

# LPIC-2 201 Linux Server Administration

## Duration:

5 Days

## What is the course about?

LPIC-2 is the second certification in LPI's multi-level professional certification program. The LPIC-2 will validate the candidate's ability to administer small to medium-sized mixed networks. The candidate must have an active LPIC-1 certification to receive LPIC-2 certification, but the LPIC-1 and LPIC-2 exams may be taken in any order.

## Duration

The course is run 5 days full time.

## Technical Skill

To become LPIC-2 certified the candidate must be able to:

- perform advanced system administration, including common tasks regarding the Linux kernel, system startup and maintenance;
- perform advanced Management of block storage and file systems as well as advanced networking and authentication and system security, including firewall and VPN;
- install and configure fundamental network services, including DHCP, DNS, SSH, Web servers, file servers using FTP, NFS and Samba, email delivery; and
- supervise assistants and advise management on automation and purchases

## Private Training

The course can be offered privately onsite or on our premises. A minimum of 4 delegates is required to schedule the course. The course price is R9 500 onsite and R12 500 on our premises. There is no set date to run the course, we schedule a date that suits your team.

## Public Training

This course is also offered publicly. The course runs at our offices in Cape Town or Johannesburg. A minimum of 4 delegates is required to run the course. A tentative date is set but the course will only be confirmed to run once we have 4 confirmed bookings. There is no set date as the course is run on demand.

## Course Topics

### Customize and use the shell environment

Measure CPU usage

Measure memory usage

Measure disk I/O

Measure network I/O

Measure firewalling and routing throughput

Map client bandwidth usage

Match/correlate system symptoms with likely problems

Estimate throughput and identify bottlenecks in a system including networking

### Predict Future Resource Needs

- Use collectd to monitor IT infrastructure usage
- Predict capacity break point of a configuration
- Observe growth rate of capacity usage
- Graph the trend of capacity usage
- Awareness of monitoring solutions such as Nagios, MRTG and Cacti

### Kernel Components

- Kernel 2.6.x documentation
- Kernel 3.x documentation

### Compiling a Kernel

- /usr/src/linux/
- Kernel Makefiles
- Kernel 2.6.x/3.x make targets
- Customize the current kernel configuration.
- Build a new kernel and appropriate kernel modules.
- Install a new kernel and any modules.
- Ensure that the boot manager can locate the new kernel and associated files.
- Module configuration files
- Awareness of dracut

### Kernel Runtime Management and Troubleshooting

- Manually load and unload kernel modules
- Determine when modules can be unloaded
- Determine what parameters a module accepts
- Configure the system to load modules by names other than their file name.
- /proc filesystem
- Content of /, /boot, and /lib/modules/
- Tools and utilities to analyze information about the available hardware
- udev rules

### Customizing SysV-init system startup

- Linux Standard Base Specification (LSB)
- SysV init environment)

### System Recovery

- GRUB version 2 and Legacy
- Grub shell
- Boot loader start and hand off to kernel
- Kernel loading
- Hardware initialization and setup
- Daemon/service initialization and setup
- Know the different boot loader install locations on a hard disk or removable device
- Overwriting standard boot loader options and using boot loader shells
- Awareness of UEFI

## Alternate Bootloaders

LILO

SYSLINUX, ISOLINUX, PXELINUX

Understanding of PXE

## Operating the Linux Filesystem

The concept of the fstab configuration

Tools and utilities for handling SWAP partitions and files

Use of UUIDs

## Maintaining a Linux Filesystem

Tools and utilities to manipulate and ext2, ext3 and ext4

Tools and utilities to manipulate xfs

Awareness of Btrfs

## Creating and configuring filesystem options

autofs configuration files

UDF and ISO9660 tools and utilities

Awareness of CD-ROM filesystems (UDF, ISO9660, HFS)

Awareness of CD-ROM filesystem extensions (Joliet, Rock Ridge, El Torito)

Basic feature knowledge of encrypted filesystem

## Configuring RAID

Software raid configuration files and utilities

mdadm.conf

mdadm

/proc/mdstat

partition type 0xFD

## Adjusting Storage Device Access

Tools and utilities to configure DMA for IDE devices including ATAPI and SATA

Tools and utilities to manipulate or analyze system resources (e.g. interrupts)

Awareness of sdparm command and its uses

Tools and utilities for iSCSI

## Logical Volume Manager

Tools in the LVM suite

Resizing, renaming, creating, and removing logical volumes, volume groups, and physical volumes

Creating and maintaining snapshots

Activating volume groups

## Basic Networking Configuration

Utilities to configure and manipulate ethernet network interfaces

Configuring basic access to wireless networks with iw, iwconfig and iwlist

## Advanced Network Configuration and Troubleshooting

Utilities to manipulate routing tables

Utilities to configure and manipulate ethernet network interfaces

Utilities to analyze the status of the network devices  
Utilities to monitor and analyze the TCP/IP traffic

### Troubleshooting Network Issues

Location and content of access restriction files  
Utilities to configure and manipulate ethernet network interfaces  
Utilities to manage routing tables  
Utilities to list network states.  
Utilities to gain information about the network configuration  
Methods of information about the recognized and used hardware devices  
System initialization files and their contents (SysV init process)  
Awareness of NetworkManager and its impact on network configuration

### Make and install programs from source

Unpack source code using common compression and archive utilities  
Understand basics of invoking make to compile programs  
Apply parameters to a configure script  
Know where sources are stored by default

### Backup Operations

Knowledge about directories that have to be include in backups  
Awareness of network backup solutions such as Amanda, Bacula and BackupPC  
Knowledge of the benefits and drawbacks of tapes, CDR, disk or other backup media  
Perform partial and manual backups  
Verify the integrity of backup files  
Partially or fully restore backups

### Notify users on system-related issues

Automate communication with users through logon messages  
Inform active users of system maintenance