

Course Name: Network+ Boot Camp

Course Code: 3300

Course Overview: Master essential data networking skills while preparing for the CompTIA Network+ certification exam.

Course Length: 5 days

Who should attend:

IT personnel who need a solid foundation in networking. Individuals interested in pursuing CompTIA's Network+ Certification.

You will learn:

- How to prepare for the CompTIA Network+ certification exam
- Practice exam questions using Self Test Software
- Common building blocks of your network: cabling, hubs, switches, access points, routers, workstations, servers, and network operating systems
- Key concepts for effective wireless networking
- Essentials of network cabling, cable types, and the various connectors used
- Microsoft networking concepts including NetBIOS and SMB
- Apple networking building blocks such as AppleTalk, AppleShare, and Mac OS X
- Fundamentals of Novell Netware and associated protocols
- IP subnetting
- Role of DNS and DHCP
- Routing protocols and how routers communicate
- TCP/IP protocols such as IP, TCP, UDP, and ICMP
- Multicasting concepts
- How Network Address Translation (NAT) works
- Common troubleshooting tools like ping, arp, netstat, ifconfig, and nslookup
- How to use a protocol analyzer to capture, analyze, and monitor network traffic
- WAN technologies and services, such as T1, T3, Sonet, Frame Relay
- VPN protocols and applications

Prerequisites: Six months of experience in the IT industry. A+ certification or similar knowledge is beneficial but not required.

Course Fee: Call for quote

Customizable: No

Course Content:

Computer Science 101: Inside the Computer

- CPU, memory, and I/O systems
- Number systems (decimal, binary, hex)
- Memory structures: bits, bytes, and words

- Masking (Logical) operations (AND, NOT, etc.)
- Character codes (ASCII and the like)
- Standards organizations
- Absolutely essential data communications concepts

Local Area Network Fundamentals

- Why Networks?
- Contrast: Internet, Intranet, and Extranet
- Types of networks
- Network topologies
- Common network building blocks
- Media types
- Data Link Control alternatives (not just Ethernet)
- Network Operating Systems (Windows, Unix, Apple, NetWare)
- Network wiring fundamentals

Ethernet

- Origins - How Ethernet has evolved
- Standards
- Adapters
- CSMA/CD, the "access method"
- Addresses (the term "MAC address" explained)
- Frame size limits
- Header formats
- Speed, Media, and Distance
- Full and half duplex
- Broadcast domain and Collision domain
- Compare with: Wireless, Token Ring, FDDI, and ATM

Microsoft, Novell, and Apple Networking

- NetBIOS, NetBEUI, and SMB
- TCP/IP
- IPX/SPX
- AppleTalk, AppleShare IP, AFP ("old" Apple vs. "new" Apple)
- NetWare - important protocols, old and new

Internet Protocol Address Basics

- Logical addressing contrasted with physical and symbolic addressing
- IP address structure
- IP address classes
- Masks
- Private addressing
- Address assignment (static vs. dynamic vs. automatic)
- Datagram delivery (Local delivery vs. Indirect routing)

- Address Resolution Protocol (ARP) - the "map" from IP to MAC address
- Host names and domain names

Internet Protocol (IP)

- Important IP network characteristics
- IP header format - examine the individual fields
- IP version 6 - a glimpse at the future of IP

TCP, UDP, ICMP, and IP Address Autoconfiguration

- User Datagram Protocol
- Role of "port numbers"
- Transmission Control Protocol
- Contrast UDP and TCP
- Internet Control Message Protocol
- RARP, BOOTP, and DHCP for automating IP address assignment
- Notes on Zeroconf and UPnP

Bridges, Switches, and Routers

- Layer 1: Hubs, Repeaters, MAUs, MSAUs
- Layer 2: NICs, Switches, Bridges, Access Points
- Differences between bridging and switching
- Virtual LANs (VLANs)
- Spanning Tree
- Layer 3: Routers
- Brouters and Gateways

Routing and Routing Protocols

- The routing concept
- Routing is independent of the LAN/WAN technologies that you use
- Routing tables examined
- The route selection process (masking)
- Routing protocols, like RIP, OSPF, and EIGRP

IP Subnetting

- Why subnet?
- Subnetting involves "carving your address pie"
- Relationships: Subnets, LAN broadcast domains, WAN circuits
- Role of the subnet mask
- Analyzing IP addresses, noting the special addresses that occur on every subnet
- Classless addressing

Firewalls, Proxies, and Address Translation

- Firewall tools and techniques
- Proxy servers
- Address translation and port forwarding

Domain Name Services

- Worldwide Domain Name System
- Client and server interaction, understand the "resolver"
- How Domain Name Servers are organized and configured
- Resource records used to construct the name and address database
- How DNS queries are processed
- WINS (aka NetBIOS Name Services)

Network Troubleshooting

- Documentation and Baselining
- Tools (hardware and software)
- Methodology and tips

Network Operations Practices

- Windows network and security models
- Accounts and passwords
- Windows "domain controllers" and directory servers in general
- Environmental factors like temperature and power
- System maintenance and change control
- Backup strategies
- Fault tolerance
- Antivirus measures
- SNMP (network management)

Wide Area Networking Concepts

- WAN protocols (SLIP, HDLC, PPP, PPPoE, Frame Relay)
- Secure protocols
- Virtual Private Networking (VPN)
- PPTP, L2TP, etc.
- Circuit switching vs. Packet switching

Wide Area Networking Technologies & Services

- Internet services and connections (ISPs)
- WAN hardware
- WAN services (X.25, Frame Relay, SONET, etc.)
- ATM basics

Application Level Protocols

- File transfer (secure and unsecure)
- Internet mail protocols (SMTP, POP)
- Web client/server interaction via HTTP and HTTPS
- Multicasting in IP networks
- Usenet "news"