



PROXMOX

Current Developments

AARON LAUTERER, PROXMOX SERVER SOLUTIONS GMBH
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About Me

About Me

- Aaron Lauterer
- Over 20 years in IT
- Linux focus (10+ years)
- At Proxmox for 6+ years
 - Development
 - Ceph
 - Support
 - Trainings



Introduction

About Proxmox



Open Source at heart

Delivering powerful enterprise solutions.



100% privately owned

Driven by innovation and community needs, not investor demands.



20th Anniversary 2005 - 2025

20+ years of open-source innovation, serving enterprises worldwide.

About Proxmox



Omnipresent
7 continents & in space

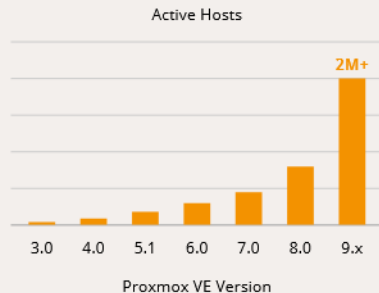


Enterprises of all sizes and industries



2,600 Partners
Local expertise and support

Over
2 Million



Proxmox Support & Services



Professional Enterprise Support

Flexible subscriptions for mission-critical environments.



Subscription Plans

Access to the stable Enterprise Repository, timely updates, and security fixes.



Technical Expertise

Help from the Proxmox team



Training Courses

Gain Knowledge quickly

Products

- **Proxmox Virtual Environment**
Hypervisor (KVM / Qemu and LXC Guests)
- **Proxmox Backup Server**
Backup for hosts and guests
- **Proxmox Offline Mirror**
Offline repository for air-gapped hosts
- **Proxmox Datacenter Manager**
Manage multiple clusters from a single dashboard
- **Proxmox Mail Gateway**
Email security

Open Source

Benefits of Open Source

- No vendor lock-in
- No licensing costs
- Transparent
- Flexible
- Contribute
- Building on established cutting-edge technologies

Benefits of Open Source

Developer Documentation:

https://pve.proxmox.com/wiki/Developer_Documentation



Mailing Lists:

<https://lists.proxmox.com>



GIT Repositories:

<https://git.proxmox.com>

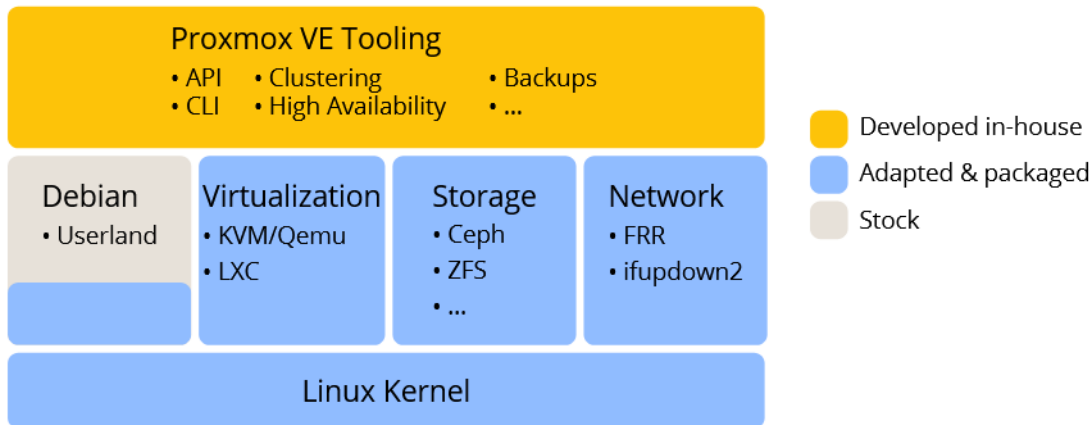


Archive:

<https://lore.proxmox.com>



Proxmox VE – Technology Stack



Developments

Solution Provider Ecosystem

Solution Provider Ecosystem – Backup



Solution Provider Ecosystem – vGPU & VDI

vGPU



VDI

(virtual desktop infrastructure)



omnissa[®]

*in the finalizing steps

Solution Provider Ecosystem – Hardware



Solution Provider Ecosystem – Storage



Solution Provider Ecosystem – Upcoming

- Proxmox VE SDN
 - Cisco ACI integration with SDN
- Monitoring
 - Zabbix
 - ...
- Supported Guest OS
 - The usual enterprise Linux suspects.

Proxmox VE

Proxmox VE – Storage

Snapshots as a Volume Chain

- Snapshots on shared LVM (block storage)
- Snapshots in individual files on directory type storage
 - NFS
 - SMB/CIFS
 - generic directory
- As of Proxmox VE 9.1 in tech-preview state.

Add: LVM ⊗

General Backup Retention

ID: Nodes: All (No restrictions) ⌵

Base storage: Existing volume groups ⌵ Enable:

Volume group: ⌵ Shared:

Content: Disk image, Container ⌵ Wipe Removed Volumes:

Allow Snapshots as Volume-Chain

Snapshots as Volume-Chain are a technology preview.

Keep Snapshots as Volume-Chain enabled if qcow2 images exist!

ⓘ Help Advanced Add

Proxmox VE

Affinity/Anti-Affinity

Between guests or guest-node.

Pressure-Stall-Information

(PSI)

Additional metric for:

- Host
- Guest

Measures how long it takes for certain resources to complete.

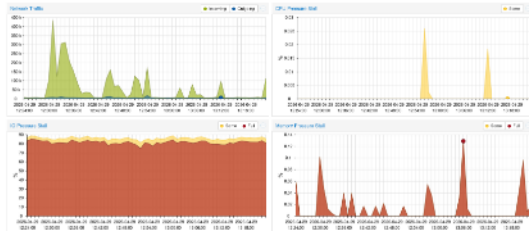
Add: HA Resource Affinity

Enable: Affinity: Keep Together

HA Resources:

Comment:

Help Add



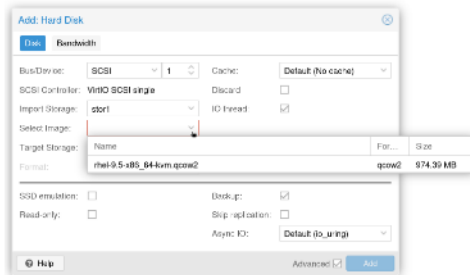
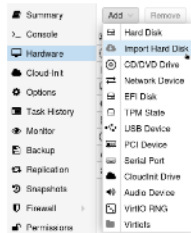
Proxmox VE

VM Import

- OVA/OVF import via GUI
- Single disk import

OCI containers

New type of container for OCI (docker) container.



Proxmox VE – Network Status

Show status of bridges and SDN fabrics.

zone 'training' on node 'hola' Help

| VNETs | | Bridge Ports | | | | |
|----------|------------|--------------|--------|---------------|-------------|-------|
| Bridge ↑ | VLAN-aware | Name | VMID ↑ | Guest Network | Primary ... | VLANs |
| training | No | tap50010 | 5001 | net0 | | |
| trs1s2 | No | tap50011 | 5001 | net1 | | |
| trs2s3 | No | tap50012 | 5001 | net2 | | |
| trs3e1 | No | tap50013 | 5001 | net3 | | |
| | | tap50020 | 5002 | net0 | | |
| | | tap50021 | 5002 | net1 | | |
| | | tap50022 | 5002 | net2 | | |
| | | tap50023 | 5002 | net3 | | |
| | | tap50030 | 5003 | net0 | | |
| | | tap50031 | 5003 | net1 | | |
| | | tap50032 | 5003 | net2 | | |
| | | tap50033 | 5003 | net3 | | |

fabric 'ceph' on node 'server1' Help

| Neighbor | Status | Uptime |
|----------|--------|------------|
| server2 | Up | 1w1h35m10s |
| server3 | Up | 1w1h35m10s |

Proxmox VE

- **VirtioFS:** Share host local directories directly with VM.
- **Live Migration with vGPU:** VMs using NVIDIA Mediated Devices vGPUs can be live migrated between hosts.

Proxmox Datacenter Manager

Proxmox Datacenter Manager

- Release 1.0
- Update management for remotes.
- Views
 - Build custom dashboards
 - Include/exclude remotes by multiple properties.

Add: View

Name Copy Layout from

Include All Include all remotes and their resources.

Include

| Type | Value | |
|---|--|-----------------------------------|
| Select <input type="text" value="Select Type first"/> | <input type="text" value="Select Type first"/> | <input type="button" value="🗑️"/> |
| Resource Type | | |
| Resource Pool | | |
| Resource ID | | |
| Tag | | |
| Remote | | |

Exclude

| Type | Value | |
|---|--|-----------------------------------|
| Select <input type="text" value="Select Type first"/> | <input type="text" value="Select Type first"/> | <input type="button" value="🗑️"/> |

Add

Proxmox Datacenter Manager

- Shell/CLI access for remotes.
- EVPN Management across remotes.
- Migration of guests between remotes.
Live for VMs:
 - Detailed mapping of resources
 - virtual disks
 - NICs

Software Defined Networking

Fabrics:

- OSPF2
- OpenFabric

Firewall:

- Firewall rules for each VNET.

Proxmox Backup Server

Proxmox Backup Server

- Push-sync
 - Initiate Sync between two Proxmox Backup Servers from the source.
- Removable datastores
 - Removable disks
 - Alternative to tapes
 - Autosync when plugged in
- S3 datastores
 - Local cache to reduce traffic and access.

Roadmap

Roadmap — Proxmox VE

- **DRS:** Dynamic Resource Scheduling
 - Distribute guests over cluster nodes, depending on resource usage.
- **Snapshots as Volume Chain:** Move out of "tech preview".
- **MBEC:** Windows VBS performance improvements
- **NVIDIA MIG:** Full support for NVIDIA MIG vGPUs.
- **Installer:**
 - (i)PXE boot
 - Netboot

Roadmap – Software Defined Networking

- Fabrics
 - Wireguard
 - Improve OSPF2 (Route redistribution / Filtering)
- Route Maps / Prefix Lists
- EVPN controller
 - per-node controller
 - route maps + filtering
 - BGP mode (eBGP/iBGP)

Roadmap – Proxmox Datacenter Manager

- Manage SDN Fabrics across clusters
- Subscription Key Management
- Automated installer answer server
- Proxmox Mail Gateway as new remote
- Proxmox VE guest bulk actions
- QDevice
- Mid/Long term:
 - Site replication
 - Disaster recovery

Roadmap – Proxmox Backup Server

- **Server side Encryption:** Store unencrypted locally, encrypt on Push-Sync
- **Backup Groups:** Move easier between namespaces
- **S3:**
 - Usage reporting
 - Traffic counter/statistic

Questions?

Thank you!



PROXMOX

Proxmox Server Solutions GmbH

Bräuhausgasse 37, 1050 Vienna, Austria

office@proxmox.com | www.proxmox.com

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