Objetivos

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
- 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

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Pre-requisitos

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)
- **Implementing Cisco Data Center Virtualization and Automation** (DCVAI)

Contenido

- 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
  - Troubleshoot PIM
  - Troubleshoot First Hop Redundancy Protocol (FHRP)
- Troubleshoot Data Center LAN Security
  - Troubleshoot Authentication, Authorization, and Accounting (AAA) and Role-Based Access Control (RBAC)
  - Troubleshoot First-Hop Security
  - Troubleshoot Control Plane Policing (CoPP)
  - Troubleshoot Access Control Lists (ACLs)
- Troubleshooting Platform-Specific Issues
  - Cisco Fabric Services Overview
  - Troubleshoot Cisco Fabric Services
  - Configure and Troubleshoot Configuration Profiles
  - Common Virtual Device Contexts (VDC) Issues
  - Troubleshoot VDC
  - Troubleshoot Virtual Routing and Forwarding (VRF)
  - Cisco FEX Troubleshooting
  - Troubleshoot Cisco In-Service Software Upgrade (ISSU)

- Troubleshooting Fibre Channel Interfaces
  - Fibre Channel Overview
  - Troubleshoot Fibre Channel Interfaces and Device Registration
  - Troubleshoot Fibre Channel Port Channels
  - Troubleshoot Port Security and Fabric Binding
- Troubleshooting Fibre Channel Fabric Services
  - Troubleshoot Virtual Storage Area Networks (VSANs)
  - Troubleshoot Fibre Channel Domain and Name Services
  - Troubleshoot Zoning and Fabric Merges
  - Troubleshoot Cisco Fabric Services
- Troubleshooting NPV Mode
  - N-Port ID Virtualization (NPIV) and NPV Overview
  - Troubleshoot NPV Mode
- Troubleshooting FCoE
  - FCoE and FIP Overview
  - Troubleshoot FIP
  - Troubleshoot FCoE- and QoS-Related Issues
  - Troubleshoot Data Center Bridging (DCB)
- 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
- Troubleshooting Cisco UCS Configuration
  - Stateless Computing
  - Troubleshoot Service Profile Association Issues Due to Unavailable Addresses
  - Other Service Profile Association Issues
  - Cisco UCS Manageability
  - Troubleshoot Authentication Failures
- Troubleshooting Cisco UCS B-Series Servers
  - Troubleshoot Cisco UCS B-Series Blade Server
  - Troubleshoot Firmware Upgrade and Operating System Drivers
  - Troubleshoot Remote Access

- Troubleshoot Server Hardware
- 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
- 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 Logical Unit Number LUN
  - Troubleshoot Cisco UCS C-Series iSCSI Boot
- 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
- 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
- Troubleshoot Automation and Scripting Tools
  - Troubleshoot Cisco Internetwork Operating System (IOS) EEM

- Troubleshoot the Cisco NX-OS Scheduler
- Troubleshooting Programmability
  - Troubleshoot Bash Shell and Guest Shell for NX-OS
  - Troubleshoot Representational State Transfer (REST) API, JavaScript Object Notation (JSON), and Extensible Markup Language (XML) Encodings

Laboratorio

- 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
