

SDN/NFV Module 2: Practical Software Defined Networking & Network Function Virtualization

The future of network facilities & infrastructure



Overview

This hands-on practical course provides participants with a practical introduction to virtualization via Software Defined Networking (SDN) and Network Function Virtualization (NFV). These are arguably two of the most significant enablers in modern networking, allowing for centralised control of networks, dynamic network operation based on service requests, and easier backup and recovery strategies. The course provides an understanding of each and builds skills in deploying and managing both SDN and NFV environments and ultimately supporting different types of service. The learning is facilitated with practical exercises and activities.

You will learn

- Install and configure a virtual environment
- Create & manager a virtual network device
- Remotely access & control a virtual machine
- Manage a network using a SDN controller
- Configure network services using SDN and NFV
- Monitor traffic in a virtual environment
- Design a Virtual Network from a given plan

Who can benefit

This program is designed to provide those working in the communications environment with a detailed hands-on exploration of key aspects of virtualization & SDN/NFV. In particular it is useful for those who need to evaluate and implement SDN & NFV.

Pre requisite knowledge

Participants should have attended SDN/NFV Module 1: Essentials of Software Defined Networking & Network Function Virtualization and Certified IP Associate (CIPA) or equivalent

Outline

Review of SDN & NFV

- Review of SDN concept
- Review of IP routing & L2 switching
- Separating the control & traffic forwarding functions
- Orchestration & automation
- Defining policies & service levels
- Review to NFV
- What are the benefits?
- Key environments & platforms
- SDN & NFV: compare & contrast
- Using SDN & NFV together
- Applications of SDN & NFV to Telco environment
- Providing business continuity, disaster recovery & service restoration

Virtual Server creation

- Creating a VM & installing an OS
- Export, cloning & VM snapshots
- Downloading VMs
- Modifying VM settings
- Integrating VMs with hosts
- Monitoring resource usage

Software defined networking (SDN)

- SDN architecture and key components
- Open SDN implementation

- The Open Networking Foundation (ONF)
- SDN controllers & applications
- Southbound interface/API protocols
- OpenFlow
 - OVSDB
 - NETCONF
 - LISP
 - BGP
 - PCEP
 - SNMP
- Northbound interfaces/APIs & standardization
- The OpenDaylight project
- OpenDaylight REST APIs
- The OSGi (Open Service Gateway initiative) specification
- SDN and virtualized network devices
- Software interfaces & programming using Java, JSON, Python

Network Function Virtualization (NFV)

- NFV system building blocks
- Example NFV operation
- NFV and LTE EPC core network
- Virtual switches and routers
- Open vSwitch
- Creating a virtual network device
- Configuring interfaces
- Bridging and internal interfaces
- Monitoring internal activity
- Virtual network design & implementation
- Troubleshoot faults on a Virtual Network

Hands on exercises including:

- Creating & managing a virtual machine
- Using OpenFlow
- Managing traffic flows using SDN
- Using a SDN controller
- Virtualizing network devices & functions
- Working with a virtual switch
- Create and configure a virtual router
- Analysing network & SDN control flows
- Creating SDN scripts
- Troubleshooting the network
- Introduction to planning virtual environments

DURATION 5 days

MAXIMUM CLASS SIZE 14