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Technical Specification

3rd Generation Partnership Project;

Technical Specification Group Services and System Aspects;

Telecommunication management;

Generic Network Resource Model (NRM)

Integration Reference Point (IRP);

Solution Set (SS) definitions

(Release 19)

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# Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

# Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; as identified below:

28.621 Generic Network Resource Model (NRM) Integration Reference Point (IRP); Requirements.

28.622 Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS).

**28.623 Generic Network Resource Model (NRM)** **Integration Reference Point (IRP); Solution Set (SS) definitions.**

# 1 Scope

This TS-family specifies a generic Network Resource Model, NRM (also referred to as a Management Information Model - MIM) with definitions of Information Object Classes (IOCs) and Managed Object Classes (MOCs).

The present document specifies the Solution Set definition for the Generic NRM IRP.

The Solution Set definition is related to 3GPP TS 28.622 [4].

Note that the present document is applicable to deployment scenarios using the Service Based Management Architecture (SBMA) as defined in TS 28.533 [20]. For deployment scenarios using the IRP framework the latest Rel-14 version of TS 28.623 is applicable.

# 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 TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.102: "Telecommunication management; Architecture".

[3] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

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

[5] Void

[6] Void

[7] Void

[8] Void

[9] Void.

[10] Void

[11] Void

[12] Void

[13] Void

[14] 3GPP TS 32.160: "Management and orchestration; Management Service Template".

[15] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[16] IETF RFC 8528: "YANG Schema Mount".

[17] Management and Orchestration APIs Stage 3 Repository <https://forge.3gpp.org/rep/sa5/MnS/-/tree/Tag_Rel19_SA107/>

[18] RFC 8525: "YANG Library"

[19] RFC 6022: "YANG Module for NETCONF Monitoring"

[20] 3GPP TS 28.533: "Management and orchestration; Architecture framework"

[21] 3GPP TS 32.161: "Management and orchestration; JSON expressions (Jex)".

[22] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[23] IETF RFC 7950: “The YANG 1.1 Data Modeling Language”

[24] IETF RFC 6991: “Common YANG Data Types”

# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [15], 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.600 [3], 3GPP TS 28.622 [4] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [15] and 3GPP TS 32.101 [1], 3GPP TS 32.102 [2] and 3GPP TS 32.600 [3] and 3GPP TS 28.622 [4].

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [15], 3GPP TS 32.600 [3] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [15] and 3GPP TS 32.600 [3].

JSON JavaScript Object Notation

SS Solution Set

# 4 Solution Set (SS) definitions

## 4.0 3GPP Generic NRM IRP Solution Set Definitions

This latest Rel-14 version of TS 28.623 specifies the Solution Set definition for the Generic NRM IRP.

## 4.1 Void

## 4.2 Void

## 4.3 OpenAPI Definitions

The present clause contains the OpenAPI definitions of the Generic NRM in YAML format.

The Information Service (IS) of the Generic NRM is defined in 3GPP TS 28.622 [4].

Mapping rules to produce the OpenAPI definition based on the IS are defined in 3GPP TS 32.160 [14].

OpenAPI/YAML definitions are specified in 3GPP Forge [17].

Directory: OpenAPI

Files:

TS28623\_ComDefs.yaml

TS28623\_GenericNrm.yaml

TS28623\_PmControlNrm.yaml

TS28623\_ThresholdMonitorNrm.yaml

TS28623\_SubscriptionControlNrm.yaml

TS28623\_MnSRegistryNrm.yaml

TS28623\_FileManagementNrm.yaml

TS28623\_ManagementDataCollectionNrm.yaml

TS28623\_QoEMeasurementCollectionNrm.yaml

TS28623\_TraceControlNrm.yaml

TS28623\_FeatureNrm.yaml

## 4.4 YANG Definitions

The present clause contains the YANG definitions for the Generic NRM.

The Information Service (IS) of the Generic NRM is defined in 3GPP TS 28.622 [4].

Mapping rules to produce the YANG definition based on the IS are defined in 3GPP TS 32.160 [14].

YANG definitions are specified in 3GPP Forge [17].

Directory: yang-models

Files:

\_3gpp-common-ep-rp.yang

\_3gpp-common-filemanagement.yang

\_3gpp-common-files.yang

\_3gpp-common-managed-element.yang

\_3gpp-common-managed-function.yang

\_3gpp-common-managementdatacollection.yang

\_3gpp-common-management-node.yang

\_3gpp-common-measurements.yang

\_3gpp-common-mecontext.yang

\_3gpp-common-mnsagent.yang

\_3gpp-common-mnsregistry.yang

\_3gpp-common-qmcjob.yang

\_3gpp-common-subnetwork.yang

\_3gpp-common-subscription-control.yang

\_3gpp-common-top.yang

\_3gpp-common-trace.yang

\_3gpp-common-util.yang

\_3gpp-common-yang-extensions.yang

\_3gpp-common-yang-types.yang

Mount information

If the class ManagedElement and the underlying hierarchy is contained under a SubNetwork, the YANG module for ManagedElement shall be mounted at the mountpoint "children-of- SubNetwork" in the YANG module \_3gpp-common-subnetwork, together with the YANG modules containing IOCs that can be contained under the ManagedElement directly or under other IOCs contained by the ManagedElement.

If the class ManagedElement and the underlying hierarchy is contained under a MeContext, the YANG module for ManagedElement shall be mounted at the mountpoint "children-of-MeContext" in the YANG module \_3gpp-common-mecontext, together with the YANG modules containing IOCs that can be contained under the ManagedElement directly or under other IOCs contained by the ManagedElement.See IETF RFC 8528 [16] that describes the mechanism that adds the schema trees defined by a set of YANG modules onto a mount point defined in the schema tree in another YANG module.

Annex 0 (informative):  
Annex A-D in the latest Rel-14 version of TS 28.623 describes the solution set definition for the Generic NRM IRP.

Annex A (normative):  
Void

Annex B (normative):  
Void

Annex C (normative):  
Void

Annex D (normative):  
Void

Annex E (normative):Solution set specific provisions and examples

# E.1 RESTful HTTP-based solution set

**MnS producer specific schema definitions**

The NRM properties supported by a specific MnS producer are specified by MnS producer specific versions of the standardized OpenAPI definition files. These definitions reflect exactly what is supported. The OpenAPI definitions for unsupported properties are removed.

For example, the schema of the Generic NRM as published by 3GPP allows both a "SubNetwork" of type "SubNetwork-Multiple" and a "ManagedElement" of type "ManagedElement-Multiple" as roots. A concrete MnS producer has only one root class. Therefore, the schema definitions need to be modified accordingly in the file describing the NRM properties of a concrete MnS producer.

Furthermore, the standardized definition of "SubNetwork-Single" and "ManagedElement-Single" includes all possible name-contained objects. A concrete MnS producer supports in most cases only a subset of those. Unsupported name-containments need to be removed. For example, if "SubNetwork-Single" does not support the Intent NRM, then the following line "$ref: 'TS28312\_IntentNrm.yaml#/components/schemas/SubNetwork-ncO-IntentNrm" needs to be deleted.

When objects, attributes or attribute fields are unsupported, its schema definitions need to be removed.

The MnS producer specific schema of the Generic NRM is always the root schema, that includes references to child schemas in other files, that in turn may reference other schemas, and so forth. It is recommended to locate the root schema at a URI that is composed by appending the path component "/schemas" to the URI specified in "mnsAddress":

<mnsAddress>/schemas

To obtain all NRM properties supported by a MnS producer it is necessary to inspect the root schema and all its descendant schemas.

References in a file may contain a relative path or an absolute path. When a reference has a relative path, the processor shall assume that the referenced file is located at the same address as the file referencing it.

Examples:

The following example shows an excerpt of a file specifying a NRM, that supports the complete Generic NRM and the complete NR NRM. The root class is "SubNetwork".

The schema definition published by 3GPP specifies the allowed root classes.

|  |
| --- |
| NrmRoot:  oneOf:  - type: object  properties:  SubNetwork:  $ref: '#/components/schemas/SubNetwork-Multiple'  - type: object  properties:  ManagedElement:  $ref: '#/components/schemas/ManagedElement-Multiple' |

This definition needs to be modified to produce the following schema definition that allows only "SubNetwork" as root class.

|  |
| --- |
| NrmRoot:  type: object  properties:  SubNetwork:  $ref: '#/components/schemas/SubNetwork-Multiple' |

Furthermore, all objects name-contained by "SubNetwork" and "ManagedElement" that are not defined by the NR NRM need to be removed. The excerpt of the schema published by 3GPP may look as follows.

|  |
| --- |
| SubNetwork-Single:  allOf:  - $ref: '#/components/schemas/Top'  - $ref: '#/components/schemas/SubNetwork-Attr'  - $ref: '#/components/schemas/SubNetwork-ncO'  - $ref: 'TS28104\_MdaNrm.yaml#/components/schemas/SubNetwork-ncO-MdaNrm'  - $ref: 'TS28105\_AiMlNrm.yaml#/components/schemas/SubNetwork-ncO-AiMlNrm'  - $ref: 'TS28312\_IntentNrm.yaml#/components/schemas/SubNetwork-ncO-IntentNrm'  - $ref: 'TS28317\_RanScNrm.yaml#/components/schemas/SubNetwork-ncO-RanScNrm'  - $ref: 'TS28536\_CoslaNrm.yaml#/components/schemas/SubNetwork-ncO-CoslaNrm'  - $ref: 'TS28538\_EdgeNrm.yaml#/components/schemas/SubNetwork-ncO-EdgeNrm'  - $ref: 'TS28541\_SliceNrm.yaml#/components/schemas/SubNetwork-ncO-SliceNrm'  - $ref: 'TS28541\_NrNrm.yaml#/components/schemas/SubNetwork-ncO-NrNrm'  - $ref: 'TS28541\_5GcNrm.yaml#/components/schemas/SubNetwork-ncO-5GcNrm'  ManagedElement-Single:  allOf:  - $ref: '#/components/schemas/Top'  - $ref: '#/components/schemas/ManagedElement-Attr'  - $ref: '#/components/schemas/ManagedElement-ncO'  - $ref: 'TS28104\_MdaNrm.yaml#/components/schemas/ManagedElement-ncO-MdaNrm'  - $ref: 'TS28105\_AiMlNrm.yaml#/components/schemas/ManagedElement-ncO-AiMlNrm'  - $ref: 'TS28536\_CoslaNrm.yaml#/components/schemas/ManagedElement-ncO-CoslaNrm'  - $ref: 'TS28541\_NrNrm.yaml#/components/schemas/ManagedElement-ncO-NrNrm'  - $ref: 'TS28541\_5GcNrm.yaml#/components/schemas/ManagedElement-ncO-5GcNrm' |

The schema describing the example NRM includes only name-containments from the NR NRM.

|  |
| --- |
| SubNetwork-Single:  allOf:  - $ref: '#/components/schemas/Top'  - $ref: '#/components/schemas/SubNetwork-Attr'  - $ref: '#/components/schemas/SubNetwork-ncO'  - $ref: 'TS28541\_NrNrm.yaml#/components/schemas/SubNetwork-ncO-NrNrm'  ManagedElement-Single:  allOf:  - $ref: '#/components/schemas/Top'  - $ref: '#/components/schemas/ManagedElement-Attr'  - $ref: '#/components/schemas/ManagedElement-ncO'  - $ref: 'TS28541\_NrNrm.yaml#/components/schemas/ManagedElement-ncO-NrNrm' |

The next example demonstrates how to deal with attributes whose support qualifier is optional and that are not supported by a MnS producer. The "FileDownLoadJob" is a case that has as one optional attribute, the " notificationRecipientAddress". The schema published by 3GPP includes its attribute definition.

|  |
| --- |
| FileDownloadJob-Single:  allOf:  - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'  - type: object  properties:  attributes:  type: object  properties:  fileLocation:  type: string  notificationRecipientAddress:  $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Uri'  cancelJob:  type: string  enum:  - TRUE  - FALSE  jobMonitor:  $ref: '#/components/schemas/FileDownloadJobProcessMonitor' |

The schema describing what is supported on the MnS producer does not include it.

|  |
| --- |
| FileDownloadJob-Single:  allOf:  - $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'  - type: object  properties:  attributes:  type: object  properties:  fileLocation:  type: string  cancelJob:  type: string  enum:  - TRUE  - FALSE  jobMonitor:  $ref: '#/components/schemas/FileDownloadJobProcessMonitor' |

The following example shows possible URIs for accessing the MnS producer specific schema of the Generic NRM, the file that always needs to be retrieved first.

|  |
| --- |
| https://example.com/management/ProvMnS/1800/schemas/TS28623\_GenericNrm\_VS.yaml  sftp://example.com/management/ProvMnS/1800/schemas/TS28623\_GenericNrm\_VS.yaml |

**NtfSubscriptionControl**

The format of the value of the attribute "dataNodeSelector" shall be a Jex expression that is compliant to either the Jex basic profile specified in clause 7.4 of TS 32.161 [21]) or to the Jex advanced profile specified in clause 7.5 of TS 32.161 [21]). The value of the attribute "notificationFilter" shall be a Jex expression that is compliant to the Jex conditions profile specified in clause 7.6 of TS 32.161 [21]). The accessible data nodes of the Jex expressions are equal to the nodes in the tree starting at the parent object of the "NtfSubscriptionControl" object.

Examples:

The following example demonstrates how an "NtfSubscriptionControl" object can be used for monitoring quality of service alarm notifications from all "YxzFunction" objects under all "ManagedElement" objects in a specific "SubNetwork".

|  |
| --- |
| PUT /3gpp-management/SubNetwork=SN1/NtfSubscriptionControl=NSC1 HTTP/1.1  Host: example.org  Content-Type: application/json  {  "notificationRecipientAddress": "example.org/3gpp-management/alarm-notification-sink",  "notificationTypes": [  "notifyNewAlarm",  "notifyChangedAlarmGeneral",  "notifyClearedAlarm"  ],  "scope": {  "dataNodeSelector": "/SubNetwork[id="SN1"]/ManagedElement/XyzFunction"  },  "notificationFilter": "alarmType=\"QUALITY\_OF\_SERVICE\_ALARM\""  } |

The next example shows how the operational state and administrative state attributes of all "YxzFunction" objects under all "ManagedElement" objects in a specific "SubNetwork" can be monitored.

|  |
| --- |
| PUT /3gpp-management/SubNetwork[id"=SN1"]/NtfSubscriptionControl=NSC1 HTTP/1.1  Host: example.org  Content-Type: application/json  {  "notificationRecipientAddress": "http://example.org/3gpp-management/cm-notification-sink",  "notificationTypes": [  " notifyMOIChanges "  ],  "scope": {  "dataNodeSelector": "/SubNetwork[id="SN"1/ManagedElement/XyzFunction/attributes\  (operationalState | administrativeState)"  }  } |

**ConditionMonitor**

The value of the attribute "conditions" shall be a Jex expression that is compliant to the Jex conditions profile specified in clause 7.6 of TS 32.161 [21]). The accessible data nodes of the Jex expressions are equal to the nodes in the tree starting at the parent object of the "ConditionMonitor" object.

Examples:

The following example demonstrates how the "ConditionMonitor" can be used for monitoring alarm lists. The condition below evaluates to true, when an alarm is raised on the object instance identified by "DN1".

|  |
| --- |
| "condition": \  "/SubNetwork[id="SN1"]/AlarmList[id="AL1"]/attributes/alarmRecords/\*/objectInstance="DN1" |

The occurrence of this condition may for example switch on a "PerfMetricJob" to start collecting performance metrics on the alarmed object instance. To do so the "conditionMonitorRef" attribute of the "PerfMetricJob" must specify the DN of the "ConditionMonitor".

In the next example the condition in the example above is modified to include the status of a "Scheduler". The modified condition evaluates to true, when an alarm is raised on the object instance identified by "DN1", but only in the time periods specified in the "Scheduler".

|  |
| --- |
| "condition": \  "/SubNetwork[id="SN1"]/AlarmList[id="AL1"]/attributes/alarmRecords/\*/objectInstance="DN1\  and /SubNetwork[id="SN1"]/Scheduler[id="S1"]/attributes/schedulerStatus=true" |

### E.1.1 Common data types

Table E.1. 1-1 includes clarifications on the realization of some data types.

**Table E.1. 1-1: Mapping of common data types**

|  |  |  |
| --- | --- | --- |
| Stage-2 Type Name | YAML type | Description |
| Float | Number, with format “float” | Defined in OpenAPI data types [22] |

# E.2 YANG/Netconf-based solution set

### E.2.1 NRM properties supported

The YANG module "ietf-yang-library" (RFC 8525 [18]) is available via NETCONF at the "mnsAddress". This YANG module lists the supported YANG modules and related information.

The individual supported YANG modules shall be accessible via the "ietf-netconf-monitoring module" (RFC 6022 [19]) with the "<get-schema>" operation. The individual supported YANG modules may also be accessible via the "ietf-yang-library module" (RFC 8525[18]) as specified by the leaves "/modules-state/module/schema", "/yang-library/module-set/import-only-module/location" and "/yang-library/module-set/module/location".

### E.2.2 Common data types

Data types in YANG have the same name as in stage 2 also considering the mapping rule in TS 32.160 [14] clause 6.2.16.1. There are some data types that do not conform to this rule because the data type was defined by an external organisation (e.g. IETF) or pre-existing YANG definitions exist. Table E.2.2-1 lists the mapping for these exceptions.

**Table E.2.2-1: Mapping of common data types**

|  |  |  |
| --- | --- | --- |
| Stage-2 Type Name | YANG type | Description |
| FullTime | yang:time-with-zone-offset | Defined in ietf-yang-types.yang |
| Float | Decimal64 fraction-digits 1 to 7 | Defined in RFC 7950 [23] |
| DN | types3gpp:DistinguishedName | Defined in \_3gpp-common-yang-types.yang |
| Real | Decimal64 fraction-digits 8 to 18 | Defined in RFC 7950 [y23] |
| DnList | types3gpp:DistinguishedName | A list or leaf-list using type types3gpp:DistinguishedName |
| Fqdn | inet:host-name | Defined in ietf-inet-types.yang [24] |
| Ipv4Addr | inet:ipv4-address | Defined in ietf-inet-types.yang [24] |
| Ipv6Addr | inet:ipv6-address | Defined in ietf-inet-types.yang [24] |
| Ipv6Prefix | inet:ipv6-prefix | Defined in ietf-inet-types.yang [24] |
| Uri | inet:uri | Defined in ietf-inet-types.yang [24] |

Annex F (informative):  
Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Change history | | | | | | | |
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New |
| 2012-12 |  |  |  |  | New version after approval | 2.0.0 | 11.0.0 |
| 2013-06 | SA#60 | SP-130304 | 002 | 2 | Correction of XML schema | 11.0.0 | 11.1.0 |
| 2014-06 | SA#64 | SP-140332 | 003 | 1 | upgrade XSD | 11.1.0 | 11.2.0 |
| SP-140358 | 004 | - | remove the feature support statements |
| 2014-09 | SA#65 | SP-140560 | 005 | - | Update the link from Solution Set to Information Service due to the end of Release 12 | 11.2.0 | 12.0.0 |
| 2015-12 | SA#70 | SP-150691 | 006 | 1 | Add missing id attribute | 12.0.0 | 12.1.0 |
| 2016-01 |  |  |  |  | Upgrade to Rel-13 (MCC) | 12.1.0 | 13.0.0 |
| 2016-03 | SA#71 | SP-160031 | 010 | 1 | Make the XML schema well formed | 13.0.0 | 13.1.0 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2016-06 | SA#72 | SP-160407 | 0011 | - | F | Update the link from IRP Solution Set to IRP Information Service | 13.2.0 |
| 2017-03 | SA#75 | - | - | - |  | Promotion to Release 14 without technical change | 14.0.0 |
| 2017-06 | SA#76 | SP-170510 | 0015 | 2 | B | Modifications to align with IS to support Configuration Management for mobile networks that include virtualized network functions | 14.1.0 |
| 2018-03 | SA#79 | SP-180060 | 0016 | 1 | B | Add attribute peeParametersList to Solution Set definitions | 15.0.0 |
| 2018-12 | SA#82 | SP-181042 | 0018 | 1 | F | Update NRM root IOCs Solution Set to support priority | 15.1.0 |
| 2019-03 | SA#83 | SP-190121 | 0020 | 1 | F | Update Generic NRM Solution Set to support JSON | 15.2.0 |
| 2019-06 | SA#84 | SP-190371 | 0021 | - | B | Add IOCs for threshold monitoring control | 16.0.0 |
| 2019-09 | SA#85 | SP-190745 | 0026 | 1 | F | generate JSON definition for generic NRM based on new style guideline | 16.1.0 |
| 2019-09 | SA#85 | SP-190744 | 0027 | - | A | Add IDL XML YANG solutions | 16.1.0 |
| 2019-09 | SA#85 | SP-190751 | 0029 | - | A | Correct references and remove not need abbreviations | 16.1.0 |
| 2019-12 | SA#86 | SP-191166 | 0031 | 1 | F | Correct XML solution set for generic NRM | 16.2.0 |
| 2019-12 | SA#86 | SP-191166 | 0035 | - | B | Updates to YANG SS | 16.2.0 |
| 2019-12 | SA#86 | SP-191173 | 0037 | 1 | A | Add the definition of attribute measurementsList | 16.2.0 |
| 2019-12 | SA#86 | SP-191166 | 0039 | - | B | Add heartbeat control NRM fragment - Stage 3 | 16.2.0 |
| 2019-12 | SA#86 | SP-191166 | 0040 | - | B | Add notification subscription control NRM fragment - Stage 3 | 16.2.0 |
| 2020-03 | SA#87E | SP-200163 | 0041 | 2 | B | Add configurable KPI control NRM | 16.3.0 |
| 2020-03 | SA#87E | SP-200163 | 0042 | - | B | Add configurable FM - YANG Solution | 16.3.0 |
| 2020-03 | SA#87E | SP-200230 | 0043 | 1 | F | Add OpenAPI definitions required by the ProvMnS | 16.3.0 |
| 2020-03 | SA#87E | SP-200169 | 0045 |  | F | Correct errors in yang solution set | 16.3.0 |
| 2020-03 | SA#87E |  |  |  |  | Correction in the implementation of CR0041 | 16.3.1 |
| 2020-03 | SA#87E |  |  |  |  | Correction of implementation | 16.3.2 |
| 2020-07 | SA#88E | SP-200490 | 0046 | 2 | B | Add OpenAPI definitions for the FM control fragment | 16.4.0 |
| 2020-07 | SA#88E | SP-200489 | 0047 | - | F | Correct OpenAPI definition for notificationTypes | 16.4.0 |
| 2020-07 | SA#88E | SP-200483 | 0079 | 2 | B | Add trace control NRM fragment stage 3 | 16.4.0 |
| 2020-07 | SA#88E | SP-200484 | 0080 | - | D | Fix inconsistent formatting | 16.4.0 |
| 2020-07 | SA#88E | SP-200493 | 0081 | - | B | Stage3 add the NRM fragment for SON management | 16.4.0 |
| 2020-07 | SA#88E | SP-200485 | 0082 | - | F | Update the definition of SNssai | 16.4.0 |
| 2020-07 | SA#88E | SP-200490 | 0084 | - | F | Update ManagedElement YANG moduel | 16.4.0 |
| 2020-07 | SA#88E | SP-200596 | 0085 | 1 | F | Update Nrm YANG | 16.4.0 |
| 2020-07 | SA#88E | SP-200490 | 0087 | 2 | F | Update PM control fragment (OpenAPI definitions) | 16.4.0 |
| 2020-07 | SA#88E | SP-200490 | 0088 | - | F | Clarify usage of the VsDataContainer (OpenAPI definitions) | 16.4.0 |
| 2020-07 | SA#88E | SP-200490 | 0089 | - | F | Add common data definitions (OpenAPI definitions) | 16.4.0 |
| 2020-07 | SA#88E | SP-200490 | 0091 | - | F | Update FM control fragment (YANG definitions) | 16.4.0 |
| 2020-07 | SA#88E | SP-200490 | 0092 | - | F | Update PM Control fragment (YANG definitions) | 16.4.0 |
| 2020-07 | SA#88E | SP-200490 | 0093 | 1 | F | Correct genericNRM definition in XML solution | 16.4.0 |
| 2020-09 | SA#89e | SP-200729 | 0095 | - | F | Correction of YANG errors | 16.5.0 |
| 2020-09 | SA#89e | SP-200727 | 0101 | 1 | A | Clean-up definitions and references | 16.5.0 |
| 2020-09 | SA#89e | SP-200729 | 0102 | - | B | YANG SS for Trace Control | 16.5.0 |
| 2020-09 | SA#89e | SP-200724 | 0103 | - | F | Add missing definitions to comDefs.yaml (OpenAPI definitions) | 16.5.0 |
| 2020-09 | SA#89e | SP-200724 | 0104 | - | F | Correct various smaller errors (e.g. validation errors) in genericNRM.yaml (OpenAPI definitions) | 16.5.0 |
| 2020-09 | SA#89e | SP-200729 | 0105 | 1 | F | Correct ThresholdMonitor definition (OpenAPI definitions) | 16.5.0 |
| 2020-09 | SA#89e | SP-200729 | 0106 | - | F | Update HeartbeatControl YANG definition | 16.5.0 |
| 2020-09 | SA#89e | SP-200729 | 0107 | - | F | Update ThresholdMonitor YANG definition | 16.5.0 |
| 2020-12 | SA#90e | SP-201057 | 0108 | - | F | Correction of NRM YANG errors | 16.6.0 |
| 2020-12 | SA#90e | SP-201063 | 0109 | 1 | F | Add new MDT specific parameter collection period for NR aligning with 28.622 for stage 3 | 16.6.0 |
| 2020-12 | SA#90e | SP-201057 | 0110 | - | F | Remove thresholdLevel attribute from ThresholdMonitor (OpenAPI definition) | 16.6.0 |
| 2020-12 | SA#90e | SP-201050 | 0111 | 1 | F | Correct and add types in comDefs.yaml (OpenAPI definition) | 16.6.0 |
| 2020-12 | SA#90e | SP-201050 | 0112 | 1 | F | Use comDefs.yaml instead of local definitions in genericNrm.yaml (OpenAPI definition) | 16.6.0 |
| 2020-12 | SA#90e | SP-201057 | 0113 | 1 | F | Update attribute perfMetricJobGroupId. | 16.6.0 |
| 2020-12 | SA#90e | SP-201057 | 0114 | - | F | Remove value handling from the granularityPeriod description | 16.6.0 |
| 2020-12 | SA#90e | SP-201088 | 0115 | - | F | Correct and add types in comDefs.yaml (OpenAPI definition) | 16.6.0 |
| 2020-12 | SA#90e | SP-201063 | 0117 |  | F | Correct trace target parameter for trace control in stage 3 | 16.6.0 |
| 2020-12 | SA#90e | SP-201089 | 0118 | 1 | F | Remove incorrect S-NSSAI definition from YANG SS | 16.6.0 |
| 2021-03 | SA#91e | SP-210146 | 0121 | - | F | Fix compilation errors | 16.7.0 |
| 2021-03 | SA#91e | SP-210153 | 0125 | - | F | YANG compilation error and missing stage 2 corrections | 16.7.0 |
| 2021-06 | SA#92e | SP-210406 | 0119 | 2 | F | Replace legacy IRPAgent with MnsAgent (OpenAPI definition) | 16.8.0 |
| 2021-06 | SA#92e | SP-210397 | 0127 | 1 | F | Correction of Trace/MDT related parameters (OpenAPI definition) | 16.8.0 |
| 2021-06 | SA#92e | SP-210397 | 0128 | 1 | F | Align Trace/MDT related parameters to TS 32.422 (OpenAPI definition) | 16.8.0 |
| 2021-06 | SA#92e | SP-210406 | 0129 | 1 | F | Clean up regarding common data types (OpenAPI definition) | 16.8.0 |
| 2021-06 | SA#92e | SP-210411 | 0130 | - | F | Correct definition of additionalInformation (YANG) | 16.8.0 |
| 2021-09 | SA#93e | SP-210886 | 0131 | 1 | F | Replace local data type definition for notificationFilter by common filter definition | 16.9.0 |
| 2021-09 | SA#93e | SP-210886 | 0132 | 1 | F | Correct data type of notificationId (YANG definitions) | 16.9.0 |
| 2021-09 | SA#93e | SP-210886 | 0133 | 1 | F | Clarify resource id is required and nullable (OpenAPI definitions) | 16.9.0 |
| 2021-09 | SA#93e | SP-210865 | 0134 | - | F | Correction and clarification of reporting in TraceJob (stage3) | 16.9.0 |
| 2021-09 | SA#93e | SP-210865 | 0135 | - | F | Adaptation and cleanup of Trace/MDT related parameters (stage3) | 16.9.0 |
| 2021-09 | SA#93e | SP-210871 | 0136 | - | F | YANG updates to correct YANG merging problems | 16.9.0 |
| 2021-09 | SA#93e | SP-210867 | 0137 | 1 | F | Correction of YANG Solution set | 16.9.0 |
| 2021-12 | SA#94e | SP-211475 | 0139 | 1 | F | Correction of YANG Solution set | 16.10.0 |
| 2021-12 | SA#94e | SP-211458 | 0142 | - | F | Introduce missing IEs for HSS and UDM Trace Record | 16.10.0 |
| 2021-12 | SA#94e | SP-211465 | 0138 | 1 | B | Add new common types for YANG | 17.0.0 |
| 2021-12 | SA#94e | SP-211467 | 0140 | - | B | Add support for MnS Discovery | 17.0.0 |
| 2021-12 | SA#94e | SP-211473 | 0141 | - | B | Add new common types for YANG | 17.0.0 |
| 2022-03 | SA#95e | SP-220168 | 0144 | 1 | C | Asynchronous operation NRM additions - YANG Stage-3 | 17.1.0 |
| 2022-03 | SA#95e | SP-220177 | 0146 | 1 | B | Enhance NRM with geographical information supporting MDA | 17.1.0 |
| 2022-03 | SA#95e | SP-220163 | 0147 | 1 | B | Add support for discovery of managed entities | 17.1.0 |
| 2022-03 | SA#95e | SP-220183 | 0148 | - | B | Add file retrieval NRM fragment (OpenAPI definitions) | 17.1.0 |
| 2022-03 | SA#95e | SP-220183 | 0149 | 1 | B | Add file download NRM fragment (OpenAPI definitions) | 17.1.0 |
| 2022-03 | SA#95e | SP-220171 | 0153 | - | B | Add parameter to configure beam level measurements in NR MDT | 17.1.0 |
| 2022-03 | SA#95e | SP-220183 | 0154 | - | B | Add attribute to configure an identifier of a TraceJob | 17.1.0 |
| 2022-03 | SA#95e | SP-220187 | 0156 |  | B | Add file download NRM fragment (YANG) | 17.1.0 |
| 2022-06 | SA#96 | SP-220498 | 0159 | - | A | Stage 3 Yang fix for 3GPP Common Trace | 17.2.0 |
| 2022-06 | SA#96 | SP-220498 | 0162 | 1 | A | OpenAPI file name and dependence change for comDefs.yaml | 17.2.0 |
| 2022-06 | SA#96 | SP-220498 | 0163 | 1 | A | OpenAPI file name and dependence change for genericNrm.yaml | 17.2.0 |
| 2022-06 | SA#96 | SP-220498 | 0166 | - | A | yaml indentation correction for comDefs.yaml | 17.2.0 |
| 2022-06 | SA#96 | SP-220516 | 0168 | - | A | Alignment of attribute names of TraceJob IOC to TS 32.422 (stage 3) | 17.2.0 |
| 2022-06 | SA#96 | SP-220496 | 0169 | - | F | Fix description of attribute mnsScope | 17.2.0 |
| 2022-06 | SA#96 | SP-220516 | 0174 | - | A | Alignment of attribute values of attribute tjMDTReportInterval to TS 32.422, TS 38.413 and TS 38.423 | 17.2.0 |
| 2022-06 | SA#96 | SP-220505 | 0175 | - | B | Add stage 3 for management data collection and discovery (OpenAPI definitions) | 17.2.0 |
| 2022-06 | SA#96 |  |  |  |  | Correction of implementation in D.2.10 | 17.2.1 |
| 2022-06 | SA#96 |  |  |  |  | Further corrections on the changes in the code from the annexes | 17.2.2 |
| 2022-09 | SA#97e | SP-220853 | 0180 | - | A | YANG Corrections | 17.3.0 |
| 2022-09 | SA#97e | SP-220859 | 0182 | 1 | A | Adding missing interface for SMF | 17.3.0 |
| 2022-09 | SA#97e | SP-220863 | 0186 | - | F | Correction of file names in OpenAPI Solution Set | 17.3.0 |
| 2022-09 | SA#97e | SP-220864 | 0188 | - | A | Correction of attribute names according to Upper Camel Case Convention and WKA | 17.3.0 |
| 2022-09 | SA#97e | SP-220855 | 0185 | 1 | B | Add QMC job (stage 3 YANG) | 18.0.0 |
| 2022-09 | SA#97e |  |  |  |  | Alignment with content in FORGE | 18.0.1 |
| 2022-09 | SA#97e |  |  |  |  | Alignment with content in FORGE (Yang) | 18.0.2 |
| 2023-01 | SA#98e | SP-221172 | 0189 | - | F | YANG Corrections in Word TS | 18.1.0 |
| 2023-01 | SA#98e | SP-221188 | 0191 | 1 | B | FIles and File IOCs YANG | 18.1.0 |
| 2023-01 | SA#98e | SP-221186 | 0194 | - | A | Add YANG for ManagementDataCollection | 18.1.0 |
| 2023-01 | SA#98e | SP-221188 | 0197 | - | B | NRM enhancements for NF List | 18.1.0 |
| 2023-01 | SA#98e | SP-221173 | 0202 | 1 | A | Adding YANG begin and End markers | 18.1.0 |
| 2023-01 | SA#98e | SP-221186 | 0204 | 1 | A | Correct yaml definition for ManagementDataCollection IOC | 18.1.0 |
| 2023-01 | SA#98e | SP-221187 | 0206 | - | A | Adding a new data type only to represent GeoArea via convex polygon - Stage 3 | 18.1.0 |
| 2023-01 | SA#98e | SP-221172 | 0212 | - | F | YANG Corrections | 18.1.0 |
| 2023-01 | SA#98e | SP-221176 | 0215 |  | B | Definition of parameters MDT Alignment Information and Available RAN Visible QoE Metrics (stage3, YANG) | 18.1.0 |
| 2023-01 | SA#98e | SP-221170 | 0218 | - | A | Add missing attribute properties to YANG | 18.1.0 |
| 2023-01 | SA#98e | SP-221197 | 0219 | 1 | A | Correct M6 Delay Threshold to align with TS 38.314 and TS 38.413 | 18.1.0 |
| 2023-01 | SA#98e |  |  |  |  | Fixing minor implementation mistakes | 18.1.1 |
| 2023-03 | SA#99 | SP-230199 | 0223 | 1 | A | Fix IpAddr stage 3 definition | 18.2.0 |
| 2023-03 | SA#99 | SP-230207 | 0226 | - | A | Adding altitude to GeoArea datatype - Stage 3 | 18.2.0 |
| 2023-03 | SA#99 | SP-230200 | 0230 | - | A | Missing Mount information | 18.2.0 |
| 2023-03 | SA#99 | SP-230210 | 0233 | 1 | A | Correcting traceRecordingSessionReference property (stage3) | 18.2.0 |
| 2023-03 | SA#99 | SP-230204 | 0234 | 1 | F | YANG Corrections | 18.2.0 |
| 2023-03 | SA#99 | SP-230208 | 0240 | 1 | A | Clarify reporting and monitoring period usage in SupportedPerfMetricGroup datatype. (stage3) | 18.2.0 |
| 2023-03 | SA#99 | SP-230211 | 0241 | - | F | Correct YANG for ReportingCtrl | 18.2.0 |
| 2023-03 | SA#99 |  |  |  |  | Correction of annexes for alignment with FORGE | 18.2.1 |
| 2023-06 | SA#100 | SP-230653 | 0214 | 3 | B | Add stage 3 for data type AvailabilityStatus | 18.3.0 |
| 2023-06 | SA#100 | SP-230651 | 0244 | 1 | F | Correcting the min and max Items possible for fiveQIValue attribute in Stage 3 | 18.3.0 |
| 2023-06 | SA#100 | SP-230649 | 0246 | - | A | correction to stage 3 implementation for MnSInfo and MnsRegistry | 18.3.0 |
| 2023-06 | SA#100 | SP-230651 | 0250 | - | F | YANG Corrections | 18.3.0 |
| 2023-06 | SA#100 |  |  |  |  | CR implementation corrections | 18.3.1 |
| 2023-09 | SA#101 | SP-230944 | 0243 | 4 | A | Clarify MnsRegistry handling, YANG SS R18 | 18.4.0 |
| 2023-09 | SA#101 | SP-230938 | 0255 | - | B | Rel18 CR TS 28.623 Stage 3 Re-structuring Trace job | 18.4.0 |
| 2023-09 | SA#101 | SP-230938 | 0256 | - | C | Rel-18 CR TS 28.623 Report Amount for M4, M5, M6 and M7 measurements in LTE | 18.4.0 |
| 2023-09 | SA#101 | SP-230960 | 0257 | - | C | Introduce MnS Producer Notification Capabilility | 18.4.0 |
| 2023-09 | SA#101 | SP-230942 | 0260 | 1 | A | Rel-18 CR 28.623 Clarify HeartbeatControl IOC definition (stage3, yang) | 18.4.0 |
| 2023-09 | SA#101 | SP-230938 | 0261 |  | B | Rel-18 CR TS 28.623 Stage 3 Re-structuring Trace job (yang) | 18.4.0 |
| 2023-09 | SA#101 | SP-230944 | 0266 | - | A | Improve DistinguishedName pattern in YANG - R18 | 18.4.0 |
| 2023-12 | SA#102 | SP-231458 | 0267 | - | B | TS28.623 Rel18 OpenAPI SS for QMCJob | 18.5.0 |
| 2023-12 | SA#102 | SP-231472 | 0268 | - | B | TS28.623 Rel18 OpenAPI SS for SupportedNotifications | 18.5.0 |
| 2023-12 | SA#102 | SP-231458 | 0269 | 1 | C | Rel-18 CR 28.623 Move normative YANG and YAML code to Forge | 18.5.0 |
| 2023-12 | SA#102 | SP-231492 | 0271 | 1 | A | Rel-18 CR 28.623 YANG Corrections and inVariant | 18.5.0 |
| 2023-12 | SA#102 | SP-231453 | 0272 | - | B | Rel-18 CR TS 28.623 Stage 3 Report Amount parameter in NR | 18.5.0 |
| 2023-12 | SA#102 | SP-231492 | 0274 |  | A | Rel-18 CR TS 28.623 Stage 3 Correction of ExcessPacketDelayThreshold definition | 18.5.0 |
| 2023-12 | SA#102 | SP-231458 | 0276 | 1 | B | Rel18 TS28.623 Add NRM fragments for scheduler and condition monitor (OpenAPI definition) | 18.5.0 |
| 2023-12 | SA#102 | SP-231452 | 0278 |  | A | Rel-18 CR 28.623 Clarify MnS scope value for Managed Elements (stage3, yang) | 18.5.0 |
| 2023-12 | SA#102 | SP-231457 | 0287 | 1 | A | Rel-18 CR TS28.623 Correct the yaml definition for ThresholdMonitor IOC to align with stage2 definition | 18.5.0 |
| 2023-12 | SA#102 | SP-231458 | 0288 | 1 | F | Rel-18 CR TS28.623 Separate yaml file for trace control NRM fragment | 18.5.0 |
| 2023-12 | SA#102 | SP-231477 | 0289 |  | B | Rel-18 CR TS 28.623 Enhance the ManagementDataCollection to support request management data per PLMN | 18.5.0 |
| 2023-12 | SA#102 | SP-231453 | 0290 | 1 | B | Rel-18 CR TS28.623 Adding NPN Area Scope of MDT | 18.5.0 |
| 2023-12 | SA#102 | SP-231494 | 0291 | - | F | Rel-18 CR TS 28.623 Solution Sets clarifications | 18.5.0 |
| 2023-12 | SA#102 | SP-231488 | 0294 | 3 | A | Rel-18 CR TS 28.623 Align N38 in SMF with TS23.501 | 18.5.0 |
| 2023-12 | SA#102 | SP-231453 | 0295 | 1 | B | Rel-18 CR TS 28.623 MDT support for NPN | 18.5.0 |
| 2023-12 | SA#102 | SP-231471 | 0299 | 1 | A | Rel-18 CR 28.623 Add measurement bin support to NRM (stage3, yang) | 18.5.0 |
| 2023-12 | SA#102 | SP-231488 | 0302 |  | A | Rel-18 CR TS28.623 Adding N16 and N16a into module\_3gpp-common-trace.yang | 18.5.0 |
| 2023-12 | SA#102 | SP-231494 | 0305 | 1 | F | Rel-18 TS 28.623 YANG Correction of GeoAreaGrp and GeoCoordinateGrp | 18.5.0 |
| 2023-12 | SA#102 |  |  |  |  | Add code files in zip | 18.5.1 |
| 2024-03 | SA#103 | SP-240205 | 0307 | 1 | F | TS28.623 Rel18 correction to Schema definition Issues for SubNetwork and ManagedElement of OpenAPI SS | 18.6.0 |
| 2024-03 | SA#103 | SP-240168 | 0308 | 1 | B | Rel-18 CR TS 28.623 Add annex with example for advertising NRM properties | 18.6.0 |
| 2024-03 | SA#103 | SP-240168 | 0309 |  | C | Rel-18 CR 28.623 Specify notificationFilter | 18.6.0 |
| 2024-03 | SA#103 | SP-240185 | 0311 |  | A | TS28.623 Rel18 correction to ReportingCtrl stage 3 OpenAPI implementation | 18.6.0 |
| 2024-03 | SA#103 | SP-240395 | 0312 |  | F | Rel-18 CR TS28.623 Separate yaml file for control NRM fragment | 18.6.0 |
| 2024-03 | SA#103 | SP-240205 | 0314 |  | F | Rel-18 CR 28.623 Removal of the Corba and XML Solution Sets | 18.6.0 |
| 2024-03 | SA#103 | SP-240168 | 0315 |  | C | Rel-18 CR 28.623 Remove-Update FM related parts | 18.6.0 |
| 2024-03 | SA#103 | SP-240180 | 0316 | 1 | B | Enhance TraceJob for UE level measurements collection | 18.6.0 |
| 2024-03 | SA#103 | SP-240168 | 0317 |  | B | Rel-18 CR 28.623 Change Filter data type from XPath 1.0 to Jex and new Error Response Code(OpenAPI) | 18.6.0 |
| 2024-03 | SA#103 | SP-240205 | 0328 | 1 | F | Rel-18 CR 28.623 YANG Corrections | 18.6.0 |
| 2024-03 | SA#103 | SP-240168 | 0329 | 1 | B | Rel-18 CR 28.623 Add new method for specifying the scope of subscriptions (OpenAPI definitions) | 18.6.0 |
| 2024-03 | SA#103 | SP-240168 | 0309 |  | C | Rel-18 CR 28.623 Specify notificationFilter | 18.6.0 |
| 2024-06 | SA#104 | SP-240805 | 0333 | 1 | A | Rel-18 CR 28.623 System created extension | 18.7.0 |
| 2024-06 | SA#104 | SP-240809 | 0338 | - | F | TS28.623 Rel18 corrections to Schema definition Issues for SubNetwork OpenAPI SS for TS28.318 | 18.7.0 |
| 2024-06 | SA#104 | SP-240805 | 0340 | - | A | TS28.623 Rel18 correction to OpenAPI stage 3 issues in TS28623\_ComDefs.yaml | 18.7.0 |
| 2024-06 | SA#104 | SP-240805 | 0342 | 1 | A | Rel-18 CR 28.623 Add missing trace message support to trace job (stage 3, yang) | 18.7.0 |
| 2024-06 | SA#104 | SP-240805 | 0344 | 1 | A | Rel-18 CR 28.623 Add missing trace message support to trace job (stage 3, yaml) | 18.7.0 |
| 2024-06 | SA#104 | SP-240809 | 0346 | - | F | Rel-18 CR 28.623 YANG Corrections | 18.7.0 |
| 2024-06 | SA#104 | SP-240821 | 0348 | - | F | Rel-18 CR TS 28.623 Add missing defautValue in YAML files to align with stage2 | 18.7.0 |
| 2024-06 | SA#104 | SP-240809 | 0353 | 1 | F | Rel-18 CR TS 28.623 Change NpnId from dataType to choice to align with TS 38.331 | 18.7.0 |
| 2024-06 | SA#104 | SP-240809 | 0354 | - | F | TS28.623 Rel18 Introducing Nrm root to Generic NRM YAML | 18.7.0 |
| 2024-06 | SA#104 | SP-240820 | 0356 | 1 | F | Rel-18 CR Clarify clause on MnS producer specific NRM schema | 18.7.0 |
| 2024-06 | SA#104 | SP-240820 | 0357 | 1 | F | Rel-18 CR Clarify use of Jex by the ConditionMonitor | 18.7.0 |
| 2024-06 | SA#104 | SP-240809 | 0359 | 1 | F | Rel-18 CR 28.623 YANG Corrections | 18.7.0 |
| 2024-06 | SA#104 | SP-240809 | 0360 | 1 | F | Rel-18 CR TS 28.623 Aligning Stage 3 YAML QMC attributes with Stage 2 | 18.7.0 |
| 2024-06 | SA#104 | SP-240805 | 0362 | - | A | Rel-18 CR TS 28.623 Remove notifyFileDeletion as notification type (YANG, stage 3) | 18.7.0 |
| 2024-06 | SA#104 | SP-240805 | 0365 | - | A | Rel-18 CR 28.623 Fix trace attribute definition (stage 3, yaml) | 18.7.0 |
| 2024-06 | SA#104 | SP-240805 | 0366 | - | A | Rel-18 CR 28.623 Fix trace attribute definition (stage 3, yang) | 18.7.0 |
| 2024-06 | SA#104 | SP-240818 | 0367 | - | F | Rel-18 CR 28.623 Clarification of attribute name for 5GC UE measurements | 18.7.0 |
| 2024-06 | SA#104 | SP-240831 | 0334 | 1 | F | R19 CR 28.623 missing MBS indication | 19.0.0 |
| 2024-06 | SA#104 | SP-240823 | 0337 | 1 | C | Rel-19 CR TS 28.623 Correct issues for the attribute with the ENUM type | 19.0.0 |
| 2024-06 | SA#104 | SP-240823 | 0351 | 1 | C | Rel-19 CR TS 28.623 Remove ManagedNFService | 19.0.0 |
| 2024-06 | SA#104 | SP-240823 | 0352 | 1 | C | Rel-19 CR TS 28.623 Update Schema definition for SubNetwork and ManagedElement for generic control NRM fragment of openAPI SS | 19.0.0 |
| 2024-06 | SA#104 | SP-240823 | 0355 | 1 | B | TS28.623 Rel19 common data Type stage 3 - YAML | 19.0.0 |
| 2024-06 | SA#104 | SP-240823 | 0373 | - | B | CR 28.623 Rel19 Common data types in YANG | 19.0.0 |
| 2024-07 | SA#104 |  |  |  |  | Apply correct format for headings. Fix reference 17 that should refer to the Rel-19 code. Add YANG and YAML files as attachments to the spec. | 19.0.1 |
| 2024-09 | SA#105 | SP-241178 | 0377 | - | A | Rel-19 CR 28.623 Clarification of attribute name for 5GC UE measurements | 19.1.0 |
| 2024-09 | SA#105 | SP-241175 | 0379 | 1 | A | Rel-19 CR 28.623 Correction on MDT configuration in MR-DC | 19.1.0 |
| 2024-09 | SA#105 | SP-241184 | 0380 | 1 | C | Rel-19 CR TS 28.623 Implement readonly attributes for openAPI SS | 19.1.0 |
| 2024-09 | SA#105 | SP-241162 | 0383 | - | A | Rel-19 CR 28.623 MeContext YANG mapping | 19.1.0 |
| 2024-09 | SA#105 | SP-241182 | 0387 | - | F | Rel-19 CR 28.623 YANG Corrections | 19.1.0 |
| 2024-09 | SA#105 | SP-241173 | 0389 | - | A | Rel19 correction to duplicate Scope definition and misalignment | 19.1.0 |
| 2024-09 | SA#105 | SP-241179 | 0391 | - | A | Rel-19 CR 28.623 Clarify usage of JEX for the dataNodeSelector attribute of NtfSubscriptionControl | 19.1.0 |
| 2024-09 | SA#105 | SP-241179 | 0393 | - | A | Rel-19 CR 28.623 Update ConditionMonitor for YANG | 19.1.0 |
| 2024-09 | SA#105 | SP-241175 | 0394 | - | A | Rel-19 CR 28.623 Correction of TraceJob attribute names according to specified name style | 19.1.0 |
| 2024-09 | SA#105 | SP-241170 | 0398 | - | A | Rel-19 CR 28.623 Cleanup of TraceJob | 19.1.0 |
| 2024-09 | SA#105 | SP-241170 | 0402 | 1 | A | Rel-19 CR 28.623 Correction of TraceJob attributes MBSFN Area List and Area Configuration For Neighboring Cells (stage 3) | 19.1.0 |
| 2024-09 | SA#105 | SP-241175 | 0404 | 1 | A | Rel-19 CR TS 28.623 Add missing interface and Trigger events for core functions | 19.1.0 |
| 2024-09 | SA#105 | SP-241185 | 0405 | 1 | B | Rel-19 CR 28.623 Trace new RRC reports | 19.1.0 |
| 2024-09 | SA#105 | SP-241179 | 0408 | 1 | A | Rel-19 CR TS 28.623 Correction of scope and add reference | 19.1.0 |
| 2024-09 | SA#105 | SP-241175 | 0421 | - | A | Rel-19 CR TS 28.623 Correction to AreaScope (stage 3, YANG) | 19.1.0 |
| 2024-09 | SA#105 | SP-241175 | 0426 | - | A | Rel-19 CR TS 28.623 Correction to AreaScope (stage 3, YAML) | 19.1.0 |
| 2024-12 | SA#106 | SP-241631 | 0435 | - | A | Rel-19 CR TS 28.623 Correct the YAML definition for PerfMetricJob and ProcessMonitor to align with stage2 | 19.2.0 |
| 2024-12 | SA#106 | SP-241638 | 0436 | 1 | C | Rel-19 CR TS 28.623 Implement readonly attributes for openAPI SS | 19.2.0 |
| 2024-12 | SA#106 | SP-241642 | 0438 | - | A | Rel-19 CR to TS 28.623 Correct wrong CR number in managed element YANG file | 19.2.0 |
| 2024-12 | SA#106 | SP-241647 | 0440 | - | B | Enhance the isUnique property for stage 3 OpenAPI | 19.2.0 |
| 2024-12 | SA#106 | SP-241642 | 0442 | - | A | Correction to Jex for dataNodeSelector and notificationFilter in OpenAPI | 19.2.0 |
| 2024-12 | SA#106 | SP-241642 | 0444 | 1 | A | Update Forge link and a few miscellaneous corrections | 19.2.0 |
| 2024-12 | SA#106 | SP-241636 | 0445 | 1 | A | Rel-19 CR 28.623 Correction for "NR Measurent Type" for TraceControlNrm | 19.2.0 |
| 2024-12 | SA#106 | SP-241638 | 0448 | - | C | Rel-19 CR 28.623 Clarify how to fetch YANG modules | 19.2.0 |
| 2024-12 | SA#106 | SP-241647 | 0449 | 1 | F | Rel-19 CR 28.623 Add missing DN type to the table of YANG common types | 19.2.0 |
| 2024-12 | SA#106 | SP-241647 | 0450 | - | C | Update the isReadOnly property for stage 3 OpenAPI | 19.2.0 |
| 2024-12 | SA#106 | SP-241649 | 0457 | - | F | Rel-19 CR 28.623 Corrections on RRC reporting | 19.2.0 |
| 2024-12 | SA#106 | SP-241638 | 0458 | - | F | Rel-19 CR TS 28.623 Clarification on Real and Float data types | 19.2.0 |
| 2024-12 | SA#106 | SP-241638 | 0463 | - | F | Rel-19 CR 28.623 YANG Corrections SA5-158 | 19.2.0 |
| 2024-12 | SA#106 | SP-241647 | 0464 | - | B | Rel19 CR 28.623 Enhance the OpenAPI related to multiplicity | 19.2.0 |
| 2024-12 | SA#106 | SP-241647 | 0465 | - | B | Rel19 CR 28.623 Enhance the isUnique property for stage 3 OpenAPI for TraceControlNrm | 19.2.0 |
| 2024-12 | SA#106 | SP-241642 | 0467 | - | A | Rel19 CR 28.623 correction to duplicate AreaScope in stage 3. | 19.2.0 |
| 2024-12 | SA#106 | SP-241631 | 0474 | - | A | Rel-19 CR TS 28.623 Remove unneeded fileLocation attribute (stage 3) | 19.2.0 |
| 2024-12 | SA#106 | SP-241649 | 0476 | 1 | C | Rel-19 CR TS 28.623 enhance the area scope to support Network Slice Based MDT | 19.2.0 |
| 2024-12 | SA#106 | SP-241649 | 0480 | 1 | C | Rel-19 CR TS 28.623 Add slice to area scope for MDT (stage3, yang) | 19.2.0 |
| 2024-12 | SA#106 | SP-241646 | 0485 | - | A | Rel-19 CR TS 28.623 Add information for IRP based solutions | 19.2.0 |
| 2024-12 | SA#106 | SP-241631 | 0488 | - | A | Rel-19 CR 28.623 Update PM YANG mapping | 19.2.0 |
| 2024-12 | SA#106 | SP-241631 | 0491 | 1 | A | Rel-19 CR 28.623 Correction of limitation of convex polygons for geographical area | 19.2.0 |
| 2025-03 | SA#107 | SP-250161 | 0461 | 1 | A | Rel-19 CR TS 28.623 Corrections of measurement type | 19.3.0 |
| 2025-03 | SA#107 | SP-250149 | 0492 | 2 | F | Rel-19 CR 28.623 YANG stage-3 Corrections | 19.3.0 |
| 2025-03 | SA#107 | SP-250160 | 0495 | 1 | B | Rel-19 CR TS 28.623 decouples the ProvMnS schema with supported feature schemas | 19.3.0 |
| 2025-03 | SA#107 | SP-250160 | 0496 | 1 | B | Rel-19 CR TS 28.623 Update MnSInfo IOC to support MnS Registry capability | 19.3.0 |
| 2025-03 | SA#107 | SP-250154 | 0504 | - | A | Rel-19 CR TS 28.623 Correct Trace-MDT (YANG) | 19.3.0 |
| 2025-03 | SA#107 | SP-250172 | 0505 | - | B | Rel-19 CR TS 28.623 Add RRC report in missing IOCs (YANG) | 19.3.0 |
| 2025-03 | SA#107 | SP-250149 | 0506 | 1 | F | Rel-19 CR TS 28.623 Fix errors on selected attributes (YAML) | 19.3.0 |
| 2025-03 | SA#107 | SP-250148 | 0508 | - | F | Rel19 CR TS28.623 correction to definitions related to availableRANqoEMetrics for YANG and OpenAPI | 19.3.0 |
| 2025-03 | SA#107 | SP-250151 | 0512 | 2 | A | Rel-19 CR 28.623 Clarify usage of notifyFileReady for PM (yang) | 19.3.0 |
| 2025-03 | SA#107 | SP-250151 | 0514 | 1 | A | Rel19 CR 28.623 Correction of geographical area | 19.3.0 |