**3GPP TSG-SA5 Meeting #155 *S5-243209***

**Jeju, Korea (Republic Of), 27th May 2024 - 31st May 2024**

**Source: Ericsson**

**Title: Rel-19 pCR TR 28.871 Management and Resource 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. As the management objects are themselves part of, and subject to differences between releases, or the NRM resources they are intended to manage.

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] will also require update to support the new management services model to remove the DN of the managed resources currently embedded in the URLs.

# 4 Detailed proposal

**First change**

# 5.x Decouple the management and resource models

5.x.1 Description

To better support 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:** A model for the management system shall be defined.

**REQ-MNS-MgmtModel-2:** The management model shall be defined separately from the resource models.

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

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

**REQ-MNS-MgmtModel-5:** The management model shall be capable of managing multiple versions of resource models.

5.x.3 Potential solutions

#### 5.x.3.1 Potential solution#1 Add Management Service NRM

A new ‘Management Services’ NRM is defined.

This new IOC *ManagementServiceNetwork* would be a root element with management scope of all root *Subnetwork* and *ManagedElement* instances being managed by a common set of 3GPP management services.

All IOCs comprising the management objects currently residing within the common NRM are updated to be name-contained within the *ManagementServiceNetwork.*

Objects currently defined purely for management purposes would be redefined to be name-contained under *ManagementSericeNetwork*, including:

* ManagementNode
* MnsRegistry
* MnsAgent
* NtfSubscriptionControl
* MnsInfo

Objects defined to support management of network resources would allow optional name-containment under *ManagedServiceNetwork*, in addition to their current containments.

* PerfMetricJob
* TraceJob
* ManagementDataCollection
* ThresholdMonitor

The main change would be the name-containment of these IOCs. Some of these objects already contain attributes such as *objectInstances* and *rootObjectInstances* which can continue to be used to define their scope.

#### 5.x.3.1 Potential solution#2 Reuse ManagementNode NRM

Similar to Solution 1 but instead of defining a new IOC the ManagementNode IOC would be redefined as the management model.

ManagementNode IOC would be redefined to be the root element with management scope of all root *Subnetwork* and *ManagedElement* instances being managed by a common set of 3GPP management services.

All IOCs comprising the management objects currently residing within the common NRM are updated to be name-contained within the *ManagementServiceNetwork.*

Objects currently defined purely for management purposes would be redefined to be name-contained under *ManagementNode* including:

* MnsRegistry
* MnsAgent
* NtfSubscriptionControl
* MnsInfo

Objects defined to support management of network resources would allow optional name-containment under *ManagedServiceNetwork*, in addition to their current containments.

* PerfMetricJob
* TraceJob
* ManagementDataCollection
* ThresholdMonitor

The main change would be the name-containment of these IOCs. Some of these objects already contain attributes such as *objectInstances* and *rootObjectInstances* which can continue to be used to define their scope.

5.x.4 Evaluation of potential solutions

TBD