

## Network+ Boot Camp

### Computer Science 101: Inside the Computer

- Number systems (decimal, binary, hex)
- Bits, bytes, and words
- Logical operations (AND, NOT, etc.)
- Character codes (ASCII and the like)
- Standards organizations
- Data communications concepts

### Local Area Network Fundamentals

- Why Networks?
- Types of networks
- Network topologies
- Essential components
- Media types
- Data Link Control alternatives
- Network Operating Systems
- Network wiring

### Ethernet

- Origins
- Standards
- Adapters
- CSMA/CD
- Addresses
- Frame size limits
- Header formats
- Speed
- Full and half duplex
- Broadcast domain
- Collision domain
- Wireless, Token Ring, FDDI, and ATM

### Microsoft, Novell, and Apple Networking

- NetBIOS, NetBEUI, and SMB
- TCP/IP
- IPX/SPX

- AppleTalk and AppleShare
- Netware

## Internet Protocol Address Basics

- Logical 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)
- Host names and domain names

## Internet Protocol (IP)

- IP network characteristics
- IP header format
- IP version 6

## TCP, UDP, ICMP, and IP Address Autoconfiguration

- User Datagram Protocol
- Transmission Control Protocol
- Internet Control Message Protocol
- RARP, BOOTP, and DHCP

## Bridges, Switches, and Routers

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

## Routing and Routing Protocols

- The routing concept
- Data Link layer independence
- Routing tables examined
- The route selection process
- Routing protocols

## IP Subnetting

- Why subnet?
- The nature of subnets
- Routable address structures
- Role of the subnet mask
- Analyzing IP addresses
- Classless addressing

## Routing and Routing Protocols

- Moving packets between networks
- Data Link layer independence
- Routing tables
- How routing really works
- Routing protocols
- Multicast routing

## Firewalls, Proxies, and Address Translation

- Firewall tools and techniques
- Proxy servers
- Address translation

## Domain Name Services

- Concepts
- Resolver
- Domain Name Servers
- Resource records
- How DNS queries are processed
- WINS (aka NetBIOS Name Services)

## Network Operations Practices

- Domains
- Accounts
- Passwords
- Environmental factors
- System maintenance
- Backup strategies
- Fault tolerance
- Anti-virus measures
- Change control
- SNMP (network management)

## Network Troubleshooting

- Baselineing
- Tools (hardware and software)
- Methodology and tips

## Wide Area Networking Concepts

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

## Wide Area Networking Technologies & Services

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