

Course Training

IPv6 Fundamentals

Course Content

The IPv6 Fundamentals, Design, and Deployment (IP6FD) that provides individuals with the knowledge and skills needed to implement and configure the IP version 6 (IPv6) features of Cisco IOS Software. The training 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 training also includes case studies that are useful for deployment scenarios and remote labs.

Course Objectives

After taking this course, you should 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 Domain Name System (DNS) and Dynamic Host Configuration Protocol (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

Course Prerequisite

The knowledge and skills you are expected to have before attending this course are:

- Understanding of networking and routing (on Cisco CCNP® level, but no formal certification is required)
- Working knowledge of the Microsoft Windows operating system

Who should attend

- Network engineers

Course Outline

- Overview of IPv4 and introduction to IPv6

- IPv6 Headers (standard and extension headers)
- IPv6 addresses (unicast, multicast, anycast, link local, unique local and special addresses)
- ICMPv6 Messages and Protocols (neighbor discovery, address resolution, duplicate address detection, router discovery and multicast listener discovery)
- IPv6 Host Processing (stateless address auto configuration process (SLAAC) for various types of unicast IPv6 addresses)
- IPv6 Unicast Routing (overview of RIPng, OSPFv3, IS-IS, MPBGP and segment routing)
- Migration from IPv4 to IPv6 (DHCPv6, DNS, tunnelling mechanisms, dual stack and protocol translation)