



# Future Cert



# LPIC-1: Linux Server Professional Certification

## LPIC-1 Exam 102

PIC-1 is the first certification in LPI's multi-level Linux Professional certification program. The LPIC-1 will validate your ability to perform maintenance tasks with the command line, install & configure a computer running Linux and be able to configure basic networking.

To pass LPIC-1, you should be able to:

- Work at the Linux command line
- Perform easy maintenance tasks: help users, add users to a larger system, backup and restore, shutdown and reboot
- Install and configure a workstation (including X) and connect it to a LAN, or a standalone PC to the Internet

### TOPIC 105: SHELLS, SCRIPTING AND DATA MANAGEMENT

#### 105.1 Customize and use the shell environment (4)

Candidates should be able to customize shell environments to meet users' needs. Candidates should be able to modify global and user profiles.

**Key knowledge areas:**

- Set environment variables (e.g. PATH) at login or when spawning a new shell
- Write Bash functions for frequently used sequences of commands
- Maintain skeleton directories for new user accounts
- Set command search path with the proper directory

#### 105.2 Customize or write simple scripts (4)

Candidates should be able to customize existing scripts, or write simple new Bash scripts.

**Key knowledge areas:**

- Use standard sh syntax (loops, tests)
- Use command substitution
- Test return values for success or failure or other information provided by a command
- Perform conditional mailing to the superuser
- Correctly select the script interpreter through the shebang (#!) line
- Manage the location, ownership, execution and suid-rights of scripts

#### 105.3 SQL data management (2)

Candidates should be able to query databases and manipulate data using basic SQL

commands. This objective includes performing queries involving joining of 2 tables and/or subselects.

**Key knowledge areas:**

- Use of basic SQL commands
- Perform basic data manipulation

### TOPIC 106: USER INTERFACES AND DESKTOPS

#### 106.1 Install and configure X11 (2)

Candidates should be able to install and configure X11.

**Key knowledge areas:**

- Verify that the video card and monitor are supported by an X server
- Awareness of the X font server
- Basic understanding and knowledge of the X Window configuration file

#### 106.2 Setup a display manager (1)

Candidates should be able to describe the basic features and configuration of the LightDM display manager. This objective covers awareness of the display managers XDM (X Display Manger), GDM (Gnome Display Manager) and KDM (KDE Display Manager).

**Key knowledge areas:**

- Basic configuration of LightDM
- Turn the display manager on or off
- Change the display manager greeting
- Awareness of XDM, KDM and GDM

#### 106.3 Accessibility (1)

Demonstrate knowledge and awareness of accessibility technologies.

**Key knowledge areas:**

- Basic knowledge of keyboard accessibility settings (AccessX)
- Basic knowledge of visual settings and themes
- Basic knowledge of assistive technology (ATs)

### TOPIC 107: ADMINISTRATIVE TASKS

#### 107.1 Manage user and group accounts and related system files (5)

Candidates should be able to add, remove, suspend and change user accounts.

**Key knowledge areas:**

- Add, modify and remove users and groups
- Manage user/group info in password/group databases
- Create and manage special purpose and limited accounts

#### 107.2 Automate system administration tasks by scheduling jobs (4)

Candidates should be able to use cron or anacron to run jobs at regular intervals and to use at to run jobs at a specific time.

**Key knowledge areas:**

- Manage cron and at jobs
- Configure user access to cron and at services
- Configure anacron

#### 107.3 Localisation and internationalisation (3)

Candidates should be able to localize a system in a different language than English. As well, an understanding of why LANG=C is useful when scripting.



**Exam Objectives Version:** Version 4.0 (last updated: April 15th, 2015)

**Exam Covered:** LPIC-1 102 (102-400) also available as CompTIA Linux+ (LX0-104); Exam 2 of 2 to obtain LPIC-1 Linux Server Professional certification

**Objectives Reflected in Published Exam:** February 10th, 2015

**Required Prerequisite:** LPIC-1 101, the two LPIC-1 exams may be completed in any order, but candidates must pass both LPIC-1 101 and 102 exams in order to obtain the LPIC-1 certification.

**About objective weights:** Each objective is assigned a weighting value. The weights range roughly from 1 to 10 and indicate the relative importance of each objective. Objectives with higher weights will be covered in the exam with more questions.

**Key knowledge areas:**

- Configure locale settings and environment variables
- Configure timezone settings and environment variables

**TOPIC 108: ESSENTIAL SYSTEM SERVICES**

**108.1 Maintain system time (3)**

Candidates should be able to properly maintain the system time and synchronize the clock via NTP.

**Key knowledge areas:**

- Set the system date and time
- Set the hardware clock to the correct time in UTC
- Configure the correct timezone
- Basic NTP configuration
- Knowledge of using the pool.ntp.org service
- Awareness of the ntpq command

**108.2 System logging (3)**

Candidates should be able to configure the syslog daemon. This objective also includes configuring the logging daemon to send log output to a central log server or accept log output as a central log server. Use of the systemd journal subsystem is covered. Also, awareness of rsyslog and syslog-ng as alternative logging systems is included.

**Key knowledge areas:**

- Configuration of the syslog daemon
- Understanding of standard facilities, priorities and actions
- Configuration of logrotate
- Awareness of rsyslog and syslog-ng

**108.3 Mail Transfer Agent (MTA) basics (3)**

Candidates should be aware of the commonly available MTA programs and be able to perform basic forward and alias configuration on a client host. Other configuration files are not covered.

**Key knowledge areas:**

- Create e-mail aliases
- Configure e-mail forwarding
- Knowledge of commonly available MTA programs (postfix, sendmail, qmail, exim) (no configuration)

**108.4 Manage printers and printing (2)**

Candidates should be able to manage print queues and user print jobs using CUPS and the LPD compatibility interface.

**Key knowledge areas:**

- Basic CUPS configuration (for local and remote printers)
- Manage user print queues
- Troubleshoot general printing problems
- Add and remove jobs from configured printer queues

**TOPIC 109: NETWORKING FUNDAMENTALS**

**109.1 Fundamentals of internet protocols (4)**

Candidates should demonstrate a proper understanding of TCP/IP network fundamentals.

**Key knowledge areas:**

- Demonstrate an understanding of network masks and CIDR notation
- Knowledge of the differences between private and public "dotted quad" IP addresses
- Knowledge about common TCP and UDP ports and services (20, 21, 22, 23, 25, 53, 80, 110, 123, 139, 143, 161, 162, 389, 443, 465, 514, 636, 993, 995)
- Knowledge about the differences and major features of UDP, TCP and ICMP
- Knowledge of the major differences between IPv4 and IPv6
- Knowledge of the basic features of IPv6

**109.2 Basic network configuration (4)**

Candidates should be able to view, change and verify configuration settings on client hosts.

**Key knowledge areas:**

- Manually and automatically configure network interfaces
- Basic TCP/IP host configuration
- Setting a default route

**109.3 Basic network troubleshooting (4)**

Candidates should be able to troubleshoot networking issues on client hosts.

**Key knowledge areas:**

- Manually and automatically configure network interfaces and routing tables to include adding, starting, stopping, restarting, deleting or reconfiguring network interfaces
- Change, view, or configure the routing table and correct an improperly set default route manually
- Debug problems associated with the network configuration

**109.4 Configure client side DNS (2)**

Candidates should be able to configure DNS on a client host.

**Key knowledge areas:**

- Query remote DNS servers
- Configure local name resolution and use remote DNS servers
- Modify the order in which name resolution is done

**TOPIC 110: SECURITY**

**110.1 Perform security administration tasks (3)**

Candidates should know how to review system configuration to ensure host security in accordance with local security policies.

**Key knowledge areas:**

- Audit a system to find files with the suid/sgid bit set

- Set or change user passwords and password aging information
- Being able to use nmap and netstat to discover open ports on a system
- Set up limits on user logins, processes and memory usage
- Determine which users have logged in to the system or are currently logged in
- Basic sudo configuration and usage

**110.2 Setup host security (3)**

Candidates should know how to set up a basic level of host security.

**Key knowledge areas:**

- Awareness of shadow passwords and how they work
- Turn off network services not in use
- Understand the role of TCP wrappers

**110.3 Securing data with encryption (3)**

The candidate should be able to use public key techniques to secure data and communication.

**Key knowledge areas:**

- Perform basic OpenSSH 2 client configuration and usage
- Understand the role of OpenSSH 2 server host keys
- Perform basic GnuPG configuration, usage and revocation
- Understand SSH port tunnels (including X11 tunnels)