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SERIES Y: GLOBAL INFORMATION
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS,
NEXT-GENERATION NETWORKS, INTERNET OF
THINGS AND SMART CITIES

Cloud Computing

Cloud computing – End-to-end fault and performance management framework of network services in inter-cloud

Recommendation ITU-T Y.3527

ITU-T

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Recommendation ITU-T Y.3527

Cloud computing – End-to-end fault and performance management framework of network services in inter-cloud

Summary

Recommendation ITU-T Y.3527 provides framework and functional requirements of end-to-end (E2E) fault and performance management of network services (NSs) in inter-cloud. The functional requirements are derived from the corresponding typical use cases. In particular, a predictive model for fault and performance issue detection and localization is presented.

History

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End-to-end, fault, framework, inter-cloud, management, network service, performance.

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

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Recommendation ITU-T Y.3527

Cloud computing – End-to-end fault and performance management framework of network services in inter-cloud

1 Scope

This Recommendation specifies framework and functional requirements for end-to-end (E2E) fault and performance management of network services (NSs) in inter-cloud. The scope of this Recommendation includes:

- an overview of E2E fault and performance management of NSs in inter-cloud;
- functional requirements for E2E fault and performance management of NSs in inter-cloud;
- typical use cases for E2E fault and performance management of NSs in inter-cloud;
- a predictive model for fault and performance issues detection and localization.

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.

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|----------------|---|
| [ITU-T M.3010] | Recommendation ITU-T M.3010 (2000), <i>Principles for a telecommunications management network</i> . |
| [ITU-T X.711] | Recommendation ITU-T X.711 (1997), <i>Information technology – Open Systems Interconnection – Common management information protocol: Specification</i> . |
| [ITU-T X.1601] | Recommendation ITU-T X.1601 (2015), <i>Security framework for cloud computing</i> . |
| [ITU-T Y.3502] | Recommendation ITU-T Y.3502 (2014) ISO/IEC 17789:2014, <i>Information technology – Cloud computing – Reference architecture</i> . |
| [ITU-T Y.3515] | Recommendation ITU-T Y.3515 (2017), <i>Cloud computing – Functional architecture of Network as a Service</i> . |

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

- 3.1.1 cloud service customer** [b-ITU-T Y.3500]: Party which is in a business relationship for the purpose of using cloud services.
- 3.1.2 cloud service provider** [b-ITU-T Y.3500]: Party which makes cloud services available.
- 3.1.3 inter-cloud computing** [b-ITU-T Y.3511]: The paradigm for enabling the interworking between two or more cloud service providers.

3.1.4 network as a service (NaaS) [b-ITU-T Y.3500]: Cloud service category in which the capability provided to the cloud service customer is transport connectivity and related network capabilities.

NOTE – NaaS can provide any of the three cloud capabilities types.

3.1.5 network function [ITU-T Y.3515]: A function of a network infrastructure whose external interfaces and functional behaviour are well specified.

NOTE – Examples of network functions include network switches and network routers.

3.1.6 network service [ITU-T Y.3515]: A collection of network functions with a well specified behaviour.

NOTE – Examples of network services include content delivery networks (CDNs) and IP multimedia subsystem (IMS).

3.1.7 physical network function [ITU-T Y.3515]: A network function implemented via a tightly coupled software and hardware system.

3.1.8 service function chain [b-ITU-T Y.Suppl. 41]: A chain that defines an ordered set of abstract service functions and ordering constraints that must be applied to packets and/or frames and/or flows selected as a result of classification and/or policy.

3.1.9 virtualized network function [ITU-T Y.3515]: A network function that can be deployed as a software on a NaaS cloud service provider infrastructure.

NOTE – Examples of virtualized network functions include virtual switches and virtual routers.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 cloud service: One or more capabilities offered via cloud computing invoked using a defined interface. It may comprise the hardware and hypervisor layers delivering individual servers, border routers, firewalls, load balancers & switches.

NOTE – Expanded version of definition in [b-ITU-T Y.3500].

3.2.2 network function virtualization (NFV): Principle of separating network functions from the hardware they run on by using virtual hardware abstraction.

NOTE – Based on [b-ETSI GR NFV 003].

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

CCS	Cloud Compute and Storage
CDN	Content Delivery Network
CMIP	Common Management Information Protocol
CSC	Cloud Service Customer
CSP	Cloud Service Provider
E2E	End to End
FCAPS	Fault, Configuration, Accounting, Performance and Security
IMS	IP Multimedia Subsystem
IP	Internet Protocol
NaaS	Network as a Service