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Learning Style: Virtual Classroom

Technology: Cisco

Difficulty: Intermediate

Course Duration: 5 Days

Configuring BGP on Cisco Routers v4.0 (BGP)



About this course:

Configuring BGP on Cisco Routers (BGP) v4.0 is a 5-day Cisco BGP training program that is designed to give you an in-depth knowledge of BGP, the routing protocol that is one of the underlying foundations of the Internet. You will explore the theory of BGP, configuration of BGP on Cisco IOS routers, and detailed troubleshooting information.

Our labs provide you with the skills needed to configure and troubleshoot BGP networks in both enterprise and service provider environments. You'll also learn BGP network design issues and usage rules for various features as well as how to design and implement efficient, optimal, and trouble-free BGP networks. Learn more about configuring BGP in our Cisco BGP course by viewing additional course details and objectives below.

Course Objective:

Upon completing this course, the learner will be able to meet these overall objectives:

- Implement the correct BGP configuration to allow your network to act as an ISP
- Configure BGP with multiple BGP connections to other autonomous systems
- Configure a provider network to behave as a transit autonomous system (AS)
- Configure, monitor, and troubleshoot basic BGP to enable inter-domain routing in a network scenario with multiple domains
- Use BGP policy controls to influence the route selection process with minimal impact on BGP route processing in a network scenario where you must support connections to multiple ISPs
- Configure BGP to connect the customer network to the Internet when multiple connections must be implemented
- Enable route reflection and confederations as possible solutions to BGP scaling issues
- Optimize the scalability of the BGP routing protocol in a typical network

Audience:

The primary audience for this course is as follows:

- Internet service providers
- Networking professionals who need to connect to ISPs
- CCIP and CCIE certification candidates
- Individuals who need to understand how to configure Cisco routers for the BGP protocol

Prerequisite:

The knowledge and skills the learner should have before attennding this course are as follows:

- ROUTE - Implementing Cisco IP Routing v2.0

Course Outline:

Module 1: BGP Overview

- Session Establishment
- Path Attributes
- Route Processing
- Basic Configuration
- Monitoring and Troubleshooting

Module 2: BGP Transit Autonomous Systems

- Working with a Transit AS
- Interacting with IBGP and EBGP in a Transit AS
- Forwarding Packets in a Transit AS
- Configuring a Transit AS
- Monitoring and Troubleshooting IBGP in a Transit AS

Module 3: Route Selection Using Policy Controls

- Multihomed BGP Networks
- Employing AS Path Filters
- Filtering with Prefix Lists
- Outbound Route Filtering
- Applying Route Maps as BGP Filters
- Implementing Changes in BGP Policy

Module 4: Route Selection Using Attributes

- BGP Route Selection with Weights
- BGP Local Preference
- AS-Path Prepending
- BGP Multi-Exit Discriminator (MED)
- Addressing BGP Communities

Module 5: Customer-to-Provider Connectivity with BGP

- Customer-to-Provider Connectivity Requirements
- Implementing Customer Connectivity Using Static Routes
- Connecting a Multihomed Customer to Single or Multiple Service Providers

Module 6: Scaling Service Provider Networks

- Scaling IGP and BGP in Service Provider Networks
- Designing Networks and Route Reflectors
- Configuring and Monitoring Route Reflectors
- Configuring and Monitoring Confederations

Module 7: Optimizing BGP Scalability

- Improving BGP Convergence
- Limiting the Number of Prefixes Received from a BGP Neighbor
- Implementing BGP Peer Groups
- BGP Route Dampening

Lab Outline

- Lab 1: Configuring basic BGP
    - Create BGP peerings
    - Advertise networks into BGP
    - Redistribute your IGP into BGP
    - Examine the effects of BGP auto-summarization
    - Summarize routes to your neighbor
    - Implement BGP TTL Security
    - Implement BGP Authentication
- Lab 2: Configuring IBGP Peerings
    - Configure an IBGP peering with another edge router
    - Peering with loopback interfaces
    - Examine effect of BGP synchronization
    - Discover BGP next-hop behavior
    - Examine the effects of multihoming on path selection
- Lab 3: Using AS-Path Filters and Regular Expressions
    - Filter updates to external routers
    - Manipulate path selection using AS-path filters and regular expressions
- Lab 4: Using Prefix Lists
    - Filter advertised AS routes using prefix lists
    - Implement Outbound Route Filtering
- Lab 5: Configure Route Maps for BGP Filtering
    - Configure a route map as a BGP filter
- Lab 6: Configuring the Weight Attribute
    - Configure a second BGP peering for each router
    - Set a weight value for routes received from each EBGP neighbor
    - Monitor the resulting path choice
- Lab 7: Configuring the Local Preference Attribute
    - Use the Local Preference attribute to control BGP path selection
- Lab 8: AS-Path Prepending
    - Configure AS-Path Prepending to make one path into your AS look more attractive than the other
- Lab 9: Configuring the Multi-Exit Discriminator (MED) Attribute
    - Use the MED attribute to influence the BGP path selection by routers in neighboring systems
- Lab 10: Using the Community Attribute
    - Configure the community attribute in setting local preference BGP policies
- Lab 11: Using Route Reflectors
    - Configure a hierarchical route reflector structure
    - Examine the effects of route reflectors on routing updates
- Lab 12: Monitoring and Tuning BGP Resource Use
    - Examine the effects of BGP session establishment and route updates on router resources
    - Examine how timers speed BGP convergence
    - Set a maximum prefix value
- Lab 13: Using Peer Groups
    - Place neighboring BGP routers into peer groups

    - Apply policy configuration to peer groups
- Lab 14: Using Route Dampening
    - Configure and apply route dampening to external peers
    - Monitor the results when that peer's routes flap
- Lab 15: Implement BGP for IPv6 (Optional)
    - Configure BGP to support IPv6

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