**3GPP TSG-SA5 Meeting #140-e *S5-216060rev1***

**e-meeting, 15 - 24 November 2021**

**Source: Huawei**

**Title: Update NPN management aspects**

**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 v1.1.0

# 3 Rationale

It is proposed to update NPN management aspects and the corresponding requirement for the missing fault supervision part.

# 4 Detailed proposal

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

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| **1st Change** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 28.530: "Management and orchestration; Concepts, use cases and requirements".

[3] 3GPP TS 23.501: "System architecture for the 5G System (5GS)".

[4] 3GPP TS 22.261: "Service requirements for the 5G system".

[5] 5G-ACIA White paper: "5G Non-Public Networks for Industrial Scenarios", July 31, 2019.

[6] 3GPP TS 23.003: "Numbering, addressing and identification".

[7] 3GPP TS 28.541: "Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[8] 3GPP TS 28.531: "Management and orchestration; Provisioning".

[9] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[10] 3GPP TS 38.473: "NG-RAN; F1 Application Protocol (F1AP)".

[11] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".

[12] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[13] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

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## 4.3 NPN management aspects

### 4.3.1 Drivers

Vertical industries have a very wide range of use cases with very diverse requirements comparing with management of traditional PLMN. Management of NPN has the following specific aspects:

- Assurance for diversified SLA requirements: The diversified SLA requirements from different kinds of vertical industries need to be guaranteed, e.g. manufacturing industry and medical care need ultra-reliable low-latency wireless connectivity and indoor, outdoor or hybrid coverage NPN deployments. Other than performance requirements (e.g. ultra-low latency, ultra-high reliability), functional and operational requirements should also be guaranteed in SLA, e.g. high-precision positioning, real-time monitoring, etc.

- Support of different O&M models: an O&M model allows specifying who is responsible for managing what part of the network. The various NPN scenarios, with a number of vertical use cases and a plenty of deployment variants, in some cases may lead to the definition of different O&M models. For example, many small and medium-sized enterprises (SMEs) do not have sufficient technical expertise for their NPNs' deployment and operation. Therefore, cooperation with PLMN Operators to obtain O&M of NPNs from PLMN Operators might be the most cost-effective way for such customers. On the other hand, large enterprises like electric utility companies might want to have their own O&M for their NPNs to fulfil specific requirements.

- Management capability exposure: this expresses the ability of an NPN-SP to expose some management capabilities, such as performance and KPIs monitoring, fault supervision and provisioning management capabilities, to the corresponding NPN-SC. The NPN-SP makes the selected NPN management capabilities available through well-defined APIs to allow the NPN-SC to consume these capabilities, as well as extending them with their own operation and maintenance systems, if needed. NPN-SC may provide their business objectives by intents and policies management to NPN-SP and no need to focus on detailed configuration parameters of NPNs. The mobile management capabilities exposed to the enterprise are as follows.

- Management capability of configuration: The vertical may request to mobile network operator for a limited management capability which would enable the enterprise to dynamically change the configuration parameters (e.g. CAG configuration).

- Management capability of performance assurance: The performance assurance capabilities that may be provided to the enterprise may include creation of certain measurement jobs which collects the value of one or multiple measurement types which are the performance measurements and assurance data defined in TS 28.552 [12] or collects the value of one or multiple KPIs defined in TS 28.554 [13].

- Management capability of fault supervision: The fault supervision capabilities that may be provided to the enterprise may include get NSI/NSSI/NF alarm data and control NSI/NSSI/NF alarm data.

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## 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 service provider or NPN service consumer.

**REQ-NPN-FUN-03** The 3GPP management system shall have the capability to receive SLA requirements from authorized NPN service consumer 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 vertical.

**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 service consumer.

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| **End of change** |