

دوره SPROUTE سیسکو | Deploying Cisco Service Provider Network Routing

شرح مختصر

یادگیری الزامات رایج مربوط به مسیریابی و پروتکل های مورد استفاده در شبکه های ارائه کننده خدمات (SP)

مروری بر دوره

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شما در طی این دوره می آموزید که چگونه با استفاده از تکنیک های پیشرفته مربوط به routing، می توان امکان مقیاس پذیری (scalability) را در Cisco router های متصل به LAN ها و WAN ها پیاده سازی نمود. همچنین با شرکت در این دوره، شما آمادگی لازم جهت شرکت در آزمون SPROUTE ۸۸۳-۶۴۲، که جزو ملزومات اخذ مدرک CCNP Service Provider می باشد را کسب خواهید نمود.

آنچه در این دوره خواهید آموخت

آنچه خواهید آموخت

- پروتکل های Service provider routing
- پیاده سازی OSPF در شبکه service provider
- پیاده سازی integrated IS-IS در شبکه service provider
- پیاده سازی BGP در شبکه service provider
- Routing protocol pool ها و route manipulation
- IOS XR و IOS XE، IOS های آپدیت شده با آخرین نسخه Output

سرفصل ها (حضور)

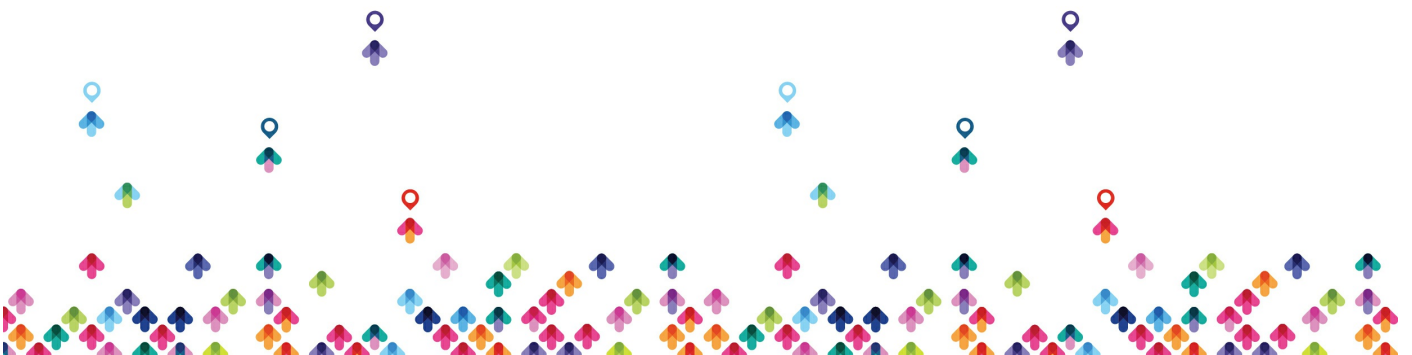


۱. Service Provider Routing

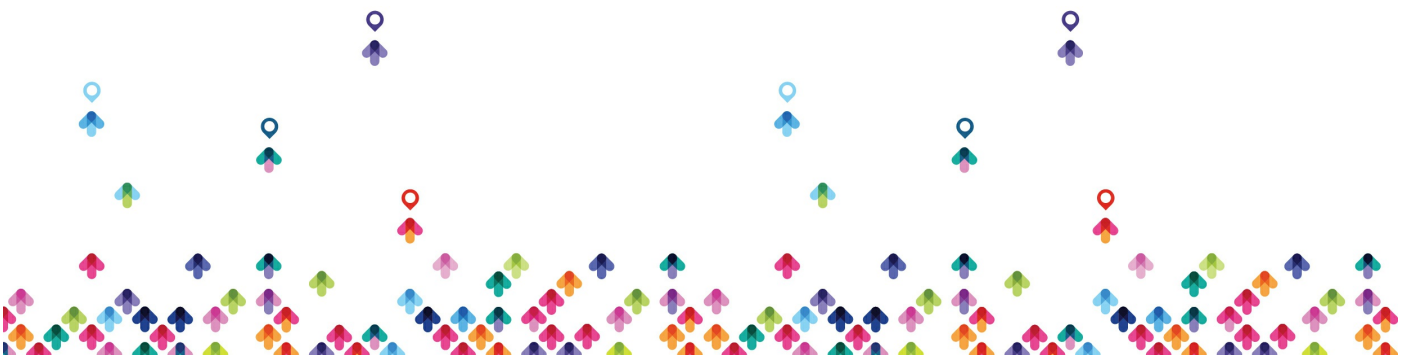
- Understanding Service Provider Routing Protocols
 - Cisco IP NGN Architecture
 - Overview of Routing Protocols
 - Interior Gateway Protocols
 - Overview of OSPF
 - Overview of IS-IS
 - BGP Overview

۲. Implement OSPF in the Service Provider Network

- Introducing OSPF Routing
 - OSPF in the Cisco IP NGN Architecture
 - OSPF and OSPFv3 Key Characteristics
 - Structure of OSPF Network
 - Hierarchical Structure of OSPF in a Service Provider Environment
 - OSPF LSA Types
 - OSPF Operation
 - OSPF Best Path Calculation
 - OSPF Metric
 - Building the LSDB
 - LSA Operation
 - OSPF Link-State Database
 - OSPF Intra-Area Routing



- OSPF Inter-Area Routing
- OSPF External Routes
- OSPF Virtual Link
- Interpreting OSPF Routes in the Routing Table
- Calculating Costs for E₁ and E₂ OSPF Routes
- OSPF LSDB Overload Protection
- Understanding OSPF Operation
 - OSPF Functions
 - OSPF Packet Format
 - OSPF Packet Types
 - OSPF Neighbor States
 - OSPF Link-State Flooding
 - Debug OSPF Packets
 - OSPF Network Types
 - IPv6 Support for OSPF Modes
- Implementing OSPF Routing
 - Implement OSPF
 - Verifying Basic OSPF
 - OSPF Virtual Links
 - Cisco Nonstop Forwarding
 - Cisco Nonstop Routing
 - Cisco NSF and NSR for OSPF
 - Graceful Restart for OSPFv3
 - Bidirectional Forwarding Detection
 - OSPF Authentication Overview
- Implementing OSPF Special Area Types



- OSPF Summarization
 - OSPF Interarea Route Summarization
 - OSPF External Route Summarization
- Default Routes in OSPF
- OSPF Area Types
- OSPF Router and LSA Types
- OSPF Stub Area and Totally Stubby Area
- OSPF Not-So-Stubby Area and Totally Not-So-Stubby Area

۳. Implement Integrated IS-IS in the Service Provider Network

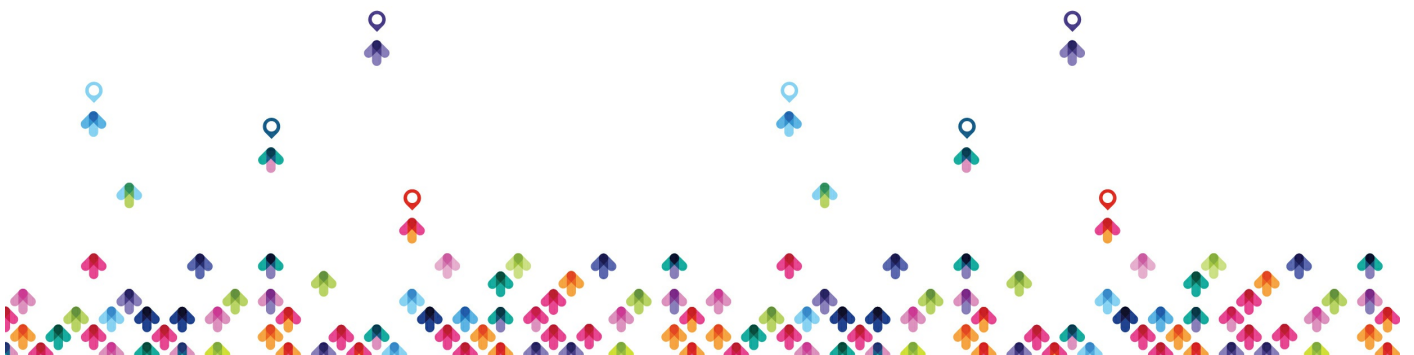
- Introducing IS-IS Routing
 - IS-IS in the Cisco IP NGN
 - Integrated IS-IS Routing
 - Integrated IS-IS Design Principles
 - Similarities Between IS-IS and OSPF
 - IS-IS Addressing
 - IS-IS Router Types
 - IS-IS Routing Logic
 - Asymmetric IS-IS Routing
 - Symmetric IS-IS Routing
 - IS-IS Packets
 - Integrated IS-IS for IPv6
 - IS-IS Network Types
 - IS-IS Operations
 - IS-IS LSP Flooding



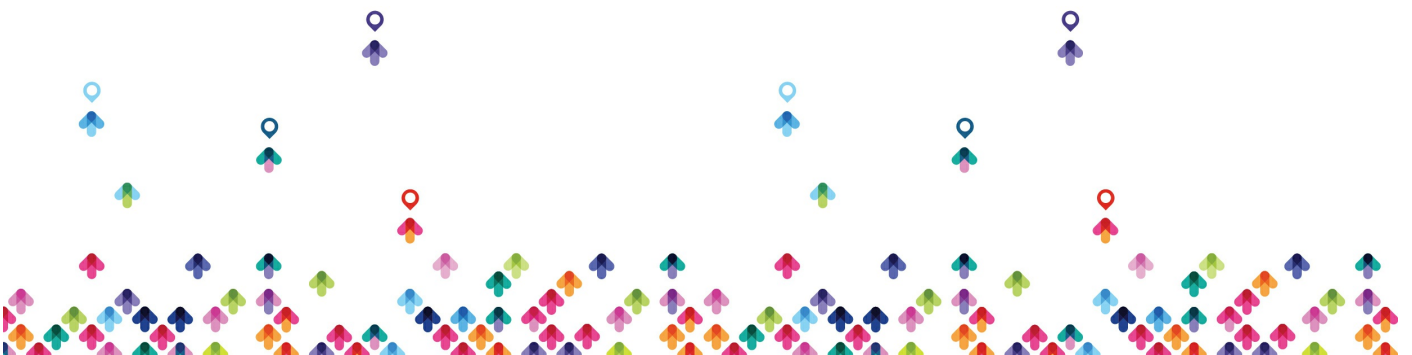
- IS-IS LSDB Synchronization
- IS-IS Adjacencies
- IS-IS Single Topology Restrictions
- Multitopology IS-IS for IPv6
- Implementing Integrated IS-IS Routing
 - Implement OSI Area Routing
 - Implement IS-IS Routing
 - Optimizing the IS-IS Processes
 - Bidirectional Forwarding Detection for IS-IS
 - Nonstop Forwarding for IS-IS
 - IP Route Summarization Configurations in IS-IS Networks
 - Verification of IS-IS
 - Troubleshooting IS-IS Commands
 - Configuring IS-IS to Support IPv6

۴. Implement BGP in the Service Provider Network

- Enterprise Connectivity to Service Providers
 - Enterprise Connectivity Requirements
 - Routing Method Selection
 - Connection Options
 - Single-Homed Enterprises
 - Dual-Homed Enterprises
 - Multihomed Enterprises
 - Dual-Multihomed Enterprises
- Introducing BGP Routing



- BGP Terminology
- Autonomous System and BGP
- BGP Routing Between Autonomous Systems
- BGP Path Vector Functionality
- BGP Routing Policies
- BGP Features
- BGP Databases
- BGP Message Types
- Multiprotocol Extensions for BGP
- MPLS VPN Overview
- Implementing Basic BGP Routing
 - Planning for BGP
 - Configure Basic EBGP
 - Advertising BGP Networks
 - Configure Basic IBGP
 - Full-Mesh IBGP
 - BGP Support for IPv6
 - Shutting Down a BGP Neighbor
 - BGP Next-Hop Behavior
 - BGP Next Hop Self
 - Cisco IOS XR BGP Configuration Templates
 - BGP Neighbor States
 - BGP Neighbor Authentication
 - Clearing the BGP Session
 - Monitoring BGP Routes
 - BGP Path Selection



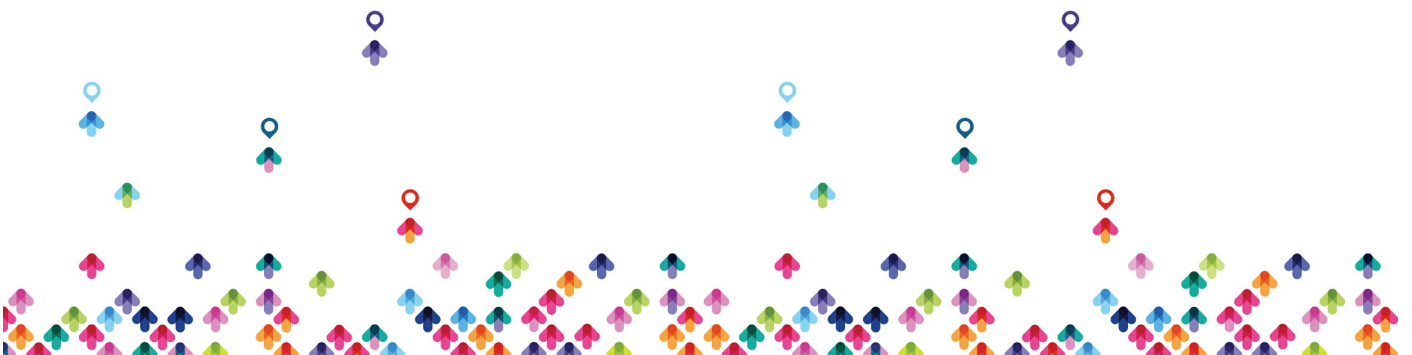
- BGP Route Selection Decision Process
- BGP Weight Attribute
- BGP Local Preference Attribute
- BGP AS Path Attribute
- BGP Multi-Exit Discriminator Attribute

۵. Routing Protocol Tools and Route Manipulation

- Introducing Routing Protocol Tools
 - Routing Protocol Tools Overview
 - Example: OSPF Filtering
 - Example: BGP Filtering
 - Route Filtering Tools
 - Prefix Lists Overview
 - Prefix List Syntax in Cisco IOS or IOS XE Software
 - AS Path-Based Filtering
 - AS Path Access List Syntax in Cisco IOS or IOS XE Software
 - Regular Expressions, Special Characters
 - Commonly Used Regular Expressions
 - AS Path Access List Examples
- Introducing Route Maps and Routing Policy Language
 - Route Maps Overview
 - Route Map Processing
 - Route Maps Syntax
 - Routing Policy Language
 - RPL Conditions



- RPL Operators
- RPL Boolean Operators
- RPL Nesting
- RPL Setting Attributes and Parameters
- RPL Setting BGP Attributes and Parameters
- RPL Setting OSPF and IS-IS Parameters
- RPL Parameterization
- Applying Routing Policies
- Maintaining Routing Policies
- Value Sets
- AS Path Sets
- Standard Community Sets
- Prefix Sets
- Monitoring Routing Policies
- Testing Routing Policies
- Translating Route Maps to Routing Policies
- Implementing Route Redistribution
 - The Need for Redistribution
 - Route Redistribution
 - Using Seed Metrics in Route Redistribution
 - Default Seed Metrics in Route Redistribution
 - One-Point Route Redistribution
 - Multipoint Route Redistribution
 - Route Redistribution Techniques
 - Redistribution Implementation Considerations
 - Implement Redistribution



- Redistribution into OSPF
- Redistribution into IS-IS
- Redistribution into BGP
- Administrative Distance
 - Modifying OSPF Administrative Distance
 - Modifying IS-IS and BGP Administrative Distance
- Redistribution to Prevent Routing Loops
- Influencing BGP Route Selection
 - BGP Weight
 - Configuring Per-Neighbor Weights
 - Changing Weights with RPLs or Route Maps
 - BGP Weight Attachment Points
 - BGP Local Preference
 - Changing Local Preference
 - Monitoring Local Preference
 - AS Path Prepending
 - AS Path Prepending Design Considerations
 - AS Path Filtering Concerns: AS Path Prepending
 - BGP Multi-Exit Discriminators
 - BGP Communities
 - Steps for Designing a BGP solution around BGP communities
 - BGP Named Community Lists
 - BGP Support for Sequenced Entries in Extended Community Lists
 - Matching BGP Communities
 - Monitoring BGP Communities



مخاطبان دوره

مخاطبان دوره

- Admin های شبکه، مهندسين، و مدیرانی که علاقه‌مند به راه‌اندازی IP routing در محیط‌های مربوط به service provider هستند
- مهندسين سیستم‌ها
- طراحان شبکه و مدیران پروژه
- کسانی قصد شرکت در آزمون اخذ مدرک CCNP Service Provider را دارند

پیش نیازها

پیش نیازها

- آشنایی با Cisco IOS/IOS XE و انجام پیکربندی‌های نرم‌افزاری مربوط به Cisco IOS XR در سطح متوسط
- آشنایی با مبانی مربوط به کامپیوتر
- آشنایی با
- مهارت‌های اولیه کار با اینترنت
- دوره [SPNGN1 سسکو](#)

[Building Cisco Service Provider Next-Generation Networks, Part 1 v1.2](#)

- دوره [SPNGN2 سسکو](#)

[Building Cisco Service Provider Next-Generation Networks, Part 2 v1.2](#)

دوره های مرتبط

دوره های مرتبط

دوره [SPADVROUTE سسکو](#) | [Deploying](#)

[Cisco Service Provider Advanced Network Routing v1.2](#)



دوره SPCORE سیسکو |

Implementing Cisco Service Provider Next-Generation Core Network Services v۱.۲

دوره SPEDGE سیسکو |

Implementing Cisco Service Provider Next-Generation Edge Network Services

۷۱.۲

