CompTIA Network+ 2009 Edition R3

Topic A: Network Concepts
Networks
Local Area Networks
Basic Network Types
Peer-to-Peer Model
Peer-to-Peer Authentication
Client/Server Model
Client/Server Authentication
Segments and Backbones
Network Wiring
Fiber Optic
Twisted Pair
Composite Cable
Coaxial
Live Demo: Cable Types
Serial
Duplex
Wireless LAN
Benefits/Drawbacks of WLANs
Network Protocols
Wireless Network Protocols

Topic B: Network Architectures
Network Architecture
Star Architecture
Bus Architecture
Ring Architecture
Mesh Architecture
Hybrid Architecture
Point-to-Point
Point-to-Multipoint
Packet vs. Circuit Switching
Ethernet
Ethernet Mediums
Ethernet Standards
Ethernet Networks
Data Collisions
Channel Access Methods
Token Ring Networks
Wireless LANs
Wide Area Networks
WAN Connections
POTS/PSTN
ISDN
DSL
Cable
Satellite
Wireless WAN
Cellular

T and E Lines
X.25 and Frame Relay
ATM
Mesh Networks

Topic C: The OSI Model
OSI Model
OSI Layer 7
OSI Layer 6
OSI Layer 5
OSI Layer 4
OSI Layer 3
OSI Layer 2
OSI Layer 1
Module 01 - Review

Module 02 - Wired Computer-to-Computer Connections   2h 29m

Topic A: Wired Network Connections
Fiber Optic Wired Connections
SONET
Fiber Optic Connectors
Fiber Optic Connector Types
Twisted Pair Connections
UTP Categories
Stranded vs. Solid
Twisted Pair Connectors
RJ Connectors
Modern Residential Wiring
RJ-45 Connector
Pin Numbering of RJ-45 Connector
Terminating CatX to RJ-45
Live Demo: Crossover Cable
Coaxial Connections
RG Standards
Thinnet Connectors
Live Demo: Thinnet Connectors
Thicknet Vampire Tap
Plenum

Topic B: Network Interface Cards and Modems
Network Adapter
Live Demo: NIC Installation
Live Demo: NIC Removal
Internal NICs
Notebook Computers
NIC Selection
Live Demo: NIC Card
Live Demo: PCM CIA
Addressing
MAC Address
IPv4
IPv6
Character-Based Names
Domain Name System (DNS)

Demo: Examining Addresses
Top-Level Domains
NetBIOS
Resolving NetBIOS by Broadcast
Resolving NetBIOS by WINS
Port Addresses
Modems
Modulation/Demodulation
Riser Cards
Softmodems
Dial-Up Connection Creation
Vista Dial-Up Connection Wizard
Vista Connect to Workplace
Dial-Up Connection Properties
Demo: Create Dial-Up
Module 02 - Review

Module 03 - Network-to-Network Connections   58m
Topic A: Network-to-Network Connection Components
Network Access Points
Internet Service Providers (ISPs)
Small ISPs
Regional ISP
LAN Installation Components
Cross-Connects
Standards
Typical UTP Installation
Telecommunications Room
Punchdown Block
Live Demo: Punchdown Block
Wire Placement

Topic B: LAN Wiring
LAN Wiring Categories
Guidelines
Backbone Installation
Workstation Runs
Calculate Workstation Run Length
Modular Office Systems
Telecommunications Room Management
Telecommunications Room Equipment
Patch Panel
Connecting Block
Punchdown Tool
Punchdown Procedure
Live Demo: Punchdown Tool

Topic C: LAN Wiring Tests
LAN Wiring Tests
Testing Equipment
Module 03 - Review

Module 04 - Wired Internetworking Devices   3h 54m

Topic A: Basic Internetworking Devices
Common Internetworking Devices
Repeaters
Repeater Placement
Repeater Operation
Repeater Issues
Bridges
Bridge Operation
Bridge Types
Bridge Routing Management
Bridge Filtering and Intelligence
Local and Remote Bridges
Layer 2 Switch
Bridges vs. Switches
Live Demo: Switch
Trunking Example
Routers
Router Operation
About Routers
Router Features
Key Points
Types of Routers
Routing Table Contents
Routing Examples
Brouters
Bridges vs. Routers
Ethernet Hub
Hub Types
Token Ring MSAU
Token Ring Distances
MSAU Functions
Media Converters
Firewalls
Firewall Functions
Hardware Firewall
Software Firewall
Proxy Server
Port and Packet Filtering

Topic B: Specialized Internetworking Devices
Higher-Level Switches
Content Switches
IDS and IPS
IDS
Malicious Traffic Detected by IDS
IPS
Traffic Shapers
Multiprotocol Label Switching (MPLS)
Multifunction Network Devices
Module 04 - Review

Module 05 - Wired Communication Standards   4h 2m

Topic A: The TCP/IP Protocol Suite
Network Communication Protocols
TCP/IP Architecture
Network Interface Layer Protocols
Address Resolution Protocol (ARP)
MAC Address Filter
Data Packet Addresses
ARP Request Packet Structure
ARP Reply Packet Structure
Router Forwarding
IPConfig
Demo: ARP Connectivity
Internet Layer Protocols
Internet Protocol (IP)
RIP/RIPv2 and OSPF
ICMP/ICMPv6
IGMP
SSH
Transport Layer Protocols
Service Port Numbers
Demo: Port Numbers
TCP
TCP Three-Way Handshake
Microsoft Network Monitor
UDP
Demo: Packet Capture
Application Layer Protocols
HTTP
FTP
Telnet
Demo: Using Telnet
NTP
Email Messaging Protocols

Topic B: TCP/IP
IPv4
Classful IPv4 Addresses
Subnet Masks
Network IDs
Special Addresses
CIDR
CIDR Address
Demo: Binary Conversion
Demo: Subnetting Theory
Demo: Subnetting Practical
NAT
APIPA
IPv6
IPv6 Address Types
IPv6 Address Scopes
Subnet Mask Communication
IPv4 Custom Subnets
IPv6 Subnets
IPv6 Custom Subnets

Default Gateway
Address Translation
DNS
DNS Namespace
WINS
Static TCP/IP Configuration
DHCP and DHCPv6
IPv4 Lease Process
IPv6 Lease Process
IPv6 Router Flags
M and O Flags

Topic C: DHCP Servers
Installing a DHCP Server
Demo: DHCPv4
IPv6 Scopes
Demo: DHCPv6
Module 05 - Review

Module 06 - Wireless Networking   1h 41m

Topic A: Wireless Network Devices
Wireless
Wireless Connections
Infrared
Radio
Bluetooth
Wireless Communications
Indoor Point-to-Mulitpoint LANs
Live Demo: Wireless Router
Outdoor Point-to-Point Links
Outdoor Point-to-Multipoint Links
Wireless Connection Components
Wireless NICs
Live Demo: Wireless Network Adapters
Live Demo: USB Wireless
Wireless Access Points
Wireless Speeds
WAP Placement

Topic B: Wireless Networking Standards
Standards
802.1x Standard
802.11 Standard
Access Point
802.11 WLAN Standards
Wireless Protocols
LAN Technologies
Wi-Fi
Bluetooth
802.11a/802.11g
WiMAX

Topic C: Wireless Configuration
WLAN Security Risks
Additional Risks
WLAN Security Components
Transmission Encryption
802.1x Authentication
Wireless Access Point Configuration
Securing Your AP
Demo: WAP
Wireless Clients
Wireless Auto Configuration
Windows CE Wireless Clients
Module 06 - Review

Module 07 - Security Threats and Mitigation   1h 54m

Topic A: Security Threats
Security Threat Categories
Technology Weaknesses
Configuration Weaknesses
Human Error and Malice
Viruses, Worms, Trojan Horses
Social Engineering
Dumpster Diving
Online Attacks
Countermeasures
Phishing
Denial of Service Attacks
SYN Flood Attack
SYN Flood Defense
Smurf Attacks
Ping of Death
Distributed DoS Attacks
DDoS Countermeasures
Demo: DDoS
Man-in-the-Middle
Spoofing
IP Address Spoofing
Demo: Port Scanner

Topic B: Threat Mitigation
Security Policies
Acceptable Use
Due Care
Privacy
Separation of Duties
Need to Know
Password Management
Account Expiration
Service-Level Agreement
Disposal and Destruction
Human Resources Policy
Incident Response Policy
Preparation
Detection

Containment
Eradication
Recovery
Follow-Up
Change Management
Configuration Management Documentation
Education
Communication
User Awareness
Types of Training
Module 07 - Review

Module 08 - Security Practices   2h 9m

Topic A: Operating Systems
Antivirus Software
Demo: Antivirus
Spyware
Windows Defender
Demo: Spyware
Securing the Operating System
Windows Update
Update Categories
Patch Management
Demo: Windows Updates
Other Updates
System Information
Windows Firewall
Demo: BIOS
Demo: Firewall

Topic B: Devices
Firewalls and Proxy Servers
Security Zones
Intranet
Perimeter Network
DMZ
Screened Host
Bastion Host
Three-Homed Firewall
Back-to-Back Firewall
Dead Zone
Traffic Filtering
Network Access Control
Virtual Private Network
IPSec Encryption
Demo: IPSec
Security Issues
Built-In Management Interfaces
Secure and Unsecure Methods
Physical Attack Susceptibility
Overcoming Device Weaknesses
Intrusion Detection and Prevention
NIDS
HIDS

HIDS Advantages
Physical Access Control
Surveillance
Module 08 - Review

Module 09 - Network Access Control   2h 16m

Topic A: Authentication
AAA
Usernames and Passwords
Password Protection
Strong Passwords
Multiple Passwords
Authentication Factors
One-Factor Authentication
Two-Factor Authentication
Three-Factor Authentication
Live Demo: Thumb Scanner
Authentication Protocols
Preventing Impersonation
Identify Proofing
Single Sign-On
Kerberos
Kerberos System Composition
Kerberos Data Types
Kerberos Authentication Process
Kerberos Security Weaknesses
CHAP
EAP
Mutual Authentication

Topic B: Public Key Cryptography
Cryptography
ROT13 Cipher
Keys
Symmetric Encryption in Action
Public Key Cryptography
Asymmetric Encryption in Action
Public Key Cryptography Characteristics
Public Key Infrastructure
Demo: Public Key Infrastructure
Setup and Initialization Phase
Administration Phase
Cancellation and History Phase

Topic C: Remote Access
AAA
RADIUS
RADIUS Authentication
Realms
RADIUS Security
RADIUS Benefits
Diameter
Diameter Improvements
LDAP and Remote Access

LDAP Security
LDAP Authentication/Authorization
TACACS+
TACACS+ vs. RADIUS
802.1x
Virtual Private Networks
VPN Technologies
VPN Security Models
VPN Protocols
PPTP vs. L2TP
IPSec Protocols
Encryption Modes
Secure Shell (SSH)
VPN Solutions
Service Provider Tunneling

Topic D: Wireless Security
802.11 Standard
Wireless Security
Wireless Vulnerabilities
Wi-Fi Scanners
Warchalking Symbols
Module 09 - Review

Module 10 – Monitoring   59m

Topic A: Monitoring Resources
Resource Overview
Performance Monitor
Performance Objects
Demo: Performance Monitor
Bottlenecks
Configuration
Data Collector Sets
Data Collector Set Reports
Demo: Data Collector Sets
Reliability Monitor
Remote Desktop
Remote Desktop Options
Remote Desktop Connection
Demo: Remote Desktop

Topic B: Event Viewer
Event Viewer
Event Information
Event Types
Remote Logs
Event Forwarding
Demo: Event Forwarding
Source Computers
Collecting Computers
Subscriptions
Device and Application Logging
Module 10 - Review

Module 11 – Troubleshooting   1h 32m

Topic A: Troubleshooting Basics
Troubleshooting
Information Gathering
Identify the Affected Area
Determine If Anything Has Changed
Establish Probable Cause
Determine If Escalation Is Necessary
Create an Action Plan
Implement and Test a Solution
Identify Results and Effects
Document Problem and Solution
Problem and Resolution Tracking
Hardware Toolkit
Live Demo: Multimeter
Additional Tools
Software Toolkit

Topic B: Troubleshooting The Network
Troubleshooting Wired Connections
Cable Testing Devices
Physical Cable Tests
Live Demo: Troubleshooting
Network Function Tests
Network Analyzer
Troubleshooting Wireless
TCP/IP Utilities
IPConfig
Unix IFConfig
Ping
Ping Troubleshooting
NSLookup and Tracert
Windows Network Diagnostics
Demo: Troubleshooting Connections
Demo: Network Diagnostic

Topic C: Troubleshooting Scenarios
Remote Desktop Components
Module 11 - Review
Course Closure

Total Duration: 25 hrs 53 min