

## **Cisco Network Functions Virtualization (NFV)**

### **Course Introduction**

This 5 days OR 5 weekends, 40 hours, instructor led Network Function Virtualization (NFV) course is customized to provide candidates with extensive knowledge to accomplish their day to day jobs. Network Functions Virtualization Training, NFV Training introduces concepts, technologies and new ways to design, deploy and manage networking services. Network Functions Virtualization allows decoupling of critical network functions such as NAT, DHCP, DNS, firewall, IDS from proprietary hardware appliances. These critical functions are able to run in software only and simplifies networking components and leads to a fully virtualized infrastructure. This is applicable to data plane processing or control plane function in both wired and wireless network infrastructures.

### **Course Highlights**

- This Instructor-led classroom course is designed with an aim to build theoretical knowledge supplemented by ample hands-on lab exercises
- Facility of Lab on cloud available (based on booking)
- Courseware includes reference material to maximize learning.
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- Pre and Post test to ensure concept absorption.
- Repeating or lectures allowed (based on seat availability)

### **Course Objectives**

#### **After completing this course, you should be able to:**

- Understand concepts behind virtualization
- Discuss Network Functions Virtualization (NFV) and its benefits and value proposition
- List concepts and technologies behind NFV
- Understand concepts behind service and infrastructure evolution: cloud computing, Software-defined networking (SDN), OpenFlow, OpenStack, and Network Functions Virtualization (NFV)
- Discuss implementation of network functions in software running on a range of industry standard server hardware
- Discuss the NFV reference architecture and building blocks
- Discuss NFV architectural elements and implementation use cases
- Understand concepts behind Network Functions
- Virtualization Infrastructure as a Service (VNFaaS),
- Virtualization of the CPE (vE-CPE), Virtualization of the PE(vPE), Virtual Network Platform as a Service (VNPaaS), VNF Forwarding Graphs, Virtualization of Mobile Core Network and IMS, Virtualization of Mobile base station and Virtualization of CDNs (vCDN)
- Define how SND and NFV can be integrated with each other

- Discuss how NFV will impact LTE and IMS network functions, network design and operations
- Understand concepts such as Virtualization of Compute and Network and Storage

## **Course Topics**

### **Module 1: Introduction to NFV**

- Background
- History & Framework
- Practical aspects
- Relationship to SDN
- Industry Impact
- CAPEX & OPEX

### **Module 2: NFV Vendors (VNF & MANO)**

- Cisco
- VMware
- Juniper
- Intel
- Brocade
- Citrix
- Dell
- Microsoft
- Oracle
- Arista
- Ericsson
- Alcatel-Lucent

### **Module 2: Organizations with NFV**

- Google
- AT&T
- Verizon

### **Module 3: Sector wise NFV functions**

- Enterprise
- Service Providers
- Data Centers
- Security
- Cloud
- Distributed NFV

### **Module 4: Understanding Hypervisor and capabilities**

- Hyper-V
- VMware

- KVM & QEMU

### **Module 5: Moving towards the 5G Goal for service providers**

- Problems with current architecture
- Understanding SD-WAN
- Understanding VCPE
- Understanding VPE
- Understanding VCDN
- Virtualization of Mobile Core and IMS
- NFV for LTE
- Understanding Network Service Orchestrator Solutions
- Understanding Virtualized Infrastructure management.

### **Lab Topics**

- Deploying a Hypervisor using Vmware Environment
- Deploying a Cisco ISRV using Hypervisor Environment
- Deploying a Cisco Nexus 9000v using Hypervisor Environment
- Deploying a Cisco ASR 9000v using a Hypervisor Environment.
- Deploying a vSRX on a Hypervisor Environment
- Deploying a SD-Wan Controller
- Deploying Segment Routing
- Deploying Cisco UCS-E for VCPE environments.