Reference: 2B/EN/LE

# Expert Level Linux Training Course

## Diagnose, Correct and Optimise a Production System

*Duration: 5 Days | Hours: 35 h*

*Remote · Sessions guaranteed from 1 registrant · 60% hands-on practice*

## DESCRIPTION

In a production environment, system incidents can quickly impact business operations — a saturated CPU, a misconfigured service, a kernel panic at 3am all translate directly into downtime and lost revenue. Senior Linux engineers are the people who make those incidents short and rare.

This advanced training course teaches you how to quickly identify, diagnose and resolve malfunctions on Linux servers while implementing sustainable optimisations. With a focus on practical application, it prepares you to deal with critical situations such as slowdowns, crashes, startup errors and CPU/memory saturation — using the same tools and methods adopted by SRE teams in demanding environments.

## LEARNING OBJECTIVES

By the end of this training course, participants will be able to:

- Identify and correct problems related to startup, services or I/O
- Diagnose system bottlenecks: memory, CPU, disk, network
- Optimise the overall performance of a Linux system in production
- Master advanced logs, profiling and analysis tools
- Automate monitoring and diagnostic tasks
- Enhance the stability and resilience of a Linux system

## PREREQUISITES

- Completion of the 'Advanced Linux Administration' training course or equivalent experience
- Proficient in the basics of administration (users, services, scripts, partitions)

> *Because each participant is unique, a personalised interview is systematically organised in advance with our expert to design a training programme perfectly aligned with their objectives, level and professional challenges.*

## TARGET AUDIENCE

Confirmed Linux administrators and system engineers operating in sensitive or high-availability production environments.

# DETAILED PROGRAMME

> The training alternates between theoretical input and hands-on practice (approximately 60% of the time). Modules are built around practical exercises based on real-world business use cases.

## Module 1 – System Architecture and Status Analysis

- Reminders about systemd and system structure
- Critical checkpoints and boot performance analysis
- System health validation routines

## Module 2 – Diagnosing System Problems

- Identification of crashes, slowdowns and saturated resources
- Tools: top, htop, iotop, vmstat, dstat, lsof
- Management of blocking processes and zombies

## Module 3 – Start-up Troubleshooting

- Boot analysis with journalctl
- Recovery in rescue mode and GRUB troubleshooting
- fstab management and kernel panic recovery

## Module 4 – Log Analysis and Monitoring

- Advanced system logs with rsyslog and logrotate customisation
- Centralisation and alerts
- Anomaly monitoring and audit trails

## Module 5 – Performance Optimisation

- CPU, RAM and disk optimisation
- Network tuning and process priorities (nice, ionice)
- Swap tuning and kernel parameters

## Module 6 – Diagnostic and Automation Scripts

- Advanced shell scripts for automatic monitoring
- Alerting, restoring and corrective workflows
- Integration with cron, mail and centralised logs

# TEACHING METHODS

### Format and Delivery

The training is delivered remotely via an interactive virtual classroom. It can also be delivered on-site, with content customised to match the needs of your professional project. The theory/practice split is approximately 40%/60%.

### MFE-IT Ultra-Personalised Format

Each session accommodates between 1 and 3 participants, ensuring highly individualised support. A preliminary interview allows us to tailor the content to each participant's profile. Inter-company sessions are guaranteed from just 1 registrant (except in cases of force majeure).

### Skills Assessment

Throughout the training, the trainer assesses participant progress through multiple-choice questions, role-playing exercises and hands-on work. At the end, a certificate of achievement is issued to each participant.

### Post-Training Support

For one month following the training, each participant can contact MFE-IT trainers with questions about implementing acquired knowledge. A response is provided by email or telephone within 48 working hours.

### Accessibility

MFE-IT is committed to welcoming people with disabilities. Contact: contact@mfe-it.com.

# PRACTICAL INFORMATION

### Trainer Resources

- Structured demonstrations aligned with the detailed programme
- Exercise briefs and solutions throughout the training
- A ready-to-use technical environment for practical workshops
- Trainer validation of acquired knowledge at the end of each workshop
- Digital reference documents

### Certification and Validation

At the end of the training, a certificate is sent by email specifying the objectives, nature, duration and assessment results. A completion certificate can also be provided on request.

### Benefits for Participants

- Train from your workplace or home, with no travel required
- Benefit from an expert trainer-consultant on the subject
- Enjoy an ultra-personalised format (1 to 3 participants)
- Continue training even in the event of unforeseen circumstances

### Benefits for the Organisation

- Optimise the training budget by reducing travel and accommodation costs
- Offer quality training to all employees, regardless of location
- Reduce absence time linked to travel
- Support team upskilling in all contexts