

## LPI102 - LPIC-1 EXAM PREP (COURSE 2)

This course prepares students to take the LPI 102 exam of the LPI level 1 certification. The Linux Professional Institute (LPI) is the go to certification body for vendor independent Linux certifications. This course covers fundamental Linux skills such as file management and manipulation, text processing, command line use, package management, filesystems, hardware, and many more. Students will feel confident taking the LPI LPIC-1 102 exam with in classroom assessments and practice exams.

This course is validated against the v4.0 objectives.

**Prerequisites:** Course: LPI101 "LPIC-1 Exam Prep (Course 1)" or knowledge and experience equivalent to the LPI101 course.

### Supported Distributions:

- Red Hat Enterprise Linux 7
- SUSE Linux Enterprise 12

### Course Outline:

#### 1. ACCOUNT AND SECURITY ADMINISTRATION

1. LPI Objectives Covered
2. Gathering System Info
3. Approaches to Storing User Accounts
4. User and Group Concepts
5. User Private Group Scheme
6. User Administration
7. Modifying Accounts
8. Group Administration
9. Password Aging
10. Limiting Logins
11. Default User Files
12. su and Wheel
13. sudo
14. Setting Resource Limits via ulimit
15. pam\_limits.so
16. lsof and fuser

### LAB TASKS

17. User and Group Administration

18. Restricting superuser access to wheel group membership
19. User Private Groups
20. Setting Limits with the pam\_limits Modules

## **2. CUSTOMIZING THE SHELL AND WRITING SIMPLE SCRIPTS**

1. LPI Objectives Covered
2. Configuration Files
3. Script Execution
4. Bash: Configuration Files
5. Shell and Environment Variables
6. Bash Shell Options
7. Bash: "shortcuts"
8. Bash: prompt
9. Nesting Commands
10. Shell Script Strengths and Weaknesses
11. Example Shell Script
12. Positional Parameters
13. Input & Output
14. Doing Math
15. Comparisons with test
16. Exit Status
17. Conditional Statements
18. Flow Control: case
19. The for-Loop
20. The while and until Loops
21. Functions
22. Sending and Receiving Email with mailx

### **LAB TASKS**

23. Bash Login Scripts
24. Writing a Shell Script
25. Command Line Email
26. Alpine

## **3. AUTOMATING TASKS**

1. LPI Objectives Covered
2. Automating Tasks
3. at/batch
4. cron

5. The crontab Command
6. crontab Format
7. /etc/cron.\* Directories
8. Anacron

#### **LAB TASKS**

9. Adding System cron Jobs
10. Creating and Managing User Cron Jobs

#### **4. NETWORKING**

1. LPI Objectives Covered
2. IPv4 Fundamentals
3. TCP/UDP Fundamentals
4. IPv6
5. Linux Network Interfaces
6. Ethernet Hardware Tools
7. Configuring Routing Tables
8. Network Configuration with ip Command
9. Starting and Stopping Interfaces
10. SUSE YaST Network Configuration Tool
11. Hostname and Domain Name
12. Name Resolution
13. DNS Clients
14. Network Diagnostics
15. Information from ss and netstat
16. nmap
17. Netcat

#### **LAB TASKS**

18. Basic Client Networking
19. Configuring IPv6

#### **5. X WINDOW SYSTEM**

1. LPI Objectives Covered
2. The X Window System
3. X Modularity
4. X.Org Drivers
5. Starting X
6. Configuring X Manually

7. Automatic X Configuration
8. Xorg and Fonts
9. Installing Fonts for Modern Applications
10. Installing Fonts for Legacy Applications
11. The X11 Protocol and Display Names
12. Display Managers and Graphical Login
13. X Access Control
14. Remote X Access (historical/insecure)
15. Remote X Access (modern/secure)
16. Customizing X Sessions
17. Starting X Apps Automatically

#### **LAB TASKS**

18. Configure X Security
19. Launching X Apps Automatically
20. Secure X

### **6. ACCESSIBILITY AND LOCALIZATION**

1. LPI Objectives Covered
2. GNOME Accessibility Support
3. Internationalization & Localization
4. Character Encodings
5. Locales
6. Setting the Time Zone

#### **LAB TASKS**

7. GNOME Accessibility
8. Character Encoding Conversion
9. Locale Configuration
10. Time Zone Configuration - Common Method
11. System Clock Configuration - Distribution tools
12. System Clock Configuration - Distribution tools

### **7. TIME AND PRINTING**

1. LPI Objectives Covered
2. Hardware and System Clock
3. Managing Network-Wide Time
4. Continual Time Sync with NTP
5. Configuring NTP Clients

6. Useful NTP Commands
7. Common UNIX Printing System
8. Defining a Printer
9. Standard Print Commands
10. CUPS Troubleshooting
11. CUPS Troubleshooting

### **LAB TASKS**

12. NTP Client Configuration
13. Printing
14. Configuring Print Queues

## **8. LOG FILE ADMINISTRATION**

1. LPI Objectives Covered
2. System Logging
3. Syslog-ng
4. systemd Journal
5. systemd Journal's journalctl
6. Secure Logging with Journal's Log Sealing
7. Rsyslog
8. /etc/rsyslog.conf
9. Log Management
10. Sending logs from the shell

### **LAB TASKS**

11. Using the systemd Journal
12. Setting up a Full Debug Logfile
13. Remote Syslog Configuration

## **9. SQL AND MTA FUNDAMENTALS**

1. LPI Objectives Covered
2. Popular SQL Databases
3. SELECT Statements
4. INSERT Statements
5. UPDATE Statements
6. DELETE Statements
7. JOIN Clauses
8. SMTP
9. SMTP Terminology

10. SMTP Architecture
11. Sendmail Architecture
12. Sending Email with sendmail
13. Sendmail Components
14. Exim
15. Postfix Features
16. Postfix Architecture
17. Postfix Components
18. Postfix Map Types
19. Configuration Commands

### **LAB TASKS**

20. SQL with Sqlite3
21. Configuring Postfix
22. Configuring Sendmail

## **10. HOST SECURITY AND ENCRYPTION**

1. LPI Objectives Covered
2. Controlling Login Sessions
3. Xinetd
4. TCP Wrappers
5. /etc/hosts.{allow,deny} Shortcuts
6. Advanced TCP Wrappers
7. Discovering Hosts
8. Secure Shell
9. OpenSSH Client & Server Configuration
10. Accessing Remote Shells
11. SSH Port Forwarding
12. Transferring Files
13. Alternative sftp Clients
14. SSH Key Management
15. ssh-agent
16. GPG â€™ GNU Privacy Guard

### **LAB TASKS**

17. Securing xinetd Services
18. Enforcing Security Policy with xinetd
19. Securing Services with TCP Wrappers
20. Introduction to ssh and scp

21. SSH Key-based User Authentication
22. Using ssh-agent
23. File Encryption with GPG