

Implementing Cisco SD-WAN Solutions

Duration: 5 Days **Course Code: ENSDWI** **Version: 2.0**

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. 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).

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

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
- Review the Zero-Touch Provisioning (ZTP) process and examine technical specifics for on-premises deployment
- Review the device configuration template and describe new features of device 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
- Identify and implement advanced data policies, such as policies for traffic engineering and QoS
- 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 Cisco SD-WAN Day-2 operations, such as monitoring, reporting, logging, troubleshooting, and upgrading
- 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)

Testing and Certification

Recommended as preparation for the following exams:

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

Content:

Examining the Cisco SD-WAN Architecture

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

Examining Cisco SD-WAN Deployment Options

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

Deploying WAN Edge Devices

- Onboard WAN Edge Devices
- Deploy vEdge Cloud Devices
- Deploy Cisco CSR 1000v Devices
- Working with NAT

Onboarding WAN Edge Devices with ZTP and PnP

- ZTP Process Overview - Viptela OS vEdge
- On Premises Zero-Touch Provisioning
- Cisco Plug-and-Play Process Overview

Using Device Configuration Templates

- Device Configuration Template Overview
- Device Configuration Template Features

Exploring 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

- Underlay and Overlay Network
- Implement OSPF
- Implement BGP
- Implement EIGRP
- Implement TLOC Extensions
- Loop Prevention Mechanism

Understanding Cisco SD-WAN Policy Configuration Basics

- Policy Configuration Overview
- Policy Attachment, Distribution and Operation

Defining Advanced Control Policies

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

Defining Advanced Data Policies

- Data Policy Overview
- Implement Traffic Engineering
- Data Forwarding and QoS
- Implement QoS in Cisco SD-WAN
- VPN Membership Policies

Implementing AAR

- AAR Overview
- Implement AAR Policy

Examining Direct Internet Access and Cloud Deployment Options

- Implement DIA
- Cisco SD-WAN Cloud OnRamp for SaaS
- Cisco SD-WAN Cloud onRamp for IaaS
- Cisco SD-WAN Cloud OnRamp for Colocation

Exploring Cisco SD-WAN Security

- Cisco SD-WAN Intent Based Security Use Cases
- Cisco SD-WAN Security Components
- Cisco Umbrella DNS Security and SIG Integration
- Implement Application Firewall Policy
- Implement Zone-Based Firewalls - CLI Example

Designing and Migrating 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

Performing Cisco SD-WAN Network Management and Troubleshooting

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

Examining Cisco SD-WAN Multicast Support

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

Lab outline

- Deploy Cisco SD-WAN Controllers
- Add a WAN Edge Router Using ZTP
- Deploy Cisco SD-WAN Device Using Configuration Templates
- Configure Cisco SD-WAN Controller Affinity
- Implement Service Side Routing Protocols
- Implement Transport Location (TLOC) Extensions
- Implement Control Policies
- Implement Data Policies
- Implement Application-Aware Routing
- Implement Branch and Regional Internet Breakouts
- Migrate Branch Sites
- Perform Cisco SD-WAN Software Upgrade

Further Information:

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

info@globalknowledge.co.uk

www.globalknowledge.com/en-gb/

Global Knowledge, Mulberry Business Park, Fishponds Road, Wokingham Berkshire RG41 2GY UK