



CompTia Network+ Certification

Duration 5 Days

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.

Course 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