



Proxmox VE Backup & Restore

Many functions, comfortable, High-performance, scalable, reliable

SEP
The Data Protection Company

**THOMAS
KRENN**[®]
IT's people business

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Proxmox VE Backup & Restore

Many functions, comfortable, high-performance, scalable, reliable

Proxmox VE is a valid open-source alternative to VMware, Microsoft Hyper-V or other virtualization solutions. As a product, it is characterized by its small size combined with high user-friendliness and functionality. Proxmox VE offers both VM technology (based on KVM) and container technology using Linux Containers (LXC). To protect against system failures, Proxmox VE also offers cluster operation of multiple servers including high availability.

As a solution from Austria, it helps to make it easier to comply with formal regulations such as GDPR, NIS2 or the US Cloud Act. Based on Debian GNU/Linux, it increases protection against malware, among other things.

Due to the takeover of VMware by Broadcom and the drastic price increases that came with it, demand for Proxmox VE has increased enormously. Anyone who has always flirted with switching to an open-source solution is now setting up such a project. But many other unnerved VMware customers are also evaluating a migration of their virtual environment. The same applies to many users of Citrix XenServer,

because here too there was a surprisingly large increase in license costs.

In addition to its hypervisor, Proxmox also offers its own backup solution:

The Proxmox Backup Server (PBS)

Even if it is limited exclusively to the backup of Proxmox VMs and containers, PBS offers a range of convenient backup functions using proprietary APIs, especially in comparison with the competition on the backup market. Many customers have therefore decided to use PBS as a dedicated stand-alone solution - in addition to their existing backup product.

Although the PBS offers some added value for the backup of a Proxmox environment, as an isolated solution it contradicts a generally valid backup consolidation in terms of backup concept, central control, administration, know-how, etc.

For example, the deduplication of the PBS cannot be combined with the highly efficient and global S3 deduplication of SEP sesam. The limited support time of the PBS to 9x5 also has an inhibiting effect in the enterprise environment.

Further information on Proxmox VE and the PBS:
Proxmox



To solve the above-mentioned challenges, we recommend using the professional backup software SEP sesam, which offers unique added value with its considerably extended backup and

restore functions when backing up and restoring VMs in Proxmox VE environments. A first insight into the SEP Proxmox functionality can be found here:

Proxmox Features

Backup

For the 3 block-based storage types mentioned above, the SEP backup method is based on direct access to the storage to trigger storage snapshots. This results in completely new functionalities as added value, which users migrating from VMware or Citrix in particular are already accustomed to and which are indispensable for an enterprise-capable, convenient backup.

- *Incremental backup by comparing snapshots*
- *Improved performance compared to 'vzdump'*
- *Enterprise-capable thanks to many parallel streams, i.e. simultaneous backup of many VMs*
- *Automatic detection of the most suitable backup option*
- *Backup of encrypted VMs (vTPM)*
- *Efficient application of the global deduplication Si3 integrated in SEP Sesam*
- *For an easier identification of a single VM in addition to the cryptic VM IDs also the VM name as well as the VM tags will be displayed*

Other comfort functions already available for all hypervisors supported by SEP can of course also be used for Proxmox VE:

- *Define policies for newly recognized VMs*
=> *Automated inclusion of new backups in the existing backup processes*
- *Automatic follow-up actions after a successful backup*
=> *e.g. migration to tape or to the cloud*
- *Create or delete lots of backup tasks for a predefined task group with just one click*
- *Intuitive configuration of Proxmox backup tasks via WebUI*

All listed backup functionalities are valid also for the QEMU-based backup type for file storage and a limited subset for vzdump as well.

Backup task ⓘ

- 1 Client selection
- 2 Task type selection
- 3 Configuration
- 4 Advanced Options
- 5 Type of scheduling
- 6 Backup group configuration
- 7 Confirmation
- 8 Finish

Backup Task Selection for Client pxmx-node1.srv.qa.hk.sep.de ✕

Select which type of backup task you want to add. This selection only shows types which are supported by the selected client.

- Local file system**
Back up files and directories accessible via the local file system of either the SEP sesam server or of a remote computer.
- Linux BSR**
Linux BSR
- Proxmox VE**
Proxmox-VE

Selection of backup type

Backup task ?

- 1 Client selection
- 2 Task type selection
- 3 Configuration
- 4 Advanced Options
- 5 Type of scheduling
- 6 Backup group configuration
- 7 Summary
- 8 Finish

Back up Virtual Machines of Virtualization Server pxmx-node1.srv.qa.hk.sep.de (Proxmox-VE) ✕

Click browse to select a Virtual Machine first. The task name will then be generated.

Browse virtual machines

103

Task Name: •

pxmx-node1_srv_qa_hk_sep_de_pve_103

↻ Regenerate task name

Notes:

Add advanced options step, e.g. for data mover, VM options

Cancel
Back
Next

Automatic selection of backup type

Browse pxmx-node1.srv.qa.hk.sep.de (OS: LINUX) (Task Type: Proxmox-VE) ✕

Name	Used Size	Details	Host system
📁 100 (VM 100)		Details	pxmx-node1
📁 101 (ct-on-node3) ●	8.0 GiB	Details	pxmx-node1
📁 102 (ct-n2-a8) ●	8.0 GiB	Details	pxmx-node2
📁 103 (lvm-sepvg) ●	8.0 GiB	Details	pxmx-node1
📁 104 (vm-zfs-n1-bt1) ●	10.0 GiB	Details	pxmx-node1
📁 105 (vm-n2-nbd-dx) ●	8.0 GiB	Details	pxmx-node2
📁 106 (vm-on-node1)	5.0 GiB	Details	pxmx-node2
📁 107 (vm-on-node2)	5.0 GiB	Details	pxmx-node2

Refresh
Cancel
Save

VM selection: Identification via ID, name, tags

The backup type used for the backup can be determined automatically during runtime, what provides high usability, can however be specified explicitly by the user himself in case of need. If there is no snapshot API available, v2dump acts as a fallback.

Another added value with SEP sesam is the ability to back up the Proxmox nodes themselves, regardless of whether it is a single node or a cluster configuration. Since a SEP client package must already be installed on each node and the SEP Linux Agent also supports Debian, a complete file backup of the node or even an image (BSR) backup of the computer can be made. Since all Proxmox configuration files on the node as well as the OS of the node are backed up, this significantly increases the security and availability of your virtual environment, especially in the event of disaster recovery, e.g. hardware failure. Thanks to the BSR backup, a restore to new HW is possible without any problems, even if this requires minor manual intervention

Restore

The use of storage and the QEMU snapshots has also made restoring much easier:

- Restore an entire VM with overwrite: YES/NO
- Mounting the backup for Single File Restore (also from a Si3 Dedup Store, Linux and Windows, even for OES with NSS)
- Instant Recovery (Live Migration) i.e. mounting a backup for an instant start of the VM
- Restore with new name
- Restore with new ID
- Parallel restores of many VMs (-> disaster recovery)

Hint:

In the event that a VM uses several virtual disks that are located on different storage types, the restore will fail!

However, functionalities already available from the restore of other hypervisors can also be used for the Proxmox VE restore:

- Automatic start of a VM after the restore
- Restore to other Proxmox VE environments (e.g. DR at another location)
- Save a restore task with a name to be used as restore event in a schedule for automated restores
- Intuitive restore via WebUI

Notes:

- For snapshot backups, the storage type must match, i.e. zfs to zfs, nfs to nfs, etc.
- For v2dump backups the source and target storage type can be different

Auftragsauswahl	
Auftrag	Quelle
ps-win	129

Sicherungsauswahl				
Ausgewählte Sicherung: SF20250410160036531@BGUJJ1VBxHk 10.04.2025 16:00:40				
Sicherungsdatum	Methode	Sicherung	Größe	Medienpool
10.04.2025 16:02	INCR	SI20250410160206113@UFZUluqNoM	3,0 KB	Backup-Pool
10.04.2025 16:01	INCR	SI20250410160112902@IZxOL2xb658	3,0 KB	Backup-Pool
10.04.2025 16:00	FULL	SF20250410160036531@BGUJJ1VBxHk	1,0 MB	Backup-Pool
10.04.2025 15:58	COPY	SC20250410155843250@oDWU0qTWM3K	1,0 MB	Backup-Pool

Generationsrücksicherung Einzeldateirücksicherung Rücksicherung der virtuellen Maschine

Abbrechen Erweiterte Ansicht < Zurück Weiter >

Selection of restore type

Migration to Proxmox VE

To be able to use the backup and restore functions of SEP sesam for Proxmox VE, the existing VMs and containers must first be moved

1. OVF Tool

The first option is to do this using the commandline tool OVF-Tools. The virtual machines can be exported directly from VMware and then imported into Proxmox VE. However, there are restrictions here. For example, live migration is not possible as the VMs must be switched off during the entire process.

Further information (use browser utilities to translate the German page):

[VM Export & Import OVF-Tool](#)

2. ESXi Importer

The newer variant is to use the implemented ESXi Importer from Proxmox VE. The individual ESXi servers (or the vCenter) can be added in the storage settings of the Proxmox VE single host or the cluster. The individual VMs can then be imported under the added storage; in contrast to the OVF tool, this works without any major downtime. However, it is necessary that the VM is stopped on the VMware side, as otherwise an error will occur when activating the live import (this problem may already be solved if you follow these instructions).

Further information (use browser utilities to translate the German page):

[ESXi VM Importer](#)

3. Backup and Restore

The last possible option would be to use a backup solution to back up the VMs under VMware and then restore them under Proxmox VE. Depending on the solution and the backup method used, the entire process may not work live, but it is possible to continue using the existing backups.

from VMware to the new virtualization environment Proxmox VE. There are basically three options for how this can be done:

In addition, there must be enough temporary storage space on the local storage to export the VMs to this storage

This may not be the actual target storage. In practice, however, the OVF tool option has now largely been replaced by the second option, although it is still used to some extent and Proxmox continues to develop it accordingly.

With the live restore, Proxmox VE starts the image immediately if the VM is off on the VMware side and you have started the import. All required data is then retrieved on-demand.

However, there is currently still a limitation: It is not possible to import VMs that use vSAN storage directly. The disks must first be moved to another storage to be able to use the ESXi Importer.

This means that, even after switching to Proxmox VE, the existing backups can still be used to perform a restore to an older data status.

Outlook

With the next version of SEP sesam Artemis V4 there will be supported a QEMU-based snapshot backup of LVM-thick.

With the current version of SEP sesam a sandbox restore is already included, however only from CLI. A integration into the WebUI will be given with the next release.

ZFS over iSCSI is also zfs and block-based, but is currently not supported due to the more complex setup with an external storage server.

Since the method of storage snapshots is independent of Proxmox, it can also be generally offered in SEP sesam when using these file systems for backup.

Since the method of QEMU snapshots is independent of Proxmox, it can also be used offered in other agents of SEP sesam. Therefore we just released the incremental backup for our KVM agent.



About SEP:

SEP makes the world a little safer every day. With the hybrid backup and disaster recovery solutions, the data of companies and organizations is backed up around the clock and fully restored in the event of a disaster.

SEP's claim:

No data should be lost. That is why all components are developed, extensively tested and constantly improved.

About Thomas-Krenn:

Thomas-Krenn.AG is one of the largest manufacturers of individual server and storage systems in Germany. Since 2002, the company has been supplying end users, resellers and data center operators with high-quality hardware based on the build-to-order principle. The company stands for the highest service quality in hardware-related development, contract manufacturing, product refinement and logistics.

Thanks to customized solutions, the company is a reliable partner for industry, system houses, service providers and medium-sized end customers - from every sector. In accordance with DIN EN ISO 14001, the highest standards of sustainability and ecology are met. The company currently employs around 200 people and produces all systems in Germany at its Freyung site.



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