ADV SDWAN - ADVANCED CISCO SD-WAN ROUTING, TEMPLATES, POLICIES, MIGRATION AND, TSHOOT

Course Code: 821652

This five-day, hands-on, instructor-led course provides detailed training on Advanced SD-WAN Design and Features on the 20.15 SD-WAN and 17.15 IOS-XE releases. This course focuses on the 20.15 SD-WAN and 17.15 IOS-XE releases. It emphasizes advanced deployment and troubleshooting of SD-WAN Templates, Features, and Policies. Participants are trained to configure high-availability features for Controllers and Routers, and manage non-SD-WAN routers via the Manager (vManage) for configuration, management, monitoring, and upgrading.

The curriculum covers the advanced design and deployment of Feature Templates, Device Templates, CLI Templates, and Configuration Groups, highlighting optimization for different regions. It delves into the design and deeper explanation of Quality of Experience (QoE) features, including Forward Error Correction (FEC), TCP Optimization (TCP OPT), Data Redundancy Elimination (DRE), SD-Application Visibility and Control (SD-AVC), and comprehensive Quality of Service (QoS) policies, exploring their impact on router throughput. The course also explores advanced design and implementation strategies for Overlay, Transport, and Service-Side Routing Protocols such as Overlay Management Protocol (OMP), BGP, EIGRP, OSPF, RIP, and On-demand routing, including the deployment of Direct Internet Access (DIA) with a focus on design, implementation, and security. Additionally, it covers the implementation of Multicast Routing in an SD-WAN environment.

Furthermore, the course teaches techniques for designing and deploying advanced local and centralized policies and troubleshooting them. It concludes with the integration of SD-WAN Security features with Umbrella Cloud Security. The training encapsulates a comprehensive review of SD-WAN concepts, insights into SD-WAN High Availability, deep dives into SD-AVC, QoS Policies, advanced template design, troubleshooting, security integrations, detailed design and troubleshooting of routing protocols, configuration of Multicast Routing, and strategies for network migration to SD-WAN, including the implementation of Cisco Multi Region Fabric and migration from vEdge to cEdge Routers.

Use this course towards your Cisco Continuing (CE) Education Credits (50)

What You'll Learn

- SD-WAN Review
- Clusters and High Availability
- SD-AVC and QoS Policies
- Advanced Template Design and Troubleshooting
- Advanced Security Policies on vEdge and IOS-XE Platforms
- Advanced Local Policies on vEdge and IOS-XE Platforms
- Advanced Central Policies on vEdge and IOS-XE Platforms
- Advanced Troubleshooting of Policies on vEdge and IOS-XE Platforms

Who Needs to Attend

This course is suitable for Network Engineers, System Administrators, IT Professionals, Technical Support Staff, and Cisco-Certified Professionals looking to enhance their skills and proficiency with Cisco Catalyst SD-WAN network management tailored for networks.

The course is highly recommended for:
- **Network Engineers:** Professionals tasked with the design, implementation, and maintenance of the network infrastructure. This includes managing both Catalyst SD-WAN and data communication systems, ensuring they meet the high standards required for government operations.
- **System Administrators:** Individuals responsible for the daily management and configuration of the network systems. Their role is crucial in ensuring the reliable operation of Catalyst SD-WAN and WAN services across various departments.
- **IT Professionals:** This group includes a wide range of IT personnel working who require a robust understanding of secure and reliable Catalyst SD-WAN network systems. Their work is critical in ensuring that these networks comply with stringent standards and regulations.
- **Technical Support Staff:** These are the frontline personnel who provide essential technical support for Catalyst SD-WAN network systems within the environments. Their expertise ensures that any issues are promptly resolved to maintain network integrity and security.
- **Cisco Certified Professionals:** Individuals who have already achieved Cisco certifications and are looking to further their knowledge and expertise specifically in Catalyst SD-WAN Networks and Technologies. This course offers them an opportunity to specialize in Catalyst SD-WAN solutions, enhancing their skill set in the context of the network requirements

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CLASSROOM LIVE	$4,395 USD	5 Day

Classroom Live Outline

Module 0: Introductions

- Module Introduction
- Lesson 1: Introductions
- Module Summary

Module 1: SD-WAN Overview

- Module Introduction
- Lesson 1: Cisco SD-WAN Overview
- SD-WAN Architecture
- Lesson 2: SD-WAN Platform Discussion
- Module Summary

Module 2: SD-WAN Advanced Settings

- Module Introduction
- Lesson 1: Design Considerations and Scaling
- Lesson 2: Site Design
- Lesson 3: Advanced Settings
- Lesson 4: Ether Channel Support (20.6)
- Lesson 5: Hot Standby Router Protocol (HSRP)
- Lesson 6: LTE Design and Deployment
- Module Summary

Module 3: SD-WAN High Availability

- Module Introduction
- Lesson 1: Common WAN Topologies Design and Deployment Considerations
- Lesson 2: Active vManage, Backup Inactive vManage, Clustering vManage
- Lesson 3: SD-WAN Disaster Recovery
- Lesson 4: Troubleshooting Cluster Operation
- Module Summary

Module 4: SD-WAN Templates

- Module Introduction
- Lesson 1: Template Overview
- Lesson 2: Using Python to Import / Export Templates
- Lesson 3: Parsing JSON with Python
- Lesson 4: Create / Delete / Import / Export of Templates
- Module Summary

Module 5: SD-WAN APP-QoE, SD-AVC and QoS Policies

- Module Introduction
- Lesson 1: Application Quality of Experience (APPQoE)
- Lesson 2: Custom Application Identification
- Lesson 3: Bidirectional Forwarding Detection (BFD)
- Lesson 4: Cloud onRamp for SaaS for Office 365
- Lesson 5: Per Tunnel QOS
- Lesson 6: Adaptive QOS
- Lesson 7: SD-WAN 17.6/20.6 - Per VPN QOS
- Lesson 8: TCP Optimization
- Lesson 9: Service Nodes for AppQoE
- Lesson 10: Forward Error Correction (FEC)
- Lesson 11: Packet Duplication
- Module Summary

Module 6: Bridging

- Module Introduction
- Lesson 1: Transparent Bridging
- Lesson 2: Bridging Template Configuration
- Lesson 3: cEdge Bridging Template Configuration
- Lesson 4: vEdge Bridging Template Configuration
- Module Summary

Module 7: Routing Protocols

- Module Introduction
- Lesson 1: SD-WAN Underlay Routing
- Lesson 2: Static Routes
- Lesson 3: VRRP Enhancements
- Lesson 4: Dynamic Routing Protocols
- Lesson 5: Routing Information Protocols
- Lesson 6: SD-WAN On Demand Tunnels
- Lesson 7: Route Leaking
- Lesson 8: Hierarchical SD-WAN (Regions)
- Module Summary

Module 8: Multicast

- Module Introduction
- Lesson 1: Complete Multicast Support on Cisco SD-WAN
- Lesson 2: vEdge Support

- Module Summary

Module 9: Direct Internet Access (DIA) Overview

- Module Introduction
- Lesson 1: SD-WAN Direct Internet Access (DIA)
- Lesson 2: Deploying DIA
- Lesson 3: Central Data Policy
- Lesson 4: NAT DIA Route
- Module Summary

Module 10: SD-WAN Voice Configuration

- Module Introduction
- Lesson 1: Voice Integration in SD-WAN
- Lesson 2: Voice Card Feature Templates
- Lesson 3: Call Routing Feature Templates
- Lesson 4: Survivable Remote Site Telephony (SRST)
- Lesson 5: Voice Policies
- Lesson 6: Create a Voice Port Policy
- Lesson 7: Voice Port Translation Profile
- Lesson 8: FXO Supervisory Disconnect
- Lesson 9: Cisco Unified Border Element (CUBE)
- Module Summary

Module 11: SD-WAN Security Policy

- Module Introduction
- Lesson 1: SD-WAN Security
- Lesson 2: SD-WAN Base Security
- Lesson 3: SD-WAN Cloud Security
- Lesson 4: Zscaler Integration
- Lesson 5: SD-WAN Cloud Security Features
- Lesson 6: SD-WAN Integrated Security
- Lesson 7: 17.6/20.6 – Geo-Fencing
- Lesson 8: SD-WAN Security Configuration
- Module Summary

Module 12: SD-WAN Local Policy

- Module Introduction
- Lesson 1: Policy Configuration Overview
- Lesson 2: Local Data Policies
- Module Introduction

Module 13: SD-WAN Central Policy

- Module Introduction
- Lesson 1: Centralized Control Policies
- Lesson 2: Centralized Data Policies
- Lesson 3: Application Aware Routing
- Lesson 4: Service Chaining
- Lesson 5: Traffic Flow Monitoring with Cflowd

- Lesson 6: Policy Construction
- Lesson 7: Platform Support and Scalability
- Module Summary

Module 14: SD-WAN Migration

- Module Introduction
- Lesson 1: SD-WAN Conversation Tool
- Lesson 2: Cisco Sure Tool
- Lesson 3: Migration and Deployment Models
- Lesson 4: Typical Migrations
- Lesson 5: Data Center / Hub Migration
- Lesson 6: Branch / Spoke Site Migration
- Module Summary

Classroom Live Labs

LAB OUTLINE

Lab 1: Review & Troubleshoot Initials SDWAN Environment

- Review Environment
- Troubleshooting Initial Connectivity
- Troubleshooting Initial Control Connections

Lab 2: Create and Troubleshoot SDWAN Clusters

- Create a 3 Node SDWAN Cluster
- Monitor Cluster Troubleshoot Cluster

Lab 3: Template / Configurations Groups

- Advanced Techniques for Template Creation
- Variable Naming Conventions for Reusability
- Create Feature Template for reuse across all vEdge devices
- Export and Import Templates via API
- Troubleshoot Template Deployment

Lab 4: Deploy and Troubleshoot Hardware Routers with ztp.

- Troubleshoot and Deploy 4331 Router
- Troubleshoot and Deploy vEdge Router

Lab 5: Implement Routing Protocol

- Configure Transparent Routing
- Configure BGP Template and Local Policy on the Transport VPN
- Configure OSPF Template and Local Policy on the Transport VPN
- Configure BGP Template and Local Policy on the Service Side (LAN) VPN
- Configure OSPF Template and Local Policy on the Service Side (LAN) VPN
- Configure EIGRP Template and Local Policy on the Service Side (LAN) VPN
- Configure Multicast on vEdge
- Configure Multicast on IOS-XE
- Monitor Routing

- Troubleshooting Routing Protocols

Lab 6: Advanced Firewall Policy Design

- Setup and deploy a realistic firewall Configuration on vEdge and IOS-XE
- Setup IPS/URL Filtering on IOS-XE Device
- Setup Web Layer Security
- Monitoring Security Policy
- Test and Troubleshoot a Firewall Policy

Lab 7: Designing and Implementing Local Policies and QoS Policies

- Design and Implement Lists to Support Local Policies
- Design Access List
- Advanced QoS Design on Interfaces / Sub Interfaces
- Creating Shapers and Policers
- Rewriting QoS for External MPLS Circuit
- Remarking for Cisco Enterprise QoS Model
- Setup Port Mirroring for traffic analysis

Lab 8: Create Advanced Central Policies

- Advanced List Design Techniques
- Advanced Site Design
- Design and Troubleshoot a Hub and Spoke Topology
- Design, Configure, and Troubleshoot a Full Mesh Topology
- Design, Configure, and Troubleshoot a Hub and Spoke Topology with a Full Mesh Core
- Design, Configure, and Troubleshoot Custom Control Policies with Traffic Engineering
- Design, Configure, and Troubleshoot a Service Chain with an ASA Firewall
- Design, Configure, and Troubleshoot a QoS Policy at the VPN Level
- Design, Configure, and Troubleshoot Extranet with a 3rd Party Provider
- Design, Configure, and Troubleshoot Application Aware Routing Policy

Lab 9: Monitoring the Environment

- Monitoring using vManage
- Monitoring using the CLI
- Monitoring using vAnalytics

Lab 10: Troubleshooting

- Troubleshooting Hardware Issues
- Troubleshooting Control Connections
- Troubleshooting Certificate Issues
- Troubleshooting Controllers
- Troubleshooting BFD Sessions
- Troubleshooting Templates
- Troubleshooting Local Policies
- Troubleshooting Central Policies

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- Troubleshooting Central Policies

May 4 - 8, 2026 | 8:00 AM - 5:00 PM CDT

Jun 22 - 26, 2026 | 8:00 AM - 5:00 PM CST

Aug 3 - 7, 2026 | 8:00 AM - 5:00 PM CDT

Sep 28 - Oct 2, 2026 | 8:00 AM - 5:00 PM CST

Nov 30 - Dec 4, 2026 | 8:00 AM - 5:00 PM CST

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PRIVATE GROUP TRAINING	5 Day

Visit us at www.globalknowledge.com or call us at 1-866-716-6688.