Configuring BGP on Cisco Routers (BGP) v4.0

Duration 5 Days

COURSE CONTENT

The Configuring BGP on Cisco Routers (BGP) v4.0 course provides you with in-depth knowledge of BGP, the routing protocol that is one of the underlying foundations of the Internet and new-world technologies such as Multiprotocol Label Switching (MPLS). This curriculum covers the theory of BGP, configuration of BGP on Cisco IOS routers, detailed troubleshooting information and hands-on exercises that provide you with the skills needed to configure and troubleshoot BGP networks in customer environments. Different service solutions in the curriculum cover BGP network design issues and usage rules for various BGP features, preparing you to design and implement efficient, optimal, and trouble-free BGP networks.

COURSE OBJECTIVES

- Configure, monitor and troubleshoot basic BGP to enable interdomain routing, given a network scenario with multiple domains
- Use BGP policy controls to influence the route selection process with minimal impact on BGP route processing, given a network scenario where connections to multiple ISPs must be supported
- Use BGP attributes to influence the route selection process, given a network scenario where multiple connections must be supported
- Implement the correct BGP configuration to successfully connect the customer's network to the Internet, given customer connectivity requirements
- Enable the provider network to behave as a transit autonomous system, given a typical service provider network with multiple BGP connections to other autonomous systems
- Identify common BGP scaling issues and enable route reflection and confederations as possible solutions to these issues, given a typical service provider network
- Use available BGP tools and features to optimize the scalability of the BGP routing protocol, given a typical BGP network

WHO SHOULD ATTEND

- Network Administrators
- Network Engineers
- Network Managers
- Systems Engineers involved in implementation of BGP

PREREQUISITES

- Interconnecting Cisco Network Devices Part 1 (ICND1)
- Interconnecting Cisco Network Devices Part 2 (ICND2)
- Implementing Cisco IP Routing v2.0 (ROUTE)

COURSE OUTLINE

Module 1: BGP Overview
- Introducing BGP
- Understanding BGP path attributes
- Establishing BGP sessions
- Processing BGP routes
- Configuring basic BGP
- Monitoring and Troubleshooting BGP

Module 2: BGP Transit Autonomous Systems
- Working with Transit AS
- Interacting with IBGP and EBGP in Transit AS
- Forwarding Packets in Transit AS
- Monitoring and Troubleshooting IBGP in Transit AS

Module 3: Route Selection Using Policy Controls
- Using Mulithomed BGP networks
- Employing AS Path Filters
- Filtering with Prefix Lists
- Using Outbound Route Filtering
- Implementing Changes in BGP policy

Module 4: Route Selection Using Attributes
- Influencing BGP Route Selection with Weights
- Setting BGP Local Preferences
- Using AS Path Prepending
- Understanding BGP Multi-Exit Discriminators
- Addressing BGP Communities

Module 5: Customer-to-Provider Connectivity with BGP
- Understanding Customer-to-Provider Connectivity Requirements
- Implementing Customer Connectivity Using Static Routing
- Connecting a Customer to a Single Service Provider
- Connecting a Multihomed Customer to Multiple Service Providers

Module 6: Scaling Service Provider Networks
- Scaling IGP and BGP in Service Provider Networks
- Introducing and Designing Route Reflectors
- Configuring and Monitoring Route Reflectors

Module 7: Optimizing BGP Scalability
- Improving BGP Convergence
- Limiting the number of prefixes received from a BGP neighbor
- Implementing BGP Peer Groups
- Using BGP route dampening

Labs
- Configure a Basic BGP network
- Announcing networks in BGP
- Implement BGP TTL Security Check
- BGP Route Propagation
- IBGP Full Mesh
- BGP Administrative Distance
- Configure a Transit AS
- Configure a Non-Transit AS
- Configure BGP using BGP Filtering
- Configuring Per-Neighbor Weights
- Configure and Monitor Local Presence
- Configure AS Path Prepending
- Configure MED
- Configure local Preference Using the Communities
- Configure BGP Route Selection Using BGP Attributes
- Configure BGP Route Reflectors
- Configure BGP Route Limiting
- Configure BGP Peer Groups
- Configure BGP Route Dampening

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