LPI Linux Essentials

Duration: 4 days (8hrs/day)

Lab Requirement: Koenig-DC

Objectives

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

1.1 Linux Evolution and Popular Operating Systems (weight: 2)

Weight	2
Description	Knowledge of Linux development and major distributions.

Key Knowledge Areas:

- o Distributions
- o Embedded Systems
- o Linux in the Cloud

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

- o Debian, Ubuntu (LTS)
- o CentOS, openSUSE, Red Hat, SUSE
- o Linux Mint, Scientific Linux
- o Raspberry Pi, Raspbian
- o Android

1.2 Major Open Source Applications (weight: 2)

Weight	2
Description	Awareness of major applications as well as their uses and development.

Key Knowledge Areas:

- o Desktop applications
- o Server applications
- o Development languages
- o Package management tools and repositories

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

- o OpenOffice.org, LibreOffice, Thunderbird, Firefox, GIMP
- o Nextcloud, ownCloud
- o Apache HTTPD, NGINX, MariaDB, MySQL, NFS, Samba
- o C, Java, JavaScript, Perl, shell, Python, PHP

o   dpkg, apt-get, rpm, yum

1.3 Open Source Software and Licensing (weight: 1)

Weight	1
Description	Open communities and licensing Open Source Software for business.

Key Knowledge Areas:

- o   Open source philosophy
- o   Open source licensing
- o   Free Software Foundation (FSF), Open Source Initiative (OSI)

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

- o   Copyleft, Permissive
- o   GPL, BSD, Creative Commons
- o   Free Software, Open Source Software, FOSS, FLOSS
- o   Open source business models

1.4 ICT Skills and Working in Linux (weight: 2)

Weight	2
Description	Basic Information and Communication Technology (ICT) skills and working in Linux.

Key Knowledge Areas:

- o   Desktop skills
- o   Getting to the command line
- o   Industry uses of Linux, cloud computing and virtualization

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

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

Topic 2: Finding Your Way on a Linux System

2.1 Command Line Basics (weight: 3)

Weight	3
Description	Basics of using the Linux command line.

Key Knowledge Areas:

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

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

- o Bash
- o echo
- o history
- o PATH environment variable
- o export
- o type

2.2 Using the Command Line to Get Help (weight: 2)

Weight	2
Description	Running help commands and navigation of the various help systems.

Key Knowledge Areas:

- o Man pages
- o Info pages

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

- o man
- o info
- o /usr/share/doc/
- o locate

2.3 Using Directories and Listing Files (weight: 2)

Weight	2
Description	Navigation of home and system directories and listing files in various locations.

Key Knowledge Areas:

- o Files, directories
- o Hidden files and directories

o   Home directories
o   Absolute and relative paths

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

o   Common options for ls
o   Recursive listings
o   cd
o   **.** and **..**
o   home and ~

2.4 Creating, Moving and Deleting Files (weight: 2)

Weight	2
Description	Create, move and delete files and directories under the home directory.

Key Knowledge Areas:

o   Files and directories
o   Case sensitivity
o   Simple globbing

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

o   mv, cp, rm, touch
o   mkdir, rmdir

Topic 3: The Power of the Command Line

3.1 Archiving Files on the Command Line (weight: 2)

Weight	2
Description	Archiving files in the user home directory.

Key Knowledge Areas:

o   Files, directories
o   Archives, compression

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

o   tar
o   Common tar options
o   gzip, bzip2, xz
o   zip, unzip

3.2 Searching and Extracting Data from Files (weight: 3)

Weight	3
Description	Search and extract data from files in the home directory.

Key Knowledge Areas:

- Command line pipes
- I/O redirection
- Basic Regular Expressions using ., [ ], *, and ?

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

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

3.3 Turning Commands into a Script (weight: 4)

Weight	4
Description	Turning repetitive commands into simple scripts.

Key Knowledge Areas:

- Basic shell scripting
- Awareness of common text editors (vi and nano)

The following is a partial list of the used files, 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 (weight: 1)

Weight	1
Description	Knowledge of major operating systems and Linux distributions.

Key Knowledge Areas:

- o   Differences between Windows, OS X and Linux
- o   Distribution life cycle management

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

- o   GUI versus command line, desktop configuration
- o   Maintenance cycles, beta and stable

4.2 Understanding Computer Hardware (weight: 2)

Weight	2
Description	Familiarity with the components that go into building desktop and server computers.

Key Knowledge Areas:

- o   Hardware

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

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

4.3 Where Data is Stored (weight: 3)

Weight	3
Description	Where various types of information are stored on a Linux system.

Key Knowledge Areas:

- o   Programs and configuration
- o   Processes
- o   Memory addresses
- o   System messaging
- o   Logging

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

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

4.4 Your Computer on the Network (weight: 2)

Weight	2
Description	Querying vital networking configuration and determining the basic requirements for a computer on a Local Area Network (LAN).

Key Knowledge Areas:

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

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

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

Topic 5: Security and File Permissions

5.1 Basic Security and Identifying User Types (weight: 2)

Weight	2
Description	Various types of users on a Linux system.

Key Knowledge Areas:

- o   Root and standard users
- o   System users

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

- o   /etc/passwd, /etc/shadow, /etc/group
- o   id, last, who, w
- o   sudo, su

5.2 Creating Users and Groups (weight: 2)

Weight	2
Description	Creating users and groups on a Linux system.

Key Knowledge Areas:

- o User and group commands
- o User IDs

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

- o /etc/passwd, /etc/shadow, /etc/group, /etc/skel/
- o useradd, groupadd
- o passwd

5.3 Managing File Permissions and Ownership (weight: 2)

Weight	2
Description	Understanding and manipulating file permissions and ownership settings.

Key Knowledge Areas:

- o File and directory permissions and ownership

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

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

5.4 Special Directories and Files (weight: 1)

Weight	1
Description	Special directories and files on a Linux system including special permissions.

Key Knowledge Areas:

- o Using temporary files and directories
- o Symbolic links

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

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