Designing Cisco Data Center Infrastructure (DCID)

Prerequisites

Before taking this course, you should be able to:

- Describe data center networking concepts
- Describe data center storage concepts
- Describe data center virtualization
- Describe the Cisco Unified Computing System™
- Describe data center automation and orchestration focusing on Cisco Application Centric Infrastructure (Cisco ACI™) and Cisco UCS Director
- Identify products in the Cisco Nexus and MDS families
- Describe network fundamentals and build simple LANs, including switching and routing

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

- Introducing Cisco Data Center Networking (DCICN)
- Introducing Cisco Data Center Technologies (DCICT)
- Interconnecting Cisco Networking Devices: Accelerated (CCNAX), or Interconnecting Cisco Networking Devices, Part 1 (ICND1), and Interconnecting Cisco Networking Devices, Part 2 (ICND2)

Course Content & Objectives

The Designing Cisco Data Center Infrastructure (DCID) v6.2 course helps you prepare for the Cisco CCNP® Data Center certification and for professional-level data center roles. In this course, you will master design and deployment options focused on Cisco® data center infrastructure, including networking, virtualization, storage networking, compute, and management tools. You can expect theoretical content as well as design-oriented case studies in the form of activities.

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IT professionals with Cisco CCNP Data Center training and certification are uniquely qualified for professional-level or higher roles in enterprise-class data center environments. Cisco CCNP training and certification equips you with skills in a broad range of technologies and industry best practices to help you succeed in these in-demand roles.

After taking this course, you should be able to:

- 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
- Design a solution that uses Locator/ID Separation Protocol (LISP) for traffic forwarding
- Describe the hardware redundancy options and virtualize the network, compute, and storage
- Discuss virtual networking in the data center
- Describe solutions using Fabric Extenders (FEX) and compare Cisco Adapter FEX with VM-FEX
- Describe the Cisco Nexus® 1000V solution to extend the hypervisor functionality
- Describe security threats and solutions in the data center
- Describe advanced data center security technologies and best practices
- Describe virtual appliances that are deployed in a data center network
- Describe device management and orchestration in the data center
- Design a data center storage network
- Describe the storage options for compute and the different RAID levels from a High Availability (HA) and performance perspective
- Describe Fibre Channel concepts, architecture, topologies, and industry terms
- Describe how Ethernet and Fibre Channel networks converge
- Describe security options in the storage network
- Describe management and automation options for the storage networking infrastructure
- Describe Cisco UCS® servers and use cases for various Cisco UCS platforms (B-Series and C-Series)
- Explain the connectivity options in the fabric interconnects for southbound and northbound connections. Describe port personalities and oversubscription models. Distinguish between the End-Host Virtualizer (EHV) and switching mode, and between the N-Port Virtualization (NPV) and Fibre Channel switching mode. Describe split brain and partition in time issues with the fabric interconnects for HA
- Describe the hyperconvergence solution and how it integrates systems based on different storage vendors. Compare storage vendors and evaluate the advantages for each stacked solution
- Describe design and management options for Cisco UCS. Design the management solution in HA mode and describe integration with the Cisco UCS domain

- Describe the systemwide parameters to set up a Cisco UCS domain, including monitoring, Quality of Service (QoS), and organizations to build up a management hierarchy in the 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 in Cisco UCS Manager. Describe the design of and best practices for naming conventions
- Describe the different policies you may set in the service profile to achieve and fulfill customer or application requirements
- Describe the Ethernet and Fibre Channel interface policies and additional network technologies
- Describe how to use templates to work more efficiently in Cisco UCS Manager
- 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
- Prepare for the Cisco CCNP Data Center certification through a combination of lessons and design practice
- Qualify for professional-level job roles in the high-demand area of enterprise-class data center environments
- Develop well-rounded career growth

Course Outline

- Data Center Network Connectivity Designs
  - Describing High Availability on Layer 2
  - Designing Layer 3 Connectivity
  - Designing Data Center Topologies
  - Designing Data Center Interconnects with Cisco OTV
  - Designing a LISP Solution
- Data Center Infrastructure Design
  - Describing Hardware and Device Virtualization
  - Describing FEX Options
  - Describing Virtual Networking
  - Describing Basic Data Center Security
  - Describing Advanced Data Center Security
  - Describing Virtual Appliances
  - Describing Management and Orchestration
- Data Center Storage Network Design

  - Describing Storage and RAID Options
  - Describing Fibre Channel Concepts
  - Describing Fibre Channel Topologies
  - Describing FCoE
  - Describing Storage Security
  - Describing SAN Management and Orchestration
- Data Center Compute Connectivity Design
  - Describing Cisco UCS Servers and Use Cases
  - Describing Fabric Interconnect Connectivity
  - Describing Hyperconverged and Integrated Systems
  - Describing Management Systems
  - Describing Hadoop, SAP Hana, and IoT on Cisco UCS
- Data Center Compute Resource Parameters Design
  - Describing Cisco UCS Manager Systemwide Parameters
  - Describing Cisco UCS RBAC
  - Describing Pools for Service Profiles
  - Describing Policies for Service Profiles
  - Describing Network-Specific Adapters and Policies
  - Describing Templates in Cisco UCS Manager

Activity Outline

- Design Virtual Port Channels
- Design FabricPath
- Design FHRP
- Design Routing Protocols
- Design Data Center Topology for a Customer
- Design Data Center Interconnect Using Cisco OTV
- Design Your VXLAN Network
- Design a FEX
- Design a Cisco Nexus 1000V-Based Solution
- Design Management and Orchestration in Cisco UCS Solution
- Design a Fibre Channel Network
- Design and Integrate an FCoE Solution
- Design a Secure SAN
- Design Cisco UCS Director for Storage Networking
- Design Cisco UCS C-Series Servers Implementation
- Design a Cisco UCS Domain and Fabric Interconnect Cabling
- Design Cisco C-Series Integration with a Cisco UCS Domain
- Design a Cisco UCS Mini Solution

- Design Cisco UCS Fabric Interconnect Network and Storage Connectivity
- Design Systemwide Parameters in a Cisco UCS Solution
- Design an LDAP Integration with a Cisco UCS Domain
- Design Pools for Service Profiles in a Cisco UCS Solution
- Design Network-Specific Adapters and Policies in a Cisco UCS Solution

Who Should Attend

- Channel Partners
- Customers
- Employees
- Entry-level to experienced Network Administrator
- Senior Network Engineer
- Presales Engineer
- Design Engineer
- Data Center Administrator
- Senior Systems Engineer
- Senior Technical Solutions Architect