

CIW™ Internetworking Professional: Advanced TCP/IP Concepts and Practices

Course length: 3 days

Course Description

Course Objective: You will identify and use advanced features of the TCP/IP protocol suite.

Target Student: This course is targeted at working IT professionals who are familiar with the basic concepts of TCP/IP networking and who wish to enhance their knowledge on advanced concepts such as troubleshooting enterprise TCP/IP networks and monitoring and analyzing network performance. It is also designed for network professionals who wish to gain knowledge on the current and emerging trends in TCP/IP. This course is also mapped to the exam objectives of CIW Internetworking Professional Series – Course 2.

Prerequisites: It is recommended that students have knowledge of the CIW Foundations certification:

- CIW: Internet Business Foundations
- CIW: Site Development Foundations
- CIW: Network Technology Foundations
- CIW: TCP/IP Internetworking

Course Objectives

Upon successful completion of this course, students will be able to:

- Describe the basic concepts of TCP/IP routing.
- Identify the salient features of various Interior Gateway Protocols (IGPs).
- Discuss the basic and advanced features of the Border Gateway Protocol (BGP).
- Describe multicasting, IGMP, and multicast routing protocols.
- Describe the protocol involved in the management of TCP/IP networks.
- Describe management information base.
- Describe the tasks and management model involved in the management of TCP/IP networks.
- Examine the necessity of IPv6 and identify some of the deployment strategies.
- Describe the IPv6 address notation and the classification of IPv6 addresses.
- Implement IPv6.
- Describe the features of the Internet Control Message Protocol version 6 (ICMPv6).
- Describe the enhancements made to IP routing protocols to support IPv6 networks.
- Identify the security issues regarding TCP/IP networks.
- Identify the security features of IPv6.
- Describe the various techniques involved in migrating to IPv6 and implement the same.
- Identify various TCP/IP troubleshooting tools and techniques.
- Describe the Mobile IPv6 protocol.
- Identify the current and emerging trends of TCP/IP in the telecommunications, wireless communication, and multimedia domains.

Course Content

Lesson 1: Introducing Routing in TCP/IP Network

Topic 1A: View Routing Information in TCP/IP Networks

Topic 1B: Describe IP Routing Algorithms

Lesson 2: Identifying Interior Gateway Protocols (IGPs)

Topic 2A: Routing Information Protocol Version 1 (RIP-1)



Topic 2B: Routing Information Protocol Version 2 (RIP-2)
Topic 2C: The Open Shortest Path First (OSPF) Protocol
Topic 2D: The Intermediate System-Intermediate System (IS-IS) Protocol
Topic 2E: Enhanced Interior Gateway Routing Protocol (EIGRP)

Lesson 3: Describing the Border Gateway Protocol (BGP)

Topic 3A: BGP Basics
Topic 3B: Advanced BGP Concepts

Lesson 4: Introducing IP Multicasting

Topic 4A: IP Multicasting
Topic 4B: Internet Group Management Protocol (IGMP)
Topic 4C: Multicast Routing Protocols

Lesson 5: Introducing Simple Network Management Protocol (SNMP)

Topic 5A: SNMP Basics
Topic 5B: SNMP Architecture
Topic 5C: Describe SNMPv1
Topic 5D: SNMP Agents
Topic 5E: Examine SNMPv2 and SNMPv3

Lesson 6: Using Management Information Bases (MIBs)

Topic 6A: MIB Basics
Topic 6B: Access MIB Variables

Lesson 7: Managing TCP/IP Networks

Topic 7A: Basic Network Management Tasks
Topic 7B: The SNMP Network Management Model

Lesson 8: Introducing IPv6

Topic 8A: Evolution of IPv6
Topic 8B: IPv6 Deployment

Lesson 9: Addressing in IPv6

Topic 9A: IPv6 Address Notation
Topic 9B: IPv6 Address Types

Lesson 10: Implementing IPv6

Topic 10A: Describe IPv6 Packet Structure
Topic 10B: IPv6 Extension Headers
Topic 10C: Install the IPv6 Stack

Lesson 11: Introducing Internet Control Message Protocol Version 6 (ICMPv6)

Topic 11A: ICMPv6 Basic Concepts
Topic 11B: ICMPv6 Message Types
Topic 11C: IPv6 Multicast Listener Management
Topic 11D: Neighbor Discovery

Lesson 12: Introducing Routing in IPv6

Topic 12A: IPv6 Routing Protocols
Topic 12B: Routing Information Protocol (RIP) for IPv6
Topic 12C: Open Shortest Path First (OSPF) for IPv6
Topic 12D: Other Routing Protocols for IPv6



Lesson 13: Examining Network Security Fundamentals

Topic 13A: Security Fundamentals
Topic 13B: Cryptography Fundamentals
Topic 13C: Firewalls

Lesson 14: Introducing IP Security Architecture

Topic 14A: Internet Protocol Security (IPSec)
Topic 14B: IPSec Core Processes
Topic 14C: Enterprise Security Models for IPv6

Lesson 15: Migrating to IPv6

Topic 15A: IP Interoperability Techniques
Topic 15B: Protocol Translation Support Features
Topic 15C: Describe the IPv6-in-IPv4 Tunneling Mechanism

Lesson 16: Identifying TCP/IP Troubleshooting Tools and Techniques

Topic 16A: Establish a Baseline
Topic 16B: Performance Degradation Factors
Topic 16C: Network Files
Topic 16D: Troubleshoot Basic Network Problems

Lesson 17: Introducing Mobile IPv6

Topic 17A: Basics of Mobile IPv6
Topic 17B: ICMPv6 Support for Mobile IPv6
Topic 17C: Data Communication Using Mobile IPv6

Lesson 18: Identifying the Current and Emerging Trends in TCP/IP

Topic 18A: Internet Telephony Using VoIP
Topic 18B: Internet Protocol Television (IPTV)

Appendix A: Mapping CIW Internetworking Professional: Advanced TCP/IP Concepts and Practices to the CIW Internetworking Professional Series – Course 2: TCP/IP Internetworking Objectives

