

## **Draft new Recommendation ITU-T Y.IBN-reqts**

### **Scenarios and requirements of Intent-Based Network for network evolution**

#### **Summary**

This draft Recommendation provides specification about scenarios and requirements of Intent-Based Network for network evolution.

#### **Keywords**

<TBD>

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# **Draft new Recommendation ITU-T Y.IBN-reqts**

## **Scenarios and requirements of Intent-Based Network for network evolution**

### **1. Scope**

This draft recommendation aims to study scenarios and requirements of Intent-Based Network for network evolution.

The scope of this Draft Recommendation includes:

- Scenarios and workflow of Intent-Based Network for network evolution.
- Capability requirements of Intent-Based Network for network evolution.
- General framework and model architecture of Intent-Based Network for network evolution.

### **2. References**

The following ITU-T Recommendations and other references contain provisions, which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

### **3. Definitions**

#### **3.1 Terms defined elsewhere**

This Recommendation uses the following terms defined elsewhere:

[TBD]

#### **3.2 Terms defined in this Recommendation**

This Recommendation defines the following terms:

[TBD]

### **4 Abbreviations and acronyms**

This Recommendation uses the following abbreviations and acronyms:

### **5 Conventions**

In this Recommendation:

The keywords "is required to" indicate a requirement which must be strictly followed and from which no deviation is permitted, if conformance to this Recommendation is to be claimed.

The keywords "is recommended" indicate a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance.

The keywords "can optionally" indicate an optional requirement which is permissible, without implying any sense of being recommended. This term is not intended to imply that the vendor's implementation must provide the option, and the feature can be optionally enabled by the network operator/service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with this Recommendation.

## 6 Overview of Intent-Based Network

*[Editor's Note] This clause provides the overview on Intent-Based Network, which includes the background, purpose of Intent-Based Network and principles of the framework.*

At present, for the evolution by emerging technologies represented by cloud computing, big data, Internet of Things, artificial intelligence, etc. are surging, which has set off a storm of change in various industries. At the same time, under the dual drive of 'technology and demand', the network field is also undergoing a huge change which lead to inevitable network evolution. The data shows that by 2020, the base of IoT devices will grow to a staggering 30.7 billion. By then, 63 million new devices will be connected to the network in every second. At the same time, the cost of network operations for enterprises will be three times that of the network itself. In terms of network security, it takes six months to discover a vulnerability. However, for the support of network operation and maintenance, the current business requirements and network requirements seem to be standing on two opposite sides: on one hand, various network requirements are continuously put forward for business needs, and on the other hand, the network operation and maintenance personnel are exhausted by various operations in response to the demand.

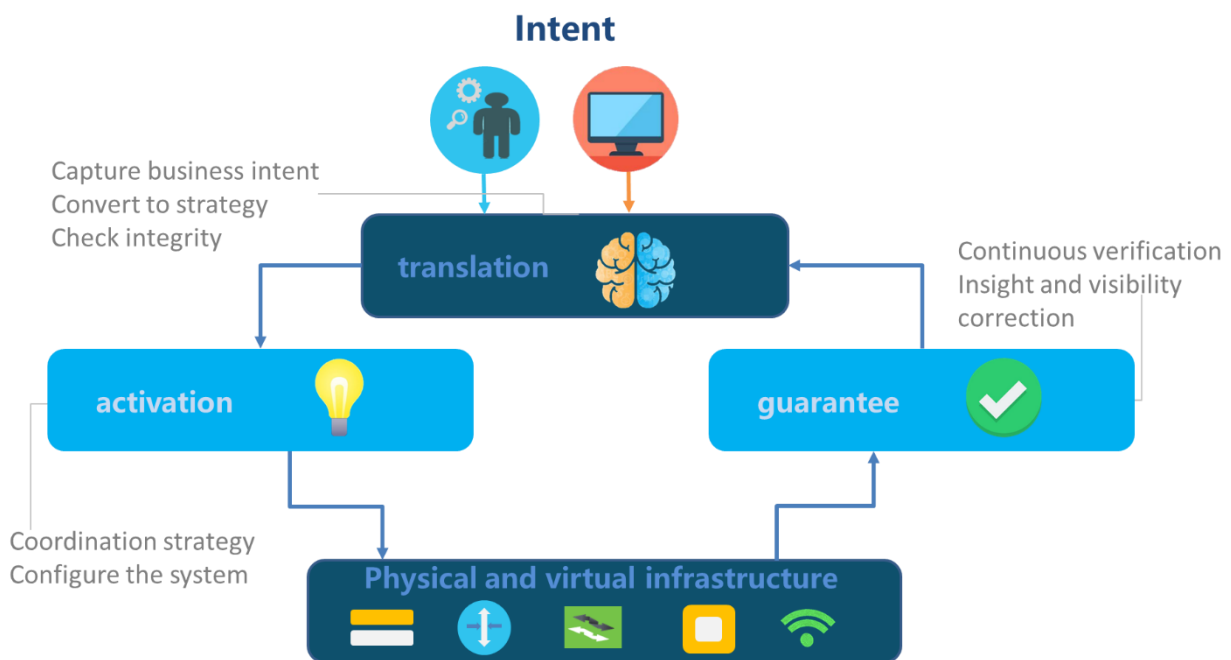


Figure 1 Implementation Process of the Intent-Based Network

## **7 Framework of the Intent-Based Network for network evolution**

*[Editor's Note] This clause will provide a framework of Intent-Based Network.*

<TBD>

## **8 High-level requirements of Intent-Based Network for network evolution**

*[Editor's Note] This clause will raise the High-level requirements of intent-based network.*

## **9 Capability requirements of Intent-Based Network for network evolution**

*[Editor's Note] This clause will address the capability requirements of each layer based on the framework in clause 7.*

<TBD>

## **10 Security considerations**

*[Editor's Note] This clause will present the security considerations of the Intent-Based Network.*

<TBD>

## **11 Bibliography**

*[Editor's Note] This clause will present the Bibliography of the Intent-Based Network.*

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|----------------|---|
| [ITU-T Y.2323] | Recommendation ITU-T Y.2323 (2018), Requirements and capabilities of orchestration in next generation network evolution |
| [ITU-T Y.2324] | Recommendation ITU-T Y.2324(2019), Functional architecture of orchestration in NGNe                                     |
| [RFC 7575]     | Recommendation RFC 7575 (2015), Autonomic networking: Definitions and design goals                                      |

**Annex 1**

**A.1 justification for proposed draft new Recommendation ITU-T Y.IBN-reqts**

<b>Question:</b>	2/13	<b>Proposed new ITU-T Recommendation</b>	Virtual, 20-31 July 2020
<b>Reference and title:</b>	Draft Recommendation ITU-T Y.IBN-reqts," Scenarios and Requirements of Intent-Based Network for network evolution "		
<b>Base text:</b>		<b>Timing:</b>	2022-Q4
<b>Editor(s):</b>	Xin Zhang, China <a href="mailto:zhangxin8@chinatelecom.cn">Telcom, zhangxin8@chinatelecom.cn</a> Huan Deng, China Telcom, <a href="mailto:denghuan@chinatelecom.cn">denghuan@chinatelecom.cn</a> Qiong Sun, China Telecom, <a href="mailto:sunqiong@chinatelecom.cn">sunqiong@chinatelecom.cn</a>	<b>Approval process:</b>	AAP
<p><b>Scope</b> (defines the intent or object of the Recommendation and the aspects covered, thereby indicating the limits of its applicability):</p> <p>This Draft Recommendation aims to provide scenarios and requirements of the Intent-Based Network, and address the framework accordingly. The scope of this Draft Recommendation includes:</p> <ul style="list-style-type: none"> <li>• Scenarios and workflow of Intent-Based Network for network evolution;</li> <li>• Capability requirements of Intent-Based Network for network evolution;</li> <li>• General framework and model architecture of Intent-Based Network for network evolution;</li> </ul>			
<p><b>Summary</b> (provides a brief overview of the purpose and contents of the Recommendation, thus permitting readers to judge its usefulness for their work):</p> <p>By the massive network device access requests and rapidly changing business demand, the network needs to be evolved to support these requirements and solve the questions as follows:</p> <ul style="list-style-type: none"> <li>- How do the carrier network deal with the needs of a large number of users efficiently and quickly?</li> <li>- How do the administrator to trust the software to operate their network correctly, if they use software to automate network maintenance?</li> <li>- How to improve the security features and protect the uncertainty of the future business development of the enterprise, as the business of an enterprise depends on the network.?</li> </ul> <p>To cope with the above challenges, the Intent-based network (IBN) could be one possible solution. Intent-based network (IBN) is one of the hottest IT trends in recent years. IBN is developed from software-defined network (SDN). Its goal is to automate network operations and enable the network to better align with business goals or intent.</p> <p>This new work item proposed to provide scenarios and requirements of the Intent-Based Network, and address the framework accordingly.</p>			
<p><b>Relations to ITU-T Recommendations or to other standards</b> (approved or under development):</p> <p>(1) Relations to ITU-T Y.2323 “Requirements and capabilities of orchestration in next generation network evolution”</p> <p>This Recommendation provides the scenarios of the orchestration in NGNe, specifies its general requirements and defines its capabilities.</p> <p>(2) Relations to ITU-T Y.2324 “Functional architecture of orchestration in NGNe”</p> <p>This Recommendation provides the general functional architecture of the orchestration in NGNe, specifies its functional entities and defines the functionalities of these functional entities of orchestration in NGNe, and provides descriptions of all reference points.</p> <p>As for Y.2323 and Y.2324 already elaborate the power of SDN and NFV technologies to translate the network request into network configurations. IBN go one step further to truly understand the real-world customers’ wills into service requests and form a closed self adjusting cycle to optimize the network performance in order to better respond to the increasingly complex customer needs without human interception.</p> <p>(3) Relations to Y.NGNe-PLA-reqts“scenarios and capability requirements of Programmable log analysis in next generation networks”</p>			

This ongoing draft recommendation of Q2/13 specifies programmable log analysis in next generation networks. Programmable log analysis can learn key information such as user behaviour, security risk, capacity consumption, quality of service, network failures, in an automatic manner rather than in a manual way. In addition, programmable log analysis can predict potential faults and performance degradations ahead of time, and help network managers act upon proactively in NGN environment.

And for Y.NGNe-PLA-reqts, IBN also consider to apply the network analysis result to provide the on-demand automation of network operation and management to satisfy the intent of the network, however, the study of IBN for network evolution would be considered more widely rather the NGN but also the evolved carrier network at large scale.

(4) Relations to draft-irtf-nmrg-ibn-concepts-definitions-01

The Draft “Intent-Based Networking - Concepts and Definitions” clarifies the concept of "Intent" and provides an overview of functionality that is associated with it, and it lays the foundation for intent research work.

(5) Relations to draft-li-nmrg-intent-classification-03

The Draft “Intent Classification” discusses what intent means to different stakeholders, describes the different ways to classify intent, and the related taxonomy for that classification, which lays the foundation for the subsequent discussion of related topics of intent.

It is clear that the IETF mainly focuses on the detailed implementations of IBN, and has done some discussion on the definition of intent and internal modules. This draft recommendation will focus on the requirements and architectural design which would be crucial important for IBN.

**Liaisons with other study groups or with other standards bodies:**

IETF,3GPP

**Supporting members that are committing to contributing actively to the work item:**

China Telecom, MIIT China

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