StarWind Virtual Backup Appliance: Configuration Guide for Proxmox Virtual Environment [KVM], Virtual Backup Appliance Deployed as a Controller VM using Web UI

2026

TECHNICAL PAPERS

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About StarWind

StarWind is a pioneer in virtualization and a company that participated in the development of this technology from its earliest days. Now the company is among the leading vendors of software and hardware hyper-converged solutions. The company’s core product is the years-proven StarWind Virtual SAN, which allows SMB and ROBO to benefit from cost-efficient hyperconverged IT infrastructure. Having earned a reputation of reliability, StarWind created a hardware product line and is actively tapping into hyperconverged and storage appliances market. In 2016, Gartner named StarWind “Cool Vendor for Compute Platforms” following the success and popularity of StarWind HyperConverged Appliance. StarWind partners with world-known companies: Microsoft, VMware, Veeam, Intel, Dell, Mellanox, Citrix, Western Digital, etc.

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Annotation

Relevant products

StarWind Virtual Backup Appliance (VBA), StarWind Virtual Backup Appliance Free (VBA Free)

Purpose

StarWind Virtual Backup Appliance (VBA) is a software solution that runs as a Virtual Machine on top of the Proxmox host and turns it into a modern and robust backup repository.

This document outlines how to configure the StarWind Virtual Backup Appliance (VBA) on Proxmox host. It covers the steps on how to create a Hardened Repository in StarWind VBA and connect it to Veeam Backup & Replication for achieving backups immutability. It also describes how to configure an iSCSI backup repository as well as NFS and SMB repositories for use with Veeam Backup & Replication or other backup software.

Audience

This technical guide is intended for storage and virtualization architects, system and backup administrators, and partners designing virtualized environments StarWind Virtual Backup Appliance (VBA).

Expected result

The end result of following this guide will be a fully configured StarWind Virtual Backup Appliance (VBA) on a Proxmox host with different backup repository types created.

Prerequisites

StarWind VBA system requirements

Prior to installing StarWind VBA, please make sure that the system meets the requirements, which are available via the following link:

https://www.starwindsoftware.com/system-requirements#vba

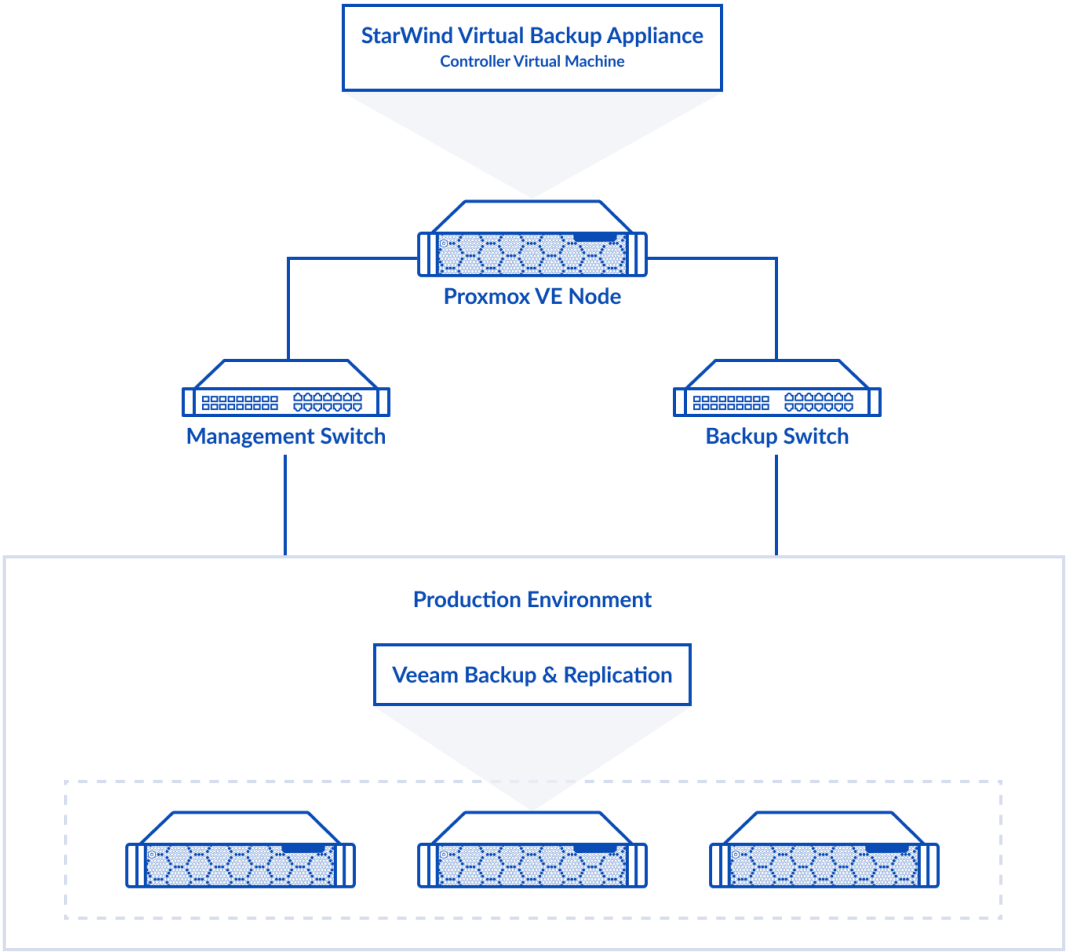
StarWind Software System Requirements

Check out the system requirements for StarWind solutions to ensure the promised performance and stability

Recommended RAID settings for HDD and SSD disks:
https://knowledgebase.starwindsoftware.com/guidance/recommended-raid-settings-for-hdd-and-ssd-disks/

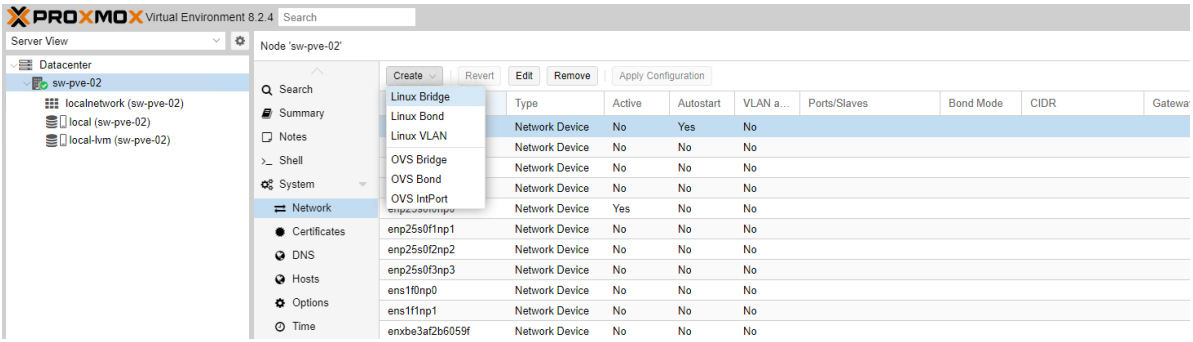
Solution diagram

The diagrams below illustrate the network and storage configuration of the solution:

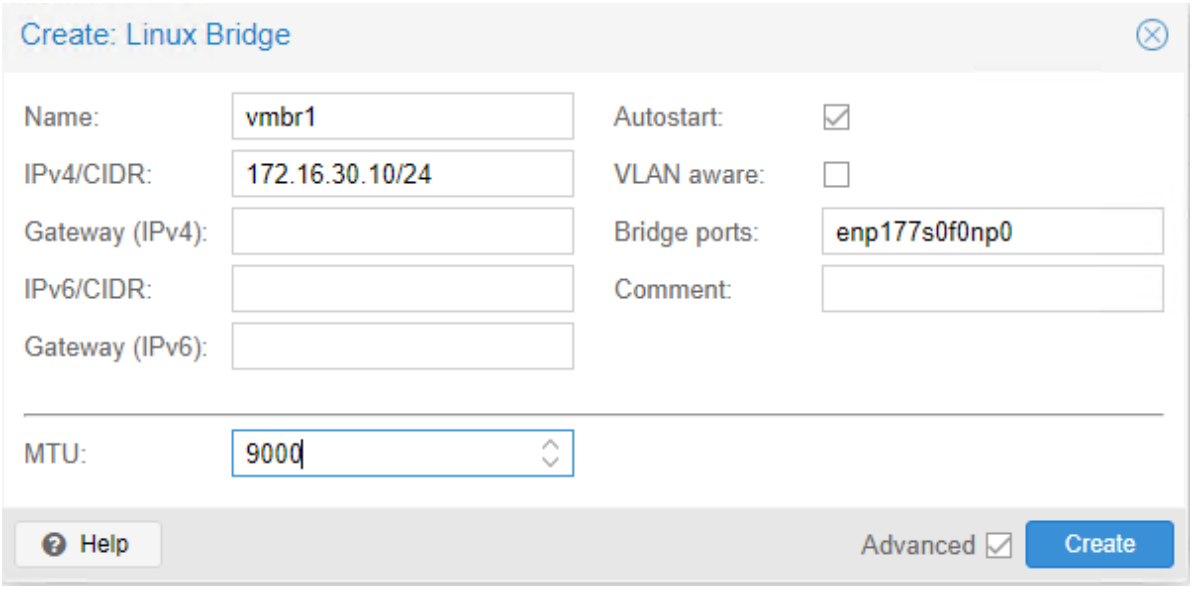


Preconfiguring Proxmox Host

1. Configure network interfaces that will be used for the backup traffic. In this document, 172.16.30.x subnet is used for the backup traffic. Choose node and open System -> Network page. Click Create. Choose Linux Bridge.



2. Create Linux Bridge and set IP address. Set MTU to 9000. Click Create.



3. Verify network configuration in /etc/network/interfaces file. Login to the node via SSH and check the contents of the file.

```
auto lo
iface lo inet loopback

iface enp25s0f0np0 inet manual

iface enp177s0f1np1 inet manual
        mtu 9000

iface enp202s0f0np0 inet manual

iface enp202s0f1np1 inet manual

iface enxbe3af2b6059f inet manual

iface enp25s0f1np1 inet manual

iface enp25s0f2np2 inet manual

iface enp25s0f3np3 inet manual

iface ens1f0np0 inet manual

iface ens1f1np1 inet manual

auto enp177s0f0np0
iface enp177s0f0np0 inet manual
        mtu 9000

auto vmbr0
iface vmbr0 inet static
        address 172.27.31.112/24
        gateway 172.27.31.10
        bridge-ports enp25s0f0np0
        bridge-stp off
        bridge-fd 0

auto vmbr1
iface vmbr1 inet static
        address 172.16.30.10/24
        bridge-ports enp177s0f0np0
        bridge-stp off
        bridge-fd 0
        mtu 9000
```

4. Enable IOMMU support in kernel, if PCIe passthourgh will be used to pass RAID Controller, HBA or NVMe drives to the VM. Update grub configuration file.

For Intel CPU:

Add “intel_iommu=on iommu=pt” to GRUB_CMDLINE_LINUX_DEFAULT line in /etc/default/grub file.

For AMD CPU:

Add “iommu=pt” to GRUB_CMDLINE_LINUX_DEFAULT line in /etc/default/grub file.

```
root@sw-pve-02:~# cat /etc/default/grub
# If you change this file, run 'update-grub' afterwards to update
# /boot/grub/grub.cfg.
# For full documentation of the options in this file, see:
#   info -f grub -n 'Simple configuration'

GRUB_DEFAULT=0
GRUB_TIMEOUT=5
GRUB_DISTRIBUTOR=`lsb_release -i -s 2> /dev/null || echo Debian`
GRUB_CMDLINE_LINUX_DEFAULT="quiet intel_iommu=on iommu=pt"
GRUB_CMDLINE_LINUX=""

# If your computer has multiple operating systems installed, then you
# probably want to run os-prober. However, if your computer is a host
# for guest OSes installed via LVM or raw disk devices, running
# os-prober can cause damage to those guest OSes as it mounts
# filesystems to look for things.
#GRUB_DISABLE_OS_PROBER=false

# Uncomment to enable BadRAM filtering, modify to suit your needs
# This works with Linux (no patch required) and with any kernel that obtains
# the memory map information from GRUB (GNU Mach, kernel of FreeBSD ...)
#GRUB_BADRAM="0x01234567,0xfefefefe,0x89abcdef,0xefefefef"

# Uncomment to disable graphical terminal
#GRUB_TERMINAL=console

# The resolution used on graphical terminal
# note that you can use only modes which your graphic card supports via VBE
# you can see them in real GRUB with the command `vbeinfo'
#GRUB_GFXMODE=640x480

# Uncomment if you don't want GRUB to pass "root=UUID=xxx" parameter to Linux
#GRUB_DISABLE_LINUX_UUID=true

# Uncomment to disable generation of recovery mode menu entries
#GRUB_DISABLE_RECOVERY="true"

# Uncomment to get a beep at grub start
#GRUB_INIT_TUNE="480 440 1"
```

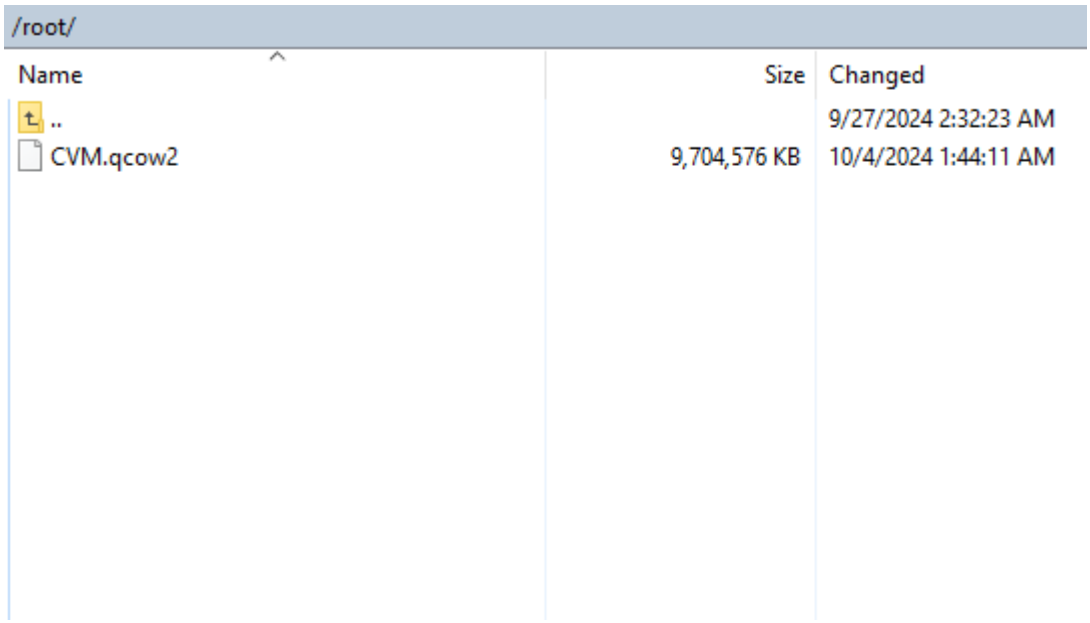
5. Reboot the host.

Deploying Starwind Virtual Backup Appliance

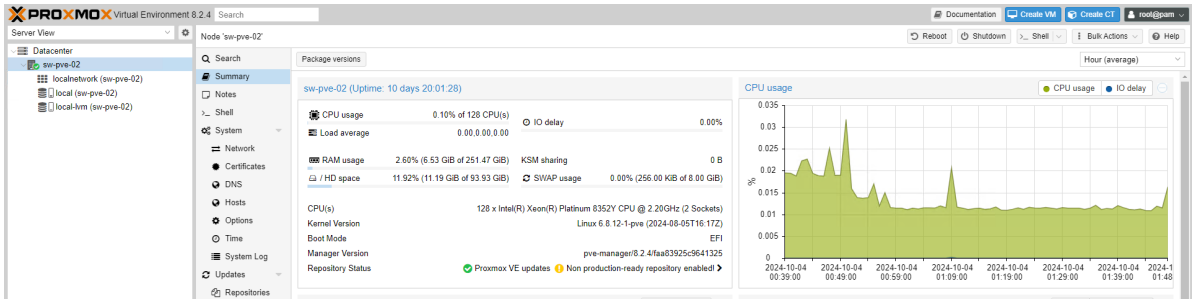
1. Download StarWind Virtual Backup Appliance zip archive: https://www.starwindsoftware.com/backup-appliance#download

2. Extract the CVM.qcow2 file from the downloaded archive.

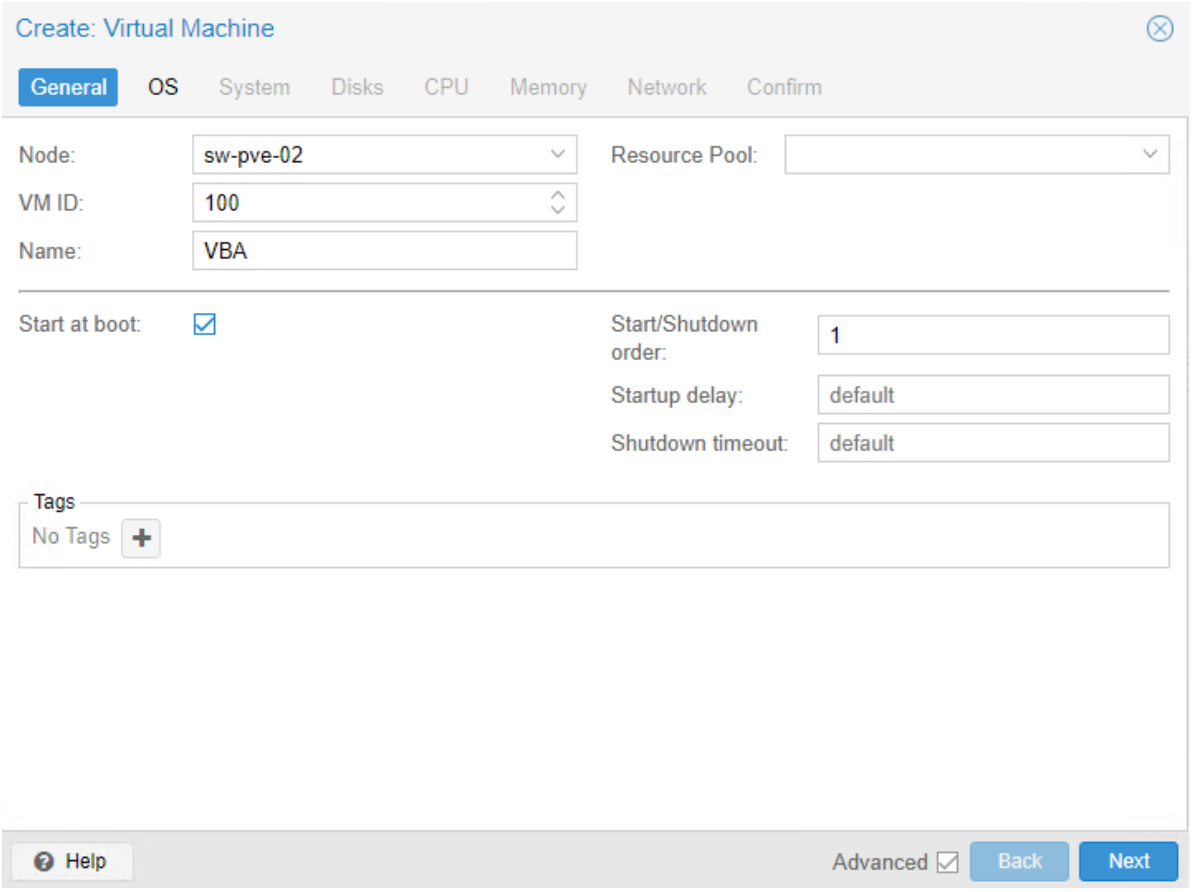
3. Upload CVM.qcow2 file to the Proxmox Host via any SFTP client (e.g. WinSCP) to /root/ directory.



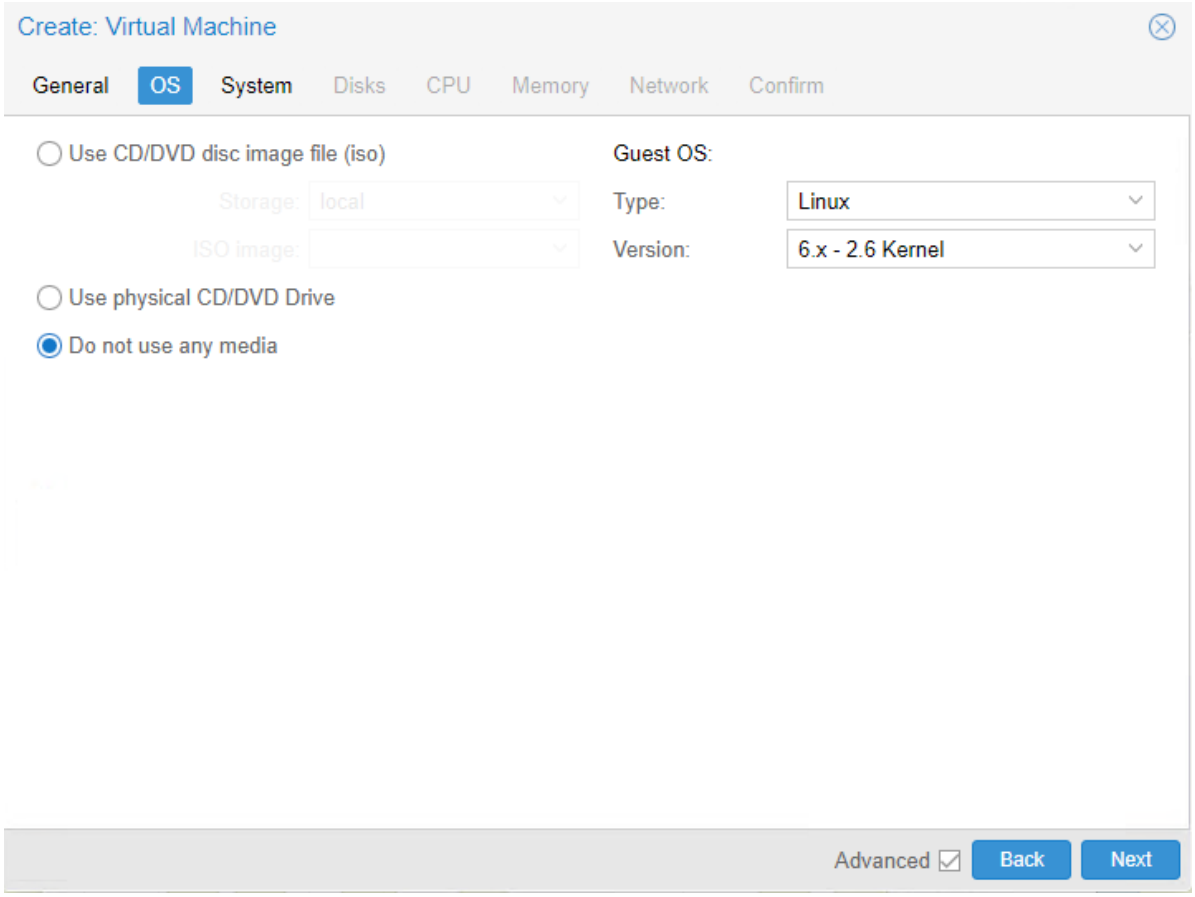
4. Create a VM without OS. Login to Proxmox host via Web GUI. Click Create VM.



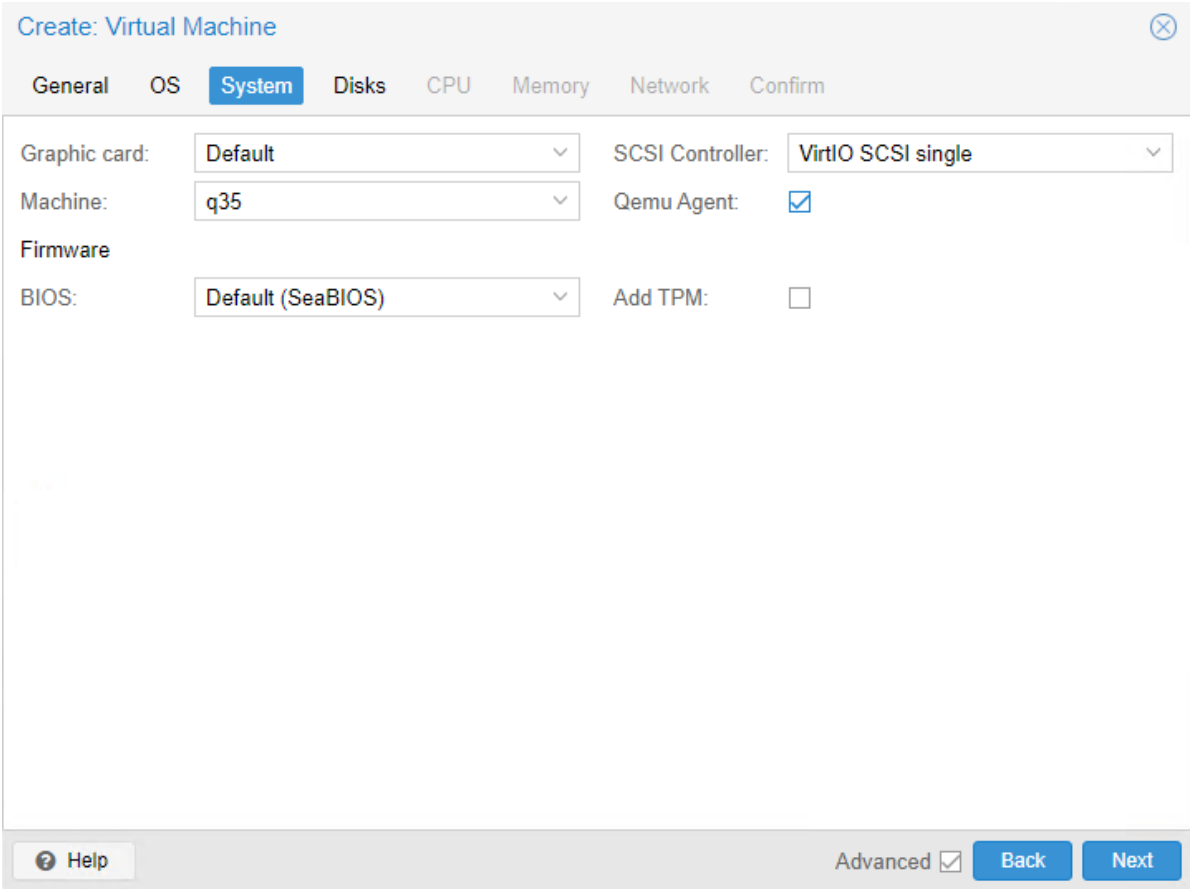
5. Choose node to create VM. Enable Start at boot checkbox and set Start/Shutdown order to 1. Click Next.



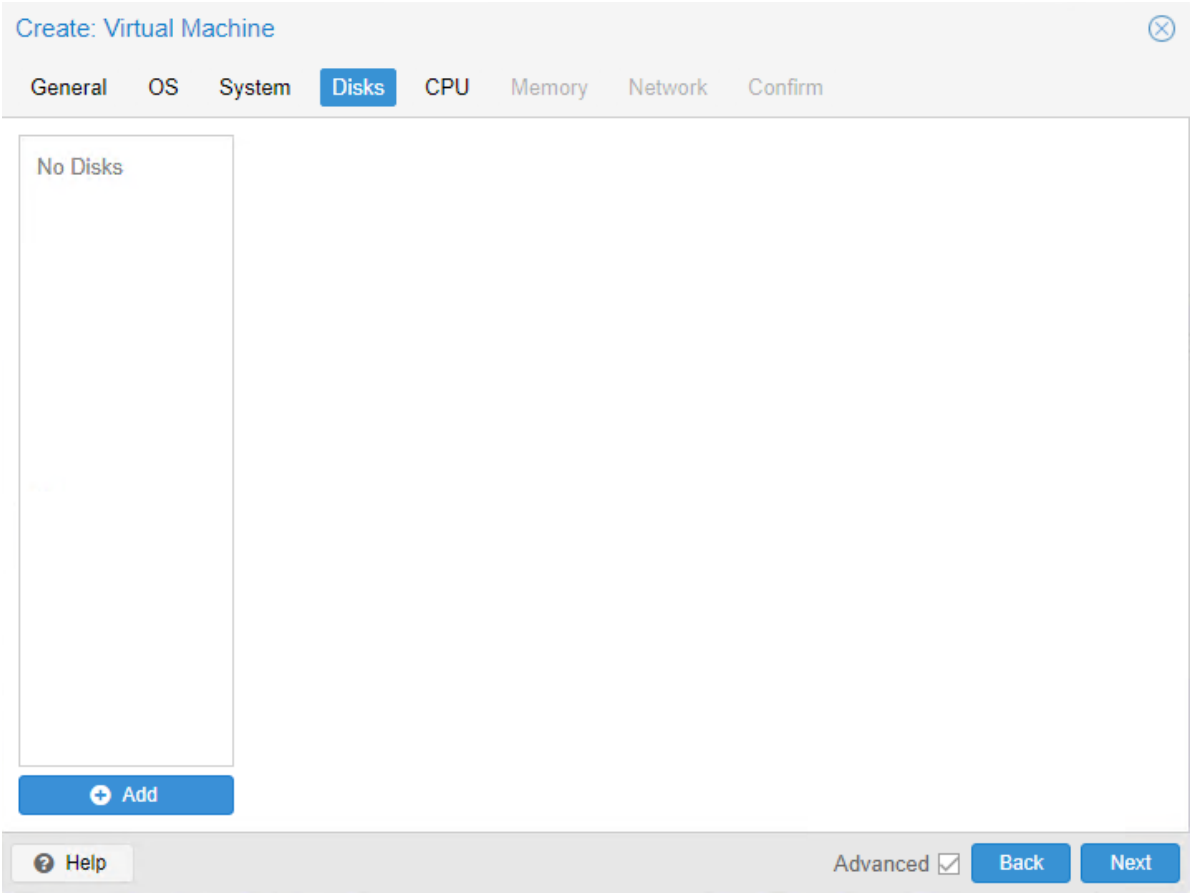
6. Choose Do not use any media and choose Guest OS Linux. Click Next.



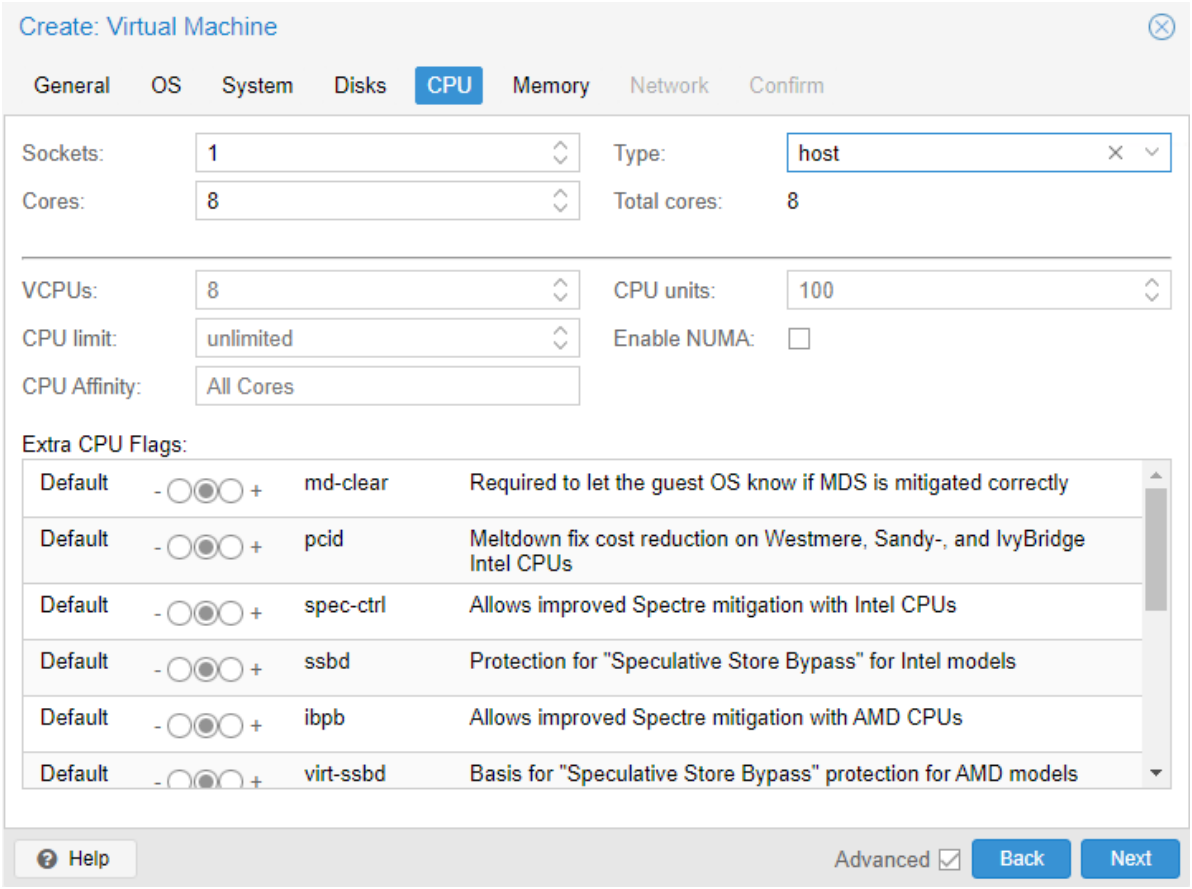
7. Specify system options. Choose Machine type q35 and check the Qemu Agent box. Click Next.



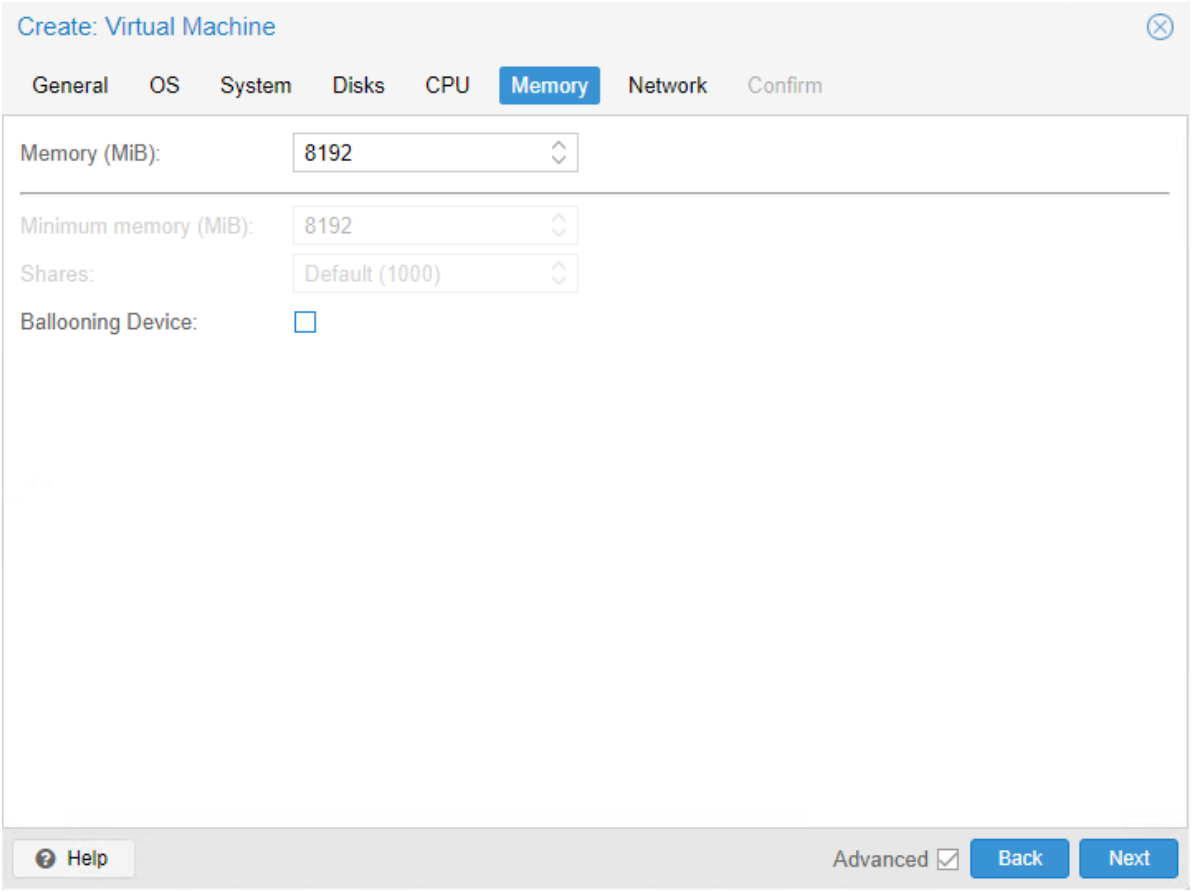
8. Remove all disks from the VM. Click Next.



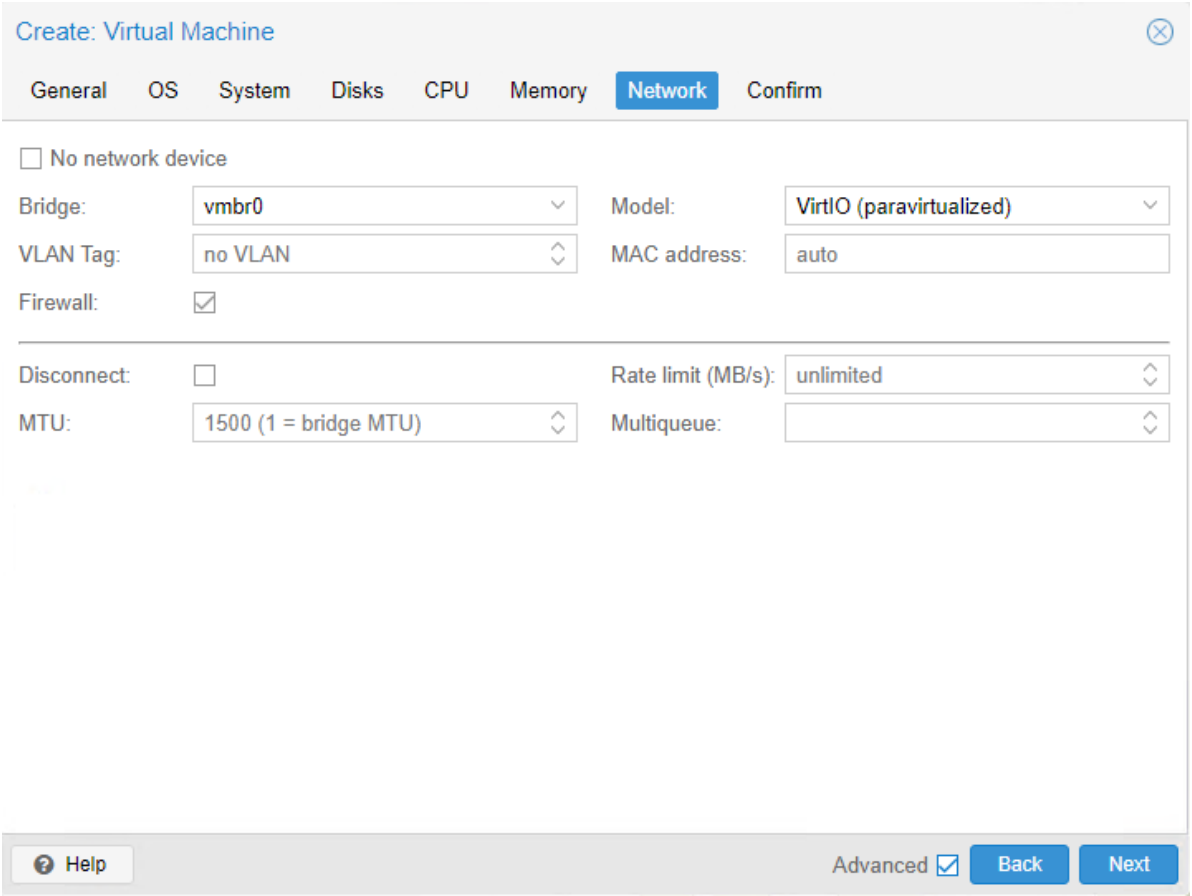
9. Assign at least 8 cores to the VM and choose Host CPU type. Click Next.



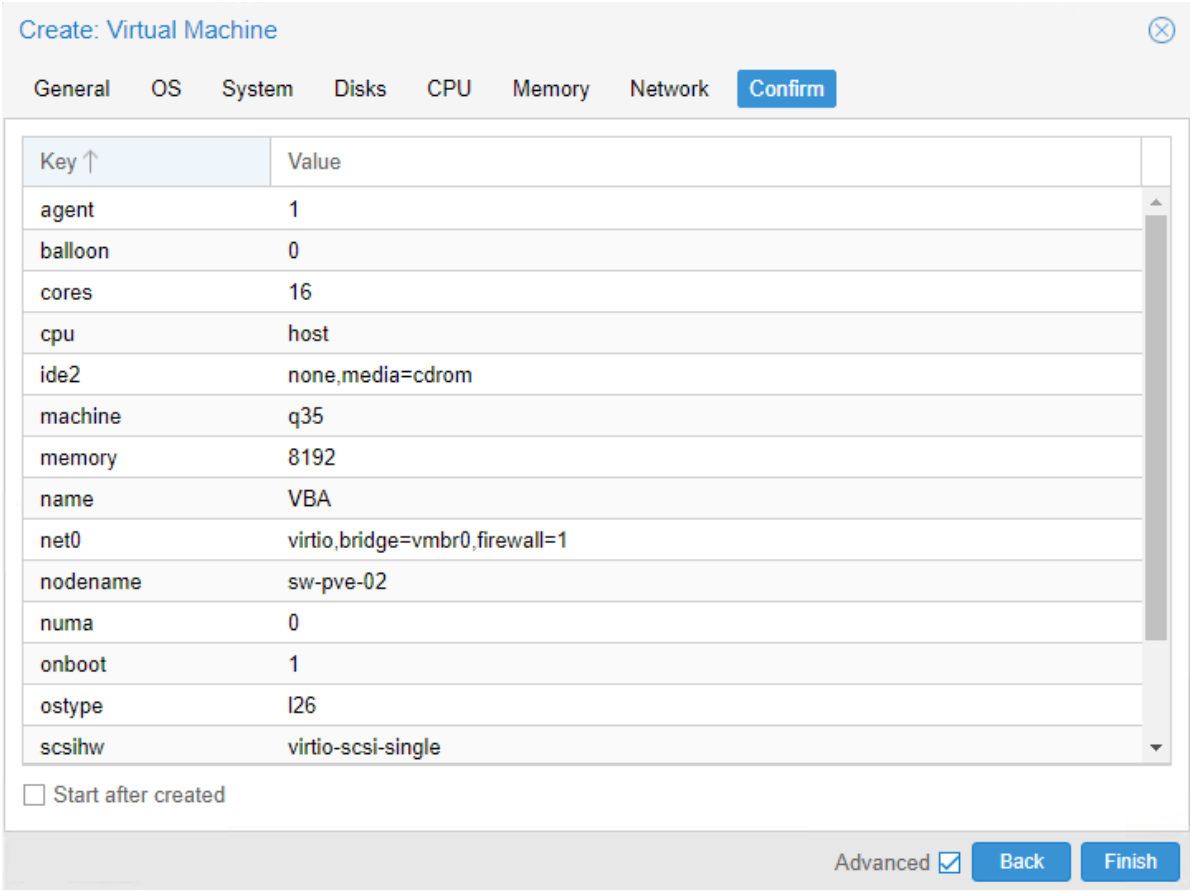
10. Assign at least 8GB of RAM to the VM. Click Next.



11. Configure Management network for the VM. Click Next.



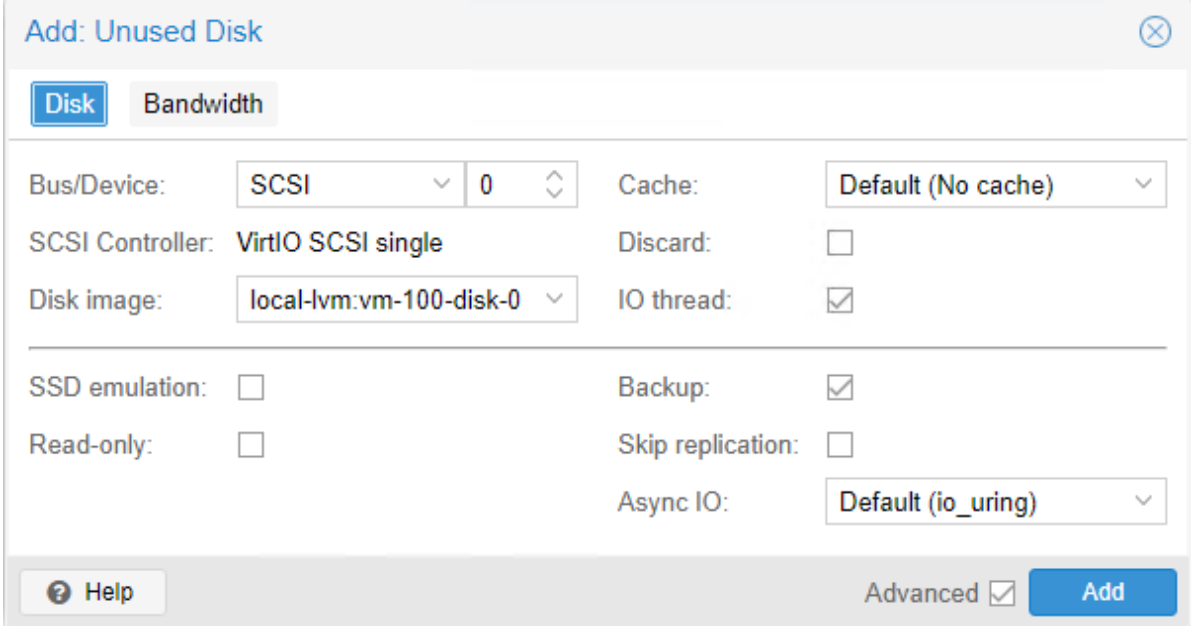
12. Confirm settings. Click Finish.



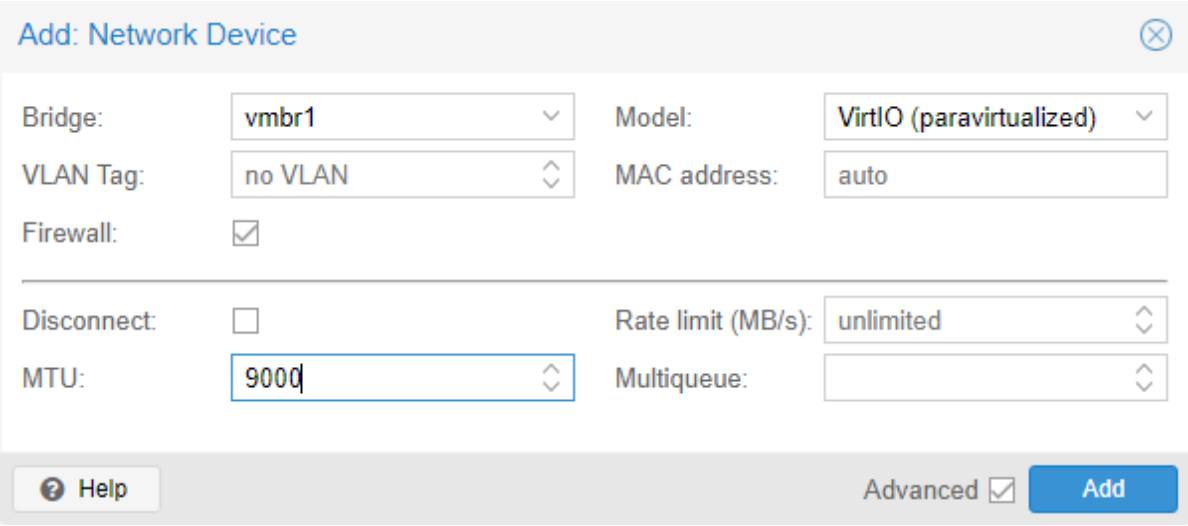
13. Connect to Proxmox host via SSH. Attach CVM.qcow2 file to the VM.

```
qm importdisk 100 /root/CVM.qcow2 local-lvm
```

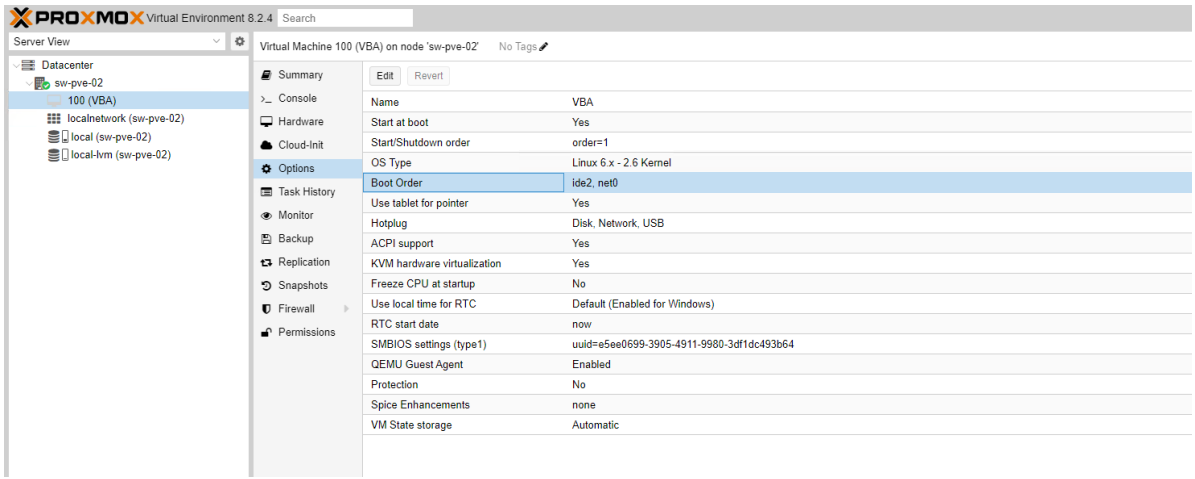
14. Open VM and go to Hardware page. Add unused SCSI disk to the VM.



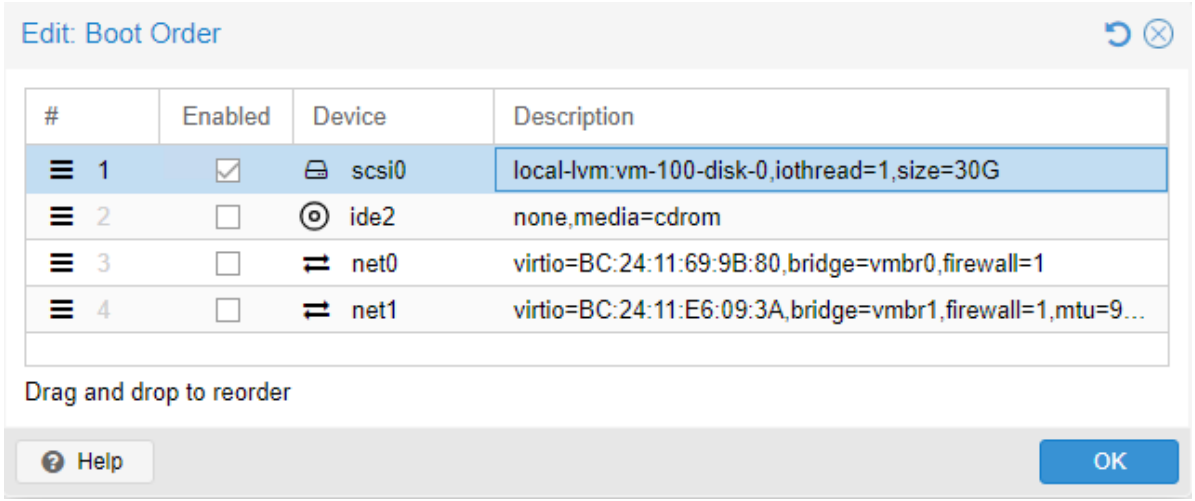
15. Attach Network interface for backup traffic.



16. Open Options page of the VM. Select Boot Order and click Edit.



17. Move scsi0 device as #1 to boot from.



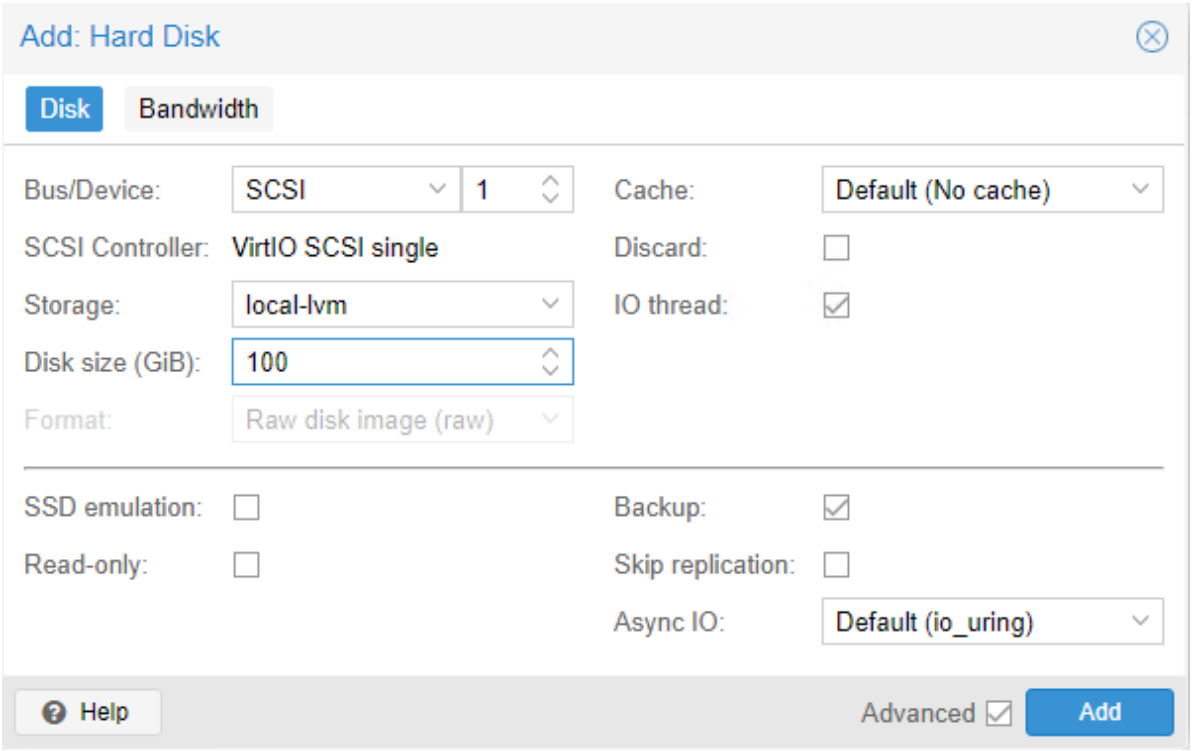
Attaching Storage To Starwind Virtual Backup Appliance Cvm

Please follow the steps below to attach desired storage type to the CVM

Attaching Virtual Disk To Starwind Virtual Backup Appliance Cvm

1. Open VM Hardware page in Proxmox and add drive to the VM, which going to be used

as a backup repository StarWind service. Specify size of the Virtual disk and click OK.



NOTE. It is recommended to use VirtIO SCSI single controller for better performance. If multiple virtual disks are needed to be used in a software RAID inside of the CVM, VirtIO SCSI controller should be used.

Repeat step 1 to attach additional Virtual Disks.

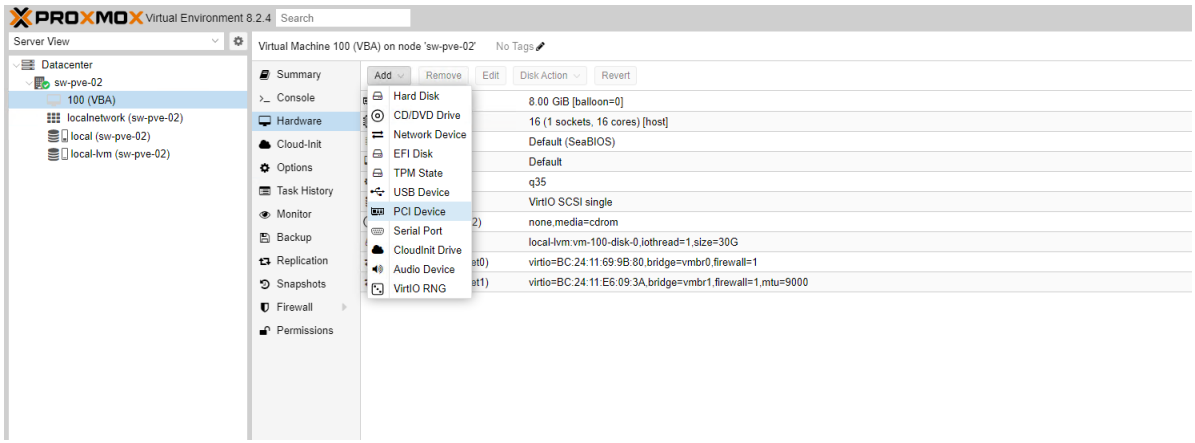
Start VM.

NOTE. When using Veeam Hardened backup repository, it is recommended to passthrough an entire RAID controller or HBA or NVMe drives directly to CVM to avoid hypervisor access to storage.

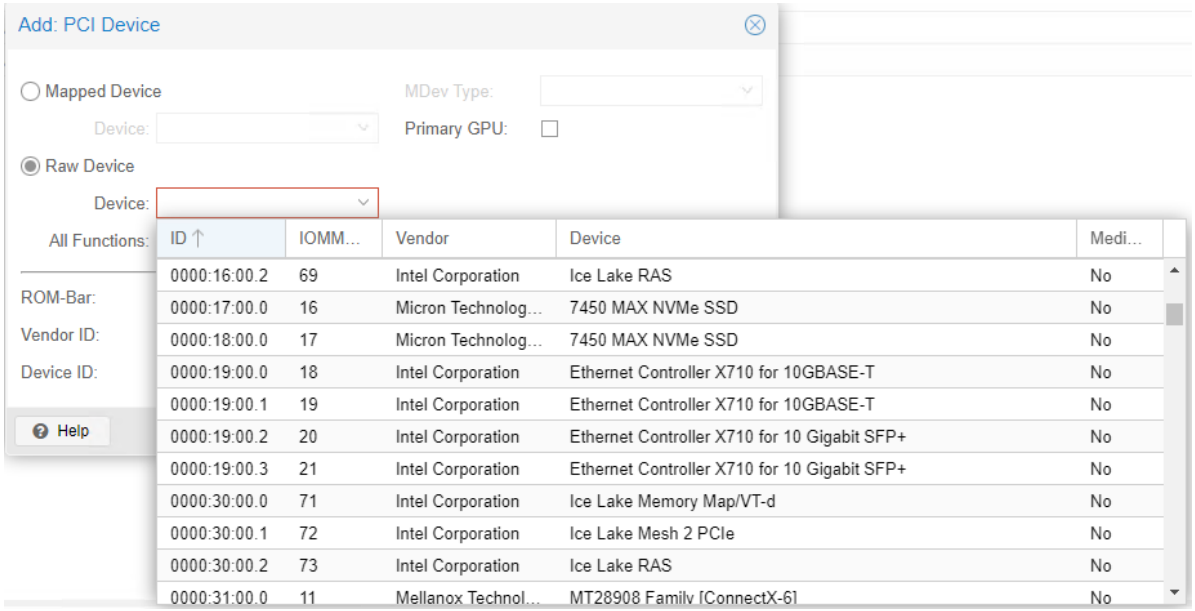
Attaching Pcie Device To Starwind Virtual San Cvm

1. Shutdown StarWind VSAN CVM.

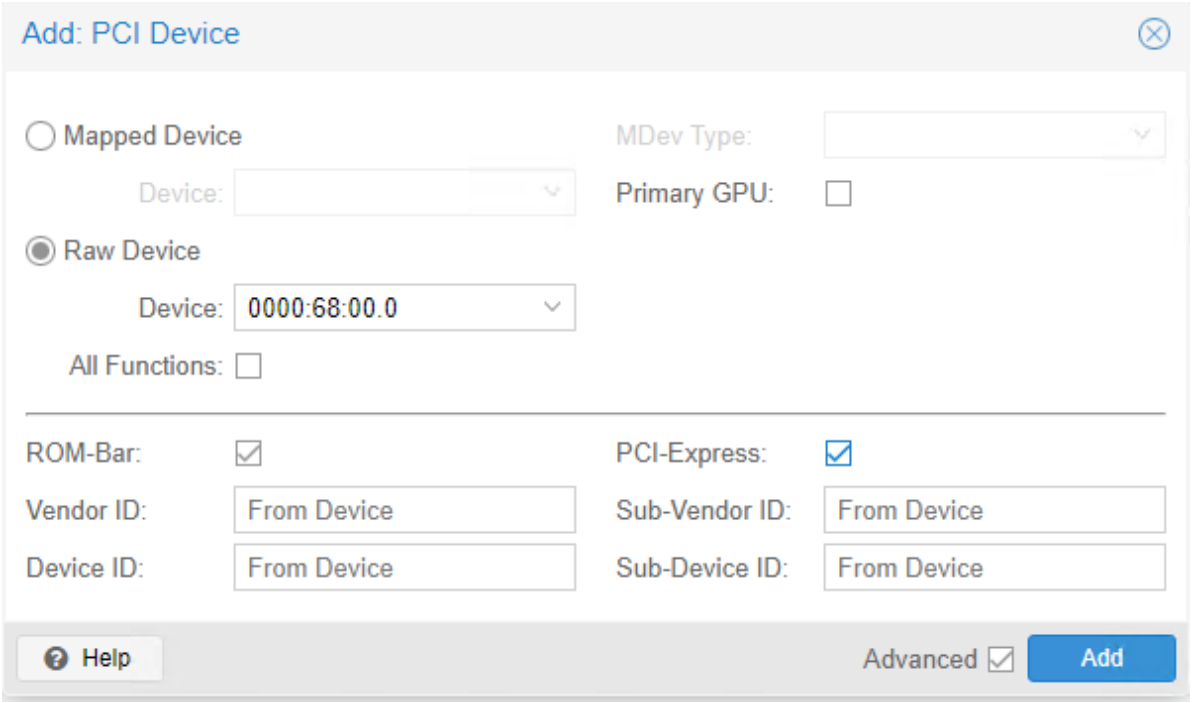
2. Open VM Hardware page in Proxmox and click Add -> PCI Device.



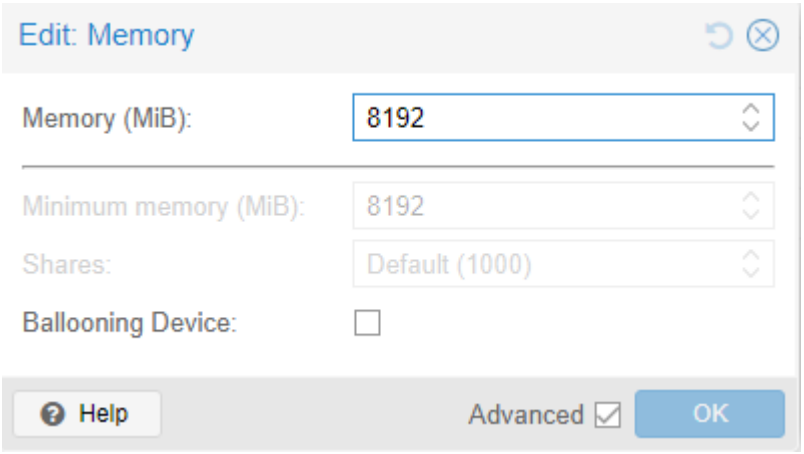
3. Choose PCIe Device from drop-down list.



4. Click Add.



5. Edit Memory. Uncheck Ballooning Device. Click OK.



6. Start VM.

NOTE. In this guide, NVMe drives are passed through to CVM and will be collected in Software RAID5.

Initial Configuration Wizard

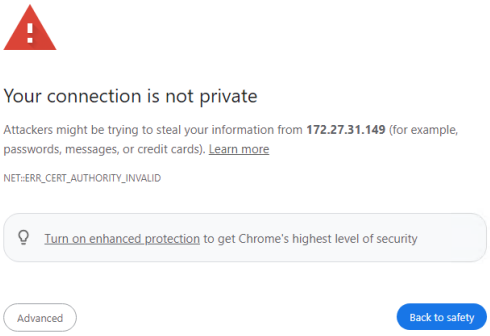
1. Start StarWind Virtual Backup Appliance CVM.

2. Launch VM console to see the VM boot process and get the IPv4 address of the Management network interface.

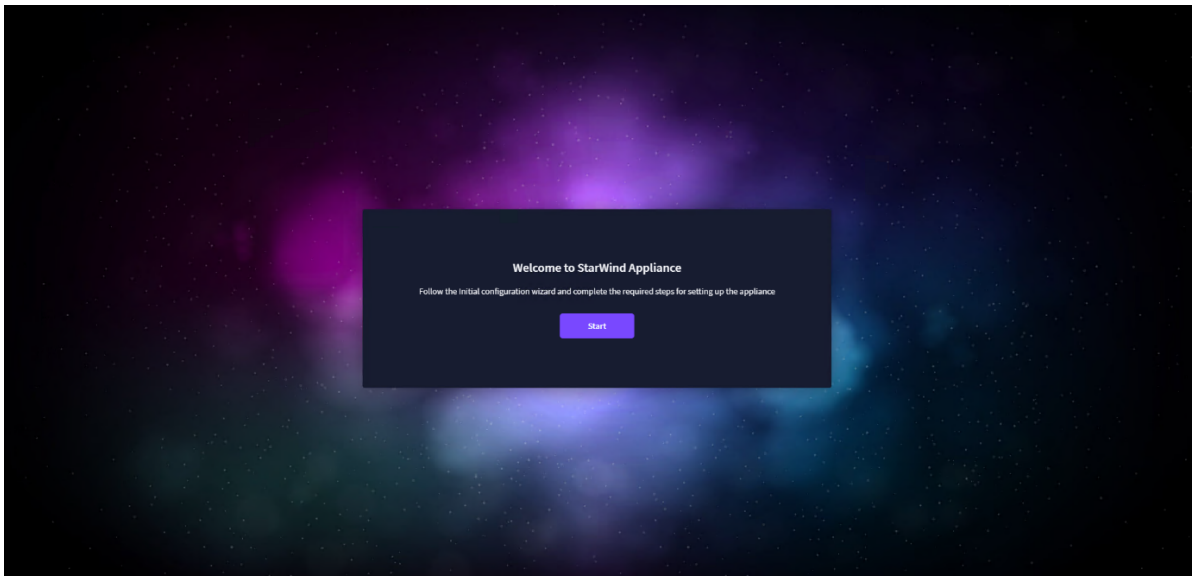
NOTE: in case VM has no IPv4 address obtained from a DHCP server, use the Text-based User Interface (TUI) to set up a Management network.

Default credentials for TUI: user/rds123RDS

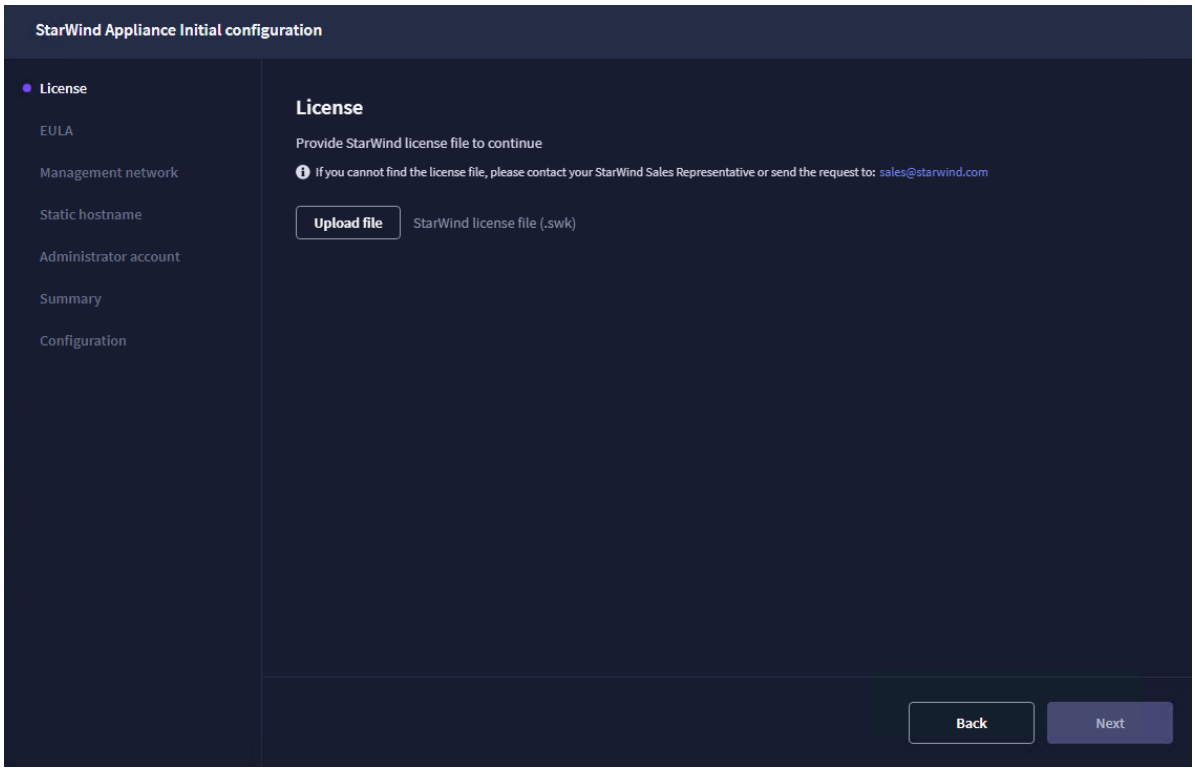
3. Using the web browser, open a new tab and enter the VM IPv4 address to open StarWind VBA Web Interface. Click “Advanced” and then “Continue to...”



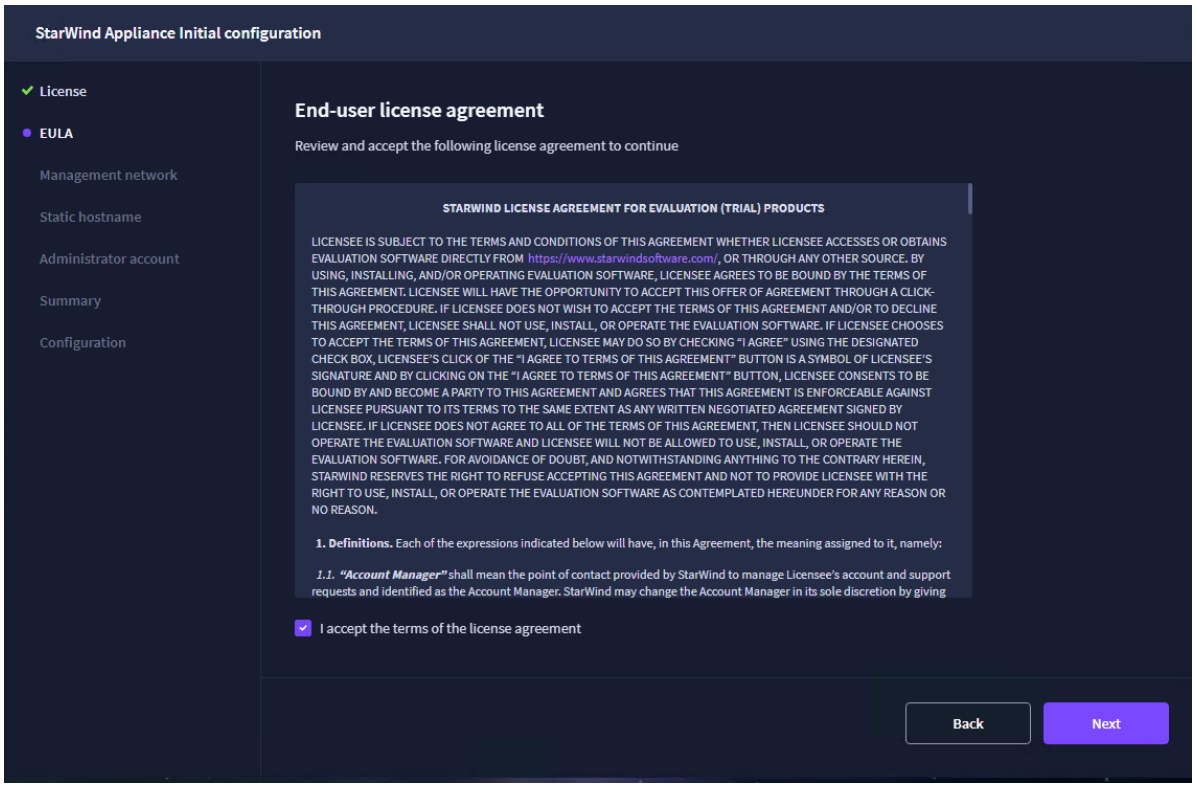
4. StarWind VBA web UI welcomes you, and the “Initial Configuration” wizard will guide you through the deployment process.



5. In the following step, upload the license file.

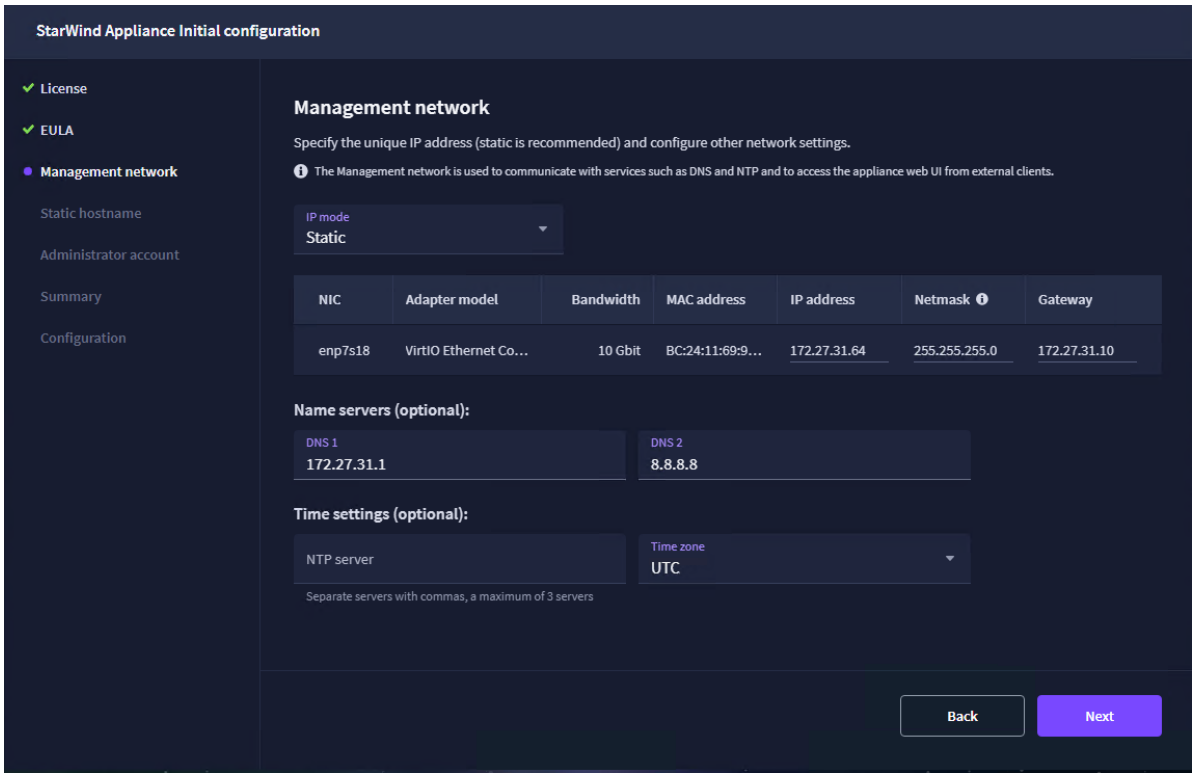


6. Read and accept the End User License Agreement to proceed.

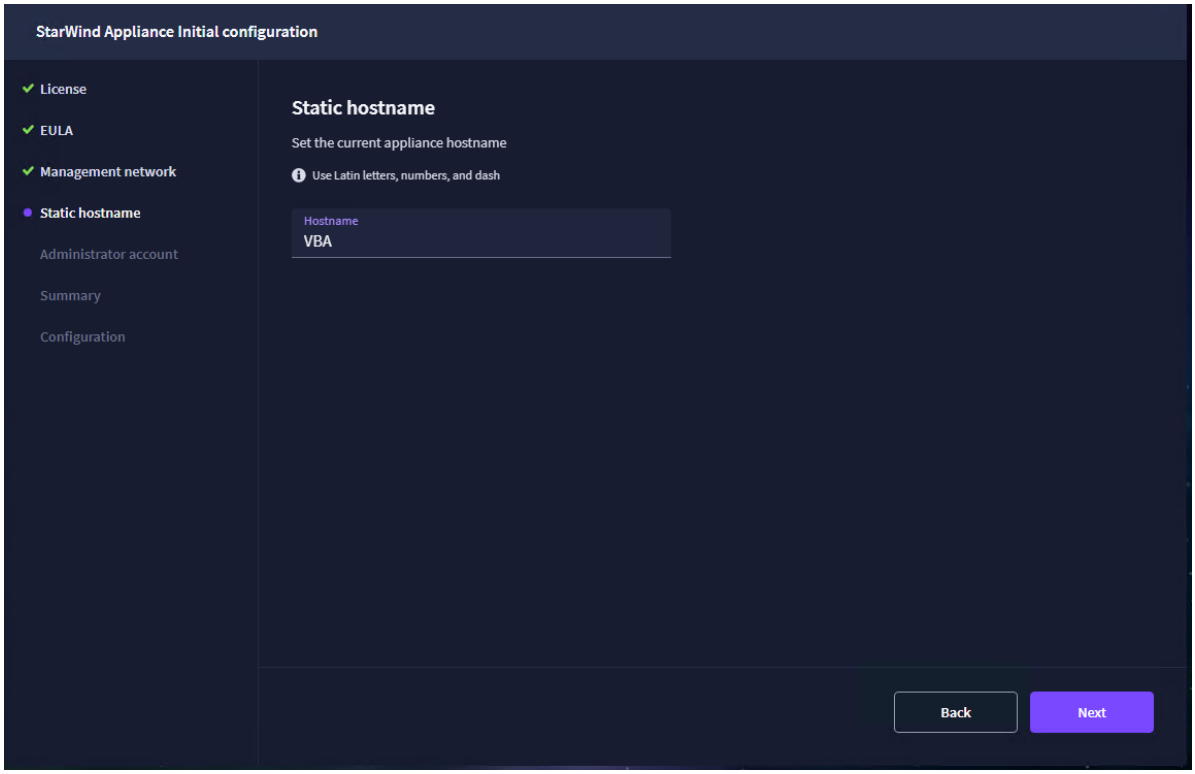


7. Review or edit the Network settings and click Next.

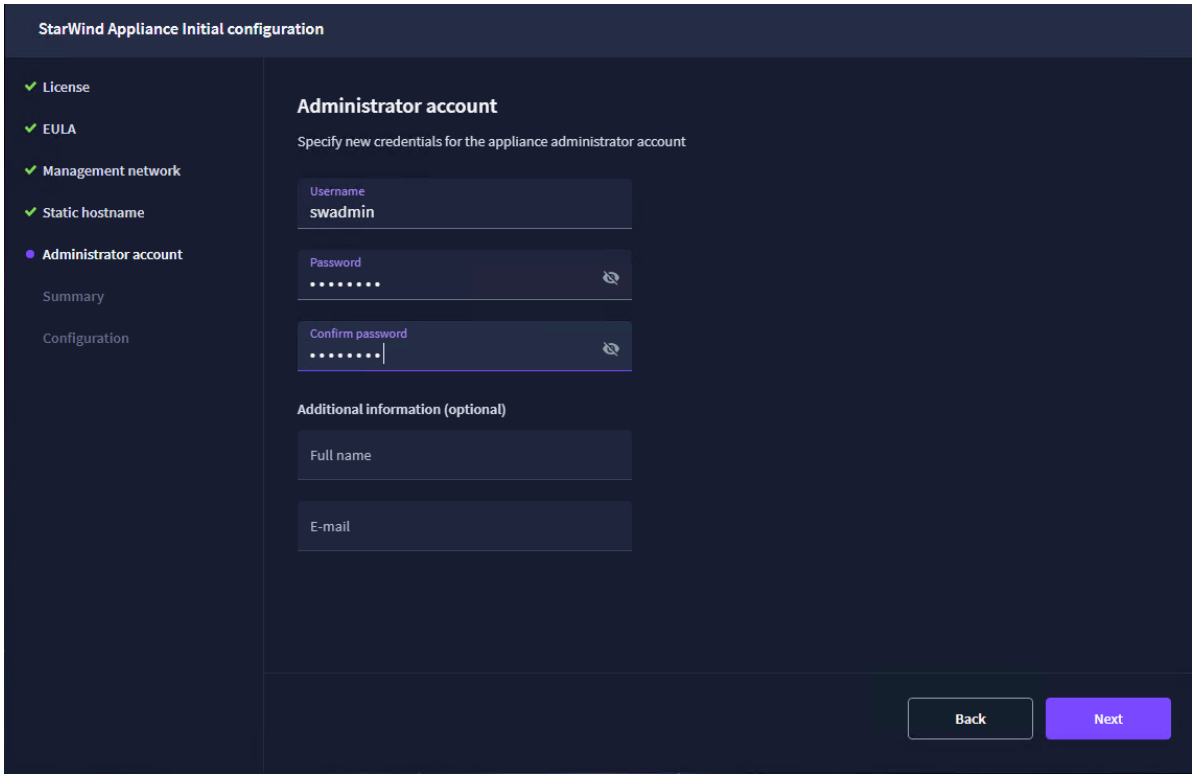
NOTE: Static network settings are recommended for the configuration.



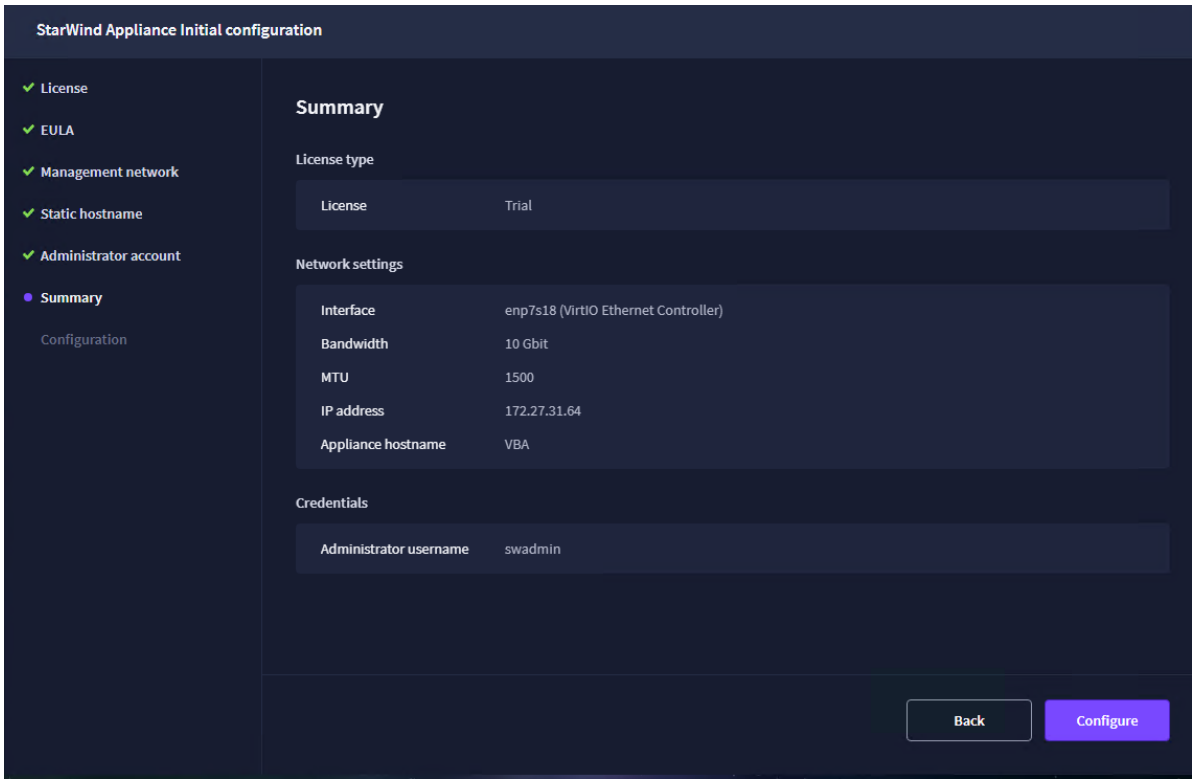
8. Specify the hostname for the virtual machine and click Next.



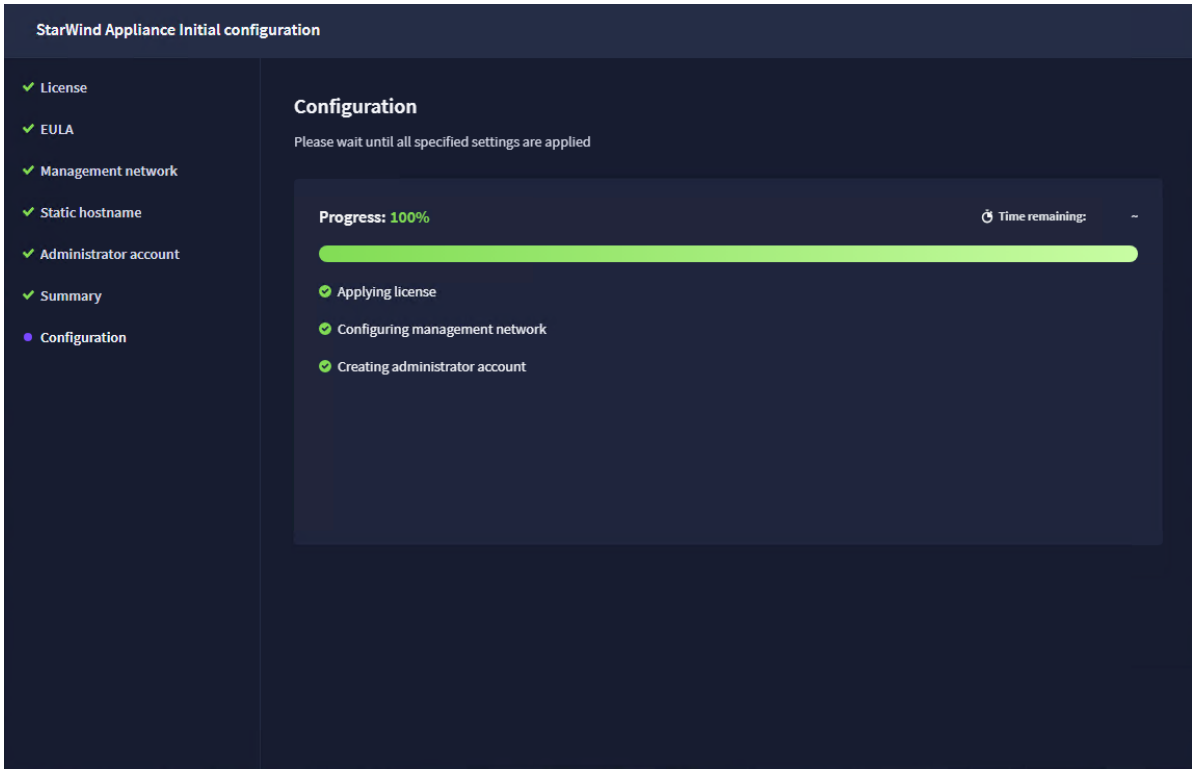
9. Create an administrator account. Click Next.



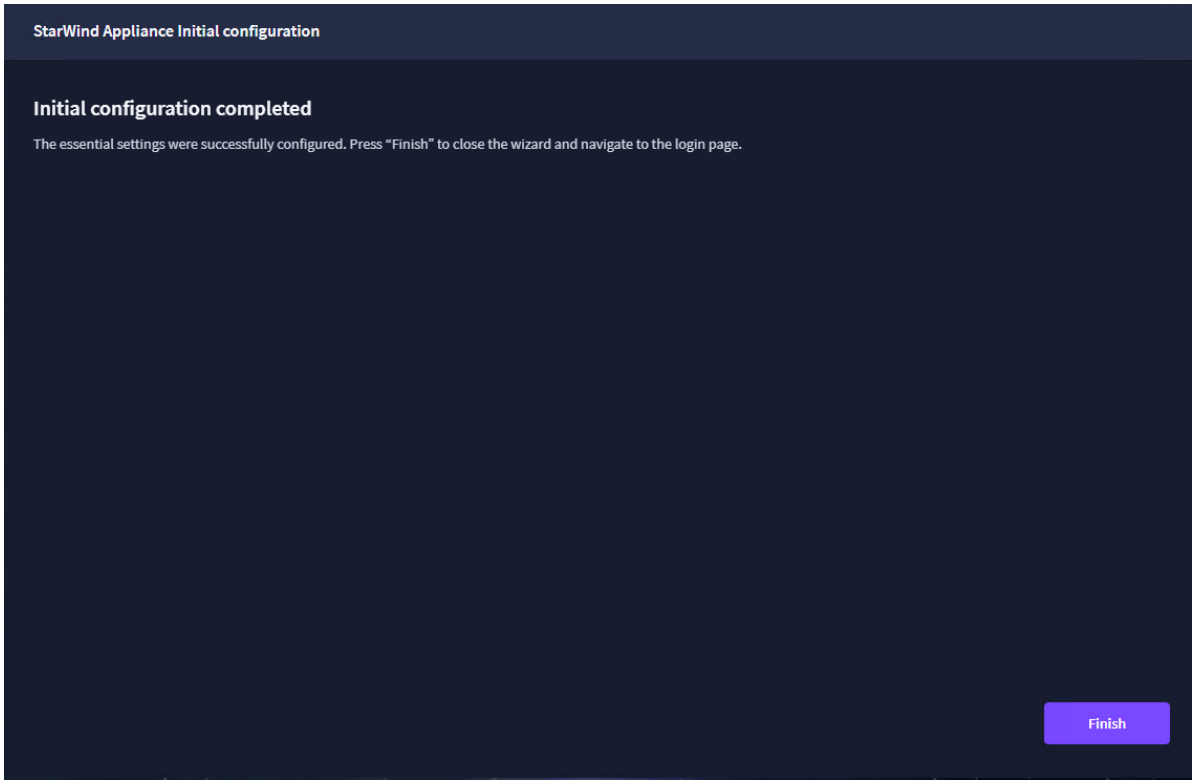
10. Review your settings selection before setting up StarWind VBA.



11. Please standby until the Initial Configuration Wizard configures StarWind VBA for you.

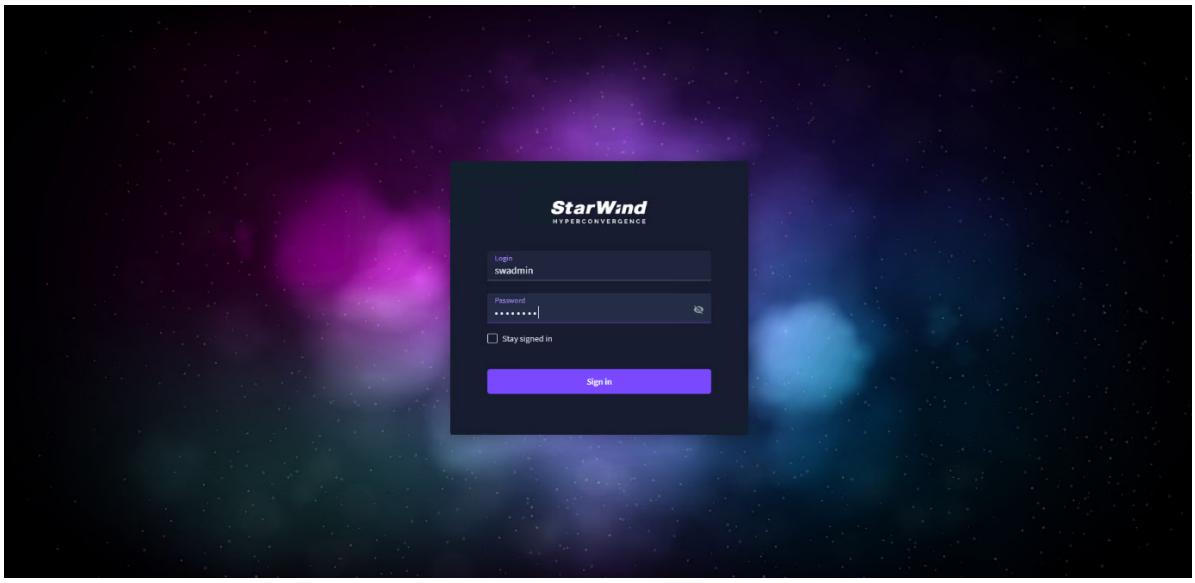


12. The appliance is set and ready. Click Finish to proceed to the Login page.

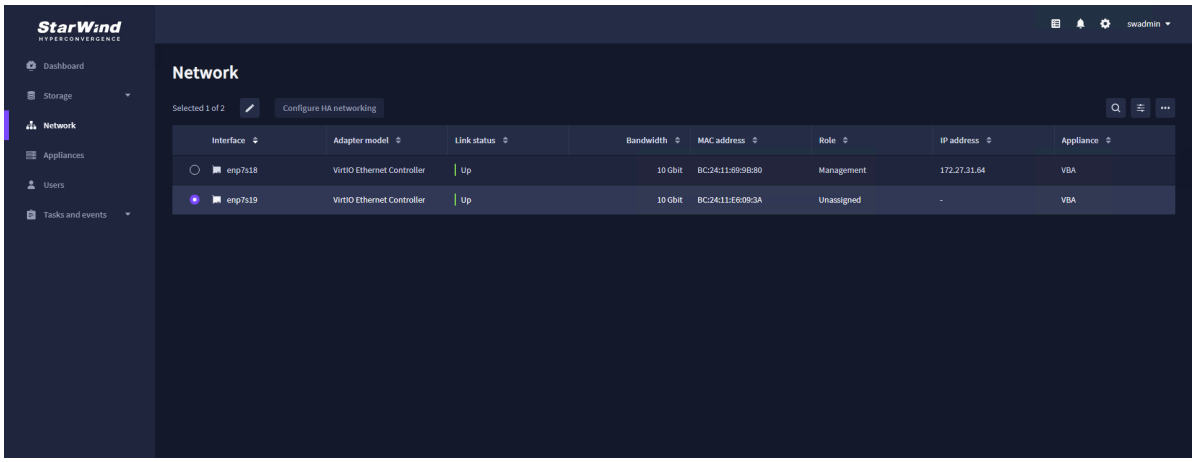


Configure Networking

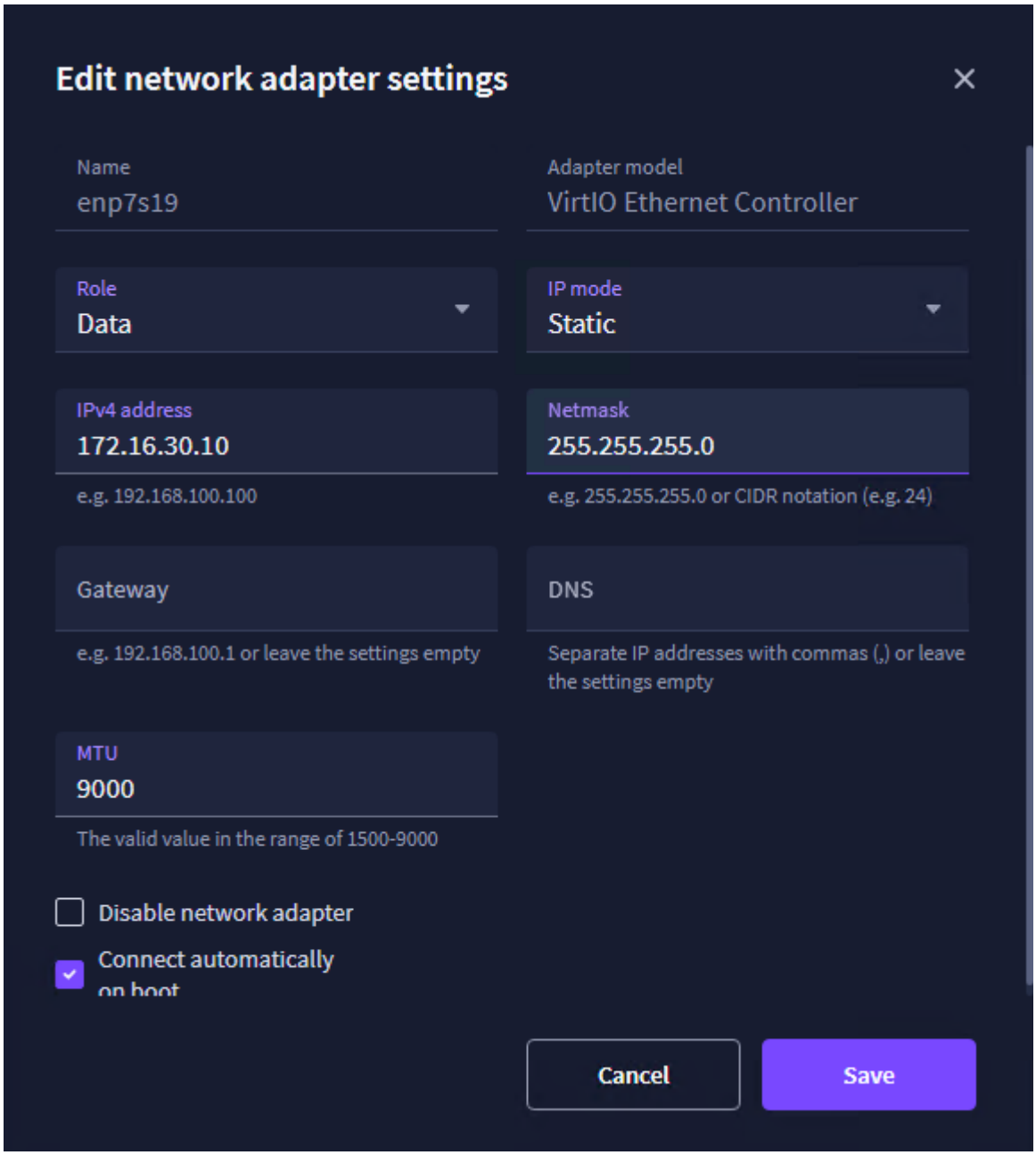
1. Log in to the CVM WEB UI using the username and password specified during the initial configuration.



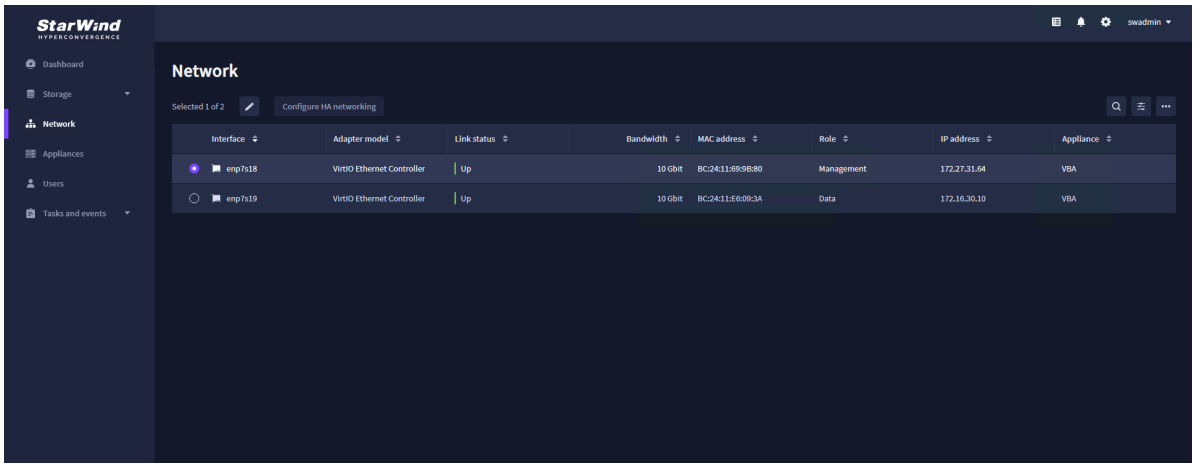
2. Navigate to the Network tab, select the network adapter that will be used for Data (Backup) traffic, and click the Edit icon.



3. If the network adapter status is “Down”, uncheck the “Disable network adapter” checkbox. Make sure that the “Connect automatically on boot” checkbox is enabled and MTU is set to 9000 Assign the Data role to the network adapter, and specify the IPv4 address and network mask. Click Save.



4. You should see the newly assigned “Data” role and IP address to the network adapter.



Add Physical Disks

Attach physical storage to StarWind VBA Controller VM:

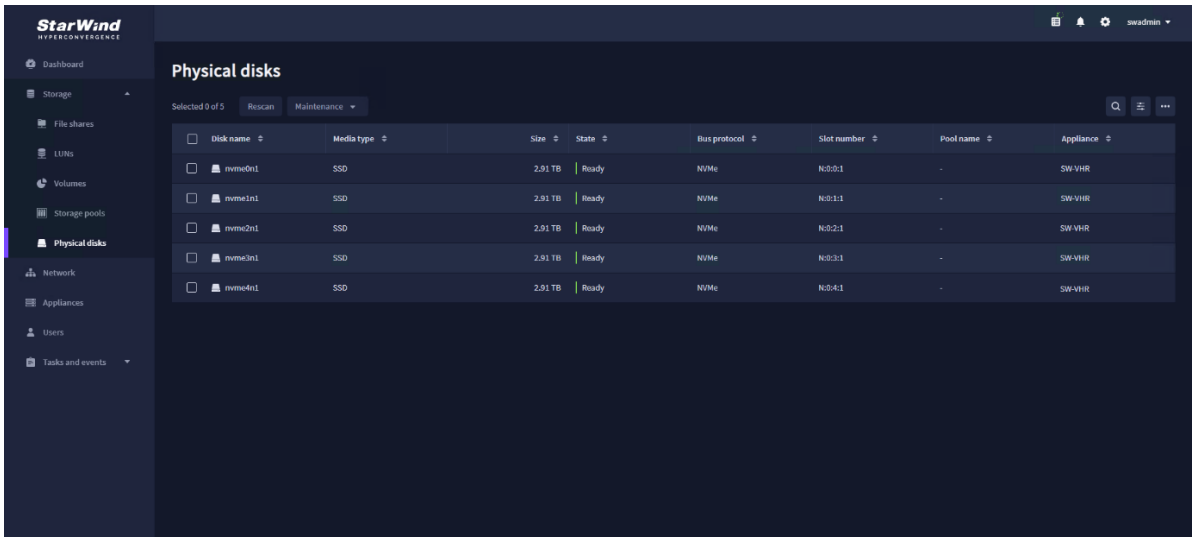
- Ensure that all physical drives are connected through an HBA or RAID controller.
- Add HBA, RAID controllers, or NVMe SSD drives to StarWind CVM via a passthrough device or add a virtual disk.

Learn more about storage provisioning guidelines in the KB article.

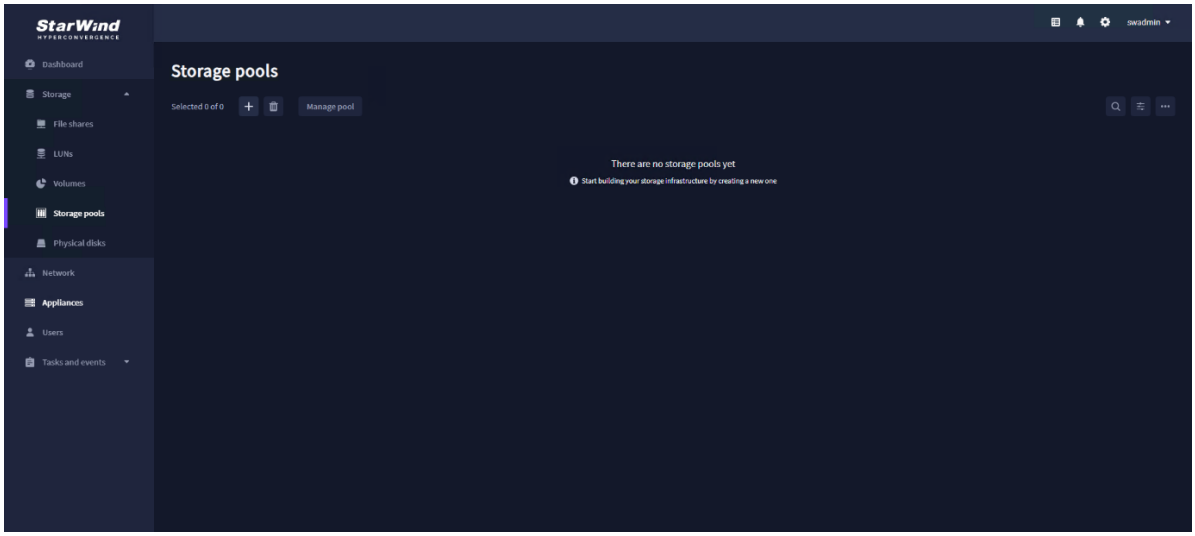
NOTE. In this guide, NVMe drives are passed through to StarWind VBA CVM as an example.

Create Storage Pool

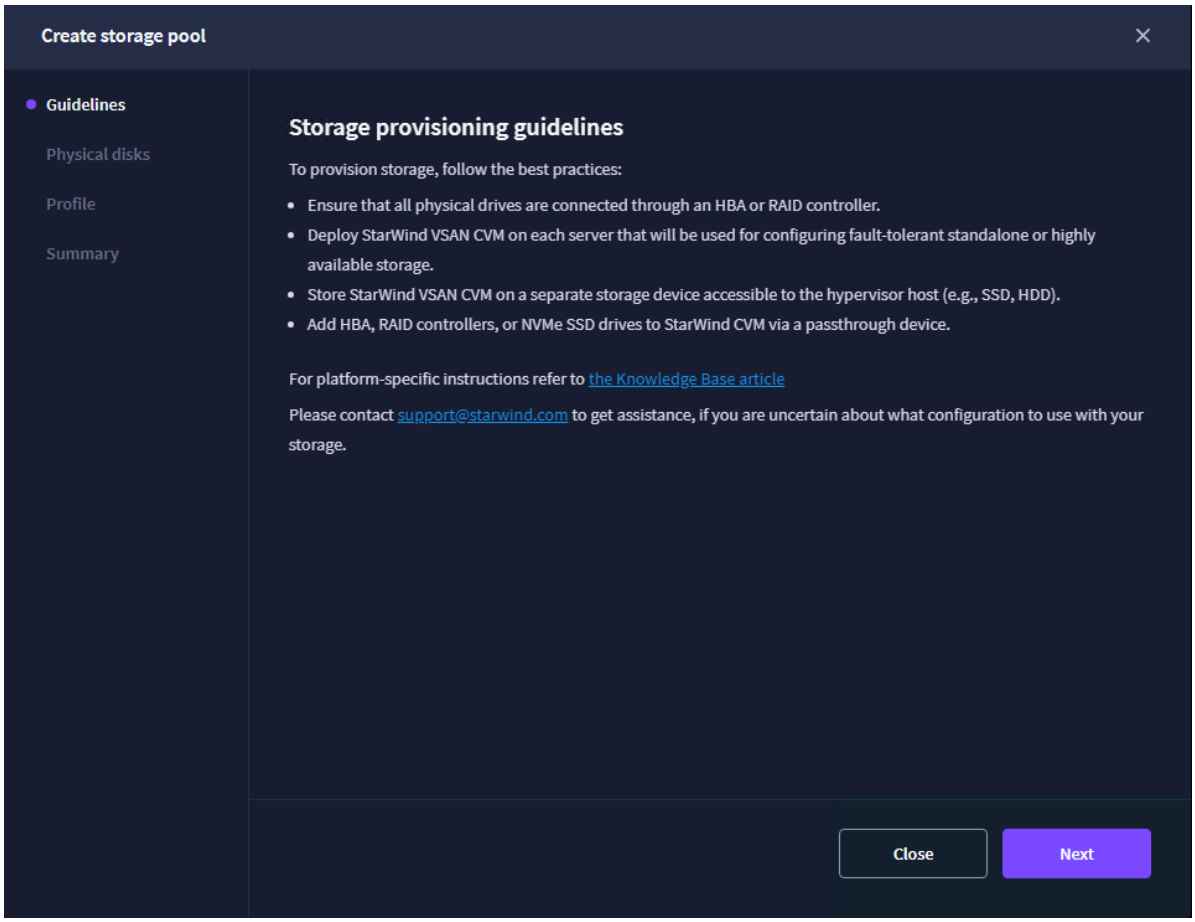
1. Navigate to the Storage tab, select Physical disks, and click Rescan.



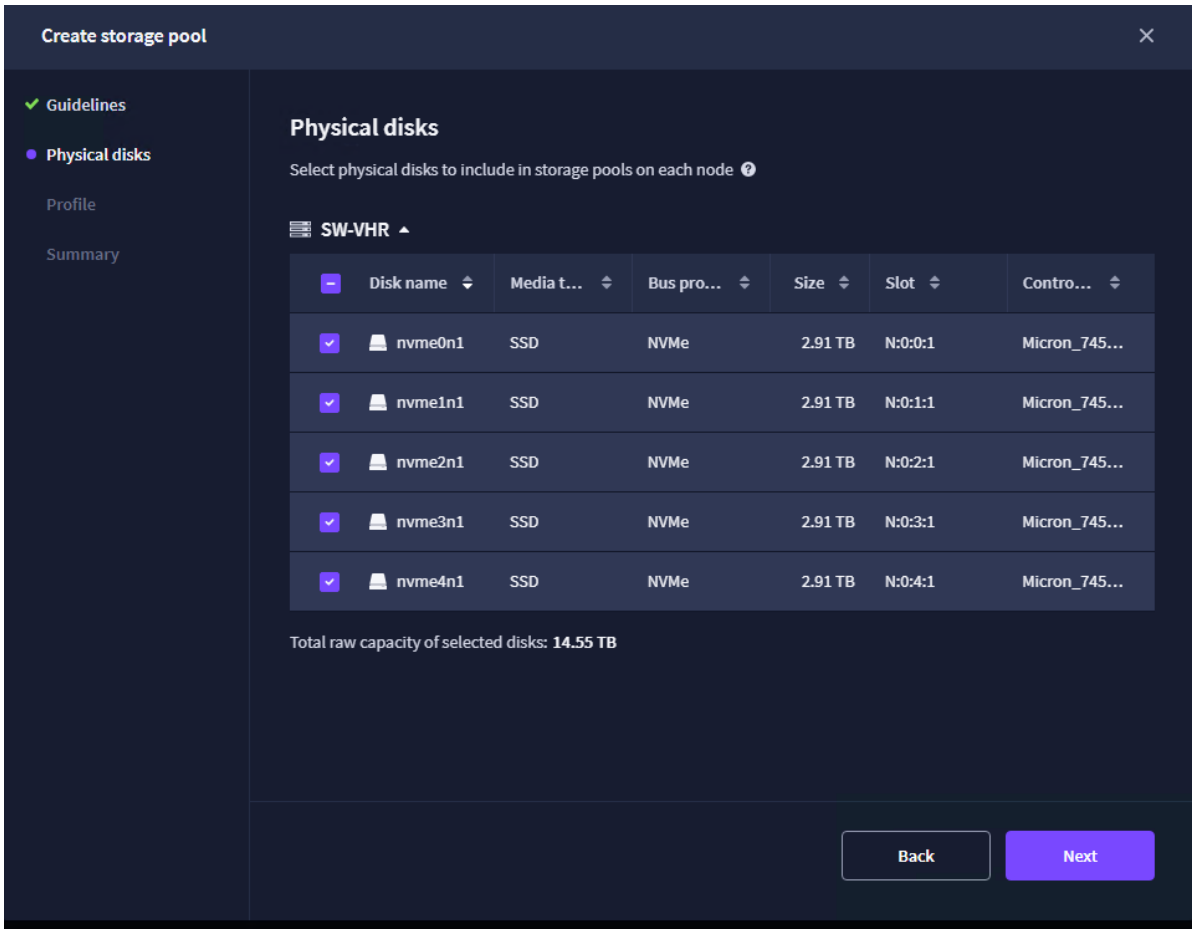
2. In the Storage tab, navigate to the Storage pools and click the “+” sign.



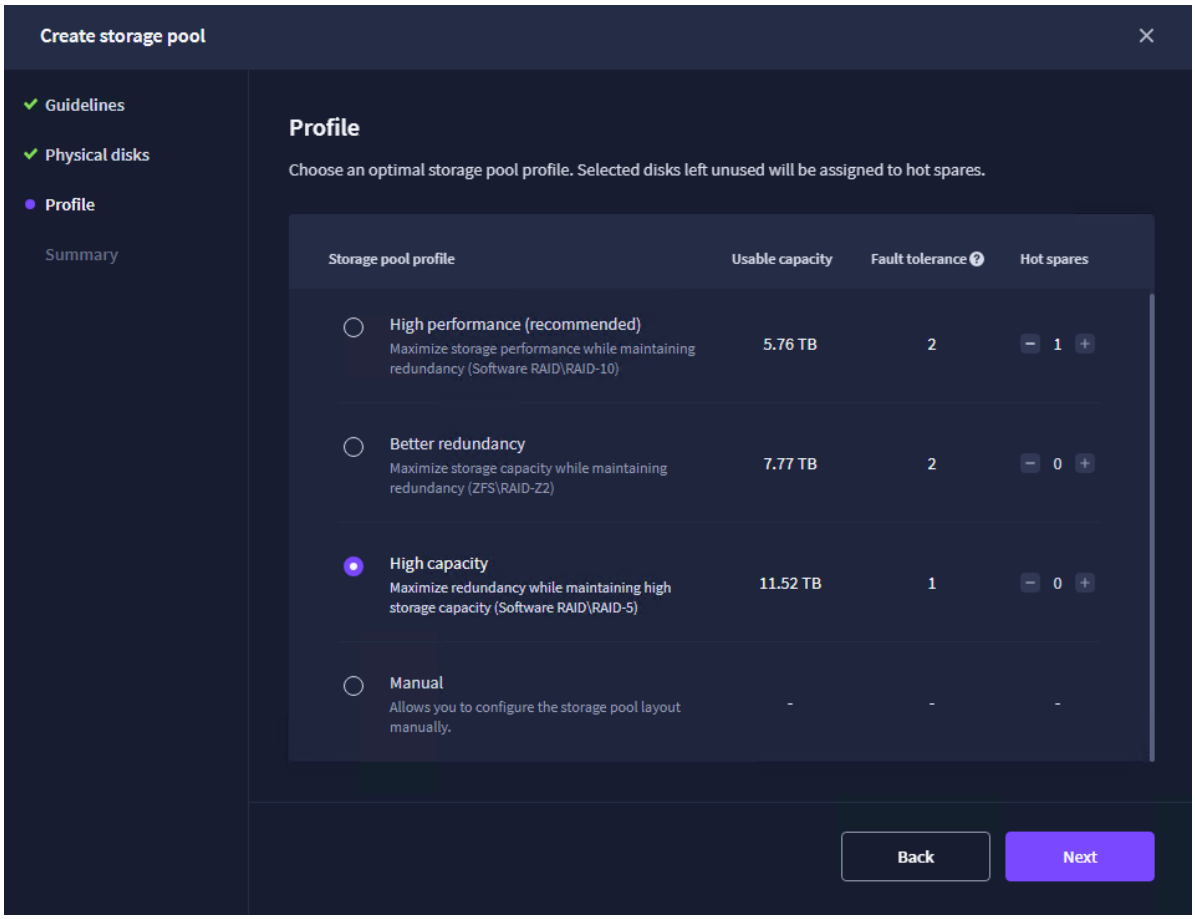
3. Verify the prerequisites and click Next.



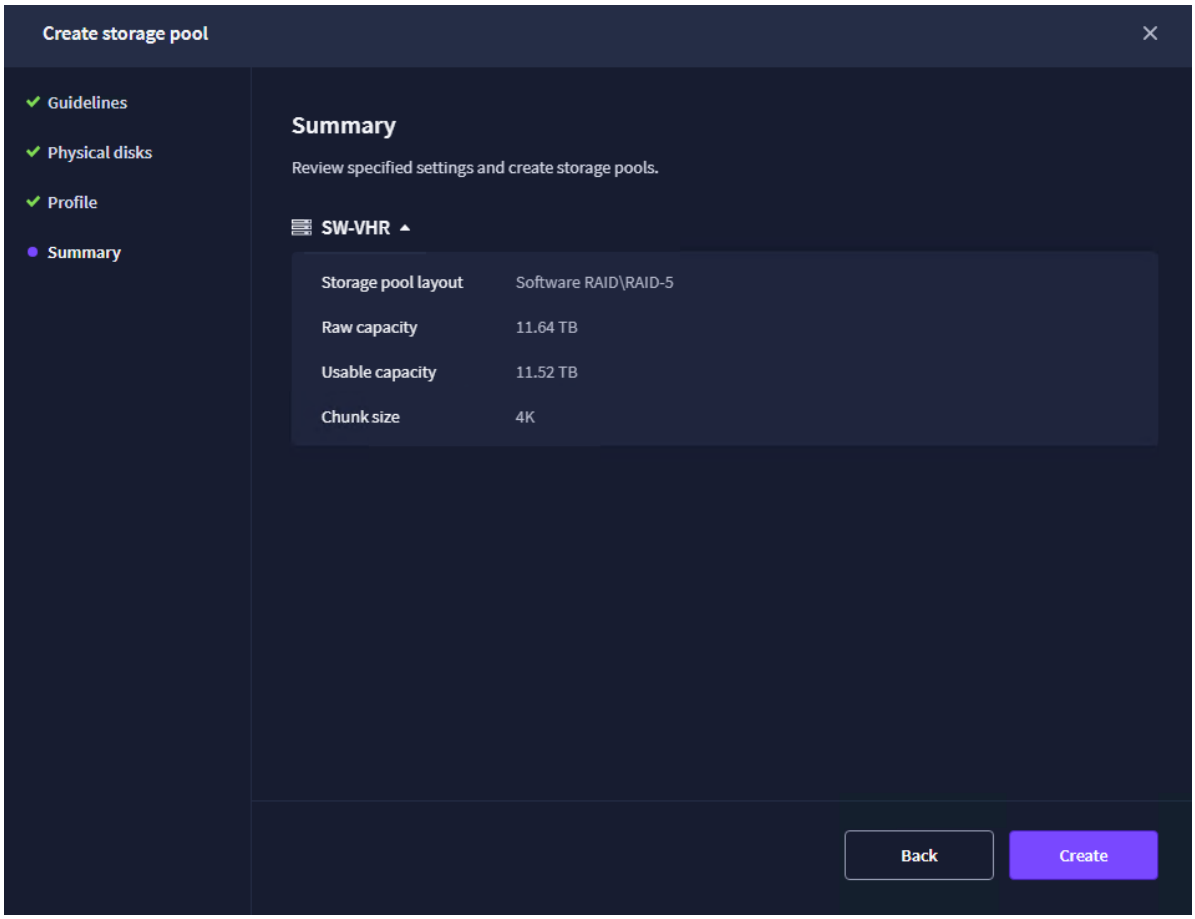
4. Select the drives to create a Linux Software RAID and click Next.



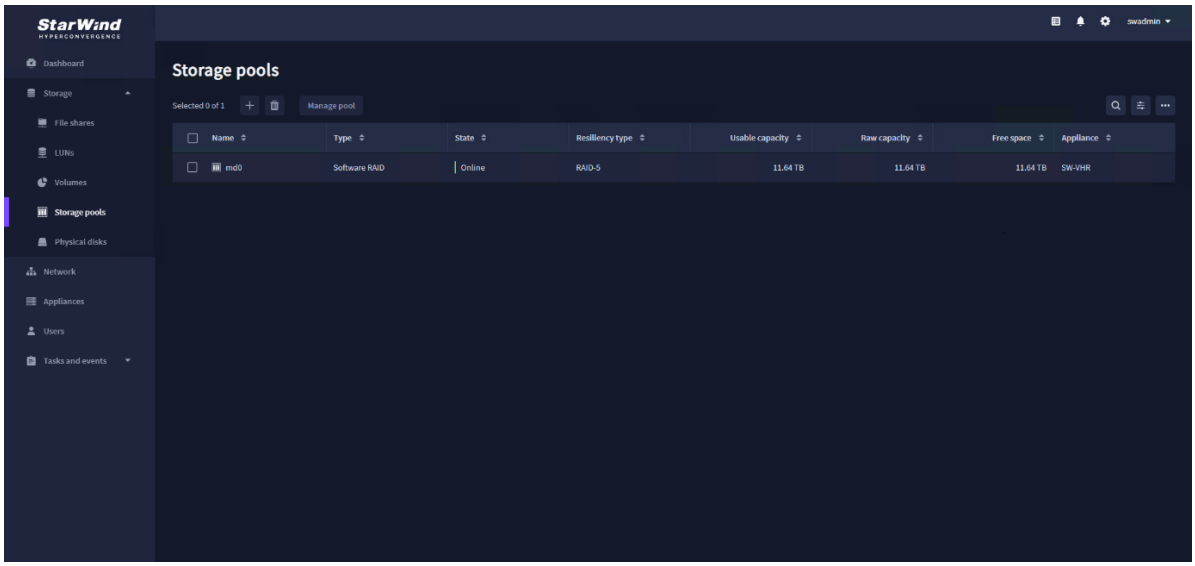
5. Select one of the preconfigured storage profiles or create a redundancy layout for the new storage pool manually according to your redundancy, capacity, and performance requirements. Click Next.



6. Review “Summary” and click the “Create” button to create the storage pool.



7. Wait until the Linux Software RAID synchronization process is fully complete and its state changes to Online.



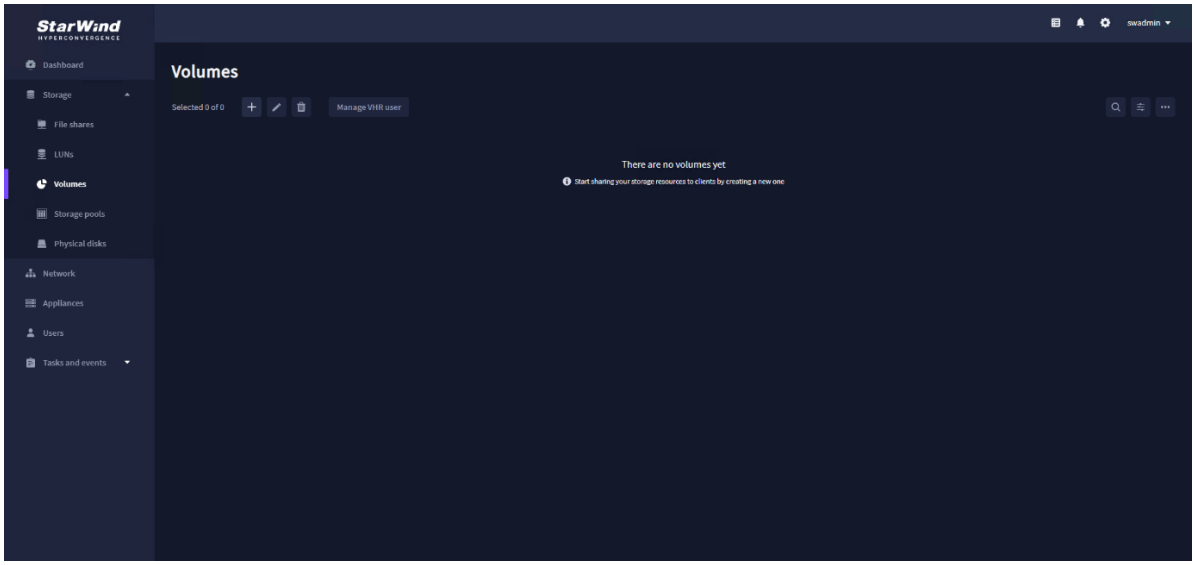
Create Backup Repository

There are multiple options to present storage from StarWind VBA to backup software for use as backup repository. Hardened Repository is recommended for use with Veeam Backup & Replication to ensure immutability for backup files. Otherwise, StarWind VBA can present backup repository as an iSCSI target, NFS or SMB file share.

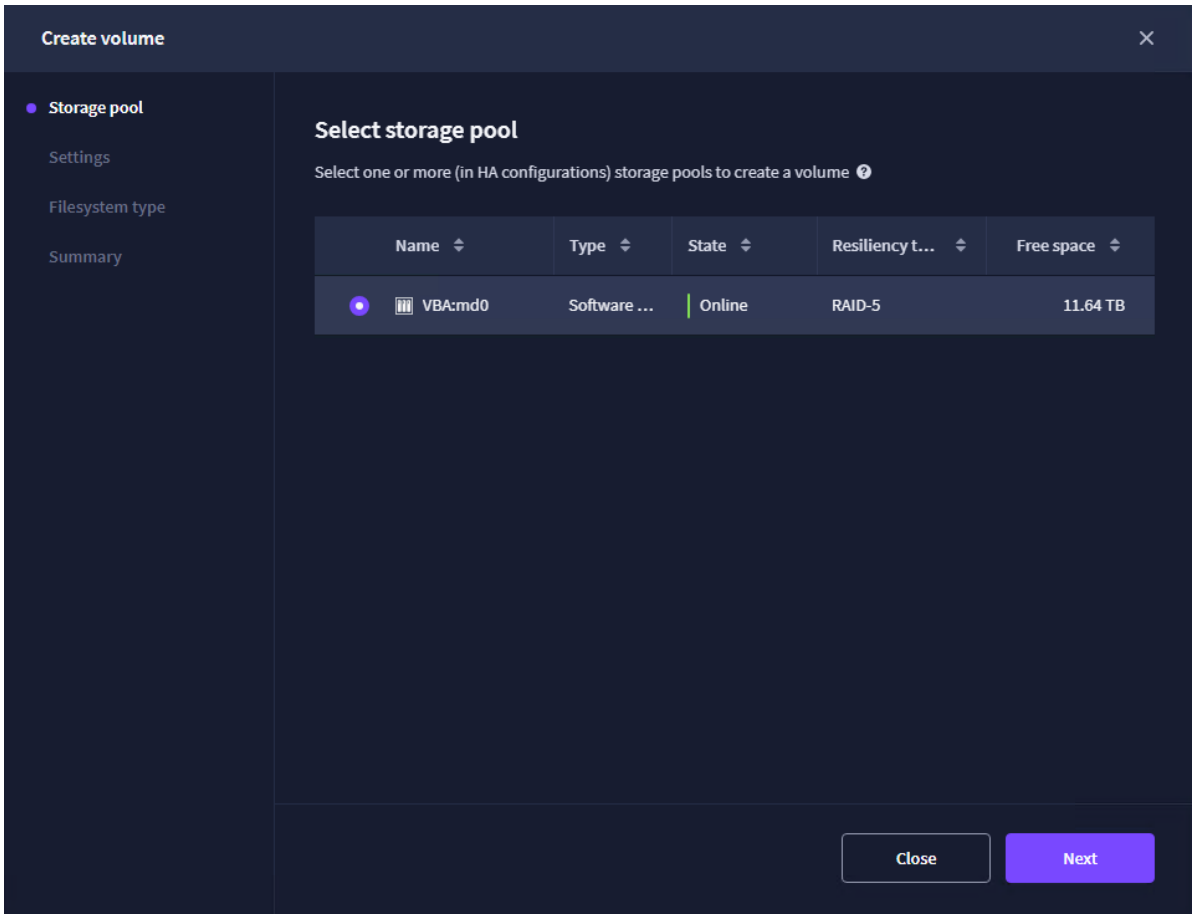
NOTE. Hardened Repository ensures immutability only when used with Veeam Backup & Replication.

Hardened Repository For Veeam Backup & Replication

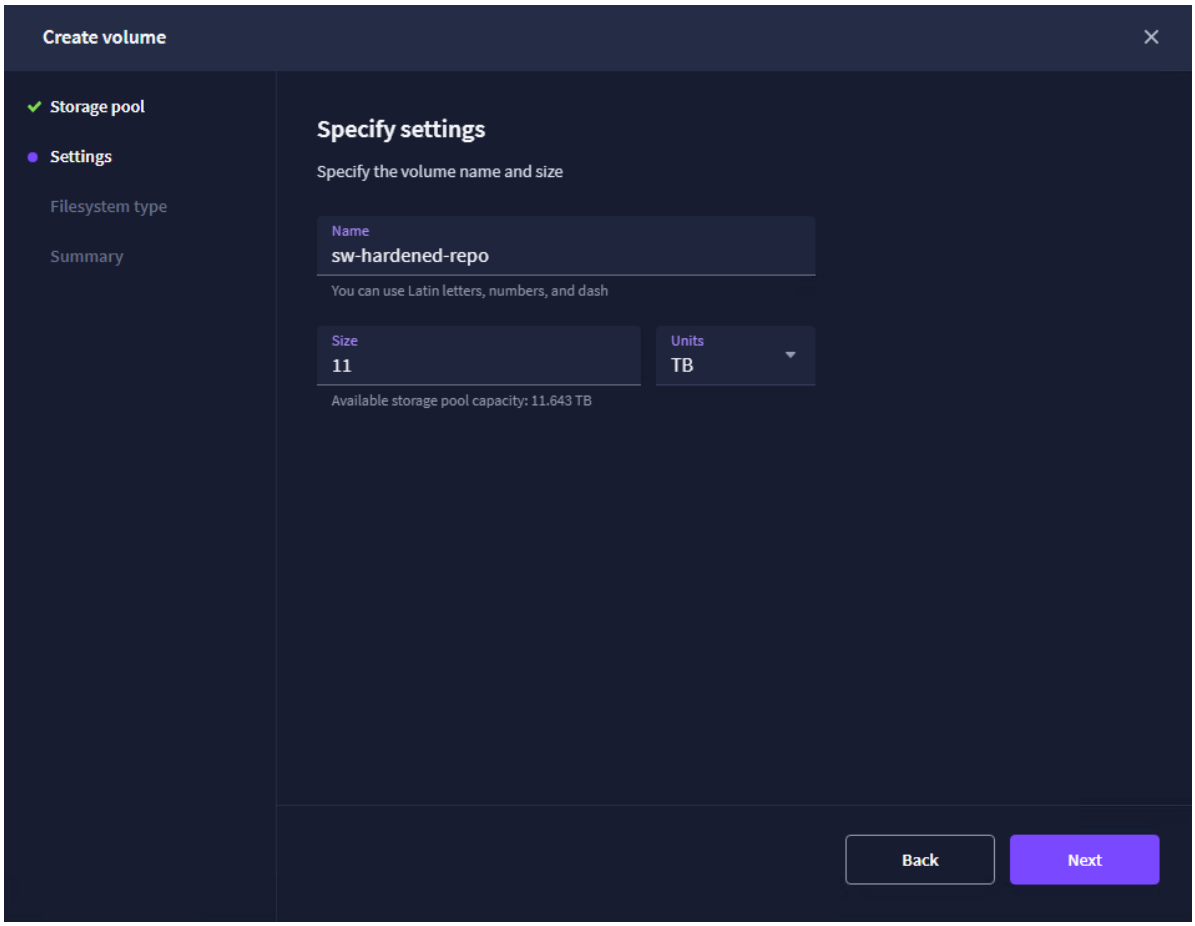
1. Navigate to the “Volumes” tab and click the “+” button to open the “Create volume” wizard.



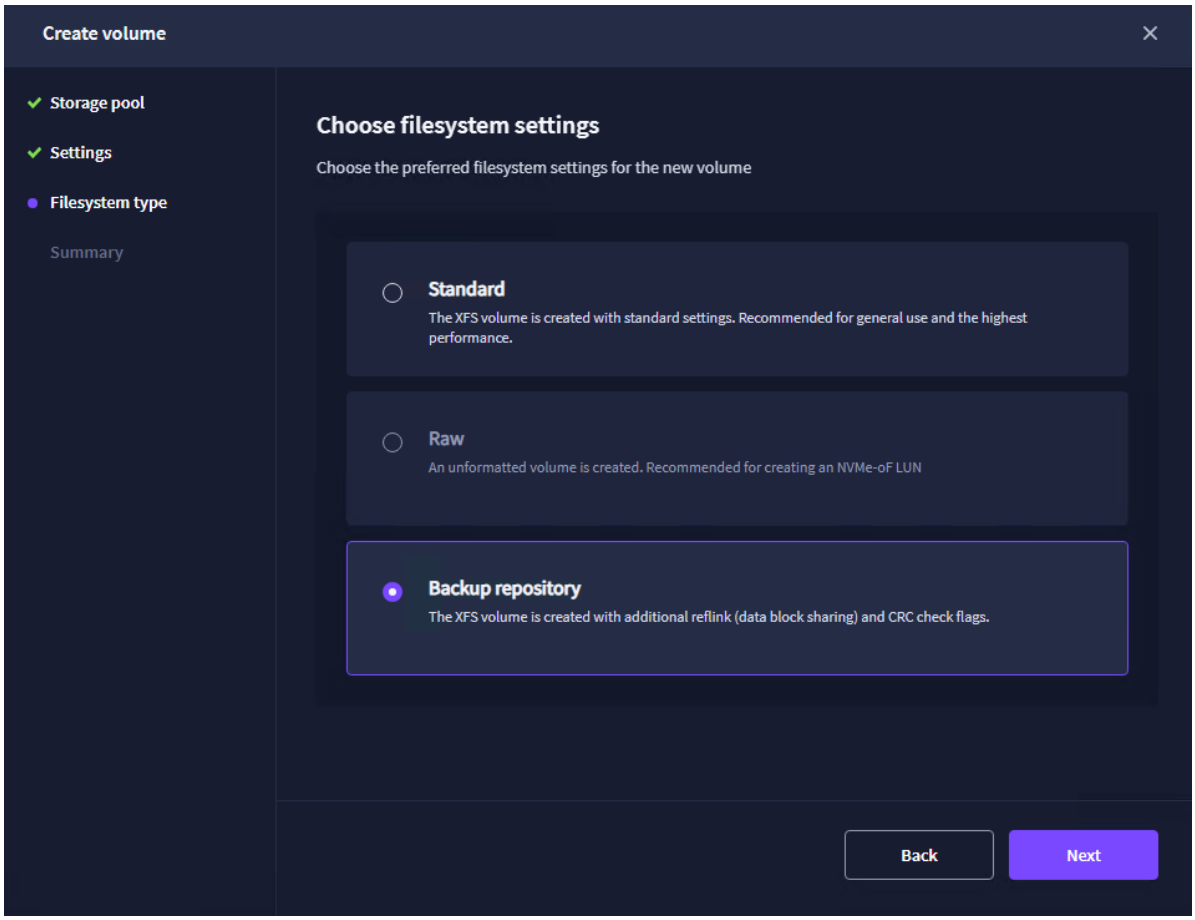
2. Select the storage pool that will be used for a new volume and click Next.



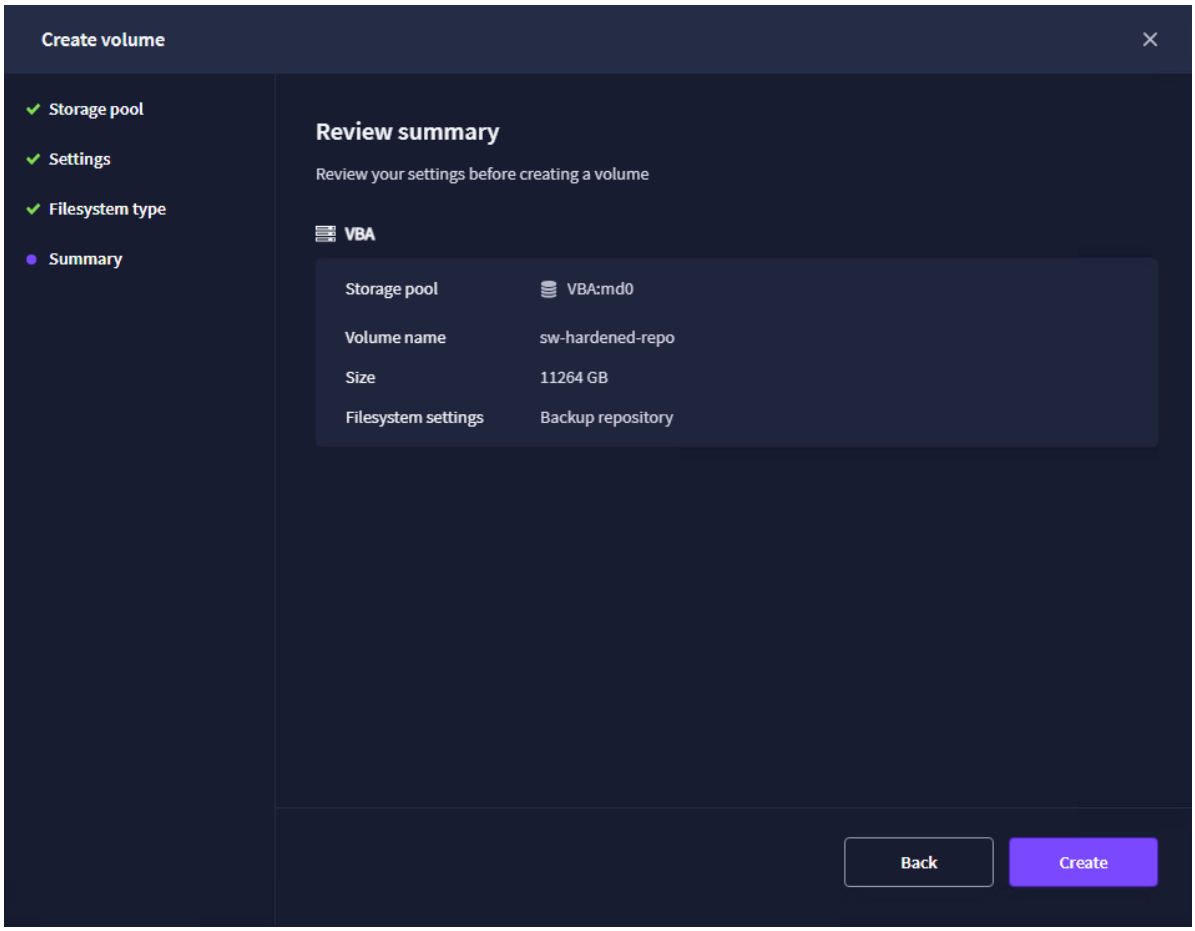
3. Specify the volume name and capacity. Click Next.



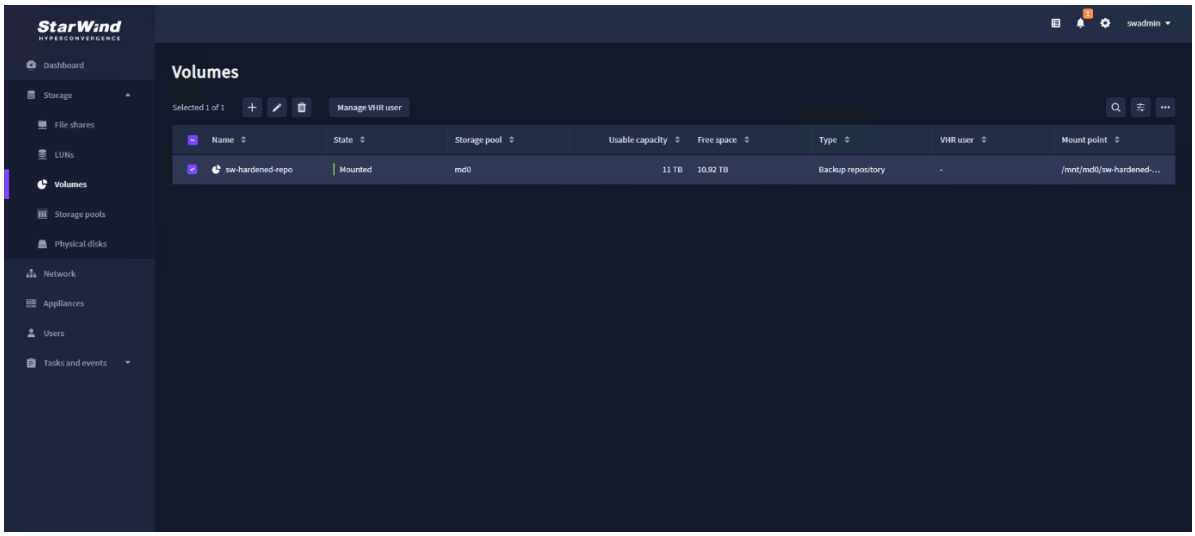
4. Select the “Backup repository” volume type and click Next. Backup repository volume type has been specifically designed for use with Veeam Backup & Replication.



5. Review Summary and click Create.

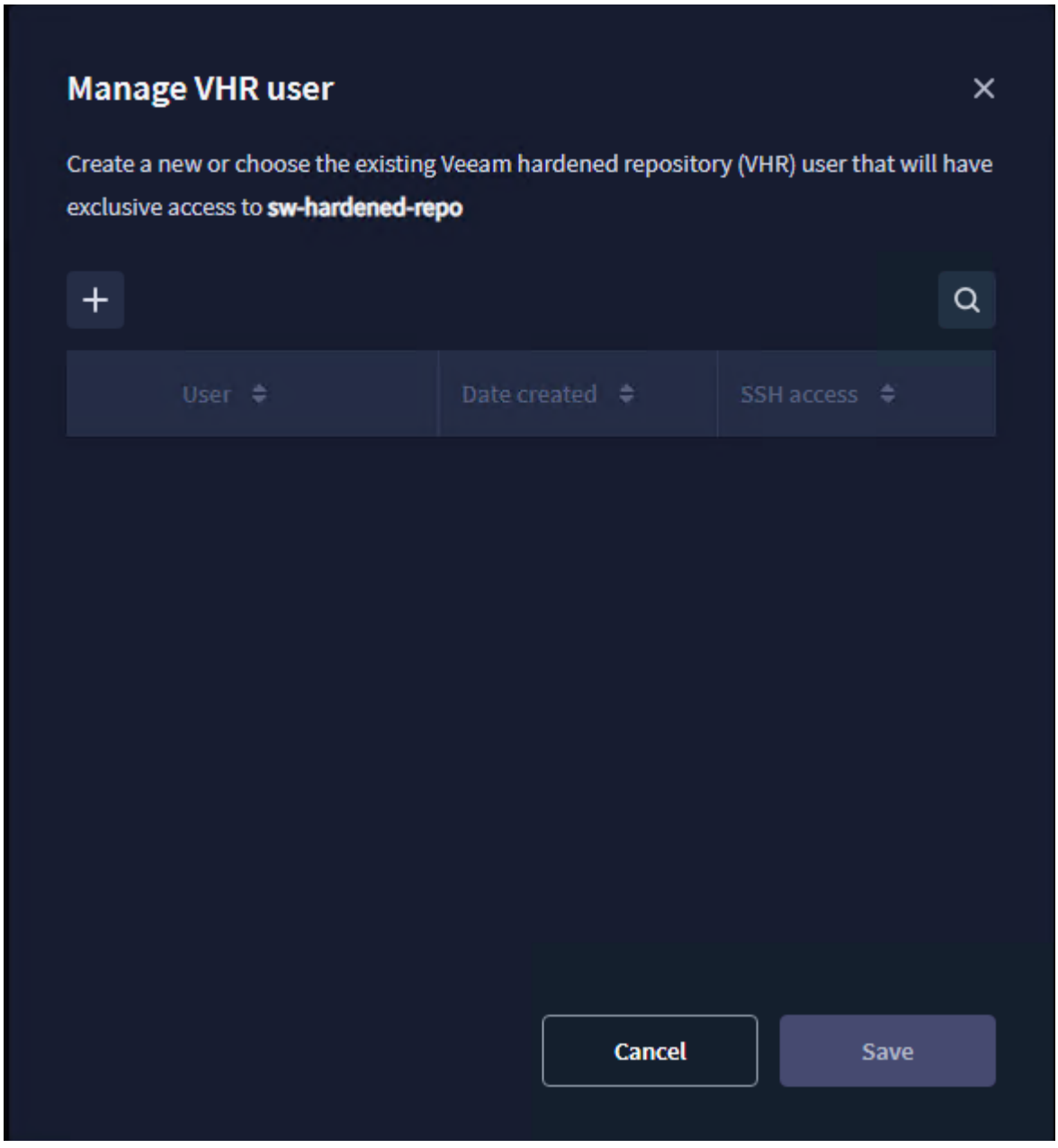


6. Select the recently created Volume and click “Manage VHR user”. This will create a dedicated Veeam Hardened Repository user with limited permissions for the selected volume.



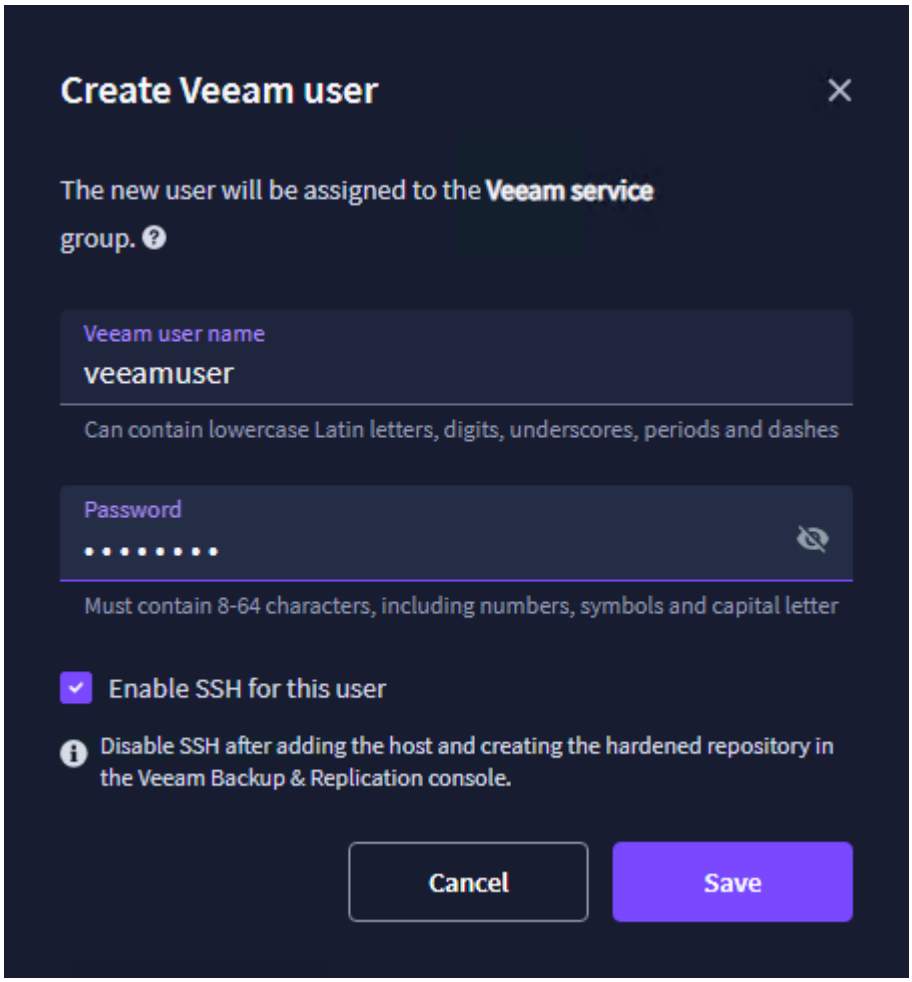
NOTE. If Hardened Repository is not required, you can skip the further steps of creating a VHR user. The backup repository can be then added to Veeam Backup & Replication as a Direct Attached Linux storage to benefit from faster Veeam transport Service.

7. Click the “+” sign to create a new VHR user.

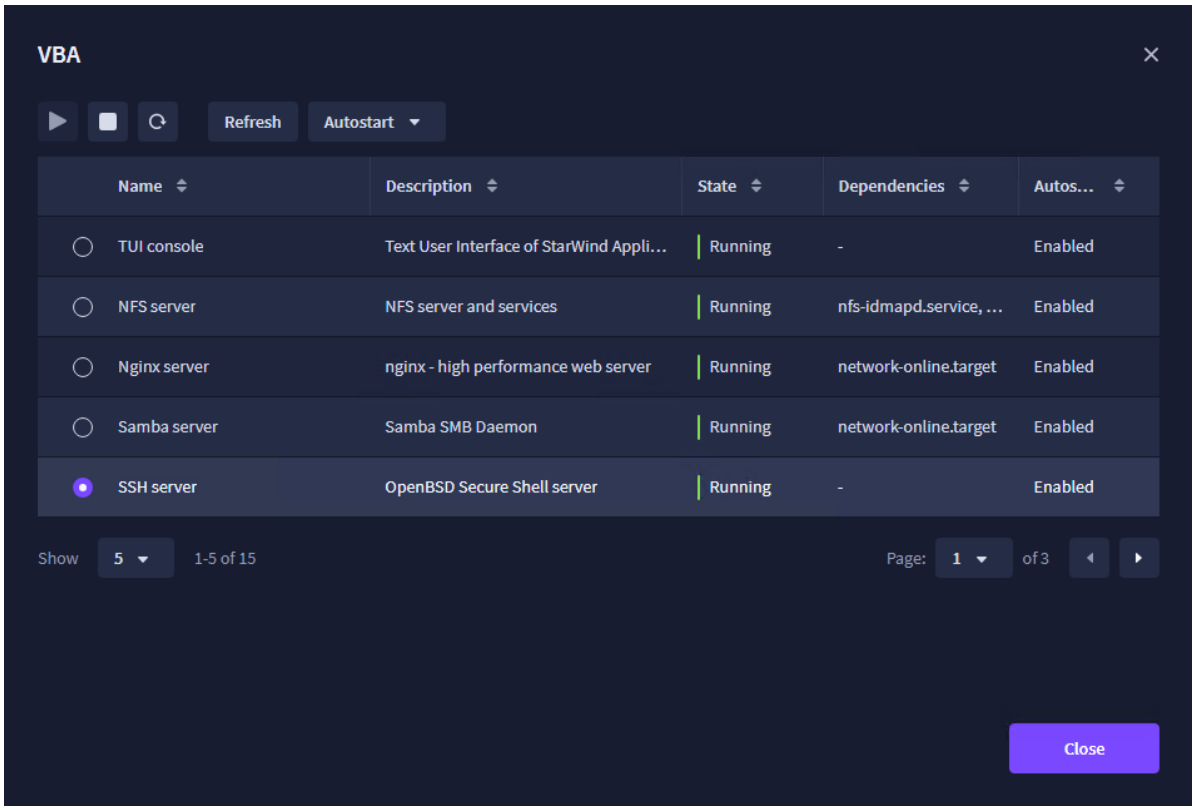


8. Specify the user name and password. Make sure to enable SSH access for VHR user.

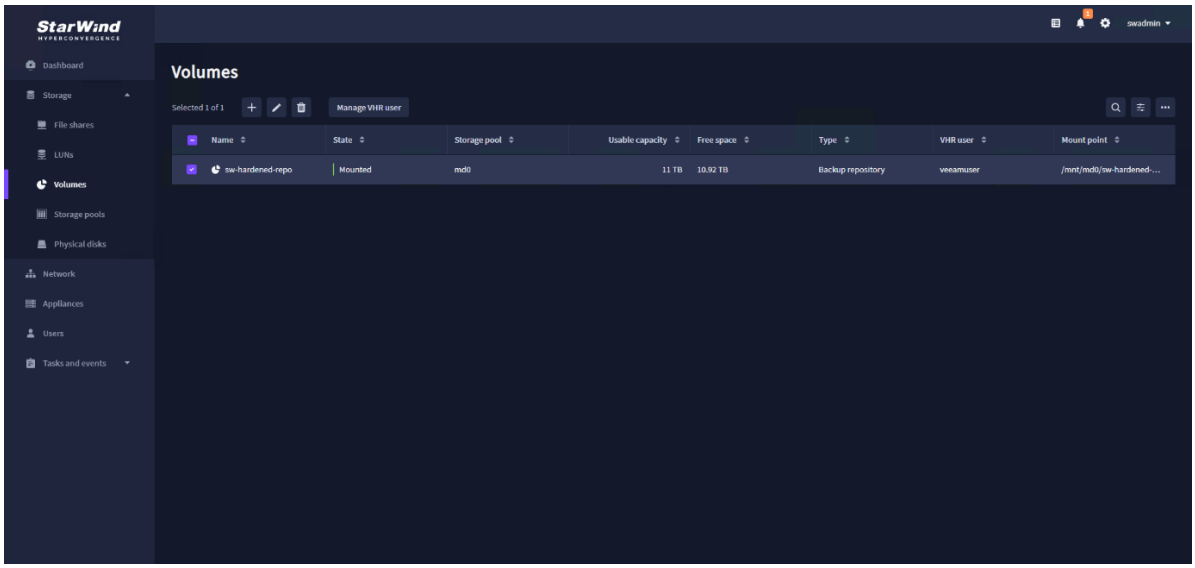
Click Save.



9. Make sure that SSH service is started an running in StarWind VBA CVM, For this, click the “settings icon”, navigate to “Services” and start SSH server.

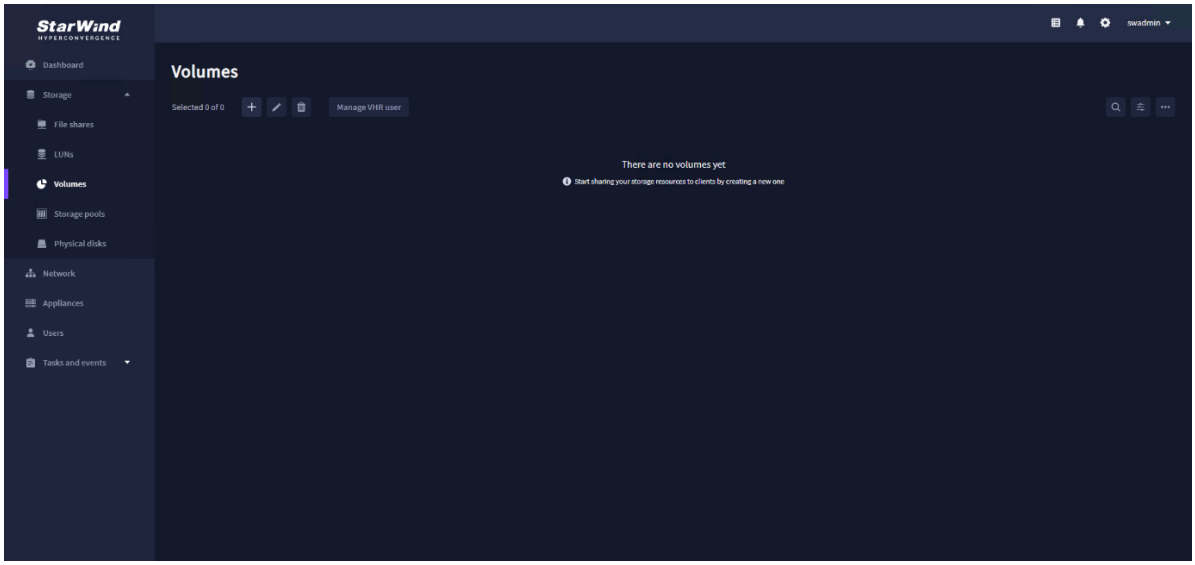


10. The recently created VHR user has been assigned to the volume.

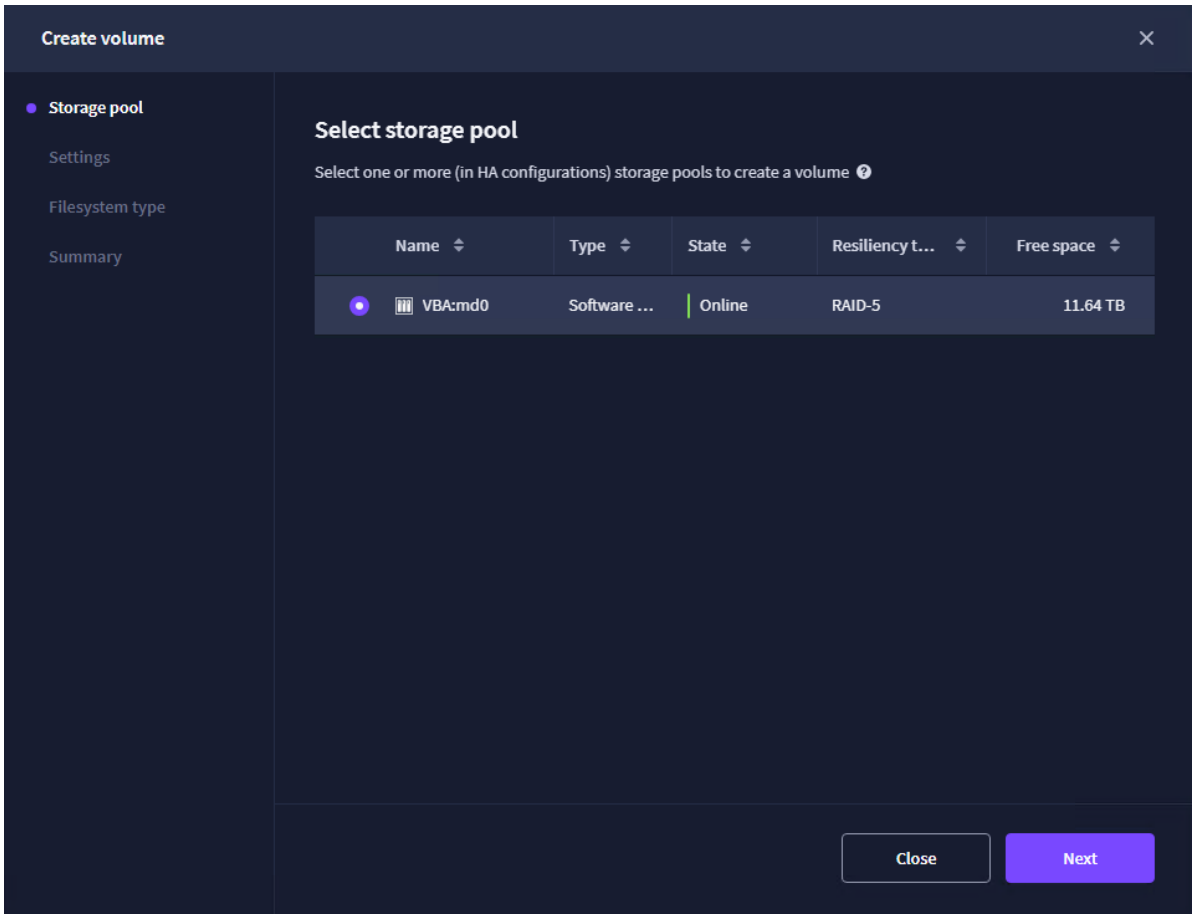


Creating Iscsi Backup Repository

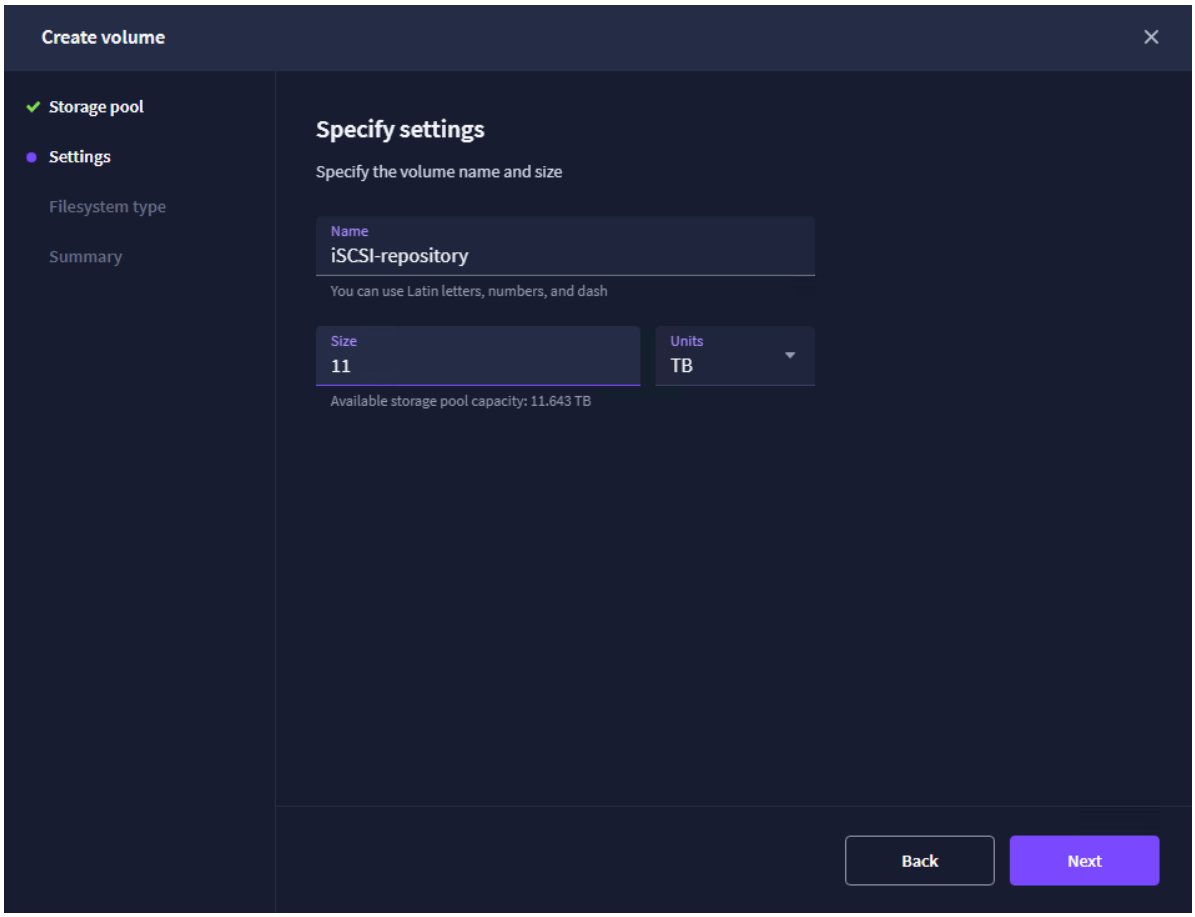
1. Navigate to the “Volumes” tab and click the “+” button to open the “Create volume” wizard.



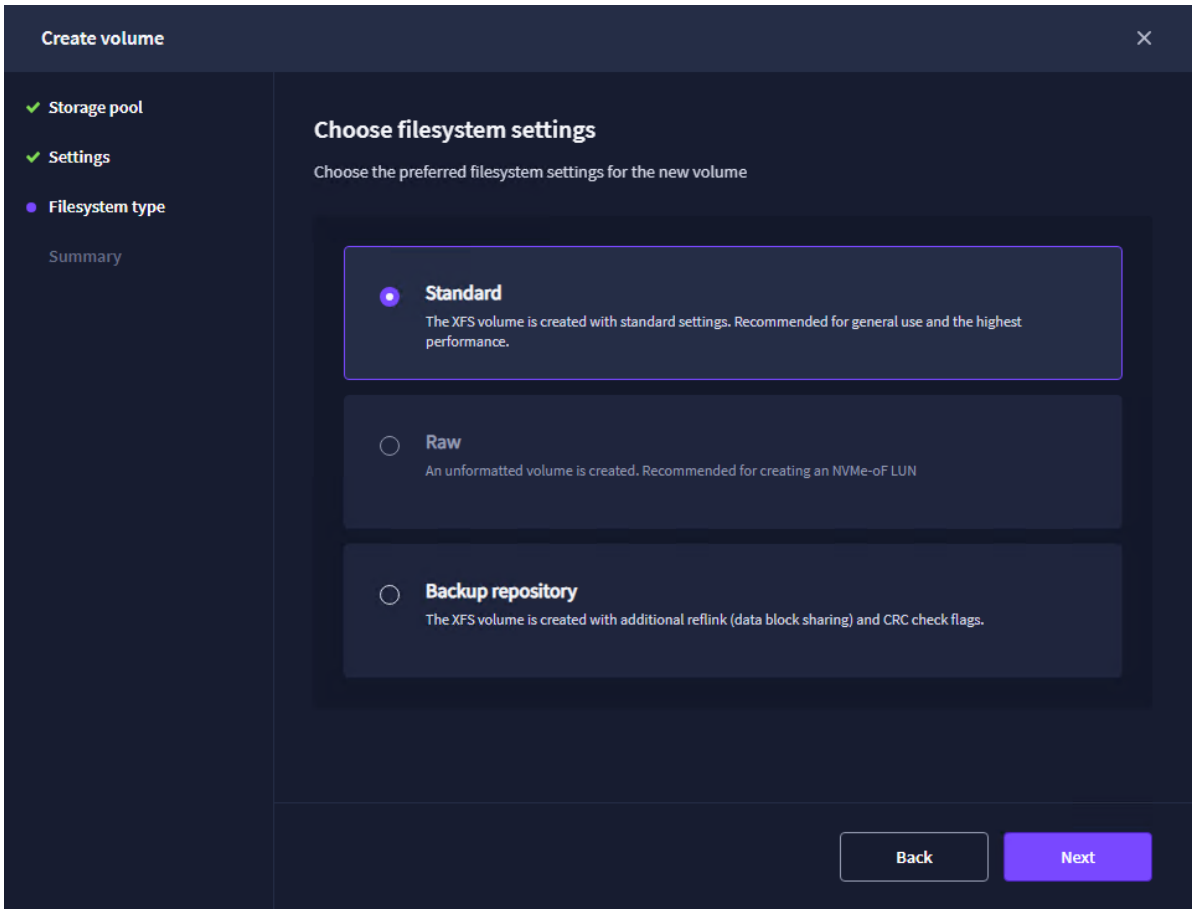
2. Select the storage pool that will be used for a new volume and click Next.



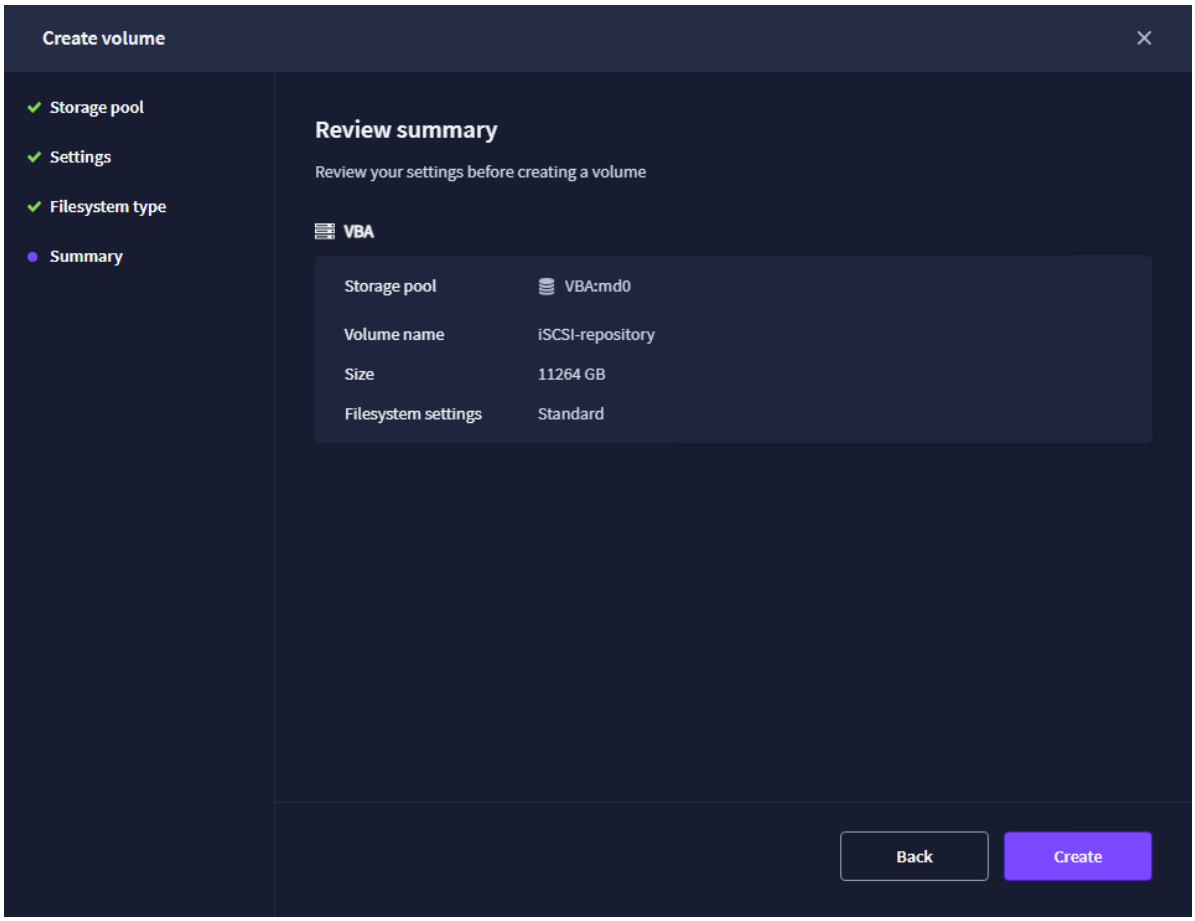
3. Specify the volume name and capacity. Click Next.



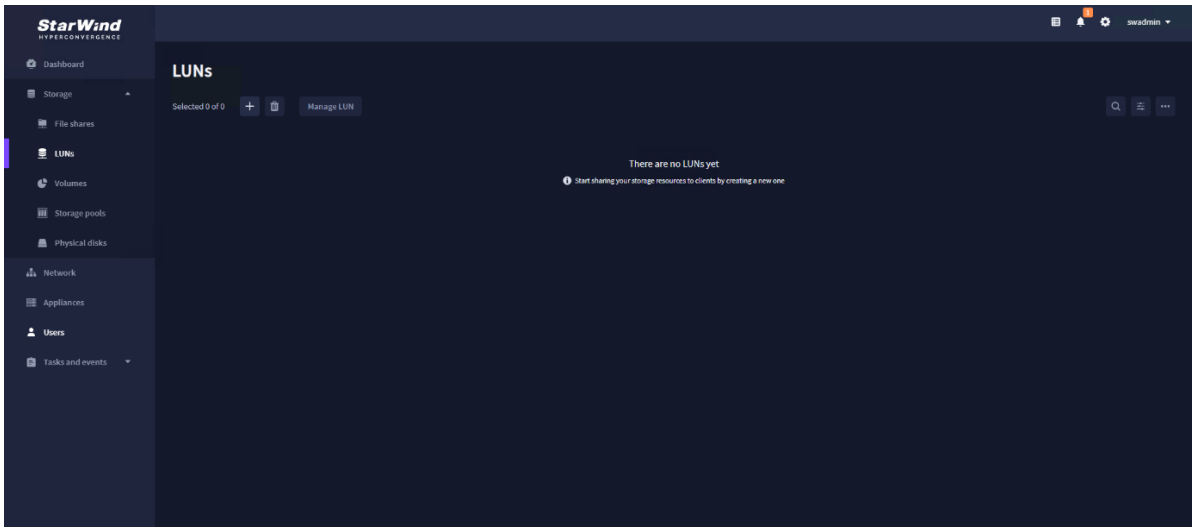
4. Select the “Standard” volume type and click Next.



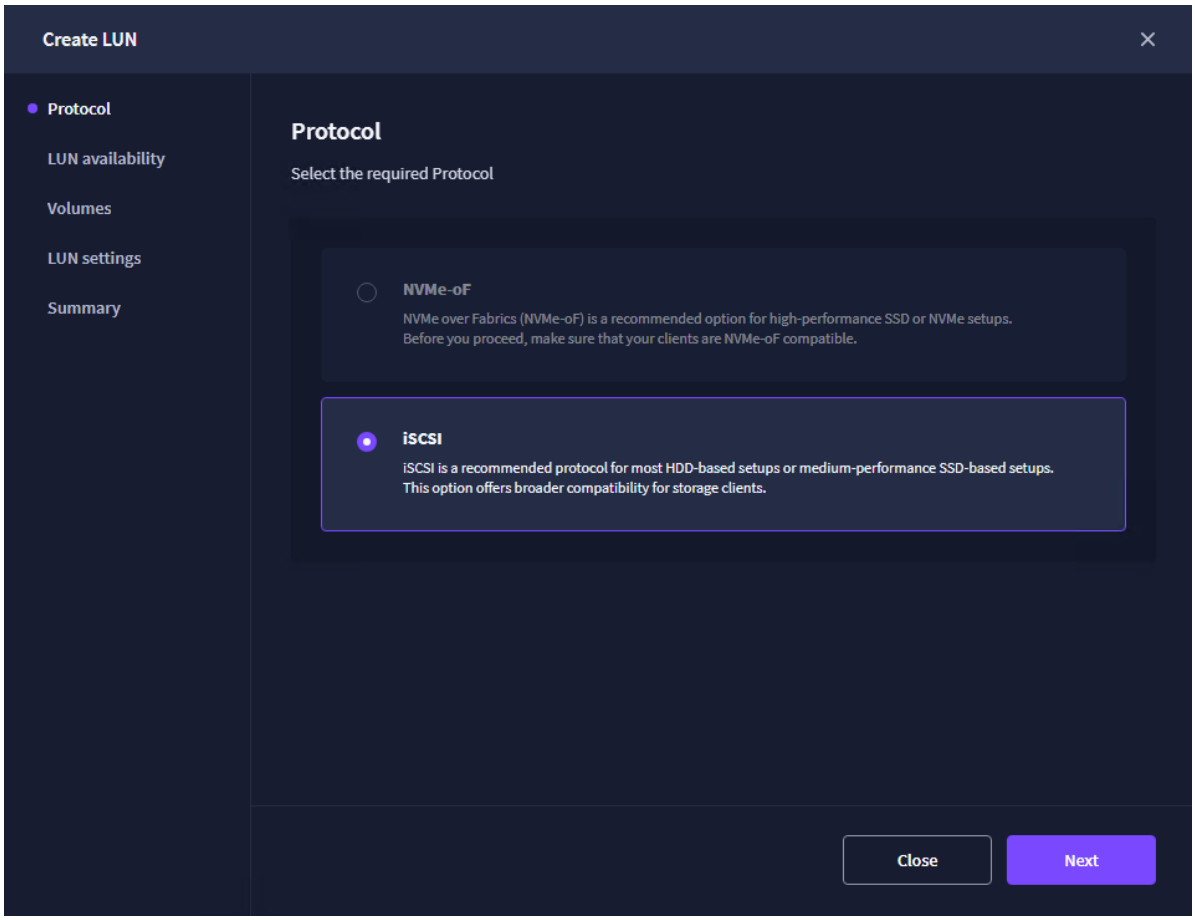
5. Review the Summary and click Create.



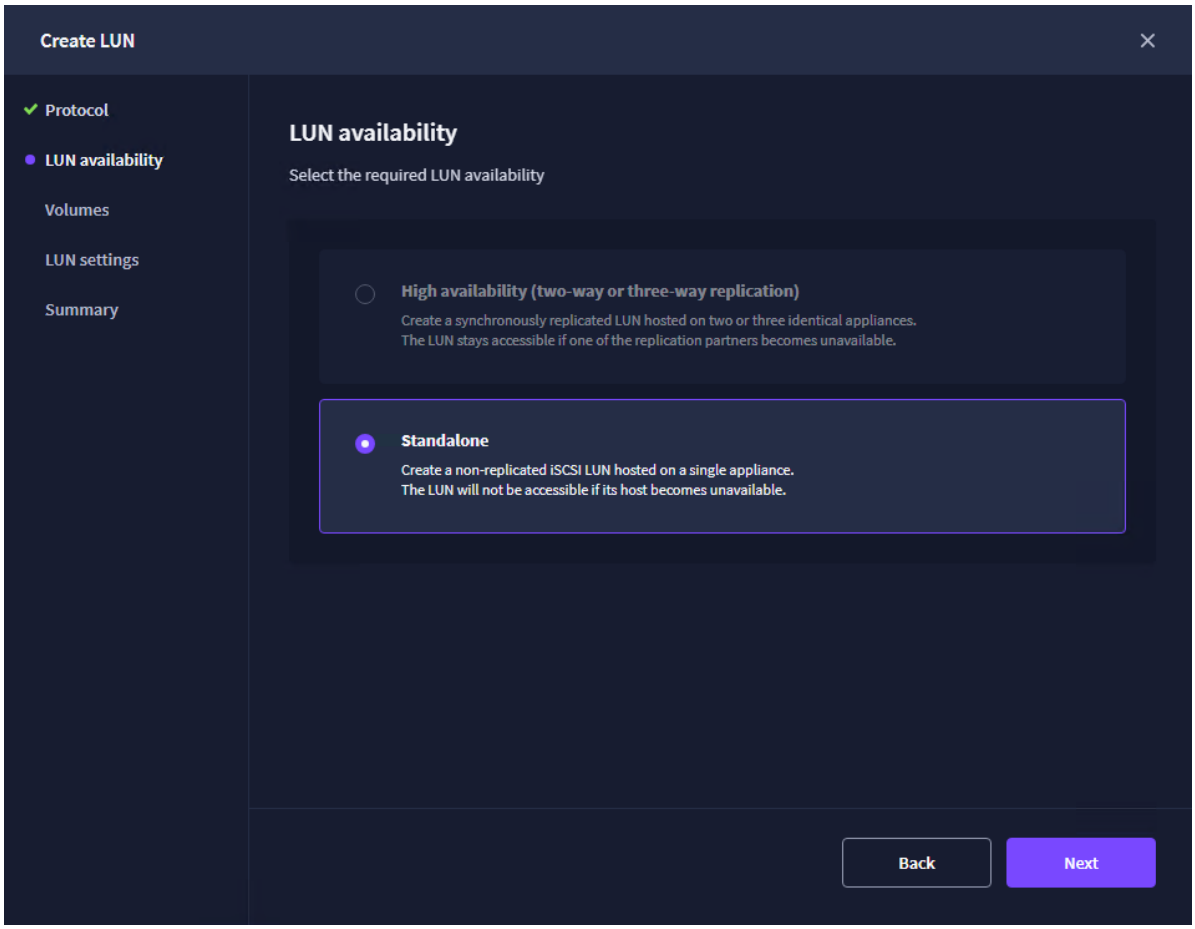
6. Navigate to the LUNs tab and click the “+” sign to create an iSCSI target.



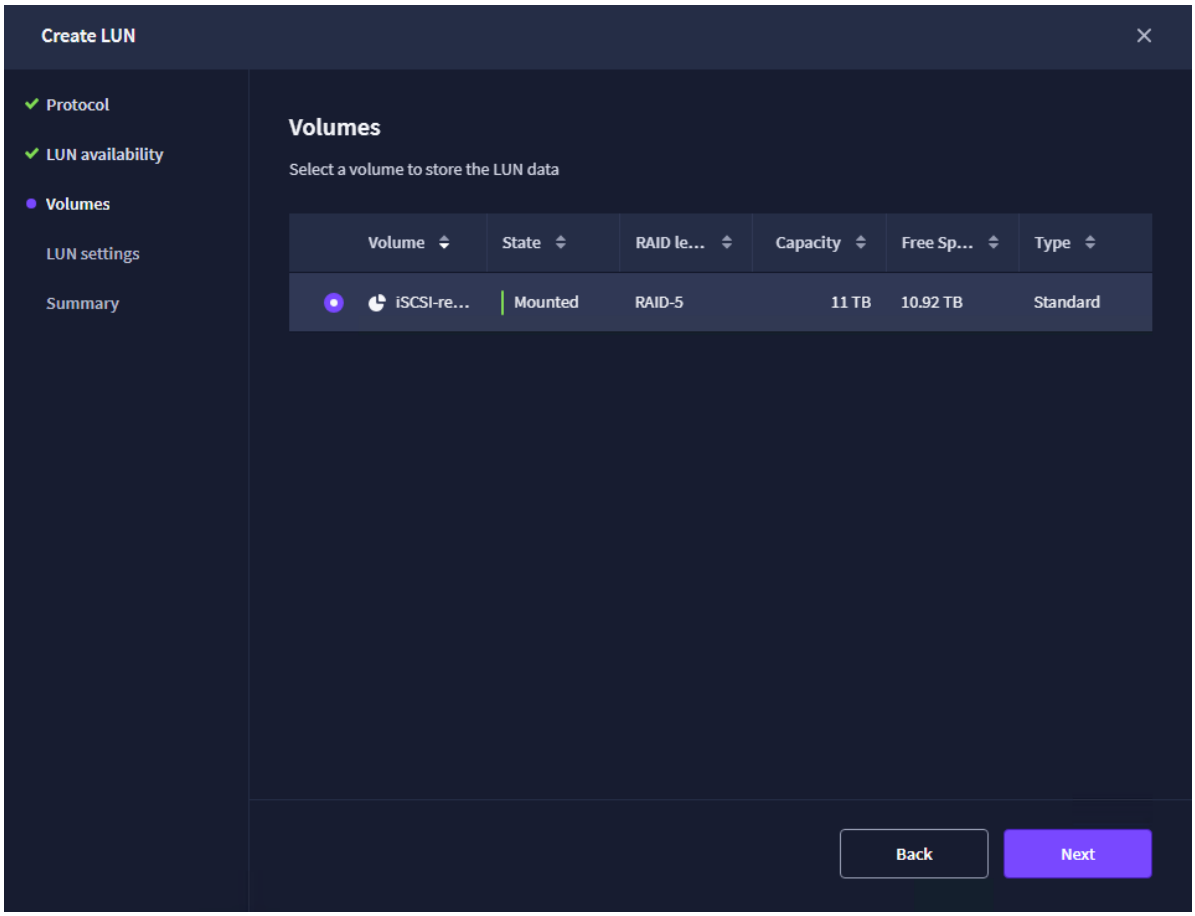
7. Click Next.



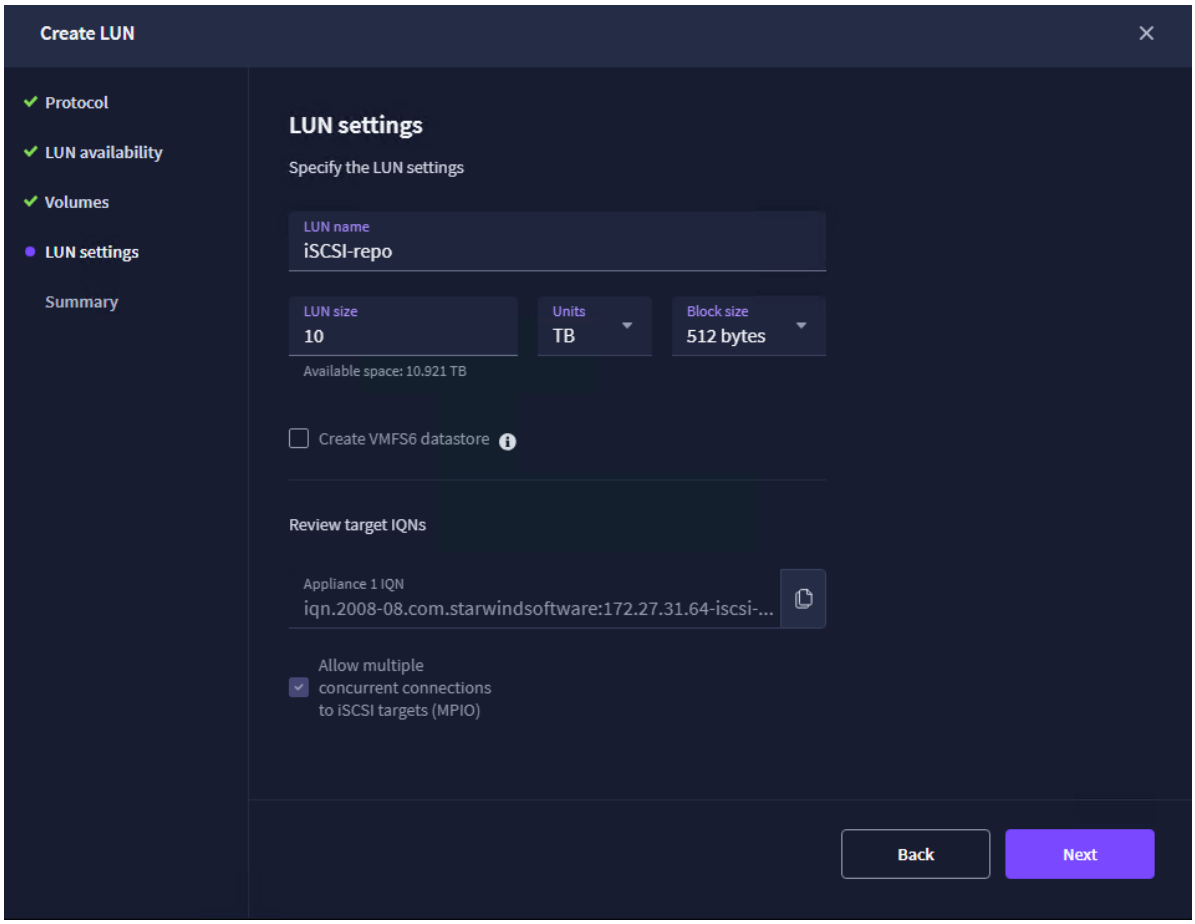
8. Standalone LUN availability is the only option for iSCSI backup repository. Click Next.



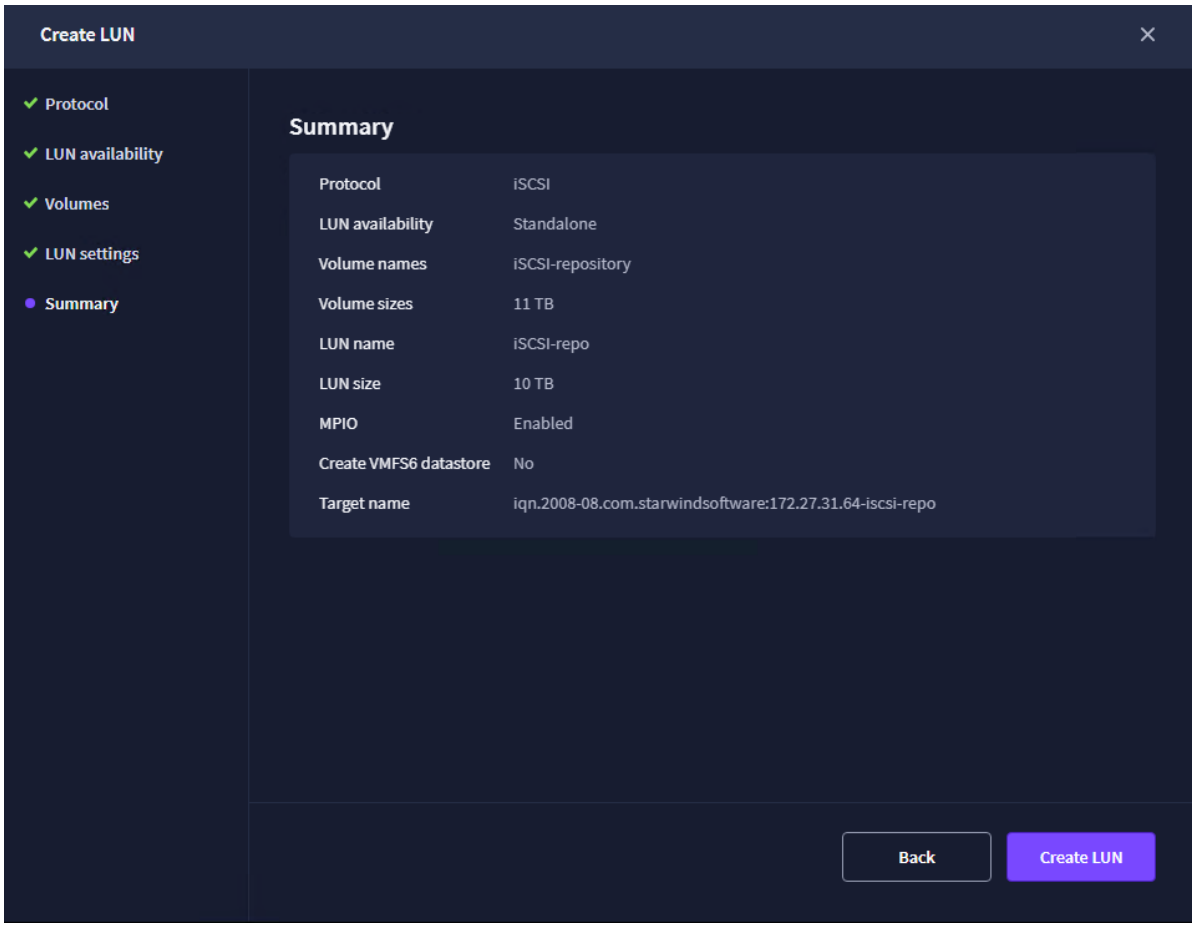
9. Select the volume on which the iSCSI LUN will be stored.



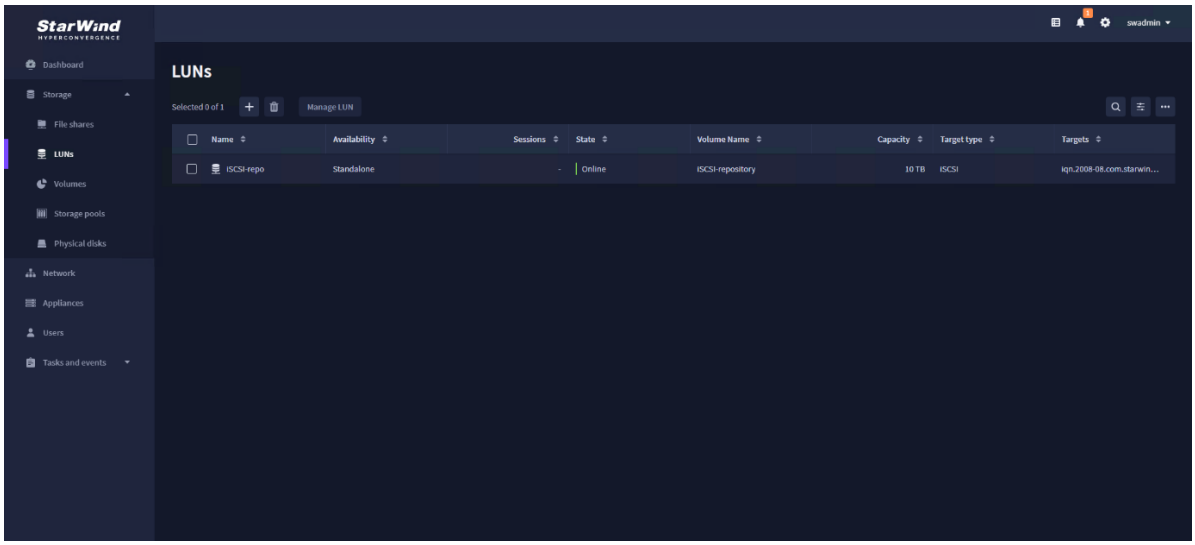
10. Specify the iSCSI LUN name and size. Click Next.



11. Review the Summary and click Create LUN.

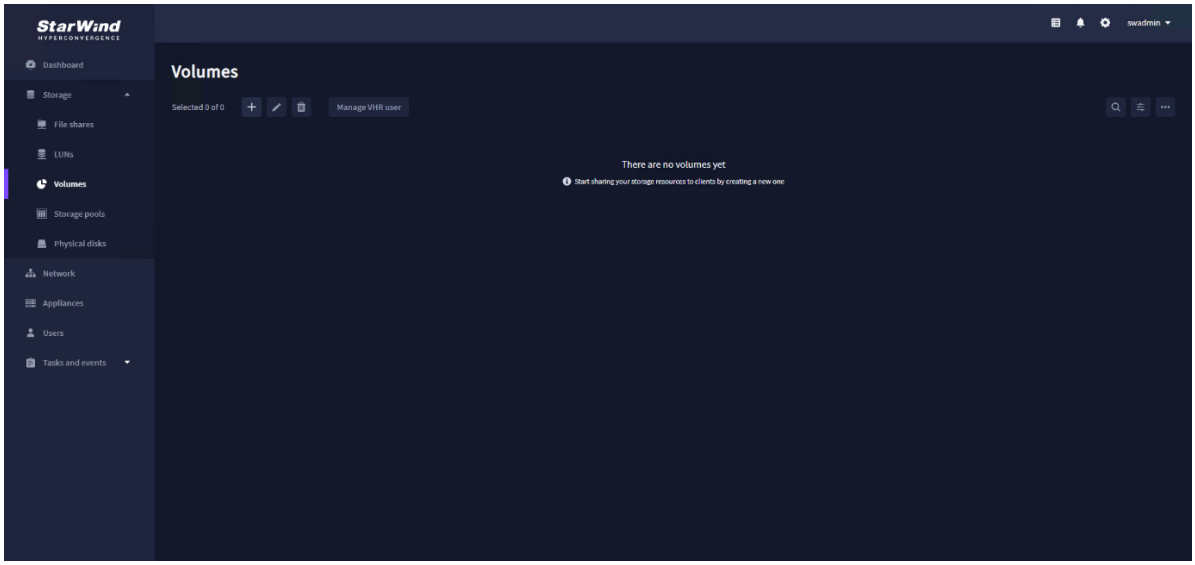


12. The iSCSI target has been created and is ready to be connected to the backup software.

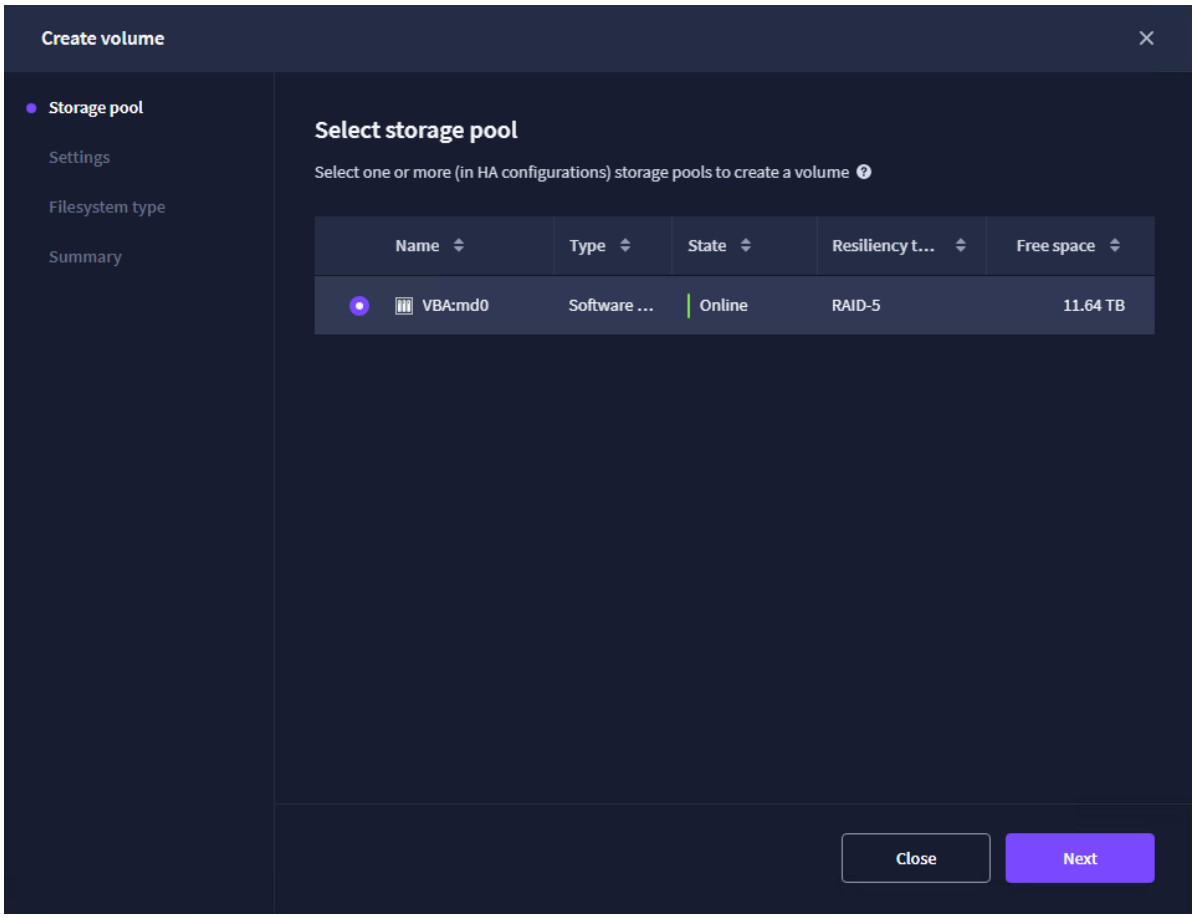


Creating Nfs Backup Repository

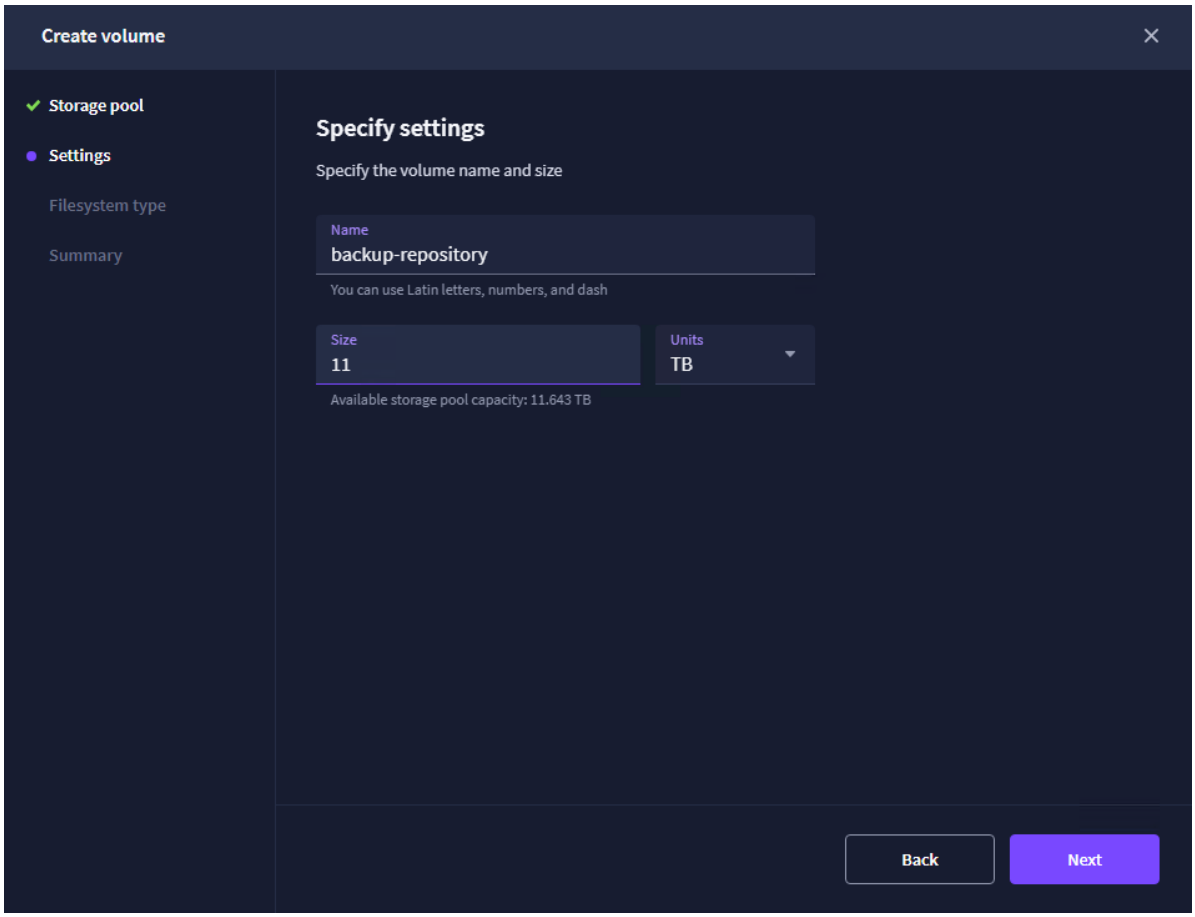
1. Navigate to the “Volumes” tab and click the “+” button to open the “Create volume” wizard.



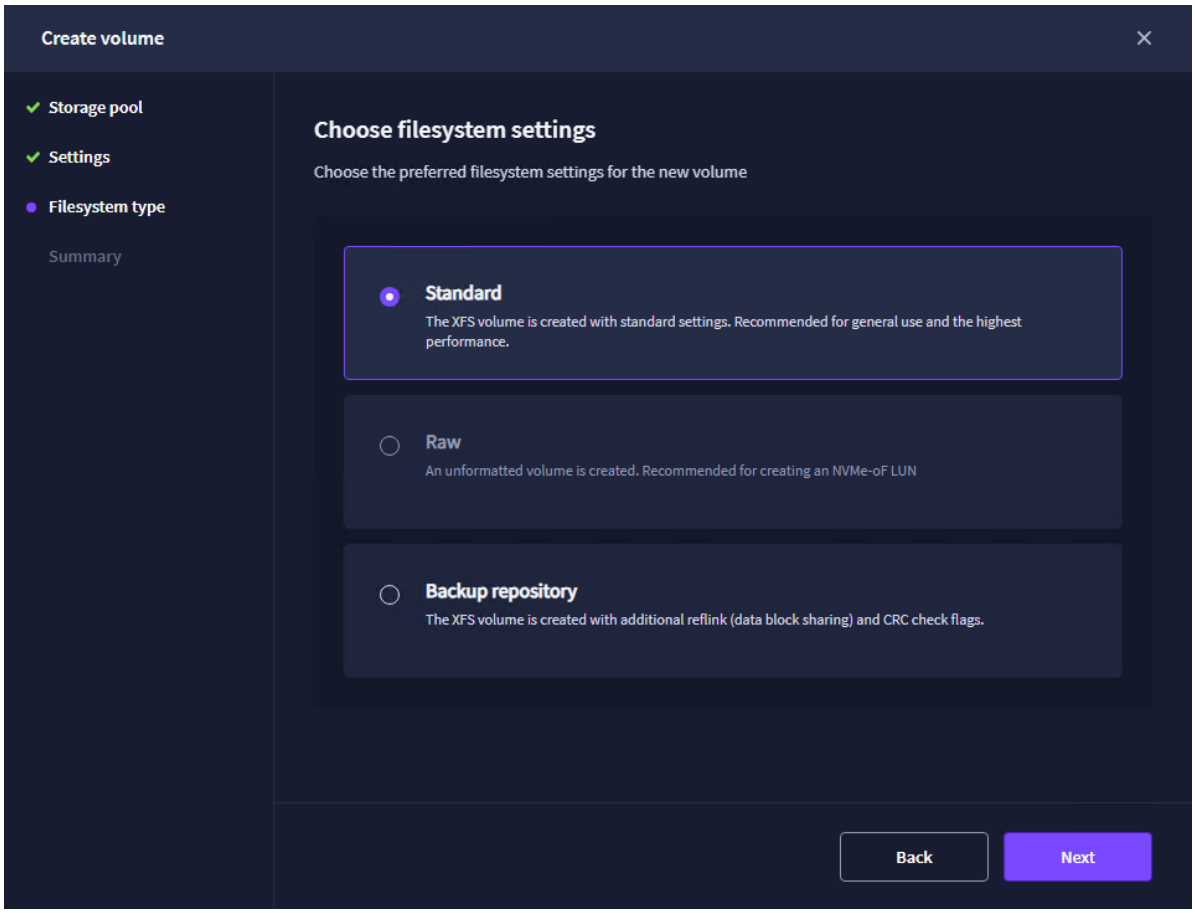
2. Select the storage pool that will be used for a new volume and click Next.



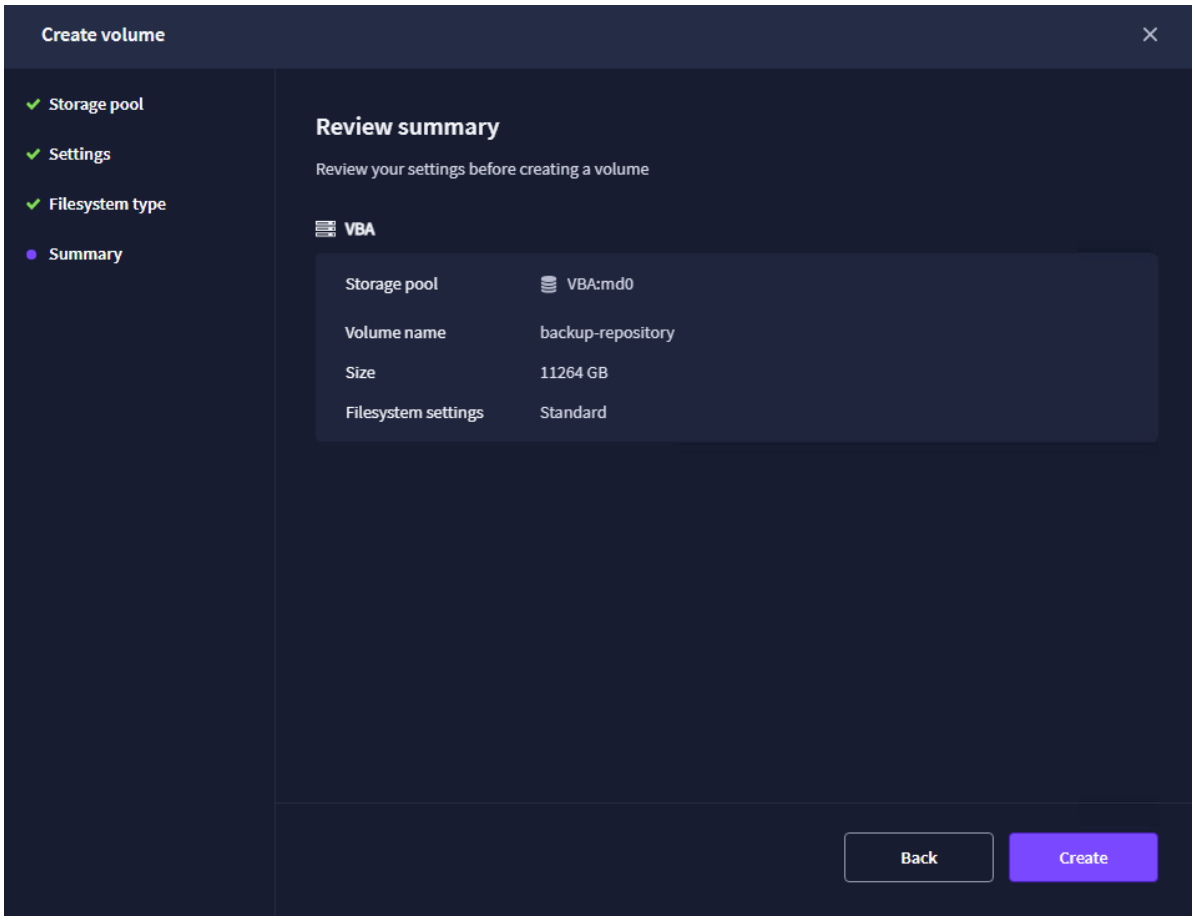
3. Specify the volume name and capacity. Click Next.



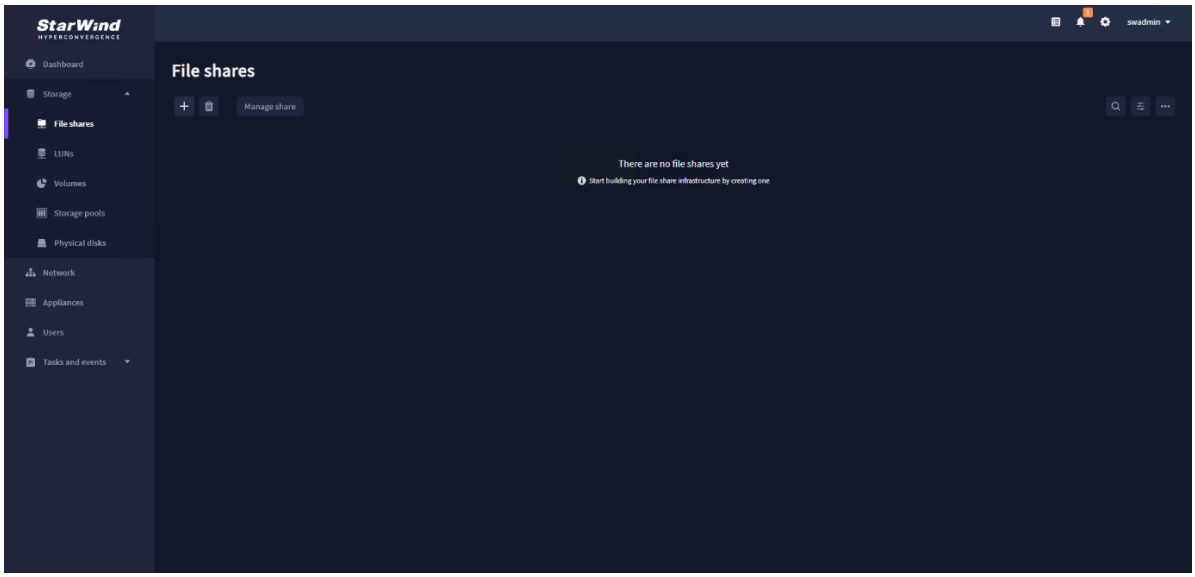
4. Select the “Standard” volume type and click Next.



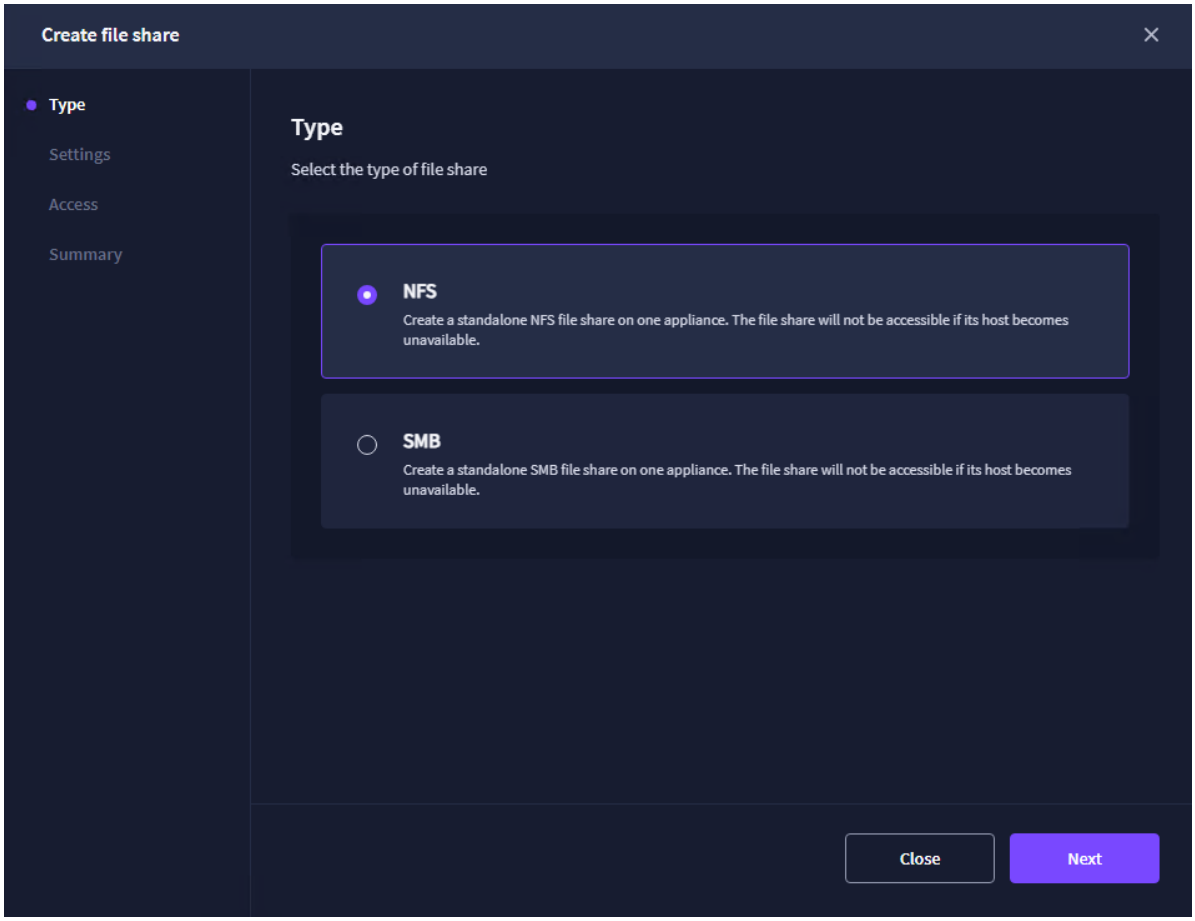
5. Review the Summary and click Create.



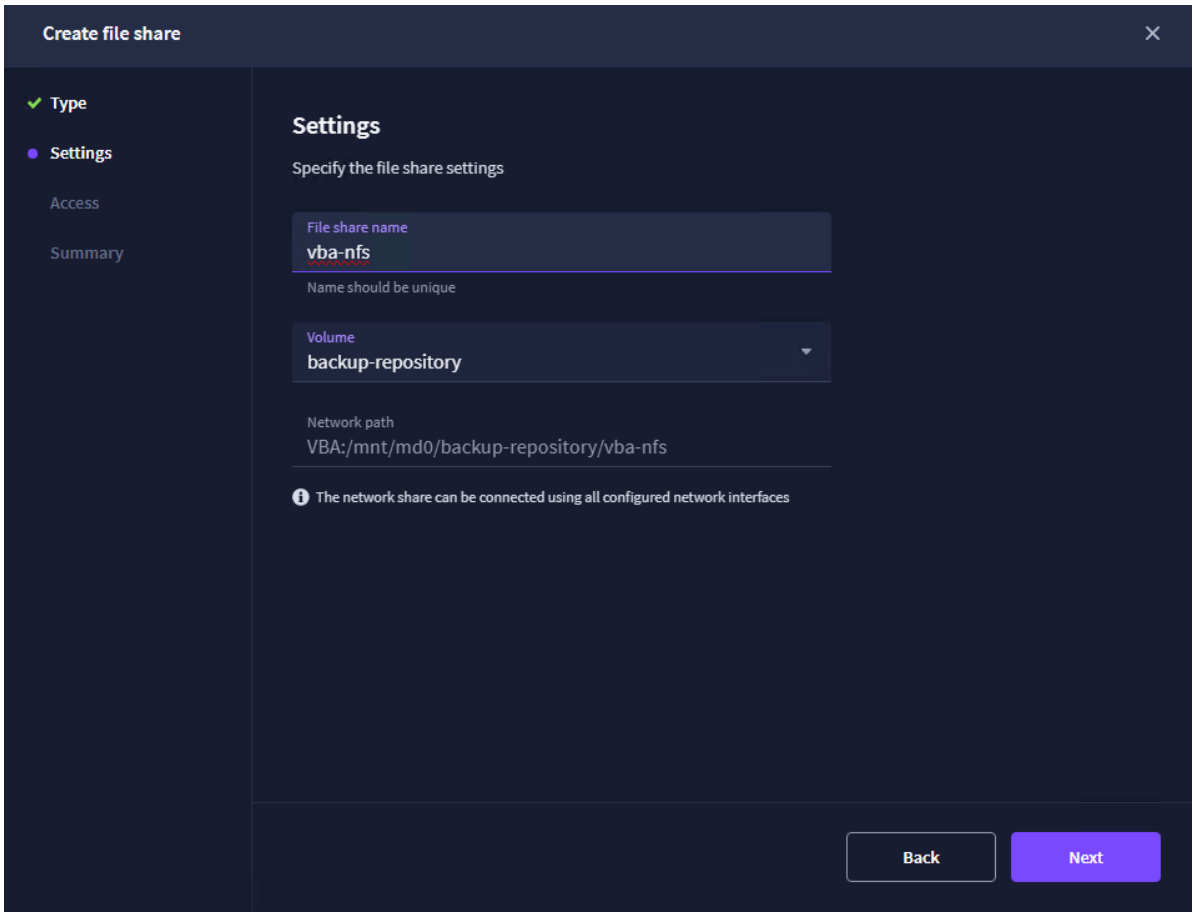
6. Navigate to the File shares tab and click the “+” sign.



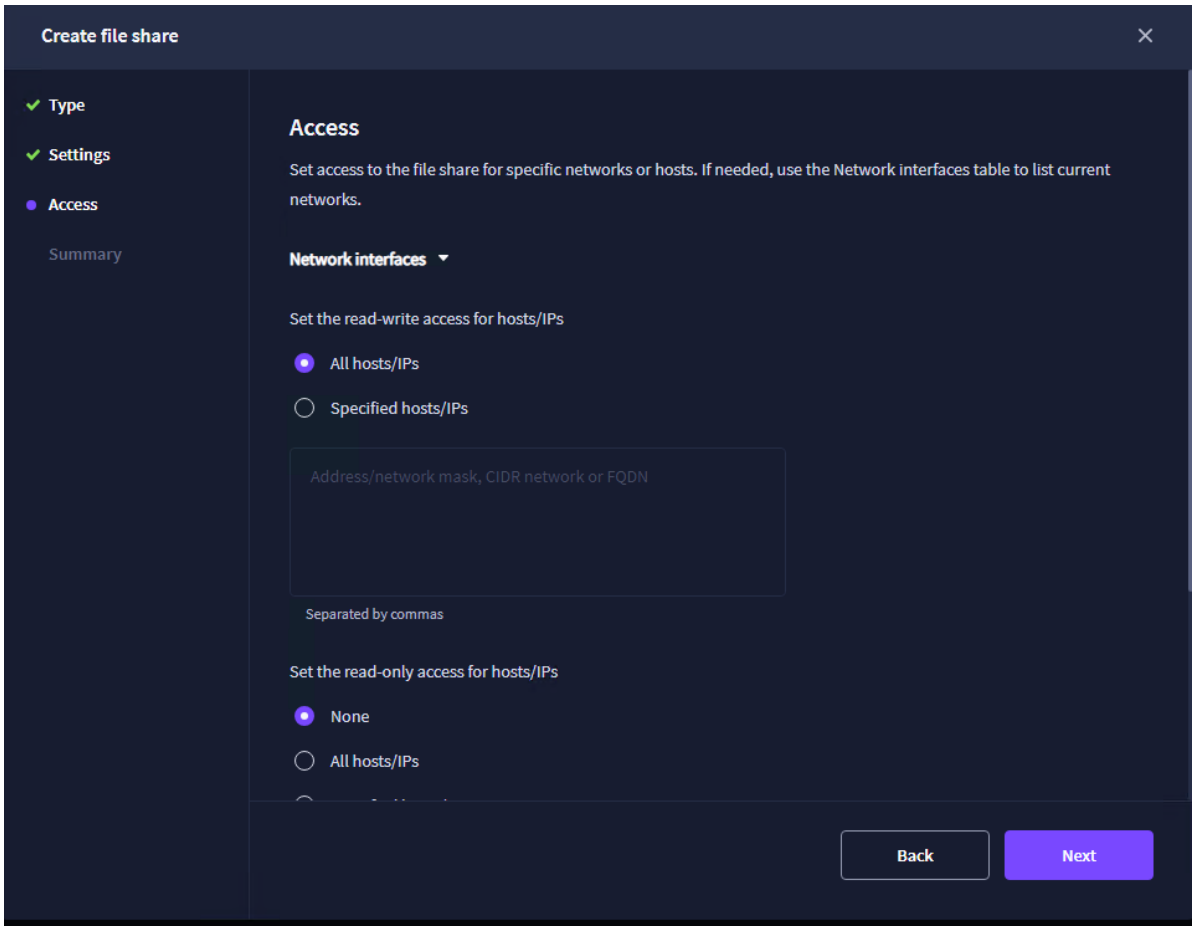
7. Select the NFS file share type and click Next.



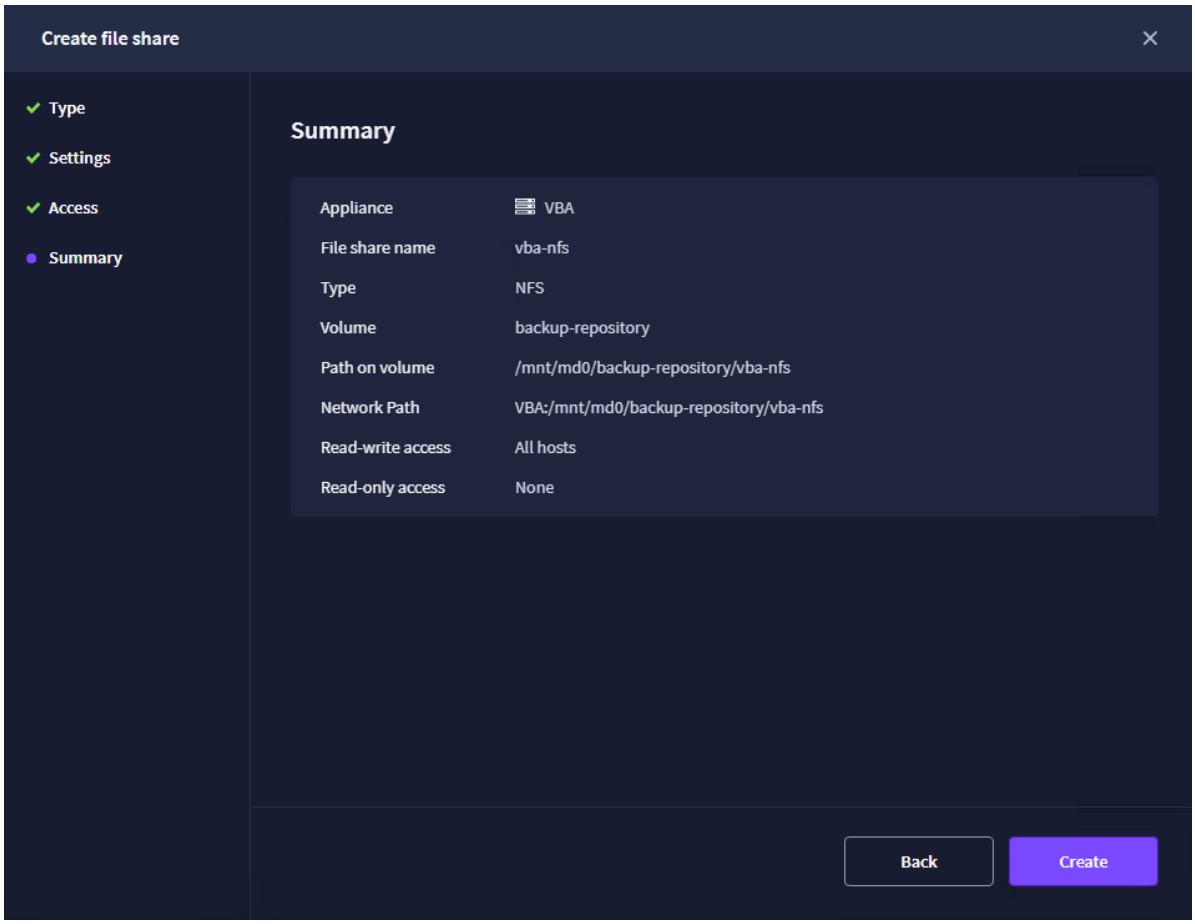
8. Specify the file share name and volume on which it will be located.



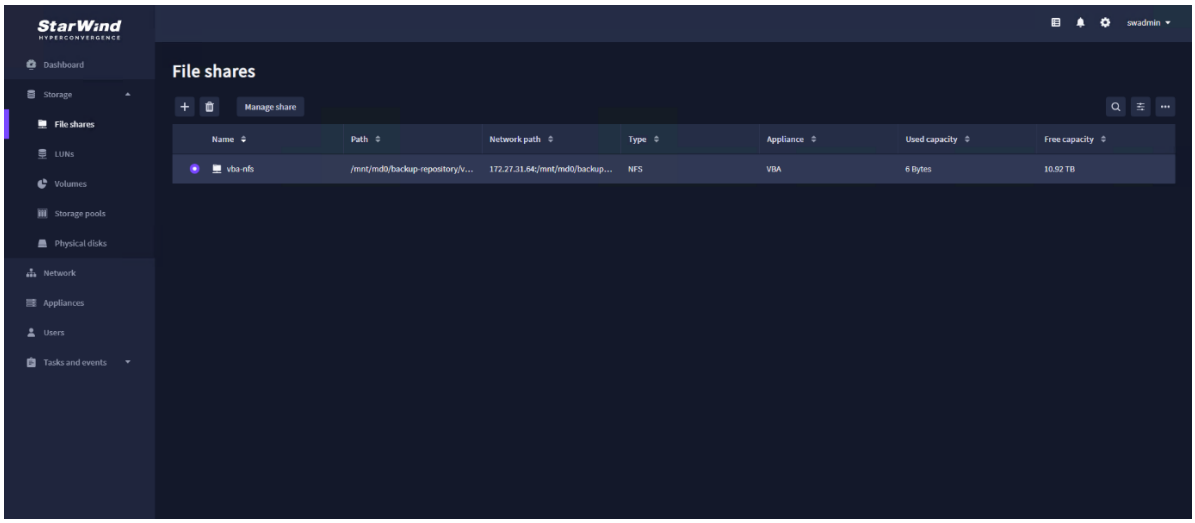
9. Specify the required access settings to the NFS share. Click Next.



10. Review Summary and click Create.

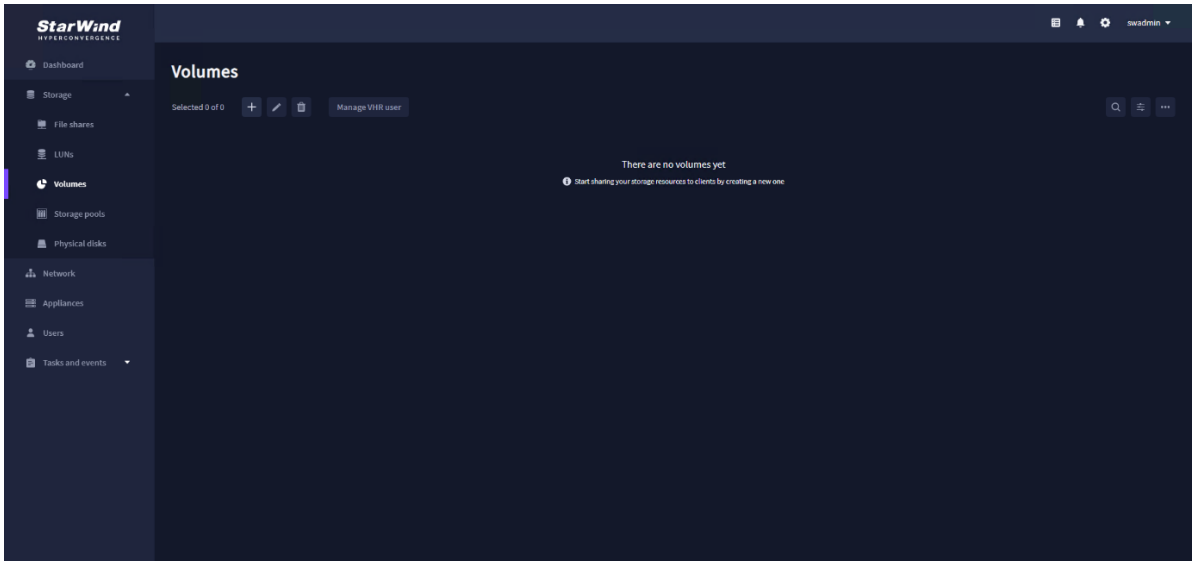


11. The NFS share repository is ready to be connected to the backup software.

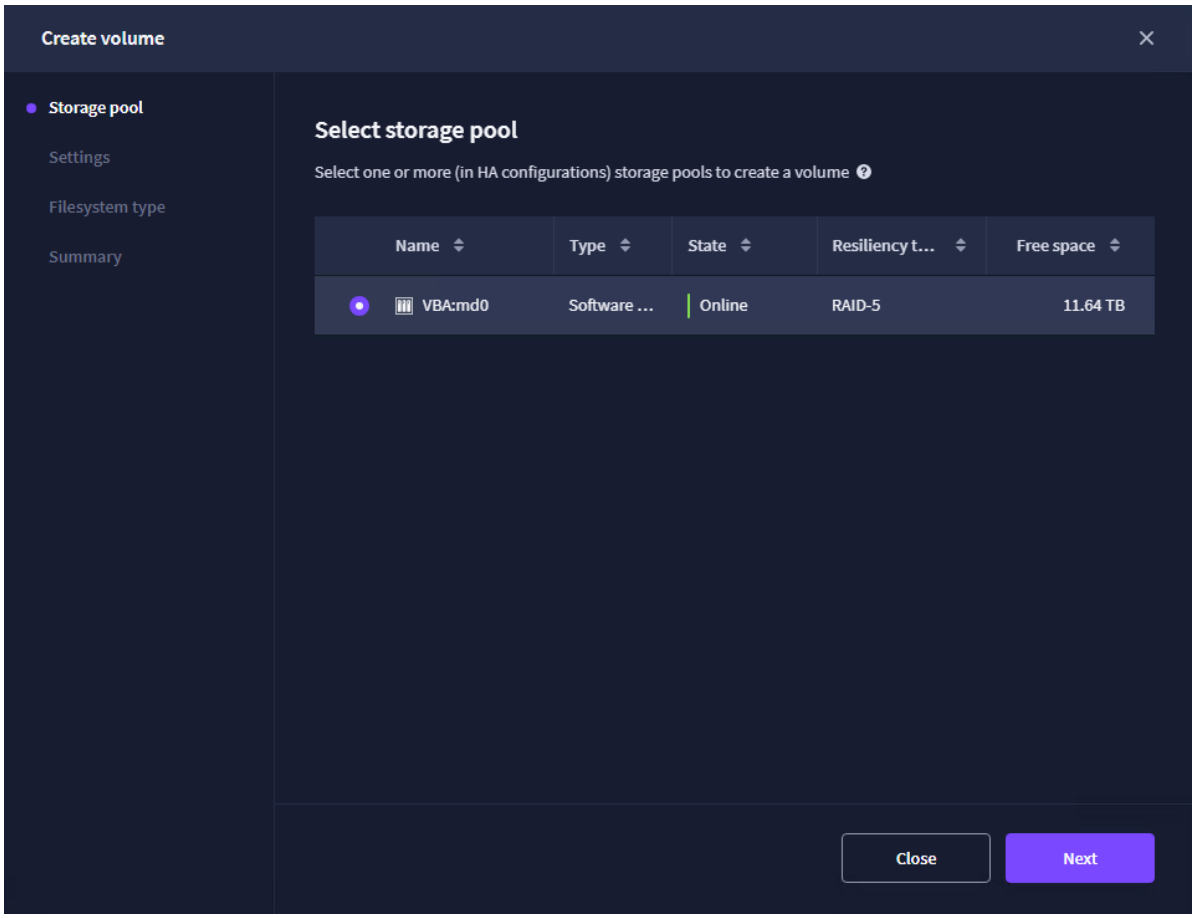


Creating Smb Backup Repository

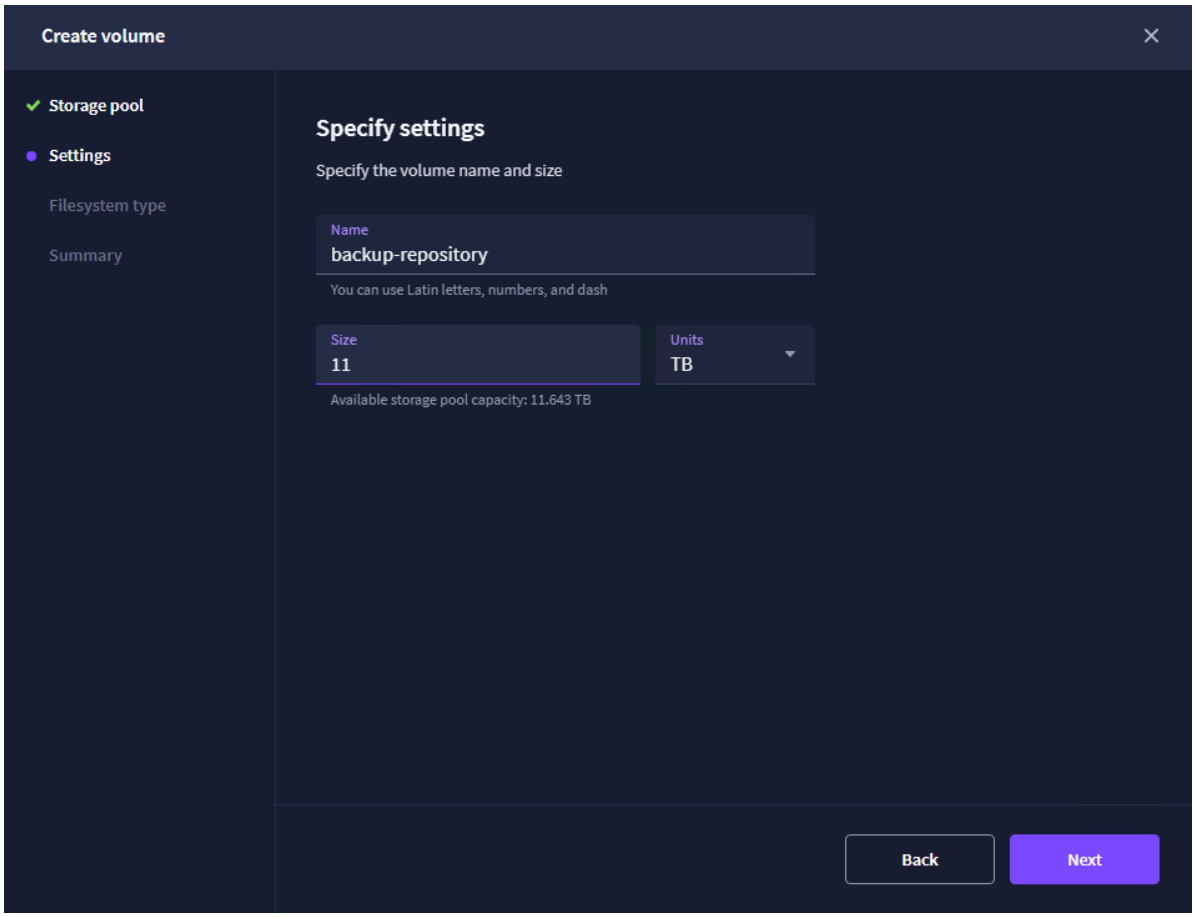
1. Navigate to the “Volumes” tab and click the “+” button to open the “Create volume” wizard.



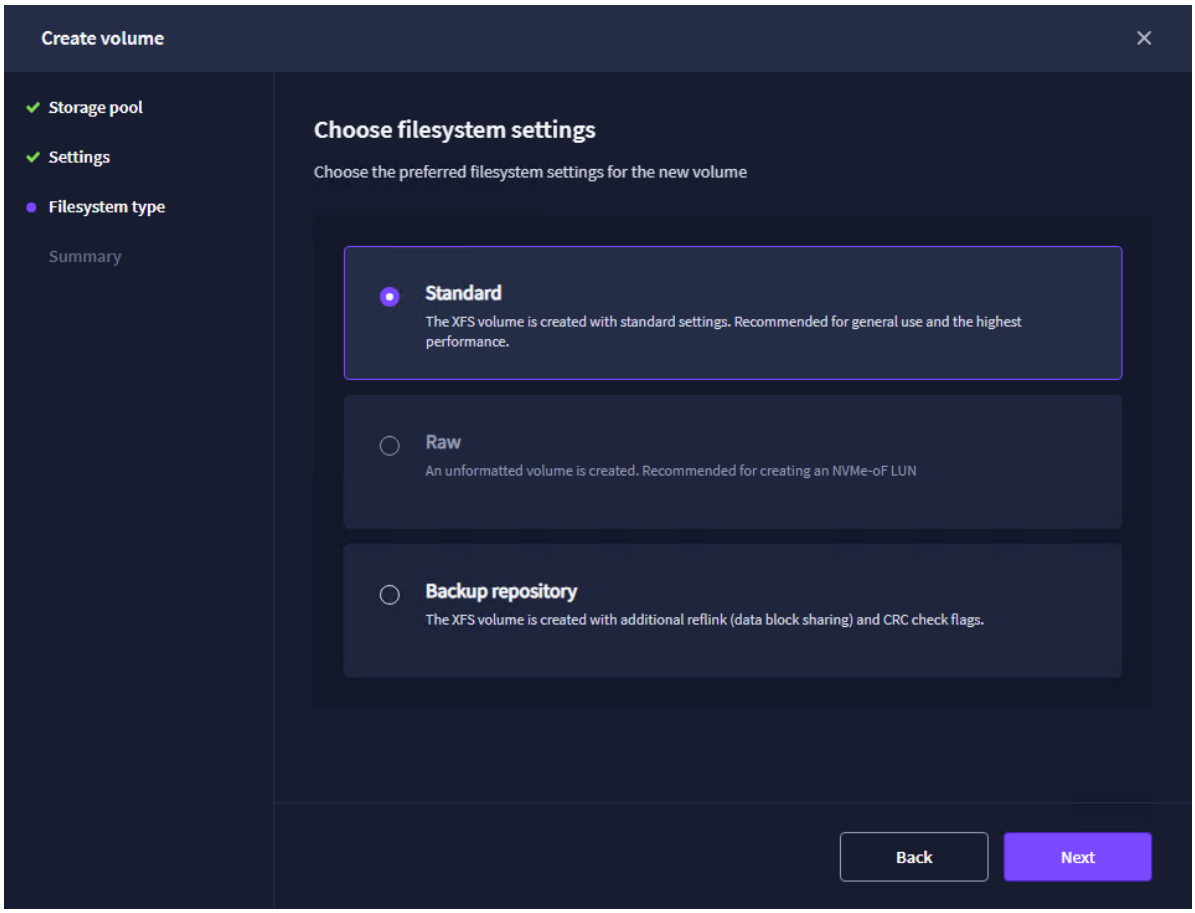
2. Select the storage pool that will be used for a new volume and click Next.



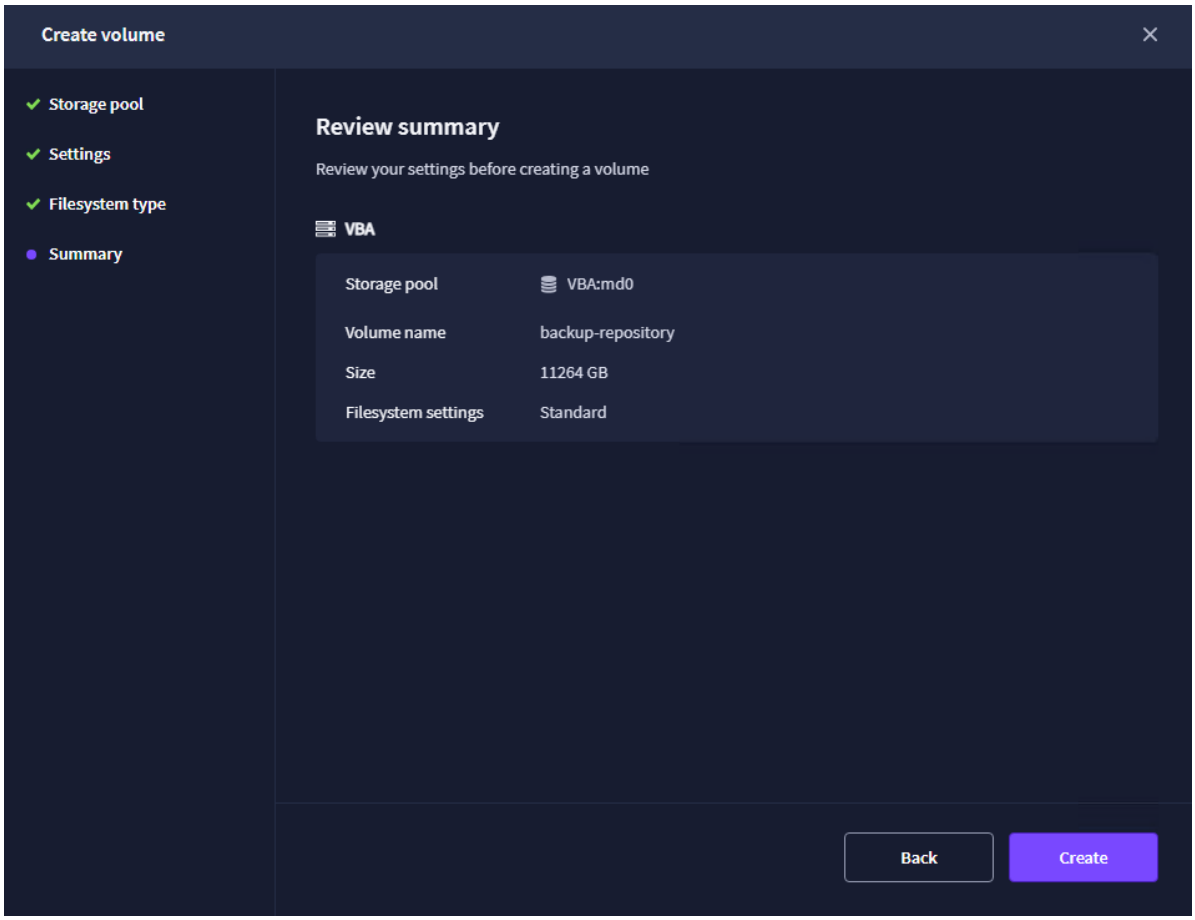
3. Specify the volume name and capacity. Click Next.



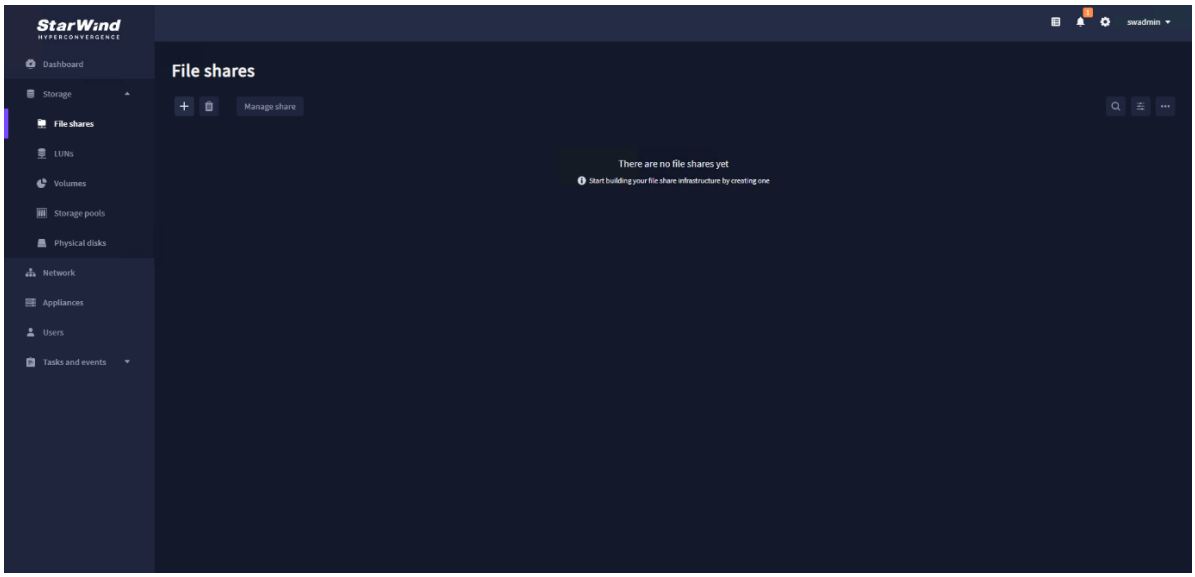
4. Select the “Standard” volume type and click Next.



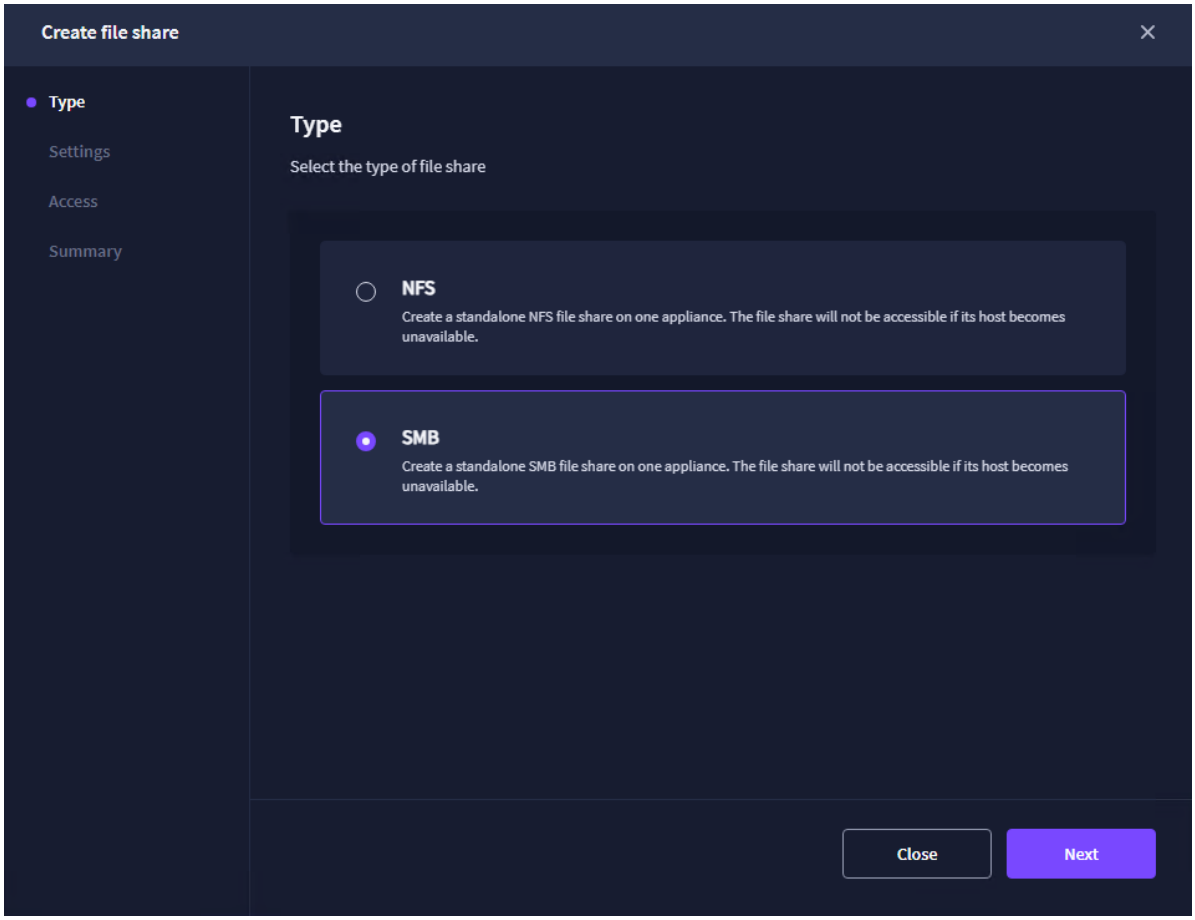
5. Review the Summary and click Create.



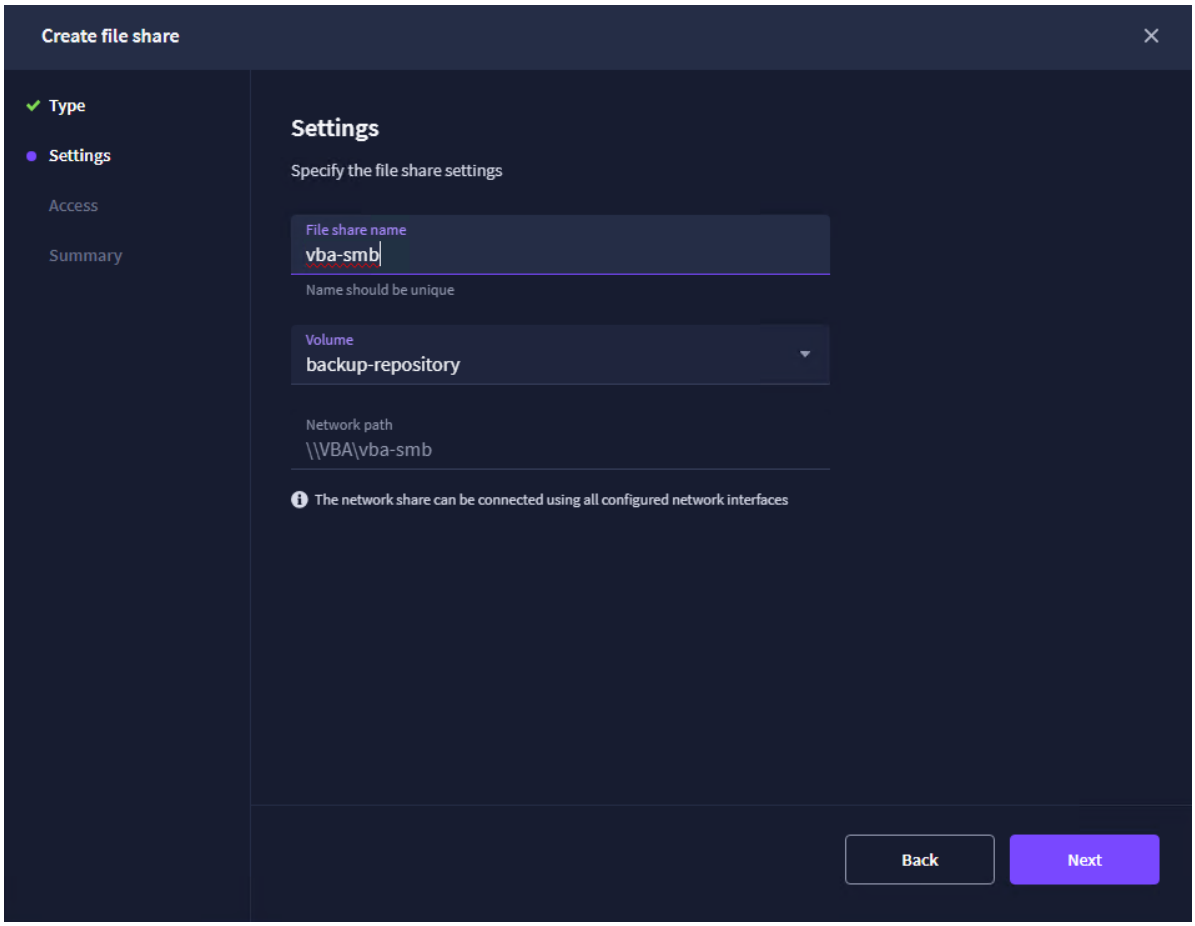
6. Navigate to the File shares tab and click the “+” sign.



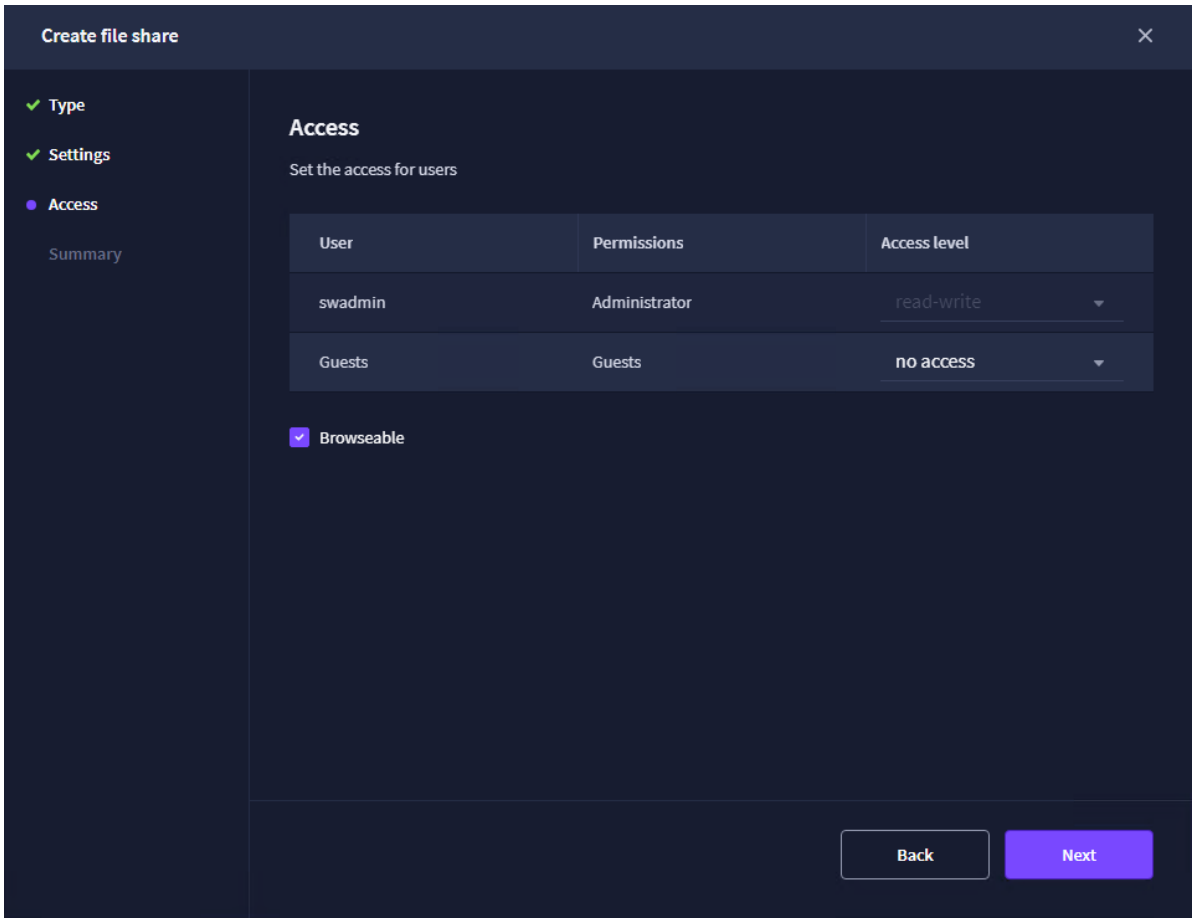
7. Select the SMB file share type and click Next.



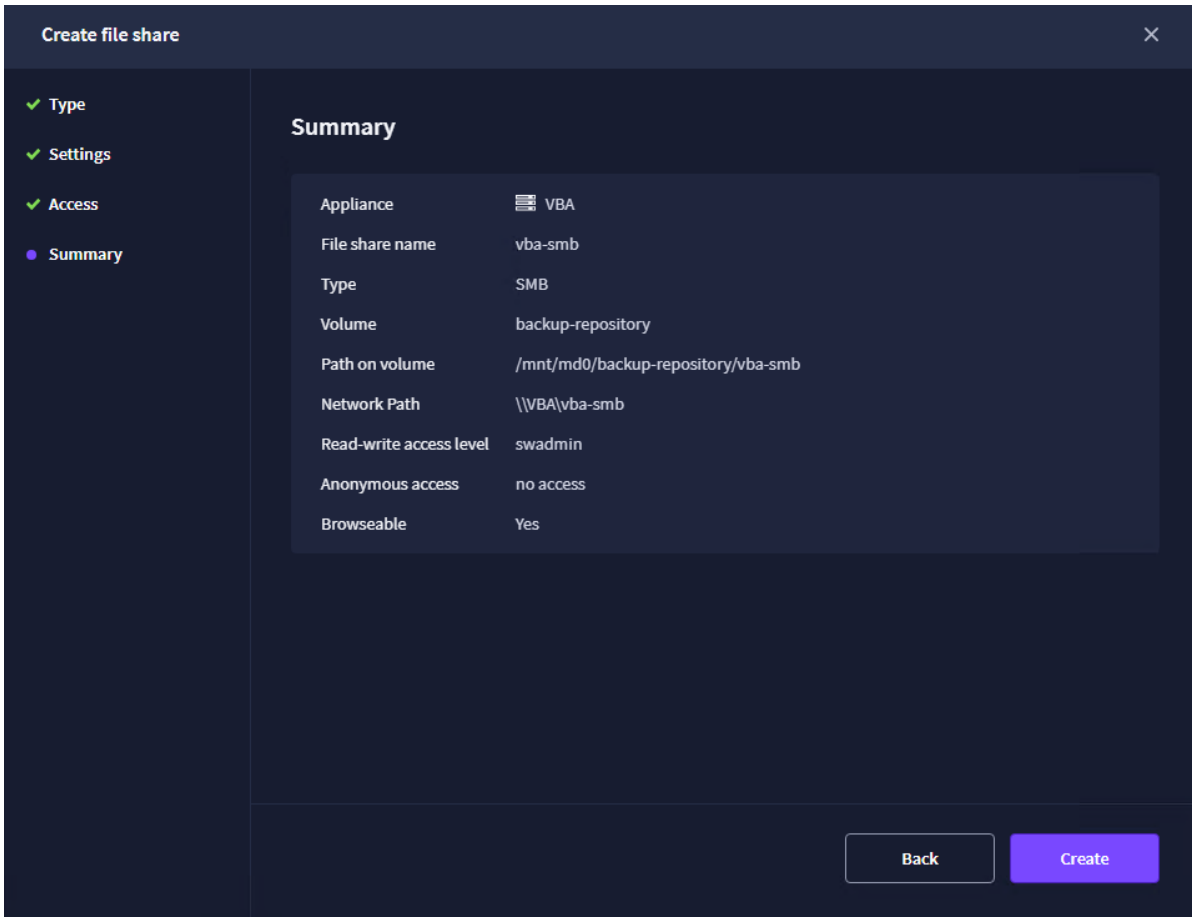
8. Specify the file share name and volume on which it will be located.



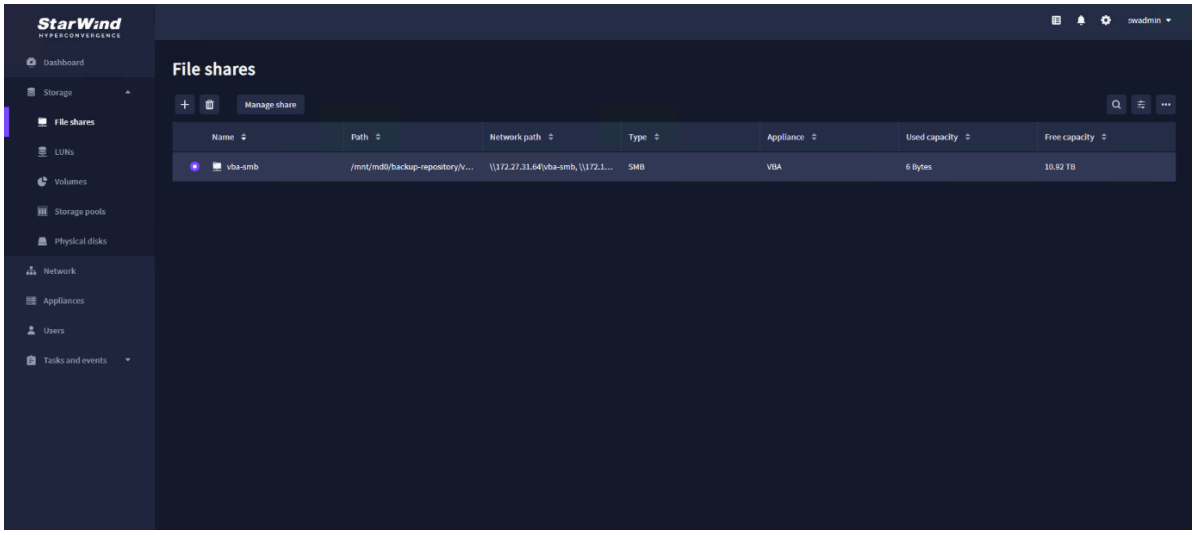
9. Specify the required access settings to the SMB share. Click Next.



10. Review Summary and click Create.

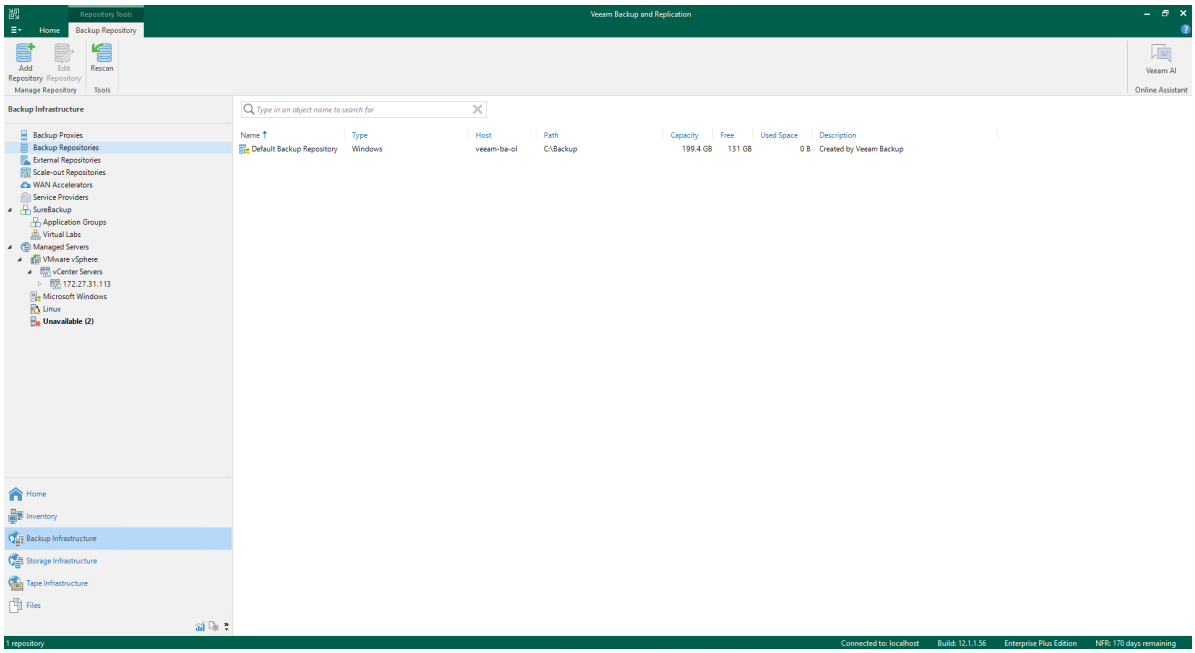


11. The SMB share repository is ready to be connected to the backup software.

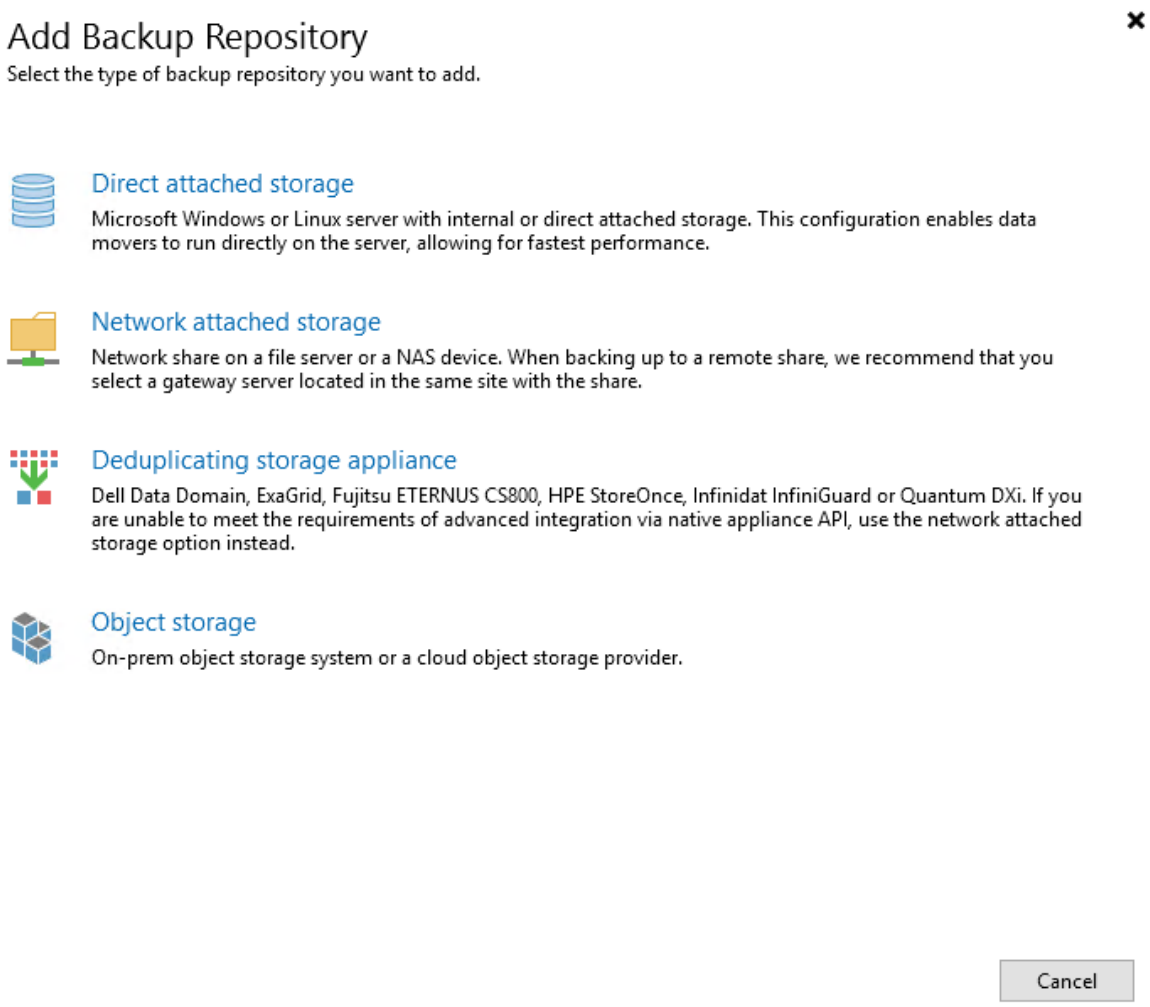


Adding Hardened Repository To Veeam Backup & Replication

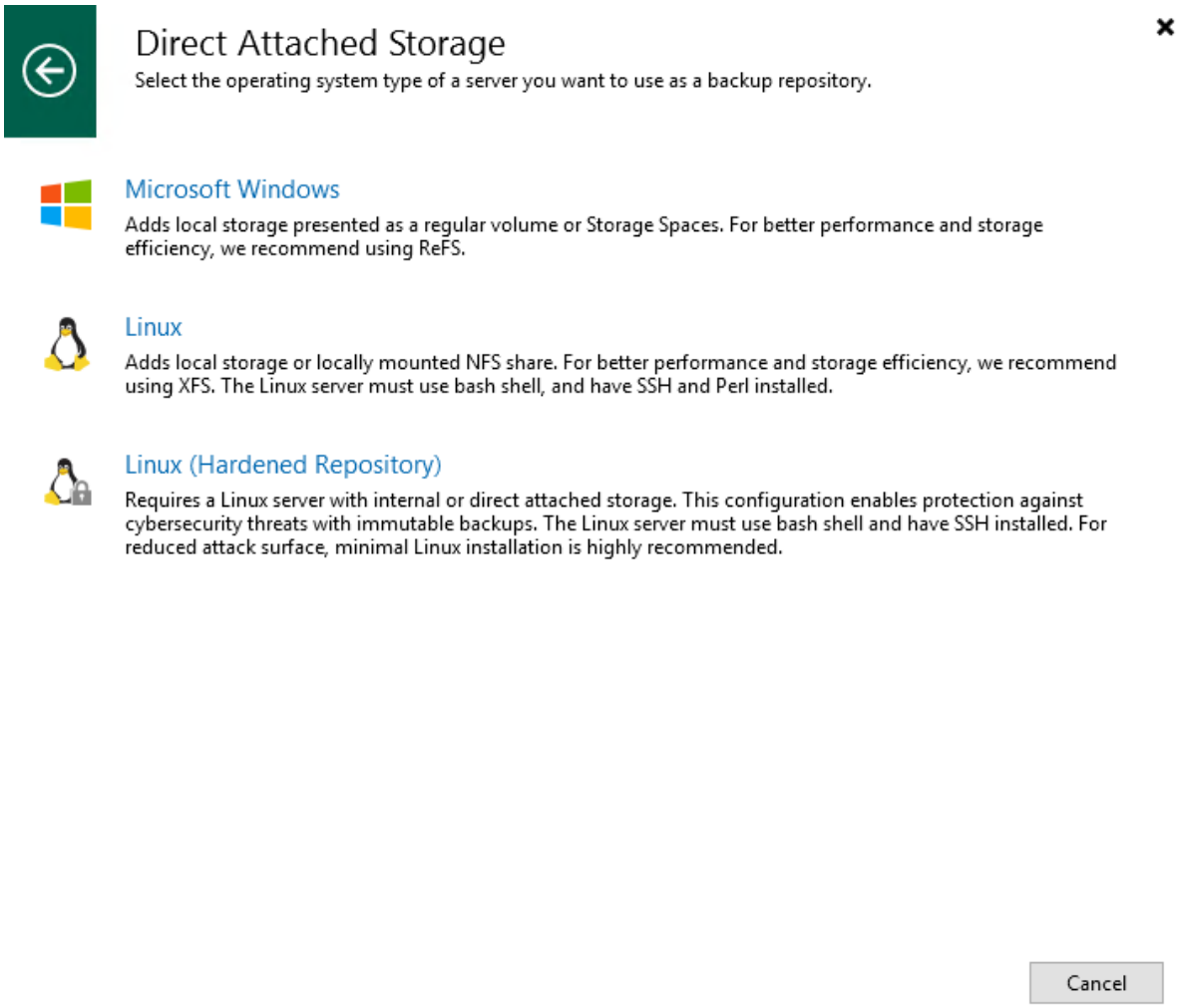
1. Open the Veeam Backup and Replication console, navigate to “Backup Infrastructure”, and select “Backup Repositories”.



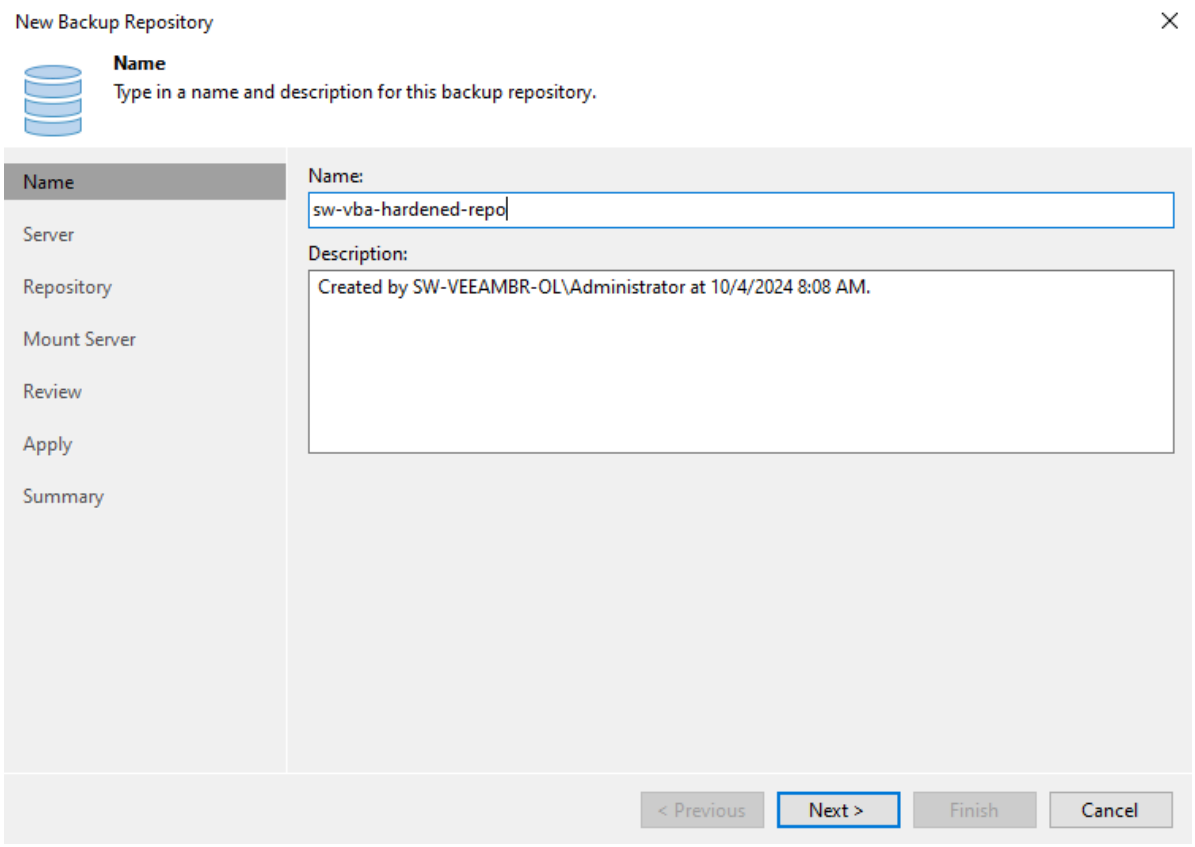
2. Click “Add Repository” and select “Direct attached storage”.



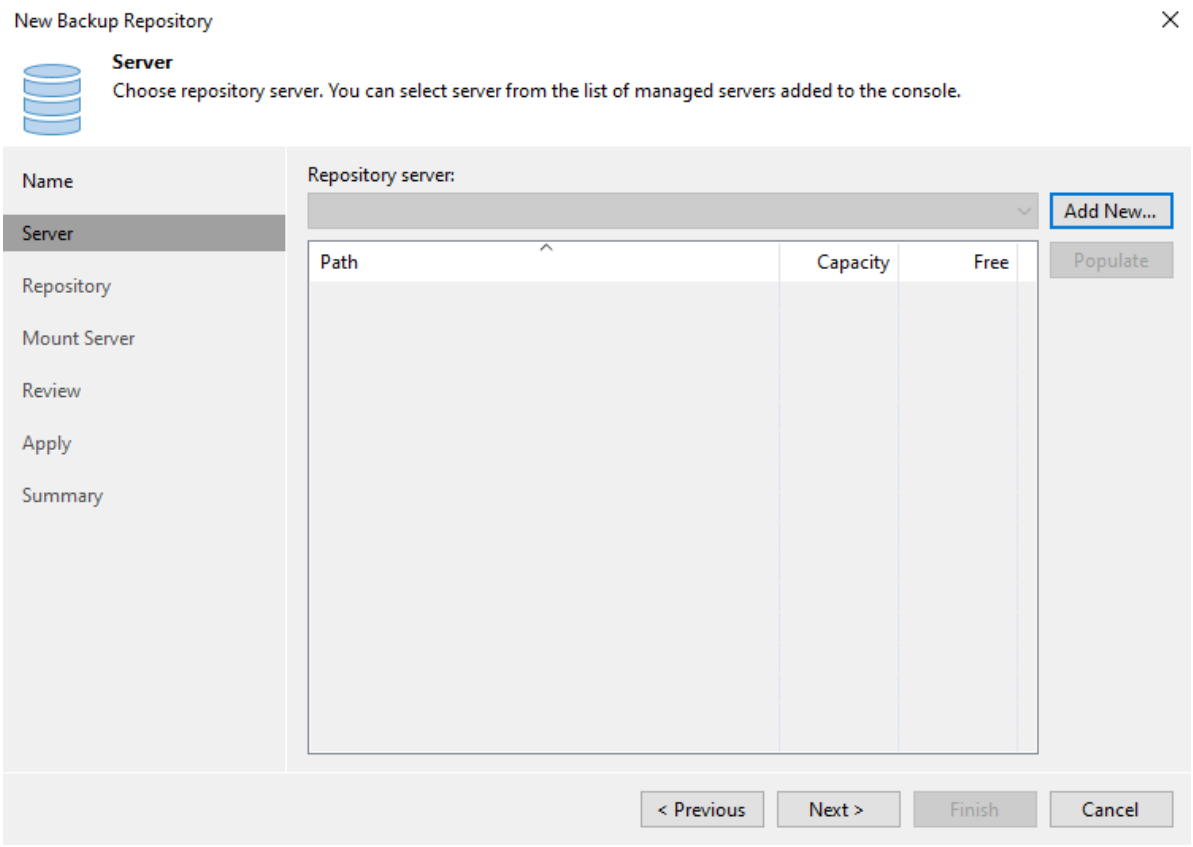
3. Select “Linux (Hardened Repository)”.



4. In the “New Backup Repository” wizard, specify the name and description for the new repository and click “Next”.

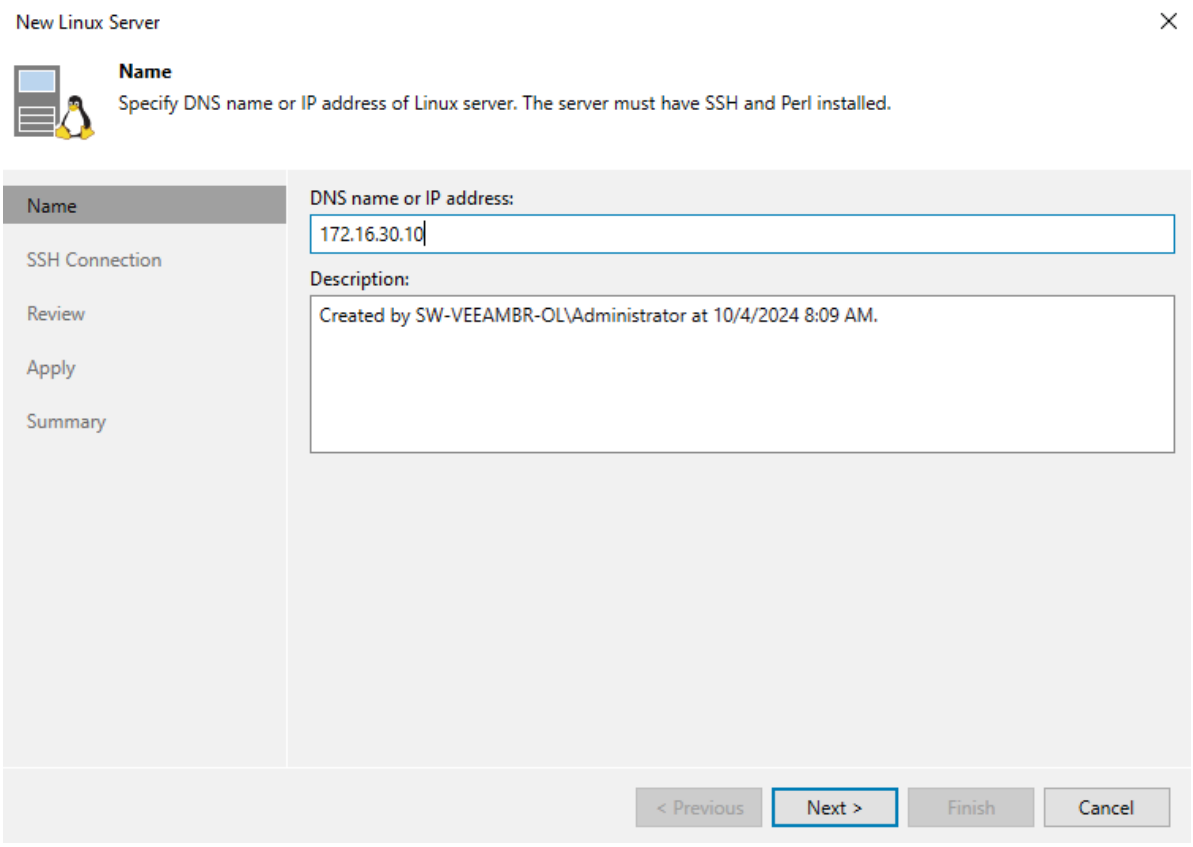


5. Click “Add New...”.

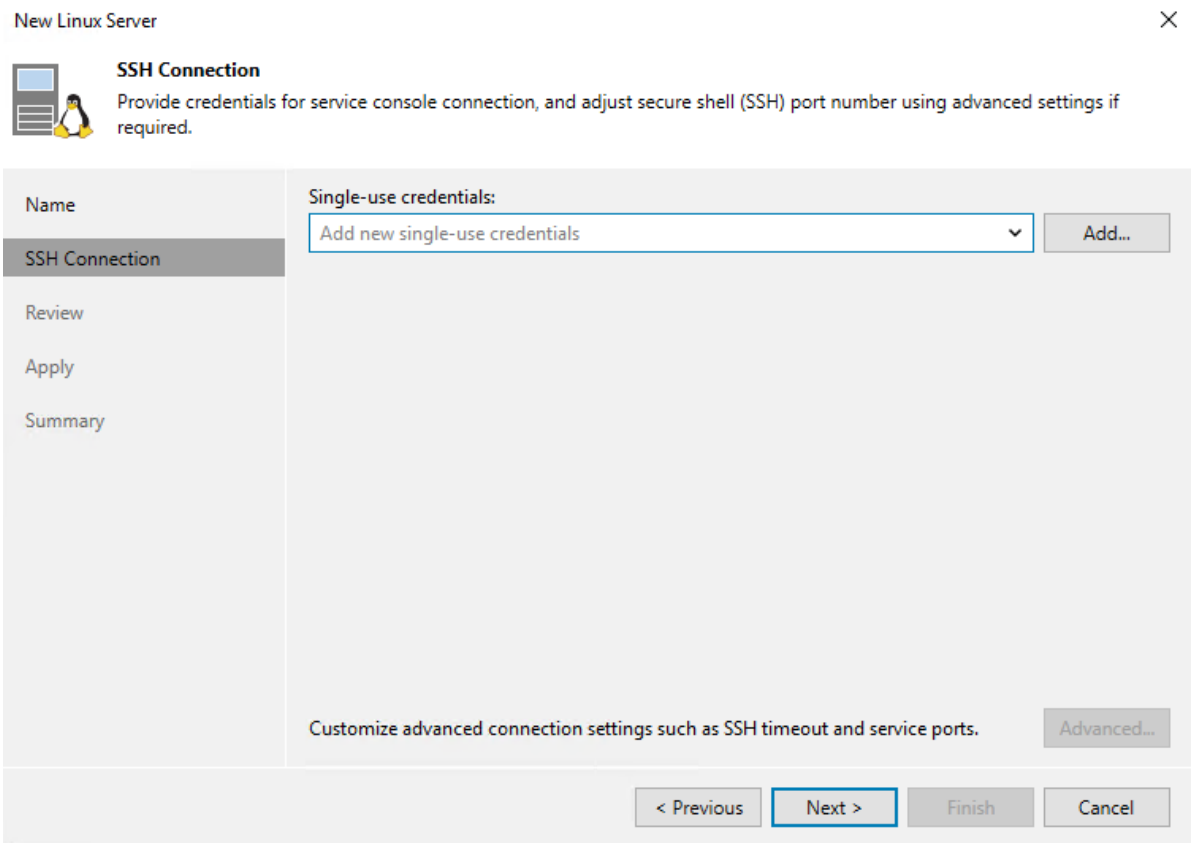


6. In the “New Linux Server” wizard, specify the IP address of the backup traffic network interface (Data) on StarWind VBA CVM and click “Next”.

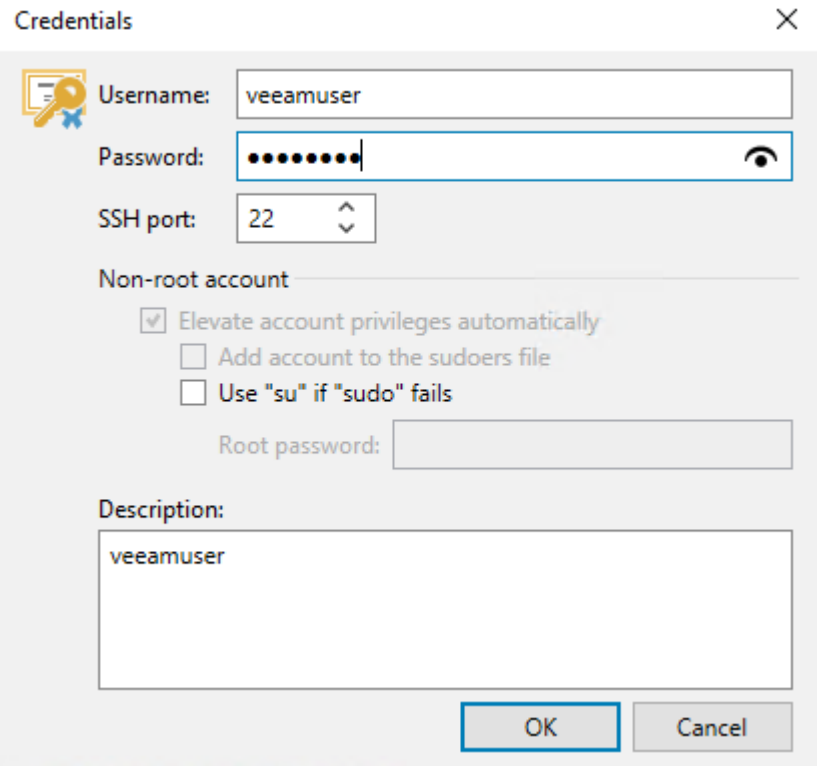
NOTE: You can add a backup repository using the management IP address of StarWind VBA CVM or DNS name. It is recommended to add the backup traffic network (Data) to Veeam preferred Networks after the addition of backup repository in case a separate dedicated backup (Data) network is present: https://helpcenter.veeam.com/docs/backup/vsphere/select_backup_network.html?ver=120



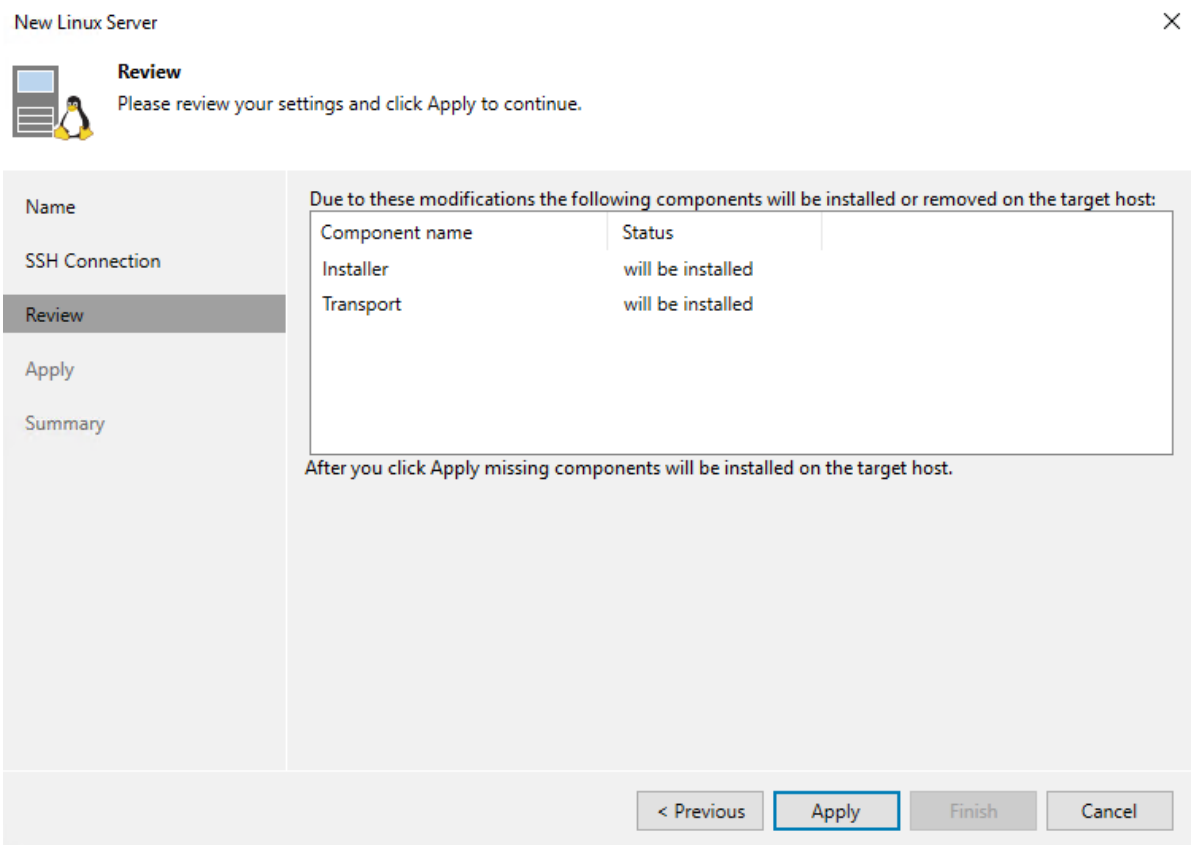
7. Click “Add...” to add the VHR user account created previously that will be used for single-use credentials.



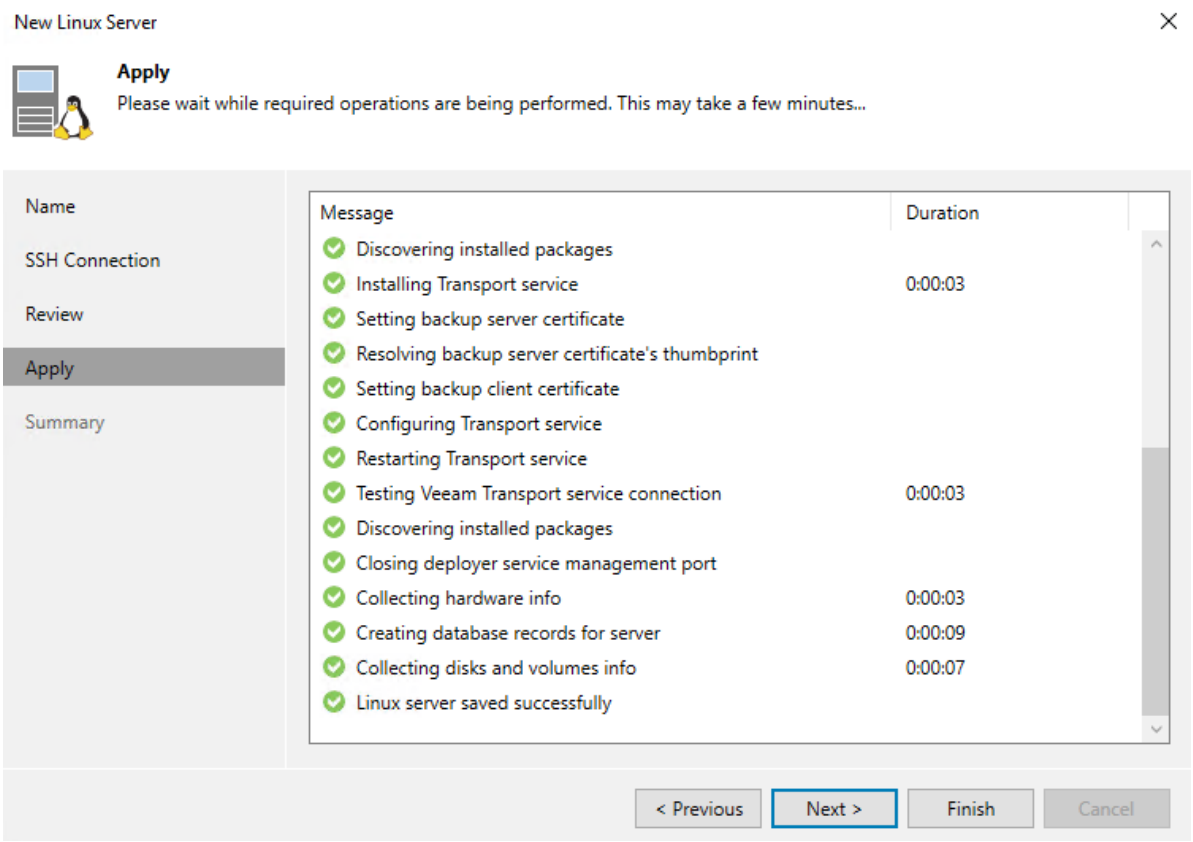
8. Specify the VHR user account credentials and click “OK”. Specify Advanced settings if required and then click “Next”.



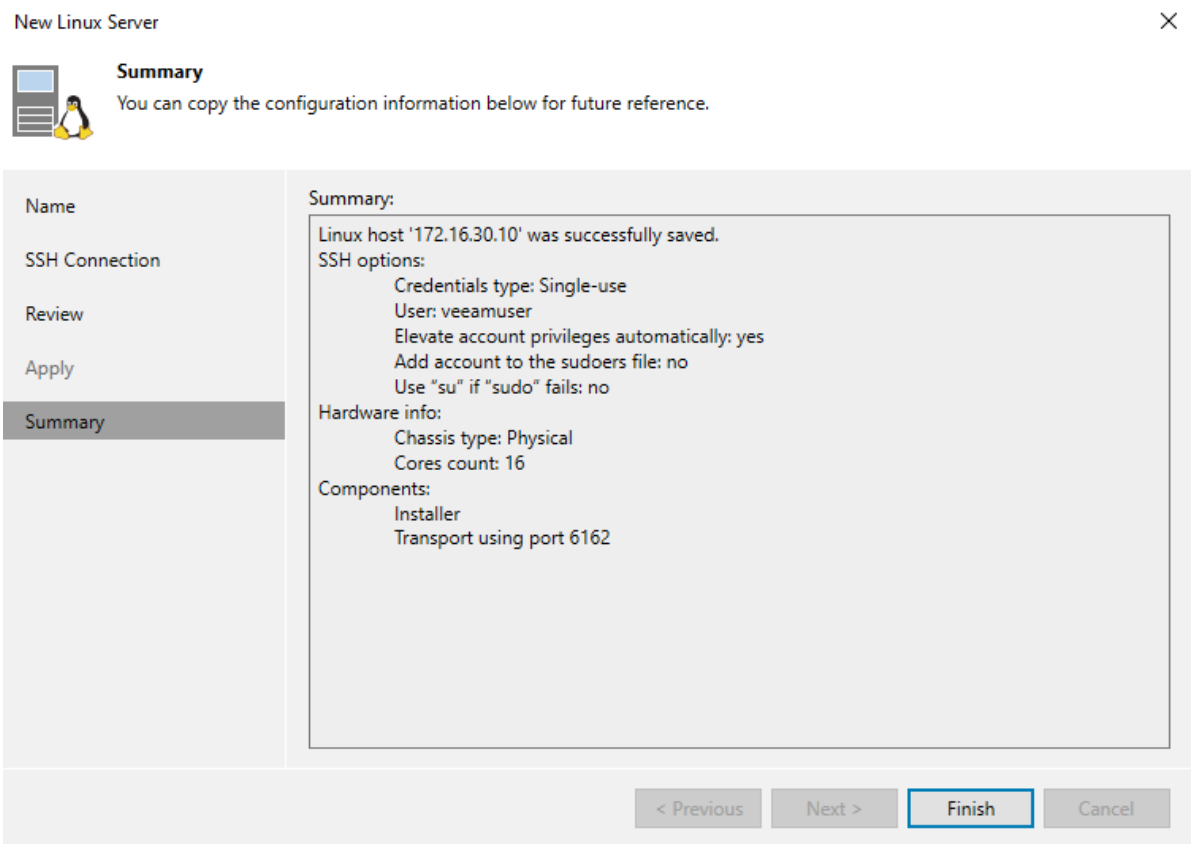
9. Review the components that will be installed and click “Apply”.



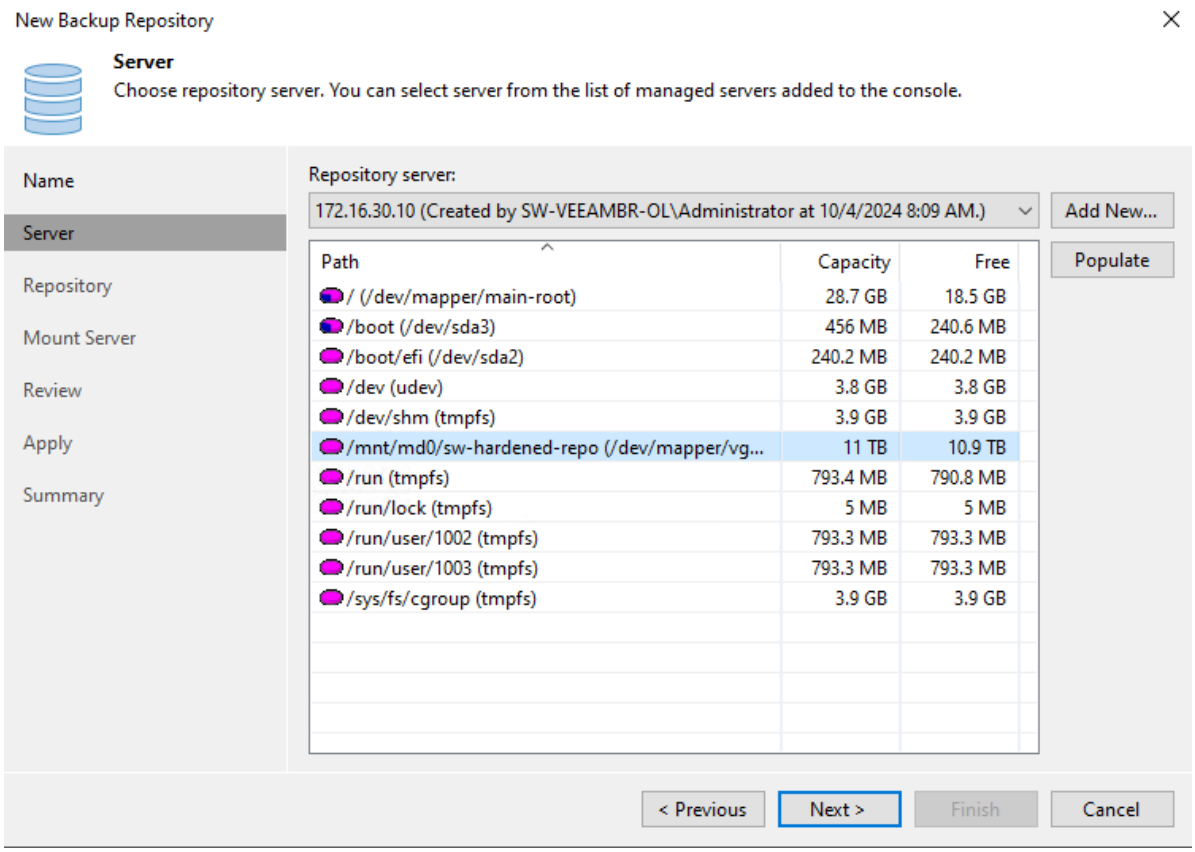
10. Wait until the installation is complete and click “Next”.



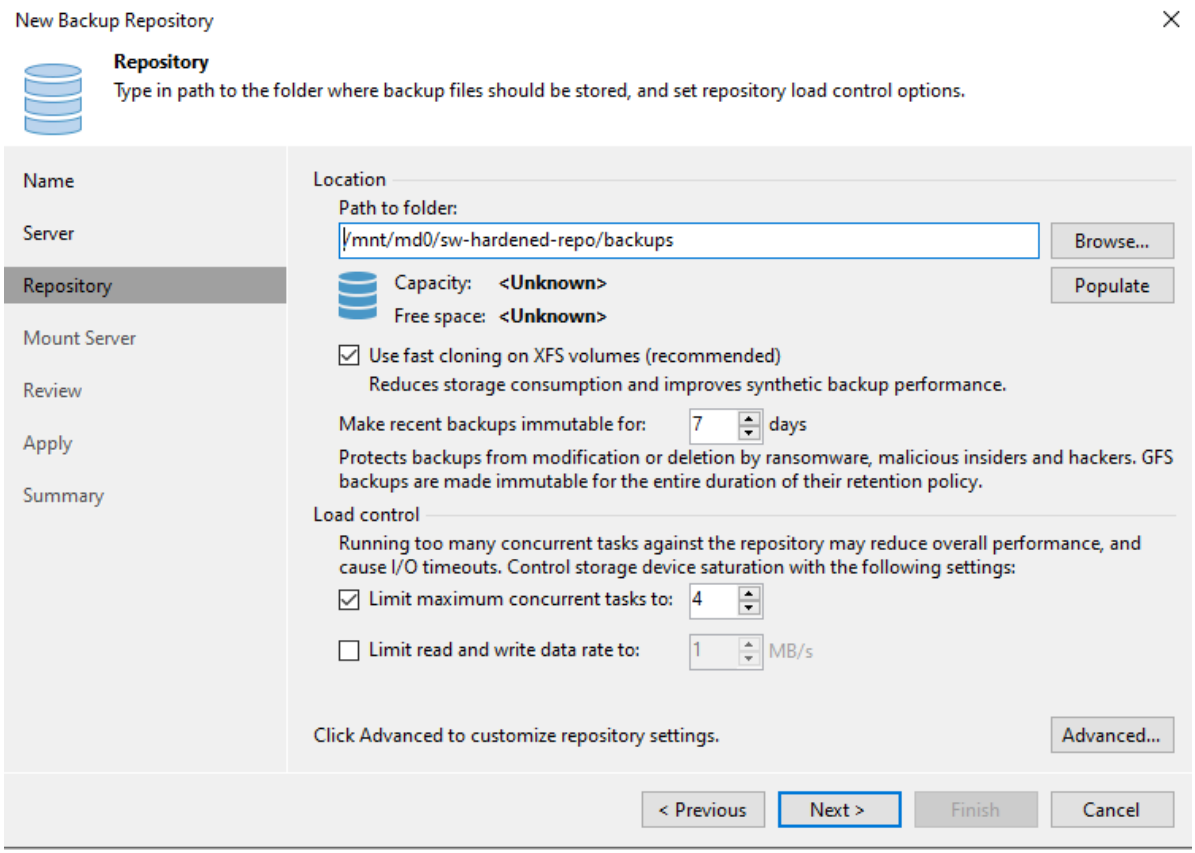
11. Review the summary and click “Finish”.



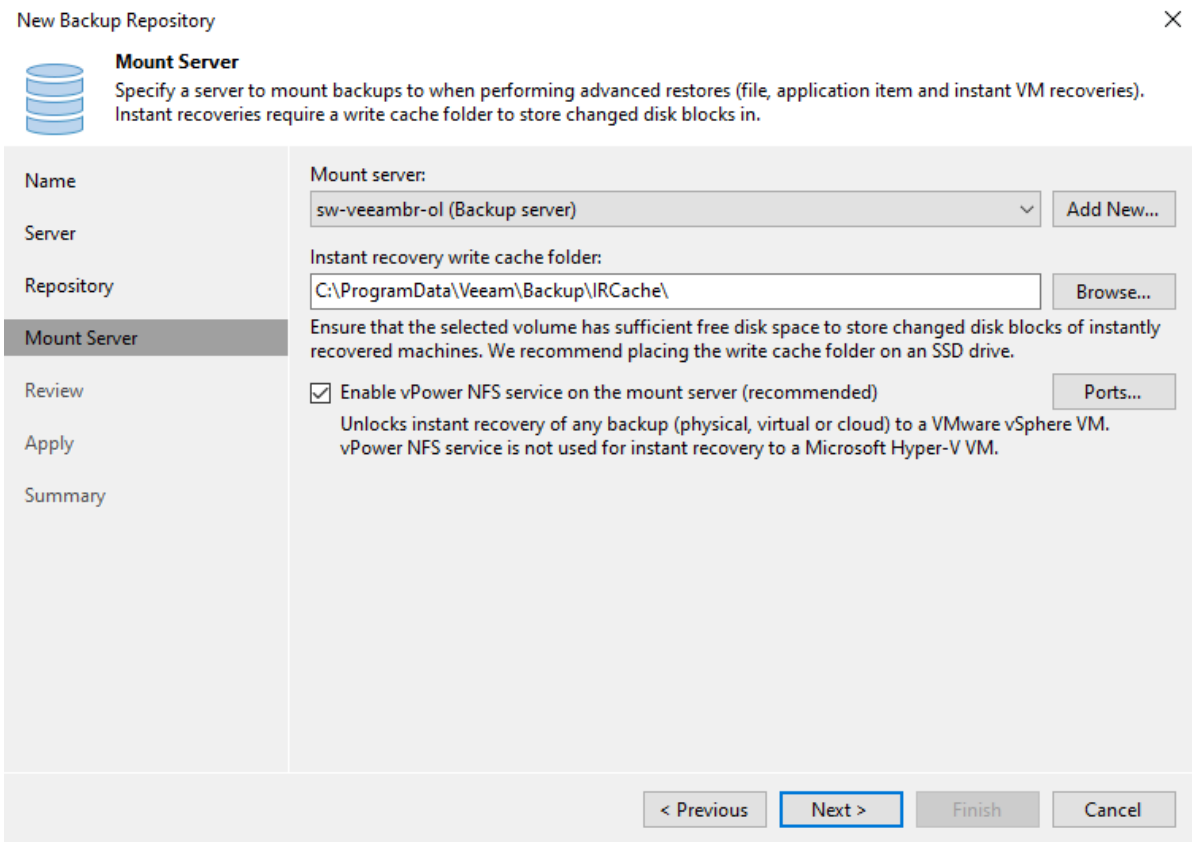
12. In the “New Backup Repository” wizard, select the newly added StarWind VBA server and click “Populate”. Select the Backup repository volume created in StarWind VBA and click “Next”



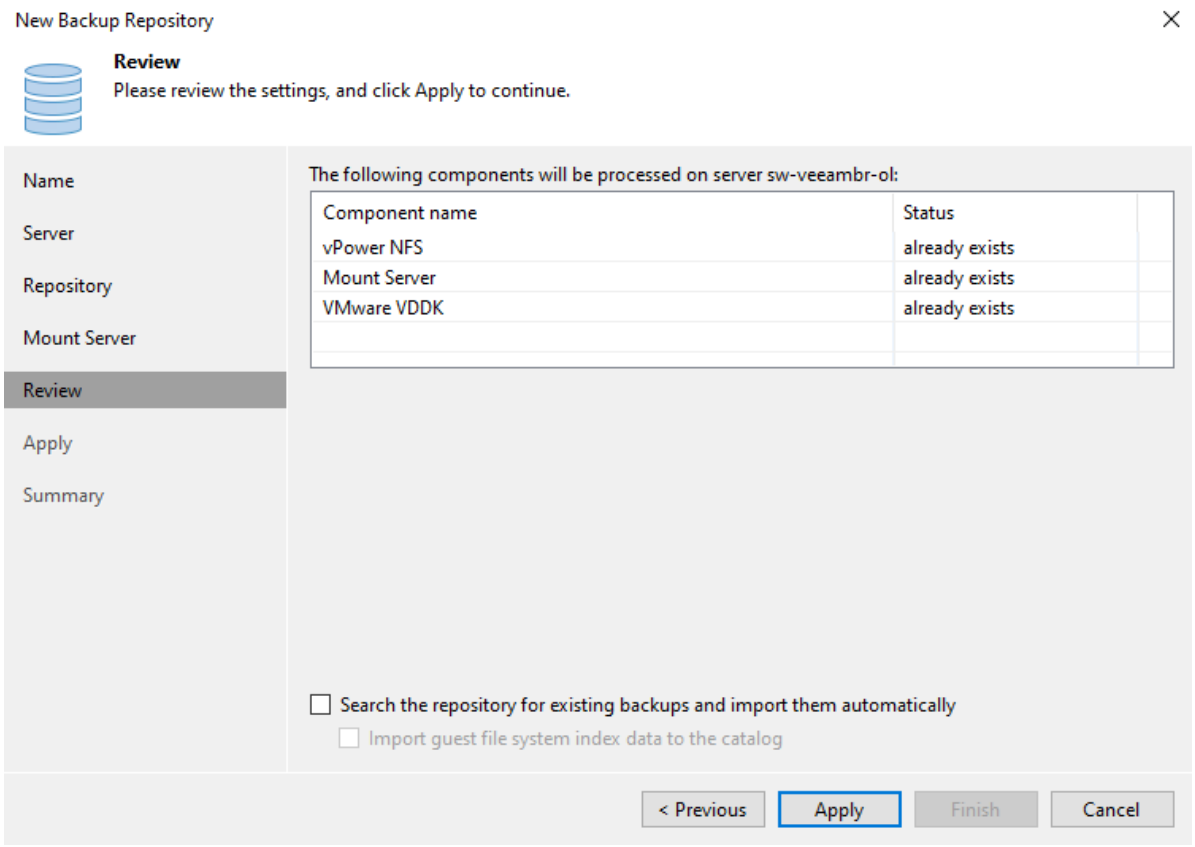
13. Make sure that the “Use fast cloning on XFS volumes” setting is enabled and specify the required retention period for immutability as well as other settings if required. Click “Next”.



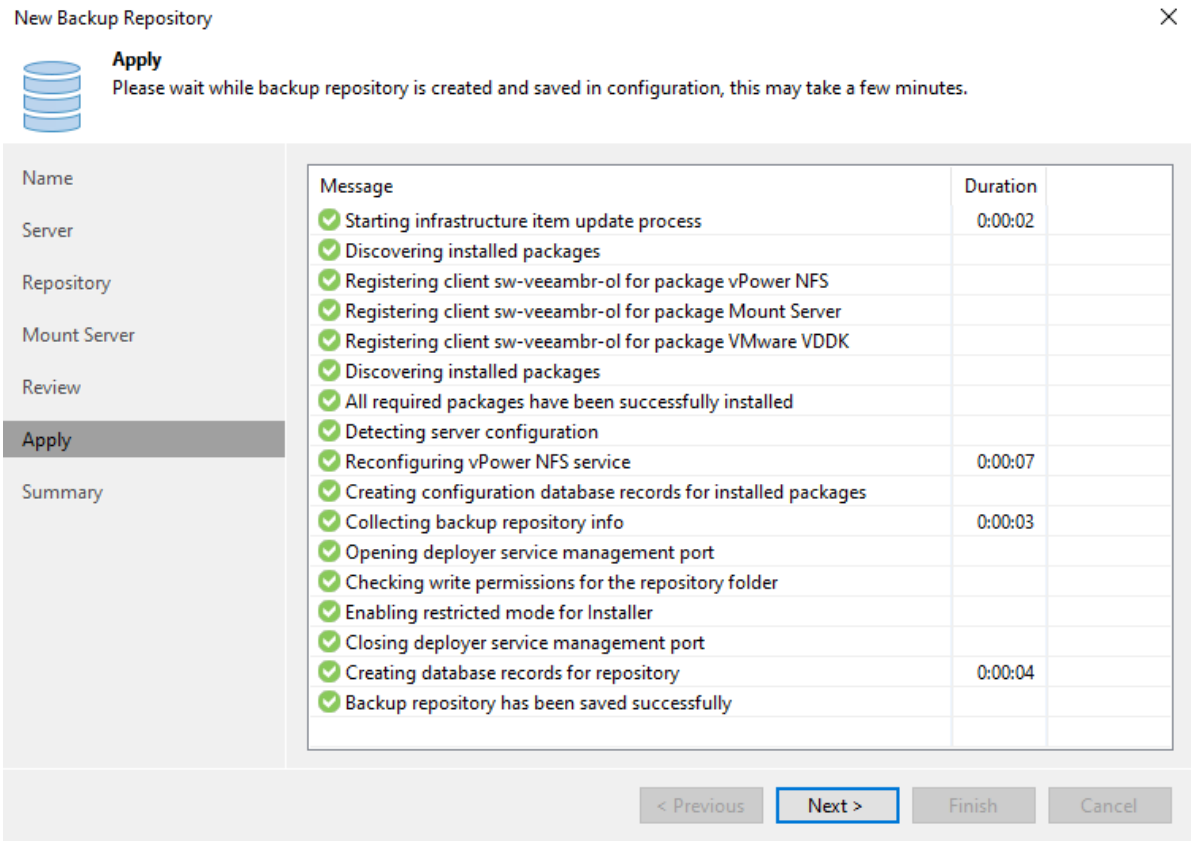
14. Select the Mount server and instant-recovery write cache folder. Specify additional Ports settings if required.



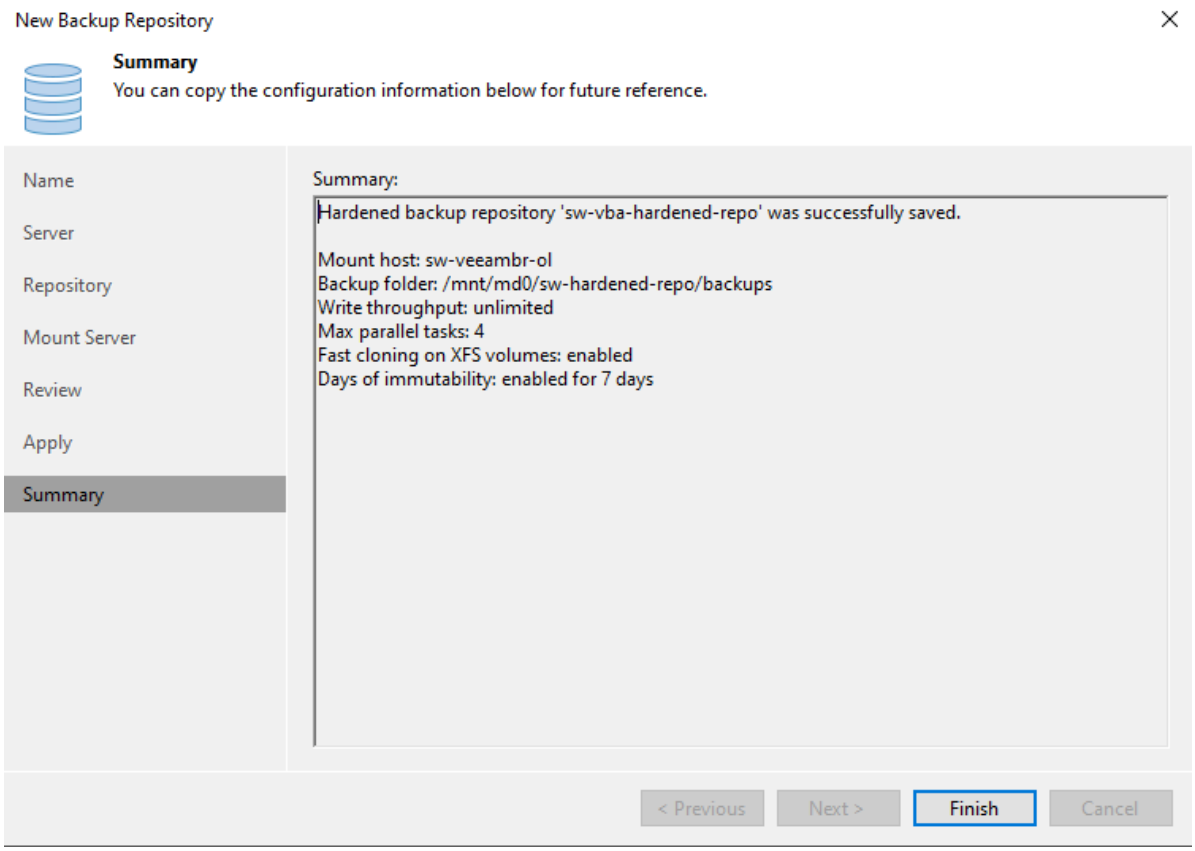
15. Review the settings and components that will be installed and click “Apply”.



16. Wait until the backup repository is created and click “Next”.

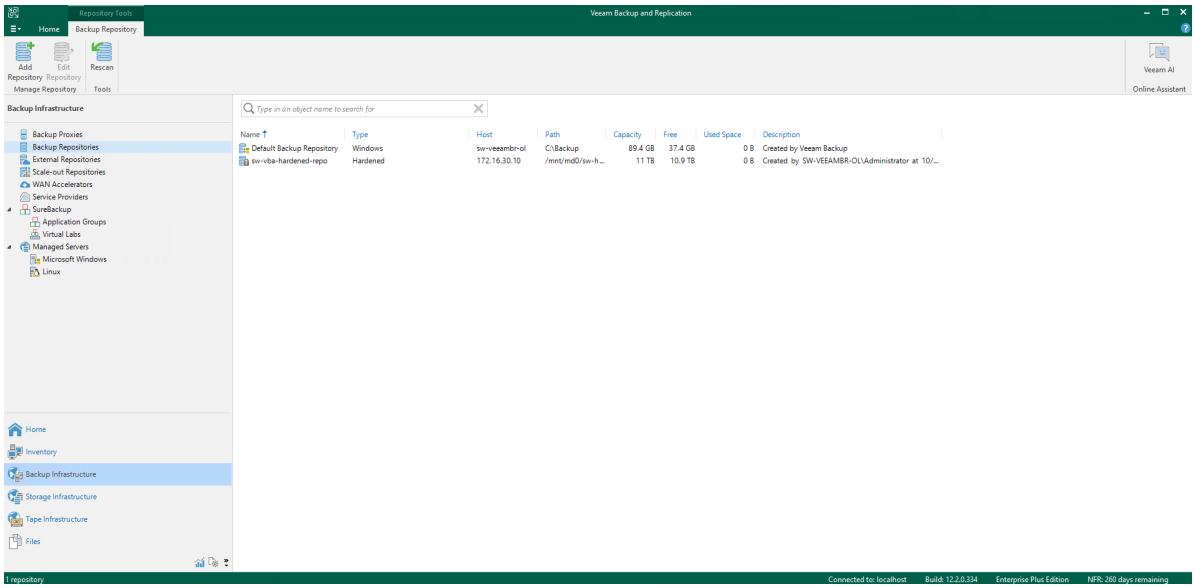


17. Review the summary and click “Finish”.

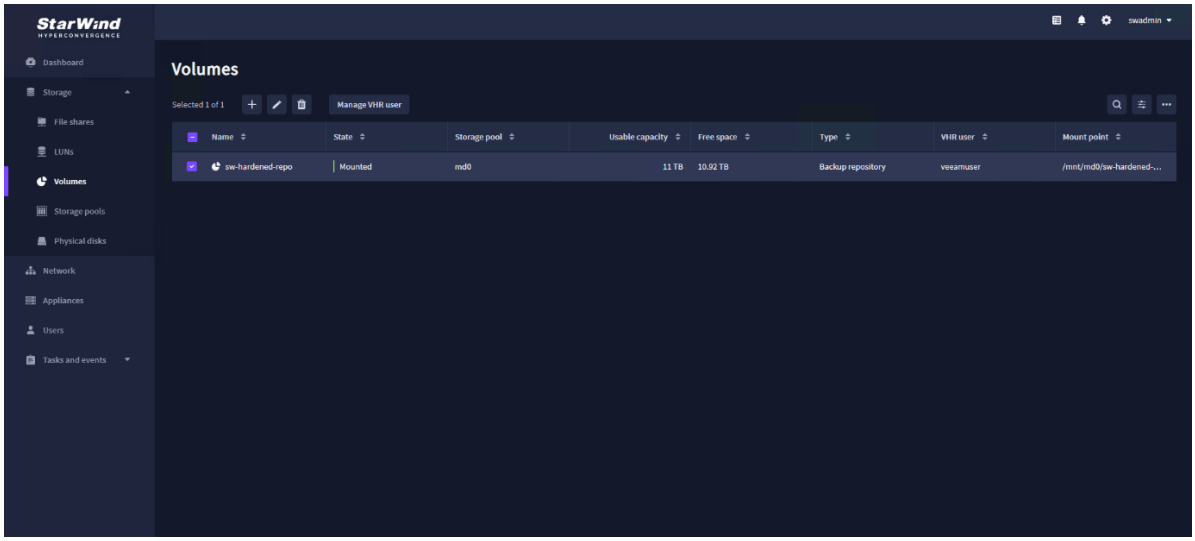


18. Veeam prompts whether you want to change the configuration backup location to the newly added repository. Select the preferred option according to your requirements.

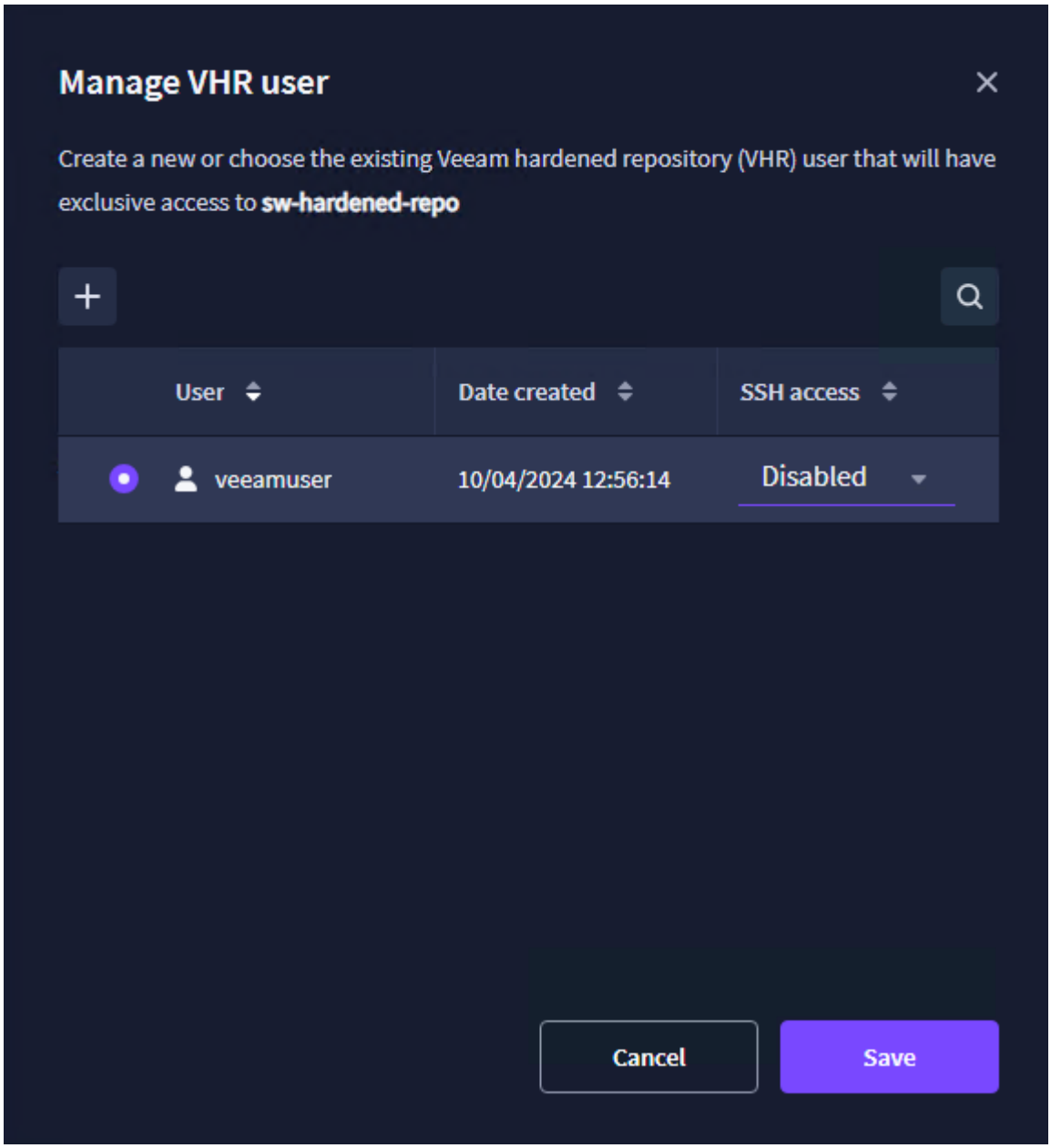
19. Hardened Repository has been successfully added to Veeam Backup & Replication.



20. Navigate back to the “Volumes” tab in StarWind VBA CVM WEB UI, select the Backup repository volume and click “Manage VHR user”.



21. Change SSH access to “Disabled” to secure the StarWind Appliance from potential local threats such as credentials theft. Click “Save”.



Conclusion

Following this guide, Veeam Hardened Linux Repository has been configured in StarWind VBA installed on a Proxmox host and added to Veeam Backup & Replication. This guide also showed the steps on how to configure an iSCSI backup repository as well as NFS and SMB repositories for use with Veeam Backup & replication or other backup software.

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