

# Implementing Cisco Multicast (MCAST)

ID MCAST Price 3,595.— €(excl. tax) Duration 5 days

## Course Overview

The Implementing Cisco Multicast (MCAST) v2.0 course is a five-day instructor-led course covering the fundamentals of IP multicasting, which includes multicast applications, sources, receivers, group management, and IP multicast routing protocols (such as Protocol Independent Multicast, PIM) used within a single administrative domain (intradomain). The issues of switched LAN environments and reliable IP multicasting are covered as well. The course provides technical solutions for simple deployments of IP multicast within a provider or customer network. The curriculum provides the configuration and troubleshooting guidelines for implementation of IP multicast on Cisco routers. The labs provide students with the hands-on experience needed to successfully deploy IP multicast.

## Who should attend

The primary audience for this course is as follows:

- Network professionals, including systems engineers
- Partners
- Customers

## Prerequisites

We recommend that you have the following knowledge and skills before taking this course:

- Work experience and configuration skills for Cisco routers and LAN switches

## Course Objectives

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

- Introduce IP multicast services, to evaluate the functional model of IP multicasting and the technologies present in IP multicasting, acknowledge IP multicast benefits and

associated caveats, and determine various types of multicast applications in order to understand the IP multicast conceptual model and its implementation prerequisites

- Identify IP multicast issues on a data link layer, explain the methods of mapping network layer multicast addresses to data link layer addresses, and list the mechanisms for constraining multicast streams in a LAN environment
- Introduce Protocol Independent Multicast sparse mode (PIM-SM) as the most current scalable IP multicast routing protocol to learn the principles of protocol operation and details, become familiar with the determinism built into sparse mode multicast protocols, and configure and deploy PIM-SM in complex IP multicast network deployments
- Review RP distribution solutions, recognize the drawbacks of manual RP configuration, become familiar with the Auto-Rendezvous Point (Auto-RP) and the bootstrap router (BSR) mechanisms, and introduce the concept of Anycast RP that works in combination with the Multicast Source Discovery Protocol (MSDP)
- Recognize the drawbacks of the PIM-SM and introduce two extensions to provide possible solutions; learn about mechanics of the Source Specific Multicast (SSM) and bidirectional mode of PIM-SM in order to configure and deploy SSM and bidirectional mode of the PIM-SM in a large service provider network
- Explain basic concepts of Multiprotocol BGP (MP-BGP) and its use in the IP multicast environment, apply steps that are associated with configuring MP-BGP with Address Family Identifier (AFI) syntax to support IP multicast in the interdomain environment
- Configure and deploy MSDP in the interdomain environment
- Introduce solutions to mitigate security issues in the IP multicast network. Examine and implement suitable virtual private network (VPN) technologies, such as Generic Routing Encapsulation (GRE) with IP Security (IPsec) and Group Encrypted Transport (GET) VPN
- Describe the process of monitoring and maintaining multicast high-availability operations, introduce the PIM triggered join feature, and describe how load splitting IP multicast traffic over Equal-Cost Multipath (ECMP) works

## Detailed Course Outline

#### Module 1: IP Multicast Concepts and Technologies

- Lesson 1: Introducing IP Multicast
- Lesson 2: Understanding the Multicast Service Model
- Lesson 3: Defining Multicast Distribution Trees and Forwarding
- Lesson 4: Reviewing Multicast Protocols

#### Module 2: Multicast on the LAN

- Lesson 1: Mapping Layer 3 to Layer 2
- Lesson 2: Working with Cisco Group Management Protocol
- Lesson 3: Using IGMP Snooping

#### Module 3: PIM Sparse Mode

- Lesson 1: Introducing Protocol Independent Multicast Sparse Mode
- Lesson 2: Understanding PIM-SM Protocol Mechanics
- Lesson 3: Using PIM-SM in a Sample Situation
- Lesson 4: Configuring and Monitoring PIM-SM

#### Module 4: Rendezvous Point Engineering

- Lesson 1: Identifying RP Distribution Solutions
- Lesson 2: Implementing Auto-RP
- Lesson 3: Using PIMv2 BSR
- Lesson 4: Using Anycast RP and MSDP

#### Module 5: PIM Sparse Mode Protocol Extensions

- Lesson 1: Introducing Source Specific Multicast
- Lesson 2: Configuring and Monitoring SSM
- Lesson 3: Reviewing Bidirectional PIM
- Lesson 4: Configuring and Monitoring Bidirectional PIM

#### Module 6: Multiprotocol Extensions for BGP

- Lesson 1: Introducing MP-BGP
- Lesson 2: Configuring and Monitoring MP-BGP

#### Module 7: Interdomain IP Multicast

- Lesson 1: Examining Dynamic Interdomain IP Multicast
- Lesson 2: Explaining Multicast Source Discovery Protocol
- Lesson 3: Using MSDP SA Caching
- Lesson 4: Configuring and Monitoring MSDP

#### Module 8: IP Multicast Security

- Lesson 1: Introducing IP Multicast and Security
- Lesson 2: Securing a Multicast Network

#### Module 9: Multicast Optimization and High-Availability Features

- Lesson 1: Using Multicast Optimization and High-Availability Features

#### Module 10: Applications of Multicast

- Lesson 1: Exploring IP Multicast and Video Applications
- Lesson 2: Using IP Multicast in Mission-Critical Environments
- Lesson 3: Exploring How Enterprise IT Uses IP Multicasting Globally

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