Syllabus: Linux Internals Fundamentals for Windows Professionals

> *Learn Linux from the man who wrote the book on Windows internals. In this live masterclass, Pavel Yosifovich, co-author of Windows Internals, 7th Edition and one of the world's foremost experts on Windows internals, takes the operating system knowledge you already have (processes, virtual memory, handles, services, debugging) and maps it straight onto Linux. The approach is simple: relabel, don't relearn. Every Linux concept is introduced through the Windows equivalent you already know, with the real differences called out. Four short modules, each with a guided hands-on lab. You leave with a Windows-to-Ubuntu cheat sheet and your own lab VM full of commands to keep exploring.*

About TrainSec Academy

TrainSec is an online learning hub for current and aspiring cybersecurity pros who understand the need for excellence. Level up or change career using skill-expanding modular learning way. We turn beginners into experts and experts into masters. TrainSec is designed for those who are serious about being at the vanguard of the latest knowledge, skills and trends. We're already working with the best.

Instructor	Pavel Yosifovich
Date	2026-08-17 (Monday)
Time	15:00 UTC (11:00 New York, 17:00 Amsterdam, 18:00 Jerusalem, 20:30 Delhi)
Duration	4 hours, including a short break and Q&A
Format	Live online masterclass, hands-on labs, lifetime recording access
Series	Tiny Masterclasses by TrainSec. A new live masterclass every month: trainsec.net/events
Language	English
Price	$59 per seat (includes a $59 TrainSec course voucher, usable on any course in the catalog)
Lab platform	Attendee-provided Debian-based Linux (Ubuntu, Debian, Mint) via VM, WSL2, or cloud. Setup guide provided.

Your instructor

Pavel Yosifovich is a software developer, trainer, consultant, author, and speaker with over 25 years of experience, and one of the world's foremost experts on Windows internals and low-level system architecture. He is the co-author of *Windows Internals, 7th Edition Part 1* and the author of *Windows Kernel Programming*, *Windows 10 System Programming*, and *Windows Native API Programming*. His

books, talks, and training programs are trusted by engineers, developers, and teams worldwide. At TrainSec he delivers live training on Windows internals, debugging, and kernel programming.

- **Instructor profile:** trainsec.net/pavel-yosifovich

A word from Pavel

I've spent the last 25 years inside Windows: writing about it, teaching it, and taking it apart. At some point, everyone doing serious systems or security work runs into Linux, and the usual advice is to start over with a beginner course. That, I think, is a waste of your time. You already understand processes, virtual memory, and debuggers; Linux has the same ideas under different names, plus a handful of genuine differences that actually matter, and those are exactly what we'll focus on. In four hours we'll map one system onto the other and run the commands ourselves, in your own lab. By the end, Linux should feel less like a foreign OS and more like a dialect you can already read. This masterclass is also the opening chapter of a bigger story: I'm building a full 3-day Linux Internals for Windows Professionals course for TrainSec, and these four hours are its fundamentals layer, same approach, same mappings. I hope to see you there.

Target audience

Experienced Windows developers, security researchers, and systems engineers who are comfortable with Windows internals but new to hands-on Linux.

Prerequisites

- A solid Windows internals background: processes, virtual memory, handles, services, debugging. No prior Linux experience required.
- A Debian-based Linux lab environment: Ubuntu, Debian, Mint, or similar, running as a VM, under WSL2, or in the cloud. A setup guide is provided before the session.

Tools and software required

- A Debian-based Linux environment (Ubuntu, Debian, Mint) running as a VM, under WSL2, or in the cloud. A setup guide is provided before the session.

Learning outcomes

After this masterclass, attendees will be able to:

1. Map the Linux kernel, userland, and distro stack onto the Windows model they already know, and reason about the syscall boundary.
2. Compare `fork` / `exec` with `CreateProcess`, inspect live processes through `/proc`, and explain signals, zombies, scheduling, and `systemd`.

3. Reason about Linux virtual memory, `mmap`, the OOM killer, file descriptors, inodes, permissions, and `sudo` in Windows terms.
4. Trace the boot and service path (GRUB to `systemd` to `journald`) and drive the core observability tools: `strace`, `perf`, `gdb`, and `bpftrace`.

Format and details

- **Structure:** four short modules, each a Windows-to-Linux mapping followed by a guided hands-on lab you run in your own environment.
- **Duration:** 4 hours, including a short break and live Q&A. Questions are welcome throughout, with a dedicated block at the end.
- **Delivery:** live online masterclass, hands-on labs, lifetime access to the recording.
- **Series:** part of Tiny Masterclasses by TrainSec, with a new live masterclass every month. Browse upcoming events at trainsec.net/events.
- **Language:** English.
- **Price:** $59 per seat. Every registrant also receives a $59 TrainSec course voucher, usable on any course in the catalog.
- **Lab environment:** your own Debian-based Linux (Ubuntu, Debian, Mint) via VM, WSL2, or cloud. A setup guide is sent ahead of the session.

Masterclass overview

You already understand operating systems on Windows: processes, virtual memory, handles, services, debugging. In this live masterclass, Pavel takes that knowledge and maps it straight onto Linux. Every Linux concept is introduced through the Windows equivalent you already know, with the real differences called out.

Four short modules, each with a guided hands-on lab. You leave with a Windows-to-Ubuntu cheat sheet and your own lab VM full of commands to keep exploring.

Modules

Each module maps its topics onto the Windows equivalents attendees already know, and includes a guided hands-on lab.

Module 1: Orientation

- The kernel, userland, and distro stack
- The syscall boundary
- "Everything is a file"
- Packages (`apt` / `snap`)

Module 2: Processes

- `fork` / `exec` vs `CreateProcess`
- `/proc`
- Zombies
- Signals
- Scheduling
- `systemd`

Module 3: Memory & Files

- Virtual memory
- `mmap`
- The OOM killer
- File descriptors and inodes
- Permissions and `sudo`

Module 4: Boot, Services & Observability

- GRUB to `systemd` to `journald`
- Devices
- The observability toolbox: `strace`, `perf`, `gdb`, `bpftrace`

Deliverables (included with registration)

1. **Windows-to-Ubuntu cheat sheet.** Every concept and command from the masterclass, mapped from the Windows term to the Linux one.
2. **Hands-on lab materials.** Guided labs with all the commands and examples from every module, which you run and keep in your own Debian-based environment. Note: a VM is not provided; attendees bring their own lab environment (see Prerequisites), with a setup guide sent before the session.
3. **Masterclass recording.** Lifetime access, available after the event.
4. **$59 TrainSec course voucher.** Per registrant, usable on any course in the catalog.

About Tiny Masterclasses

This event is part of **Tiny Masterclasses by TrainSec**: a series of short, live, hands-on masterclasses from TrainSec instructors. Each one takes a single deep technical topic and delivers it in a few focused hours, with a recording you keep. A new masterclass runs every month. See what's coming next at trainsec.net/events.

Where this leads

This masterclass is the fundamentals layer of Pavel's upcoming 3-day **Linux Internals for Windows Professionals** course, coming to TrainSec in the next few months. The course continues from exactly where these four hours stop, covering what a masterclass deliberately cannot: reading ELF binaries with PE-level fluency, writing and source-level debugging Linux kernel modules (QEMU + GDB), futex-based synchronization, the memory overcommit model, namespaces, cgroups, containers, and eBPF.

References and further reading

- Setup guide for standing up a Debian-based lab environment (VM, WSL2, or cloud), sent before the session.

Contact & support

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