

## Introduction

Welcome to **Proxmox VE for Self-Hosted Services**, the hands-on course designed for anyone who wants to run their own private cloud without relying on big-name providers. Whether you're a small business owner, privacy-conscious professional, or tech-savvy hobbyist, this course will walk you through everything you need to know to install, configure, and maintain Proxmox Virtual Environment (VE) on your own hardware.

Proxmox is a powerful, open-source virtualization platform that lets you run virtual machines (VMs) and Linux containers (LXC) on a single server. It's the foundation of many self-hosted setups, from Odoo and Nextcloud to paperless-ngx, security tools, and more. By the end of this course, you'll have a solid, production-ready Proxmox system you can trust to host your critical services efficiently and securely.

This course is built with **Lan Samurai's** mission in mind: helping small businesses save money while gaining efficiency, privacy, and independence from large cloud services—without sacrificing flexibility or reliability.

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## What You'll Learn (Course Expectations)

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

### 1. Install Proxmox VE from Scratch

- Download and verify the official Proxmox VE ISO.
- Create a bootable USB and install Proxmox on bare metal.
- Configure basic networking, hostname, DNS, and storage during installation.
- Access the Proxmox web interface and understand the core UI.

### 2. Harden Your System & Automate Security Updates

- Apply essential hardening steps: firewall rules, SSH configuration, and user permissions.
- Write and deploy quick scripts to automate security updates and system monitoring.
- Understand how to configure apt repositories and keep Proxmox and its packages up to date.
- Set up basic logging and alerting for critical events.

### **3. Choose Between VMs and LXC Containers**

- Understand the trade-offs between full VMs and lightweight LXC containers.
- Decide when to use a dedicated VM (full isolation, different OS) vs. a container (efficiency, shared kernel).
- Set up both VMs and containers for common self-hosted workloads.
- Optimize resource allocation (CPU, RAM, disk) based on workload needs.

### **4. Allocate Storage and Resources Properly**

- Configure local storage, ZFS, or network storage (NFS, iSCSI) for your Proxmox node.
- Create and manage storage pools for VM disks, container volumes, and backups.
- Understand thin provisioning, disk sizing, and performance considerations.
- Allocate CPU and RAM efficiently to avoid overcommitment and ensure smooth performance.

### **5. Use Proxmox VE Helper Scripts to Install Open-Source Applications**

- Learn how to safely use community-maintained helper scripts (like community VM/Container templates) to deploy popular open-source apps.
- Install services such as:
  - **Odoo** (ERP/CRM)
  - **Nextcloud** (file sync and share)
  - **paperless-ngx / paperless AI** (document management)
  - Home automation and monitoring tools
- Customize scripts for your environment and verify successful deployments.

### **6. Organize, Manage, and Keep Your Containers/VMs Updated**

- Use Proxmox groups, tags, and folder structures to organize your services logically.
- Set naming conventions and resource planning for future growth.
- Automate updates for containers and VMs using scripts and scheduled tasks.
- Implement basic monitoring and health checks to catch issues early.

### **7. Implement Backup Options and Perform System Maintenance**

- Plan a robust backup strategy:
    - Local backups vs. offsite backups
    - Full VM/container backups vs. selective file backups
  - Configure Proxmox Backup Server or use built-in backup tools.
  - Set up automated backup schedules and retention policies.
  - Test restore procedures to ensure you can recover quickly from failures.
  - Perform routine maintenance: firmware updates, log rotation, disk checks, and system upgrades with minimal downtime.
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### Who This Course Is For

- **Small business owners** who want to reduce cloud costs and own their infrastructure.
  - **IT professionals** moving from traditional on-prem servers to virtualization.
  - **Self-hosting enthusiasts** who want a professional-grade setup for home labs or small offices.
  - **Privacy advocates** who want to minimize reliance on third-party cloud providers.
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### What You'll Need

- A server or spare machine capable of running Proxmox VE (minimum 8 GB RAM, 64 GB storage recommended).
- Basic familiarity with command-line interfaces and Linux.
- A router and network access to configure networking on your server.
- A USB drive (8 GB+) for the Proxmox installer.

No enterprise-level experience is required—just a willingness to learn and get hands-on.

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### How This Course Is Structured

The course is divided into **7 modules**, each with:

- Clear learning objectives
- Step-by-step instructions
- Practical examples and scripts you can reuse
- Quick checks to confirm your setup is correct

You'll move from a bare-metal install to a fully functional, secure, and maintainable self-hosted environment.

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### **What You'll Walk Away With**

By the end of this course, you'll have:

- **A fully installed and hardened Proxmox VE server.**
- A working set of **VMs and containers** running real applications.
- A **custom backup and maintenance strategy** you can trust.
- A **collection of scripts and configurations** you can reuse for future deployments.
- The confidence to **manage, scale, and maintain** your own private cloud for your business or personal use.

Let's get started building your self-hosted infrastructure with Proxmox VE.