IPv6 Fundamentals, Design and Deployment

Duration: 5 Days **Course Code: IP6FD** **Version: 3.0**

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.

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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