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Learning Style: Virtual Classroom

Technology: Cisco

Difficulty: Intermediate

Course Duration: 5 Days

Designing Cisco Data Center Infrastructure (DCID) v8.0

About this Course:

This course is specifically designed for Network Designers and Engineers and focuses on Cisco Data Center Infrastructure Designing. The key concepts of utilizing Cisco Technologies and Components for Designing Data Centers are discussed in this course. Businesses direly need services of professionals sharing proficiency in Data Center Design and Cisco Data Center Technician earns $77,670 annually. Through this course, professionals will learn the skillset needed to design data center infrastructures and will gain a conceptual understanding of advanced security technologies, security threats, virtual networking, & many more concepts.

Course Objectives:

The core objective of this course is to help professionals gain a better understanding and conceptual knowledge of the following key elements:

- Understanding Data Center Protocols and Layer Forwarding Options
- Fundamental Knowledge of Cisco OTV Technology, Traffic Patterns, and Data Center
- Key Concepts of Rack Design, Layer Switching, Core, and Aggregation
- LISP Traffic Forwarding Solution Design & Network Virtualization
- Advanced Security Technologies, Virtual Networking, and Security Threats
- Hardware Redundancy Options and Fabric Extenders Solutions
- Data Center Network Device Orchestration and Management
- Describing Multiple Levels of RAID and Virtual Appliances
- Architecture, Concepts, and Topologies of Fiber Channel
- Storage Network Automation, Management, and Security Features
- Switching Modes & EHV Differentiation and Fabric Interconnect Connectivity Options
- Storage Vendor Integration and Hyper-Convergence Solutions
- HA Mode Management Solution and Cisco UCS Management Options

Audience:

- Network Engineer and Designer
- System Engineer
- Network Administrator
- Technical Solutions Architect

Prerequisites:

Students and Professionals should obtain a fundamental understanding of the following courses or must have equivalent knowledge and experience:

- Cisco Data Center Networking (DCICN) v6.0 Fundamentals or Higher
- Cisco Data Center Technologies (DCICT) v6.0 Essentials or Higher
- Cisco Nexus 9000 Series Switches in ACI Mode v2.0 (DCAC9K) or Higher

It is also recommended that the students should have the foundational knowledge

of Data Center Virtualization, Storage, Automation, Orchestration, & Networking Concepts, and VMware Environment. Furthermore, a basic understanding of Cisco ACI, Cisco UCS, Cisco MDS, and Cisco Nexus Families.

Course Outline:

Describing High Availability on Layer 2

- Overview of Layer 2 High-Availability Mechanisms
- Virtual Port Channels
- Cisco Fabric Path
- Virtual Port Channel+

Designing Layer 3 Connectivity

- First Hop Redundancy Protocols
- Improve Routing Protocol Performance and Security
- Enhance Layer 3 Scalability and Robustness

Designing Data Center Topologies

- Data Center Traffic Flows
- Cabling Challenges
- Access Layer
- Aggregation Layer
- Core Layer
- Spine-and-Leaf Topology
- Redundancy Options

Designing Data Center Interconnects with Cisco OTV

- Cisco OTV Overview
- Cisco OTV Control and Data Planes
- Failure Isolation
- Cisco OTV Features
- Optimize Cisco OTV
- Evaluate Cisco OTV

Describing Locator/ID Separation Protocol

- Locator/ID Separation Protocol
- Location Identifier Separation Protocol (LISP) Virtual Machine (VM) Mobility
- LISP Extended Subnet Mode (ESM) Multihop Mobility
- LISP VPN Virtualization

Describing VXLAN Overlay Networks

- Describe VXLAN Benefits over VLAN
- Layer 2 and Layer 3 VXLAN Overlay
- Multiprotocol Border Gateway Protocol (MP-BGP) Ethernet VPN (EVPN)

Control Plane Overview
- VXLAN Data Plane

Describing Hardware and Device Virtualization

- Hardware-Based High Availability
- Device Virtualization
- Cisco UCS Hardware Virtualization
- Server Virtualization
- SAN Virtualization
- N-Port ID Virtualization

Describing Cisco FEX Options

- Cisco Adapter FEX
- Access Layer with Cisco FEX
- Cisco FEX Topologies
- Virtualization-Aware Networking
- Single Root I/O Virtualization
- Cisco FEX Evaluation

Describing Basic Data Center Security

- Threat Mitigation
- Attack and Countermeasure Examples
- Secure the Management Plane
- Protect the Control Plane
- RBAC and Authentication, Authorization, and Accounting (AAA)

Describing Advanced Data Center Security

- Cisco TrustSec in Cisco Secure Enclaves Architecture
- Cisco TrustSec Operation
- Firewalling
- Positioning the Firewall Within Data Center Networks
- Cisco Firepower® Portfolio
- Firewall Virtualization
- Design for Threat Mitigation

Describing Management and Orchestration

- Network and License Management
- Cisco UCS Manager
- Cisco UCS Director
- Cisco Intersight
- Cisco DCNM Overview

Describing Storage and RAID Options

- Position DAS in Storage Technologies

- Network-Attached Storage
- Fibre Channel, FCoE, and Internet Small Computer System Interface (iSCSI)
- Evaluate Storage Technologies

Describing Fibre Channel Concepts

- Fibre Channel Connections, Layers, and Addresses
- Fibre Channel Communication
- Virtualization in Fibre Channel SAN

Describing Fibre Channel Topologies

- SAN Parameterization
- SAN Design Options
- Choosing a Fibre Channel Design Solution

Describing FCoE

- FCoE Protocol Characteristics
- FCoE Communication
- Data Center Bridging
- FCoE Initialization Protocol
- FCoE Design Options

Describing Storage Security

- Common SAN Security Features
- Zones
- SAN Security Enhancements
- Cryptography in SAN

Describing SAN Management and Orchestration

- Cisco DCNM for SAN
- Cisco DCNM Analytics and Streaming Telemetry
- Cisco UCS Director in the SAN
- Cisco UCS Director Workflows

Describing Cisco UCS Servers and Use Cases

- Cisco UCS C-Series Servers
- Fabric Interconnects and Blade Chassis
- Cisco UCS B-Series Server Adapter Cards
- Stateless Computing
- Cisco UCS Mini

Describing Fabric Interconnect Connectivity

- Use of Fabric Interconnect Interfaces

- VLANs and VSANs in a Cisco UCS Domain
- Southbound Connections
- Northbound Connections
- Disjoint Layer 2 Networks
- Fabric Interconnect High Availability and Redundancy

Describing Hyperconverged and Integrated Systems

- Hyperconverged and Integrated Systems Overview
- Cisco HyperFlex™ Solution
- Cisco HyperFlex Scalability and Robustness
- Cisco HyperFlex Clusters
- Cluster Capacity and Multiple Clusters on One Cisco UCS Domain
- External Storage and Graphical Processing Units on Cisco HyperFlex
- Cisco HyperFlex Positioning

Describing Cisco UCS Manager Systemwide Parameters

- Cisco UCS Setup and Management
- Cisco UCS Traffic Management

Describing Cisco UCS RBAC

- Roles and Privileges
- Organizations in Cisco UCS Manager
- Locales and Effective Rights
- Authentication, Authorization, and Accounting
- Two-Factor Authentication

Describing Pools for Service Profiles

- Global and Local Pools
- Universally Unique Identifier (UUID) Suffix and Media Access Control (MAC) Address Pools
- World Wide Name (WWN) Pools
- Server and iSCSI Initiator IP Pools

Describing Policies for Service Profiles

- Global vs. Local Policies
- Storage and Basic Input/Output System (BIOS) Policies
- Boot and Scrub Policies
- Intelligent Platform Management Interface (IPMI) and Maintenance Policies

Describing Network-Specific Adapters and Policies

- LAN Connectivity Controls
- SAN Connectivity Controls
- Virtual Access Layer
- Connectivity Enhancements

Describing Templates in Cisco UCS Manager

- Cisco UCS Templates
- Service Profile Templates
- Network Templates

Designing Data Center Automation

- Model-Driven Programmability
- Cisco NX-API Overview
- Programmability Using Python
- Cisco Ansible Module
- Use the Puppet Agent

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