

## Pre-requisites

The students should be able to use basic computer hardware (monitor, keyboard, and mouse).

## Next sessions

# Linux, Mastering Tools

## OBJECTIVES

*This training will teach you how to use the various Unix/Linux tools, some of them coming from Open Source. These tools will handle your data (raw text, formatted text, image, binary, etc.).*

### 1) Using bash

### 2) Automating tasks using shell scripts

### 3) Grep, ed, sed and regular expressions

### 4) Awk language

### 5) Publishing data

### 6) Managing files with tools and commands

## 1) Using bash

- Using a shell interpreter.
- Using meta-characters (\*, \$, [, ], ...).
- Command line execution, redirecting and pipes (<, <<, >, >>, |).
- Launching a command.
- Common errors.

## 2) Automating tasks using shell scripts

- Startup and install script.
- Monitoring (connexion, file system, files).
- Creating a script-shell (&, #!, source).
- Variables. Passing arguments.
- Profiling your scripts (2>, script, tee, debug, etc.).
- Using at and crontab to execute delayed commands.
- Shell programming : conditional structures (if, for, while), additions (functions, return value, etc.).

## 3) Grep, ed, sed and regular expressions

- Regular expressions. Meta-characters.
- Getting lines with grep using simple and complex patterns.
- Grep extensions : egrep, fgrep.
- Editing with sed. Syntax. Simple examples (display, remove, substitute).
- Advanced sed.

### **Workshop**

*Grep and sed examples.*

## 4) Awk language

- Awk compared to sed and grep.
- Using patterns in awk.
- Variables, records and fields (\$0,\$1,\$NR, etc.).
- Simple and complex patterns.
- Awk as a complete language.
- Essential functions in awk.
- Advanced features.

## 5) Publishing data

- Converting data (ASCII, MIME). Accents.
- Displaying file contents (od), transform (tr), converting (dos2unix), formatage (tex et latex), publishing (latex2pdf).
- Presenting data : (more or less), concatenate data (fold, pr, col, etc.).

## 6) Managing files with tools and commands

- File type : file. Read and concatenate : cat.
- File statistics : wc. Splitting a file : split, csplit
- Comparing files : diff and cmp. Sorting files : sort.
- Searching in files : find. Archiving : tar.
- Compress files : compress, gzip, bzip2, zip, ...
- Other tools : patch, strings, uniq, comm, etc.