Implementing Segment Routing on Cisco IOS XR

Duration: 4 Days **Course Code: SEGRTE201** **Version: 2.0** **Delivery Method: Company Event**

Overview:

This course covers the fundamental concepts of segment routing, how to configure and verify segment routing within an Interior Gateway Protocol (IGP), the interworking of Label Distribution Protocol (LDP) with segment routing, how to implement topology-independent loop-free alternate (TI-LFA) using segment routing, and how to instantiate and verify segment routing traffic engineering policies. Students will also learn how to implement segment routing within Border Gateway Protocol (BGP).

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:

Designed for engineers and service providers who are deploying segment routing within their network.

Objectives:

- **After completing this course you should be able to:**
- Describe the key concepts of segment routing
- Implement and verify IGP segment routing
- Migrate an existing Multiprotocol Label Switching (MPLS) LDP-based network to segment routing
- Implement and verify TI-LFA segment routing
- Instantiate segment routing policies
- Instantiate multidomain segment routing policies
- Configure and verify BGP prefix segments and SR-based services

Prerequisites:

Attendees should meet the following prerequisites:

- Cisco IOS XR platform and command-line interface (CLI) familiarity

Testing and Certification

Recommended as preparation for the following exams:

- There are no exams currently aligned to this course

Content:

Introduction to Segment Routing (SR)

- Examining Unified Fabric Routing
- Exploring Segment Routing Concepts
- Examining Segment Types
- Examining the Segment Routing Global Block (SRGB)

IGP Segment Routing Implementation and Verification

- Examining the IGP Control Plane
- Examining SRGB and IGP Interactions
- Examining Prefix and Adjacency Segment Identifiers
- Intermediate System to Intermediate System Multilevel and Open Shortest Path First (OSPF) Multi-Area
- Configuring and Verifying IS-IS SR Operation
- Configuring and Verifying OSPF SR Operation

Segment Routing and LDP Interworking

- SR and LDP Interworking Data Plane
- Mapping Server Function and Configuration
- Interworking Deployment Models

Topology Independent -Loop Free Alternate

- Examining Classic LFA
- Examining TI-LFA Fundamentals
- Implementing and Verifying TI-LFA for SR Traffic
- Implementing and Verifying TI-LFA for LDP Traffic
- TI-LFA and SR/LDP Interworking

Segment Routing Policies - Traffic Engineering (SR-TE)

- Exploring SR Policies
- Introducing the Anycast and Binding SIDs
- Enabling and Verifying SR Policies
- Instantiating SR Policies
- Instantiating SR Policies Using BGP Dynamic

Multidomain SR Policies

- Configuring and Verifying a Path Computation Element (PCE)
- Configuring and Verifying BGP Link State (BGP-LS)
- Configuring Multidomain SR Policies with a PCE
- Configuring Multidomain SR Policies with On-Demand Next Hop (ODN)

Segment Routing - Based Services

- Examining the BGP Prefix - SID Operation
- Configuring and Verifying the BGP Prefix SID
- Examining Egress Peer Engineering
- Examining the BGP Prefix-SID Operation
- SR Flexible Algorithm and Performance Measurement (PM) Delay
- SR-Enabled VPNs

Labs:

- Lab 1: Configuring and Verifying IGP Segment Routing
- Lab 2: Migrating from LDP to Segment Routing
- Lab 3: Configuring and Verifying TI-LFA Fast Reroute
- Lab 4: Configuring and Verifying SR Policies
- Lab 5: Configuring and Verifying Multidomain SR-TE
- Lab 6: Configuring and Verifying BGP Segment Routing

Further Information:

For More information, or to book your course, please call us on 0800/84.009

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