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Designing Cisco Data Center Infrastructure (DCID) V7.1

The Designing Cisco Data Center Infrastructure (DCID) provides training on designing data centers using Cisco data centers solutions and technologies. Topics covered include network designs with virtualization technologies, Layer 2 and Layer 3 technologies and routing protocols, and data center interconnect design options. You'll learn design practices for the Cisco Unified Computing System™ (Cisco UCS®) solution based on Cisco UCS B-Series and C-Series servers, Cisco UCS Manager, and Cisco Unifie Fabric, while gaining experience with network management technologies including Cisco UCS Manager, Cisco Data Center Network Manager (DCNM), and Cisco UCS Director.

This course helps you prepare to take the exam:

300-610 Designing Cisco Data Center Infrastructure (DCID)

How you'll benefit

This course will help you:

- Make design choices for optimal data center infrastructure performance, virtualization, security, and automation
- Master the practical and theoretical knowledge necessary to design a scalable, reliable, and intelligent data center based on Cisco technologies
- Qualify for professional-level job roles in the high-demand area of enterprise-class data center environments
- Earn 40 CE credits toward recertification

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Price :

$4095.00

Duration :

5 Days

Certification Exam:

300-610

CE Credit: 40

Objective

Upon completing this course, the student will be able to meet these objectives:

- Describe the Layer 2 and Layer 3 forwarding options and protocols used in a data center
- Describe the rack design options, traffic patterns, and data center switching layer access, aggregation, and core
- Describe the Cisco Overlay Transport Virtualization (OTV) technology that is used to interconnect data centers
- Describe Locator/ID separation protocol
- Design a solution that uses Virtual Extensible LAN (VXLAN) for traffic forwarding
- Describe hardware redundancy options; how to virtualize the network, compute, and storage functions; and virtual networking in the data center
- Describe solutions that use fabric extenders and compare Cisco Adapter Fabric Extender (FEX) with single root input/output virtualization (SR-IOV)
- Describe security threats and solutions in the data center
- Describe advanced data center security technologies and best practices
- Describe device management and orchestration in the data center
- Describe the storage options for compute function and different Redundant Array of Independent Disks (RAID) levels from a high-availability and performance perspective
- Describe Fibre Channel concepts, topologies, architecture, and industry terms
- Describe Fibre Channel over Ethernet (FCoE)
- Describe security options in the storage network
- Describe management and automation options for storage networking infrastructure
- Describe Cisco UCS servers and use cases for various Cisco UCS platforms
- Explain the connectivity options for fabric interconnects for southbound and northbound connections
- Describe the hyper converged solution and integrated systems
- Describe the system wide parameters for setting up a Cisco UCS domain
- Describe role-based access control (RBAC) and integration with directory servers to control access rights on Cisco UCS Manager
- Describe the pools that may be used in service profiles or service profile templates on Cisco UCS Manager
- Describe the different policies in the service profile
- Describe the Ethernet and Fibre Channel interface policies and additional network technologies
- Describe the advantages of templates and the difference between initial and updated templates
- Describe data center automation tools

Who Should Attend

The primary audience for this course is as follows:

- Data Center Engineers
- Network Designers
- Network Administrators
- Network Engineers
- Systems Engineers
- Consulting Systems Engineers
- Technical solutions Architects
- Server Administrators
- Network Managers
- Cisco Integrators or Partners

Prerequisites

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Before taking this course, you should be able to:

- Implement data center networking [Local Area Network (LAN) and Storage Area Network (SAN)]
- Describe data center storage
- Implement data center virtualization
- Implement Cisco Unified Computing System (Cisco UCS)
- Implement data center automation and orchestration with the focus on Cisco Application Centric Infrastructure (ACI) and Cisco UCS Director
- Describe products in the Cisco Data Center Nexus and Multilayer Director Switch (MDS) families

To fully benefit from this course, you should have completed the following courses or obtained the equivalent level of knowledge:

- Understanding Cisco Data Center Foundations (DCFNDU)
- Implementing and Administering Cisco Networking Technologies (CCNA®)
- Implementing Cisco Data Center Core Technologies (DCCOR)

Course Outline

Module 1: Describing High Availability on Layer 2

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

Module 2: Designing Layer 3 Connectivity

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

Module 3: Designing Data Center Topologies

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

Module 4: 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

Module 5: 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

Module 6: Describing VXLAN Overlay Networks

- Describe VXLAN Benefits over VLAN

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- Layer 2 and Layer 3 VXLAN Overlay
- Multiprotocol Border Gateway Protocol (MP-BGP) Ethernet VPN (EVPN) Control Plane Overview
- VXLAN Data Plane

Module 7: Describing Hardware and Device Virtualization

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

Module 8: 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

Module 9: 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)

Module 10: 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

Module 11: Describing Management and Orchestration

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

Module 12: 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

Module 13: Describing Fibre Channel Concepts

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

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Module 14: Describing Fibre Channel Topologies

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

Module 15: Describing FCoE

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

Module 16: Describing Storage Security

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

Module 17: 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

Module 18: 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

Module 19: 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

Module 20: 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

Module 21: Describing Cisco UCS Manager Systemwide Parameters

- Cisco UCS Setup and Management
- Cisco UCS Traffic Management

Module 22: Describing Cisco UCS RBAC

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

Module 23: 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

Module 24: 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

Module 25: Describing Network-Specific Adapters and Policies

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

Module 26: Describing Templates in Cisco UCS Manager

- Cisco UCS Templates
- Service Profile Templates
- Network Templates

Module 27: Designing Data Center Automation

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

LAB OUTLINE

- Module 1: High Availability on Layer 2
- Module 2: Designing Layer 3 Connectivity
- Module 3: Designing Data Center Topologies
- Module 4: Locator/ID Separation Protocol
- Module 5: VXLAN Overlay Networks
- Module 6: Hardware and Device Virtualization
- Module 7: Cisco FEX Options
- Module 8: Basic Data Center Security
- Module 9: Advanced Data Center Security
- Module 10: Management and Orchestration
- Module 11: Storage and RAID Options
- Module 12: Fibre Channel Topologies
- Module 13: Fibre Channel Topologies
- Module 14: FCoE
- Module 15: Storage Security
- Module 16: SAN Management and Orchestration

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- Module 17: Cisco UCS Servers and Use Cases
- Module 18: Fabric Interconnect Connectivity
- Module 19: Hyperconverged and Integrated Systems
- Module 20: Cisco UCS Manager Systemwide Parameters
- Module 21: Cisco UCS RBAC
- Module 22: Pools for Service Profiles
- Module 23: Policies for Service Profiles
- Module 24: Network-Specific Adapters and Policies
- Module 25: Templates in Cisco UCS Manager
- Module 26: Designing Data Center Automation

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