CompTIA Linux+ 2009

Course Introduction 10m

Unit 01 - Installation 52m

Topic A: Linux Introduction
Ubuntu with OpenOffice / Firefox
Linux Platforms
Popular Distros
Software Licensing
Non-licensing Terminology
Demo - Exploring Linux and Licensing
Topic B: Pre-installation Tasks
Pre-installation Tasks
Installation Types
Installation Files
ISO Burning Applications
Topic C: Linux Installation
File Systems
Partitioning
Minimum Partitions
Demo - Installing Linux
Logging On
Demo - Logging into Debian
Unit 01 Review

Unit 02 - Using Linux 2h 24m

Topic A: Graphical User Interfaces
User Interface Architecture
Demo - Exploring User Interfaces
Desktop Environments
GNOME
GNOME Environment
KDE
Xfce
Linux Applications
Demo - Exploring End-user Applications and OpenOffice Writer
Topic B: Command Line Linux
Command Line Interface
BASH (Bourne Shell)
Common Commands
Demo - Entering Commands at the BASH Prompt
BASH Proficiency
Command History
Shell Variables
Shell Metacharacters
Tab Completion
Demo - Exploring the BASH Command Line Interface
Piping and Redirecting
Standard I/O
Demo - Exploring Piping and Redirection
Named Pipes
Demo - Exploring Named Pipes
Getting Help
Man Page

Man Page Sections
Info Pages
Demo - Getting Help
Additional Help Options
Demo - Exploring Further Help Options
Unit 02 Review

Unit 03 - File and Directory Management 1h 54m

Topic A: Directory Organization
Filesystem Hierarchy Standard
Directory Navigation
pushd and popd
Demo - Exploring the FHS Directories
Managing Directories
Demo - Managing Directories
Topic B: File Management
Files
Wildcards
Demo - Managing Files
The vi Editor
vi Commands
Demo - Editing a File with vi
Links
Demo - Creating and Using File Links
File Information Commands
File Info with ls -lF
More File Information Commands
Demo - Examining File Types
Finding Files
Demo - Finding Files
Topic C: Removable Storage
Mounting Volumes
File System Types
Device Files
Mount Points
Mount Options
Example Commands
Mounting
Privilege Escalation
Demo - Mounting and Unmounting a CD and USB Drive
Unit 03 Review

Unit 04 - System Administration 2h 40m

Topic A: Users and Groups
User Security - /etc/passwd
Password File Fields
User Security - /etc/shadow
Shadow File Fields
Privilege Escalation
Demo - Exploring User Accounts
Demo - Adding Your Account to the sudoers File
User Accounts
The /etc/login.defs File
The /etc/default/useradd File
The /etc/skel Directory

The adduser Command
The /etc/adduser.conf File
Demo - Creating User Accounts at the Command Line
GUI Admin Tools
Demo - Creating User Accounts via the GUI
Modifying Users
The chfn Command
The finger Command
Demo - Modifying a User Account
Creating Groups
Adding Users to Groups
Demo - Creating Groups and Adding Members
Deleting Accounts
Demo - Deleting Users and Groups
Topic B: File and Directory Permissions
File Ownership
Demo - Managing File Ownership
File and Directory Permissions
The Mode
Mode Explained
Demo - Viewing File Permissions
Changing Permissions
Numeric Syntax
Demo - Changing File Permissions
Default Permissions
Umask
Demo - Viewing and Changing the Umask
Special Permissions
Special Permissions in the Mode
Setting Special Permissions
Demo - Viewing and Changing Special Permissions
File System Specific Attributes
Demo - Viewing and Changing ext3 File Attributes
Topic C: User Environment Configuration
Variables
Viewing Variables, Custom Variables
PATH
Changing the Prompt
Demo - Working with Shell and Environment Variables
Command Aliases
Demo - Viewing and Creating Command Aliases
Environment Files
Demo - Saving a Command Alias in an Environment File
Topic D: GUI Configuration
Video Configuration
Screen Resolution
xvidtune
Screensaver
Appearance Preferences
Demo - Configuring Video Settings
Mouse Preferences
Keyboard Preferences
Demo - Configuring the Mouse and Keyboard
Stop and Start X Windows
Demo - Stopping and Starting X Windows
Unit 04 Review

Unit 05 - Application Management 52m

Topic A: Packages and Package Managers
Software Distribution
Packages
Package Managers
Synaptic Package Manager
Demo - Installing a Package via the GUI
Command Line Package Managers
Demo - Installing a Package via the Command Line
Installed Software
Demo - Gathering Information about Installed Software
Removing Software
Demo - Removing Software
Repositories
Synaptic - Software Sources
Demo - Managing Repositories
Topic B: Source Code Software
Installing from Source Code
Extracting
Compiling and Linking
Installing and Cleaning Up
Demo - Installing the GNU C Compiler
Demo - Downloading and Installing a Source Code Application
Unit 05 Review

Unit 06 - System Configuration 1h 31m

Topic A: Disk Management
Disk Drives
Drive Components
Drive Geometry
Partitioning
fdisk
fdisk - Drive and Partition List
parted - Partition Editor
GParted
Demo - Exploring Partitions with fdisk
Demo - Exploring Partitions via the GUI
Formatting
Demo - Formatting a Partition with mkfs
The /etc/fstab File
The fstab with New Drives
Demo - Editing the fstab File
Virtual File Systems
Demo - Mounting a Loop Device
Topic B: File System Management
Quotas
Quotas Enabled in fstab
Enabling Quotas
Editing Quotas with edquota
Enabling Quotas (cont.)
Swap Space
Swap Space Options
Creating Swap Space
Filling New Swap Space
Managing Swap
Demo - Managing Swap Space

Disk Arrays
RAID Level 0
RAID Level 1
RAID Level 3
RAID Level 5
Logical Volume Manager
Implementing LVM
Topic C: Device Management
Devices
Sample Devices
Demo - Exploring the /dev Directory
Viewing USB Devices
Demo - Viewing Devices on the USB Bus
Viewing PCI Devices
Unit 06 Review

Unit 07 - Process and Module Management 1h 14m

Topic A: Process Management
Processes
Process IDs
Demo - Exploring Processes
The ps Command
Common ps Command Forms
Output of ps aux
The top Command
Demo - Viewing Processes and Devices
Killing Processes
Other kill Commands
Demo - Managing Processes
Topic B: Process Priority and Execution
Process Forking
Foreground and Background
Demo - Comparing Foreground and Background Processes
Process Priority
Viewing Priorities
Setting Priorities
Renice
Demo - Managing Process Priorities
Topic C: Kernel Modules
Kernel
Kernel Tuning
Common sysctl Settings
Demo - Viewing Kernel Information
Kernel Modules
The lsmod Command
The modprobe Command
Module Related Files
Demo - Exploring Kernel Modules
Unit 07 Review

Unit 08 - System Maintenance 1h 59m

Topic A: Backup and Restore
Compression
Algorithms
Compressed File Types
Compression Utilities

GNU zip = gzip
bzip2
Compression via the GUI
Demo - Compressing and Extracting Data
Tape Archives
Demo - Creating Archiving with tar
cpio and find
Demo - Backing Up with cpio
Backup with dd
Demo - Backing Up with dd
Topic B: Scheduling Tasks
Scheduling Commands
The at Command
Demo - Scheduling Commands with at
The cron Command
Sample crontab
crontab run-parts Format
Managing cron
Demo - Scheduling a Job with cron
Topic C: Performance Monitoring
Monitoring Tools
Demo - Installing the sysstat Package
mpstat
iostat
Demo - Monitoring with mpstat and iostat
System Activity Reporter
Output of sar
Demo - Monitoring System Activity with sar
The uptime Command
The free Command
The top Command
The vmstat Command
Demo - Using the Memory Statistics Utilities
Load Average
Demo - Viewing the Load Average for Your Computer
Topic D: Logging
Log Files
Demo - Viewing Logs
System Logging Daemon
Sample rsyslog.conf
Logging Facilities
Priorities
Priority Notation
Demo - Examining the syslog.conf File
Log Rotation
Sample logrotate.conf
Demo - Examining Log Rotation
Text Manipulation Commands
grep
head and tail
sed
Demo - Searching and Displaying Text Files
awk
Demo - Searching and Replacing with awk
Unit 08 Review

Unit 09 - Networking 2h 6m

Topic A: Networking Basics

Networks
Protocols
OSI Reference Model
Internet Protocol Suite
Additional Protocols
Addressing
Addresses
Internet Protocol Version 4
IPv4 Classes
Internet Protocol Version 6
Assigning Addresses
Demo - Examining Addresses
Character Based Names
Name Utilities
Demo - Identifying Addresses and Names
Ports
Demo - Viewing an Using Ports
Authentication
Authentication Factors
One-factor Authentication
Two-factor Authentication
Three-factor Authentication

Topic B: Network Services

NIC Configuration
Network Commands
Demo - Configuring Your Network Interface
DHCP Services
Demo - Managing DHCP Client Services
DHCP Server Services
Demo - Installing and Configuring DHCP Server Services
Network Time Services
Date and Time Commands
Demo - Installing NTP and Configuring Time Synchronization
Internet Super Daemon
Demo - Viewing Daemon Startup Options

Topic C: Domain Name Services

DNS
Name Resolution Process
Demo - Resolving Names
BIND
Resource Records
Demo - Installing BIND and Examining its Configuration Files
Managing BIND
Demo - Managing BIND
Local Name Resolution
Default /etc/hosts File
The nssswitch.conf File
Demo - Examining Local Name Resolution
Unit 09 Review

Unit 10 - File Sharing and Printing 43m

Topic A: Network File Resources
NFS
Demo - Enabling Local Name Resolution and Installing NFS
NFS Server Configuration
The exports File
Computer Entries
Options
Demo - Configuring and Starting the NFS Server
Mounting
Demo - Mounting an NFS File System
Managing NFS
Demo - Managing Exports
Topic B: Printing
Printing
LPD/LPR
Application Specific
CUPS
CUPS Configuration
GUI Tools
More on Printing
Demo - Creating a Printer in CUPS
Printing Management
Demo - Managing Printers
Unit 10 Review

Unit 11 - Interoperability 28m

Topic A: Network Interoperability
Samba
Demo - Installing Samba
Samba Configuration
The smb.conf File
SWAT
GUI Tools
Browsing for Linux Resources
Demo - Configuring Samba Shares
Components
Topic B: Remote Desktop Access
rdesktop
rdesktop Command
GUI Clients
VNC
Debian's VNC Server
TightVNC on Windows XP
A Linux Desktop on Windows
A Windows Desktop on Linux
Unit 11 Review

Unit 12 - Security 57m

Topic A: System Security
NIS
NIS Roles
PAM
LDAP
RADIUS

RADIUS Benefits
SELinux - Security Enhanced
Changing Modes
Demo - Examining SELinux
User Tools
Demo - Exploring User Management Commands
Topic B: Network Security
Routing and Firewalls
Basic Routing Table
Routing
Large Network
Modifying Routing Tables
Demo - Examining Routing
Traffic Filtering
Configuring Chains and Rules
iptables Command Parameters
iptables Examples
Demo - Configuring iptables
Network Security Tools
Nessus
Intrusion Detection Systems
Snort IDS
HIDS
Unit 12 Review

Unit 13 - Web Environment 59m

Topic A: Web Services
Web Technologies
Sample PHP Program
MySQL Client
Apache
Demo - Installing Apache
Apache Configuration
Site Definition Files
The .htaccess File
Demo - Configuring Apache
Apache Modules
Apache Daemon
Demo - Installing the PHP Module
Demo - Configuring Apache's Default Document
Topic B: MySQL Services
MySQL
Demo - Installing MySQL and Associated Tools
MySQL Configuration
Demo - Examining the MySQL Configuration Files
phpMyAdmin
Demo - Testing Your MySQL Server
Starting and Stopping MySQL
Demo - Starting and Stopping MySQL
Unit 13 Review

Unit 14 - FTP and Email Services 44m

Topic A: FTP Services
FTP
Demo - Installing an FTP Server
Configuration
Demo - Configuring the FTP Server
Security
FTP Clients
Active Mode
Passive Mode
Transfer Types
Demo - Transferring Files with FTP
Secure FTP
SSH Daemon Configuration
Key Generation
Public Key Encryption
Demo - Installing and Configuring the SSH Daemon
Demo - Connecting via SSH
Synchronizing Directories
Topic B: Mail Services
Electronic Mail
Mail Clients
Email Addresses
Unit 14 Review

Unit 15 - Troubleshooting and Maintenance 57m

Topic A: Booting Linux
Booting
Boot Loaders
GRUB Boot Loader Screen
GRUB Configuration
Demo - Investigating GRUB
Runlevels
Runlevel Initialization
Demo - Changing Runlevels
Root Password Recovery
Demo - Recovering the Root Password
Kernel Options and Recovery
Demo - Troubleshooting Boot Problems
Topic B: Network Troubleshooting
Troubleshooting
Network Utilities
Obtaining Files
File Verification
Topic C: Scripting Basics
Scripting
A Script
Commands
Demo - Writing and Testing a Shell Script
Unit 15 Review
Course Closure

Total Duration: 20hrs 30min