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## IPv6 Fundamentals, Design and Deployment

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

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### Overview:

The IPv6 Fundamentals, Design, and Deployment (IP6FD) 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. The course 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 course also includes case studies that are useful for deployment scenarios and remote labs.

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### Target Audience:

This course is designed for: Network engineers and technicians who are working in the enterprise sector

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### Objectives:

- 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 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
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### Prerequisites:

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

- Understanding of networking and routing (on Cisco CCNP level, but no formal certification is required).
  - Working knowledge of the Microsoft Windows operating system
- To gain the prerequisite skills and knowledge, Cisco strongly recommends knowledge of the following courses:

- Interconnecting Cisco Network Devices 1 (ICND1)
  - Interconnecting Cisco Network Devices 2 (ICND2)
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## Content:

### Introduction to IPv6

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

### 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

### 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 Tunneling 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 Issue
- 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

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## Further Information:

For More information, or to book your course, please call us on +254 713 027 191

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