**3GPP TSG-SA5 Meeting #0**

**, Sweden, 7th Apr 2025 - 11th Apr 2025**

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| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** | **-** | **Current version:** | **19.0.0** |  |
|  |
| *For* [***HELP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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|  |
| ***Title:***  | Rel-19 CR 28.537 Add details for MnS versioning |
|  |  |
| ***Source to WG:*** | Ericsson Inc. |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | eSBMA |  | ***Date:*** | 2025-02-07 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-19 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | The eSBMA architecture defines mechanisms to version (i.e. MnSVersion) and publish (i.e. MnsRegisty) MnS Producers. At present the SA5 provided stage2 artefacts contain inconsistent versioning (i.e. ‘XXX’) and there are no no guidelines on version handling. TR 28.871 contains a proposal for MnS API versioning handling based on similar in TS 29.501. |
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| ***Summary of change:*** | Add API versioning handling details to MnS definition. Add annex with examples. |
|  |  |
| ***Consequences if not approved:*** | Inconsistencies in MnS version handling can lead to confusion and cause interoperability issues. |
|  |  |
| ***Clauses affected:*** | 5.x (new), 5.x.1 (new), 5.x.2 (new), 5.x.2.1 (new), 5.x.2.2 (new), 5.x.2.3 (new), 5.x.3 (new), A.x (new), A.x.1 (new), A.x.1.1 (new), A.x.1.2 (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR 32.158 CR xxx  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | **S5-250885** |

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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 28.532: "Management and orchestration; Generic management services".

[3] 3GPP TS 28.533: " Management and orchestration; Architecture framework".

[4] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

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

[6] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[7] 3GPP TS 32.404: "Telecommunication management; Performance Management (PM); Performance measurements; Definitions and template".

[8] 3GPP TS 32.423: "Telecommunication management; Subscriber and equipment trace: Trace data definition and management".

[x] 3GPP 29.501: 5G System; Principles and Guidelines for Services Definition

# 5 Discovery of Management Services

## 5.1 Overview

To enable communication between MnS Consumers and MnS Producers, MnS Consumers need mechanisms to discover management service information available in the 3GPP management system, and their management capabilities. To this end, MnS Producers and their management capabilities need to be exposed in the 3GPP management system.

From management service perspective the following information can be exposed:

- Identifying data describing an MnS, e.g. name, API version, type

- Capabilities of an MnS, e.g. supported operations, supported notifications

From MnS Consumer perspective such information can be used for different purposes, including:

- MnS Producer discovery: allows MnS Consumer to discover identifying information about an MnS Producer instance. In short, allows MnS Consumer to know which MnS Producers instances are exposed.

- MnS Producer Capabilities retrieval: allows MnS Consumer to retrieve capability information about an MnS Producer instance. In short, allows MnS Consumer to know what an MnS Producer instance is capable of.

In case an exposed MnS Producer instance’s information changes the 3GPP management system needs to be updated.

MnS Consumers wishing to discover MnS Producer instances might have different questions. For example, an MnS Consumer may wish to know which MnS Producers manage a certain geographical area or civic location. Or, after receiving an alarm notification specifying that a specific NF is alarmed, they may wish to know the MnS Producers from which they can request management data from that NF or to retrieve the configuration of that NF.

## 5.2 Specification level requirements

### 5.2.1 Use cases

#### 5.2.1.1 Adding a new management service producer to MnS registry

| Use case stage | Evolution/Specification | <<Uses>>Related use |
| --- | --- | --- |
| **Goal**  | Add a MnS producer to a 3GPP management system. |  |
| **Actors and Roles** | MnS Producer, MnS Registry |  |
| **Telecom resources** | MnS producer.MnS discovery service producer. |  |
| **Assumptions** | MnS producer is ready to be added to MnS registry. |  |
| **Pre-conditions** | The MnS Producer is available. |  |
| **Begins when**  | There is a need for a MnS producer to be exposed via MnS registry. |  |
| **Step 1 (M)** | The MnS producer is added to the MnS registry. |  |
| **Ends when**  | All the steps identified above are successfully completed. |  |
| **Exceptions** | One of the mandatory steps fails. |  |
| **Post-conditions** | MnS discovery service producer has stored the MnS information. |  |
| **Traceability**  | REQ-DMS-1 |  |

#### 5.2.1.2 Removing a management service producer from MnS registry

| Use case stage | Evolution/Specification | <<Uses>>Related use |
| --- | --- | --- |
| **Goal**  | Remove a MnS producerfrom MnS registry.. |  |
| **Actors and Roles** | Network operator. |  |
| **Telecom resources** | MnS producer. |  |
| **Assumptions** | -  |  |
| **Pre-conditions** | The management service producer is no longer required in the MnS registry. |  |
| **Begins when**  |  The management service is ready to be removed from MnS Registry. |  |
| **Step 1 (M)** |  The management service producer is removed from the MnS Registry. |  |
| **Ends when**  | All the steps identified above are successfully completed. |  |
| **Exceptions** | One of the mandatory steps fails. |  |
| **Post-conditions** | MnS discovery service producer has removed the MnS information related to the MnS Producer. |  |
| **Traceability**  | REQ-DMS-1 |  |

#### 5.2.1.3 MnS Consumer retrieves management service information from MnS registry

| Use case stage | Evolution/Specification | <<Uses>>Related use |
| --- | --- | --- |
| **Goal**  | MnS consumer retrieves information from MnS registry. |  |
| **Actors and Roles** | MnS Consumer |  |
| **Telecom resources** | MnS registry |  |
| **Assumptions** | MnS consumer is authorized to obtain the MnS information for the available management service(s) from MnS discovery service producer. |  |
| **Pre-conditions** | MnS information exists in MnS registry. |  |
| **Begins when**  | MnS Consumer needs to access a specific MnS Producer(s). |  |
| **Step 1 (M)** | MnS Consumer queries MnS Registry with filter criteria based on the management service(s) of interest. |  |
| **Step 2 (M)** | MnS Consumer receives response with MnS Info for the management service(s) which match the criteria. |  |
| **Ends when**  | All the steps identified above are successfully completed. |  |
| **Exceptions** | One of the mandatory steps fails. |  |
| **Post-conditions** | MnS Consumer has basic information about the management service(s). |  |
| **Traceability**  | REQ-DMS-2, REQ-DMS-3, REQ-DMS-4  |  |

NOTE: MnS information refer to the information used by the consumer to discover the producers of specific Management Services and to derive the addresses of the Management Service.

#### 5.2.1.4 Providing detailed capabilities about management service

| Use case stage | Evolution/Specification | <<Uses>>Related use |
| --- | --- | --- |
| **Goal**  | Management service detailed capabilities are exposed. |  |
| **Actors and Roles** |  |  |
| **Telecom resources** | - |  |
| **Assumptions** | Management service detailed capabilities are available. |  |
| **Pre-conditions** | Management service detailed capabilities are ready to be exposed. |  |
| **Begins when**  | MnS Producer wants to expose its detailed capabilities. |  |
| **Step 1 (M)** | Management service detailed capabilities are exposed by MnS Producer. |  |
| **Post-conditions** | Management services detailed capabilities have been exposed. |  |
| **Traceability**  |  |  |

#### 5.2.1.5 MnS Consumer retrieves detailed capabilities about management service

| Use case stage | Evolution/Specification | <<Uses>>Related use |
| --- | --- | --- |
| **Goal**  | MnS Consumer retrieves detailed capabilities for specific MnS Producer(s). |  |
| **Actors and Roles** | MnS Consumer |  |
| **Telecom resources** | - |  |
| **Assumptions** | Management service has ability to expose its detailed capabilities. |  |
| **Pre-conditions** | Authorized MnS Consumer knows location and method to retrieve detailed capabilities. |  |
| **Begins when**  | MnS Consumer requires to retrieve detailed capabilities of specific MnS Producer(s). |  |
| **Step 1 (M)** | MnS Consumer reads detailed capabilities from MnS Producer of interest. |  |
| **Post-conditions** | MnS Consumer has retrieved detailed capabilities of specific MnS Producer(s). |  |
| **Traceability**  |  |  |

### 5.2.2 Requirements

**REQ-DMS-1:** The 3GPP management system shall provide capabilities allowing MnS producers to register their management capabilities (including the endpoint address) at MnS discovery service producer for use by MnS consumers wishing to interact with these MnS producers.

**REQ-DMS-2:** The 3GPP management system shall provide capabilities allowing MnS consumers to retrieve the management capabilities registered at MnS discovery service producer by MnS producers.

**REQ-DMS-3:** The 3GPP management system shall provide capabilities allowing to discover MnS producers that are managing a specified managed entity.

**REQ-DMS-4:** The 3GPP management system shall provide capabilities allowing to discover the managed entities a MnS producer is responsible for.

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| **3rd Change** |

# 5.X Versioning of Management Services

## 5.X.1 Overview

A version number is generally defined as a unique identifier to differentiate specific API releases.

In the context of SBMA, the MnS version is used to differentiate basic operations (i.e. component A) to assist an MnS Consumer in understanding the standardized operations of the MnS Producer.

The MnS version does not imply other capabilities (i.e. component B and component C) which are independent of the API version and are provided during detailed discovery.

For SBMA, each MnS definition also contains information to identify the 3GPP specification(s) and version which were used to define it.

## 5.X.2 Use cases

### 5.X.2.1 MnS version definition

Per definition of “API version numbers” in [x], clause 4.3.1.1 an MnS version number consists of at least 3 fields, following a MAJOR.MINOR.PATCH pattern plus operator specific version information.

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.

The 4th element (vendor specific version) shall be appended after the 3 first version fields using the plus sign "+" character and shall consist of a list of dot-separated identifiers, where each identifier may contain only alphanumeric characters and hyphens ([0-9A-Za-z-]).

### 5.X.2.2 MnS API version value handling

For SBMA, each MnS definition contains information to identify the MnS API version.

A default MnS version value (e.g. ’18.5.0’) is provided in the solution set definitions provided by 3GPP.

Each vendor provides appropriate version value for each MnS based on their MnS implementation and product release strategy.

Recommended guidelines for version incrementing are provided in [x], clause 4.3.1.2.

### 5.X.2.3 MnS version usage

The MnS version is available in the MnS Registry NRM fragment [32] in support of MnS Discovery as defined in this specification.

## 5.X.3 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 solution set files/modules.

**REQ-MNS-versioning-2:** The MnS version number shall be vendor specified.

**REQ-MNS-versioning-3:** An MnS Producer may comprise multiple solution set files/modules, each containing version information, however the MnS version in the registry shall provide a single version number per MnS Producer.

**REQ-MNS-versioning-4:** The MnS Producer shall advertise the MnS version in the MnS registry.

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| **4rd Change** |

# A.x Examples of MnS version usage

## A.x.1 Version information in OpenAPI definitions

The OpenAPI solution set follows a file naming convention that indicates the TS and MnS, e.g. *TS28532\_ProvMnS.yaml*. This can be helpful in identifying which yaml files define an MnS.

Each contains information which can be used to associate the yaml definition to the specific 3GPP TS version on which it is based. Excerpt from *TS28532\_ProvMnS.yaml*:

openapi: 3.0.1

info:

 title: Provisioning MnS

 version: 18.5.0

 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/

Such files also contain default MnSVersion information:

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: 18.5.0

 URI-LDN-first-part:

 description: See clause 4.4.2 of TS 32.158

 default: ''

An appropriate MnS Version value is provided by the implementation and used in the MnS Registry.

The default MnS version value may be modifed before publishing the MnS in the MnS Registry.

### A.x.1.1 Example, MnS API version follows 3GPP release

In case of an “as-is” MnS definition (i.e. no modifications from 3GPP specification) the MnS version would be the same as that of the 3GPP release containing the 3GPP definition.

For example [A.x.1] above the value for 3GPP Release 18 would be:

 MnSVersion:

 description: Vendor X, 3GPP Version number of the OpenAPI definition

 default: 18.5.0

In case of a modified MnS definition (i.e. modifications from 3GPP specification) the MnS version should be updated to reflect the modifications.

For example [A.x.1] above, the value for 3GPP Release 18 (v18.5.0) with a backward compatible correction could be:

 MnSVersion:

 description: Vendor X, Version number of the OpenAPI definition

 default: 18.5.1+vendorX.2025-01

For example [A.x.1] above, the value for 3GPP Release 18 with a backward compatible feature addition could be:

 MnSVersion:

 description: Vendor X, Version number of the OpenAPI definition

 default: 18.6.0+vendorX.2025-02

For example [A.x.1] above, the value for 3GPP Release 18 with a non-backward compatible feature addition should result in a new 3GPP release:

 MnSVersion:

 description: Vendor X, Version number of the OpenAPI definition

 default: 19.0.0+vendorX.2025-01

### A.x.1.2 Example, MnS version follows vendor release

In cases where a vendor provides their MnS implementation in a manner consistent with their product release strategy, which may be decoupled from a specific 3GPP release, the 3GPP release number would likely not be the basis for the MnS version values.

For example [A.x.1] the value for 3GPP Release 18 (v18.5.0) could be:

 MnSVersion:

 description: Vendor X, Version number of the OpenAPI definition

 default: 1.0.0+vendorX.2025-01

For example [A.x.1] the value for 3GPP Release 18 (v18.5.0) and 3GPP Release 19 (v19.2.1) could be:

 MnSVersion:

 description: Vendor X, Version number of the OpenAPI definition

 default: 2.0.0+vendorX.2026-01