Implementing Cisco SD-WAN Solutions

Duration: 5 Days   **Course Code: ENSDWI**   **Version: 3.0**   **Delivery Method: Closed Events**

Overview:

Learn how to design, deploy, configure and manage your Cisco® Software-Defined WAN (SD-WAN) solution in a large-scale live network, including how to migrate from legacy WAN to SD-WAN. You will learn best practices for configuring routing protocols in the data center and the branch, as well as how to implement advanced control, data, and application-aware policies.
The course also covers SD-WAN deployment and migration options, placement of controllers, how to deploy WAN Edge devices, and how to configure Direct Internet Access (DIA) breakout, and how to deploy a Multi-Region Cisco SD-WAN fabric. You will also learn about the various Application Quality of Experience (AppQoE) traffic optimization capabilities. Finally, the training looks at the different Cisco SD-WAN security options available. The course looks at the different Cisco SD-WAN security options available, such as application-aware enterprise firewall, Intrusion Prevention System (IPS), URL filtering, Cisco Advanced Malware Protection (AMP), Secure Sockets Layer/Transport Layer Security (SSL/TLS) proxy, and Cisco Umbrella® Secure Internet Gateway (SIG) and Cisco TrustSec in Cisco SD-WAN.

This course is worth 32 Continuing Education (CE) credits towards recertification.

Company Events

These events can be delivered exclusively for your company at our locations or yours, specifically for your delegates and your needs. The Company Events can be tailored or standard course deliveries.

Target Audience:

Engineers involved in the design, planning, deployment, maintenance and troubleshooting of a Cisco SD-WAN solution.

Objectives:

- **After completing this course you should be able to:**

- Describe the Cisco SD-WAN solution and how modes of operation differ in traditional WAN versus SD-WAN.

- Describe options for Cisco SD-WAN cloud and on-premises deployment.

- Explain how to deploy WAN Edge devices.

- Compare the Zero-Touch Provisioning (ZTP) and traditional Plug-n-Play processes and examine technical specifics for on-premises deployment.

- Describe configuration groups and feature profiles for configuration management.

- Describe device and feature configuration templates.

- Describe options for providing scalability, high availability, and redundancy.

- Explain how dynamic routing protocols are deployed in an SD-WAN environment, on the service side and transport side.

- Describe Cisco SD-WAN policy concepts, which includes how policies are defined, attached, distributed, and applied.

- Define and implement advanced control policies, such as policies for custom topologies and service insertion.

- Describe the Multi-Region SD-WAN fabric feature.

- Define and implement advanced data policies, such as policies for traffic engineering and QoS.

- Describe the Application Quality of Experience (AppQoE) capabilities available in Cisco SD-WAN.

- Define and implement an Application-Aware Routing (AAR) policy.

- Implement Direct Internet Access (DIA) and Cisco SD-WAN Cloud OnRamp options.

- Describe Cisco SD-WAN security components and integration.

- Describe how to design pure and hybrid Cisco SD-WAN solutions, as well as how to perform a migration to Cisco SD-WAN.

- Describe the different tools and options available for managing a Cisco SD-WAN fabric.

- Describe the different tools and options available for monitoring the Cisco SD-WAN fabric.

- Describe Cisco SD-WAN support for multicast.

Prerequisites:

Attendees should meet the following prerequisites:

- Knowledge of Software-Defined Networking (SDN) concepts as applied to large-scale live network deployments
- Strong understanding of enterprise WAN design
- Strong understanding of routing protocol operation, including both interior and exterior routing protocol operation
- Familiarity with Transport Layer Security (TLS) and IP Security (IPSec)
- CCNA - Implementing and Administering Cisco Solutions
- ENCOR - Implementing and Operating Cisco Enterprise Network Core Technologies

Testing and Certification

Recommended as preparation for the following exams:

- **300-415** - ENSDWI - Implementing Cisco SD-WAN Solutions

Content:

Examine the Cisco SD WAN Architecture

- Software-Defined Networking for the WAN
- SD-WAN Components and Functions
- Underlay and Overlay Network
- SD-WAN Terminology
- Secure Control Plane
- Secure Data Plane
- SD-WAN Platforms
- IOS XE and IOS XE SD-WAN Software

Examine Cisco SD-WAN Deployment Options

- Flexible Controller Deployment Options
- SD-WAN Cloud Deployment
- SD-WAN Managed Service Provider Deployment
- SD-WAN On-Premises Deployment
- Using an Enterprise CA
- Controller Placement and Challenges

Deploying WAN Edge Devices

- Onboard WAN Edge Devices
- Deploy Cisco Catalyst 8000v IOS XE Devices
- ZTP Process Overview - Pure Play Viptela operating system
- Cisco Plug-and-Play Process Overview
- Working with NAT

Manage Device Configuration

- Configuration Groups Overview
- Configuraion Group Feature Profile Overview
- Device Configuration Template Overview
- Device Configuration Template Features

Explore Redundancy, High Availability, and Scalability

- Horizontal Solution Scale
- Cisco vManage, vSmart and vBond Redundancy
- Routed and Bridged Site Design

Enabling Service-Side and Transport-Side Routing

- Implement OSPF
- Implement BGP
- Impement EIGRP
- Implement TLOC Extensions
- Loop Prevention Mechanism

Explore SD-WAN Policy Configuration Basics

- Policy Configuraton Overview
- Policy Attachment, Distribution and Operation

Define Advanced Control Policies

- Control Policy Overview
- Control Policy Application
- Using Arbitrary VPN Topology
- Using Hierarchical Topology
- VPN Membership Policies
- Multi-Region Fabric
- Implementing Traffic Engineering
- Implementing Service Insertion and Chaining
- Implementing Shared Services
- Dynamic On-Demand Tunnels

Define Advanced Data Policies

- Data Policy Overview
- Implementing Traffic Engineering
- Data Forwarding and Qos
- Implementing Qos in Cisco SD-WAN

Implement Application Quality of Experience

- Application Quality of Experience Overview
- TCP Optimization
- Data Redundancy Elimination
- Packet Duplication
- Forward Error Correction
- AppNav-XE

Implement Application-Aware Routing

- AAR Overview
- Implement AAR Policy

Examine Direct Internet Access and Cloud Deployment Options

- Implement Direct Internet Access
- Cisco SD-WAN Cloud OnRamp for SaaS
- Cisco SD-WAN Cloud onRamp for IaaS
- Cisco SD-WAN Cloud onRamp for Multicloud
- Cisco SD-WAN Cloud OnRamp for Colocation
- Cisco Enterprise NFV Infrastructure Software (NFVIS) SD-Branch

Explore Cisco SD-WAN Security

- Cisco SD-WAN Intent Based Security Use Cases
- Cisco SD-WAN Security Components
- Cisco Umbrella DNS Security and SIG Integration
- Cisco Legacy and Unified Policy
- Describe Cisco SD-WAN TrustSec

Design and Migrate to Cisco SD-WAN

- Design Considerations for Hybrid Scenarios
- Enabling Cisco SD-WAN in the Data Center
- Migrating the Branch to Pure SD-WAN
- Migrating a Branch to a Hybrid Model

Perform Cisco SD-WAN Network Management and Troubleshooting

- Managing Cisco SD-WAN
- Monitoring Cisco SD-WAN
- Troubleshooting Cisco SD-WAN
- Upgrading Cisco SD-WAN Components

Examine Cisco SD-WAN Multicast Support

- Multicast Overlay Routing
- Multicast Protocol Support
- Traffic Flow in Multicast Overlay Routing

Lab outline

- Lab 1: Deploy Cisco SD-WAN Controllers
- Lab 2: Manage Cisco SD-WAN Device Configuration
- Lab 3: Configure Cisco SD-WAN Controller Affinity
- Lab 4: Implement Service Side Routing Protocols
- Lab 5: Implement Transport Location (TLOC) Extensions
- Lab 6: Implement Control Policies
- Lab 7: Implement Data Policies
- Lab 8: Implement Application-Aware Routing
- Lab 9: Implement Branch and Regional Internet Breakouts
- Lab 10: Configure Application Firewall
- Lab 11: Migrate Branch Sites
- Lab 12: Perform Cisco SD-WAN Software Upgrade

Further Information:

For More information, or to book your course, please call us on 00 966 92000 9278

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