

CompTIA Network+ 2009 Training Course outline

Session 1

Section A: Introduction

- Understanding the Network+
- Network+ Domains

Section B: Packets

- What is a Network?
- Network Card
- Everything is Binary
- Conceptualizing Packets
- Conceptualizing MAC Addresses
- Binary to Hex
- IPCONFIG
- IFCONFIG

Section C: Topologies

- Bus Topology
- Ring Topology
- Star Topology
- Mesh Topology
- Point-to-Point
- Point-to-Multipoint
- Hybrid Topologies

Section D: Building a Network with OSI

- OSI History
- Physical Layer
- Frames
- Data-Link Layer
- Network Layer
- Transport Layer
- Session Layer
- Presentation Layer
- Application Layer

Section E: Network Cabling

- Network Cabling Overview
- Coaxial
- Unshielded Twisted Pair
- Cat Levels
- RJ Connectors
- Cable Fire Ratings
- Shielded Twisted Pair
- Fiberoptic
- Fiber Connectors

- Understanding Fiber

Section F: Ethernet Basics

- Understanding Ethernet
- Ethernet Frame
- Conceptualizing Ethernet
- Sending Ethernet Frames
- Promiscuous Mode
- Receiving Ethernet Frames
- CSMA/CD
- Connecting Hubs
- Crossover Cable
- Daisy Chaining Hubs

Section G: 10Base/100Base Ethernet

- 10Base-T
- 10Base-FL
- 10Base Ethernet
- 100Base-T
- 100Base Ethernet
- Media Converter
- Link Lights Session 2

Section A: Modern Ethernet

- Ethernet Switches
- Switching
- Spanning Tree Protocol
- Gigabit Ethernet
- Backbone
- 10GbE
- 10GBase-T

Section B: Structured Cabling

- Structured Cabling Defined
- Structured Cabling Terminology
- Rack Units
- Wiring Distribution
- Patch Panel
- Patch Cables
- Horizontal Run Demonstration
- 66 Block
- Wiring Schematic
- Physical Network Diagram

Section C: Structured Cabling Tools

- Cable Making Tools
- Crimping
- Punch Tools

- Testing Tools
- Continuity
- Continuity Tester
- MicroScanner
- TDRs
- Multimeter
- Attenuation
- Crosstalk
- Shorts
- Interference
- Certifiers
- Toner Probes

Section D: Introducing TCP/IP

- Protocol Suite
- Broadcasting
- NetBIOS/NetBEUI
- Logical Network Addressing
- Routing
- IP Naming Importance
- TCP/IP
- TCP/UDP/ICMP

Section E: Basic IP Addressing

- IP Addressing Defined
- Unique Addresses
- Subnet Mask
- Network ID
- Binary vs. Decimal
- Converting Binary to Decimal
- Dotted Decimal
- Converting Decimal to Binary

Section F: Advanced IP Addressing

- Class Licenses
- CIDR
- Configuring IP
- Ping
- ARP
- Mac IP Tools
- Linux IP Tools Session 3

Section A: Subnetting

- Understanding Subnetting
- Subnet Setup
- Extending the Subnet
- Calculating Hosts
- Determining IP Addresses

- Determining Network IDs
- Applying Subnetting
- Example Subnetting Scenarios

Section B: DHCP

- Understanding DHCP
- DHCP Client Side
- DHCP Server
- Administering DHCP Server
- Renewing DHCP Lease
- APIPA
- Windows DHCP Server
- Rogue DHCP Server

Section C: Network Naming

- Name Resolution
- Host File
- DNS
- DNS Server
- DNS in Action
- Reverse Lookup Zones
- Root Hints
- Forwarder Servers
- Nslookup
- Dig

Section D: Windows Name Resolution

- WINS
- SMB/CIFS
- NetBIOS Commands

Section E: Introducing TCP/IP Ports

- Ports Defined
- Netstat
- TCPView
- Wireshark
- Packet Filtering

Section F: Static Routing

- Routers
- Router Console Cables
- Routing Tables
- Static Routes
- Route Print
- Broadcast/Unicast/Multicast
- Origin of Routing Tables
- netstat-r

Section G: Dynamic Routing

- Why Dynamic Routing
- Dynamic Routing Types
- Distance Vector
- RIP
- Autonomous System
- BGP
- OSPF
- IS-IS
- Link State
- Hybrid
- Trace Route
- MTR

Section H: Firewalls

- Private IPs
- NAT
- Overloaded NAT (PAT)
- Static NAT
- Configuring Access Control
- Port Filtering
- Intrusion Detection
- Common Firewall Features

Session 4

Section A: Internet Applications Part I

- Identifying DHCP Port
- Identifying DNS Port
- SNMP
- Three Types of SNMP
- Cacti and SNMP
- HTTP and HTTPS
- Web Server Administration
- Telnet
- SSH

Section B: Internet Applications Part II

- FTP
- FTP Client
- Secure FTP
- TFTP
- E-mail and SMTP
- Network Time Protocol
- What to Know

Section C: Encryption

- Understanding Encryption

- Symmetric Encryption
- Asymmetric Keys
- Certificates/PKI

Section D: Authentication

- Authentication Standards
- Point-to-Point Protocol
- PAP and CHAP
- Kerberos
- AAA Tools
- EAP
- 802.1x

Section E: Wireless

- Understanding 802.11
- 802.11 Standards
- Wireless Settings
- ESSID
- Joining a Wireless Network
- Wireless Security
- WEP
- 802.11i
- AES Encryption
- WPA
- Recommended Wireless Security

Section F: Implementing Wireless

- Wireless Access Points
- Access Point Antennas
- Wireless Issues

Section G: Advanced Networking Devices

- Introduction
- Peer-to-Peer
- Multilayer Switch
- Content Switch
- Bandwidth Shaper
- Proxy Server
- VLANs
- Creating a VLAN
- Assigning VLAN Ports
- Route and Trunking
- Dynamic VLAN
- VPNs and Tunnels
- VPN Tunnel Standards
- Connecting VPNs Session 5

Section A: IPv6

- IPv6 Defined
- IPv6 Addresses
- Link Local Address
- Getting IPv6 Address
- Configuring IPv6
- IPv6 Tunneling
- Using IPv6

Section B: Remote Connections

- Connectivity History
- Circuit Switching
- Analog to Digital
- DSO
- Digital Cabling
- Testing T1s
- T-Carriers
- SONET
- Packet Switching
- MPLS

Section C: The Last Mile

- The Last Mile
- POTS/PSTN
- Central Office
- Digital to Analog to Digital
- ISDN
- DSL
- DSL Types
- PPPoE
- Cable Modem
- DOCSIS
- Satellite
- Wireless

Section D: Remote Access

- Remote Access Overview
- Remote Access Options
- RRAS
- VNC
- Remote Desktop
- Best Practices

Section E: Network Optimization

- Network Optimization Overview
- Bonding
- Traffic Shapping
- QoS

Section F: Physical Network Protection

- Security Considerations
- Physical Security
- Theft
- Power
- HVAC
- Fire
- Hardware Failure

Section G: Maintaining Network Integrity

- Antivirus / Malware
- DoS / Attacks
- Man in the Middle
- Rogue Access Points
- Phishing / Procedures / Policies
- Protection Checklist
- Baselines
- Patches / Updates
- Configurations
- Regulations

Section H: The Art of Network Support

- Nine Step Process

Section I: Lab 1: WAN Issues

- Misconfigurations
- NIC Configurations
- Speed / Duplex Issues
- IP Address Issues
- Dynamic vs. Static IP/DNS
- VLAN Issues
- Angry IP Scanner
- Port Monitoring
- Impedance Mismatch
- Logs

Section J: Lab 2: Wireless Issues

- Escalatory Problems
- Switching Loops
- Routing Loops
- Broadcast Storms
- Proxy Arp
- IDS/Signature Identification

Section K: Lab 3: Wireless Issues

- Interface

- ESSID Mismatch
- Incorrect Encryption
- Incorrect Channel
- Incorrect Frequency