# Troubleshooting Cisco Data Center Infrastructure

**Duration: 180 Days** **Course Code: DCIT** **Version: 7.2** **Delivery Method: Elearning (Self-paced)**

## Overview:

This Troubleshooting Cisco Data Center Infrastructure (DCIT) course shows you how to troubleshoot LANs, SANs, Cisco Data Center Unified Fabrics, Cisco Unified Computing Systems (UCS), and Cisco Application-Centric Infrastructures (ACI). You will get extensive hands-on practice troubleshooting installation,configuration and interconnectivity issues on Cisco MDS switches, Cisco Nexus switches, Cisco Fabric Extenders (FEXs), Cisco UCS, Cisco ACI, and more.

This course helps you to prepare to take the Troubleshooting Cisco Data Center Infrastructure (300-615 DCIT) exam, which is one of the concentrations for **CCNP Data Center.** You will also achieve the **Cisco Certified Specialist - Data Center Operations** certification.

**This course is worth 50 Continuing Education Credits (CE).**

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e-Learning

Interactive self-paced content that provides flexibility in terms of pace, place and time to suit individuals and organisations. These resources also consist of online books, educational podcasts and vodcasts, and video-based learning.

## Target Audience:

Engineers involved in the troubleshooting of LAN, SAN, Cisco Data Center Unified Fabric, Cisco Unified Computing System (UCS) and Cisco Application Centric Infrastructure (ACI).

## Objectives:

- **After completing this course you should be able to:**
- Describe how to troubleshoot the data center network
- Describe the troubleshooting tools and methodologies available from the Command-Line Interface (CLI) that are used to identify and resolve issues in a Cisco data center network architecture
- Identify and resolve issues that are related to: Virtual LANs (VLANs) and private VLANs (PVLANs); port channels and virtual port channels; and Virtual Extensible LAN (VXLAN)
- Describe troubleshooting of routing and high-availability protocols
- Describe troubleshooting of the LAN security features
- Identify and resolve issues that are related to a single device
- Identify and resolve issues that are related to Fibre Channel interface operation
- Identify and resolve Fibre Channel switching issues when the Cisco NX-OS Software is used in switched mode and in N-Port Virtualization (NPV) mode
- Identify and resolve issues that are related to Fibre Channel switching when a Cisco NX-OS switch is used in NPV mode
- Describe Cisco UCS architecture, initial setup, tools, and service aids that are available for Cisco UCS troubleshooting and
- Describe Cisco UCS B-Series Blade Server operation and troubleshoot related issues
- Describe UCS B-Series LAN, SAN, and Fibre Channel operations, including in-depth troubleshooting procedures
- Describe Cisco Integrated Management Controller (IMC) tools for validating performance and facilitating data-gathering activities for Cisco UCS C-Series server troubleshooting, and the troubleshooting approach for hardware and firmware failures
- Define the proper procedures for configuring Cisco UCS C-Series LAN and SAN connectivity, avoiding issues with the VIC, troubleshooting connectivity issues
- Troubleshooting Cisco UCS C-Series server integration with Cisco UCS Manager
- Describe Cisco Intersight characteristics
- Explore the Cisco Nexus Dashboard platform
- Explain Cisco Nexus Dashboard cluster connectivity and installation procedures
- Identify the tools, protocols, and methods to effectively troubleshoot Cisco ACI
- Describe how to troubleshoot automation and programmability tools

interpretation of the output

- Describe Cisco UCS configuration and troubleshooting
- Understand functionality provided by the on-box tooling on the Cisco Nexus series switches and implement simple solutions to improve daily operations
- Describe the use of Python and Ansible to leverage the NX-API to implement and verify configuration state using modern workflows

## Prerequisites:

**Attendees should meet the following prerequisites:**

- Configure, secure, and maintain LAN and SAN based on Cisco Nexus and MDS switches
- Configure, secure, and maintain Cisco Unified Computing System
- Configure, secure, and maintain Cisco ACI
- CCNA - Implementing and Administering Cisco Solutions
- DCFNDU - Understanding Cisco Data Center Foundations
- DCCOR - Implementing and Operating Cisco Data Center Core Technologies

## Testing and Certification

**Recommended as preparation for exam:**

- **300-615 - DCIT -** Troubleshooting Cisco Data Center Infrastructure

To achieve CCNP Data Center Certification you will also need to pass the DCCOR - 350-601 exam.

## Follow-on-Courses:

- DCID - Designing Cisco Data Center Infrastructure
- DCACI - Implementing Cisco Application Centric Infrastructure
- DCNAUTO - Automating Cisco Data Center Networking Solutions
- DCAI - Implementing Cisco Data Center AI Infrastructure

## Content:

Describing the Troubleshooting Process

- Troubleshooting Overview
- Troubleshooting Overview and Issue Identification

Understanding CLI Troubleshooting Tools

- Ping, Pong, and Traceroute
- Debugging, Event History, and System Monitoring
- SPAN and Encapsulated Remote SPAN
- Ethanalyzer, ELAM and Data Plane Sampling Capture
- Logging
- Cisco Generic Online Diagnostics
- SNMP, Cisco EEM, and RMON

Troubleshooting VLANs and PVLANs

- Troubleshooting VTP
- Troubleshooting Layer 2 Issues
- VLANs and SVIs on Cisco Nexus Series Switches
- Troubleshooting VLANs, PVLANs, and SVIs
- Troubleshooting Rapid PVST+

Troubleshooting Port Channels and Virtual Port Channels

- Port Channel Overview
- vPC Overview
- Troubleshooting vPCs
- Common vPC Issues

Troubleshooting VXLAN

- VXLAN Overlay Features
- VXLAN MP-BGP Ethernet VPN
- Common VXLAN Issues
- TroubleshootingVXLAN

Troubleshooting Routing and High-Availability Protocols

- Troubleshooting Basic Routing Issues
- Troubleshooting OSPFv2 and OSPFv3
- Troubleshooting EIGRP
- Troubleshooting PIM
- Troubleshooting FHRP

Troubleshooting Data Center LAN Security

- Troubleshooting AAA and RBAC
- Troubleshooting First-Hop Security
- Troubleshooting ACLs

Troubleshooting Platform-Specific Issues

- Cisco Fabric Services Overview
- Troubleshooting Cisco Fabric Services
- Troubleshooting Configuration Profiles
- Common VDC Issues

Troubleshooting Fibre Channel Fabric Services

- Troubleshooting VSANs
- Troubleshooting Fibre Channel Domain and Name Services
- Distributed Device Aliases
- Troubleshooting Zoning and Fabric Merges
- Troubleshooting Cisco Fabric Services

Troubleshooting NPV Mode

- NPIV and NPV Overview
- Troubleshooting NPV Mode

Troubleshooting Cisco UCS Architecture and Initialization

- Troubleshooting Fabric Interconnect in Standalone and Cluster Mode
- Troubleshooting Cisco UCS Management Access
- Troubleshooting Cisco UCS Manager CLI
- Troubleshooting Cisco UCS with Embedded Tools
- Troubleshooting Cisco UCS Hardware Discovery

Troubleshooting Cisco UCS Configuration

- Stateless Computing
- Troubleshooting Service Profile Association Issues Due to Unavailable Addresses
- Cisco UCS Manageability
- Troubleshooting Authentication Failures

Troubleshooting Cisco UCS B-Series Servers

- Troubleshooting Cisco UCS B-Series Blade Servers
- Troubleshooting Firmware Upgrade and Operating System Drivers
- Troubleshooting Remote Access
- Troubleshooting Server Hardware

Troubleshooting Cisco UCS B-Series LAN and SAN Connectivity

- Troubleshooting Link-Level Issues
- Troubleshooting Connectivity Issues for Specific Servers
- Troubleshooting Intermittent Connectivity
- Troubleshooting Disjoint Layer 2 Networks
- Troubleshooting Redundant Connectivity
- Troubleshooting Cisco UCS B-Series SAN Connectivity
- Troubleshooting Directly Attached Storage
- Troubleshooting Server Boot from SAN and iSCSI

Cisco Intersight Overview

- Cisco Intersight
- Cisco Intersight Architecture
- Flexible Deployment Models
- Cisco Intersight Security
- Cisco Intersight Authentication Options
- Setup Cisco Intersight SaaS Account
- Cisco Intersight Role-Based Access Control
- Connected Cisco Technical Assistance Center
- Cisco Intersight Tagging
- Cisco Intersight Dashboard, Inventory and Faults
- Firmware Management
- Hardware Compatibility List (HCL) Feature
- Best Practices for Updating Firmware using Cisco Intersight
- Cisco Intersight Managed Operating System Installation
- Context Launch and KVM

Cisco Nexus Dashboard Overview

- The Need for Day-2 Operations Tools
- Cisco Nexus Dashboard Insights Application Use Cases
- Cisco Nexus Dashboard Orchestrator Application Use Cases
- Cisco Nexus Dashboard Fabric Controller Application Use Cases
- Cisco Nexus dashboard Data Broker Application Use Cases
- Physical and Virtual Cisco Nexus Dashboard Platforms
- Cisco Nexus Dashboard Cluster Node Roles
- Deployment and Placement of Nodes Across Sites
- Cisco Nexus Dashboard One-View
- Cisco Nexus Dashboard Software Stack

Cisco Nexus Dashboard Connectivity and Installation

- Cisco Nexus Dashboard Logical Network Connectivity
- Physical Cisco Nexus Dashboard Cluster Connection
- IP Pools for Services Configuration
- Connection Mode Comparison
- Cisco Nexus Dashboard Installation Procedures
- User Interface Bootcamp
- Node Registration
- Connection to Cisco Intersight
- Onboarding Sites

Exploring theTools and Methodologies for Troubleshooting Cisco ACI

- Troubleshooting the Fabric Discovery

- Troubleshooting VDC
- Troubleshooting VRF
- Cisco FEX Troubleshooting
- Troubleshooting Cisco ISSU

Troubleshooting Fibre Channel Interfaces

- Fibre Channel Overview
- Troubleshooting Fibre Channel Interfaces and Device Registration
- Troubleshooting Fibre Port Channels
- Troubleshooting Port Security and Fabric Binding
- Use SPAN for Troubleshooting
- Analyzing Packet Flow

Troubleshooting Cisco UCS C-Series Servers

- Troubleshooting Cisco UCS C-Series Initialization and Cisco IMC
- Troubleshooting Cisco UCS C-Series Hardware and Firmware

Troubleshooting Cisco UCS C-Series LAN and SAN Connectivity

- Troubleshooting the Cisco UCS C-Series VIC Module and Connectivity to Cisco IMC
- Troubleshooting Cisco UCS C-Series LAN Connectivity
- Troubleshooting Cisco UCS C-Series SAN Connectivity
- Using SPAN to Capture Cisco UCS C-Series Server Traffic
- Troubleshooting Cisco UCS C-Series iSCSI Boot

Troubleshooting Cisco UCS C-Series and Cisco UCS Manager Integration

- Integrating Cisco UCS C-Series Servers with Cisco UCS Manager
- Troubleshooting FEX Discovery and VIC Issues

Process

- Traditional Troubleshooting Methods in Cisco ACI
- Atomic Counters, Faults, and Health Scores
- Troubleshooting Tenant-Based Policies
- Packet Flow Through the Cisco ACI Fabric
- Troubleshoot AAA and RBAC

Troubleshooting Automation and Programmability Tools

- Troubleshooting the Cisco NX-OS Scheduler
- Troubleshooting REST API,JSON, and XML Encodings
- Cisco NX-OS Programmability

On-Box Programmability and Automation with Cisco NX-OS

- Working with Cisco NX-OS Bash
- Linux Containers and Guest Shell
- Python API
- Embedded Event Manager
- Docker Containers on Cisco NX-OS

Off-Box Programmability and Automation with Cisco NX-OS

- NX-API Enhancement
- Model-Driven Programmability on Cisco NX-OS
- Ansible for Cisco NX-OS
- Introduction to Terraform
- Utilization of Terraform
- Terraform for Cisco NX-OS

Labs

- Discovery Lab 1: Document the Network Baseline
- Discovery Lab 2: Troubleshoot Rapid PVST+
- Discovery Lab 3: Troubleshoot LACP
- Discovery Lab 4: Troubleshoot vPC
- Discovery Lab 5: Troubleshoot VXLAN
- Discovery Lab 6: Troubleshoot OSPF
- Discovery Lab 7: Troubleshoot FHRP
- Discovery Lab 8: Troubleshoot Cisco Fabric Services
- Discovery Lab 9: Troubleshoot VRF
- Discovery Lab 10: Troubleshoot Cisco Fibre Channel Interfaces
- Discovery Lab 11: Troubleshoot Fibre Channel VSANs, Zones, and Domain Services
- Discovery Lab 12 Troubleshoot NPV Mode
- Discovery Lab 13: Troubleshoot Cisco UCS Management and Service Profile Deployment
- Discovery Lab 14: Troubleshoot Cisco UCS C-Series Server LAN Connectivity
- Discovery Lab 15: Troubleshoot Cisco UCS C-Series Server Boot from the Fibre

Channel LUN
- Discovery Lab 16: Troubleshoot Cisco UCS C-Series Server Management Connectivity
- Discovery Lab 17: Troubleshoot Cisco ACI Integration with VMware vCenter
- Discovery Lab 18 Troubleshoot Contracts in Cisco ACI
- Discovery Lab 19: Troubleshoot Cisco ACI External Layer 3 Connectivity
- Discovery Lab 20: Troubleshoot Cisco ACI External Layer 2 Connectivity

## Additional Information:

**Students looking to achieve their CCNP in Data Center will also require** :
**350-601 DCCOR- Implementing and Operating Cisco Data Center Core Technologies**

## Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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