

Linux System Administration

Course specifications

Course number: 079 935

Software version number: (see hardware/software requirements)

Course length: 3 days

Hardware/software required to run this course

Software Requirements:

Most features discussed in the courseware are available for multiple distribution of Linux. Here are some suggestions for Linux distributions.

Caldera OpenLinux 2.2, 2.3 or higher

Debian GNU/Linux 2.1 or higher

Mandrake Linux 6.0, 6.1, 7.0 or higher

Red Hat Linux 6.0, 6.1 or higher

Slackware 4.0, 7.0 or higher

SuSE 6.1, 6.2, 6.3 or higher

TurboLinux 4.0, 6.0 or higher

Hardware Requirements:

One of the strengths of Linux is its ability to run efficiently on minimal hardware. It is possible to create a fully-functional server or workstation on a system such as a 386 25MHz/4MB RAM/80MB hard drive, but the ability of a student to explore and use all of the features available would be limited. For that reason, two specifications are listed here, a minimum set of hardware specifications, and a recommended specifications for installing Linux, running the X Window System, and performing the most common learning tasks.

Minimum Hardware:

CPU: Pentium P133 or similar

RAM: 16 MB

HD: 1.5GB free space for a complete Linux installation (any of the above distributions)

CDROM: 4x or faster

Video Card compatible with the X Window System (the SVGA X Server will work for most cards)

Network Card compatible with Linux

Internet connection (optional)

Keyboard and pointing device

Recommended Hardware:

CPU: Pentium PII 300, Celeron 300, AMD K6-2 300 or similar

RAM: 64 MB (32 will do for most learning environments)

HD: 1.5GB free space for a complete Linux installation (any of the above distributions)

CDROM: 4x or faster

Video Card compatible with the X Window System (the SVGA X Server will work for most cards)

Network Card compatible with Linux

Internet connection (optional)

Keyboard and pointing device

CD-ROM System Specifications:

The Interactive Learning CD-ROM that accompanies the courseware has been designed to run on the following configuration.

Processor: Pentium

Operating System: Windows 95, Windows 98, or Windows NT 4.0 with a minimum of Service Pack 3 and any necessary Y2K upgrades

Memory: 32 MB of RAM

Hard Disk: 50 MB of free space

Monitor: 256-color display or higher

CD Drive: 4x speed or greater

Sound: Sound card

Linux Software Included:

Red Hat 6.1 – i386.iso

TurboLinux Server Release 4.0

Course description

Overview: Students will gain hands-on experience with kernel customization, package management, process and disk management, as well as user and group management.

Prerequisites: Students should have 6-12 months experience with Linux. Familiarity with the Linux or Unix command line is required.

Delivery method: Instructor-led, group-paced, classroom-delivery learning model.

Benefits: Students with some experience administering a server will benefit from the breadth of coverage of this course, by gaining a broad overview of the most important responsibilities of a system administrator.

Target Student: Students who expect to become the primary system administrator for one or more hosts, but currently may have only junior system administration privileges and responsibilities.

What's next: 079-935, Linux System Administration is the second course in the Linux series.

After completion of the second course in this series, the final course in this series is 079-933, Linux Networking. Linux Networking helps students gain a comprehensive overview of the TCP/IP functionality and networking features and daemons available for the Linux platform.

079-934, Linux Fundamentals is the first course in the Linux series, in which students install Linux, configure the X Window System, and learn to navigate the Linux command-line shell. Students also learn fundamental concepts common to Linux: the kernel, Linux filesystem, boot process and runlevels, shell scripting, and editing text files.

Certification Study Guides:

079-933 Linux Networking, 079-934 Linux Fundamentals, and 079-935 Linux System Administration can be used with the following study guides for supplemental training materials that directly focus on exam criteria.

- 079-931, Sair Linux & GNU Certification Study Guide
- 079-936, Linux Professional Institute Certification Study Guide
- 079-932, Linux Certification Study Guide – Preparing Students for the Red Hat Certified Engineer Exam.

A certification matrix is included in each of the study guides. This matrix maps the applicable study guide materials and courseware materials from Linux Fundamentals, Linux Administration, and Linux Networking to exam objectives for one of the following certification programs:

- Linux Professional Institute Certification
- Red Hat Certified Engineer Certification
- Sair Linux & GNU CertificationLinux System Administration

Objectives

This courseware will provide you with the information you need to complete the following:

- Describe the role of a Linux system administrator.
- Explain the function of the kernel and how it interacts with the rest of the system.
- Use package management to perform system updates and maintain system integrity.
- Make and install programs from source code.
- Perform basic process, memory, and performance management.
- Manage system functionality through daemons.
- Manage file ownership and permissions.
- Manage user and group accounts and related system files.
- Configure and verify system security.
- Customize and use the shell in user and system environments.
- Design and maintain an effective data backup strategy.
- Use and manage local system documentation.
- Configure logging and monitor log files of local and remote systems.

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Course content

Chapter 1: Introduction to Linux Administration

The System Administrator's Role

The root Account

Documentation

Chapter 2: Kernel Modules and Customization

Kernel Basics

Compiling the Kernel

Modules

Kernel Tuning

Chapter 3: Package Management

RPM Packages

Debian Packages

Compiling Programs from Source

Shared Libraries

Chapter 4: Process Management

Processes

Signals

Daemons

Memory

Process Accounting

Chapter 5: Disk Management and Quotas

Files and Directories

File Systems

Kernel File Cache

Distributed File Systems

Chapter 6: User Management

Users and Groups

Passwords

Removing a User

Restrictions

Logging in to Linux

Chapter 7: Scheduling Tasks and Managing Backups

Cron

At and Batch

Back Up and Restore

Backup Media

Backup Utilities

Chapter 8: Configuring Printers

Printing

Chapter 9: Security

Vulnerabilities

Host Security

TCP Wrappers

Detecting Break-Ins

Internet Security Resources

Security Policies

Security Tools

What to Do if Attacked

Chapter 10: System Logs

Common Logfiles

Klogd

Syslogd

Logger

logrotate