IP6FD - IPv6 Fundamentals, Design, and Deployment v4.0

Course Duration: 40 Hours **Course Code: IP6FD**

1. Course Overview

The IP6FD - IPv6 Fundamentals, Design, and Deployment v4.0 course is designed to provide participants with an in-depth understanding of Internet Protocol version 6 (IPv6). This course covers the essential concepts, configuration, and deployment strategies required for integrating IPv6 into modern networks. Participants will gain hands-on experience in planning, designing, implementing, and troubleshooting IPv6 in enterprise and service provider environments.

2. What You'll Learn?

By the end of this course, you will be able to:

- Understand the fundamentals and features of IPv6.
- Explain IPv6 addressing architecture and configuration.
- Design and implement IPv6 routing in enterprise and service provider networks.
- Deploy IPv6 transition mechanisms and tunneling techniques.
- Configure and troubleshoot IPv6-enabled services and applications.
- Apply best practices for secure IPv6 deployment.

3. Target Audience

This course is intended for:

- Network Engineers and Administrators
- Network Designers and Architects
- Support Engineers and Technical Specialists
- IT Professionals preparing for IPv6 integration
- Individuals seeking to enhance their networking skills with IPv6 expertise

4. Pre-Requisites

Before enrolling in this course, participants should have:

- Understanding of networking fundamentals
- Familiarity with IPv4 routing and configuration
- Basic knowledge of network protocols and services

5. Course Content

Module 1: Introduction to IPv6

- Need for IPv6
- IPv6 features and enhancements over IPv4
- IPv6 addressing basics

Module 2: IPv6 Addressing Architecture

- Address types (Unicast, Multicast, Anycast)
- Address allocation and assignment
- Address configuration (SLAAC, DHCPv6)

Module 3: IPv6 Routing

- Static and dynamic routing with IPv6
- OSPFv3, EIGRP for IPv6, IS-IS, and BGP4+

- Route redistribution and filtering

Module 4: IPv6 Services

- Neighbor Discovery Protocol (NDP)
- DNS for IPv6
- DHCPv6 and related services

Module 5: Transition Mechanisms

- Dual Stack deployment
- Tunneling techniques (6to4, ISATAP, GRE, MPLS)
- NAT64 and DNS64

Module 6: IPv6 Security

- IPv6 security considerations
- Securing IPv6 networks
- IPsec with IPv6

Module 7: IPv6 Deployment and Design

- IPv6 integration in enterprise networks
- Service provider deployment models
- Best practices and troubleshooting

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