

IPv6 Fundamentals – Theoretical

Course 1133 – 16 Hours

Overview

This course is a two-day, instructor led training course that provides baseline technical information and training on the next-generation Internet protocol, IPv6. This course will help network engineers understand, configure, and support Cisco devices running IOS software. This course covers the fundamentals of IPv6; routing protocols such as RIPng, OSPF, BGP, and IS-IS; IPv6 transition mechanisms including tunnels, ISATAP, NAT-PT, and 6to4; and other features. The course is a prerequisite to the IPv6 Design and Deployment course.

On Completion, Delegates will be able to

- Describe the features and benefits of implementing IPv6
- Describe the operation of IPv6 including neighbor discovery
- Describe Cisco IOS IPv6 features set
- Describe the integration and coexistence strategies available for deploying IPv6
- Design and deploy appropriate mechanism for the implementation of IPv6 networks
- Describe, implement, and configure, and maintain:
 - IPv6 addressing and auto-configuration features
 - IPv6 services such as Extended ACL in IPv6 networks
 - Routing protocols (RIPv6, I / IS-IS, BGP4+) in IPv6 networks
 - Appropriate IPv6 Transition mechanisms such as tunnels and NAT-PT

Who Should Attend

- Network engineers

Prerequisites

- Routing, switching and access product knowledge and skills.
- Working knowledge of all routing protocols.

Course Contents

1. Introduction

- The need for IPv6
- Shortcomings of IPv4
- History
- Design goals

2. IPv6 overview

- IPv6 addressing
- Fragmentation and path MTU
- Autoconfiguration
- Security
- QOS

3. IPv6 header format

- IPv6 Datagrams
- Base Header
- Extension Headers
- Address Schemes
- Unicast
- Anycast
- Multicast

4. ICMPv6

- Message Format
- Error Messages
- Informational Messages
 - ICMP Security
 - Neighbor Discovery
 - Address Resolution
 - Router Discovery
 - Redirection
 - Group Membership
- ICMPv6 Autoconfiguration

5. Addressing

- Address architecture
- Initial assignment
- Provider addresses
- Multicasting and anycasting

6. DNS for IPv6

- Changes Required
- New Record Type
- Query Modifications

7. IPv6 Interface with Ethernet

- MTU
- Frame Format
- Stateless Auto configuration
- Link Local Address

8. Deployment and Migration from IPv4

- Conversions
- Migration Strategy
- Dual Stack
- Tunneling
- Header Translation