

Course Outline

LPI 102

Duration: 5 days (30 hours)

Learning Objectives:

Target Audience:

- Anyone interested in gaining a greater understanding of Linux
- Anyone responsible for providing basic installation, operation, and troubleshooting services on Linux workstations and servers
- Microsoft professionals seeking to add Linux expertise

Prerequisites:

- 101

Topics Covered:

- Installing a Linux System
 - Objectives
 - Installation Options
 - Getting Ready
 - Linux PRE-Installation
 - Installation
 - System Initialization
 - Labs & Self-Directed Exercises
- Configuring a Linux System
 - Objectives
 - X Window System
 - Configuring and Using KDE
 - Configuring and Using GNOME
 - Red Hat Package Managers
 - Debian Package Manager
 - Non Debian Packages – alien
 - Using Packages Without a Package Manager
 - Labs & Self-Directed Exercises
- Linux System Background
 - Objectives
 - Hardware and Architecture
 - System Resources
 - The Linux File System



- File System Structure
 - Directory Hierarchy
 - File-related Commands
 - Windows NT and Linux File Permissions
 - Mounting File Systems
 - Managing Shared Libraries
 - System Library File Names and Locations
 - Shared Libraries – Commands, Install, Support, Errors
 - Process Management
 - The /proc File System
 - Labs & Self-Directed Exercises
- Processes
- Objectives
 - The Linux Kernel
 - Programs and Processes
 - Daemons and Zombies
 - Key Attributes of a Process
 - Running and Checking
 - Signals – Sending and Intercepting
 - Scheduling Processes
 - The at Command
 - The crontab Command
 - Administering at and crontab
 - Labs & Self-Directed Exercises
- The Linux Shell & Bash Scripting
- Objectives
 - Linux Shell Profiles
 - Environment
 - Using the bash Shell
 - Redirecting Input and Output
 - Shell Scripts
 - Background Jobs
 - Variables – Naming and Assigning Quotes and Command Substitution
 - Passing Information to Your Script
 - Flow Control
 - Loops – for, while, and until Tests and Conditions
 - Return Codes/Exit Status if-then-else
 - Conditions
 - Comparisons – String, Arithmetic
 - Logical Evaluation

- File Status Tests
- Input – accepting, read, select
- Functions
- Advanced bash Concepts
- Labs & Self-Directed Exercises
- User Environments
 - Objectives
 - Login Shell
 - Restricted root Access
 - Environment Files & Definitions
 - The unmask Command
 - Security Issues
 - Message of the Day (motd)
 - Guest Accounts
 - Shared Group Directories
 - Labs
- File Systems
 - Objectives
 - File System Structure & Types
 - Making and Mounting
 - Kernel File Cache
 - The lost+found Directory
 - Corrupt File Systems
 - File System Configuration File
 - Utilities
 - User Disk Quota
 - Turning on Quota at Boot Time
 - Maintaining Quota
 - Labs & Self-Directed Exercises
- Printing
 - Objectives
 - Print Spooler Model
 - User Commands
 - Installing and Managing Printers
 - Manipulating Printers in Linux
 - Adding a Printer
 - Network Printing
 - Print Filters
 - PostScript Printers
 - Labs

- The Linux Kernel
 - Objectives
 - About the Linux Kernel
 - Preparing for a New Kernel
 - Software Tools
 - The source Tree
 - Patching the Source Code
 - Customizing and Installing a New Kernel
 - Configuring a New Kernel
 - Detailed Procedure – Building new Kernel
 - Default Kernel Options with rdev
 - Kernel Modules
 - Building a Monolithic Kernel
 - LILO Configuration File
 - Using LILO to Test a New Kernel
 - LILO Command Options
 - Boot Options
- TCP/IP Networking
 - Objectives
 - Overview of TCP/IC
 - IP Address Format
 - Setting up Networking
 - Defining IP Addresses
 - Network Interface Configuration
 - Network Statistics
 - Change the Routing Table
 - Utilities
 - Looking for a System
 - Telnet
 - File Transfer Protocol
 - Berkeley r Utilities
 - Remote Access and Shells
 - Internet Services
 - Labs & Self-Directed Exercises
- Device Configuration
 - Objectives
 - Configure the Device
 - Labs & Self-Directed Exercises
- Network Configuration
 - Objectives

- Set Up Networking
- Routing Tables and Routing Daemons
- Point to Point Protocol (PPP)
- Setting up PPP
- Labs & Self-Directed Exercises
- DHCP
 - Objectives
 - Dynamic Host Configuration Protocol
 - DHCP Clients
 - dhcpcd, dhclient
 - The alias Command
 - Labs & Self-Directed Exercises
- Name Resolution
 - Objective
 - /etc/host.conf, /etc/networks, /etc/resolv.conf
 - Network Information Service (NIS)
 - Top Level Domains
 - Zones
 - Labs & Self-Directed Exercises
- DNS
 - Objectives
 - The DNS Namespace
 - Zones
 - BIND
 - Configuring BIND
 - Named (the Server Program) Files
 - Domain Database File
 - SOA (Start of Authority) Record
 - Name and MailServers
 - DNS Database Records
 - Labs & Self-Directed Exercises
- Network Security
 - Objectives
 - Your Role in Security
 - Exploits
 - Security Tools
 - Basic NFS Security
 - X Windows Security
 - Physical Security
 - Data Integrity

- Two Main Types of Network Attacks
- Security Updates
- TCP Wrappers
- Labs & Self-Directed Exercises
- Network Management and SNMP
 - Objectives
 - Components of SNMP
 - Manager, Agents, and Nodes
 - SMI- Object Naming
 - The MIB Object Namespace
 - SNMP Messages
 - Communities
 - SNMP Version 2 and 3
 - Using SNMP
 - Other NM Protocols
 - Labs & Self-Directed Exercises