

## CCNP Data Center

### Course Outline

- Implementing Data Center Switching Protocols\*
  - Spanning Tree Protocol
  - Port Channels Overview
  - Virtual Port Channels Overview
- Implementing First-Hop Redundancy Protocols\*
  - Hot Standby Router Protocol (HSRP) Overview
  - Virtual Router Redundancy Protocol (VRRP) Overview
  - First Hop Redundancy Protocol (FHRP) for IPv6
- Implementing Routing in Data Center\*
  - Open Shortest Path First (OSPF) v2 and Open Shortest Path Protocol (OSPF) v3
  - Border Gateway Protocol
- Implementing Multicast in Data Center\*
  - IP Multicast in Data Center Networks
  - Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD)
  - Multicast Distribution Trees and Routing Protocols
  - IP Multicast on Cisco Nexus Switches
- Implementing Data Center Overlay Protocols
  - Cisco Overlay Transport Virtualization
  - Virtual Extensible LAN
- Implementing Network Infrastructure Security\*
  - User Accounts and Role Based Access Control (RBAC)
  - Authentication, Authorization, and Accounting (AAA) and SSH on Cisco NX-OS
  - Keychain Authentication
  - First Hop Security
  - Media Access Control Security
  - Control Plane Policing

- Describing Cisco Application-Centric Infrastructure
  - Cisco ACI Overview, Initialization, and Discovery
  - Cisco ACI Management
  - Cisco ACI Fabric Access Policies
- Describing Cisco ACI Building Blocks and VMM Domain Integration
  - Tenant-Based Components
  - Cisco ACI Endpoints and Endpoint Groups (EPG)
  - Controlling Traffic Flow with Contracts
  - Virtual Switches and Cisco ACI VMM Domains
  - VMM Domain EPG Association
  - Cisco ACI Integration with Hypervisor Solutions
- Describing Packet Flow in Data Center Network\*
  - Data Center Traffic Flows
  - Packet Flow in Cisco Nexus Switches
  - Packet Flow in Cisco ACI Fabric
- Describing Cisco Cloud Service and Deployment Models
  - Cloud Architectures
  - Cloud Deployment Models
- Describing Data Center Network Infrastructure Management, Maintenance, and Operations\*
  - Time Synchronization
  - Network Configuration Management
  - Software Updates
  - Network Infrastructure Monitoring
- Explaining Cisco Network Assurance Concepts\*
  - Need for Network Assurance
  - Cisco Streaming Telemetry Overview
- Implementing Fibre Channel Fabric
  - Fibre Channel Basics
  - Virtual Storage Area Network (VSAN) Overview
  - SAN Port Channels Overview

- Fibre Channel Domain Configuration Process
- Implementing Storage Infrastructure Services
  - Distributed Device Aliases
  - Zoning
  - N-Port Identifier Virtualization (NPIV) and N-Port Virtualization (NPV)
  - Fibre Channel over IP
  - Network Access Server (NAS) Concepts
  - Storage Area Network (SAN) Design Options
- Implementing FCoE Unified Fabric
  - Fibre Channel over Ethernet
  - Describing FCoE
  - FCoE Topology Options
  - FCoE Implementation
- Implementing Storage Infrastructure Security\*
  - User Accounts and RBAC
  - Authentication, Authorization, and Accounting
  - Fibre Channel Port Security and Fabric Binding
- Describing Data Center Storage Infrastructure Maintenance and Operations\*
  - Time Synchronization
  - Software Installation and Upgrade
  - Storage Infrastructure Monitoring
- Describing Cisco UCS Server Form Factors\*
  - Cisco UCS B-Series Blade Servers
  - Cisco UCS C-Series Rack Servers
- Implementing Cisco Unified Computing Network Connectivity
  - Cisco UCS Fabric Interconnect
  - Cisco UCS B-Series Connectivity
  - Cisco UCS C-Series Integration
- Implementing Cisco Unified Computing Server Abstraction
  - Identity Abstraction
  - Service Profile Templates

- Implementing Cisco Unified Computing SAN Connectivity
  - iSCSI Overview
  - Fibre Channel Overview
  - Implement FCoE
- Implementing Unified Computing Security
  - User Accounts and RBAC
  - Options for Authentication
  - Key Management
- Introducing Cisco HyperFlex Systems\*
  - Hyperconverged and Integrated Systems Overview
  - Cisco HyperFlex Solution
  - Cisco HyperFlex Scalability and Robustness
- Describing Data Center Unified Computing Management, Maintenance, and Operations\*
  - Compute Configuration Management
  - Software Updates
  - Infrastructure Monitoring
  - Cisco Intersight™
- Implementing Cisco Data Center Automation and Scripting Tools\*
  - Cisco NX-OS Programmability
  - Scheduler Overview
  - Cisco Embedded Event Manager Overview
  - Bash Shell and Guest Shell for Cisco NX-OS
  - Cisco Nexus API
- Describing Cisco Integration with Automation and Orchestration Software Platforms
  - Cisco and Ansible Integration Overview
  - Cisco and Puppet Integration Overview
  - Python in Cisco NX-OS and Cisco UCS
- Describing Cisco Data Center Automation and Orchestration Technologies\*
  - Power On Auto Provisioning
  - Cisco Data Center Network Manager Overview
  - Cisco UCS Director Fundamentals

- Cisco UCS PowerTool

\* This section is self-study material that can be done at your own pace after the instructor-led portion of the course.

### **Lab outline**

- Configure Overlay Transport Visualization (OTV)
- Configure Virtual Extensible LAN (VXLAN)
- Explore the Cisco ACI Fabric
- Implement Cisco ACI Access Policies and Out-of-Band Management
- Implement Cisco ACI Tenant Policies
- Integrate Cisco ACI with VMware
- Configure Fibre Channel
- Configure Device Aliases
- Configure Zoning
- Configure NPV
- Configure FCoE
- Provision Cisco UCS Fabric Interconnect Cluster
- Configure Server and Uplink Ports
- Configure VLANs
- Configure a Cisco UCS Server Profile Using Hardware Identities
- Configure Basic Identity Pools
- Configure a Cisco UCS Service Profile Using Pools
- Configure an Internet Small Computer Systems Interface (iSCSI) Service Profile
- Configure Cisco UCS Manager to Authenticate Users with Microsoft Active Directory
- Program a Cisco Nexus Switch with Python