Question 14/11 – Testing of cloud, SDN and NFV

(Continuation of Question 14/11)

1   Motivation

Cloud computing is a paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand. Software-defined networking is a set of technologies that enables to directly program, orchestrate, control and manage network resources, which facilitates the design, delivery and operation of network services in a dynamic and scalable manner. Network functions virtualization refers to principle of separating network functions from the hardware they run on by using virtual hardware abstraction.

Cloud, SDN and NFV are emerging technologies that are widely used in a variety of scenarios. The conformance, interoperability, and benchmark testing of cloud, SDN and NFV are very important study topics.

In the context of cloud/SDN/NFV, conformance testing is testing to verify that an implementation of cloud/SDN/NFV is compliant with a developed standard, such as a functional requirement standard or a protocol specification. Interoperability testing is testing to assess the ability of entities involved in cloud/SDN/NFV to interact with each other as expected. Benchmark testing is testing used to measure implementation of cloud/SDN/NFV, from the performance aspect.

In addition, more and more services are implemented by using cloud, SDN and NFV technologies, such as SD-WAN. The testing of services based on cloud, SDN and NFV are needed to be considered.

Cooperation with ITU-T SG13 (the lead SG on cloud) on testing of cloud is necessary. Cloud related testing activities will start after terminology and architecture are identified by SG13.

2   Question

Study items to be considered include, but are not limited to:

–   What are the requirements for conformance, interoperability and benchmark testing of cloud, SDN and NFV?

–   What kind of test suites are needed for testing of cloud, SDN and NFV, including conformance, interoperability and benchmark aspect?

–   How to establish automated testing system for cloud, SDN and NFV to improve testing efficiency?

–   What kind of test suites are needed for testing of services implemented by cloud, SDN and NFV?

–   What collaboration is necessary to minimize duplication of efforts with other SDOs?

–   What collaboration is necessary to utilize open source community?

3   Tasks

Tasks include, but are not limited to:

–   identify conformance, interoperability and benchmark testing requirements for cloud, SDN and NFV;

–   develop test suites for conformance, interoperability and benchmark testing of cloud, SDN and NFV;

–   develop methodology and framework for automated testing of cloud, SDN and NFV;

–   develop test suites for testing of services implemented by cloud, SDN and NFV;

–   provide necessary collaboration with external SDOs, consortia and forums and open source communities;

–   maintain and enhance the Recommendations for which the Question is responsible.

An up-to-date status of work under Q14/11 is contained in the SG11 work programme (https://www.itu.int/ITU-T/workprog/wp_search.aspx?sp=17&q=14/11).

4   Relationships

Recommendations:

–   Q, Y, H, I, M and F-series (especially cloud computing and testing related Recommendations)

Questions:

–   All Questions of SG11

Study Groups:

–   SG2 on Operational aspects

–   SG12 on QoS/QoE

–   SG13 on future network architecture and cloud computing

–   SG15 on Transport, Access and Home

–   SG16 on multimedia services and applications

–   SG17 on security

Other bodies:

–   ISO/IEC JTC 1 (especially ISO/IEC JTC 1 SC 38)

–   IETF

–   ETSI NFV ISG

–   IEEE

–   OASIS

–   NIST

–   TM Forum

–   ONF

WSIS action lines:

–   C2, C5, C11

Sustainable Development Goals:

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