

IPv6 Fundamentals, Design and Deployment

Duration: 5 Days **Course Code: IP6FD** **Version: 3.0** **Delivery Method: Company Event**

Overview:

This five-day course provides network engineers and technicians who are working in the enterprise sector with the knowledge and skills that are needed to study and configure the IP version 6 (IPv6) features of Cisco IOS Software. This course provides an overview of IPv6 technologies; covers IPv6 design and implementation; describes IPv6 operations, addressing, routing, services, and transition; and describes the deployment of IPv6 in enterprise and service provider networks. Hands-on labs and case studies are used to provide possible deployment scenarios.

Company Events

These events can be delivered exclusively for your company at our locations or yours, specifically for your delegates and your needs. The Company Events can be tailored or standard course deliveries.

Target Audience:

The primary audience for this course is network engineers and technicians who are working in the enterprise sector

Objectives:

- After you complete this course you will be able to:
- 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 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
- 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
- Describe case studies for enterprise, service provider, branch, and access networks

Prerequisites:

Attendees should meet the following prerequisites:

- Cisco CCNA® certification. [ICND1](#) and [ICND2](#) or [CCNABC](#) required
- A CCNP level understanding of networking and routing is required -[ROUTE](#) is recommended although no formal certification at CCNP level is required.
- Working knowledge of the Microsoft Windows operating system.
- CCNA - Implementing and Administering Cisco Solutions
- ENCOR - Implementing and Operating Cisco Enterprise Network Core Technologies

Testing and Certification

Recommended preparation for exam(s):

- No applicable exam

Follow-on-Courses:

The following courses are recommended for further study:

- None recommended at this time

Content:

Introduction to IPv6

- Explaining the rationale for IPv6
- Evaluating IPv6 features and benefits
- Understanding Market Drivers

IPv6 Operations

- Understanding 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 Services

- IPv6 Mobility
- Describing DNS in an IPv6 Environment
- Understanding DHCPv6 Operations
- Understanding QoS Support in an IPv6 Environment
- Using Cisco IOS Software Features

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

IPv6 Multicast Services

- Implementing Multicast in an IPv6 Network
- Using IPv6 MLD

IPv6 Transition Mechanisms

- Implementing Dual Stack
- Describing IPv6 Tunnelling Mechanisms

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

Deploying IPv6

- Examining IPv6 Address Allocation
- Understanding the IPv6 Multihoming Issues
- Identifying IPv6 Enterprise Deployment Strategies

IPv6 and Service Providers

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

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

Labs

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

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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