



# PROXMOX BACKUP SERVER

## OVERVIEW

Proxmox Backup Server is an enterprise backup solution for backing up and restoring virtual machines, containers, and physical hosts. With key features like incremental backups, deduplication, Zstandard compression, and authenticated encryption (AE), Proxmox Backup Server ensures that protecting your most valuable data is quick and effortless. Tight integration with Proxmox VE makes Proxmox Backup Server a great choice for seamlessly backing up your VMs and containers – even between remote sites. The intuitive web-interface provides a great user experience for deploying, managing, and monitoring the server, for IT experts and novices alike. Proxmox Backup Server is lightning fast, meaning that when disaster strikes, you'll have that file, archive or VM back in no time.

## WHY PROXMOX BACKUP SERVER?

Every system administrator knows that the occurrence of data loss is only a matter of time and the best you can be is prepared. For this reason, reliable backup software is the most essential software that you can invest in. To meet your operational goals, the easy-to-use Proxmox Backup Server lets you back up your data in a space-efficient manner, restore it in a flash, and effectively reduce work hours thanks to simplified management. By supporting incremental, fully deduplicated backups, Proxmox Backup Server significantly reduces network load and saves valuable storage space. With strong encryption and methods of ensuring data integrity, backing up data, even to targets which are not fully trusted, is safe. Moreover, the available range of access control options help to ensure that users are limited to only the level of access they require. With enterprise support available from the Proxmox team, you will get the most from your software solution.

## BENEFITS



### Versatility

Backup and restore diverse workloads, including VMs, containers, and physical hosts without artificial limits.



### Unified management

Manage and monitor all backup, restore, and maintenance tasks easily with the intuitive GUI or CLI.



### Efficient & Fast

Incremental, deduplicated and compressed backups optimize storage usage and speed.



### Secure

Data integrity, strong encryption on client-side, and ransomware protection for critical data, on-premises or remotely.



### Tape Backup

Ideal for a 3-2-1 backup strategy and for compliance-driven industries.



### 100% Open-Source

No hidden licensing fee and full access to source code for customization.



### Made for Production

Keep your business running smoothly with Enterprise-grade services & technical support from Proxmox.



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## Enterprise-Class Backup Solution

- ✓ Secure backup of VMs, containers, and physical hosts.
- ✓ Optimized for virtual environments like Proxmox VE.
- ✓ Written in Rust for performance, speed, and memory efficiency.
- ✓ Store on-premises and remotely.
- ✓ Stand-alone solution means no vendor lock-in.

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## Free & Open-Source Software

- ✓ Licensed under the GNU AGPL, v3.
- ✓ Debian-based, using the Proxmox kernel with OpenZFS support.
- ✓ Public code repository (Git).
- ✓ Open development on transparent mailing list.
- ✓ Bug tracker for issue tracking.
- ✓ Community support forum.
- ✓ Documentation, project page, video tutorials, howto guides, and much more.

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## Enterprise Support Agreement

- ✓ Avoid hidden costs with clear subscription model.
- ✓ Flexible support options that grow with your needs.
- ✓ Access to the stable and extensively tested Enterprise Repository.
- ✓ Updates and version upgrades via GUI.
- ✓ Proxmox Offline Mirror tool to keep air-gapped systems up-to-date.
- ✓ Premium technical support from the highly-skilled Proxmox support team.
- ✓ Large network of resellers & partners who help with your project.

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## Client-Server Model

- ✓ Separation allows multiple, unrelated hosts to use the backup server.
- ✓ The client tool will work with most modern Linux distributions, allowing you to create and manage backups from all your hosts.
- ✓ Ability to encrypt on the client-side, to ensure data is secure before reaching the server.

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## Proxmox VE Integration

- ✓ Proxmox Virtual Environment is fully supported.
- ✓ Add datastores and run backups in the same way you would with any other Proxmox VE storage type.
- ✓ Best choice for quick and simple backup of VMs (supporting QEMU dirty bitmaps) and containers.
- ✓ Restore single files from VM and container backups.
- ✓ Live-restore feature allows for starting a VM, as soon as the restore starts.

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## Incremental, Deduplicated Backups

- ✓ Only changes since the last backup are sent and stored – whether it's an archive, VM, or container.
- ✓ The deduplication layer reduces the amount of duplicate data on the backup server.
- ✓ Using Proxmox File Archive Format (.pxar) allows you to achieve a high level of deduplication.
- ✓ Metadata and data are stored separately for faster change detection.
- ✓ Low network impact – only changes in data are transferred from the backup client to the server.
- ✓ Storage space is used efficiently.
- ✓ Fast incremental backup (QEMU dirty-bitmap support) for running VMs.
- ✓ Use of Zstandard compression to compress several GBs of data per second, before sending.
- ✓ Datastore namespaces enable deduplication of data from multiple backup sources.

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## Flexible retention options

- ✓ Schedule from the server or trigger manually from the client.
- ✓ Built-in Prune Simulator to visualize settings.
- ✓ Intelligently thin-out backups over time.
- ✓ Fine-grained pruning selection of whole datastore or specific namespaces.



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## Encryption

- ✓ Strong client-side encryption with AES-256 in Galois/Counter Mode (GCM) means data is useless to unauthorized persons.
- ✓ Use of a master key (RSA public/private key pair) to store encrypted version of the encryption key. Print secret encryption keys on paper to place in a secure vault for safe, long-term storage.

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## Access Control

- ✓ Broad array of privilege roles (groups permission sets), to specify each user's permissions.
- ✓ Create API Tokens and lock them further down for secure and easily revocable access, for example to a specific datastore and namespace.
- ✓ Multiple Authentication Realms: Add Linux PAM users, utilize the Backup Server realm for system-independent access with user-self service, or relay authentication to your OpenID Connect single signon solution.
- ✓ Support for LDAP as authentication realm.
- ✓ Support for Microsoft Active Directory (MS ADS).
- ✓ Setup Two-Factor Authentication.
- ✓ Restricted by default: new users or API tokens do not have any permissions.

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## Two-Factor Authentication

- ✓ Can be activated and configured via GUI, providing high security.
- ✓ Configure multiple 2nd factors.
- ✓ Time-based One Time Passwords (TOTP).
- ✓ Web Authentication (WebAuthn).
- ✓ Single-use recovery code.
- ✓ TFA/TOTP lockout to protect against brute-force attacks.

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## Data integrity

- ✓ Accurate and consistent backups with built-in SHA-256 checksum algorithm.
- ✓ Schedule regular backup verification, to detect bit rot and confirm backups are safe.
- ✓ Maintenance mode with active operations tracking allows for safer maintenance windows.

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## Ransomware Protection

- ✓ Off-server and off-site synchronization for recovery.
- ✓ Data for existing blocks is not rewritten.
- ✓ Fine-grained user and access management system.
- ✓ SHA-256 checksums and verification jobs can indicate possible ransomware.

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## Quick Restore

- ✓ Fast and simple restore via the GUI – ease stressful situations.
- ✓ Granular recovery options.
- ✓ Quickly search contents of an archive.
- ✓ Restore single files/directories/archives using the GUI or interactive recovery shell.
- ✓ Download as ZIP or zstd-compressed tar archive.

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## Remote Synchronization

- ✓ Synchronize datastores or individual namespaces from other locations for redundancy or long-term archival.
- ✓ Efficiently synchronize data to offsite locations.
- ✓ Only transfer changes since previous sync.
- ✓ Filter the backups which should be synced.
- ✓ Schedule sync jobs to run regularly or start them manually in the GUI.



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## Tape Backup

- ✓ Native tape support fully integrated into Proxmox Backup Server.
- ✓ Supports LTO-5 and later (with best-effort support for LTO-4).
- ✓ Tape backup/restore jobs.
- ✓ Flexible retention policies.
- ✓ New user space tape driver (in Rust).
- ✓ Support for various tape autoloaders (pmtx-tool).
- ✓ Proxmox LTO Barcode Label Generator for organizing your tape library.

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## S3-compatible object storage

- ✓ Native support for S3-compatible object storage as backend for backups.
- ✓ Access public and private cloud environments for storing backup data.

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## Modern Linux Server Experience

- ✓ Flexible notification system: rule-based notifications sent as email via local Postfix MTA or authenticated SMTP, or sent via a Gotify instance.
- ✓ Webhooks for the notification system enable system events to trigger HTTP requests.
- ✓ Secure boot compatibility.
- ✓ Automated and unattended installation for full automation of the setup process on bare-metal machines.
- ✓ Support for external metric server.

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## Web-Based Management Interface

- ✓ Intuitive, integrated, web-based user interface.
- ✓ Available in multiple languages.
- ✓ Create and manage datastores.
- ✓ Administer removable datastores.
- ✓ Organize datastores into namespaces.
- ✓ Browse and restore backups.
- ✓ Get an overview of performance, backup tasks, and usage statistics.
- ✓ Integrated HTML documentation.
- ✓ Access to a secure HTML5 console.
- ✓ Full integration of the ACME protocol, manage TLS certificates from Let's Encrypt and other providers, optionally with external account binding (EAB).
- ✓ Manage network configuration and interfaces.
- ✓ Configure users, access permissions, remote stores and subscriptions.
- ✓ Check for updates and perform upgrades.
- ✓ Configure and schedule network bandwidth limits, to avoid network saturation.
- ✓ Record and render markdown-formatted notes on the server.

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## Command Line Interface (CLI)

- ✓ Manage all components of your server.
- ✓ Intelligent tab completion.
- ✓ Full UNIX man page documentation.

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## REST API

- ✓ Easy integration for 3rd party management tools.
- ✓ Simple, human-readable data format (JSON as primary data format).
- ✓ Endpoints available for most server management tasks.

## **LEARN MORE**

Project Page: **[pbs.proxmox.com](https://pbs.proxmox.com)**  
Bugtracker: **[bugzilla.proxmox.com](https://bugzilla.proxmox.com)**  
Code repository: **[git.proxmox.com](https://git.proxmox.com)**

## **HOW TO BUY**

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## **HELP AND SUPPORT**

Proxmox Customer Portal: **[my.proxmox.com](https://my.proxmox.com)**  
Community Support Forum: **[forum.proxmox.com](https://forum.proxmox.com)**

## **SALES INQUIRIES?**

Please contact our team:  
**[sales@proxmox.com](mailto:sales@proxmox.com)**.

## **ABOUT PROXMOX**

Proxmox Server Solutions GmbH is a software provider dedicated to developing powerful and efficient open-source server solutions. The privately held company is based in Vienna (Europe).

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