Troubleshooting Cisco Data Center Infrastructure (DCIT)

Duration 5 Days

COURSE DESCRIPTION

The Troubleshooting Cisco Data Center Infrastructure (DCIT) v7.0 course shows you how to troubleshoot LAN, SAN, Cisco® Data Center Unified Fabric, Cisco Unified Computing System™ (Cisco UCS®), and Cisco Application-Centric Infrastructure (Cisco ACI®).You will learn methodologies and tools to identify issues that may occur in data center network architecture. You will get extensive hands-on practice troubleshooting installation, configuration and interconnectivity issues on Cisco Multilayer Director Switch (MDS) switches, Cisco Nexus® switches, Cisco Fabric Extenders (FEXs), Cisco UCS, Cisco ACI, and more.

This course will help you:

- Learn how to deploy and troubleshoot various components of Cisco data center infrastructure to support performance, resiliency, scalability needs
- Gain knowledge and skills through Cisco's unique combination of lessons and hands-on practice using enterprise-grade Cisco learning technologies, data center equipment, and software
- Qualify for professional-level job roles

COURSE OBJECTIVES

After taking this course, you should be able to:

- Describe how to troubleshoot the data center network, 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; Overlay Transport Virtualization (OTV); and Virtual Extensible LAN (VXLAN)
- Describe troubleshooting of routing protocols such as Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Protocol-Independent Multicast (PIM), and 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 over Ethernet (FCoE) and FCoE Initialization Protocol (FIP), including FCoE performance
- 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, Cisco UCS B-Series Blade Server operation and troubleshoot related issues

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- Describe 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 LAN and SAN connectivity, avoiding issues with the VIC, troubleshooting connectivity issues and 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

COURSE OUTLINE

- Describing the Troubleshooting Process
  - Troubleshooting Overview
  - Narrow Down the Cause of the Problem
- Understanding CLI Troubleshooting Tools
  - Ping, Pong, and Traceroute
  - Debugging, Event History, and System Monitoring
  - Switched Port Analyzer (SPAN) and Encapsulated Remote SPAN
  - Ethanalyzer, Embedded Logic Analyzer Module (ELAM), and Data Plane Sampling Capture
  - Logging
  - Cisco Generic Online Diagnostics
  - Simple Network Management Protocol (SNMP), Cisco Embedded Event Manager (EEM), and Remote Network Monitor (RMON)
- Troubleshooting VLANs and PVLANs
  - Troubleshoot VLAN Trunking Protocol (VTP)
  - Troubleshoot Layer 2 Issues
  - VLANs and Switched Virtual Interfaces (SVIs) on Cisco Nexus Series Switches
  - Troubleshoot VLANs, PVLANs, and SVIs
  - Troubleshoot Rapid Per VLAN Spanning Tree+ (PVST+)
- Troubleshooting Port Channels and Virtual Port Channels
  - Port Channel Overview
  - Virtual Port Channel (vPC) Overview
  - Troubleshoot vPCs
  - Common vPC Issues
- Troubleshooting Cisco Overlay Transport Virtualization (OTV)
  - Cisco OTV Features
  - Common Cisco OTV Issues
  - Cisco OTV Troubleshooting
  - Hot Standby Routing Protocol (HSRP) Isolation Between Data Centers Using Cisco OTV
- Troubleshooting Virtual Extensible LAN (VXLAN)
  - VXLAN Overlay Features
  - VXLAN Multiprotocol Border Gateway Protocol (MP-BGP) Ethernet VPN
  - Common VXLAN Issues
  - VXLAN Troubleshooting
- Troubleshooting Routing and High-Availability Protocols
  - Troubleshoot Basic Routing Issues
  - Troubleshoot OSPFv2 and OSPFv3
  - Troubleshoot EIGRP

- o Troubleshoot PIM
- o Troubleshoot First Hop Redundancy Protocol (FHRP)
- Troubleshoot Data Center LAN Security
  - o Troubleshoot Authentication, Authorization, and Accounting (AAA) and Role-Based Access Control (RBAC)
  - o Troubleshoot First-Hop Security
  - o Troubleshoot Control Plane Policing (CoPP)
  - o Troubleshoot Access Control Lists (ACLs)
- Troubleshooting Platform-Specific Issues
  - o Cisco Fabric Services Overview
  - o Troubleshoot Cisco Fabric Services
  - o Configure and Troubleshoot Configuration Profiles
  - o Common Virtual Device Contexts (VDC) Issues
  - o Troubleshoot VDC
  - o Troubleshoot Virtual Routing and Forwarding (VRF)
  - o Cisco FEX Troubleshooting
  - o Troubleshoot Cisco In-Service Software Upgrade (ISSU)
- Troubleshooting Fibre Channel Interfaces
  - o Fibre Channel Overview
  - o Troubleshoot Fibre Channel Interfaces and Device Registration
  - o Troubleshoot Fibre Channel Port Channels
  - o Troubleshoot Port Security and Fabric Binding
- Troubleshooting Fibre Channel Fabric Services
  - o Troubleshoot Virtual Storage Area Networks (VSANs)
  - o Troubleshoot Fibre Channel Domain and Name Services
  - o Troubleshoot Zoning and Fabric Merges
  - o Troubleshoot Cisco Fabric Services
- Troubleshooting NPV Mode
  - o N-Port ID Virtualization (NPIV) and NPV Overview
  - o Troubleshoot NPV Mode
- Troubleshooting FCoE
  - o FCoE and FIP Overview
  - o Troubleshoot FIP
  - o Troubleshoot FCoE- and QoS-Related Issues
  - o Troubleshoot Data Center Bridging (DCB)
- Troubleshooting Cisco UCS Architecture and Initialization
  - o Troubleshoot Fabric Interconnect in Standalone and Cluster Mode
  - o Troubleshoot Cisco UCS Management Access
  - o Troubleshoot Cisco UCS Manager CLI
  - o Troubleshoot Cisco UCS with Embedded Tools
  - o Troubleshoot Cisco UCS Hardware Discovery
- Troubleshooting Cisco UCS Configuration
  - o Stateless Computing
  - o Troubleshoot Service Profile Association Issues Due to Unavailable Addresses
  - o Other Service Profile Association Issues
  - o Cisco UCS Manageability
  - o Troubleshoot Authentication Failures
- Troubleshooting Cisco UCS B-Series Servers
  - o Troubleshoot Cisco UCS B-Series Blade Server
  - o Troubleshoot Firmware Upgrade and Operating System Drivers
  - o Troubleshoot Remote Access

- o Troubleshoot Server Hardware
- Troubleshooting Cisco UCS B-Series LAN and SAN Connectivity
  - o Troubleshoot Link-Level Issues
  - o Troubleshoot Connectivity Issues for Specific Servers
  - o Troubleshoot Intermittent Connectivity
  - o Troubleshoot Disjoint Layer 2 Networks
  - o Troubleshoot Redundant Connectivity
  - o Troubleshoot Cisco UCS B-Series SAN Connectivity
  - o Troubleshoot Directly Attached Storage
  - o Troubleshoot Server Boot from SAN and iSCSI
  - o Use SPAN for Troubleshooting
  - o Analyze Packet Flow
- Troubleshooting Cisco UCS C-Series Servers
  - o Troubleshoot Cisco UCS C-Series Initialization and Cisco IMC
  - o Troubleshoot Cisco UCS C-Series Hardware and Firmware
- Troubleshooting Cisco UCS C-Series LAN and SAN Connectivity
  - o Troubleshoot the Cisco UCS C-Series VIC Module and Connectivity to Cisco IMC
  - o Troubleshoot Cisco UCS C-Series LAN Connectivity
  - o Troubleshoot Cisco UCS C-Series SAN Connectivity
  - o Use SPAN to Capture Cisco UCS C-Series Server Traffic
  - o Troubleshoot Cisco UCS C-Series Boot from the Fibre Channel Logical Unit Number LUN
  - o Troubleshoot Cisco UCS C-Series iSCSI Boot
- Troubleshooting Cisco UCS C-Series and Cisco UCS Manager Integration
  - o Integrate Cisco UCS C-Series Servers with Cisco UCS Manager
  - o Troubleshoot FEX Discovery and VIC Issues
- Exploring the Tools and Methodologies for Troubleshooting Cisco ACI
  - o Troubleshoot the Fabric Discovery Process
  - o Traditional Troubleshooting Methods in Cisco ACI
  - o Atomic Counters, Faults, and Health Scores
  - o Troubleshoot Tenant-Based Policies
  - o Packet Flow Through Cisco ACI Fabric
  - o Troubleshoot AAA and RBAC
- Troubleshoot Automation and Scripting Tools
  - o Troubleshoot Cisco Internetwork Operating System (IOS) EEM
  - o Troubleshoot the Cisco NX-OS Scheduler
- Troubleshooting Programmability
  - o Troubleshoot Bash Shell and Guest Shell for NX-OS
  - o Troubleshoot Representational State Transfer (REST) API, JavaScript Object Notation (JSON), and Extensible Markup Language (XML) Encodings

Lab outline
- Designing Enterprise Connectivity
- Designing an Enterprise Network with BGP Internet Connectivity
- Designing an Enterprise Campus LAN
- Designing Resilient Enterprise WAN
- Designing QoS in an Enterprise Network
- Designing an Enterprise IPv6 Network

PREREQUISITES

To fully benefit from this course, you should have the following knowledge and skills:
- 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

These are the recommended Cisco courses that may help you meet these prerequisites:
- Implementing and Administering Cisco Networking Technologies (CCNA®)
- Understanding Cisco Data Center Foundations (DCFNDU)
- Implementing and Operating Cisco Data Center Core Technologies (DCCOR)
- Introducing Cisco NX-OS Switches and Fabrics in the Data Center (DCINX)
- Configuring Cisco NX-OS Switches and Fabrics in the Data Center (DCCNX)
- Introducing Cisco Unified Computing System (DCIUCS)
- Configuring Cisco Unified Computing System (DCCUCS)

WHO SHOULD ATTEND

- Network designers
- Network administrators
- Network engineers
- System engineers
- Data center engineers

- Consulting systems engineers
- Technical solutions architects
- Server administrators
- Network managers
- Cisco integrators and partners

WHAT TO EXPECT IN THE EXAM

The 300-615 DCIT exam certifies your knowledge of troubleshooting a data center infrastructure including network, compute platforms, storage network, automation, management, and operations.

After you pass 300-615 DCIT, you earn the Cisco Certified Specialist - Data Center Operations certification and you satisfy the concentration exam requirement for new CCNP Data Center certification.

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