Deploying Network Function Virtualization Experiments on the Virtual Wall Test-bed

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9th International Conference on Autonomous Infrastructure, Management and Security (AIMS 2015)

June 22-25, 2015, University of Ghent, Belgium

Abstract Network Function Virtualization (NFV) takes advantage of IT virtualization technologies and network programming to virtualize physical network functions (e.g., firewall, NAT, and DHCP) and interconnect them to create new communication services. This allows service providers to create new communication services on top of existing network and datacenter infrastructure enabling shorter time-to-market at lower cost. Combining IT virtualization and Software defined Networking (SDN) technologies allows NFV to increase greatly the network management flexibility by decoupling network functions from physical machines and by decoupling the control plane from traffic forwarding in network equipment.

The goal of this hands-on tutorial is to familiarize all participants with the concept of NFV in general and possible benefits of combining it with SDN. This will be accomplished by deploying several network functions on the Virtual Wall and interconnecting them using OpenFlow. This allows for the creation of individual Service Function Chains (SFC) for different users.

These experiments will be run in a live network setting, facilitated by the Virtual Wall test-bed. The Virtual Wall is a test-bed facility for setting up large-scale network topologies. Its nodes can be assigned different functionality and organized in arbitrary network topologies on the fly. As such, it is a generic experimental environment for advanced network, distributed software and service evaluation, and supports scalability research. The facility has been made available to the research community through different FP7 FIRE projects. This tutorial will provide, too, a brief theoretical introduction about the Virtual Wall's capabilities in preparation of the hands-on part. By using the jFed framework for test-bed federation, experiments on the Virtual Wall will be set-up.