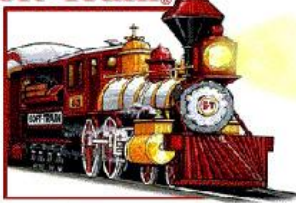


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# CompTIA Network+ (5 Days) ST32002

**COURSE GOAL:** To prepare for a Network+ Certification N10-004

**PREREQUISITES:** Basic understanding of computer operations. CompTIA A+ certification highly recommended.

**LEARNING OBJECTIVES:**

Upon completion of this course, the student will be able to:

- Understand how to build and support a computer network
- Identify the different topologies of network designs
- Understand how Protocols work
- Understand wireless networking
- Utilize remote connectivity

**KEY TOPICS:**

**I. Introduction to Networks**

- A. What's a Network
- B. Common Network Components
- C. Physical Network Topologies
- D. Topology Selection, Backbones, and Segments

**II. The Open System Interconnection Specifications**

- A. Internetworking Models
- B. The OSI Reference Model
- C. The Application Layer
- D. The Presentation Layer
- E. Introduction to Encapsulation

**III. Networking Topologies, Connectors, and Wiring Standards**

- A. Physical Media
- B. Properties of Cables
- C. Wiring Standards
- D. Installing Wiring Distributions
- E. Verifying Correct Wiring Installation
- F. Verifying Proper Wiring Termination

**IV. The Current Ethernet Specifications**

- A. Network Basics
- B. Ethernet Basics
- C. Ethernet at the Data Link Layer
- D. Ethernet at the Physical Layer

**V. Networking Devices**

- A. Common Network Connectivity Devices
- B. Other Specialized Devices
- C. Network Segmentation
- D. Hubs at the Physical Layer

## **VI. Introduction to Internet Protocol (IP)**

- A. Introducing TCP/IP
- B. A Brief History of TCP/IP
- C. TCP/IP and the DoD Model
- D. The Process/ Application Layer Protocols
- E. The Host-to-Host Layer Protocols

## **VII. IP Addressing**

- A. IP Terminology
- B. The Hierarchical Addressing Scheme
- C. Broadcast Addresses
- D. Internet Protocol Version 6 (IPv6)

## **VIII. IP Subnetting, Troubleshooting IP, and Introduction to NAT**

- A. Subnetting Basics
- B. Troubleshooting IP Addressing
- C. Determining IP Address Problems
- D. Introduction to Network Address Translation (NAT)
- E. Types of Network Address Translation

## **IX. Introduction to IP Routing**

- A. Routing Basics
- B. The IP Routing Process
- C. Testing Your IP Routing Understanding
- D. Static and Dynamic Routing

## **X. Routing Protocols**

- A. Routing Protocol Basics
- B. Distance-Vector Routing Protocol
- C. EIGRP
- D. Border Gateway Protocol (BGP)
- E. Link-State Routing Protocols
- F. IPv6 Routing Protocols

## **XI. Switching and Virtual LANs (vLANs)**

- A. Networking Before Layer 2 Switching
- B. Switching Services
- C. Spanning Tree Protocol (STP)
- D. Virtual LANs (vLANs)
- E. Switching and Network Security
- F. Two Additional Advanced Features of Switches

## **XII. Wireless Technologies**

- A. Introduction to Wireless Technology
- B. The 802.11 Standards
- C. Comparing 802.11 Standards
- D. Wireless Network Components
- E. Installing a Wireless Network
- F. Wireless Security

## **XIII. Authentication and Access Control**

- A. Security Filtering
- B. Managing User Account Password Security
- C. User-Authentication Methods
- D. Extensible Authentication Protocol (EAP)

## **XIV. Network Threats and Mitigation**

- A. Recognizing Security Threats
- B. Understanding Mitigation Techniques
- C. Policies and Procedures
- D. Security Policies

## **XV. Physical and Hardware Security**

- A. Using Hardware and Software Security Devices
- B. Defining Firewalls
- C. Firewall Technologies
- D. Firewall at the Application Layer vs. the Network Layer

- E. Scanning Services and Other Firewall Features
- F. Intrusion-Detection and Prevention Systems
- G. VPN Concentrators
- H. Understanding Problems
- I. Affecting Device Security

## **XVI. Wide Area Networks**

- A. What's a WAN
- B. T-Series Connections
- C. Transmission Media
- D. Broadband Services
- E. WAN Protocols'

## **XVII. Command-Line Tools**

- A. Using Traceroute
- B. Using IPConfig and IConfig
- C. Using Ping Utility
- D. Using the Address Resolution Protocol (ARP)
- E. Using the Nslookup Utility
- F. Resolving Names with the Host Table
- G. Using the Mtr Command
- H. Using Route Command
- I. Using the Nostat Utility
- J. Using the Netstat Utility
- K. Using the File Transfer Protocol (FTP)

## **XVIII. Software and Hardware Tools**

- A. Understanding Network Scanners
- B. Identifying Hardware Tools
- C. Protocol Analyzers
- D. Certifiers

## **XIX. Network Troubleshooting**

- A. Narrowing Down the Problems
- B. Troubleshooting Steps
- C. Troubleshooting Tips
- D. Checking for Viruses

## **XX. Management, Monitoring, and Optimization**

- A. Managing Network Documentation
- B. Schematics and Diagrams
- C. Monitoring the Network and Optimizing its Performance
- D. Network Monitoring and Logging