



HP IT Essentials II Network Operating Systems v3.0

Scope and Sequence



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Target Audience

Junior High School, High School, Community College, Military and University students as well as transitional workers enrolled in the Cisco Networking Academy Program.

Prerequisites

Students should have completed HP IT Essentials I.

Target Certifications

Students should be prepared to take the Comitia Linux + exam.

Course Description

HP IT Essentials: Network Operating Systems, sponsored by Hewlett-Packard Company, is an intensive introduction to networking fundamentals and multiuser/multitasking network operating systems. Characteristics of the Linux and Windows network operating systems will be discussed. Students will explore a variety of topics including installation and configuration procedures. More advanced administrative tasks such as troubleshooting issues, security issues, and remote access will also be covered.

Course Objectives

Upon successful completion of this course, the student will receive a Certificate of Completion for IT Essentials II: Network Operating Systems. The students' acquired competencies include:

- Network Operating System basics
- Network Operating System components
- Network design and topology
- Media types and effectiveness
- Internet connection
- Network services including remote access and directory services
- NIC and IP address configuration
- NOS installation planning
- Windows 2000 installation
- Linux installation and troubleshooting
- Network security plan development

Minimum System Requirements

Note: Hands-on labs will have a computer-to-student ratio of 1:2. The average class size is between 15 and 20 students.

Server (one per lab)

- Full-tower or Mid-tower
- 800 MHz or higher Pentium-compatible CPU
- 128 MB of RAM
- 20 GB hard drive
- 24x CD-ROM
- AGP-compatible motherboard
- Network interface card
- AGP Video Card

PC (one for every two students)

- Mini-tower
- 133 MHz or higher Pentium-compatible CPU
- 64 MB of RAM
- 10 GB hard drive
- 24x CD-ROM
- PCI and AGP-compatible motherboard
- Network interface card
- AGP Video Card
- Mouse
- Keyboard
- Sound card
- Floppy drive

Monitor (one for every two students)

- 15 inch

Printers (one for entire lab)

- Networked Printer (Laser jet/jet direct)

Software

- Microsoft® Windows® 2000 Sever
- Linux Operating System (Fedora Linux or Red Hat 7.2 or higher)

Note: To teach IT Essentials II, the instructor will need an instructional workstation to view the curriculum that is separate from the lab workstation. The computer-to-student ratio for viewing the curriculum is 1:1. The average class size is between 15 and 20 students.

Course Outline

Module 1. Operating System Fundamentals

1.1 Network Operating System Basics

- 1.1.1 Overview of PC operating systems
- 1.1.2 PCs and computer networks
- 1.1.3 The kernel
- 1.1.4 The user interface
- 1.1.5 The file system
- 1.1.6 Common desktop operating systems

Worksheet: Operating System Basics

1.2 Microsoft Windows

- 1.2.1 MS-DOS
- 1.2.2 Microsoft Windows 3.1
- 1.2.3 Windows 9x
- 1.2.4 Windows NT and Windows 2000
- 1.2.5 Windows XP
- 1.2.6 Windows GUI
- 1.2.7 Windows CLI
- 1.2.8 Windows Control Panel

Worksheet: Microsoft Windows Basics

1.3 UNIX and Linux on the Desktop

- 1.3.1 Origins of UNIX
- 1.3.2 Origins of Linux
- 1.3.3 Linux/UNIX GUI
- 1.3.4 Linux/UNIX CLI
- 1.3.5 Linux and UNIX system configuration tools

Worksheet: UNIX and Linux on the Desktop

1.4 Network Operating Systems Overview

- 1.4.1 Common network operating systems
- 1.4.2 Windows and Linux NOS Comparison
 - Describe the licensing methods for Linux & Windows
- 1.4.3 The client-server model

1.4.4 Evaluating customer resources and requirements

- Describe support options
- Given a customer scenario with number of users & applications stated, choose vendor recommended OS
- Given a customer scenario, choose appropriate features that address issue

Summary

Module 2. Introduction to Networking

2.1 Benefits of Networking

2.1.1 File, print, and application services

2.1.2 Mail services

2.1.3 Directory and name services

2.1.4 The Internet

2.1.5 Network administration

2.2 Types of Networks

2.2.1 Overview

2.2.2 Local-area networks (LANs)

2.2.3 Wide-area networks (WANs)

2.2.4 Peer-to-peer networks

2.2.5 Client/server networks

Worksheet: Types of Networks

2.3 Networking Protocols

2.3.1 Protocol suite

2.3.2 TCP/IP

Worksheet: The OSI Reference Model

2.3.3 Proprietary versus open standards

Worksheet: Proprietary and Open Standards Comparison

2.4 LAN Technologies

2.4.1 Ethernet

2.4.2 DSL

2.4.3 Cable modems

Worksheet: Network Protocols

Summary

Module 3. Physical Components of a Network

3.1 Configuring a Network Interface Card

3.1.1 What is a NIC?

3.1.2 Setting the IP address

- Describe the differences between DHCP & Static IP addressing
- Given a screenshot, describe the properties of network settings

3.1.3 DHCP servers

- Describe the process of DHCP for ip assignment

3.1.4 Domain Name System

3.1.5 Default gateway

3.2 Topologies

3.2.1 The network topology

3.2.2 Physical versus logical topology

3.2.3 Identifying Network Topologies

- Describe the different networking topologies and devices

Worksheet: Network Topologies

3.3 Media Types

3.3.1 Networking media

3.3.2 Twisted-pair cable

Worksheet: Twisted Pair Cabling

3.3.3 Fiber-optic cable

3.3.4 Wireless

Worksheet: Physical Media Types

3.4 Network Devices

3.4.1 Hubs and repeaters

3.4.2 Bridges and switches

3.4.3 Routers

Worksheet: Network Devices

Summary

Module 4. TCP/IP Networking

4.1 History of TCP/IP

4.1.1 Origins and growth of TCP/IP

4.1.2 The TCP/IP network model

Worksheet: The TCP/IP Network Model

4.1.3 TCP/IP and network operating systems

4.2 IP Addressing

4.2.1 IPv4 addressing

Lab: Configuring Static TCP/IP settings in Linux

4.2.2 IPv4 addressing overview

Worksheet: IPv4 Addressing Overview

4.2.3 Class A addresses

4.2.4 Class B addresses

4.2.5 Class C addresses

4.2.6 Class D and E addresses

4.2.7 The IPv4 address crisis

4.2.8 Subnetting

Worksheet: Subnetting

4.3 Name Resolution

4.3.1 Overview of name resolution

4.3.2 Hostnames and host tables

- Describe the purpose of machine & network identifications

4.3.3 The domain name system

- Describe the purpose of machine & network identifications

4.3.4 Name services and the NOS

4.3.5 WINS

4.4 TCP/IP Protocols

4.4.1 Overview of TCP/IP protocols

- 4.4.2 Address Resolution Protocol (ARP)
- 4.4.3 Internet Control Message Protocol (ICMP)
 - Describe the different TCP/IP utilities
- 4.4.4 Transmission Control Protocol (TCP)
- 4.4.5 User Datagram Protocol (UDP)
- 4.4.6 DHCP service
 - Describe the process of DHCP for IP assignment
- 4.4.7 Hypertext Transport Protocol (HTTP)
- 4.4.8 File Transfer Protocol (FTP)
- 4.4.9 Telnet
- 4.4.10 SMTP
- 4.4.11 POP3
- 4.4.12 IMAP

Summary

Module 5. Overview of Network Services

5.1 Network Services

- 5.1.1 An Introduction to Network/NOS Services

Worksheet: Network/NOS Services

5.2 Remote Administration and Access Services

- 5.2.1 What is remote access?
- 5.2.2 Telecommuting
- 5.2.3 Mobile users
- 5.2.4 Terminal emulation services
- 5.2.5 Telnet Services
- 5.2.6 Configuring remote access for a client
- 5.2.7 Controlling remote access rights
- 5.2.8 Remote administration to a Linux system

5.3 Directory Services

- 5.3.1 What is a directory service?
- 5.3.2 Directory service standards
- 5.3.3 Windows 2000 active directory

Worksheet: Windows 2000 Active Directory

5.3.4 Network Information Service (NIS)

- Describe NIS for Linux

Lab: Configuring Linux as a NIS Client

5.4 Other NOS Services

5.4.1 Mail

5.4.2 Printing

5.4.3 File sharing

5.4.4 FTP (File Transfer)

5.4.5 Web services

5.4.6 Intranet

5.4.7 Extranet

5.4.8 Automating task with script services

5.4.9 Domain Name Service (DNS)

5.4.10 Dynamic Host Configuration Protocol (DHCP)

- Describe the process of DHCP for ip assignment
- Describe the differences between DHCP & Static IP addressing

5.4.11 Domains

Summary

Module 6. Introduction to Network Operating Systems

6.1 Characteristics of a Network Operating System

6.1.1 Overview of NOS characteristics

6.1.2 Differences between PCs and a NOS

6.1.3 Multiuser, multitasking, and multiprocessor systems

6.1.4 NOS server hardware

6.1.5 Choosing a NOS

- Given a list of applications that need to be supported, determine the appropriate OS

6.1.6 Types of NOSs

Worksheet: Characteristics of a Network Operating System

6.2 Windows

6.2.1 Windows terminology

6.2.2 Windows NT 4.0

6.2.3 Windows 2000 and XP Operating Systems

Worksheet: Windows NT/2000/XP

6.2.4 Windows 2000 and 2003 Server Operating Systems

- Describe the features and benefits of Windows 2000 Server

6.3 Linux

6.3.1 History of Linux

- Describe the features and benefits of Linux

6.3.2 What is UNIX?

6.3.3 Linux Operating Systems

- Describe the different distribution options of each OS
- Explain the different methods Linux products use for distribution

6.3.4 Linux clients

Worksheet: Linux

6.4 Determining Software Requirements for a Linux NOS

6.4.1 Workstation software and programs

Describe the licensing methods for Linux

6.4.2 Server software and programs

6.4.3 Additional software and programs

6.4.4 Verifying software compatibility

- Describe compatibility issues between Linux & Microsoft
- Describe security issues in a multi-vendor environment

Summary

Module 7. Installations and Boot Process Overview

7.1 Preparing for the Installation

7.1.1 Installing NOS

7.1.2 Planning the system

7.1.3 Planning hardware installation

Worksheet: Planning the Installation

Determine factors that effect hardware choice

7.1.4 Server hardware components

Worksheet: Server Components

7.1.5 Hardware requirements

Worksheet: Hardware Requirements

- Determine if existing hardware will support chosen OS
- Given different hardware options determine whats necessary to support the OS
- Given a customer scenario, determine the hardware needs based from application & data requirements

7.1.6 Creating a hardware inventory

7.1.7 Identifying hardware using Device Manager

- Use Device Manager Console to install or update device drivers

Lab: Using Device Manager in Windows 2000 Server

7.1.8 Checking hardware compatibility lists

- Describe the purpose of the HCL
- Describe how to determine if hardware is adequate

Lab: Using the HCL

Worksheet: File System

7.1.9 Verifying the network

- Describe the different TCP/IP utilites

7.2 The Installation Process

7.2.1 Installation media

7.2.2 BIOS settings

7.2.3 The Installation program

7.2.4 Disk partitions

- Describe the function of a disk partition
- Describe the benefits of using disk partitions

- Explain how Linux partitions are structured

7.2.5 Partitioning a disk

- Explain the usage of the FIPS utility

7.2.6 Swap files

- Describe the required partition types, including swap

Lab: Adding Swap File Space in a Linux System

7.2.7 Formatting the disk

- Describe the differences between the various file system types
- Given a scenario, choose the appropriate file system type

7.2.8 Creating initial administrative accounts

7.2.9 Completing the installation

- Given an output/screenshot, interpret if install has been successful

7.3 The Boot Process

7.3.1 The steps of the boot process

- Identify the sequence of boot order

7.3.2 Basic files required

7.3.3 BIOS interaction

7.3.4 Detailed steps of the boot process

- Given a log file, determine possible boot problems

7.3.5 The Linux boot process

- Explain the difference between LILO & Grub

Worksheet: The Boot Process

Worksheet: The Linux Boot Process

Lab: Installing the GRUB boot loader

7.4 Troubleshooting NOS Installation

7.4.1 Unable to boot from Installation media

7.4.2 Problems during the installation process

7.4.3 Post-installation problems

Summary

Module 8. Windows 2000 Professional

8.1 Installation

8.1.1 Installing Windows 2000

Lab: Installation Demonstration of Windows 2000

Worksheet: Installing the OS

- Describe the licensing methods for Windows
- Successfully install a Windows 2000 Server
- Describe the procedure to load the OS
- Configure machine name and workgroup name
- Describe the purpose of machine & network identifications

8.1.2 Installation of OS add-on options

- Describe the procedure for updating the OS
- use ipconfig to determine existing IP settings

Lab: Configuring an IP Address and Default Gateway in Windows 2000

- Configure network settings

8.2 Administrator/User Interface

8.2.1 Log on procedures

Lab: Log on to Windows 2000

8.2.2 Graphic user interface (GUI)

Lab: Using the Windows 2000 GUI

8.2.3 Command-line interface (CLI)

Lab: Using the Windows 2000 CLI

8.2.4 Windows Explorer navigation

Lab: Navigate the Windows 2000 File System with Windows Explorer and My Computer

8.3 User Accounts

8.3.1 Adding users

Lab: Adding Users in Windows 2000

8.3.2 Managing user accounts

Lab: Manage User Accounts in Windows 2000

Worksheet: User Accounts

8.3.3 Functions and Permissions of the Administrator Account

- Explain the functions and permissions of the Administrator

8.4 Managing the File System

8.4.1 Creating and sharing folders

- Use Windows Explorer to create a folder
- Use Windows Explorer to create a file

Lab: Creating Files and Directories using Windows 2000

8.4.2 Creating groups and adding users

- Describe the process for adding users & groups
- Use Computer Management console to add and remove from a user to a group
- Use Computer Management to change a user password

Lab: Creating Groups in Windows 2000

8.4.3 Passwords and permissions

- Identify file/folder permissions
- Describe the differences in permissions levels
- Given a scenario, change a users permission level
- Describe the various level of user file permissions

Lab: Assigning Permissions in Windows 2000

8.5 Services

8.5.1 Hypertext Transfer Protocol (HTTP)

- Describe the method for installing web services
- Given a screenshot of IIS installation screen, determine the appropriate options
- Install Web services

Lab: Configure HTTP Services on Windows 2000

8.5.2 File Transfer Protocol (FTP)

- Obtain file from an FTP server

Lab: Configure FTP Services on Windows 2000

8.5.3 Telnet

Lab: Configure Telnet on Windows 2000

8.5.4 Stopping and Starting Services in Windows

- Describe the procedure for starting/stopping services
- Describe the different options for starting/stopping services
- Given a screenshot of running services, describe the status of a service
- Describe the process for changing the starting status of a service

Lab: Stopping and Starting Services in Windows 2000

8.5.5 E-mail Server/Client relationship

8.5.6 Printing in Windows 2000

- Describe the steps required to install a printer
- Given a scenario, determine if network printing should be supported

8.5.7 Scripts

- Describe ways to automate Windows functions

Lab: Write a Script in Windows 2000

Summary

Module 9. Linux Installation Procedures

9.1 Pre-Installation Tasks

9.1.1 The boot method

9.1.2 Installation media

- Describe the procedure to load the OS

9.1.3 Selecting the appropriate parameters for installation

- Given a scenario, choose the appropriate file system type

9.1.4 Creating the Linux file system

- Describe the differences between the file systems

9.1.5 Selecting packages to install

9.1.6 Linux Multimedia

9.2 Installing and Configuring Linux

9.2.1 Linux hardware requirements

- Successfully install and configure a Linux server

Lab: Installation of Linux

9.2.2 Starting the installation

- Describe the procedure to load the OS

9.2.3 Configuring appropriate security settings

- Explain the reason why add an additional administrator account other than Root

9.2.4 Configuring network settings

- Identify the IP configuration files
- Describe commands required to make identification & IP setting changes
- describe the commands required to view the identification & IP settings

Lab: Configuring Network Settings

9.2.5 Other configurations and settings

9.3 X Server

9.3.1 Video card chipset

9.3.2 X server options

9.3.3 Configuring X server

Lab: Configuring X Server

9.3.4 Hardware configurations

9.4 Post-Installation Configuration and Tasks

9.4.1 Post-installation of applications and programs

- Describe the procedure for updating the OS
- Describe various commands needed to update the OS
- Describe the relevance of patches for updates
- Describe the purpose of Package Manager
- Describe how to obtain system updates for Linux

Lab: Post-Installation of Applications and Programs

9.4.2 Creating Achieves and Basic makefile changes

- Describe tar and its uses
- Describe gzip and its uses
- Use gunzip & tar to extract files from a *.tar.gz file

9.4.3 Installing and reconfiguring the boot loader

- Given a log file, determine possible boot problems
- Describe the contents of fstab

9.4.4 Kernel issues

9.4.5 Environment variables

9.4.6 Verifying proper application functioning and performance

Summary

Module 10. Linux Administration

10.1 User Interface Administrator

10.1.1 Log in procedures

Lab: Logging into Linux

10.1.2 GUI interface

- Describe the different Windows managers
- Describe the different shells (desktop environments)

Lab: Using the Linux GUI (X Window)

10.1.3 CLI interface

- Explain how to research problem solutions using the man files
- Navigate the file structure using command line interface

Lab: The CLI Interface

10.1.4 The Linux shells

- Describe the different shells (desktop environments)

Lab: The Linux bash and C Shells

Worksheet: The Linux Shells

10.1.5 VI Editor

- Use VI to edit a file

Lab: Using the Linux vi Editor

10.1.6 awk

Worksheet: The awk command

10.2 User Accounts and Group Accounts

10.2.1 User and group accounts in a Linux environment

- Explain the functions and permissions of Root
- Define group concept in Linux

10.2.2 Adding and Removing User Accounts

- Use CLI to add, remove, edit, and delete user & group settings
- Explain the contents of the /etc/passwd & /etc/group

Lab: Adding Users in Linux

10.2.3 Managing user accounts

- Given permissions output, interprets the users right & permssions

10.2.4 Creating groups and adding users to groups

- Explain SUID & GUID

Lab: Creating Groups in Linux

10.3 Files System and Services Management

10.3.1 Creating/sharing directories

- Describe process for creating files & directories
- Create a file or directory

Lab: Creating Directories in Linux

10.3.2 Using the find and grep commands

- Describe the functions of commands used for file management

10.3.3 Passwords and permissions

- Explain the functions and permissions of Root
- Identify user level and root level properties
- Explain commands used to change permissions
- Describe process for determining current permissions

- Given permissions output, interprets the users right & permissions
- Describe the process for assigning permissions to files & directories

10.3.4 Mounting and managing files systems

- Use the mount & unmount commands to examine the state of file system status
- move a file or directory
- Use mount & unmount to make a file, directory, or disk available

10.3.5 File system configuration files

- Describe the functions of commands used for file management
- Describe the contents of fstab

10.3.6 Managing runlevels

- match the service to the correct run level
- Describe the differences between run levels

Lab: Managing Runlevels

10.3.7 Documenting a Linux system configuration

10.4 Daemons

10.4.1 Introduction to Linux daemons

10.4.2 Starting, stopping, and restarting daemons

- Describe process for determining which services/daemons are running
- Issue a command to start or stop a service
- describe the methods for stopping a service

10.4.3 HTTP

- Describe the services Apache offers
- Describe the process for obtaining Apache
- Install Apache

Lab: HTTP Apache Web Server

10.4.4 FTP

- Describe the process for enabling FTP services
- Explain the usage of FTP
- Obtain file from an FTP server

Lab: Configuring FTP Services in Linux

10.4.5 Telnet

Lab: Configuring Telnet in Linux

10.4.6 Server Message Block (SMB) protocol

- Create a SAMBA server so that Windows clients can use file & print services
- Describe the services SAMBA offers

Lab: Creating a Samba Server

10.4.7 NFS (Network File System)

10.4.8 Mail client

10.4.9 Printing in a Linux Environment

- Given the contents of a printer configuration file, modify it to support additional printers
- Describe the steps required to install a printer

10.4.9 Scripts

- Describe the methods to automate system functions

Lab: Writing a Script File in Linux

Summary

Module 11. Advanced NOS Administration

11.1 Backups

11.1.1 Overview of backup methods

Lab: Backing up with Linux

Lab: Backing up with Windows

11.2 Drive Mapping

11.2.1 What is drive mapping?

11.2.2 Mapping drives in Windows networks

11.2.3 Mapping drives in Linux networks

11.3 Partition and Processes Management

11.3.1 Using fdisk, mkfs, and fsck

- Explain the role of partitions in conjunction with system security

11.3.2 Managing system processes with cron jobs

11.3.3 Core dumps

11.3.4 Assigning permissions for processes

- Use the ps command to determine current process status
- Given permissions output, interprets the users right & permissions
- Describe process relationship (parent, child, etc.)

11.4 Monitoring Resources

11.4.1 Disk management

- Use the du, df, and top commands to determine resource utilization

11.4.2 Memory usage

- Describe methods to determine system performance

11.4.3 CPU usages

- Describe methods to determine system performance

11.4.4 Reviewing daily logs

- Describe the contents of the userlog files
- Describe the contents of syslog

11.4.5 Checking resource usage on Windows 2000 and Windows XP

- Use task manager to identify process problems
- Use task manager to terminate nonresponsive processes
- Use taskmanager to determine current processor utilization
- Describe methods to determine system performance

Lab: Checking Resource Usage on Windows 2000

11.4.6 Checking resource usage on Linux

- Describe the contents of security log
- Describe the contents of event log

Lab: Checking Resource Usage on Linux

11.5 Analyzing and Optimizing Network Performance

11.5.1 Key concepts in analyzing and optimizing network performance

- Describe the differences between core processes and non-critical processes
- Describe methods to determine system performance

11.5.2 Bottlenecks

- Describe the differences between core processes and non-critical processes

Worksheet: Bottlenecks

11.5.3 Baselines

Worksheet: Baselines

11.5.4 Determining Internet connection speed

11.5.5 Networking monitoring software

- Use NetMon to view network performance

Lab: Network Monitor

Summary

Module 12. Installing and Maintaining Hardware in Linux

12.1 Hardware Terms, Concepts, and Components

12.1.1 Overview of hardware components

12.1.2 Central processing unit (CPU)

12.1.3 Video hardware

12.1.4 Miscellaneous hardware and components

Lab: Using Device Manager in Windows 2000 Server

12.1.5 Hardware monitoring devices

Lab: Using the HCL

12.2 Hardware Installation, Configuration, and Maintenance

12.2.1 Locating hardware drivers for Linux

12.2.2 Configuring hardware in a Linux system

- Explain how to configure a new HDD
- make changes to /etc/fstab to accommodate new HDD
- use fdisk to partition new HDD

12.2.3 Linux kernel modules

Lab: Updating the Server's Operating System and Hardware

12.3 Checking and Confirming Hardware Configuration

12.3.1 Power cables

12.3.2 IRQ, DMA, and I/O settings

12.3.3 EIDE devices

12.3.4 SCSI devices

12.3.5 BIOS settings

12.3.6 Diagnosing and troubleshooting devices

12.3.7 Peripheral devices

12.3.8 Core system hardware

12.4 Laptop and Mobile Devices

12.4.1 Power management

12.4.2 PC card devices

Summary

Module 13. Troubleshooting the Operating System

13.1 Identifying and Locating Symptoms and Problems

13.1.1 Hardware problems

13.1.2 Kernel problems

13.1.3 Application software

13.1.4 Configuration

13.1.5 User error

13.1.6 Using system utilities and system status tools

- Use the ps command to determine current process status

13.1.7 Unresponsive programs and processes

- Use the ps command to determine current process status
- given a ps output, identify possible problems
- Describe process relationship (parent, child, etc.)

13.1.8 When to start, stop, or restart a process

- given a ps output, identify possible problems
- Describe the methods for stopping a process

13.1.9 Troubleshooting persistent problems

13.1.10 Examining log files

- Describe the contents of syslog

13.1.11 The dmesg command

13.1.12 Troubleshooting problems based on user feedback

13.2 LILO Boot Errors

13.2.1 Error codes

- Given a scenario, determine the cause of the boot problem
- Match an error code with corresponding problem

13.2.2 Booting a Linux system without LILO

- Given a scenario, determine problems with LILO & Bootloader

13.2.3 Emergency boot system

- Describe process for creating a boot disk after install has been completed

13.2.4 Using an emergency boot disk in Linux

- Describe process for creating a boot disk after install has been completed
- Use an emergency boot disk to restart system

13.3 Recognizing Common Errors

13.3.2 Various reasons for package dependencies problems

13.3.3 Solutions to package dependencies problems

13.3.4 Backup and restore errors

13.3.5 Application failure on Linux servers

13.4 Troubleshooting Network Problems

13.4.1 Loss of connectivity

13.4.2 Operator error

13.4.3 Using TCP/IP utilities

- Given output from tracet, explain possible problems
- Describe the different TCP/IP utilites

- Explain function of ARP command
- given an unsuccessful ping, explain the possible problem
- use Netstat to determine IP problems
- use ipconfig to determine existing IP settings
- use nbtstat to determine misc. other settings

Worksheet: Using TCP/IP Utilities

13.4.4 Problem-solving guidelines

13.4.5 Windows 2000 diagnostic tools

Worksheet: Windows 2000 Diagnostic Tools

Summary

Module 14. Network Security

14.1 Developing a Network Security Policy

14.1.1 Accessing security needs

14.1.2 Acceptable use policy

14.1.3 Username and password standards

- Describe the password default rules
- Given a list of possible password, determine which ones meet user policies
- Describe best practices for setting a password

14.1.4 Virus protection standards

- Explain the process of keeping the virus files updated

14.1.5 Online security resources

14.2 Threats to Network Security

14.2.1 Overview: Internal/external security

- Describe common threats Against an OS

14.2.2 Security vulnerabilities within Linux services

- Describe the security weakness an OS

14.2.3 Outside threats

14.2.4 Denial of Service (DoS)

14.2.5 Distributed Denial of Service (DDoS)

14.2.6 Well known exploits

14.2.7 Inside threats

Worksheet: Threats to Network Security

14.3 Implementing Security Measures

14.3.1 File encryption, auditing, and authentication

- Given a threat scenario, choose appropriate Linux option or program to address
- Describe file security
- Describe methods of security auditing available

14.3.2 Intrusion Detection Systems

- Given a threat scenario, choose appropriate Linux option or program to address
- Describe the features and functions of an IDS

14.3.3 IP security

- Given a threat scenario, choose appropriate Linux option or program to address

14.3.4 Secure Sockets Layer (SSL)

- Given a threat scenario, choose appropriate Linux option or program to address

14.3.5 E-mail security

- Given a threat scenario, choose appropriate Linux option or program to address

14.3.6 Public/private key encryption

Worksheet: Implementing Security Measures

- Given a threat scenario, choose appropriate Linux option or program to address

14.4 Applying Patches and Upgrades

14.4.1 Finding patches and upgrades

14.4.2 Selecting patches and upgrades

14.4.3 Applying patches and upgrades

- Describe the use of the automatic Windows Update client

Lab: Windows Update

14.5 Firewalls

14.5.1 Introduction to firewalls and proxies

- Describe the features of firewalls

14.5.2 Packet filtering

14.5.3 Firewall placement

14.5.4 Common firewall solutions

14.5.5 Using an NOS as a firewall

Summary

**Appendix 1: Quick Start Installation Guide (for HP OpenView
Network Node Manager and HP OpenView Customer
Views for NNM)**

**Appendix 2: Managing Networks with HP OpenViewNetwork
Node Manage**