Proxmox VE

Proxmox Virtual Environment (Proxmox VE) is an open-source server virtualization platform that integrates hypervisor-based virtual machines and container-based virtualization into a single management solution. Built on Debian Linux, it combines KVM and LXC technologies, providing administrators a unified web interface and command-line tools for managing virtual infrastructure. It is widely used in enterprise and homelab environments for its flexibility, clustering, and backup features.

Key facts

- **Initial release:** 2008
- **Developer:** Proxmox Server Solutions GmbH
- **Core technologies:** KVM, LXC, Debian
- **License:** GNU AGPL v3
- **Latest stable version:** Regularly updated; typically major releases every 1–2 years
- **Website:** Proxmox VE

Architecture and Features

Proxmox VE runs directly on bare-metal hardware, eliminating the need for a separate host operating system. It supports both full virtualization (KVM) and lightweight containers (LXC), enabling resource-efficient deployments. Core capabilities include web-based management, REST API, integrated firewall, role-based access control, and high-availability clustering.

Storage and Backup

The platform supports diverse storage backends—local disks, NFS, iSCSI, Ceph, and ZFS—allowing flexible virtual machine and container data management. Its built-in backup system, **Proxmox Backup Server**, provides incremental, deduplicated backups, with scheduling and verification integrated into the Proxmox interface.

Clustering and High Availability

Administrators can link multiple nodes into a cluster, managed through the **Proxmox Cluster File System (pmxcfs)**. This enables shared configuration, live migration of workloads, and automatic

failover in case of node failure, supporting enterprise-grade uptime and scalability.

Use and Community

Proxmox VE’s open-source model and subscription-based support have cultivated a large global community. It is favored by IT professionals, educational institutions, and small to midsize enterprises seeking cost-effective virtualization with advanced features comparable to proprietary solutions like VMware vSphere or Microsoft Hyper-V.

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