SHI SD-WAN SD-WAN Software Defined 5 Days Instructor LED User Guide

Contents

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Product Information

Specifications

- Course Name: SD-WAN: Advanced Operations, Troubleshooting, and Best Practices Course (SDWOTS)
- Duration: 5 days
- Delivery Method: Instructor Led
- Authorized Partner: Cisco Authorized Platinum Learning Partner

Product Usage Instructions

Course Overview

The SD-WAN: Advanced Operations, Troubleshooting, and Best Practices Course (SDWOTS) is a comprehensive course designed to provide students with advanced knowledge and skills in SD-WAN operations, troubleshooting, and best practices. The course is instructor-led and spans over a duration of 5 days.

Course Objectives

Upon completion of this course, students will be able to:

- Understand advanced concepts and technologies related to SD-WAN
- Effectively operate and troubleshoot SD-WAN environments
- Implement best practices for SD-WAN deployment and management

Course Outline

The course covers the following topics:

- Module 1: Introduction to SD-WAN
- Module 2: Advanced SD-WAN Concepts
- Module 3: SD-WAN Operations and Management
- Module 4: Troubleshooting SD-WAN
- Module 5: Best Practices for SD-WAN Deployment

Instructor-Led Training

This course is delivered through instructor-led training sessions. Students will have the opportunity to interact with the instructor and fellow participants, ask questions, and engage in hands-on exercises and practical labs.

Frequently Asked Questions

Q: How long is the duration of the course?
A: The course spans over a duration of 5 days.

Q: What is the delivery method of the course?
A: The course is delivered through instructor-led training sessions.

Q: Is this course authorized by Cisco?

A: Yes, this course is delivered by a Cisco Authorized Platinum Learning Partner.

- SD-WAN: Advanced Operations, Troubleshooting, and Best Practices
- Course SDWOTS: 5 days Instructor Led

All Cisco courses are delivered by a Cisco Authorized Platinum Learning Partner

About this course

This five-day course covers the new deployment, options and features of version 20.x Cisco Software-Defined WAN (SD-WAN). SD-WAN is an overlay architecture that overcomes the biggest drawbacks of traditional WAN. Students will learn how to design, configure and operate a Cisco SD-WAN utilizing any transport (MPLS, Broadband, LTE, VSAT etc.). Candidates will discuss and build an SD-WAN environment starting from Day 0 provisioning and will also be able to provide troubleshooting, management, policy control and application visibility across the enterprise network. This hands-on Course covers the Cisco SD-WAN product and contains extensive labs to reinforce the knowledge learned.

Audience profile

- Engineering and Planning team evaluating WAN evolution
- Personnel involved in SD-WAN Design, Implementation and Operation
- Network Operations team with SD-WAN solution
- Cisco partners who sell and support SD-WAN solutions

At course completion

After completing this course, students will be able to:

- Describe how to deploy SD-WAN
- Configure SD-WAN environment
- Deploy Plug and Play / Zero-Touch Provisioning
- Implement SD-WAN Security
- Configure SD-WAN Policies
- Deploy, maintain and troubleshoot cEdge devices
- Operate SD-WAN Devices and software
- Troubleshoot SD-WAN environment

Course Outline

Module 1: Cisco SD-WAN Introduction

- High-level Cisco SD-WAN Deployment models
- Application level SD-WAN solution
- Cisco SDWAN high availability solution
- Cisco SD-WAN Scalability
- Cisco SD-WAN Solution Benefits

Module 2: Cisco SD-WAN Orchestration

- Introduction
- vManage NMS
- vSmart Controller
- vBond Orchestrator
- Controller Resiliency Architecture

Module 3: Site Architecture and Deployment Models

- Site Capabilities
- cEdge Router
- Upgrading a current ISR router to support SD-WAN

Module 4: Plug and Play Connect Portal – Zero Touch Provisioning

Overview

- Understanding Cisco Plug and Play Connect Portal
- cEdge registration, licensing and onboarding
- Understanding the legacy ZTP Portal for vEdge
- User Input Required for the ZTP Automatic Authentication Process
- Authentication between the vBond Orchestrator and a cEdge Router
- Authentication between the cEdge Router and the vManage NMS
- Authentication between the vSmart Controller and the cEdge Router

Module 5: Cisco SD-WAN Solution

- Overlay Management Protocol (OMP)
- Cisco SDWAN Circuit Aggregation Capabilities
- Secure Connectivity in Cisco SD-WAN
- Performance Tracking Mechanisms
- Application Discovery
- Dynamic Path Selection
- Performance Based Routing
- Dynamic Cloud Access
- Understanding the Cisco SD-WAN Onramp
- Understanding Direct Internet Access (DIA) and it’s advantages
- Zone Based Firewall
- Umbrella integration
- SD-WAN security features overview

Module 6: Operations Best Practices

- Config: Test Configuration Changes Before Committing
- NAT: Secure Routers Acting as NATs

- cEdge / vEdge Routers: Connect to the Console Port
- cEdge / vEdge Routers: Use the Poweroff Command
- cEdge / Viptela Devices: Site ID Naming Conventions
- Edge Devices: Using the System IP Address
- vManage NMS: Disaster Recovery

Module 7: Application Monitoring

- vManage
- vAnalytics
- Ecosystem Partner Solutions

Module 8: Troubleshooting Methods

- Remote Access
- Console Access
- LAN Interfaces
- WAN Interfaces
- Control Connections

Module 9: General Troubleshooting

- Check Application-Aware Routing Traffic
- Collect Device Data To Send to Customer Support
- Monitor Alarms and Events
- Monitor TCP Optimization
- Ping a Viptela Device
- Run a Traceroute
- Simulate Flows
- Troubleshoot Cellular Interfaces
- Troubleshoot Device Bringup
- Troubleshoot WiFi Connnections
- Use Syslog Messages
- Tunnel Health

Module 10: Troubleshooting: Data Plane Issues

- BFD Session Information
- Cflowd Information
- Data Policies
- DPI Information
- Symptom: Site Cannot Reach Applications in Datacenter
- Symptom: vManage Showing vEdge or Interface Down
- Symptom: Site-Wide Loss of Connectivity (Blackout)

- Symptom: Poor Application Performance (Brownout)
- Issue Severity Assessment

Module 11: Troubleshooting: Routing Issues

- BGP Information
- Multicast Information
- OMP Information
- OSPF Information
- PIM Information
- Symptom: Some or All Routes Missing from vEdge Routing table
- Symptom: Data Traffic Using Suboptimal Path
- Symptom: Data Traffic Not Using All Transports

Module 12: Application-Aware Routing

- Application Performance with CloudExpress Service
- Tunnel Latency Statistics
- Tunnel Loss Statistics

Module 13: Interface Troubleshooting

- Reset an Interface
- All Interfaces
- ARP Table Entries
- Cellular Interface Information
- DHCP Server and Interface Information
- Interface MTU Information
- Management Interfaces
- VRRP Information
- WAN Interfaces

Module 14: Network Operations

- Check Alarms and Events
- Check User Accounts and Permissions
- Deploy the Viptela Overlay Network
- Determine the Status of Network Sites
- Control Connections
- Data Connections
- Network Performance with vAnalytics Platform
- OMP Status

Module 15: Security Certificate Troubleshooting

- Generate a Certificate
- Upload the vEdge Serial Number File
- Certificate
- CSR

Module 16: Viptela Devices Maintenance

- Decommission an vEdge Cloud Router
- Determine the Status of a Network Device
- Locate an Edge Device
- Migrate a Controller's Virtual Machine Using vMotion
- Reboot a Device
- Remove an Edge Router's Serial Number from the vManage NMS
- Replace an Edge Router
- Restore the vManage NMS
- Set Up User Accounts to Access Viptela Devices
- Validate or Invalidate a vEdge Router
- Software Versions Installed on a Device
- Status of a vBond Orchestrator
- Status of a cEdge / vEdge Router
- Status of a vSmart Controller

Module 17: Viptela Device Operation and Troubleshooting

- Determine Changes to a Configuration Template
- Determine Why a Device Rejects a Template
- Alarm Severity Levels
- Hardware Alarms
- Checking Alarms and Notifications
- LEDs
- Additional Information
- Restore a cEdge / vEdge Router
- Remove cEdge / vEdge Router Components

Module 18: Working With Viptela Support

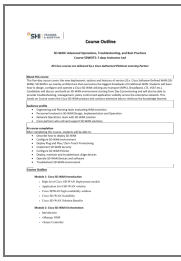
- Case Priority Levels and Response Times
- Information for Opening Cases
- Viptela Customer Support Portal
- Other Ways to Contact Support

Lab Outline

- Introduction to the Cisco SD-WAN

- Add a vSmart Controller to the vManage Inventory
- Add a vEdge Router to the vManage Inventory
- Add a cEdge Router to the vManage Inventory
- Add vEdge to vManage Inventory
- Control-Plane Connectivity
- Overlay Network
- Zero-Touch Provisioning
- vManage Templates
- vManage Basic Policies
- Application Aware Policies
- Advanced Policies
- Internet Exit lab (DIA)
- Zone Based Firewall lab
- URL Filter
- AMP Lab
- Analytics from vManage
- MultiTenant Mode and Tenants
- Troubleshooting Methods
- Troubleshooting Data Plane Issues
- Troubleshooting Routing Issues
- Best Practices

Documents / Resources

	SHI SD-WAN SD-WAN Software Defined 5 Days Instructor LED [pdf] User Guide SD-WAN SD-WAN Software Defined 5 Days Instructor LED, SD-WAN SD-WAN, Software Defined 5 Days Instructor LED, Defined 5 Days Instructor LED, Days Instructor LED, Instructor LED, LED

References

- User Manual