Welcome to IPv6

IPC_121d | On-Demand | Transport | Express
Course Duration: 1 hour

As the communications industry transitions to wireless, wireline converged networks to support voice, video, data and mobile services over IP networks, a solid understanding of IP and its role in networking is essential. IP is to data transfer as a dial tone is to a wireline telephone. IPv6 was defined in 1998 but saw little adoption for over a decade. With continued IPv4 address depletion and the migration to wireless VoIP in LTE networks, the time for widespread adoption has finally arrived. This course begins with a look at the motivation for migrating to IPv6, followed by an explanation of the IPv6 header and addressing concepts, and the 128-bit address necessitates changes to many of the supporting protocols for IP.

Intended Audience

This course is intended for technical personnel with a grounding in IPv4 networks who are seeking a technical overview of IPv6 and related protocols.

Objectives

After completing this course, the student will be able to:

- Describe why the migration to IPv6 is finally happening
- List the key benefits of IPv6
- Explain key fields in the IPv6 header
- Discuss how IPv6 addresses are formatted and how they are assigned
- Explain how the basic IP supporting protocols are enhanced to support IPV6
- Describe how automatic routing for IPv6 networks is enabled by BGP and OSPF
- Discuss how dual stack devices help ease the transition from IPv4 to IPv6
- Understand the differences between configured and automatic tunnels for IPv6 transition

Course Prerequisites

No Prerequisites

Outline

1. Motivation and Benefits
1.1 IPv4 address depletion
1.2 Limitations of NAT
1.3 Benefits of IPv6

2. IPv6 Header and Addresses
2.1 Header format
2.2 Address format
2.3 Address notation
2.4 Types of addresses
2.5 Address assignment

3. Supporting Protocols
3.1 ICMP
3.2 DNS
3.3 DHCP
3.4 OSPF
3.5 BGP

4. Transition to IPv6
4.1 The transition problem
4.2 Dual stack
4.3 Configured tunneling
4.4 Automatic tunneling
4.5 IPv6 in LTE