

ETSI TS 128 533 V15.8.0 (2023-09)



**5G;
Management and orchestration;
Architecture framework
(3GPP TS 28.533 version 15.8.0 Release 15)**

[ETSI TS 128 533 V15.8.0 \(2023-09\)](https://standards.iteh.ai/catalog/standards/sist/53ae99a2-9117-40e8-91e1-d9dab65b2264/etsi-ts-128-533-v15-8-0-2023-09)

<https://standards.iteh.ai/catalog/standards/sist/53ae99a2-9117-40e8-91e1-d9dab65b2264/etsi-ts-128-533-v15-8-0-2023-09>



Reference

RTS/TSGS-0528533vf80

Keywords

5G

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from:

<https://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

If you find a security vulnerability in the present document, please report it through our

Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2023.
All rights reserved.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Legal Notice

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

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables. (2023-09)

The cross reference between 3GPP and ETSI identities can be found under <https://webapp.etsi.org/key/queryform.asp>.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

| | |
|--------------------------------------------------------------------------------------------------------|-----------|
| Intellectual Property Rights | 2 |
| Legal Notice | 2 |
| Modal verbs terminology..... | 2 |
| Foreword..... | 5 |
| Introduction | 5 |
| 1 Scope | 6 |
| 2 References | 6 |
| 3 Definitions and abbreviations..... | 7 |
| 3.1 Definitions | 7 |
| 3.2 Abbreviations | 7 |
| 4 Management framework..... | 8 |
| 4.1 Management services | 8 |
| 4.2 MnS components..... | 8 |
| 4.2.1 Introduction..... | 8 |
| 4.2.2 MnS component type A | 8 |
| 4.2.3 Management information..... | 8 |
| 4.2.3.1 MnS component type B..... | 8 |
| 4.2.3.2 MnS component type C..... | 9 |
| 4.3 Combination of MnS components..... | 9 |
| 4.4 Management capability exposure governance..... | 9 |
| 4.5 Management Function (MnF) concept..... | 11 |
| 4.6 Management data analytics capability..... | 12 |
| 4.7 Management service discovery | 13 |
| 4.7.1 Introduction..... | 13 |
| 4.7.2 MnS data..... | 13 |
| 4.7.3 MnS discovery service..... | 13 |
| 5 Architecture reference model | 13 |
| 5.1 General concepts | 13 |
| 5.1.1 Management service providers, consumers and exposure | 13 |
| 5.1.2 Interactions between management service producer and management service consumer..... | 15 |
| 5.2 Management interactions with NFV MANO | 16 |
| 5.3 Management interactions with NWDAF..... | 16 |
| 6 Use cases and requirements..... | 17 |
| 6.1 Use cases | 17 |
| 6.1.1 MnS query | 17 |
| 6.2 Requirements..... | 17 |
| 6.2.1 Requirements for MnS discovery service | 17 |
| Annex A (informative): Example of deployment model with utilization of management services..... | 18 |
| A.1 Utilization of Management services in network and subnet layers..... | 18 |
| A.2 Utilization of management services in network function management. | 18 |
| A.3 Utilization of management services by Exposure Governance Management Function (EGMF) | 19 |
| A.4 Utilization of interface to NFV-MANO by the producer of management services | 20 |
| A.5 Management Data Analytics Service (MDAS) | 21 |
| A.6 Utilization of management services in functional management architecture..... | 22 |
| A.7 Utilization of management data analytics services | 23 |

A.8 An example of deployment scenario for network and network slice23

Annex B (normative): Solutions for management of 5G network and network slicing.....25

Annex C (informative): Example of mapping Management Services (MnS) to pre-Rel-15 management framework26

Annex D (informative): Change history27

History28

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ETSI TS 128 533 V15.8.0 \(2023-09\)](https://standards.iteh.ai/catalog/standards/sist/53ae99a2-9117-40e8-91e1-d9dab65b2264/etsi-ts-128-533-v15-8-0-2023-09)

<https://standards.iteh.ai/catalog/standards/sist/53ae99a2-9117-40e8-91e1-d9dab65b2264/etsi-ts-128-533-v15-8-0-2023-09>

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 management of the 3GPP network is provided by management services. The service based architecture and interfaces support various management services of vastly different requirements on network configuration, network performance, and network fault supervision. The 3GPP network management architecture evolves supporting operators' design and management of their service oriented networks.

[ETSI TS 128 533 V15.8.0 \(2023-09\)](https://standards.iteh.ai/catalog/standards/sist/53ae99a2-9117-40e8-91e1-d9dab65b2264/etsi-ts-128-533-v15-8-0-2023-09)

<https://standards.iteh.ai/catalog/standards/sist/53ae99a2-9117-40e8-91e1-d9dab65b2264/etsi-ts-128-533-v15-8-0-2023-09>

1 Scope

The present document defines the network management and orchestration architecture SBMA for 3GPP networks including network slicing. The use cases and requirements are specified in TS 28.530 [3]. SBMA applies to 5G.

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] Void
- [3] 3GPP TS 28.530: "Management and orchestration of networks and network slicing; Concepts, use cases and requirements".
- [4] 3GPP TS 28.541: "Management and orchestration of 5G networks; Network Resource Model (NRM); Stage 2 and stage 3".
- [5] 3GPP TS 28.552: "Management and orchestration of 5G networks; Performance measurements and assurance data".
- [6] 3GPP TS 28.554: "Management and orchestration of 5G networks; 5G End to end Key Performance Indicators (KPI)".
- [7] 3GPP TS 32.425: "Telecommunication management; Performance Management (PM); Performance measurements Evolved Universal Terrestrial Radio Access Network (E-UTRAN)".
- [8] 3GPP TS 28.531: "Management and orchestration of 5G networks; Provisioning; Stage 1".
- [9] 3GPP TS 28.xxx: "Management and orchestration; Management services".
- [10] 3GPP TS 28.500: "Telecommunication management; Management concept, architecture and requirements for mobile networks that include virtualized network functions"
- [11] 3GPP TS 28.510; "Telecommunication management; Configuration Management (CM) for mobile networks that include virtualized network functions; Requirements".
- [12] 3GPP TS 28.511; "Telecommunication management; Configuration Management (CM) for mobile networks that include virtualized network functions; Procedures".
- [13] 3GPP TS 28.512; "Telecommunication management; Configuration Management (CM) for mobile networks that include virtualized network functions; Stage 2".
- [14] 3GPP TS 28.513: "Telecommunication management; Configuration Management (CM) for mobile networks that include virtualized network functions; Stage 3".
- [15] 3GPP TS 28.515; "Telecommunication management; Fault Management (FM) for mobile networks that include virtualized network functions; Requirements".
- [16] 3GPP TS 28.516: "Telecommunication management; Fault Management (FM) for mobile networks that include virtualized network functions; Procedures".

- [17] 3GPP TS 28.517: "Telecommunication management; Fault Management (FM) for mobile networks that include virtualized network functions; Stage 2".
- [18] 3GPP TS 28.518: "Telecommunication management; Fault Management (FM) for mobile networks that include virtualized network functions; Stage 3".
- [19] 3GPP TS 28.520: "Telecommunication management; Performance Management (PM) for mobile networks that include virtualized network functions; Requirements".
- [20] 3GPP TS 28.521: "Telecommunication management; Performance Management (PM) for mobile networks that include virtualized network functions; Procedures".
- [21] 3GPP TS 28.522: "Telecommunication management; Performance Management (PM) for mobile networks that include virtualized network functions; Stage 2".
- [22] 3GPP TS 28.523: "Telecommunication management; Performance Management (PM) for mobile networks that include virtualized network functions; Stage 3".
- [23] 3GPP TS 28.525: "Telecommunication management; Life Cycle Management (LCM) for mobile networks that include virtualized network functions; Requirements".
- [24] 3GPP TS 28.526: "Telecommunication management; Life Cycle Management (LCM) for mobile networks that include virtualized network functions; Procedures".
- [25] 3GPP TS 28.527: "Telecommunication management; Life Cycle Management (LCM) for mobile networks that include virtualized network functions; Stage 2".
- [26] 3GPP TS 28.528: "Telecommunication management; Life Cycle Management (LCM) for mobile networks that include virtualized network functions; Stage 3".
- [27] ETSI GS NFV 003: "Network Functions Virtualisation (NFV); Terminology for Main Concepts in NFV V1.3.1 (2018-01)".
- [28] 3GPP TS 28.545: "Management and orchestration; Fault Supervision (FS)".
- [29] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

ETSI TS 128 533 V15.8.0 (2023-09)

<https://standards.iteh.ai/catalog/standards/sist/53ae99a2-9117-40e8-91e1-d9deb65b2264/etsi-ts-128-533-v15-8-0-2023-09>

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] 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 [1] or NFV-MANO [27].

Exposure governance management function: Management Function entity with the role of management service exposure governance.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1], in NFV-MANO [27] 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 [1].

| | |
|----------|---------------------------------------------------------------|
| CM | Configuration Management |
| LCM | Lifecycle Management |
| MDAS | Management Data Analytics Service |
| MnF | Management Function |
| MnS | Management Service |
| NFV-MANO | Network Functions Virtualisation Management and Orchestration |

4 Management framework

4.1 Management services

A Management Service (MnS) offers management capabilities. These management capabilities are accessed by Management Service consumers (MnS consumers) via standardized service interface composed of individually specified management service components. A MnS is provided by a MnS producer and can be consumed by one or multiple MnS consumer(s).

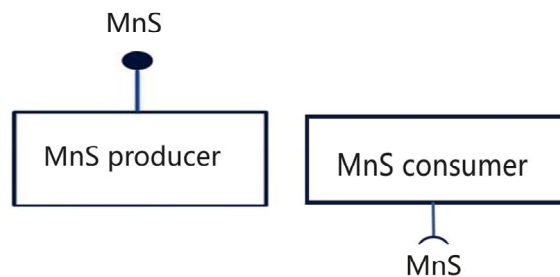


Figure 4.1.1: MnS producer and MnS consumer

4.2 MnS components

4.2.1 Introduction

A MnS is specified using different independent components. A concrete MnS is composed of at least two of these components. Three different component types are defined, called MnS component type A, MnS component type B and MnS component type C. These components are defined in the following clauses.

4.2.2 MnS component type A

The MnS component type A is a group of management operations and/or notifications that is agnostic with regard to the entities managed. The operations and notifications as such are hence not involving any information related to the managed network. These operations and notifications are called generic or network agnostic.

For example, operations for creating, reading, updating and deleting managed object instances, where the managed object instance to be manipulated is specified only in the signature of the operation, are generic.

4.2.3 Management information

4.2.3.1 MnS component type B

MnS component type B refers to management information represented by information models representing the managed entities. A MnS component type B is also called Network Resource Model (NRM).

MnS component type B examples are:

- 1) Network resource models as defined in TS 28.622 [x].
- 2) Network resource models as defined in TS 28.541 [4].

4.2.3.2 MnS component type C

MnS component type C is performance information of the managed entity and fault information of the managed entity.

The following are examples of Management service component type C:

1. Alarm information as defined in TS 28.532 [9] and TS 28.545 [28].
2. Performance data as defined in TS 28.552 [5], TS 28.554 [6] and TS 32.425 [7].

4.3 Combination of MnS components

A MnS is composed by a MnS component type A and

- a MnS component type B, or
- a MnS component type B and a MnS component type C.

The instances of management services carry information about specified management service components in the metadata attributes. Figure 4.3.1 illustrates examples of management service instances with various management service components of type A, type B and type C:

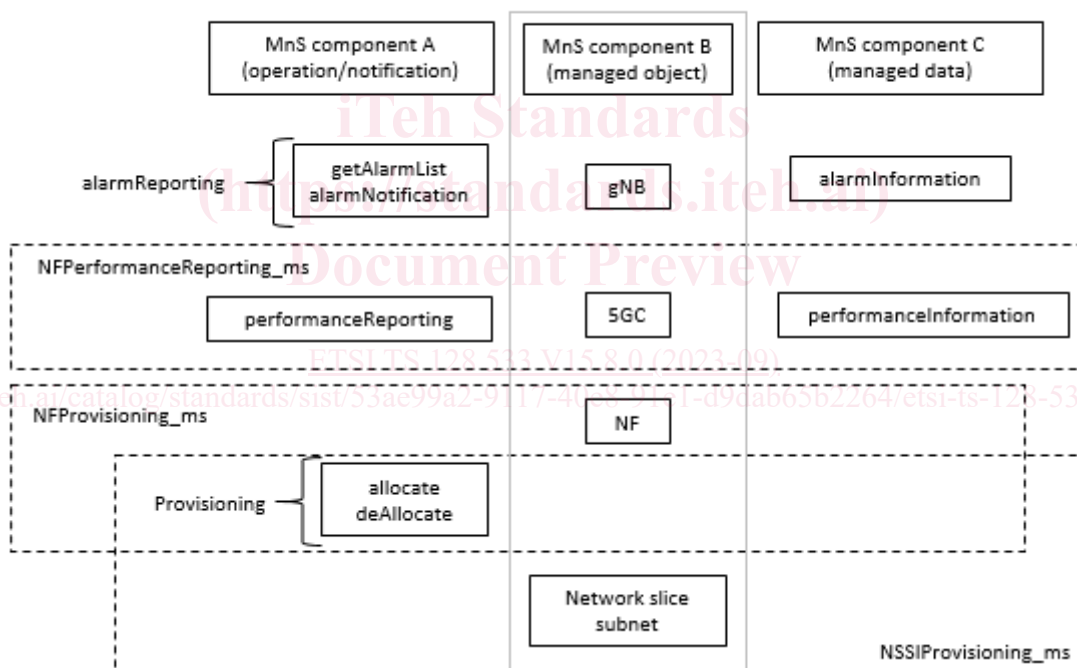


Figure 4.3.1: Example of Management Service and component type A, B and C

4.4 Management capability exposure governance

As precondition for Management Service exposure governance offer, producer of management capability exposure governance should have access to:

- An association between information about specified management service components and instances of management services.

NOTE: The detail creation of an association is left for implementation and out of scope of 3GPP standardization.