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Foreword

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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.

1 Scope

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

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.
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- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".
- [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".

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 offers management capabilities. These management capabilities are accessed by management service consumers via standardized service interface composed of individually specified management service components.



Figure 4.1.1: Management Service

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:

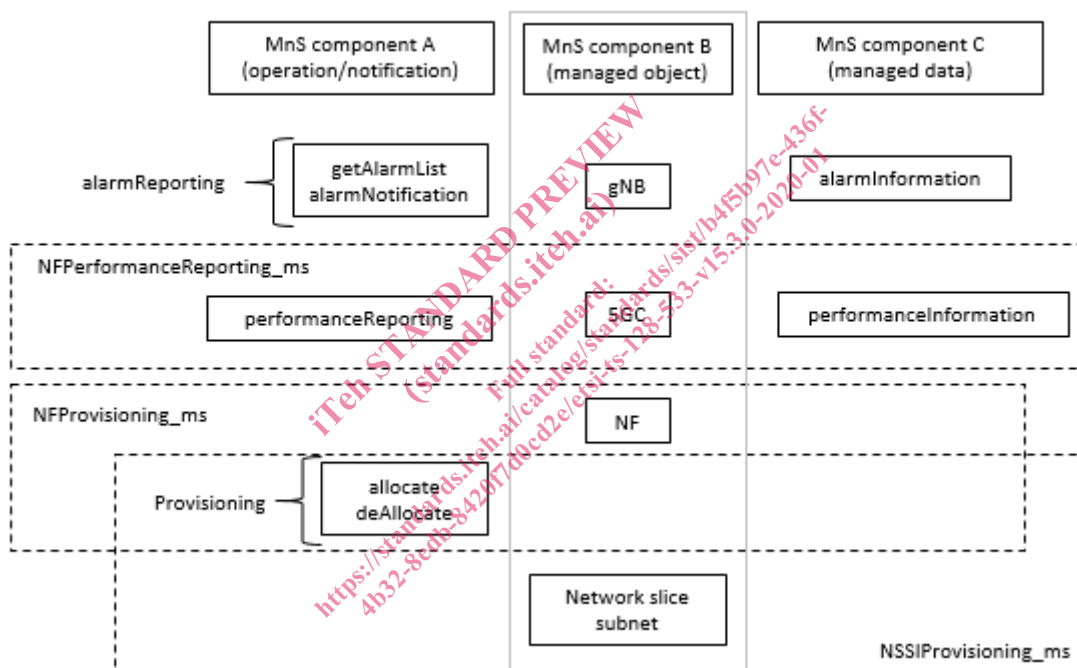


Figure 4.3.1: Example of Management Service and component type A, B and C

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.

Management capability exposure governance provides exposure governance on basic elements of management function service based interface:

- 1) Management service component type A