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| Technical Specification | |
| 3rd Generation Partnership Project;  Technical Specification Group Services and System Aspects;  Management and orchestration;  Intent driven management services for mobile networks  (Release 17 ) | |
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# Foreword

This Technical Report 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.

In the present document, modal verbs have the following meanings:

**shall** indicates a mandatory requirement to do something

**shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

**should** indicates a recommendation to do something

**should not** indicates a recommendation not to do something

**may** indicates permission to do something

**need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

**can** indicates that something is possible

**cannot** indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

**will** indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**will not** indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**might** indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

**might not** indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

**is** (or any other verb in the indicative mood) indicates a statement of fact

**is not** (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

# Introduction

# 1 Scope

The present document specifies concept, use cases, requirements and solutions for the intent driven management for service or network management.

# 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".

…

[x] <doctype> <#>[ ([up to and including]{yyyy[-mm]|V<a[.b[.c]]>}[onwards])]: "<Title>".

# 3 Definitions of terms, symbols and abbreviations

## 3.1 Terms

For the purposes of the present document, the terms 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].

**Intent:** A desire to reach a certain state for a specific service or network management workflow.

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

<symbol> <Explanation>

## 3.3 Abbreviations

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

<ABBREVIATION> <Expansion>

# 4 Concepts and Background

Editor's note: this clause will contain concepts and overview information relevant to the intent driven management.

## 4.1 Intent concept

### 4.1.1 Introduction

An intent is a desire to reach a certain state/position for a specific service or network management workflow. The intent expression information may include particular objective and possibly some related details. Intent can be categorized based on different user types or different management scenario types.

### 4.1.2 Intent categorizes based on user types

Based on roles related to 5G networks and network slicing management defined in clause 4.8 in TS 28.530[X], different kinds of intents are applicable for different kinds of standardized reference interfaces.

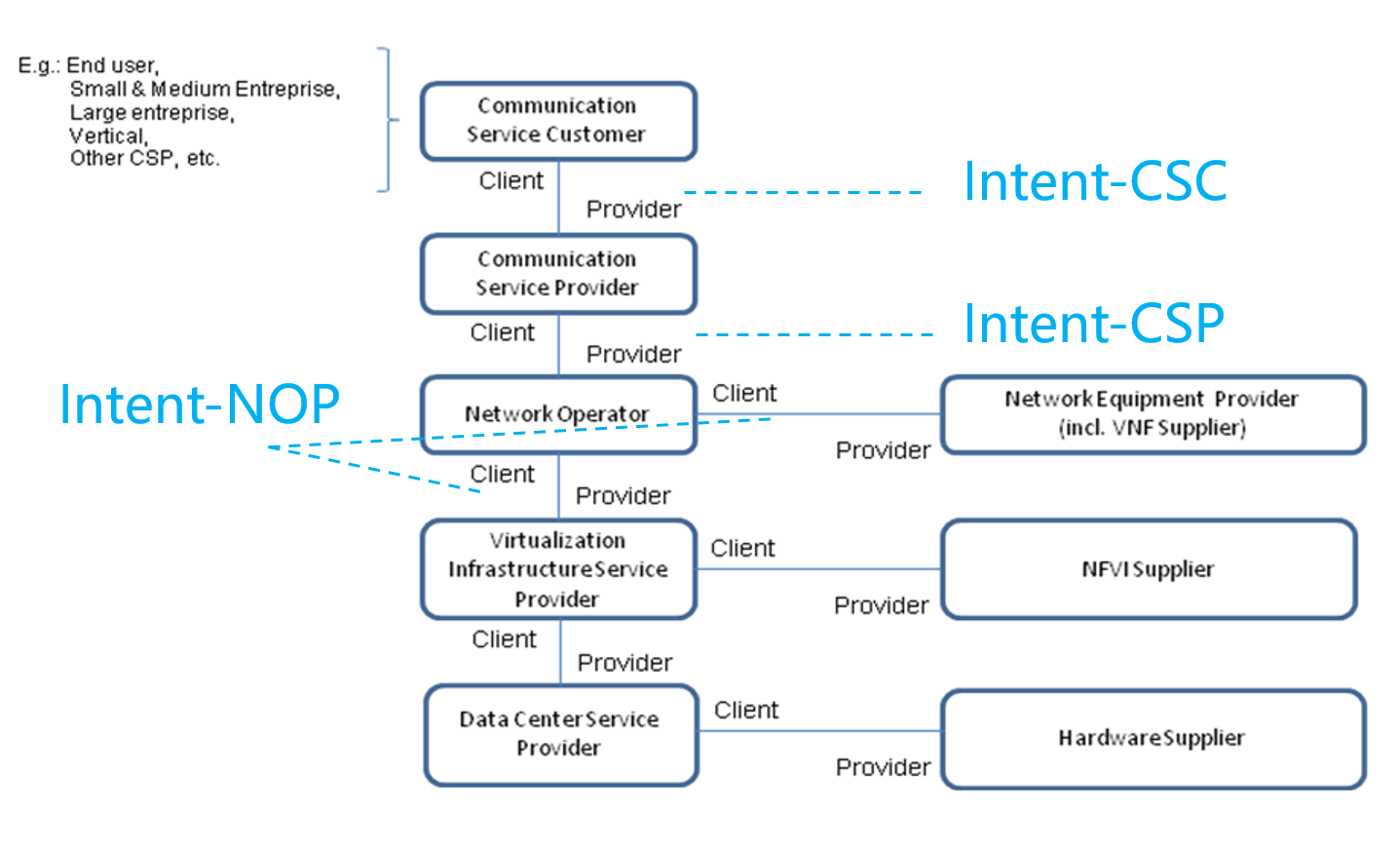


Figure 4.1.2-1: High-level model of different kind of intents expressed by different roles

**- Intent from Communication Service Customer (Intent-CSC)**: Intent from Communication Service Customer enables Communication Service Customer (CSC) to provide what CSC would like to do for the communication service without knowing how to do the detailed management for communication service. For example, Intent-CSC can be 'Enable a V2X communication service for a group of vehicles in certain time'.

**- Intent from Communication Service Provider (Intent-CSP)**: Intent from Communication Service Provider enables Communication Service Provider (CSP) to express an intent about what CSP would like to do for network without knowing how to do the detailed management for network. For example, Intent-CSP can be 'Provide a network service supporting V2X communications for highway-417 to support 500 vehicles simultaneously'.

**- Intent from Network Operator(Intent-NOP):** Intent from Network Operator enables Network Operator (NOP) to provide what NOP would like to do for group of network elements (i.e. subnetwork) management and control without knowing how to do the detailed management for the network elements. For example, Intent-NOP can be 'Provide a radio network service to satisfy the specified coverage requirements and UE throughput requirement in certain area'.

### 4.1.3 Intent categorizes based on management scenario types

Based on different the scenarios for network and service management, different kinds of intents are applicable for different kinds of management scenario types.

* **Intent for network and service design/planning**
* **Intent for network and service deployment**
* **Intent for network and service maintenance**
* **Intent for network and service optimization/assurance**

Editor’s Note: the detailed intent categorizes for different kinds of management scenario types need to be further discussed, for example, whether the Intent for network and service design/planning and Intent for network and service maintenance is needed.

## 4.2 Intent driven MnS

Introduction of service-based architecture for 5G, in combination with functional model of business roles, exceeds the level of complexity for managing network in different scenarios (including scenarios for design/planning, deployment, maintenance and optimization) both in a single and multivendor network. New/simpler ways of managing are needed.

An Intent driven MnS allows its consumer to express intents for managing the network and services and obtain the feedback of intent evaluation result. The Intent-driven MnS producer have the following capabilities:

* Translate the received intent to executable actions as follows:
* Performing service or network management tasks
* Identifying, formulating and activating service or network management policies
* Evaluate the result/information about the intent fulfilment (e.g. the intent is satisfied or not).

The following figure 4.2-1 shows the model of Intent-driven MnS.

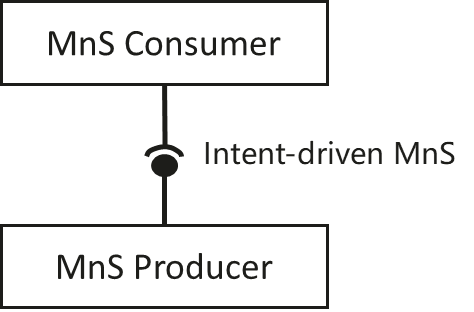


Figure 4.2-1: Intent-driven MnS

The MnS of various kinds are specified for deployment over many standardized reference interfaces. So, the Intent-driven MnS could in principle, be specified for deployment over the same set of standardized reference interfaces, as a replacement of or as an addition to the deployed non-Intent driven MnS.

## 4.3 Intent driven closed-loop

Intent can be used for management and control of closed-loop automation (e.g. intent can be used as the goals for the closed-loop), which means the intent can be translated to policies and management tasks by MnS producer to execute the closed-loop automation. In the intent driven management approach, how MnS producer using closed-loop automation mechanisms to satisfy the intent is the implementation of the MnS producer and shall not be standardized. The closed-loop automation of Intent driven MnS producer is shown in the figure 4.3-1.

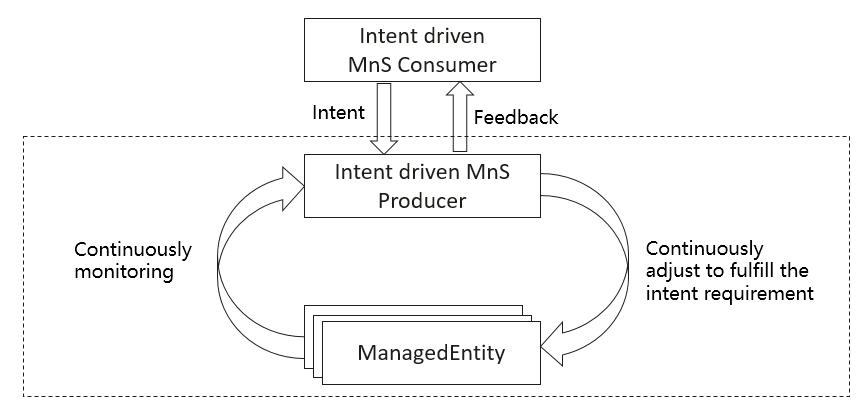


Figure 4.3-1 Intent driven closed-loop

# 5 Specification Level Requirements

Editor's note: this clause will contain specific use case and requirements for intent driven management.

## 5.1 Use cases

Editor's note: this clause will contain specific use case for intent driven management. The use case can be categorized into some sub-clauses (e.g. one sub-clause for deployment related use case, and one sub-clause for optimization related use cases)

## 5.2 Requirements

Editor's note: this clause will contain specific requirements for intent driven management.

# 6 Stage 2 definition for Intent Driven Management

Editor's note: this clause will specify the stage2 definition for Intent driven management which may include the management operations, management entities and management information

# 7 Stage 3 definition for Intent Driven Management

Editor's note: this clause will specify the solution set for Intent Driven Management defined in clause 6.

Annex <X> (informative):  
Change history

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| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2019-10 | SA5#127 | S5-196174 |  |  |  | TS 28.312\_000 | 0.0.0 |
| 2020-08 | SA5#132e | S5-204460  S5-204461  S5-204462 |  |  |  | 1. pCR 28.312 Add scope  2. pCR 28.312 Add skeleton  3. pCR 28.312 Add concept and background | 0.1.0 |