



VMware Cloud Foundation Networking: Advanced Design & Deploy [v9.1]

Course Overview

In this five-day VCF Networking: Advanced Design and Deploy course, you will explore the architectural principles, design methodologies, deployment workflows, and operational configurations required to successfully plan, implement, and validate software-defined networking within VMware Cloud Foundation (VCF). The curriculum thoroughly examines modern networking models supported by VCF, focusing on physical network fabric design, core VCF networking architecture, NSX Edge Cluster topologies, and segment networking. Special emphasis is placed on evaluating Distributed Transit Gateway versus Centralized Transit Gateway Architectures, alongside Dual Availability Zone designs to ensure high availability and structural resilience across enterprise environments.

Delivered through an engaging mix of technical lectures, architectural design discussions, product demonstrations, and hands-on lab exercises, this course equips you with the skills to architect resilient, scalable, and high-performance networking infrastructures. You will master the practical implementation of NSX, Virtual Private Cloud (VPC) networking models, and Dual Availability Design strategies. Through immersive lab scenarios, you will gain direct experience designing physical and overlay networks, configuring edge node deployments, implementing gateway services, establishing EVPN VXLAN connectivity, and designing Dual Availability Zone stretched cluster topologies for enterprise production environments.

Course Objectives

By the end of the course, you should be able to meet the following objectives:

- Evaluate physical network fabric models and NSX architecture to design VCF networking foundations with Edge Node and Edge Cluster topologies.
- Configure VCF Segment networking, logical routing, and gateway services including VRF Lite, NAT, DHCP, DNS, load balancing, and VPN technologies.
- Architect VPC networking models including Centralized and Distributed Transit Gateways with VLAN Extensions and EVPN VXLAN connectivity.
- Design dual Availability Zone architectures with stretched clusters, resilient management domains, and high availability Edge Cluster models.
- Troubleshoot VCF networking components including NSX Manager clusters, segments, Edge Nodes, logical routing, gateway services, and VPN connections.

Target Audience

- Solution Architects, Cloud Administrators, Platform Engineers, VI Administrators, System Administrators, Consultants, and Support Engineers

Prerequisites

This course has the following prerequisites:

- Working experience and knowledge of VMware Cloud Foundation, VMware vSphere, VMware NSX, and VMware vSAN.

Course Modules

Module 1: Course Introduction

- Describe the course objectives, outline, and typographical conventions.

Module 2: Network Fabric Models

- Evaluate Layer 2 and Layer 3 top-of-rack fabric models for VCF Data Center network design.
- Determine optimal switch and server hardware designs for VCF network fabric deployments.

Module 3: VCF Networking Architecture

- Analyze NSX core architecture, control planes, and data planes within VCF networking.
- Evaluate NSX Management Cluster design, host sizing, and infrastructure dependencies.
- Design NSX Edge Node and Edge Cluster topologies with high-availability mechanisms.

Module 4: Segment Networking

- Describe the VCF Segment Networking model and NSX data plane components.
- Configure Transport Nodes, Transport Zones, and VDS operational modes for segment networking.
- Manage uplink profiles, teaming policies, and Transport Node profiles for segment connectivity.
- Configure segments

Module 5: Edge Node and Edge Clusters

- Describe NSX Edge Node and Edge Cluster Architecture.
- Identify NSX Edge Cluster deployment options and failure detection methods.
- Deploy and configure Edge Nodes and Edge Clusters.

Module 6: Logical Routing

- Explain two-tier logical routing architecture and East-West versus North-South traffic flows.
- Describe gateway components, interfaces, and static and dynamic routing protocols.
- Configure Tier-0 and Tier-1 gateways with BGP, OSPF, and ECMP multi-path routing.
- Manage route aggregation, route summarization, and failover modes for logical gateways.

Module 7: Gateway Services in NSX Segment Networking

- Configure VRF Lite for multi-tenancy and design considerations in segment networking.
- Deploy NAT services including SNAT, DNAT, NAT64, and stateful active-active services.
- Configure DNS and DHCP services for NSX segment network environments.
- Deploy the NSX Native Load Balancer in Inline and One-Arm deployment modes.
- Configure L2VPN Server and Client for Layer 2 extension across network sites.

Module 8: Workload Connectivity Models

- Describe Centralized and Distributed Workload Connectivity Models for VCF networking.
- Evaluate network topology requirements for different workload deployment scenarios.
- Design workload networking solutions based on organizational scale and complexity requirements.

Module 9: VPC Networking

- Describe Virtual Private Cloud constructs and Architecture.
- Architect VPC networking models across Full Services, Scalable, and Getting Started configurations.
- Explain persona definitions and subnet allocation strategies.

Module 10: Centralized Transit Gateway

- Explain Centralized Transit Gateway architecture, use cases, and capabilities.
- Configure Centralized Transit Gateway with multiple external connections and advanced networking features.
- Deploy Policy-Based and Route-Based IPsec VPN on Centralized Transit Gateways.
- Configure NAT enhancements and DNS Forwarder services.

Module 11: Distributed Transit Gateway

- Describe Distributed Transit Gateway architecture, use cases, and capabilities.
- Deploy VNA Clusters through vCenter and NSX UI for distributed routing.
- Configure VLAN Extensions for VPC subnets to support distributed bridging.
- Implement EVPN VXLAN connectivity using EVPN Route Controllers for overlay integration.

Module 12: Dual Availability Zones

- Describe Stretched vSphere Cluster models for Dual Availability Zone deployments.
- Design management domain networking for resilience and failover in stretched clusters.
- Evaluate NSX Edge Cluster models for Dual Availability Zone architectures.
- Design Dual Availability Zone architectures using NSX Edge Node HA and vSphere HA recovery.

Module 13: VCF Network Troubleshooting

- Troubleshoot NSX Manager cluster formation and node membership issues.
- Validate VDS configuration and resolve NSX segment issues using CLI commands.
- Troubleshoot NSX Edge Node and Cluster status using CLI and log files.
- Diagnose logical routing and gateway service problems using troubleshooting flowcharts.
- Resolve L2VPN and IPsec VPN tunnel failures using CLI and UI diagnostics.