Cisco® IPv6 Fundamentals, Design and Deployment 3.0 (IP6FD)

Course Overview

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This is a 5-day class

This course aims at enabling learners to study and configure Cisco IOS Software IP version 6 (IPv6) features. The course is a technology course covering IPv6 design and implementation topics.

Course Objectives

After completing this course, students will be able to: - Describe the factors that led to the development of IPv6, and the possible usages of this new IP structure - Explore the structure of the IPv6 address format, how IPv6 interacts with link-layer technologies, and how IPv6 is supported in Cisco IOS software - Describe the nature of changes to DNS and 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 - Examine 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 service providers are facing when deploying IPv6 - Explore case studies for enterprise, service provider, branch, and access networks

Course Outline

1 Introduction to IPv6

Explaining the Rationale for IPv6
Evaluating IPv6 Features and Benefits
Understanding Market Drivers

2 IPv6 Operations

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

3 IPv6 Services

IPv6 Mobility
Describing DNS in an IPv6 Environment
Understanding DHCPv6 Operations
Understanding QoS Support in an IPv6 Environment

4 IPv6-Enabled Routing Protocols

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

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5 IPv6 Multicast Services

Implementing Multicast in an IPv6 Network
Using IPv6 MLD

6 IPv6 Transition Mechanisms

Implementing Dual-Stack
Describing IPv6 Tunneling Mechanisms

7 IPv6 Security

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

8 Deploying IPv6

Examining IPv6 Address Allocation
Understanding the IPv6 Multihoming Issue
Identifying IPv6 Enterprise Deployment Strategies

9 IPv6 and Service Providers

Identifying IPv6 Service Provider Deployment
Understanding Support for IPv6 in MPLS
Understanding 6VPE
Understanding IPv6 Broadband Access Services

10 IPv6 Case Studies

Planning and Implementing IPv6 in Enterprise Networks
Planning and Implementing IPv6 in Service Provider Networks
Planning and Implementing IPv6 in Branch Networks