

## Linux administrator (code: LC-ADMIN)

### Overview

This course is designed for those who:

- Would like to start working as an administrator of Linux,
- Want to broaden their knowledge about computers and TCP/IP networks,
- Already work as a IT professional, but want to increase their qualifications.

All classes are taught with computers and are workshops in accordance with our motto: *"The theory can also be shown on a practical example. "*

### Duration

8oh

### Agenda

#### Part I - Quick Introduction to Linux

1. Linux console: the basics
  - the most important commands
  - basic administration tools at a glance: mc and vim
2. The file system - where and what to look for
3. General principles of the system
  - users, groups and access rights (basics)
  - processes
  - boot procedure
  - how system components are connected:
    - pseudo-files
    - network ports
    - configuration files and logs
    - signals
    - static and dynamic links
  - names, functions and characteristics of each part of the system
  - how to setup the system (configuration via GUI, text and scripts)
4. Working in the shell:
  - shell scripts
  - core-utils
  - sed
5. Regular Expressions
6. Vim

#### Part II - Anatomy of the system

1. The boot process
  - differences between the distributions
  - lilo and grub
  - kernel parameters
  - init and inittab, upstart
  - startup scripts
  - launch services
2. Controlled installation
  - installing the example distribution in expert mode
  - nuances: authentication, partitioning
3. Software installation
  - configure, make, make install
  - rpm and deb

### Ask for details

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- apt and yum
- 4. Processes
  - outline of the operating systems theory
  - system monitoring
  - signals
  - loading libraries, tracking execution
- 5. Operating System vs Hardware:
  - device files, logging
  - lspci, lsusb, hotplug
- 6. Administrator's view on system architecture
  - kernel, modules, libraries
  - providing context for the rest of the course
- 7. Administrator's view on the filesystem
  - where to find binaries, libraries, configuration files, logs, data, documentation etc.
  - /proc file system
- 8. The file system
  - file types
  - permissions (suid etc.)
  - creating a file system (mkfs. \*, mkisofs)
  - mount - practical aspects: fat and other file systems, -o loop, choosing a file system

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## Part III – Linux Administration

1. Automating work: shell scripts
  - operations on text, variables
  - conditions
  - loops
  - functions
2. Users
  - users, groups - adding, deleting, configuring
  - pam
  - administrators – sudo
3. Finding files
4. SQL fundamentals - topics important for a future administrator
  - databases (tables, data types)
  - SQL basics (SELECT, INSERT, UPDATE, DELETE)
5. X-window
  - basic configuration (support tools)
  - architecture (incl. networking) with examples
  - basic tools and smart features
6. System customization
  - language, regional settings
  - graphical environment settings
  - accessibility
7. Encryption
8. Fundamental services
  - logs
  - cron and at
  - printing
  - NTP
9. Basic network configuration
10. Kernel compilation
  - why and when to compile the kernel
  - example compilation

## Part IV – Networks and security

1. Computer networks - an overview
  - topologies
  - network hardware and technologies
2. TCP/IP and ISO/OSI model
  - local area networks and the problem of connecting networks
  - addresses, ARP and RARP
  - IP protocol (IPV4 and IPV6) and routing
  - ICMP
  - TCP and UDP
3. Configuring network interfaces
  - scripts
  - manual setting up interfaces (ip command)
  - tools such as ping, traceroute, mtr, whois
  - resolving names. DNS.
4. DHCP
  - how the protocol and the services work
  - basic configuration of the server and the client
5. Remote working
  - ssh (keys, X forwarding, ports, scp and sftp)
6. Security fundamentals
  - identifying devices (nmap, server version identification)
  - basic intrusion techniques (buffer overflow, string format)
  - critical rules
7. Identifying and solving problems
  - prevention: backup strategies and methods
  - what to do in case of a catastrophe

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## Part V - Some network services

1. IPTables - a firewall
  - configuring a firewall
  - a simple NAT
  - typical settings
2. Apache
  - Apache configuration (including virtual servers, some interesting modules)
3. Samba - MS Windows integration
  - the theory
  - server configuration (including PDC basics)
  - clients
4. Secure file transfer
  - SSH and SFTP servers

## Target audience and prerequisites

We do not require the participants to have any prior Linux experience - a general familiarity with Windows (basic system management, commonly used programs, using the Internet) is sufficient.

## Certificates

After completing this course, the participants have a complete set of knowledge and skills that allow them to start working as a network administrator. They are ready to start learning by experience. After the classes we issue a certificate of attendance with a detailed list of acquired skills.

The course is also consistent with the requirements of Linux Professional Institute Certification LPIC-1.

More information on additional opportunities to take LPI exams can be found on the course web page.

## Locations

- Online (English) – your home, office or wherever you want
- Warsaw (English) – Jasna 14/16A
- any other location (London, UK, EU) on request

## Price

1249 EUR

The price includes:

- course materials,
- snacks, coffee, tea and soft drinks,
- course completion certificate,
- one-time consultation with the instructor after course completion.

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