



FIREFLY

IPv6 Fundamentals, Design, and Deployment

DURATION: 5 DAYS

COURSE CODE: IP6FD

FORMAT: LECTURE/LAB

COURSE DESCRIPTION

This five-day course aims at providing network engineers and technicians that are working in the enterprise sector with the knowledge and skills that are needed to study and configure Cisco IOS Software IPv6 features.

The course also provides an overview of IPv6 technologies, covers IPv6 design and implementation, describes IPv6 operations, addressing, routing, services, transition, and deployment of IPv6 in enterprise as well as in service provider networks, and includes case studies useful for deployment scenarios. The course also includes remote labs.

WHO SHOULD ATTEND

Network engineers and technicians that are working in the enterprise sector..

LEARNING OBJECTIVES

Describe the factors that led to the development of IPv6 and possible uses of this new IP structure

Describe the structure of the IPv6 address format, how IPv6 interacts with data link layer technologies, and how IPv6 is supported in Cisco IOS Software

Implement IPv6 services and applications

Understand the updates to IPv4 routing protocols needed to support IPv6 topologies

Understand multicast concepts and IPv6 multicast specifics

Evaluate the scenario and desired outcome and identify the best transition mechanism for the situation

Describe security issues, how security for IPv6 is different than for IPv4, and emerging practices for IPv6-enabled networks

Describe the standards bodies that define IPv6 address allocation, in addition to one of the leading IPv6 deployment issues multihoming

Describe the deployment strategies that service providers might consider when deploying IPv6

Describe case studies for enterprise, service provider, and branch networks

COURSE OUTLINE

1. Introduction to IPv6

- Lesson 1: Explaining the Rationale for IPv6
- Lesson 2: Evaluating IPv6 Features and Benefits
- Lesson 3: Understanding Market Drivers

2. IPv6 Operations

- Lesson 1: Understanding the IPv6 Addressing Architecture
- Lesson 2: Describing the IPv6 Header Format
- Lesson 3: Enabling IPv6 on Hosts
- Lesson 4: Enabling IPv6 on Cisco Routers
- Lesson 5: Using ICMPv6 and Neighbor Discovery
- Lesson 6: Troubleshooting IPv6

3. IPv6 Services

- Lesson 1: IPv6 Mobility
- Lesson 2: Describing DNS in an IPv6 Environment
- Lesson 3: Understanding DHCPv6 Operations
- Lesson 4: Understanding QoS Support in an IPv6 Environment
- Lesson 5: Using Cisco IOS Software Features

4. IPv6 Enabled Routing Protocols

- Lesson 1: Routing with RIPng
- Lesson 2: Examining OSPFv3
- Lesson 3: Examining Integrated IS-IS
- Lesson 4: Examining EIGRP for IPv6
- Lesson 5: Understanding MP-BGP
- Lesson 6: Configuring IPv6 Policy-Based Routing
- Lesson 7: Configuring FHRP for IPv6
- Lesson 8: Configuring Route Redistribution

5. IPv6 Multicast Services

- Lesson 1: Implementing Multicast in an IPv6 Network
- Lesson 2: Using IPv6 MLD

6. IPv6 Transition Mechanisms

- Lesson 1: Implementing Dual-Stack
- Lesson 2: Describing IPv6 Tunneling Mechanisms

7. IPv6 Security

- Lesson 1: Configuring IPv6 ACLs
- Lesson 2: Using IPsec, IKE, and VPNs
- Lesson 3: Discussing Security Issues in an IPv6 Transition Environment
- Lesson 4: Understanding IPv6 Security Practices
- Lesson 5: Configuring Cisco IOS Firewall for IPv6

8. Deploying IPv6

- Lesson 1: Examining IPv6 Address Allocation
- Lesson 2: Understanding the IPv6 Multihoming Issue
- Lesson 3: Identifying IPv6 Enterprise Deployment Strategies

9. IPv6 and Service Providers

- Lesson 1: Identifying IPv6 Service Provider Deployment
- Lesson 2: Understanding Support for IPv6 in MPLS
- Lesson 3: Understanding 6VPE
- Lesson 4: Understanding IPv6 Broadband Access Services

10. IPv6 Case Studies

- Lesson 1: Planning and Implementing IPv6 in Enterprise Networks
- Lesson 2: Planning and Implementing IPv6 in Service Provider Networks
- Lesson 3: Planning and Implementing IPv6 in Branch Networks

DISCOVERY LABS

- [2-1: Enabling IPv6 on Hosts](#)
- [2-2: Using Neighbor Discovery](#)
- [3-1: Using Prefix Delegation](#)
- [4-1: Routing with OSPFv3](#)
- [4-2: Routing with IS-IS](#)
- [4-3: Routing with EIGRP](#)
- [4-4: Routing with BGP and MP-BGP](#)
- [5-1: Multicasting](#)
- [6-1: Implementing Tunnels for IPv6](#)
- [7-1: Configuring Advanced ACLs](#)
- [7-2: Implementing IPsec and IKE](#)
- [7-3: Configuring Cisco IOS Firewall](#)
- [9-1: Configuring 6PE and 6VPE](#)