Linux: Advanced administration
expertise, optimisation, incidents système

Hands-on course of 4 days - 28h
Ref.: LIN - Price 2025: 2 610 (excl. taxes)

EDUCATIONAL OBJECTIVES

At the end of the training, the trainee will be able to:

Become proficient in different methods of installing and deploying Linux

Troubleshooting system, hardware, and network problems

Supervising the system load and the state of the server with Nagios

Optimizing your servers

TEACHING METHODS

Active learning based on examples, demonstrations, experience-sharing, real cases, and an evaluation of what was learned from the training.

HANDS-ON WORK

Numerous realistic simulations of operational and system incidents.

CERTIFICATION

Registration for the AVIT® Linux System Administration certification option must be done at the time of course registration. The exam is a multiple-choice test lasting one-and-a-half to two hours. The result indicates your skill level. Merely taking the course is not sufficient to achieve a maximum score. The exam must be both scheduled and then taken online within 4 weeks following the start of your session.

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@ORSYS.fr to review your request and its feasibility.

THE PROGRAMME

last updated: 03/2024

1) Advanced installation and deployment

- Installing ROOT-on LVM on RAID.
- Making the boot system secure.
- Automatic installation with kickstart (options, ks.cfg).
- Creating a recovery CD/DVD, a bootable USB key with the right utilities.
- Cloning a complete machine.

Hands-on work : Learn about and register for the AVIT® certification option. Root-on-LVM-on Raid installation with an LVM space. PXE boot and installation via Kickstart. Making the boot loader secure.

2) Becoming proficient in the system's software configuration

- Detailed structure of an RPM package.
- Executable and libraries (ld, ld.so.conf, LDPATH, etc.).
- Building an RPM package from sources (.src.rpm, .spec, rpmbuild).
- Roles of the various directories (SRPMS, SPECS, SOURCES, RPMS, BUILD).
- Setting up a local packet mirror (and synchronization).
- Managing system updates and security patches.
- Upgrade methodology.

Hands-on work : Managing system updates, implementing a Yum repository. Creating an RPM package (from sources).

3) Filesystems and storage units

- Pros and cons of various file systems (ext3, ReiserFS, JFS, XFS).
- Retrieving accidentally lost data.
- Remedying the problems (tune2fs, debugfs, etc.).
- Copying a complete system drive live.
- LVM: Linear modes, stripping, mirroring, snapshots.

Hands-on work : Installing and testing different file systems. Implementing LVM and working with the physical volume (live change). Using snapshots and live backups.

4) Kernel and devices

- Representation of devices for the kernel (/dev and udev).
- Automatic hardware detection (udev, discover, fstab).
- Creating a custom kernel.
- Important options of the .config file.
- Creating a custom Linux distribution.
- Identifying the driver needed for a component.
- Installing “exotic” drivers.
- Adding a special pilot into initrd (mkinitrd).
- Kernel settings (boot, sysctl, and dynamic parameters).

Hands-on work : Compilation, creation and implementation of a custom kernel. Installing drivers.

5) Maintenance and metrology in Linux servers

- Collecting, centralizing, and analyzing system logs (rsyslog, logcheck).
- Analyzers of Apache and Squid logs.
- Verification of system integrity.
- Tracking process and system activity (lsof, vmstat, sysstat).
- Visualizing network and server performance: Cacti.

Hands-on work : Tracking the activity of processes. Supervising the system load and the state of the server.

6) Freezing, crashes, and emergency troubleshooting

- Troubleshooting methodology.
- Detailed boot operation (grub, MBR, stage1, stage2, /boot, etc.).
- Passing arguments to boot. Reconstructing the MBR.
- Analyzing kernel traces.
- Retrieving data, a partition, or a drive.
- Accent problems (ISO-8859-?, UTF-8, LANG, LC_?, codepage, iocharset).
- Network problems (hardware, DHCP, DNS, bandwidth).
- Editing the root's “lost” password. Unblocking an account.
- Analyzing X logs. Managing your configuration (fonts, drivers, "critical" fields).

Hands-on work : Getting started with a system without the root password. Searching for network failures and defective sectors. Verifying and repairing a file system. Resizing a file system.

7) Optimizing performance

- Testing and optimizing the drive's performance.
- Detailed analysis of memory use.
- Choosing the right file system (benchmark studies).
- Tuning the file systems.
- Identifying needless, memory-consuming processes (nice, time, vmstat).
- Understanding the general vocabulary (thread, zombie, etc.).
- Respawning tasks and the benefits of Xinetd.
- Booting your system quickly.
- Testing network performance (bitrate, lag, DNS cache, etc.).

- MTU configuration, size of shipping and receiving windows.
- Standard analysis tools.

Hands-on work : Testing and optimizing performance. Tuning the file system.

8) Supervision

- Supervising systems
- Installing Nagios (engine, PHP + CGI, interface plugins).
- Object configuration principle.
- Supervising the memory, disk, and CPU load with Nagios.
- Activating plugins via NRPE.
- Online option: Schedule and take the AVIT® exam within 4 weeks.

Hands-on work : Installing Nagios and its plugins.

DATES

REMOTE CLASS
2025 : 02 sept., 16 déc.