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Computer Learning Centers

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Installing, Configuring, Monitoring and Troubleshooting Cisco Catalyst SD-WAN (SDWAN) V2.0

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Installing, Configuring, Monitoring and Troubleshooting Cisco Catalyst SD-WAN (SDWAN) V2.0

Course Duration

5 days

Course Price

$4,395.00
43 CLCs

Methods of Delivery

In-Person ILT
Virtual ILT
Onsite ILT

About this Class

In this 5-day hands-on up-to-date course on Cisco Catalyst (Viptela) SD-WAN 20.12 / IOS-XE 17.12, students will learn how to administer SD-WAN. Students will learn about Deploying and Configuring SD-WAN Controllers, vEdge Devices, and Cisco IOS-XE Devices. Students will learn how to manage the (SD-WAN Manager (vManager) Interface, along with the change in the interface in 20.6 and above. Students will learn about Device Template, Feature Template, Configuration Groups, and CLI Templates. Students will learn how to tune OMP, BFD, TLOCs, QoS, TCP OPT, DRE, FEC, and Packet Duplication. Students will learn how SD-WAN implements Security using SASE, SIG, Umbrella, FW, IPS, AMP, Threat grid, TLS Decryption, and Direct Internet Access (DIA). Students will learn about Local and Central Policies. Students will also learn how Cisco SD-WAN allows Enterprises to deploy effective Cloud Solutions such as Amazon AWS, Microsoft Azure, Google Cloud, MegaPort, Equinix, and SAAS applications such as O365 and Webex. Students will also learn how to Monitor and Troubleshoot the SDWAN Solution.

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How you will benefit

This class will help you:

- Master deploying and configuring SD-WAN Controllers, vEdge Devices, and Cisco IOS-XE Devices
- Understand local and central policies
- Learn and master Monitoring and Troubleshooting the SDWAN Solution.

Why Attend with Current Technologies CLC

- Our Instructors are the top 10% rated by Cisco
- Our Lab has a dedicated 1 Gig Fiber Connection for our Labs
- Our Labs run up to Date Code for all our courses

Who Should Attend

The job roles best suited to the material in this course are:

- System Installers
- System Integrators
- System Administrators
- Network Administrators
- Solutions Designers
- Systems Architects

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Objectives

Upon completing this course, students will be able to meet these objectives:

- SD-WAN Overview
- SD-WAN Controllers (vSmart)
- Allow Lists and Certificates
- Platforms
- Router Deployment
- Configure SD-WAN Manager (vManager)
- SD-WAN Software Updates
- OMP / Fabric
- QoS / QoE
- Security / SASE
- Creating and Applying SD-WAN Templates
- Local and Central Policy
- Deploying using Templates
- ThousandEyes Integration
- Cloud Onramp for SaaS
- Analytics
- Monitoring & Troubleshooting the SD-WAN Solution

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Course Outline

Module 0: Introductions

Module 1: Catalyst SD-WAN (Viptela) Platform Overview
- Module Topics
- Lesson 1: SD-WAN WAN Architecture Overview
- Lesson 2: Cisco SD-WAN Solution Overview
- Lesson 3: New Features by Version
- Lesson 4: Licensing for Cisco SD-WAN
- Lesson 5: SD Routing Overview (20.12)
- Module Summary

Module 2: Cisco SD-WAN Controllers
- Module Topics
- Lesson 1: Cisco SD-WAN Controller Architecture
- Lesson 2: Cisco Catalyst SD-WAN Portal
- Lesson 3: Multitenant Tenancy
- Lesson 4: Controller High Availability
- Lesson 5: Verify Control Plane
- Module Summary

Module 3: Cisco SD-WAN Allow Lists and Certificates
- Module Topics
- Lesson 1: Certificate Fundamentals
- Lesson 2: SD-WAN Certificates
- Lesson 3: Certificate Configuration
- Lesson 4: Certificate Validity
- Lesson 5: Monitoring and Troubleshooting Certificates
- Module Summary

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Course Outline

Module 4: Catalyst SD-WAN Platforms
- Module Topics
- Lesson 1: SD-WAN Platform Overview
- Lesson 2: SD-WAN vEdge Platforms
- Lesson 3: SD-WAN Industrial Router Portfolio
- Lesson 4: SD-WAN ISR 1000/1100 Series Routers
- Lesson 5: Cisco ISR 4000 Series Routers
- Lesson 6: Cisco ASR 1000 Routing Portfolio
- Lesson 7: Catalyst 8000 Series Router Overviews
- Lesson 8: Catalyst 8500 Series Routers
- Lesson 9: Catalyst 8300 Series Routers
- Lesson 10: Catalyst 8200 Series Routers
- Lesson 11: Catalyst 8000v Series Virtual Router
- Lesson 12: Catalyst 8000 SD-WAN Supported Modules
- Lesson 13: Cellular Gateways for SDWAN
- Lesson 14: SD-WAN WAN Edge High Availability
- Module Summary

Module 5: Cisco SD-WAN WAN Edge Deployments
- Module Topics
- Lesson 1: Adding Device to the PNP Portal
- Lesson 2: Device Initial Bootup and Image Selection
- Lesson 3: SD-WAN Zero Touch Provisioning
- Lesson 4: SD-WAN Quick Connect
- Lesson 5: Manually Provision SD-WAN IOS-XE
- Lesson 6: Verifying SD-WAN WAN Edge Configuration
- Module Summary

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Course Outline

Module 6: Configuring SD-WAN Manager
- Module Topics
- Lesson 1: Dashboard Overview and Changes
- Lesson 2: SD-Wan Manager Monitoring Dashboard
- Lesson 3: SD-WAN Manager Configuration
- Lesson 4: SD-WN Manager Tools
- Lesson 5: SD-WAN Manager Maintenance
- Lesson 6: Administrative Settings
- Lesson 7: Resource Groups
- Lesson 8: Users and Groups
- Lesson 9: RADIUS and TACACS
- Lesson 10: Single Sign-On / IDP Management
- Lesson 11: License Management
- Lesson 12: Network Wide Path Insight
- Module Summary

Module 7: SD-WAN Software Upgrades
- Module Topics
- Lesson 1: Upgrading the SD-WAN Environment
- Lesson 2: Upgrade SD-WAN Controllers
- Lesson 3: Software Upgrade Workflow Version 20.10 / 17.10
- Lesson 4: Upgrading Devices via CLI
- Module Summary

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Course Outline

Module 8: SD-WAN OMP/Fabric

- Module Topics
- Lesson 1: SD-WAN Fabric Overview and Terminology
- Lesson 2: SD-WAN Segmentation
- Lesson 3: OMP / TLOCs / Routes
- Lesson 4: SD-WAN BFD
- Lesson 5: On-Demand Tunnels
- Lesson 6: SD-WAN Fabric Verification
- Module Summary

Module 9: SD-WAN QoS / QoE

- Module Topics
- Lesson 1: QoE / QoS Challenges
- Lesson 2: Quality of Experience (QoE) / Quality of Service (QoS)
- Lesson 3: Per-Tunnel QoS
- Lesson 4: Adaptive QoS
- Lesson 5: Per VPN QoS
- Lesson 6: Application Quality of Experience (AppQoE)
- Lesson 7: Forward Error Correction (FEC) / Packet Duplication
- Lesson 8: TCP Optimization
- Lesson 9: Data Redundancy Elimination (DRE) / Lempel-Ziv Compression (LZ)
- Lesson 10: SD-AVC / Microsoft O365 Telemetry
- Module Summary

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Course Outline

Module 10: SD-WAN Security / SASE
- Module Topics
- Lesson 1: Security Overview
- Lesson 2: Secure Access Service Edge (SASE)
- Lesson 3: SD-WAN Fabric Security
- Lesson 4: SD-WAN Security Options
- Lesson 5: SD-WAN Integrated Security
- Lesson 6: SD-WAN Security Configuration
- Lesson 7: Cisco Umbrella
- Module Summary

Module 11: Creating and Applying SD-WAN Templates
- Module Topics
- Lesson 1: Template Overview
- Lesson 2: Feature Templates
- Lesson 3: Device Templates
- Lesson 4: CLI Templates
- Lesson 5: Create Device Templates using Feature Templates
- Lesson 6: Attaching Devices to Templates
- Lesson 7: Configuration Groups Overview
- Lesson 8: Creating Configuration Groups
- Lesson 9: Deploy Configuration Group Workflow
- Lesson 10: View/Edit Configuration Groups
- Module Summary

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Course Outline

Module 12: SD-WAN Local Policy
- Module Topics
- Lesson 1: Local Policy Overview
- Lesson 2: Local Policy Lists
- Lesson 3: Local Data Policies
- Lesson 4: Local Policy QoS Configuration
- Lesson 5: Access Control Lists
- Lesson 6: Localized Control Policy
- Lesson 7: Save and Apply Local Policy
- Module Summary

Module 13: SD-WAN Central Policies
- Module Topics
- Lesson 1: Central Policy Overview
- Lesson 2: Central Control Policy
- Lesson 3: Control Policy – Dis-contiguous Data Planes
- Lesson 4: Control Policy – Data Center Priority
- Lesson 5: Control Policy – VPN Topologies
- Lesson 6: Control Policy – VPN Membership Policy
- Lesson 7: Control Policy – Application-Aware Routing
- Lesson 8: Control Policy – Service Chaining
- Lesson 9: Central Data Policies
- Lesson 10: Central Data Policies – Use Cases
- Lesson 11: Central Data Policies - Cflowd
- Lesson 12: Creating Centralized Policies
- Module Summary

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Course Outline

Module 14: Cisco SD-WAN with ThousandEyes Integration
- Module Topics
- Lesson 1: ThousandEyes Introduction
- Lesson 2: Architecture and SD-WAN Deployment
- Lesson 3: Troubleshooting ThousandEyes SD-WAN Deployments
- Module Summary

Module 15: Cloud Onramp for SaaS
- Module Topics
- Lesson 1: Cloud OnRamp - Overview
- Lesson 2: Cloud OnRamp for SaaS Overview
- Lesson 3: Cloud OnRamp for M365
- Lesson 4: Cloud OnRamp for Webex
- Lesson 5: Cloud OnRamp for Enterprise & Custom Apps
- Lesson 6: Cloud OnRamp for SaaS – Security
- Lesson 7: Deployment Use cases
- Lesson 8: Cloud OnRamp for SaaS Configuration
- Lesson 9: Cloud OnRamp for SaaS Monitoring
- Module Summary

Module 16: Analytics (vAnalytics) 3.0
- Module Topics
- Lesson 1: Analytics Overview
- Lesson 2: Analytics Dashboards
- Lesson 3: Analytics IDP Onboarding
- Lesson 4: Analytics KPIs and Scores
- Lesson 5: Cisco Analytics Troubleshooting
- Lesson 6: Analytics Onboarding & Access Workflow
- Module Summary

Installing, Configuring, Monitoring and Troubleshooting Cisco Catalyst SD-WAN (SDWAN) V2.0

Course Outline

Module 17: Monitoring & Troubleshooting the SD-WAN Solution

- Module Topics
- Lesson 1: SD-WAN Troubleshooting Overview
- Lesson 2: SD-WAN Technical Support Access
- Lesson 3: Controller Failure Scenarios
- Lesson 4: Troubleshooting Controllers
- Lesson 5: Troubleshooting Control Connections
- Lesson 6: Typical Control Connection Issues
- Lesson 7: Troubleshooting Data Plane
- Lesson 8: Troubleshooting Routing
- Lesson 9: Centralized Policies Troubleshooting
- Lesson 10: Packet Forwarding Troubleshooting
- Lesson 11: Device Configuration and Upgrades Failure
- Lesson 12: vDiagnose - Diagnostic Tool for SD-WAN
- Lesson 13: Troubleshooting cEdge
- Lesson 14: Troubleshooting using SD-WAN Manager (vManager)
- Lesson 15: Device Troubleshooting
- Lesson 16: Using the GUI for cli show command Under Troubleshooting > Real-Time
- Lesson 17: CLI Troubleshooting
- Lesson 18: Netflow Collectors
- Lesson 19: SNMP Overview
- Lesson 20: SD-WAN Logs
- Lesson 21: SD-WAN Reporting
- Lesson 22: SD-WAN Manager (vManager), APIs & Programmability
- Module Summary

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Lab Outline

Lab 1: Deploy the SD-WAN Controller

Lab 2: Deploy the vEdge, ISR 4K /C8000V Routers

Lab 3: vManage Configuration

Lab 4-8: Creating Device Templates

- Create CLI Policy Template

- Create Feature Policy Template

- Create vSmart Device CLI Template

- Create DC1 vEdges Device Feature Template

- Attach DC1 Devices to Template

- Create DC2 IOS-XE CSRs Device Feature Template

- Attach DC2 Devices to Template

- Create BR1 vEdges Device CLI Template using TLOC Extensions

- Attach BR1 Devices to Template

- Create BR2 IOS-XE CSRs Device Feature Template using TLOC Extensions

- Attach BR2 Devices to Template

- Create BR3 IOS-XE ISR4K Device Feature Template

- Attach BR3 Devices to Template

- Configuration Rollback

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Lab Outline Cont.

Lab 9: Use APIs to Import Feature Templates

Lab 10: Upgrade SDWAN Environment

Lab 11-13: Perform ZTP on SDWAN Environment

Lab 14-17: SDWAN Policies

- List types of policies that can be implemented in the SD-WAN solution

- Describe how policies can be implemented that affect the control plane

- Describe what affect policies can have on data traffic forwarding

- Identify the various components of the vSmart policy architecture

- Describe how different policies are enabled in different devices

- Detail how policies are processed and applied

- Control Policy Lab

  - Configure a Vpn-membership-policy

  - Configure Site-list Selection Policies

  - Configure a Service Chaining Policy

  - Configure an Extranet VPN Policy

  - Configure a Service path affinity Policy

  - Configure Fabric Policies

  - Configure Security Zones

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Lab Outline Cont.

Cont. Lab 14-17

- Data Policy Lab
  - Configure Shaping Policies
  - Configure QoS Policies
  - Configure a Service Chaining
  - Configure an Extranet VPN Policy
  - Configure Service path affinity Policy
  - Configure a NAT Policies for DIA
  - Configure an OSPF BGP Routing Policy
- Application Aware Routing Policy Lab
  - SLA Classes
  - Path Selection using Application Policies
- Create a cFlowd Policy
- Create a Local Control Policy
  - Configure OSPF and BGP
- Create a Local Data Policy
  - Create ACL
  - Create Device Access Policy
  - Configure QOS
  - Configure OSPF Route Policy

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Lab Outline Cont.

Lab 18: Application Visibility

Lab 19: Cloud On-RAMP

Lab 20: Monitoring / Troubleshooting

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