

CompTIA Network+ (Exam N10-007)

Course Overview

This course will introduce students to networking, including network standards, network communications, working with TCP/IP, network devices, wide area networks, remote access, network security, building highly available and scalable networks, and maintenance, monitoring, and troubleshooting.

Course Introduction

5m

Course Introduction

Chapter 01 - Introduction to Networking

1h 25m

Topic A: Networking Fundamentals

What is a Network?

Network Building Blocks

Types of Networks

Host Requirements

Numbering Systems

Demo - Working with Numbering Systems

Communication Types

Communication Concepts

Other Communication Methods

Topic B: Network Models and Topologies

Networking Models

Workgroup vs. Domain

Network Topologies

Physical Bus

Physical Star

Physical Ring

Physical Mesh

Demo - Identifying Network Topology

Logical Topologies

Wireless Topologies

Topic C: Network Components and Services

Network Components and Services

Topic D: Becoming a Network Professional

Technical Challenges

Knowledge Specialization

Developing Soft Skills

Achieving the Certification

Planning for Certification

Chapter 01 Review

Chapter 02 - Network Standards

40m

Topic A: Introducing Networking Standards

What is a Standard?

Why Use Standards?

Standards Organizations

Topic B: Open Interconnection Systems / Reference Model

What is OSI/RM

Upper Layers

Lower Layers

Topic C: IEEE Network Standards

IEEE Networking Standards

Ethernet

Ethernet Frames

MAC Addresses

Access Methods

10Base Standards

Demo - Ethernet Standards

Chapter 02 Review

Chapter 03 - Network Communications

1h 42m

Topic A: Fundamentals of Network Transmission

Transmission Methods

Network Performance Factors

Serial vs. Parallel

Baseband vs. Broadband

Data Access Methods

Communication Domains

Data Access Methods (Cont.)

Digital Signals

Units of Measurement

Topic B: Copper Media

Transmission Media

Twisted Pair Cabling

Cable Media Categories

Twisted Pair Connectors

Copper Media Types

Wiring Differences

Coaxial Cabling

Demo - Media Types

Topic C: Optical Media
Fiber Optic Cabling
Connection Options
Fiber Optic Connectors
Demo - Optical Cables and Connectors
Topic D: Specialty Cables and Connectors
Specialty Connectors and Cabling
Media Converters
Topic E: LAN Infrastructure Wiring
Demarcation Point
Other LAN Components
Wiring Individual Workstations
Connecting Cables
Punchdown Blocks
Topic F: Wireless Networking
Introduction to Wireless LANs
Wireless Networking Fundamentals
Types of Wireless
Wireless Networking Components
Demo - Configuring an Access Point
Wireless Modes
Wireless Devices
Wireless Networking Standards
802.11 Standards
Enhancing Wireless Performance
Wired Equivalent Privacy
Wi-Fi Protected Access
802.1x
Demo - Examining Wireless Security
Planning Wireless Networks
Choosing Antennas
Antenna Types
Wireless Channels
Site Surveys
Other Considerations
Chapter 03 Review

Chapter 04 - Working with TCP/IP

3h 4m

Topic A: Understanding TCP/IP
Overview of TCP/IP
TCP/IP Layers
Core Protocols
Transport Protocols

Transmission Control Protocol
User Datagram Protocol
What is a Socket?
Internet Layer
Core Internet Layer Protocols
IP Datagrams
Application Layer
Application Layer Protocols
Well Known Ports
Topic B: Working with IPv4 Addresses
Introduction to IP Addresses
Subnet Masks
Demo - Working with Binary IP Addresses
IPv4 Address Rules
Valid Masks
Default Gateway
Demo - Configuring IP Addresses
Address Categories
Public vs. Private Addresses
Classful Addressing
Classless Addressing
Demo - CIDR Notation
Create IPv4 Subnets
Simple Subnetting
Complex Subnetting
Demo - Creating Subnets
Topic C: Working With IPv6 Addresses
Introduction to IPv6
IPv6 Advantages
IPv6 Addresses
IPv6 Addressing
Global Unicast
Unique Local Unicast
Link Local Address
Special Addresses
Autoconfiguration in IPv6
Demo - Viewing and Configuring IPV6
Topic D: Assigning Addresses with DHCP
Introducing DHCP
DHCP Leases
Lease Renewal
DHCP Server Placement
DHCP Implementations

DHCP Servers
Topic E: Resolving Names Using DNS
What is Name Resolution
Types of Names
Introduction to DNS
DNS Components
Resource Records
DNS Zones and Domains
Name Resolution Process
Types of Queries
Chapter 04 Review

Chapter 05 - Network Devices

1h 43m

Topic A: Introduction to Network Devices
Common Network Devices
Device Capabilities
OSI / RM Layers and Devices
Topic B: Physical Layer Devices
Introduction to Physical Devices
Network Interface Cards
Repeaters
Repeater Types
Hubs
Topic C: Data Link Layer Devices
Data Link Filtering
What is a Bridge?
Network Switches
Introduction to the Layer 2 Switch
Switch Categories
Switch Characteristics
Power Over Ethernet
Virtual Capabilities
Virtual LAN (VLAN)
Initial Switch Configuration
Interface Configuration
Introduction to STP
STP Port States
RSTP Differences
Understanding Trunking
Trunking Protocols
Additional Management for Switches
Topic D: Network Layer Devices
The Layer 3 Job

Routing Tables
Demo - Reading a Routing Table
Network Segmentation Benefits
Hardware vs. Software Routers
Static vs. Dynamic Routing
Routing Protocols
Dynamic Routing
What is a Metric?
Distance Vector vs. Link State
Path Vector
Interior Routing Protocols
Exterior Routing Protocols
Routing Problems
Router Redundancy
Topic E: Additional Network Devices
Additional Network Devices
Load Balancers
Traffic Shapers
Chapter 05 Review

Chapter 06 - Wide Area Networks

48m

Topic A: WAN Fundamentals
What is a Wide Area Network (WAN)?
WAN Options
WAN Categories
Topic B: Wired WAN Connections
Public Switched Telephone Network
Integrated Services Digital Network
Digital Subscriber Line
Cable Modems
MPLS
ATM
Frame Relay
Leased Lines
Metropolitan Ethernet
Topic C: Wireless WAN Connections
Satellite WANs
Wireless Local Loop
WiMAX
Cellular Connections
GSM vs. CDMA
3G Technologies
4G Technology

Topic D: Fiber WAN Connections
Fiber WAN Connections
OC Levels
Demo - Choosing a WAN Provider
Chapter 06 Review

Chapter 07 - Remote Access

1h 3m

Topic A: Introduction to Remote Networking
Introduction to Remote Networking
Remote Node
Remote Desktop Control
Remote Control Concepts
Demo - Configuring Remote Control
Topic B: Authenticating Remote Connections
Understanding Authentication
Authentication, Authorization, and Accounting (AAA)
CHAP and MS-CHAP
EAP and Other Authentication Protocols
RADIUS
TACACS+
Topic C: Understanding Virtual Private Networks
What is a VPN?
VPN Tunnel Types
What is Encapsulation?
VPN Components
Encryption Types
VPN Concentrators
VPN Protocols
Demo - Create and Configure a VPN
Chapter 07 Review

Chapter 08 - Network Security

2h 47m

Topic A: Network Security Fundamentals
Introduction to Network Security
The CIA Triad
Network Threats
Network Vulnerabilities
Understanding Risk
What is AAAA?
Cryptography
Algorithms and Keys
Digital Signatures

Best Practices for Permissions
Best Practices for Employees
Topic B: Planning for Network Security
Planning for Network Security
Types of Threats
Threat-Vulnerability Pairs
Identifying Vulnerabilities
Types of Vulnerabilities
Mitigating Risks
User Awareness
Understanding Compliance
Business Continuity
Change Management
Network Documentation
Topic C: Identifying Threats and Vulnerabilities
Threat Categories
Introduction to Software Attacks
Malicious Code Attacks
Types of Malicious Code
Network Threats
Port Scanning and Eavesdropping
IP Spoofing
Denial of Service (DoS)
Man-in-the-Middle Attacks
Human Attacks
Wireless Vulnerabilities and Threats
Topic D: Protecting the Network
Protecting the Network
Implementing Physical Protection
Physical Security Options
Demo - Examining Physical Security Devices
Anti-Malware
Demo - Anti-malware Options
Network Hardening
Securing Network Communications
Introduction to Firewalls
Types of Firewalls
Demo - Using Firewalls
Authentication
Authentication Factors
Network Access Control
Chapter 08 Review

Chapter 09 - Building Highly Available and Scalable Networks

1h 32m

Topic A: Maintaining Business Continuity

Maintaining Business Continuity

Understanding High Availability

High Availability Options

Disaster Recovery

Monitoring Network Devices

Patch Management

Topic B: Virtualization and Cloud Computing

What is Virtualization?

Virtualization Benefits

Virtualization and Cloud Computing

Virtual Machine Hosts

Virtualization Components

The Importance of Storage

Storage Options

Storage Area Networks

Virtual Devices and Networks

What is Cloud Computing?

The Cloud Advantage

Cloud Models

Cloud Services Models

Demo - Working in the Cloud

Topic C: Unified Communications

Unified Communications

Unified Communication Components

Unified Communication Technologies

Chapter 09 Review

Chapter 10 - Maintenance, Monitoring, and Troubleshooting

1h 33m

Topic A: Network Safety Fundamentals

The Importance of Safety

Electrical Safety

Static Electricity

Preventing Static Electricity

Fire Suppression Systems

Topic B: Network Operations

Implementing Network Policies

Topic C: Maintaining and Monitoring Networks

Types of Monitoring

Performance Baselines

Monitoring Tools

Network Monitoring Tools
Introduction to Network Tools
Analyzing Traffic
Environmental Monitoring
Using SYSLOG
Using SIEM
Using SNMP
SNMP Components
SNMP Packet Types
Monitoring Operating Systems
Using Task Manager
Using Event Viewer
Maintaining and Monitoring Networks
Using Performance Monitor
Additional Monitoring Types
Introduction to Patch Management
Operating System Updates
Updating Windows Systems
Managing Network Devices
Topic D: Troubleshooting Methodology
Introduction to Troubleshooting
Identifying the Issue
Establish a Theory of Probable Cause
Create an Action Plan
Putting it All Together
Topic E: Troubleshooting Tools
Hardware Troubleshooting Tools
Network Tool Kit
Software Toolkits
OS Troubleshooting Tools
Demo - OS Troubleshooting Tools
Topic F: Troubleshooting Network Issues
Introduction to Wireless Issues
Wireless Signal Issues
Troubleshooting Hardware and Configuration
Wireless Security Issues
Troubleshooting Wired Connectivity Issues
Troubleshooting Fiber Cable Issues
Troubleshooting Network Service Issues
Troubleshooting Security Issues
Chapter 10 Review
Course Closure

Total Duration: 16h 22m