**3GPP TSG-SA5 Meeting #155 *S5-242901***

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**Source: Ericsson**

**Title: Rel-19 pCR TR 28.871 Mgmt Model and NRM 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 29.501: 5G System; Principles and Guidelines for Services Definition

[4] Semantic Versioning Specification: <https://semver.org>.

# 3 Rationale

In the SBMA architecture each management service (MnS) has a specific version. This version is used in the MnS Registry when exposing management services towards consumers. Per TS 28.622[2], MnsInfo IOC is used to describe the management service information and detailed capabilities about management service, which includes its version:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| mnsLabel | M | T | F | F | T |
| mnsType | M | T | F | F | T |
| **mnsVersion** | M | T | F | F | T |
| mnsAddress | M | T | F | F | T |
| mnsScope | M | T | F | F | T |

For OpenAPI solution set there are currently multiple version numbers in the OpenAPI files defining the MnSes. For example, the Rel-18 ProvMnS.yaml contains:

openapi: 3.0.1

info:

 title: Provisioning MnS

 version: **18.2.0**

 description: >-

 OAS 3.0.1 definition of the Provisioning MnS

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externalDocs:

 description: 3GPP TS 28.532; Generic management services

 url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.532/

servers:

 - url: '{MnSRoot}/ProvMnS/{MnSVersion}/{URI-LDN-first-part}'

 variables:

 MnSRoot:

 description: See clause 4.4.2 of TS 32.158

 default: http://example.com/3GPPManagement

 MnSVersion:

 description: Version number of the OpenAPI definition

 default: **XXX**

 URI-LDN-first-part:

 description: See clause 4.4.2 of TS 32.158

 default: ''

There are also inconsistencies in the default values – some of which are ‘XXX’ and others which are blank (‘ ‘) in the yaml files.

For YANG there are revision statements for the modules. No specific MnS version values are provided. For example, the Rel-18 *\_3gpp-common-trace.yang* contains:

 description "Trace handling

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 TTA, TTC). All rights reserved.";

 reference "3GPP TS 28.623

 Generic Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Solution Set (SS) definitions

 3GPP TS 28.622

 Generic Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Information Service (IS)" ;

 revision 2024-01-29 { reference "CR-0316"; }

 revision 2023-11-06 { reference "CR-0290 CR-0294"; }

Regardless of which solution set applies a vendor will provide their own implementation of each MnS comprising their solution.

It is currently unclear how the version/revision numbers defined in the stage3 are intended to map to the MnS versions provided in a vendor’s solution. I.e. the versions which will be exposed in the MnS version in the MnS Registry.

The meaning and usage of each version/revision needs to be clarified.

# 4 Detailed proposal

**First change**

# 5.x MnS Version Number Handling

5.x.1 Description

Each MnS Producer needs to advertise itself in the MnS Registry with a version number sufficient for the MnS Consumer to understand its basic operations (i.e. component A as specified in a given 3GPP release) to then allow its Consumers to connect and perform detailed discovery of specific capabilities of that MnS (i.e. component B and component C).

Whether a vendor deploys the MnS definition as-is (i.e. no modifications from 3GPP versions) or extends them to add vendor defined capabilities a versioning scheme should allow MnS Consumers to clearly identify a particular MnS Producer version.

A versioning scheme needs to be defined to allow an MnS Producer to differentiate its baseline capabilities across different versions. This versioning will account for the basic operations the MnS Producer can perform (i.e. specific component A as defined in a particular 3GPP release), but does not imply other capabilities (i.e. component B and component C) which are provided during detailed discovery.

In other words, the MnS Consumer needs to know about the MnS Producer version to know how to perform basic operations but relies on capabilities discovery to get detailed management information.

5.x.2 Potential requirements

**REQ-MNS-versioning-1:** Information identifying the 3GPP TS(s) and version(s) for which the content is defined shall be provided in the yaml and yang files.

**REQ-MNS-versioning-2:** An MnS Producer may comprise multiple yaml files or yang modules, each containing version information, however the MnS version in the registry shall provide a single version number.

**REQ-MNS-versioning-3:** The MnS Producer shall advertise the MnS version in the MnS registry.

**REQ-MNS-versioning-4:** The MnS version number shall be vendor specified.

5.x.3 Potential solutions

#### 5.x.3.1 Potential solution#1 MnS Version scheme based on semver.

This proposal is aligned with how other 3GPP groups have defined versions for OpenAPI as defined in [3].

MnS version numbers shall consist of at least 3 fields, following a MAJOR.MINOR.PATCH pattern according to the Semantic Versioning Specification [4]. The 1st Field (MAJOR), the 2nd Field (MINOR), and the 3rd Field (PATCH) shall contain unsigned integer numbers, and they shall not contain leading zeroes.

Information in the YAML files and YANG modules indicates which TS versions the definitions are based on:

Examples:

* yaml indicates 3GPP TS, plus version info as follows:

 extermalDocs:
 description: **3GPP TS 28.532**; Generic management services
 url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.532/

info:
 title: Provisioning MnS
 version: 18.2.0

* yang indicates the 3GPP TS, plus version information as follows:

reference "3GPP TS 28.623

 Generic Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Solution Set (SS) definitions

 3GPP TS 28.622

 Generic Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Information Service (IS)" ;

 revision **2023-11-06** { reference "CR-0290 CR-0294"; }

The values above are used to associate the yaml and yang to the 3GPP TS and version. These files may contain a default MnS version value. The default value is not used to publish the MnS version in the MnS Registry.

The MnS version is a vendor specified value for the MnS used to advertise the MnS version in the registry. I.e. M*NSInfo.mnsVersion*. Example:

* “1.0.0” indicates a vendor defined version defined in yang module(s) or yaml file(s) provided by the vendor which may contain vendor extensions.

5.x.4 Evaluation of potential solutions

TBD

**End of change**