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Learning Style: Virtual Classroom

Technology: Cisco

Difficulty: Intermediate

Course Duration: 5 Days

IPv6 Fundamentals, Design, and Deployment v4.1 (IP6FD)



About this course:

The **IPv6 Fundamentals, Design, and Deployment (IP6FD)** is a five-day training that provides individuals with the knowledge and skills needed to implement and configure the IP version 6 (IPv6) features of Cisco IOS Software. The training also provides an overview of IPv6 technologies; covers IPv6 design and implementation; describes IPv6 operations, addressing, routing, services, and transition; and

describes deployment of IPv6 in enterprise networks as well as in service provider networks. The training also includes case studies that are useful for deployment scenarios and remote labs.

Course Objective:

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

- Describe the factors that led to the development of IPv6, and the 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
- Describe the nature of changes to Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) to support IPv6, and how networks can be renumbered using both services
- Understand the updates to IPv4 routing protocols needed to support IPv6 topologies
- Understand multicast concepts and IPv6 multicast specifics
- Describe IPv6 transition mechanisms and which methods will be most effective in your network
- 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, as well as one of the leading IPv6 deployment issues, multihoming
- Describe the deployment strategies that service providers are facing when deploying IPv6

Audience:

The primary audience for this course is as follows:

- Network Engineers

Prerequisite:

The knowledge and skills that a learner should have before attending this course are as follows:

- Cisco CCNA® certification, including either the Interconnecting Cisco Network Devices 1 (ICND1) certification or the Interconnecting Cisco Network Devices 2 (ICND2) certification
- Understanding of networking and routing (on Cisco CCNP® level, but no formal certification is required)
- Working knowledge of the Microsoft Windows operating system

Course Outline:

- Explaining the Rationale for IPv6
- Evaluating IPv6 Features and Benefits
- Understanding Market Drivers
- Understanding the IPv6 Addressing Architecture
- Describing the IPv6 Header Format
- Enabling IPv6 on Hosts
- Enabling IPv6 on Cisco Routers
- Using ICMPv6 and Neighbor Discovery
- Troubleshooting IPv6
- IPv6 Mobility
- Describing DNS in an IPv6 Environment
- Understanding DHCPv6 Operations
- Understanding QoS Support in an IPv6 Environment
- Using Cisco IOS Software Features
- Routing with RIPng
- Examining OSPFv3
- Examining Integrated IS-IS
- Examining EIGRP for IPv6
- Understanding MP-BGP
- Configuring IPv6 Policy-Based Routing
- Configuring FHRP for IPv6
- Configuring Route Redistribution
- Implementing Multicast in an IPv6 Network
- Using IPv6 MLD
- Implementing Dual-Stack
- Describing IPv6 Tunneling Mechanisms
- Configuring IPv6 ACLs
- Using IPsec, IKE, and VPNs
- Discussing Security Issues in an IPv6 Transition Environment
- Understanding IPv6 Security Practices
- Configuring Cisco IOS Firewall for IPv6
- Examining IPv6 Address Allocation
- Understanding the IPv6 Multihoming Issue
- Identifying IPv6 Enterprise Deployment Strategies
- Identifying IPv6 Service Provider Deployment
- Understanding Support for IPv6 in MPLS
- Understanding 6VPE
- Understanding IPv6 Broadband Access Services
- Planning and Implementing IPv6 in Enterprise Networks
- Planning and Implementing IPv6 in Service Provider Networks
- Planning and Implementing IPv6 in Branch Networks

Lab Outline:

Labs are designed to assure learners a whole practical experience, through the following practical activities:

- Enabling IPv6 on Hosts
- Using Neighbor Discovery
- Using Prefix Delegation

- Routing with OSPFv3
- Routing with IS-IS
- Routing with EIGRP
- Routing with BGP and MP-BGP
- Multicasting
- Implementing Tunnels for IPv6
- Configuring Advanced ACLs
- Implementing IPsec and IKE
- Configuring Cisco IOS Firewall
- Configuring 6PE and 6VPE

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