

Advanced Services' Building Core Networks with OSPF, IS-IS, BGP, and MPLS Bootcamp (BCN) Version 6.1



Building Core Networks with OSPF, IS-IS, BGP, and MPLS Bootcamp (BCN) is a powerful hands-on course that provides you with the required knowledge and skills to design, deploy, operate, and maintain an Internet service provider (ISP) backbone network. You will learn the primary principles of the routing protocols that are used in very large networks. Hands-on labs reinforce the lecture materials to make sure that you have the working skills to affect the networks you support.

BCN is offered in a traditional classroom or as an interactive online training delivered over Cisco® WebEx®. Both versions are led by the same knowledgeable instructors. The course materials are the same (although minor changes are made to accommodate the online environment), and both versions have the same hands-on labs. BCN Online offers the same learning experience as the traditional version with the added benefit of remote access.

Duration

- Instructor-led offering: Five days, eight hours a day
- Virtual classroom offering: Eight days, four hours a day

The virtual classroom offering allows you to attend the live instruction, along with getting access to our lab equipment, without leaving your office. Go to www.cisco.com/go/ase for more information about the virtual classroom delivery format.

Target Audience

This course is intended for network professionals, including designers, implementers, and support staff involved with design and deployment of large-scale networks for large enterprises or high-end ISP networks that use scalable technologies such as Intermediate System-to-Intermediate System (IS-IS), Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), or Multiprotocol Label Switching (MPLS).

Course Objectives

Upon completion of this course, you should be able to:

- Identify the critical factors for availability, scalability, and manageability
- Implement an Interior Gateway Protocol (IGP, either OSPF or IS-IS) into a large-scale hierarchical network using best current practices for scalability
- Implement BGP into a large-scale hierarchical network using best practices for scalability
- Control routing policy by influencing the BGP path selection process using route maps, prefix lists, and community strings
- Implement multihoming strategies using multiexit discriminators (MEDs) and local preference
- Implement and verify MPLS functionality in a large-scale network
- Implement and verify MPLS VPN connectivity in intra-autonomous-system environments
- Implement and verify MPLS traffic engineering practices
- Implement Layer 2 VPNs using Any Transport over MPLS (AToM)

Course Prerequisites

The following are the prerequisites for this course:

- Experience using the Cisco IOS® Software command-line interface (CLI)
- Proficiency in routing fundamentals and IP addressing
- CCNA® or the equivalent networking knowledge and experience

To locate Cisco courses that cover the listed prerequisites, go to the Cisco Training and Events webpage at www.cisco.com/web/learning/index.html.

Course Outline

The course outline is as follows:

- Course Introduction
- Get Started with Core Networking
- Implement Link State Protocols (OSPF or IS-IS)
- Implement BGP
- BGP Scaling Techniques
- Implement BGP Policy Control
- Implement and Troubleshoot MPLS
- Implement Intranet and Extranet MPLS VPNs
- Implement MPLS Traffic Engineering
- Implement Layer 2 VPNs with AToM

Lab Outline

The lab outline is as follows:

- Connect to the Lab Equipment

The purpose of this lab is to get you into the lab network so you can access reference

materials used throughout the course and gain device access for later lab exercises.

- **Configure the Basics**

During the lab exercise you will configure the basic information needed to operate and manage the network equipment. You will import a configuration that installs a basic template, then configure many other elements manually.

- **Configure Interfaces and IP Connectivity**

The purpose of this lab exercise is to construct the lab and introduce you to the basic principles of constructing and configuring an IP network. In this lab you will configure the interfaces and establish IP connectivity.

- **Configure and Verify OSPF or IS-IS in the Core Network**

The purpose of this lab is to continue building the lab by configuring infrastructure routing using either OSPF or IS-IS. Using the basic router configuration from the first exercise, you will configure basic IGP routing.

- **Configure and Verify Basic Interior Border Gateway Protocol (IBGP)**

The purpose of this lab exercise is to introduce you to BGP and full mesh IBGP routing within the lab network.

- **Configure and Verify Exterior Border Gateway Protocol (EBGP)**

During this lab exercise you will establish EBGP peering and verify route advertisement and reachability across the network.

- **Scale BGP with Peer Templates and Route Reflectors**

The purpose of this lab exercise is to configure route reflectors and observe the effect. You will also compare and contrast update groups to peer groups.

- **Configure BGP Route Filtering**

The purpose of this lab exercise is to introduce you to the types of routing policy available in BGP. This lab is designed to practice filtering BGP updates using various filtering methods. The methods focus on prefix lists, community filters, and AS-path access lists.

- **Configure Multihoming Policy**

This lab exercise demonstrates how an autonomous system can use local preference to control outbound traffic and use MEDs or metrics to control inbound traffic when multihoming or having connectivity to more than one other autonomous system. The goal of the exercise is to demonstrate how to achieve a particular traffic flow using different methods.

- **Configure and Verify MPLS**

This lab exercise demonstrates how to implement and verify MPLS functionality into an existing network.

- **Configure Intranet MPLS VPNs**

During this lab exercise you will learn how to implement MPLS VPNs into an existing network.

- **Configure Extranet MPLS VPNs**

In this lab exercise you will simulate sharing VRF information with multiple sites. This could be a management LAN or a partner company.

- **Configure and Verify MPLS Traffic Engineering (MPLS-TE)**

In this lab exercise you will learn how to implement MPLS-TE tunnels.

- **Implement, Verify, and Troubleshoot EoMPLS**

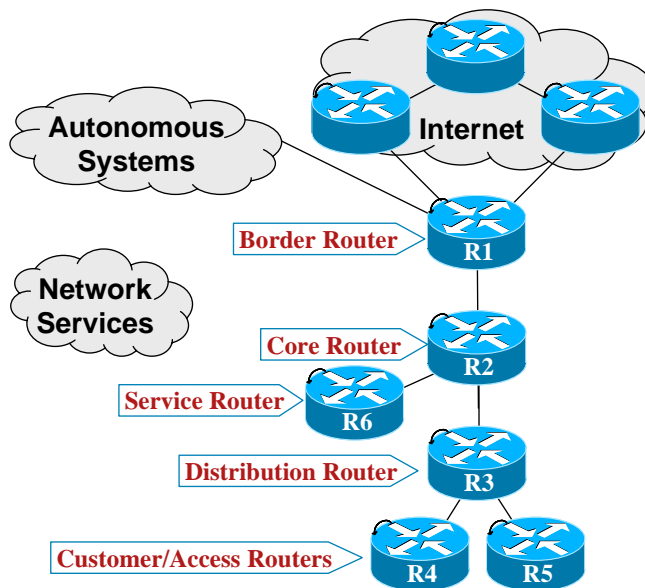
This lab exercise demonstrates how to implement and verify EoMPLS functionality. You will

implement a point-to-point emulated wire service (EWS) between customer edge routers using port mode Layer 2 transport.

Lab Topology

Figure 1 shows the lab topology that is used in this course.

Figure 1. Lab Topology of BCN



- The training lab includes more than 55 network elements.
- Pictured is the smallest grouping of lab equipment for two students (a training pod).
- Made up of six routers plus supporting network infrastructure, this grouping represents an ISP's point of presence (PoP) and makes up one-half of a BGP autonomous system.
- Each PoP is multihomed to other autonomous systems in the training network.

Registration Information

For more information about schedules and registration for this course, contact aeskt_registration@cisco.com.

For More Information

For more information about Advanced Services Education course offerings, including custom training options, as well as Advanced Services Curriculum Planning Services and the Advanced Services Technical Knowledge Library (TKL), refer to the Advanced Services Education website at www.cisco.com/go/ase.



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