DCID

Designing Cisco Data Center Infrastructure

40 horas | Data Center | Cisco

Cisco Continuing Education Credits

35 CE Credits

INTRODUÇÃO

The Designing Cisco Data Center Infrastructure (DCID) v7.0 course helps you master design and deployment options focused on Cisco® data center solutions and technologies across network, compute, virtualization, storage area networks, automation, and security. You will 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 Unified Fabric. You will also gain design experience with network management technologies including Cisco UCS Manager, Cisco Data Center Network Manager (DCNM), and Cisco UCS Director. You can expect theoretical content as well as design-oriented case studies in the form of activities.

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.

This course helps you prepare to take the exam:

• 300-610 Designing Cisco Data Center Infrastructure (DCID).

This exam certifies your knowledge of data center infrastructure design including network, compute, storage network, and automation.

After you pass 300-610 DCID, you earn the Cisco Certified Specialist - Data Center Design certification and you will have satisfied the concentration exam requirement for the CCNP Data Center certification.

OBJETIVO DO CURSO

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;

• 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 hyperconverged solution and integrated systems;

• Describe the systemwide 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.

PÚBLICO-ALVO

Professionals interested in designing Cisco Data Center Solution.

This course also helps prepare student to take the 300-610 Designing Cisco Data Center Infrastructure (DCID) exam, which is part of the new CCNP® Data Center.

PRÉ-REQUISITOS

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).

CONTEÚDO PROGRAMÁTICO

Course Introduction

Course Outline

Course Goals & Objectives

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 Trafic 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 Work?ows

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 Trafic 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) Sufix 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

Lab Outline

Lab 1: Design Virtual Port Channels

Lab 2: Design First Hop Redundancy Protocol (FHRP)

Lab 3: Design Routing Protocols

Lab 4: Design Data Center Topology for a Customer

Lab 5: Design Data Center Interconnect Using Cisco OTV

Lab 6: Design Your VXLAN Network

Lab 7: Create a Cisco FEX Design

Lab 8: Design Management and Orchestration in a Cisco UCS Solution

Lab 9: Design a Fibre Channel Network

Lab 10: Design and Integrate an FCoE Solution

Lab 11: Design a Secure SAN

Lab 12: Design Cisco UCS Director for Storage Networking

Lab 13: Design a Cisco UCS Domain and Fabric Interconnect Cabling

Lab 14: Design a Cisco UCS C-Series Server Implementation

Lab 15: Design Cisco UCS Fabric Interconnect Network and Storage Connectivity

Lab 16: Design Systemwide Parameters in a Cisco UCS Solution

Lab 17: Design an LDAP Integration with a Cisco UCS Domain

Lab 18: Design Pools for Service Profiles in a Cisco UCS Solution

Lab 19: Design Network-Specific Adapters and Policies in a Cisco UCS Solution