



## Skill Set Alignment

### Fundamentals of Unix and IT Essentials II: Network Operating Systems

This document lists the skills that students learn in the Fundamentals of UNIX and IT Essentials II courses. These two courses together help prepare students for the CompTIA Linux+ certification. Employers, Academies, and students may use this document to communicate current knowledge, or to identify skills demonstrated at a work setting. Another valuable use of this information is as a list of proficiencies expected through work experience.

\_\_\_\_\_  
Name of Business/Employer

\_\_\_\_\_  
Name of Student

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City                      State                      Zip

\_\_\_\_\_  
City                      State                      Zip

\_\_\_\_\_  
Phone

\_\_\_\_\_  
Phone

\_\_\_\_\_  
Employment Supervisor's Name and Position

#### **Skills Set - Fundamentals of UNIX and IT Essentials II**

##### **Planning the Implementation**

- Identify purpose of Unix/Linux machine based on predetermined customer requirements
- Identify all system hardware required and validate that it is supported by Unix/Linux
- Determine what software and services should be installed, check requirements and validate that it is supported by Linux
- Determine how storage space will be allocated to file systems
- Compare and contrast how major Unix/Linux licensing schemes work
- Identify the function of different Unix/Linux services
- Identify strengths and weaknesses of different distributions and their packaging solutions
- Describe the functions, features, and benefits of a Unix/Linux solutions as compared with other operating systems
- Identify how the Unix/Linux kernel version numbering works
- Identify where to obtain software and resources
- Determine customer resources for a solution

##### **Installation**

- Determine appropriate method of installation based on the environment
- Describe the different types of Linux installation interaction and determine which to use for a given situation
- Select appropriate parameters for Linux installation
- Select packages based on the machine's "role"
- Select appropriate options for partitions based on pre-installation choices
- Partition according to your pre-installation plan

- Install service tools
- Configure file systems
- Select appropriate networking configuration and protocols
- Select appropriate security settings
- Create users and passwords during installation
- Install and configure Xfree86 server
- Select Video card support
- Select appropriate monitor manufacturer and settings
- Select the appropriate window managers or desktop environment
- Explain when and why the kernel will need to be recompiled
- Install boot loader
- Install and uninstall applications after installing the operating system
- Read the Logfiles created during installation to verify the success of the installation
- Validate that an installed application is performing correctly in both a test and a production environment

### **Configuration**

- Reconfigure the Xwindow System with automated utilities
- Configure the client's workstation for remote access
- Set environment variables
- Configure basic network services and settings
- Configure basic server services
- Configure basic Internet services
- Identify when swap space needs to be increased
- Add and configure printers
- Install and configure add-in hardware
- Reconfigure boot loader
- Identify the purpose and characteristics of configuration files
- Edit basic configuration files
- Load, remove, and edit list modules
- Document the installation of the operating system, including configuration
- Configure access rights

### **Administration**

- Create and delete users
- Modify existing users
- Create, modify and delete groups
- Identify and change file permissions, modes and types
- Manage and navigate the Unix/Linux hierarchy
- Manage and navigate the standard Unix/Linux file system
- Perform administrative tasks while logged in as root or by using the **su** command
- Mount and manage file systems and devices
- Describe and use the features of the multi-user environment
- Use common shell commands and expressions
- Use network commands to connect to and manage remote systems
- Create, extract and edit file and tape archives using **tar**
- Manage run levels using **init** and **shutdown**
- Stop, start and restart services (daemons) as needed
- Manage print spools and queues
- Create, edit and save files using **vi**
- Manage and navigate the Graphical User Interface
- Program basic shell scripts using common shell commands

### **System Maintenance**

- Create and manage local storage devices and file systems
- Verify user and root **cron** jobs and understand the function of **cron**

- Identify core dumps and remove or forward as appropriate
- Run and interpret **ifconfig**
- Download and install patches and updates
- Differentiate core services from non-critical services
- Identify, execute and kill processes
- Monitor system log files regularly for errors, logins, and unusual activity
- Document work performed on a system
- Perform and verify backups and restores
- Perform and verify security best practices
- Assess security risks
- Set daemon and process permissions

### **Troubleshooting**

- Identify and locate the problem by determining whether the problem is hardware, operating system, application software, configuration or the user
- Describe troubleshooting best practices
- Examine and edit configuration files based on symptoms of a problem using system utilities
- Examine, start, and stop processes based on the signs and symptoms of a problem
- Use system status tools to examine system resources and statuses
- Use systems boot disk(s) and root disk on workstation and server to diagnose and rescue file system
- Inspect and determine cause of errors from system log files
- Use disk utilities to solve file system problems
- Resolve problems based on user feedback
- Recognize common errors
- Take appropriate action on boot errors
- Identify backup and restore errors
- Identify application failure on server
- Identify and use trouble shooting commands
- Locate troubleshooting resources and update as allowable
- Use network utilities to identify network and connectivity problems

### **Identify, Install and Maintain System Hardware**

- Identify basic terms, concepts, and functions of system components, including how each component should work during normal operation and during the boot process
- Identify proper procedures for installing and configuring ATA devices
- Identify proper procedures for installing and configuring SCSI and IEEE 1394 devices
- Identify proper procedures for installing and configuring peripheral devices
- Identify available IRQs, DMAs, and I/O addresses and procedures for device installation and configuration
- Identify basic procedures for adding and removing field replaceable components
- Identify common symptoms and problems associated with each component and how to troubleshoot and isolate the problems
- Identify basic networking concepts, including how a network works
- Identify proper procedures for diagnosing and troubleshooting ATA devices
- Identify proper procedures for diagnosing and troubleshooting SCSI devices
- Identify proper procedures for diagnosing and troubleshooting peripheral devices
- Identify proper procedures for diagnosing and troubleshooting core system hardware
- Identify and maintain mobile system hardware

Copyright © 2003 Cisco Systems, Inc. All rights reserved. Cisco, Cisco IOS, Cisco Systems, and the Cisco Systems logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries. All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0108R)