Troubleshooting Cisco Data Center Infrastructure (DCIT)

Course Duration: 40 Hours **Course code: DCIT**

1. Course Overview

The Implementing and Operating Cisco Data Center Core Technologies course helps you prepare for the Cisco CCNP Data Center and CCIE Data Center certifications and for advanced-level data center roles. Learn to master the skills and technologies you need to implement data center compute, LAN and SAN infrastructures. Understand the essentials of automation and security in data centers.

2. What you'll learn?

After completing this course you should be able to:

- Describe how to troubleshoot the data center network
- Describe the troubleshooting tools and methodologies that are available from the CLI and are used to identify and resolve issues in a Cisco Data Center network architecture
- Identify and resolve issues that are related to: VLANs and PVLANs, port channels and virtual port channels; 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 NPV mode
- Identify and resolve issues that are related to FIP and FCoE, including FCoE performance

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- Describe Cisco UCS architecture, initial setup, tools, and service aids that are available for Cisco UCS troubleshooting and interpretation of the output
- Describe Cisco UCS configuration and troubleshoot
- Describe Cisco UCS B-Series Blade Server operation and troubleshoot related issues
- Describe Cisco UCS B-Series LAN, SAN, and Fibre Channel operations, including in-depth troubleshooting procedures
- Describe Cisco 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, and troubleshooting connectivity issues
- Troubleshoot Cisco UCS C-Series server integration with Cisco UCS Manager
- Identify the tools, protocols, and methods to effectively troubleshoot Cisco ACI
- Describe how to troubleshoot automation, scripting tools, and programmability

3. 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).

4. Pre-Requisites

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

Recommended prerequisites:

- CCNA - Implementing and Administering Cisco Solutions
- DCFNDU - Understanding Cisco Data Center Foundations
- DCCOR - Implementing and Operating Cisco Data Center Core Technologies

5. Course content

1- Troubleshooting Process Overview

- Troubleshooting Overview
- Narrow Down the Cause of the Problem

2- Understanding CLI Troubleshooting Tools

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

3- Troubleshooting VLANs and PVLANs

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

4- Troubleshooting Port Channels and Virtual Port Channels

- Port Channel Overview
- vPC Overview
- Common vPC Issues

5- Troubleshooting VXLAN

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

6- Troubleshooting Routing and High-Availability Protocols

- Troubleshoot Basic Routing Issues
- Troubleshoot OSPFv2 and OSPFv3
- Troubleshoot EIGRP
- Troubleshoot PIM
- Troubleshoot FHRP
- Troubleshoot Data Center LAN Security
- Troubleshoot AAA and RBAC
- Troubleshoot First-Hop Security
- Troubleshoot ACLs

7- Troubleshooting Platform-Specific Issues

- Cisco Fabric Services Overview
- Troubleshoot Cisco Fabric Services
- Configure and Troubleshoot Configuration Profiles
- Common VDC Issues
- Troubleshoot VDC
- Troubleshoot VRF
- Cisco FEX Troubleshooting
- Troubleshoot Cisco ISSU

8- Troubleshooting Fibre Channel Interfaces

- Fibre Channel Overview
- Troubleshoot Fibre Channel Interfaces and Device Registration
- Troubleshoot SAN Port Channels
- Troubleshoot Port Security and Fabric Binding

9- Troubleshooting Fibre Channel Fabric Services

- Troubleshoot VSANs
- Troubleshoot Fibre Channel Domain and Name Services
- Troubleshoot Zoning and Fabric Merges
- Troubleshoot Cisco Fabric Services

10- Troubleshooting NPV Mode

- NPIV and NPV Overview
- Troubleshoot NPV Mode
- Troubleshooting FCoE
- FCoE and FIP Overview
- Troubleshoot FIP
- Troubleshoot FCoE- and QoS-Related Issues
- Troubleshoot DCB

11- Troubleshooting Cisco UCS Architecture and Initialization

- Troubleshoot Fabric Interconnect in Standalone and Cluster Mode
- Troubleshoot Cisco UCS Management Access
- Troubleshoot Cisco UCS Manager CLI
- Troubleshoot Cisco UCS with Embedded Tools
- Troubleshoot Cisco UCS Hardware Discovery
- Cisco Intersight Overview
- Cisco Nexus Dashboard Overview

12- Troubleshooting Cisco UCS Configuration

- Stateless Computing
- Troubleshoot Service Profile Association Issues
- Cisco UCS Manageability
- Troubleshoot Authentication Failures

13- Troubleshooting Cisco UCS B-Series Servers

- Troubleshoot Cisco UCS B-Series Server Boot
- Troubleshoot Operating System Drivers
- Troubleshoot Remote Access
- Troubleshoot Server Hardware

14- Troubleshooting Cisco UCS B-Series LAN and SAN Connectivity

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

15- Troubleshooting Cisco UCS C-Series Servers

- Troubleshoot Cisco UCS C-Series Initialization and Cisco IMC
- Troubleshoot Cisco UCS C-Series Hardware and Firmware
- Troubleshooting Cisco UCS C-Series LAN and SAN Connectivity
- Troubleshoot the Cisco UCS C-Series VIC Module and Connectivity to Cisco IMC
- Troubleshoot Cisco UCS C-Series LAN Connectivity
- Troubleshoot Cisco UCS C-Series SAN Connectivity

- Use SPAN to Capture Cisco UCS C-Series Server Traffic
- Troubleshoot Cisco UCS C-Series Boot from the Fibre Channel LUN
- Troubleshoot Cisco UCS C-Series iSCSI Boot

16- Troubleshooting Cisco UCS C-Series and Cisco UCS Manager Integration

- Integrate Cisco UCS C-Series Servers with Cisco UCS Manager
- Troubleshoot FEX Discovery and VIC Issues

17- Exploring the Tools and Methodologies for Troubleshooting Cisco ACI

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

18- Troubleshoot Automation and Scripting Tools

- Troubleshoot Cisco IOS EEM
- Troubleshoot the Cisco NX-OS Scheduler

19- Troubleshooting Programmability

- Troubleshoot Bash Shell and Guest Shell for NX-OS
- Troubleshoot REST API, JSON, and XML Encodings
- On-Box Programmability on Cisco NX-OS