

Cisco CCNP Troubleshooting Data Center Infrastructure (300-615 DCIT) v1.2

Learn to master enterprise data center troubleshooting in this CCNP Data Center course. Data centers are growing more complex and automation is taking over day-to-day operations. Engineers have to diagnose and resolve messy issues that span networking, compute, storage, and management systems. This 300-615 DCIT v1.1 course helps you build hands-on experience with troubleshooting modern data center environments, with an emphasis on centralized management, VXLAN EVPN, Fibre Channel services, and automation-driven workflows. Strengthen your ability to find root causes, manage programmable infrastructure, and prepare for the Troubleshooting Cisco Data Center Infrastructure (300-615 DCIT) CCNP Data Center concentration exam.

[CBT Nuggets course material](#) →

 STUDY PLAN

WEEK 1

DCIT Overview and Lab Options

Networking

CML Demo

Compute

UCS-PE Demo

Storage

Challenge - Plan a Lab!

Explain Troubleshooting Techniques for the DC

Troubleshooting Methodologies

Divide and Conquer

Top-Down and Bottom-Up

Validation

Explain OSPF Operation

OSPF Protocol

OSPF Router Types

OSPF Areas

Validation

Troubleshoot OSPF Adjacencies

OSPF in the Data Center

OSPF Adjacencies

WEEK 2

Adjacency Demo

Validation

Troubleshoot OSPF Costs and Pathing

OSPF Path Costs

OSPF Cost Tuning

OSPF Path Cost Demo

Validation

Explain Multicast Operation

Multicast Traffic

Protocol Independent Multicast (PIM)

Multicast Steady-State Demo

Validation

Explain PIM Sparse Mode Operation

PIM Sparse Mode

Forming Multicast Trees

Validation

Explain PIM Modes of Operation

Source Specific Multicast (PIM-SSM)

Bidirectional PIM (BiDir-PIM)

PIM Roles

Validation

Configure PIM on NX-OS

Sparse-Mode (ASM) Configuration

Source-Specific (SSM) Configuration

Bidirectional PIM Configuration

Validation

WEEK 3

Troubleshoot PIM

Configuration Failures

RPF Failures and Static mroutes

RPF Failures and RP Misconfigs

Validation

WEEK 4

Troubleshoot PIM on the NX-OS CLI

Multicast MACs and Security

Lab Challenge

Lab Challenge

Explain Data Center FHRP Operation

First Hop Redundancy Protocols (FHRPs)

Hot Standby Router Protocol (HSRP)

Virtual Router Redundancy Protocol (VRRP)

Validation

Configure Data Center FHRPs

FHRPs and Virtual Port-Channels (VPCs)

FHRP Object Tracking

Configuring HSRP on NX-OS

Configuring VRRP on NX-OS

Lab Challenge

Configure FHRP Object Tracking on NX-OS

Configuring HSRP Object Tracking

WEEK 5

Configuring Route-based Object Tracking
Configuring VRRP Object Tracking
Lab Challenge

Troubleshoot FHRPs in the Data Center

Troubleshoot FHRPs
Troubleshoot Object Tracking
Lab Challenge

Describe Rapid STP Mechanisms

RSTP in the Data Center
Rapid STP (RSTP)
RSTP Port States
RSTP Port Roles
RSTP Topology Changes
Overview Quiz

Describe RSTP Protection Mechanisms

BPDU Guard
Root Guard

WEEK 6

UDLD and Loopguard
Bridge Assurance (BA)
Topology Challenge

Explain LACP in the Data Center

Nexus Port-Channels

Port-Channel Load-balancing
LACP Operation
LACP Priorities
Validation

Configuring RSTP+ and LACP on NX-OS

Configuring LACP
Configuring Rapid-PVST+
Configuring BPDU Guard and Root Guard
Configuring UDLD and Loopguard
Configuring Bridge Assurance
Lab Challenge

Configure NX-OS Load-Balancing and Errdisable

Tuning Port-Channel Load-balancing
Nexus Load-Balancing
Configuring Port-Channel Load-Balancing
Errdisable and Recovery

WEEK 7

Lab Challenge

Troubleshooting RSTP+ and LACP

Troubleshooting Overview
Lab Challenge 1

Configure Virtual Port-Channels (VPCs)

Virtual Port-Channels (VPCs)

VPC Architecture and Traffic Flow

VPC Topologies

VPC Configuration

Lab Challenge

Deploy VPC Configurations

VPC Roles and Failure Scenarios

VPC Operational Features

VPC and STP

Lab Demo

Lab Challenge

Troubleshoot Virtual Port-Channels (VPCs)

Consistency Parameters and Types

WEEK 8

Orphan-port Suspend

Lab Challenge

Explain Spine-Leaf and VXLAN Architectures

Spine-Leaf Architectures

VXLAN Data Plane

VXLAN and VNIs

Topology Challenge

Explain VXLAN Traffic Forwarding

VXLAN Control Plane - Flood-and-Learn

Anycast Gateways

VXLAN and VPCs

Traffic Flow Challenge

Configure VXLAN in the Data Center

VXLAN Configuration Steps

Exploring the VXLAN environment

WEEK 9

Configuring VXLAN

Lab Challenge

Configure VXLAN EVPN in the Data Center

VXLAN Control Plane - EVPN

Configuring the BGP Fabric

Configuring EVPN

Lab Challenge

Configure VXLAN L3 VNIs

L2 and L3 VNIs

L3 VNI Configuration Process

Configuring L3 VNIs

Lab Challenge

Troubleshoot VXLAN and EVPN

Intro

L2 VNI Troubleshooting Challenge

WEEK 10

EVPN and L3 VNI Troubleshooting Challenge

Describe the Cisco ACI Fabric Architecture

Intro

Building an ACI Fabric

ACI Fabric Routing

BGP and Route Reflectors

ACI Fabric Setup Demo

Validation

Configure the ACI Physical Model

The ACI Physical Model

ACI Physical Configuration

Configuration Challenge

Configure the ACI Logical Model

The ACI Logical Model

Anycast Gateways

Connecting Logical to Physical

ACI Logical Configuration

EPG Static Path Binding

Configuration Challenge

Troubleshoot ACI Operations

ACI Packet Flow

Migrating Switches

ACI RBAC

ACI Tools

Troubleshooting Challenge

WEEK 11

Explain Cisco UCS Architecture

Fabric Interconnects

UCSM and Intersight

UCS Server Types

UCS Stand-up Challenge

Manage UCS Environments

UCS Manager (UCSM)

UCS Central

Cisco Integrated Management Controller (CIMC)

Intersight

Intersight Integration

Intersight Challenge

WEEK 12

Troubleshoot UCS Rack Servers

C-Series Architecture

CIMC Connectivity

UCSM Connectivity

Hardware Errors

Topology Challenge

Troubleshoot UCS Blade Infrastructure

Fabric Interconnect Connections

Chassis and IOM Connectivity

Chassis and IOM Discovery

UCS Power and Cooling

Chassis Discovery Challenge

Troubleshoot UCS Blade Networking

Fabric Interconnect Networking

VLANs and Broadcasts

Virtual Interface Card (VIC)

Fabric to Fabric Switching

Topology Challenge

Map Out UCS Network Packet Flow

vNIC Networking

WEEK 13

vNIC Demo

vNICs and VN-Tag

UCS Traffic Engineering

Traffic Engineering Challenge

Configure UCS Blade Networking

VLAN Groups

LAN PIN Groups

Resource Pools

vNIC Templates

Network Configuration Challenge

Explain UCS Storage Networking

UCS and Storage Networking

iSCSI and Fibre Channel in UCS

SAN Boot

Zoning

Quiz Challenge

Configure UCS FC Storage Networking

Unified Ports and FCOE Uplinks

VSANs

WEEK 14

WWN Pools

vHBA Templates

Local FC Zoning

SAN Configuration Challenge

Configure UCS SAN Boot

Intro

IQN and IP Pools for iSCSI

iSCSI Resource Pools

iSCSI vNICs

iSCSI SAN Boot

FC SAN Boot

Configuration Challenge

Configure UCS FC Integration

NPV and NPIV

VSAN Trunking and Isolation

UCS-MDS Demo

Lab Challenge

Troubleshoot UCS Blade Storage Networking

FC Zoning

LUN Masking

FC Boot Troubleshooting

WEEK 15

Lab Challenge

Troubleshoot UCS Server Policies

Service Profiles

Service Profile Templates

Server Pools

Server Pool Demo

Lab Challenge

Troubleshoot UCS Hardware Interoperability

Fabric Interconnects and IO Modules (IOMs)

VICs and Port Expanders

Capability Catalog

Troubleshooting Challenge

Troubleshoot Fibre Channel Switching

Fabrics and CFS

VSANs

FC Port Types

MDS Demo

Troubleshooting Challenge

Troubleshoot Fibre Channel Operation

LOGI, and PRLI

Domain IDs and FSPF

WEEK 16

WWNs and FCIDs

BB_Credits

MDS Demo

Troubleshooting Challenge

Describe Fibre Channel Configuration

Device Aliases

Zoning

NPV

NPIV

Quiz Challenge

Configure Fibre Channel Operations

Configure Zoning

Configure Device Aliases

Configure NPV and NPIV

Validation

Troubleshoot Fibre Channel Configuration

Intro

Troubleshooting Challenge

WEEK 17

Solution Configurations

Troubleshoot Fibre Channel Security

Intro

FC Port Security

Fabric Binding

FC-SP (Fibre Channel - Security Protocol)
Configuration
Troubleshooting Challenge

Explain FCOE Fundamentals

FCOE Concepts
FCOE Topologies
FCOE VLAN and Port Types
Topology Challenge

Evaluate FCOE Configuration

FIP, DCBX, and LLDP
FCOE and QoS
Configuration Planning
UCS FCOE/Unified Uplinks
Troubleshooting Quiz Challenge

Troubleshoot Embedded Event Manager

Embedded Event Manager (EEM)

WEEK 18

EEM Demo
EEM Event-Default
Clean Lab Download
Troubleshooting Challenge

Troubleshoot NX-OS Automation Tools

Scheduler
Scheduler Demo

NX-OS Bash Access
Ansible
Clean Lab Download
Troubleshooting Challenge

Troubleshoot Programmability Messaging

XML and JSON
XML and JSON Examples
REST APIs
XML/JSON Troubleshooting Challenge

Configure and Troubleshoot NX-OS APIs

NX-API and NX-API Sandbox
Using Postman and NX-API

WEEK 19

CML and NX-API Access
Lab Challenge - NX-API Sandbox
Lab Challenge - Troubleshoot NX-API Calls

Troubleshoot Python Scripts

Python Scripting
Python Conditionals
Python Data Structures
Python on NX-OS
Troubleshoot Python Scripts

Troubleshoot Nexus Upgrades

Standard and Enhanced ISSU

EPLDs and Patches

Performing an NX-OS Upgrade

NX-OS Bootloader

Upgrade Challenge

Troubleshoot UCS Maintenance

Upgrading UCS Infrastructure

Upgrading UCS Servers

Maintenance Policy

UCSM Failover

Troubleshooting Challenge

Troubleshoot Network Security

AAA and RBAC on NX-OS

AAA and RBAC on UCS

DHCP Snooping and DAI

L2 Port Security

Configuring DHCP Snooping, DAI, and Port Security

Troubleshooting Challenge

Describe Modern Infrastructure Technologies

DCIT v1.2 Update

Intersight

Terraform

Terraform CLI

MACsec

Troubleshooting Challenge

WEEK 20