

CompTIA Network+ Certification Support Skills

Learn via: **Classroom/AFA**

Duration: **5 Day**

Overview

CompTIA Network+ is the first certification IT professionals specializing in network administration and support should earn.

Network+ helps develop a career in IT infrastructure covering troubleshooting, configuring, and managing networks.

Prerequisites

Students should meet the following criteria prior to taking the course:

- Taken and passed both CompTIA A+ Certification exams or have 9-12 months knowledge and experience of IT administration.
- Be able to configure and support PC, laptop, mobile (smartphone / tablet), and print devices.
- Know basic network terminology and functions (such as Ethernet, TCP/IP, switches, routers).
- Configure and manage users, groups, and shared resources in a simple SOHO network.
- Understand the use of basic access control measures, such as authentication, security policy, encryption, and firewalls.

Outline

Module 1 - Local Area Networks

Topologies and the OSI Model

Key Features of Networks

Network Topologies

The OSI Model

Physical Layer

Data Link Layer

Network Layer

Transport Layer

Upper Layers

OSI Model Summary

Labs - VM Orientation

Ethernet

Transmission Media

Media Access Control

Broadcast Domains

Ethernet Frames

Ethernet Deployment Standards

MAC Addressing

Address Resolution Protocol (ARP)

Packet Sniffers

Labs - Configuring Ethernet Networking

Hubs, Bridges, and Switches

Hubs and Bridges

Switches

Switch Interface Configuration

Spanning Tree Protocol (STP)

Power over Ethernet (PoE)

Infrastructure and Design

Network Infrastructure Implementations

Planning an Enterprise Campus Network

Network Hierarchy and Distributed Switching

Software Defined Networking

Planning a SOHO Network

TCP/IP Protocol Suite

Policies and Best Practices

Procedures and Standards

- Safety Procedures
- Incident Response Policies
- Security and Data Policies
- Password Policy
- Employee Policies

Module 2 - IP Addressing

Internet Protocol

- IPv4
- IPv4 Address Structure
- Subnet Masks
- IP Routing Basics
- ipconfig / ifconfig
- ICMP and ping
- Labs - Configuring IPv4 Networking

IPv4 Addressing

- IPv4 Addressing Schemes
- Classful Addressing
- Public versus Private Addressing
- Subnetting and Classless Addressing
- Planning an IPv4 Addressing Scheme
- Public Internet Addressing
- Variable Length Subnet Masks (VLSM)
- Labs - Configuring IPv4 Subnets

IPv6 Addressing

- IPv6 Address Format
- IPv6 Addressing Schemes
- IPv6 Address Autoconfiguration
- Migrating to IPv6
- Labs - Configuring IPv6 Networking

DHCP and APIPA

- IPv4 Address Autoconfiguration
- Configuring DHCP
- DHCPv6
- Labs - Configuring Address Autoconfiguration

Module 3 - Internetworking

Routing

- Routing Basics
- Routing Algorithms and Metrics
- Dynamic Routing Protocols
- Administrative Distance and Route Redistribution
- IPv4 and IPv6 Internet Routing
- High Availability Routing
- Installing and Configuring Routers
- Routing Troubleshooting Tools
- Labs - Configuring Routing

TCP and UDP

- Transmission Control Protocol (TCP)
- User Datagram Protocol (UDP)
- TCP and UDP Ports
- Port Scanners
- Protocol Analyzers
- Labs - TCP and Port Scanning

Name Resolution and IPAM

- Host Names and FQDNs
- Domain Name System
- Configuring DNS Servers
- Resource Records
- Name Resolution Tools
- IP Address Management (IPAM)
- Labs - Configuring Name Resolution and IPAM

Monitoring and Scanning

- Performance Monitoring
- Network Monitoring Utilities
- Logs and Event Management
- Simple Network Management Protocol
- Analyzing Performance Metrics
- Patch Management
- Vulnerability Scanning
- Labs - Performance Testing and Monitoring

Network Troubleshooting

- Troubleshooting Procedures
- Identifying the Problem
- Establishing a Probable Cause
- Establishing a Plan of Action
- Troubleshooting Hardware Failure Issues
- Troubleshooting Addressing Issues
- Troubleshooting DHCP Issues
- Troubleshooting Name Resolution
- Troubleshooting Services

Module 4 - Applications and Security

Applications and Services

- TCP/IP Services
- HTTP and Web Servers
- SSL / TLS and HTTPS
- Email (SMTP / POP / IMAP)
- Voice Services (VoIP and VTC)
- Real-time Services Protocols
- Quality of Service
- Traffic Shaping
- Bottlenecks and Load Balancing
- Multilayer Switches
- Labs - Configuring Application Protocols

Virtualization, SAN, and Cloud Services

- Virtualization Technologies
- Network Storage Types
- Fibre Channel and InfiniBand
- iSCSI
- Cloud Computing
- Configuring Cloud Connectivity

Network Security Design

- Security Basics
- Common Networking Attacks
- Network Segmentation and DMZ
- Virtual LANs (VLAN)
- VLAN Trunks
- Network Address Translation (NAT)

- Device and Service Hardening
- Honeypots and Penetration Tests

Network Security Appliances

- Basic Firewalls
- Stateful Firewalls
- Deploying a Firewall
- Configuring a Firewall
- Deploying a Proxy
- Intrusion Detection Systems (IDS)
- Denial of Service
- Labs - Configuring a NAT Firewall

Authentication and Endpoint Security

- Authentication and Access Controls
- Social Engineering
- Authentication Technologies
- PKI and Digital Certificates
- Local Authentication
- RADIUS and TACACS+
- Directory Services
- Endpoint Security
- Network Access Control
- Labs - Secure Appliance Administration

Module 5 - Operations and Infrastructure

Network Site Management

- Network Cabling Solutions
- Distribution Frames
- Change and Configuration Management
- Network Documentation and Diagrams
- Labeling
- Physical Security Devices
- Business Continuity and Disaster Recovery
- Network Link Management
- Power Management
- Backup Management

Labs - Network Inventory Management

Installing Cabled Networks

Twisted Pair Cable (UTP / STP / ScTP)

Twisted Pair Connectors

Wiring Tools and Techniques

Cable Testing Tools

Troubleshooting Wired Connectivity

Other Copper Cable Types

Fiber Optic Cable and Connectors

Transceivers and Media Converters

Installing Wireless Networks

Wireless Standards (IEEE 802.11)

Wireless Network Topologies

Wireless Site Design

Troubleshooting Wireless Connectivity

Wireless Security

Wi-Fi Authentication

Extensible Authentication Protocol

Troubleshooting Wireless Security

Wireless Controllers

Installing WAN Links

Wide Area Networks (WAN)

Telecommunications Networks

Modern Telecommunications Networks

Local Loop Services

Installing WAN Links

Wireless WAN Services

Internet of Things

Configuring Remote Access

Remote Access Services (RAS)

MPLS and PPP

SIP Trunks

Virtual Private Networks (VPN)

SSL / TLS / DTLS VPNs

IPsec

Internet Key Exchange / ISAKMP

Remote Access Servers

Remote Administration Tools

Managing Network Appliances

Remote File Access

Labs - Configuring Secure Access Channels

- Configuring a Virtual Private Network