Linux Essentials

Linux Essentials is a professional development certificate program that covers basic knowledge for those working and studying Open Source and various distributions of Linux.

Exam Objectives Version: Version 1.5 (last updated: May 2015)

Exam Covered: Linux Essentials (LPI-010); Exam 1 of 1 to obtain Linux Essentials Professional Development Certificate

Objectives Reflected in Published Exam: May 2015

Required Prerequisite: None

Linux Essentials Objectives Topics:

- 1 – The Linux community and a career in open source
- 2 – Finding your way on a Linux system
- 3 – The power of the command line
- 4 – The Linux operating system
- 5 – Security and file permissions

Topic 1:The Linux Community and a Career in Open Source

1.1 Linux Evolution and Popular Operating Systems

Description: Knowledge of Linux development and major distributions.

Key Knowledge Areas:

- Open Source Philosophy
- Distributions
- Embedded Systems

The following is a partial list of the used files, terms and utilities:

- Android
- Debian, Ubuntu (LTS)
- CentOS, openSUSE, Red Hat
- Linux Mint, Scientific Linux

1.2 Major Open Source Applications

Description: Awareness of major applications as well as their uses and development.

Key Knowledge Areas:

- Desktop Applications
- Server Applications
- Development Languages
- Package Management Tools and repositories

Terms and Utilities:

- OpenOffice.org, LibreOffice, Thunderbird, Firefox, GIMP
- Apache HTTPD, NGINX, MySQL, NFS, Samba
- C, Java, Perl, shell, Python, Samba
- dpkg, apt-get, rpm, yum

1.3 Understanding Open Source Software and Licensing

Description: Open communities and licensing Open Source Software for business.

Key Knowledge Areas:

- Licensing
- Free Software Foundation (FSF), Open Source Initiative (OSI)

Terms and Utilities:

- GPL, BSD, Creative Commons
- Free Software, Open Source Software, FOSS, FLOSS
- Open Source business models

1.4 ICT Skills and Working in Linux

Description: Basic Information and Communication Technology (ICT) skills and working in Linux.

Key Knowledge Areas:

- Desktop Skills
- Getting to the Command Line
- Industry uses of Linux, Cloud Computing and Virtualization

Terms and Utilities:

- Using a browser, privacy concerns, configuration options, searching the web and saving content
- Terminal and Console
- Password issues
- Privacy issues and tools
- Use of common open source applications in presentations and projects

Topic 2: Finding Your Way on a Linux System

2.1 Command Line Basics

Description: Basics of using the Linux command line.

Key Knowledge Areas:

- Basic shell
- Command line syntax
- Variables
- Globbing
- Quoting

Terms and Utilities:

- Bash
- echo
- history
- PATH env variable
- export
- type

2.2 Using the Command Line to Get Help

Description: Running help commands and navigation of the various help systems.

Key Knowledge Areas:

- Man
- Info

Terms and Utilities:

- man
- info
- Man pages
- /usr/share/doc/
- locate

2.3 Using Directories and Listing Files

Description: Navigation of home and system directories and listing files in various locations.

Key Knowledge Areas:

- Files, directories
- Hidden files and directories
- Home
- Absolute and relative paths

Terms and Utilities:

- Common options for ls
- Recursive listings
- cd
- . and ..
- home and ~

2.4 Creating, Moving and Deleting Files

Description: Create, move and delete files and directories under the home directory.

Key Knowledge Areas:

- Files and directories
- Case sensitivity
- Simple globbing and quoting

Terms and Utilities:

- mv, cp, rm, touch
- mkdir, rmdir

Topic 3: The Power of the Command Line

3.1 Archiving Files on the Command Line

Description: Archiving files in the user home directory.

Key Knowledge Areas:

- Files, directories
- Archives, compression

Terms and Utilities:

- tar
- Common tar options
- gzip, bzip2

- zip, unzip

3.2 Searching and Extracting Data from Files

Description: Search and extract data from files in the home directory.

Key Knowledge Areas:

- Command line pipes
- I/O re-direction
- Basic Regular Expressions ., [ ], *, ?

Terms and Utilities:

- grep
- less
- cat, head, tail
- sort
- cut
- wc

3.3 Turning Commands into a Script

Description: Turning repetitive commands into simple scripts.

Key Knowledge Areas:

- Basic shell scripting
- Awareness of common text editors

Terms and Utilities:

- #! (shebang)
- /bin/bash
- Variables
- Arguments
- for loops
- echo
- Exit status

Topic 4: The Linux Operating System

4.1 Choosing an Operating System

Description: Knowledge of major operating systems and Linux distributions.

Key Knowledge Areas:

- Windows, Mac, Linux differences
- Distribution life cycle management

Terms and Utilities:

- GUI versus command line, desktop configuration
- Maintenance cycles, Beta and Stable

4.2 Understanding Computer Hardware

Description: Familiarity with the components that go into building desktop and server computers.

Key Knowledge Areas:

- Hardware

Terms and Utilities:

- Motherboards, processors, power supplies, optical drives, peripherals
- Hard drives and partitions, /dev/sd*
- Drivers

4.3 Where Data is Stored

Description: Where various types of information are stored on a Linux system.

Key Knowledge Areas:

- Programs and configuration, packages and package databases
- Processes, memory addresses, system messaging and logging

Terms and Utilities:

- ps, top, free
- syslog, dmesg
- /etc/, /var/log/
- /boot/, /proc/, /dev/, /sys/

4.4 Your Computer on the Network

Description: Querying vital networking configuration and determining the basic requirements for a

computer on a Local Area Network (LAN).

Key Knowledge Areas:

- Internet, network, routers
- Querying DNS client configuration
- Querying Network configuration

Terms and Utilities:

- route, ip route show
- ifconfig, ip addr show
- netstat, ip route show
- /etc/resolv.conf, /etc/hosts
- IPv4, IPv6
- ping
- host

Topic 5: Security and File Permissions

5.1 Basic Security and Identifying User Types

Description: Various types of users on a Linux system.

Key Knowledge Areas:

- Root and Standard Users
- System users

Terms and Utilities:

- /etc/passwd, /etc/group
- id, who, w
- sudo, su

5.2 Creating Users and Groups

Description: Creating users and groups on a Linux system.

Key Knowledge Areas:

- User and group commands
- User IDs

Terms and Utilities:

- /etc/passwd, /etc/shadow, /etc/group, /etc/skel/
- id, last

- useradd, groupadd
- passwd

5.3 Managing File Permissions and Ownership

Description: Understanding and manipulating file permissions and ownership settings.

Key Knowledge Areas:

- File/directory permissions and owners

Terms and Utilities:

- ls -l, ls -a
- chmod, chown

5.4 Special Directories and Files

Description: Special directories and files on a Linux system including special permissions.

Key Knowledge Areas:

- Using temporary files and directories
- Symbolic links

Terms and Utilities:

- /tmp/, /var/tmp/ and Sticky Bit
- ls -d
- ln -s