



# Introduction to Linux

## Five days

**Course Description:** This is the first in a series of courses focusing on the Linux Operating System. It is vendor neutral with an emphasis on the latest version of RedHat Linux. A comprehensive study of Linux is undertaken. Topics include Linux evolution, graphical environments, terminal interfaces and bash, file system, file manipulation commands, data manipulation commands, editors, software tools, networking tools, and system administration tools.

**Audience:** This course is for programmers, end users, managers, and future system administrators.

**Prerequisites:** Students should have some familiarity with an operating system such as Windows.

## Outline

### AN INTRODUCTION

- Operating Systems
- History of UNIX/Linux
- UNIX History
- Richard Stallman and the GNU Project
- Linus Torvalds and Linux
- GNU, FSF, and the GPL
- Commercialization of Linux

- The /etc/passwd File
- The /etc/group File
- The newgrp Command
- The su Command
- File and Directory Permissions
- chmod
- umask
- passwd
- Special Permissions
- sudo

### GETTING STARTED

- Logging in to Linux
- Working in Linux
- The X Server
- The Gnome Display
- Terminal Windows
- Nautilus
- Gnome Applications
- Terminal Window Interface
- Shell Command Lines
- Getting Help
- The man Command
- The info Command
- Linux Architecture

### SHELL FUNDAMENTALS

- Shell Functionality
- Shell Variables
- The PATH Variable
- The Command Line
- Command History
- Command Line Shortcuts
- Command Substitution
- Filename Expansion Characters
- The Standard Output
- The Standard Error
- The Standard Input
- Pipes
- Aliases
- Functions
- Quoting
- Control Sequences
- Other Special Characters
- Other Shell Features

### THE LINUX FILESYSTEM

- Filesystems
- Top Level Directories
- Home Directories
- Complete vs. Relative Path Names
- Directory Commands



## Introduction to Linux

### FILE MANIPULATION COMMANDS

- cat
- ls
- cp
- mv
- ln
- rm
- wc
- find
- Linux Editors
- vi Commands
- aspell

### LINUX FILTERS

- Perspective
- grep
- sort
- head and tail
- tr
- cut
- od
- paste
- split
- uniq
- sed
- gawk
- more and less
- tee
- lp

### PROCESSES

- What is a Process?
- Characteristics of a Process
- Process Creation
- ps
- Job Control
- Signals
- kill
- nohup

### SHELL PROGRAMMING

- Shells
- Scripting Rationale
- Scripting Prerequisites
- Creating a bash Script

- bash Startup Scripts
- A Script's Environment
- Exporting Variables
- Exit Status
- Programming the Shell
- Parameter Passing
- Operators
- Decision Making - if
- Complex Decisions
- Arithmetic
- Looping Constructs - for
- Input and Output
- Looping Constructs - while
- Interrupts

### NETWORKING APPLICATIONS

- TCP/IP
- IP Addresses
- Network Configuration Files
- Client/Server Computing
- telnet
- ping
- ftp
- ssh
- scp

### SOFTWARE TOOLS

- Building a Linux Utility
- Creating a Utility
- The C Compiler
- Libraries
- Static vs. Shared Libraries
- make
- Software Configuration Management
- Revision Control
- Data Compression

### SYSTEM ADMINISTRATION

- Duties of the System Administrator
- Bringing Up the System
- Setting the Date
- Shutting Down the System
- Adding Users
- Ownerships
- The /dev Directory



## Introduction to Linux

- mount File Systems
- df - Free Disk Space
- du - Disk Usage
- find - Find Files
- tar - Backup Files
- Managing Services
- at - Schedule Command
- crontab - Schedule Commands
- Managing Software
- rpm - Managing Software
- yum - Managing Software