

## Advanced Linux administrator (code: LC-ADMIN-S)

### Overview

Perfecting Linux system administration skills: a thorough survey of select, advanced server technologies.

This course is designed for people who:

- Are already at least an averagely advanced Linux administrators,
- Wish to further enhance their knowledge and professional skills of an administrator
- Are interested in particular services discussed during the course and their applications,
- Are willing to learn selected by us, interesting and useful new issues.

All classes are conducted using computers and are workshops in accordance with our motto: *Theory can be taught in practice.*

### Duration

64h

### Agenda

1. LVM: advanced configuration and administration
  - designing and implementing LVM-based solutions
  - lvm2 tools
  - device-mapper
  - place and data management
  - backups
  - data recovery
  - snapshots
  - selecting an appropriate file system
  - encrypted filesystems
2. Full virtualization. Paravirtualization.
  - XEN
    - possibilities
    - installation, preparing the server, server migration
    - handling and partitioning the hardware, performance analysis
    - configuration, designing virtual network infrastructure
    - user space tools, the console
    - migrating sessions-in-progress
3. System monitoring
  - SNMP protocol and SNMP support in Linux
    - snmpd daemon,
    - monitoring network devices.
  - Munin
    - trend tracking
    - implementation, configuration
    - troubleshooting performance problems using Munin
  - Nagios
    - state tracing
    - how does it work,
    - designing and preparing the implementation,
    - dependencies between hosts and services,

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- configuration of monitoring mechanisms (NRPE, NSCA, SNMP),
  - setup notification (user groups, notification via text messages and email),
  - custom plugins.; event handlers.
4. Backups and data security
- backup types
    - disk array
    - unstructured copy
    - full copy, incremental copy, differential copy
  - Creating simple file archives (zip, gzip, bzip2, lzma)
  - Rdiff-backup.
  - What hardware to use for backup data storage?
  - Backup system design; backup strategies; what is the minimal set of data to backup
  - Protecting data on customer's devices
5. Directory services, LDAP
- an introduction to directory services.
    - the LDAP protocol, searching the directory
    - public LDAP directories
    - an introduction to coherent authentication infrastructure design, using an LDAP directory.
    - dedicated client tools, examples of use (email client, access point)
  - OpenLDAP
    - installation and configuration
    - security (encrypted client-server communication)
    - folder replication
  - ApacheDS
    - setup and configuration
    - unique features
  - Typical directory authentication solutions:
    - Linux (PAM and NSS), typical system services
    - HTTP Server: Apache, Lighttpd
    - Email: Exim, Postfix, Dovecot, etc. (via SASL).
  - Administration
    - Migrating existing accounts to the directory
    - Overview of tools that facilitate administration of user accounts: phpldapadmin, LAM, migration-tools, smbldap-tools.
6. Samba as a domain controller
- an introduction to smb: theory, protocols, ports.
  - domain controller mode (PDC). Storing data and user profiles - an overview of available options.
  - storing database access rights in different formats.
    - standard (tdb), XML, smbpasswd, LDAP directory
    - samba database tools, migrating between different databases
  - Integrating LDAP with Samba
    - PAM, NSS
    - benefits of using a directory - cost-benefit analysis and implementation
    - setup, tuning and securing the server
    - user management scripts, automatic and manual
    - replication - case study (using OpenLDAP)
    - administration tools
  - Cooperating with an existing Windows 2008 server - samba as a domain client
    - working with Active Directory

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- authentication from an Active Directory server (samba as a domain client)
  - Kerberos - principles of operation, installation, configuration for a samba account
  - Winbind (description and configuration)
  - Migration strategy: Windows -> Samba
  - Samba for Linux clients
    - a comparison with NFS
    - CIFS protocol
  - Presentation and analysis of current and future solutions for providing interactions between Linux and Microsoft systems.
7. E-mail - Exim.
- anatomy, installation, configuration
  - delivering messages, manual control, testing, performance analysis
  - command-line tools
  - Exim Query Language, tailoring the system to suit your needs
  - Exim filters: the syntax
  - additional acls at different stages of processing
  - virtual domains and virtual accounts, different solutions for their storage (system, files, databases, LDAP)
  - authentication methods (authenticators, SASL)
  - limits (quotas)
  - encrypting the communication
  - implementing anti-spam and anti-virus in the early stages of mail processing
  - SpamAssassin - theory, configuration and learning
  - sa-exim
  - ClamAV
  - spf - generating records
  - dkim - digital signatures
  - configuring servers in a large network
  - information exchange between mail servers
  - greylisting: problems and solutions
  - configuring a complete, secure e-mail infrastructure based on Exim and Dovecot (IMAP and POP3), monitoring its work.
  - Example of using Exim as a spam gateway for Microsoft Exchange Server.
8. E-mail - postfix.
- Mail systems based on Postfix
  - design, installation, configuration
  - Postfix configuration, how does it work
  - maps, data sources
  - command line tools, server support
  - authentication
  - encryption of communications

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## Target audience and prerequisites

The participants should have at least an intermediate knowledge of Linux administration and TCP/IP networks.

This course serves as a good followup to the Linux Administrator course, but completing that course is not necessary to benefit from this one.

## Certificates

After the course we issue a certificate of attendance with a detailed list of acquired skills.

Additionally, there is also the possibility of certification exams <b> Linux Professional Institute (LPI) </b>. Because we are an authorized certification centre LPI exams can be passed easily from us after the course. Completion of this course allows you to obtain the title <b> Advanced Level Linux Professional (LPIC-2) </b>.

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## **Locations**

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

## **Price**

1290 EUR

The price includes:

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

## **Additional info**

We are very concerned about full participation of all students; we encourage discussing the course requirements with the trainer or with our office if you have any doubts as to meeting them.