Cisco SD-WAN Advanced Monitoring and Troubleshooting

Duration: 4 Days **Course Code: N1_SDWADV** **Delivery Method: Virtual Learning**

Overview:

SDWADV is a 4-day Cisco SD-WAN training targeted to engineers and technical personnel involved in deploying, implementing, operating and optimizing Cisco SD-WAN solution, both in enterprise and Service Provider environments, including advanced features for centralized AAR/Data policies, QoS, application performance routing, configuration templates, control policies and troubleshooting common and advanced operating issues. The Cisco SD-WAN course is lab-intensive, and objectives are accomplished mainly through hands on learning and scripting. Students taking this Cisco SD-WAN training course should be familiar with Wide Area Networks (WANs) in a variety of ways. Ideal candidates for this course include engineering and planning teams who evaluate WAN evolution and personnel involved in SD-WAN Design, Implementation and Operation.

Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

Target Audience:

The primary audience for this course is as follows:
- Systems Engineers
- Technical Solutions Architects
- Field Engineers

Objectives:

- **After completing this course you should be able to:**
- Understand Cisco SD-WAN Architecture
- Monitor Day-N SD-WAN Operations
- In-depth Troubleshooting of the SD-WAN Fabric
- Explore Advanced SD-WAN Policy Configuration
- Identify Insights into Software-Defined Application Visibility Control

Prerequisites:

Attendees should meet the following prerequisites:

- Knowledge of WAN architectures and routing networking concepts
- High-level familiarity with basic network protocols and applications
- Familiarity with common application delivery methods
- Fundamental Understanding of APIs
- Basic Cisco SD-WAN familiarity

Content:

Module 1: Cisco SD-WAN Introduction

- High-level Cisco SD-WAN Deployment models
- Application-level SD-WAN solution
- Cisco SDWAN plan for HA and Scalability
- Cisco SD-WAN solution components: vManage NMS, vSmart Controller, vBond Orchestrator
- Edge Routers
- Cloud Based Deployment vs On-Premises Deployment

Module 2: Zero Touch Provisioning

- Overview
- User Input Required for the ZTP Automatic Authentication Process
- Authentication between the vBond Orchestrator and WAN Edges
- Authentication between the Edge Routers and the vManage NMS
- Authentication between the vSmart Controller and the Edge Routers

Module 3: 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
- Direct Internet Access
- Cisco SD-WAN In-built Security features: App Aware FW, Talos IPS, URL Filtering, Umbrella Integration ; Advanced Malware Protection
- Dynamic Cloud Access: Cloud On-Ramp for SaaS and IaaS (AWS, Azure ; GPC)

Module 4: Operations Best Practices

- Config: Test Configuration Changes Before Committing
- NAT: Secure Routers Acting as NATs
- Edge Routers: Connect to the Console Port
- vManage Operational Commands
- SD WAN Devices: Site ID Naming Conventions
- SD WAN Devices: Using the System IP Address
- vManage NMS: Disaster Recovery
- Disaster Recovery – Cluster failover scenarios
- vManage Disaster Recovery Checklist
- How to configure Disaster Recovery

Module 5: Application Monitoring (Including SD-AVC)

Module 7: Troubleshooting: Data Plane Issues

- BFD Session Information and Troubleshooting a BFD Session
- Cflowd Issues
- Data Policies
- DPI Issues
- Symptom: Site Cannot Reach Applications in Datacenter
- Symptom: vManage Showing Edge Router or Interface Down
- Symptom: Site-Wide Loss of Connectivity (Blackout)
- Symptom: Poor Application Performance (Brownout)
- Issue Severity Assessment

Module 8: Troubleshooting: Routing Issues

- Troubleshooting NAT Issues for Control and Data connections
- BGP Information
- Multicast Information
- OMP Information
- OSPF Information
- PIM Information
- Symptom: Some or All Routes Missing from Edge Routing table
- Symptom: Data Traffic Using Suboptimal Path
- Symptom: Data Traffic Not Using All Transports

Module 9: Monitoring and Troubleshooting Application-Aware Routing

- Application Performance with Cloud-Express Service
- Tunnel Latency Statistics
- Tunnel Loss Statistics

Module 10: Troubleshooting Policy Related Issues

- Checking configuration
- For Localized Policies
- For Centralized Policies
- How to check if FIA is enabled
- Confirming and troubleshooting TCAM Issues
- Enabling Various Policy Level Logs
- FPM Logs
- EPBR Logs
- FNF Logs during config
- Collecting Log Files
- How to deal with too many logs

Module 11: Network Operations

- Check Alarms and Events
- Check User Accounts and Permissions
- Deploy the SD WAN Overlay Network

Module 13: SD WAN Devices Maintenance

- Decommission a vEdge Cloud Router
- Determine the Status of a Network Device
- Migrate a Controller's Virtual Machine Using vMotion
- 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 SD-WAN Devices
- Validate or Invalidate an Edge Router
- Software Versions Installed on a Device
- Troubleshooting platform crash issues

Module 14: SD-WAN 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 an Edge Router
- Remove Edge Router Components

Labs:

- Lab 1: Deploy and configure the Cisco SD-WAN Fabric
- Lab 2: Operational Best Practices
- Lab 3: Installing SD-AVC and monitoring CFlowD ; DPI
- Lab 4: Cisco SD-WAN Control Plan Troubleshooting
- Lab 5: Cisco SD-WAN Data Plane Troubleshooting
- Lab 6: Cisco SD-WAN Troubleshoot Routing Issues
- Lab 7: Troubleshooting Cisco SD-WAN Policies
- Lab 8: Configuring a vManasge Disaster Recovery Backup
- Lab 9: Troubleshooting platform crash files

Lab 10: Configuring Cisco SD-WAN Alarms, Alerts and Notifications

- vManage – Application Monitoring
- How to enable DPI on SD-WAN cEdge Routers
- Monitoring Application traffic per device/site
- How to enable SD-AVC on vManage and push to routers.
- Configuring application log collection parameters.
- vAnalytics
- vAnalytics dashboard walk-through
- vAnalytics Network Health
- vAnalytics Network Availability
- vAnalytics Applications
- Ecosystem Partner Solutions

Module 6: General Troubleshooting

- Check Application-Aware Routing Traffic
- Collect Device Data to Send to Customer Support
- Monitor Alarms and Events
- Monitor TCP Optimization
- Ping an SD WAN Device
- Run a Traceroute
- Simulate Flows
- Troubleshoot Cellular Interfaces
- Troubleshoot Device Bringup
- Use Syslog Messages
- Tunnel Health
- Determine the Status of Network Sites
- Control Connections
- Data Connections
- OMP Status
- Enabling Embedded Packet Captures and Packet Trace on Cisco cEdges

Module 12: Security Certificate Troubleshooting

- Generate a Certificate Signing Request
- Issues when installing a certificate
- Using Cisco Signed Certificates vs 3rd Party Signed Certificates
- Upload the Edge Serial Number File

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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