

## Course 402

# Linux® Installation, Configuration, Networking & Troubleshooting

## A 4-day Hands-On Workshop

This workshop is designed for Windows® power users and support personnel who want to familiarize themselves with Linux and gain experience with its operating environment. Throughout this workshop you work hands-on to build the knowledge and confidence needed to function productively in a Linux environment. The workshop builds on your DOS and Windows knowledge, and helps you experiment with, evaluate, or transition to Linux.

### You will benefit from this workshop if you

- Have plenty of Windows, but no Unix, experience and want to familiarize yourself with the Linux operating system
- Need to get comfortable working in a Linux environment quickly
- Want to experiment with Linux in a non-threatening environment

### You will learn how to

- Install Ubuntu, Fedora or SUSE Linux successfully
- Use dozens of Linux command-line commands
- Access Linux' many built-in help functions
- Install and configure *X Window System* (Linux graphical interface)
- Manage disks and directory space
- Set up and configure a Linux network
- Compile and install a custom Linux kernel
- Recover when disaster strikes

### Prerequisites

Students should have a solid understanding of general computer and operating systems concepts. While no previous Linux/Unix experience is expected power-user level knowledge of Microsoft® Windows is assumed.

### The training approach

- **Real Hands-On:** You will spend over 50% of the time doing practical, realistic hands-on labs. You will install and configure Linux and troubleshoot various problems. You will build a network in the classroom, activate Linux networking capabilities, and configure and use typical network resources such as printers and shared files. You will install and run applications. You will recover from lost passwords and damaged disks. You will configure, compile, and install a customized Linux kernel.
- **Up to date information.** We update the materials before every event.
- **Straightforward explanations.** Technical concepts and terms are explained in English. You will walk away with a thorough understanding of how Linux works, and how to fix it when it doesn't.

## Workshop topics

### Introduction to Linux

- Linux' relationship to other Unix versions
- What you get when you download Linux over the net
- What you get in addition when you buy a “distribution”
- Differences between major vendors' Linux distributions

### Linux' hardware support and requirements

- Linux doesn't run on everything out of the box
- Minimum technical and realistic CPU requirements
- Supported hard disk interfaces
- Video requirements for *X Window System* and text mode
- Supported sound, modem, and network cards
- Plug-and-Play issues
- What you need to know about your system before you install Linux

### Linux' file system

- Physical, extended, and logical partitions
- Naming conventions for disks and partitions
- Partitions' relationship to subdirectories
- The basic directory structure – what is stored where

### Essential commands

- How to get help – `man`, `info`, `what is`, and HOWTO's
- Moving around in the file system
- Creating, managing, and removing sub-directories
- Creating, copying, moving, and renaming files
- Locating files and resources
- Accessing floppies, CDs, DVDs and USB devices (Flash drives, cameras, MP3 players etc.)
- Creating and managing user accounts and passwords
- Installing, managing, verifying, and removing applications and Linux components
- Working with editors – `ed`, `vi`, `pico`, and `emacs`
- Creating, editing, and running scripts

### Installing and configuring *X Window System*

- Why *X Window System* installations frequently fail – if you don't prepare
- *X Window System* is a set of applications, and not part of the operating system
- The main components of *X Window System* and their relationship
- Starting and stopping *X Window System*
- Configuring the graphical desktop
- Changing window managers
- Integrating desktop environments with the window manager – KDE and GNOME
- Configuring different features for different user accounts

## Compiling Linux kernels

- Kernel essentials
- Acquiring and installing the kernel source
- Configuring a new kernel
- Compiling the kernel
- Installing and booting the new kernel

## Networking Linux

- What you need to know to connect a Linux machine to a network
- Capacity and performance of different types of networks
- TCP/IP fundamentals – address, netmask, private and public addresses
- Network cards, hubs, switches, bridges, routers, and gateways
- Selecting and configuring a working driver for a network card
- Troubleshooting physical connections
- Sharing and protecting files and peripherals on a network

## Troubleshooting

- Protecting systems from tinkering users
- A three-step approach to distinguishing between hardware and software problems
- Recovering from corrupted system files
- What an *Emergency Boot Floppy* should contain
- Troubleshooting the startup sequence
- How to use Linux' start-up options
- Configuration and troubleshooting tools

## Hands-On labs

During the labs you install, configure and test industry standard components and troubleshoot realistic problems. You work at your own pace. Clear, easy-to-follow lab instructions, and the instructor, are there to guide your every step (and let you explore on your own when you want).

- Install **Ubuntu, Fedora, or SUSE Linux** from scratch
- Use Linux' built in help systems
- **Create** and **edit** system configuration files
- Learn most common text mode commands
- Write and run **scripts**
- Install and configure **X Window System**, Linux' graphical user interface
- Create and administrate **user accounts** and **passwords**
- Configure, **compile**, and install your own custom **Linux kernel**
- Connect to shared **printers** and **files** over a **network**
- Troubleshoot and fix damaged installations