**3GPP TSG-SA5 Meeting #157 *S5-245777rev4***

Hyderabad, India, 14 - 18 October 2024 (is revision of S5-244335)

**Source: Ericsson, Huawei, Deutsche Telekom, Nokia**

**Title: pCR TR 28.871 Add use case, reqs, potential solutions and evaluation (management model decoupling)**

**Document for: Approval**

**Agenda Item: 6.19.8**

# 1 Decision/action requested

***Approve the proposal.***

# 2 References

[1] 3GPP TR 28.871: Study on Service Based Management Architecture enhancement phase 3

[2] 3GPP TS 28.532: Generic management services

[3] 3GPP TS 32.158: Design rules for REpresentational State Transfer (REST) Solution Sets (SS)

[4] 3GPP TS 28.622: Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)

[5] Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3

# 3 Rationale

The SBMA Architecture defines itself as being model-driven. A key benefit to a model-driven architecture is the ability to decouple the management capabilities (and implementation) from those of the resources it manages. In other words, the version of the management system providing a set of management capabilities should be decoupled from the version(s) of the resources it manages.

The SA5 MnS architecture includes mechanisms such as generic services defined in [2] and defines generic management information model to support these in [4]. These services are intended to manage RAN and CN entities, such as those defined in [5] in a consistent manner.

There is a problem however in how the information model for the management services, and those of the resources it manages, have been defined. Specifically, although [2] defines generic management objects (e.g. *PerfMetricJob*) they are defined within the same model as the objects that they manage (e.g. name contained under specific Subnetwork, ManagedElement and/or NF instances).

This sort of coupling can be particularly problematic for a management system intending to support multiple releases in parallel. Since the management objects are themselves defined as part of the NRM resources they are subject to differences between releases and versioned along with the NRM resources they manage. The contents of the management objects do not have to change at similar cadence as the resources though. E.g. new PMs in a release can be supported without change to the *PerfMetricJob* IOC, ProvMnS versioning does not have to follow cadence of the resource NRMs it operates upon.

Additionally, the NRM defines Subnetwork and ManagedElement as root objects, meaning any instances of the management objects are confined to the same, and single, namespace as the objects being managed. In other words, a management system spanning multiple Subnetworks or containing multiple root ManagedElements cannot configure truly common management across multiple root elements. At least not according to the standardized modelling.

This proposal aims to improve the decoupling of the management domain model from the NRM models.

The OpenAPI definitions in [2] may also require update to support the new management services model to remove the DN of the managed resources currently embedded in the URLs. The DN(s) could instead be passed as part of the message payload.

# 4 Detailed proposal

**First change**

# 5.x Decouple the management and resource models

5.x.1 Description

The SA5 MnS architecture includes generic services and generic management information models to support them. These services are intended to manage RAN and CN entities in a consistent manner.

There is a problem however in how the information model for the management services, and those of the resources it manages, have been defined. Specifically, generic management objects (e.g. *PerfMetricJob*) are defined within the same model as the objects that they manage (e.g. name contained under specific Subnetwork, ManagedElement and/or NF instances).

This sort of coupling can be particularly problematic for a management system intending to support multiple releases in parallel. Since the management objects are themselves defined as part of the NRM resources they are subject to differences between releases and are versioned along with the resource models which they manage. The contents of the management objects do not have to change at similar cadence as the resource models though. E.g. new PMs in a release can be supported without change to the *PerfMetricJob* IOC, ProvMnS versioning does not have to follow cadence of the resource NRMs it operates upon.

Additionally, the NRM defines Subnetwork and ManagedElement as root objects, meaning any instances of the management objects are confined to the same, and single, namespace as the objects being managed. In other words, a management system spanning multiple Subnetworks or containing multiple root ManagedElements cannot configure truly common management across multiple root elements. At least not according to the standardized modelling.

A means of improving the decoupling of the management domain model from the NRM models would be beneficial.

Note: The term decoupling does not imply any solution choices such as the separation of the 3GPP management model and the resource model into dedicated subtrees.

To better support 3GPP management system implementations capable of consistently managing multiple resource model instances and versions, the objects required by the management system related to management should be able to be fully decoupled from the NRM models they are managing.

5.x.2 Potential requirements

**REQ-MNS-MgmtModel-1:** The 3GPP management model shall be decoupled from the resource models which it manages.

**REQ-MNS-MgmtModel-2:** The 3GPP management model shall be versioned independent of the resource model versions.

**REQ-MNS-MgmtModel-3:** The 3GPP management model shall be capable of managing multiple resource model instances.

**REQ-MNS-MgmtModel-4:** The 3GPP management model shall be capable of managing multiple versions of resource models.

5.x.3 Potential solutions

FFS

5.x.4 Evaluation of potential solutions

No potential solutions are defined in this document. The requirements are recommended to be used as input for a future study.