

Designing Cisco Data Center Infrastructure

Course Duration: 40 Hours

Course code: DCID

1. Course Overview

This course provides in-depth knowledge of designing modern Cisco data center infrastructure. It focuses on Layer 2 and Layer 3 connectivity, network virtualization, compute and storage integration, and secure, scalable architecture design. Learners will gain expertise in designing resilient, high-performance data center environments aligned with business and technical requirements.

2. What you'll learn?

By the end of the course, you will be able to:

- Design scalable Layer 2 and Layer 3 data center networks
- Implement Cisco data center architecture models and design principles
- Design VXLAN BGP EVPN-based network virtualization solutions
- Integrate Cisco UCS for compute resource management
- Design storage networking solutions (SAN, NAS, IP storage)
- Apply security best practices in data center design
- Design high availability, redundancy, and disaster recovery solutions
- Optimize data center performance, scalability, and automation

3. Target Audience

This course is ideal for:

- Data Center Network Designers
- Network Engineers & Architects
- System Engineers & Integrators
- Cloud Infrastructure Engineers
- IT Professionals working with enterprise data centers

4. Pre-Requisites

Before taking this course, you should have:

- Understanding of networking fundamentals (CCNA level or equivalent)
- Basic knowledge of Cisco data center technologies
- Familiarity with routing and switching concepts
- Basic understanding of virtualization and cloud computing

5. Course content

Module 1: Course Introduction

- Course overview and objectives
- Data center design methodology
- Key design considerations and best practices

Module 2: Data Center Architecture Overview

- Cisco data center architecture models
- Spine-leaf architecture design
- Three-tier vs. two-tier architecture
- Design for scalability and performance

Module 3: Layer 2 Design

- VLAN design and segmentation
- Trunking and Layer 2 extension
- Spanning Tree Protocol (STP) design considerations
- Loop prevention and redundancy strategies

Module 4: Layer 3 Design

- IP addressing and subnetting strategies
- Routing protocol design (OSPF, BGP)
- First Hop Redundancy Protocols (HSRP, VRRP, GLBP)

- Inter-VLAN routing design

Module 5: High Availability and Redundancy

- Redundancy models in data centers
- Link aggregation (EtherChannel, vPC)
- Device and path redundancy design
- Failover and resiliency strategies

Module 6: Network Virtualization (VXLAN EVPN)

- VXLAN fundamentals and design
- BGP EVPN control plane
- Overlay and underlay network design
- Multi-tenant data center design

Module 7: Cisco ACI (Application Centric Infrastructure) Design

- ACI architecture and components
- Policy-based networking
- Tenant and application profiles
- Integration with traditional networks

Module 8: Compute Design with Cisco UCS

- Cisco UCS architecture
- Server virtualization integration
- Resource pools and service profiles
- UCS design best practices

Module 9: Storage Networking Design

- SAN and NAS architectures
- Fibre Channel and FCoE design

- IP storage (iSCSI, NFS)
- Storage redundancy and performance

Module 10: Security in Data Center Design

- Network segmentation and micro-segmentation
- Firewalls and access control
- Secure design principles
- Threat mitigation strategies

Module 11: Automation and Programmability

- Data center automation concepts
- Cisco APIs and programmability
- Infrastructure as Code (IaC) basics
- Integration with orchestration tools

Module 12: Data Center Interconnect (DCI)

- DCI design considerations
- Layer 2 and Layer 3 DCI
- OTV and VXLAN for DCI
- Multi-site data center design

Module 13: Cloud Integration

- Hybrid cloud design
- Integration with AWS, Azure, GCP
- Workload mobility and migration
- Cloud networking fundamentals

Module 14: Monitoring and Optimization

- Performance monitoring tools

- Telemetry and analytics
- Capacity planning
- Troubleshooting design issues