

# Cisco Networks Configuring BGP on Cisco Routers (BGP)

Course:ET923

## Course Description

In this course, you will gain an in-depth knowledge of BGP, the routing protocol that is one of the underlying foundations of the Internet. Explore the theory of BGP, advanced configuration of BGP on Cisco IOS routers, and detailed troubleshooting information. Our enhanced hands-on labs provide you with the skills needed to configure and troubleshoot BGP networks in both enterprise and service provider environments. Learn BGP network design issues and usage rules for various BGP features, and learn to design and implement efficient, optimal, and trouble-free BGP networks

## Who should attend?

Internet Service Providers, networking professionals who need to connect to ISPs, CCIP and CCIE certification candidates, and other individuals who need to understand how to configure Cisco routers for the BGP protocol.

## Pre-requisites

- Cisco Certified Network Associate (CCNA) certification
- Completion of Building Scalable Cisco Internetworks (BSCI) or equivalent knowledge

## Course Objectives

- Use BGP policy controls
- Use BGP attributes to influence the route selection process
- 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

## Lab Equipments

### Class Room Backbone Router

Cisco 7200 Router

### Student Router

Cisco 3640 Router

Cisco 3620 Router

Cisco 2514 Router

## Course Outline

### Day 1

1. BGP Overview
  - Introduction to BGP
  - BGP Session Establishment
  - BGP Path Attributes
  - BGP Route Processing
  - Basic BGP Configuration
  - Monitoring and Troubleshooting BGP

### Hand-On Labs

- Network Setup*
- 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

### Hand-On Labs

- Configuring EBGP Peerings*
- Configuring IBGP Peerings*

### Day 2

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

### Hand-On Labs

- Using AS-Path Filters and Regular Expressions*
- Using Prefix Lists*
- Soft Reconfiguration and Route Refresh*

### Day 3

4. Route Selection Using Attributes
  - Influencing BGP Route Selection with Weights
  - Setting BGP Local Preference
  - Using AS-Path Prepending
  - Understanding BGP Multi-Exit Discriminator (MED)
  - Addressing BGP Communities

### Hand-On Labs

- Configuring the Weight Attribute*
- Configuring the Local Preference Attribute*
- AS-Path Prepending*
- Configuring the Multi-Exit Discriminator (MED) Attribute*
- Using the Community Attribute*

### Day 4

5. Customer-to-Provider Connectivity with BGP
  - Understanding Customer-to-Provider Connectivity Requirements

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

### Hand-On Labs

### Day 5

6. Scaling Service Provider Networks
  - Scaling IGP and BGP in Service Provider Networks
  - Introduction to Route Reflectors
  - Designing Networks and Route Reflectors
  - Configuring and Monitoring Route Reflectors
  - Introducing Confederations
  - Configuring and Monitoring Confederations

### Hand-On Labs

- Becoming a Service Provider*
- Using Route Reflectors*
- Using Confederations*

### Day 6

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

### Hand-On Labs

- Monitoring and Tuning BGP Resource Use*
- Using Peer Groups*
- Using Route Dampening*

### Day 7

- Conclusion
- Exam Preparation Guide

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