Implementing Cisco Storage Networking Solutions

ICSNS

Length:
5 Days

Format:
Lecture/Lab

Course Version:
4.4r1

Product Version:
NX-OS 5.2.6

Why Firefly

We take care to keep our courseware current and reflect as close as possible the latest general release of the technology. With this release, ICSNS labs are now based on newer code than our competitors are delivering with the Cisco off the shelf courseware. This version of the firmware (NX-OS 5.2.6) also positions our customers to be ready for the DC-CCIE Lab exam.

Course Description

This five-day hands-on class gives you the essential knowledge and skills that you need to deploy the Cisco MDS 9000 Family running NX-OS 5.2.6. Course topics include installing and bringing up the switch, configuring Virtual SANs (VSANs), domains, interfaces, and zones, implementing PortChannels, configuring management security, and basic troubleshooting. You will also learn how to configure highly available FCIP tunnels and tune the performance of your FCIP links. In the lab, you will configure the switch from an out-of-the-box state, troubleshoot the boot process, configure VSANs and zones, implement a high-availability SAN design using FCIP, configure interoperability with Brocade and McData, and setup Inter-VSAN routing.

Who Should Attend

This course provides in-depth technical training for system engineers, network engineers, and field engineers who need to deploy, configure, and

Prerequisites

An understanding of basic data storage components and protocols and Fibre Channel SANs is recommended.

Learning Objectives

- Describe the components of the MDS 9000 platform
- Install the switch hardware and perform the initial software configuration process
- Explain software licensing requirements, system software upgrade procedures, and troubleshoot the boot process
- Explain how to configure Cisco Fabric Services when setting up the Call Home and NTP features
- Explain the characteristics and functions and capabilities of the Fibre Channel protocol in a storage environment
- Describe how to configure virtual SANs (VSANs) and manage domains
- Describe how to configure FC interfaces
- Describe how to configure PortChannels and FSPF
- Explain how to configure device alias' and zoning
- Describe how to configure high-availability SAN extension with FCIP
- Explain how to tune FCIP performance
- Describe how to configure interoperability for connectivity with Brocade and McData SANs
- Describe inter-VSAN routing (IVR)
- Describe how to perform port diagnostics and troubleshoot configuration errors

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Lesson 1: MDS 9000 Platform Components and Architecture

- MDS 9000 Family of Products and the Key Value-added Features
- Architecture of the MDS 9000 Supervisor and Switching Modules
- Integrated Multiprotocol Crossbars and Supervisor Modules of the MDS 9000 Platform
- Architecture of the MDS 9000 Switching Modules
- Oversubscription Architecture of the MDS 9000 Switching Modules
- Overview the Data Center Network Manager (DCNM) management tool

Lesson 2: Installing Switch Hardware

- Installation Guidelines
- Power Supply Configuration
- Installation Requirements of Supervisor Modules

Lesson 3: Initial Setup, DCNM-SAN, CLI

- Performing the Initial Setup
- Cisco DCNM-SAN installation process
- Cisco DCNM-SAN installation process
- The Command Line Interface

Lesson 4: Licensing, Software Upgrade, Troubleshooting the Boot Process

- Software Licensing
- Software Installation and Upgrade Prerequisites
- Software Upgrade Methods
- Troubleshooting the Boot Process

Lesson 5: Configuring Cisco Fabric Services and Call Home

- Cisco Fabric Services
- Cisco Fabric Services Architecture
- Cisco Fabric Services Implementation
- Cisco Fabric Services Distribution over IP
- Call Home Services
- Configuring Call Home
- Customized Alert Group Messages
- Configuring NTP

Lesson 6: Fibre Channel Protocol Addressing

- Fibre Channel Layers
- Fibre Channel Addressing
- World Wide Names
- Fibre Channel Routing
- The Registered State Change Notification Process

Lesson 7: VSAN Configuration and Domain Management

- VSAN Overview
- Creating VSANs
- Domain ID Assignment
- The Fabric Configuration Server
- Configuring the Principal Switch priority
- FCID Assignment
- N-Port Virtualizer and N_Port Identifier Virtualization
- Dynamic Port VSAN Membership

Lesson 8: Configuring Interfaces

- Configuring Fibre Channel Interfaces
- Trunk Mode Configuration
- Port Bandwidth Reservation
- NPIV and NPV technology
- Port Tracking Feature

Lesson 9: FSPF and PortChannels

- Implementing Traffic Engineering
- Configuring Load Balancing
- PortChannel Overview
- Creating PortChannels
- The PortChannel Protocol
- Modifying PortChannel Links
- Configuring Port Channels with F_Ports and TF_Ports

Lesson 10: Implementing Zones

- Zoning Overview
- Creating Zones and Zonesets
- Verifying Zone Configuration
- Configuring Zoneset Distribution
- Recovering from Zone Merge Failures
- Managing Zonesets
- Enhanced Zoning Features
- Recommended Practices for Zoning

Lesson 11: Fibre Channel over IP

- The FCIP Protocol
- IP Addressing
- IP Routing Protocols
- FCIP Configuration
- Verifying the FCIP Configuration
- Using VLAN Subinterfaces

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Lesson 12: Tuning FCIP Performance
- Overview of FCIP Tuning Parameters
- Configuring TCP Timeout, Retransmit, and Selective Acknowledgement
- Configuring the MTU
- FCIP Flow Control
- Packet Shaping
- FCIP Compression
- FCIP Write Acceleration
- FCIP Tape Acceleration
- IP QoS Overview
- Using the SAN Extension Tuner

Lesson 13: MDS Interoperability
- Overview of Switch Interoperability
- Interoperability Mode Guidelines
- Configuring Interop Mode 4
- VSANs and Interoperability
- Additional Interop Considerations

Lesson 14: Inter-VSAN Routing
- IVR Overview
- IVR Implementation
- Verifying the IVR Configuration
- IVR Zones and Zone Sets
- FSPF and IVR

Lesson 15: Basic Troubleshooting
- Troubleshooting Methodology
- Verify Power
- Monitoring Ports
- Verifying Fabric Registration
- Cisco Fabric Manager Tools
- Using FC Ping and FC Trace
- Monitoring Processes and CPUs
- FCIP Troubleshooting
- Troubleshooting Network Connectivity
- Verify FCIP Configuration

Lab 1: MDS 9000 Initial Setup

Lab 2: Troubleshooting the Boot Process

Lab 3: CFS and Call Home

Lab 4: VSANs

Lab 5: Interfaces and Port Tracking

Lab 6: Port Channels and FSPF

Lab 7: Device Aliases and Zoning

Lab 8: FCIP Tunnels and Port Channels

Lab 9: FCIP SAN Extension Tuner

Lab 10: Interoperability with IVR

Lab 11: Challenge Lab

Lab 12: Basic Port Troubleshooting