Course ID	Course Title
SDN-NFV	**SDN & NFV: Software Defined Networks & Network Functions Virtualization**
Course Duration	
2 days	

Related Courses

- SDN: Software Defined Networks (SDN1, 1 day)
- Eogogics Cloud Computing Curriculum

Aimed At

Managers and professionals, both corporate and Government, whose work requires an overview of SDN and NFV.

Prerequisites

General familiarity with TCP/IP.

Course in a Nutshell

In this course, we will study SDN and NFV, including the reasons for their development, how they are related, how they are deployed, and the benefits that they offer.

We'll take a detailed look at how SDN works, the OpenFlow protocol, SDN in the datacenter and the WAN, deployments of SDN in the real world, equipment manufacturers, the interaction of SDN with optical networking technologies (such as OTN, ASON, and GMPLS), and the future of SDN.

We will also study the principles of NFV, how NFV works in practice to simplify network operation and configuration, and the interaction of NFV and SDN in today's networks and the networks of the future.

Customize It!

We can tailor this course to your team's backgrounds and learning objectives. Based on your need, we can include or exclude topics and make the course more or less technical.

Learn How To

- Principles of Software Defined Networking (SDN) and Network Function Virtualization (NFV)
- Operation of networks using SDN
- OpenFlow protocol use and its place in SDN
- How SDN is deployed and what benefits it brings
- How software defined networks are put together
- How SDN fits in with other network technologies
- Reasons for development of NFV
- How NFV improves network performance, design, and provisioning
- Relationship of SDN and NFV

Course Outline

Part 1: Introduction to SDN and NFV

- Course overview

- Quick review of TCP/IP essentials

- Genesis of SDN and NFV: What problem are they trying to solve?
  - Software Defined Networking (SDN): Definition and discussion
  - Network Functions Virtualization (NFV): Definition and discussion
  - Problem of modern networks
  - How SDN and/or NFV will solve the problem
  - SDN benefits
  - NFV benefits

- Technical challenges for SDN and NFV
  - Portability
  - Security
  - Management
  - Resilience
  - Migration

Part 2: SDN in Depth

- Flavors of SDN
  - WAN
  - Data center
  - Other applications

- How SDN works
  - Understanding networks in terms of planes
  - Characteristics
  - The controller
  - SDN applications

- OpenFlow protocol
  - Overview
  - Basic functionality
  - OpenFlow as fundamental protocol for SDN
  - OpenFlow limitations
  - Protocols competing with OpenFlow

- Alternative definitions of SDN

  - Disadvantages of open source software for networking
  - SDN via APIs
  - SDN via Hypervisor
  - SDN via opening up the device(s)
  - Network Function Virtualization (NFV) and SDN

- SDN in the data center

  - Data center definition
  - Data center needs and demands
  - Tunneling and path technologies in data center
  - Ethernet and SDN
  - Real world implementations

- SDN in WAN

  - SDN cockpit
  - Service provider and carrier networks
  - Campus networks
  - SDN and optical networks
  - SDN vs P2P/Overlay networks

- Deployments of SDN

  - Overview
  - Google's SDN

- SDN equipment and building a software defined network

  - SDN ecosystem
  - Equipment manufacturers
  - White box switches, bare metal, and merchant silicon
  - OpenDaylight and OpenDaylight controllers
  - Other controllers marketed
  - Building an SDN

Part 3: NFV in Depth

- Birth and history of NFV

- NFV and traditional network approach

  - Old view of network components (appliances)
  - Virtualizing appliances
  - Relationship with SDN
  - Application areas
  - NFV and cloud

- NFV and virtualized appliances
    - ETSI view of NFV
    - How virtual appliances work
    - Using NFV to simplify and speed up deployment of services
    - NFV architectural framework
    - NFV management and orchestration (MANO)
    - NFV infrastructure (NFVI)
    - NFV software architecture

- Enablers for NFV
    - Cloud computing
    - Industry standard high-volume servers

- Benefits of NFV
    - Network operators
    - Customers

- Technical development
    - Challenges
    - Group specifications
    - Impact on Operations Support Systems (OSS)
    - Reliability and availability
    - Resiliency
    - Security
    - Proof of concept
    - NFV and open source, standardization
    - NFV industry specification group (NFV ISG)

- NFV systems
    - Ciena Agility
    - Intel
    - Cisco Evolved Services Platform (ESP)
    - Open Platform for NFV (OPNFV)
    - NFV specifications

- How NFV will impact network design and performance
    - SDN support of NFV
    - Network design with NFV
    - Performance improvements
    - End user experience improvements

Part 4: Putting in all together

- Business ramifications
  - SDN and everything as a service
  - SDN and NFV vendors: the ecosystem
  - Impact on network equipment manufacturers (NEMs)
  - Impact on networking vendors
  - Effect on end-users

- Future of SDN and NFV
  - Standards bodies
  - Evolving standards
  - Novel applications

- Course wrap-up
  - Course recap
  - Evaluations

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