPN-SP maps SLS of requested NPN into 3GPP 5G system related requirements. These requirements allow the NPN operator to decide on the constituent network resources and the topology of the 3GPP 5G network to be created for the SNPN, as follows:

* For the AN and CN related parts, the NPN operator takes all the actions needed to set up and configure required network resources, including RAN NE(s) and 5GC network functions. For more details, refer to TS 28.531 [x], clauses 5.1.17 “Creation of 3GPP NF” and 5.1.18 “Configuration of a 3GPP NF instance”. Some of these actions can require setting up a new 3GPP sub-network. For more details, refer to TS 28.531 [x], clause 5.1.19 “Creation of a 3GPP sub-network”.
* For the TN related part, the NPN operator takes all the actions needed to set up the required connectivity along the RAN and CN, configuring the underlying transport network . When taking these actions, information on SNPN topology (e.g. external connection points of AN and CN) and performance (e.g. latency, bandwidth) should be considered.

If the requested NPN requires connectivity to external PLMN resources (e.g. to allow UEs registered into the SNPN to access public network services), the NPN-SP derives the requirements for such a connectivity. These requirements allow the NPN operator to configure the transport network connecting the SNPN and the PLMN accordingly.

NOTE: To allow UEs to access public network services from the SNPN, the UEs also have to be registered in the PLMN UDM.

NOTE: For the derivation of connectivity requirements between SNPN and the PLMN, the NPN-SP makes use of two sources of information: 1) the SLS of requested NPN, received from the NPN-SC; and 2) connectivity information of the created 3GPP 5G network, received from the NPN operator.

In this use case, the NPN operator role is played by:

* The mobile network operator only. In such a case, the mobile network operator takes the entire responsibility of operating the SNPN and managing SNPN-PLMN connectivity, if required.
* The mobile network operator and the enterprise. For SNPN management, the mobile network operator can expose some management capabilities to the enterprise, according to business agreement between two parties. SNPN-PLMN connectivity, if required, is always managed by the mobile network operator.