

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

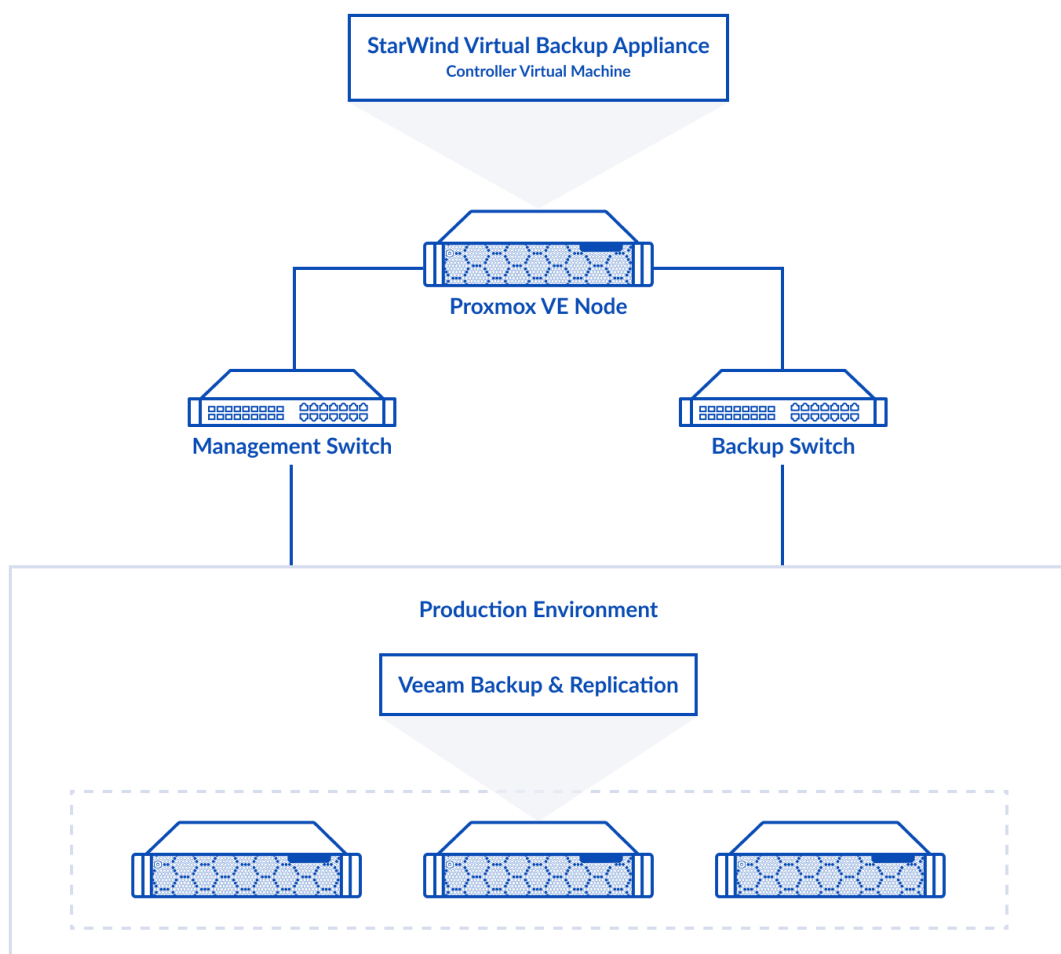
Check out the system requirements for StarWind solutions to ensure the promised performance and stability

Recommended RAID settings for HDD and SSD disks:

<https://knowledgebase.starwindsoftware.com/guidance/recommended-raid-settings-for-hdd-and-ssd-disks/>

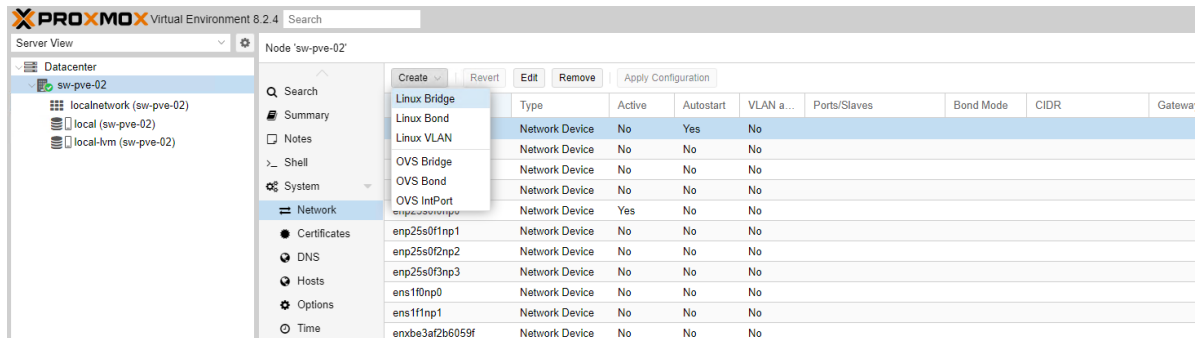
Solution diagram

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

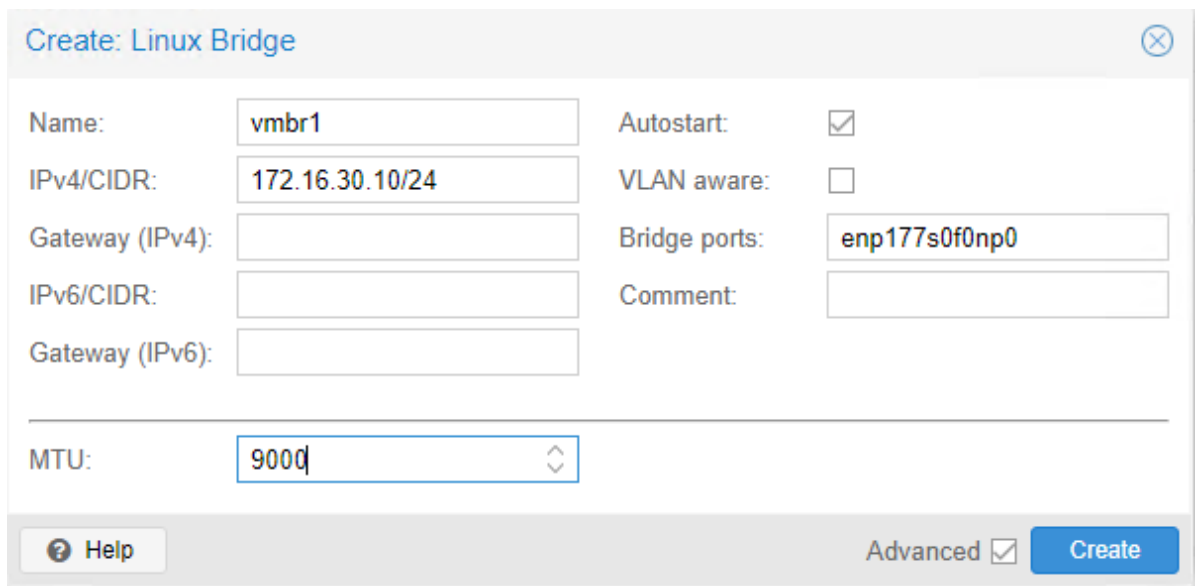


Preconfiguring Proxmox Host

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 vubr0
iface vubr0 inet static
    address 172.27.31.112/24
    gateway 172.27.31.10
    bridge-ports enp25s0f0np0
    bridge-stp off
    bridge-fd 0

auto vubr1
iface vubr1 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 passthrough 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"

```

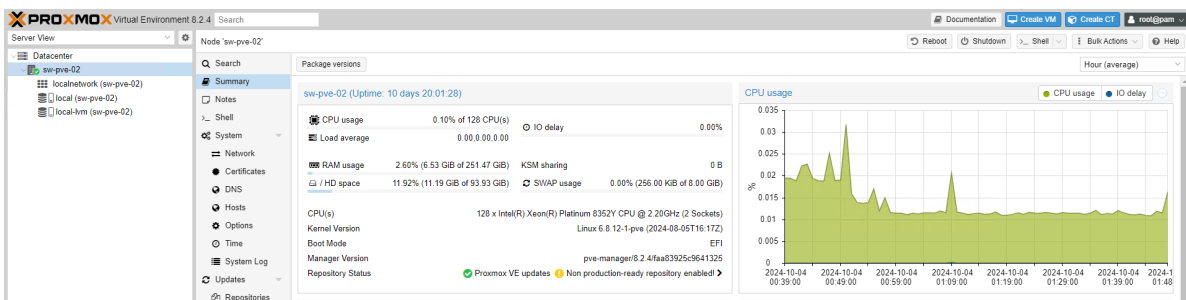
5. Reboot the host.

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.

/root/		
Name	Size	Changed
..		9/27/2024 2:32:23 AM
CVM.qcow2	9,704,576 KB	10/4/2024 1:44:11 AM

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.

Create: Virtual Machine ⊗

General OS System Disks CPU Memory Network Confirm

Node: Resource Pool:

VM ID:

Name:

Start at boot: Start/Shutdown order:

Startup delay:

Shutdown timeout:

Tags

No Tags

Advanced

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

Create: Virtual Machine

General **OS** System Disks CPU Memory Network Confirm

Use CD/DVD disc image file (iso)

Storage: local

ISO image:

Guest OS:

Type: Linux

Version: 6.x - 2.6 Kernel

Use physical CD/DVD Drive

Do not use any media

Advanced Back Next

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

Create: Virtual Machine ⊗

General OS **System** Disks CPU Memory Network Confirm

Graphic card: ▼ SCSI Controller: ▼

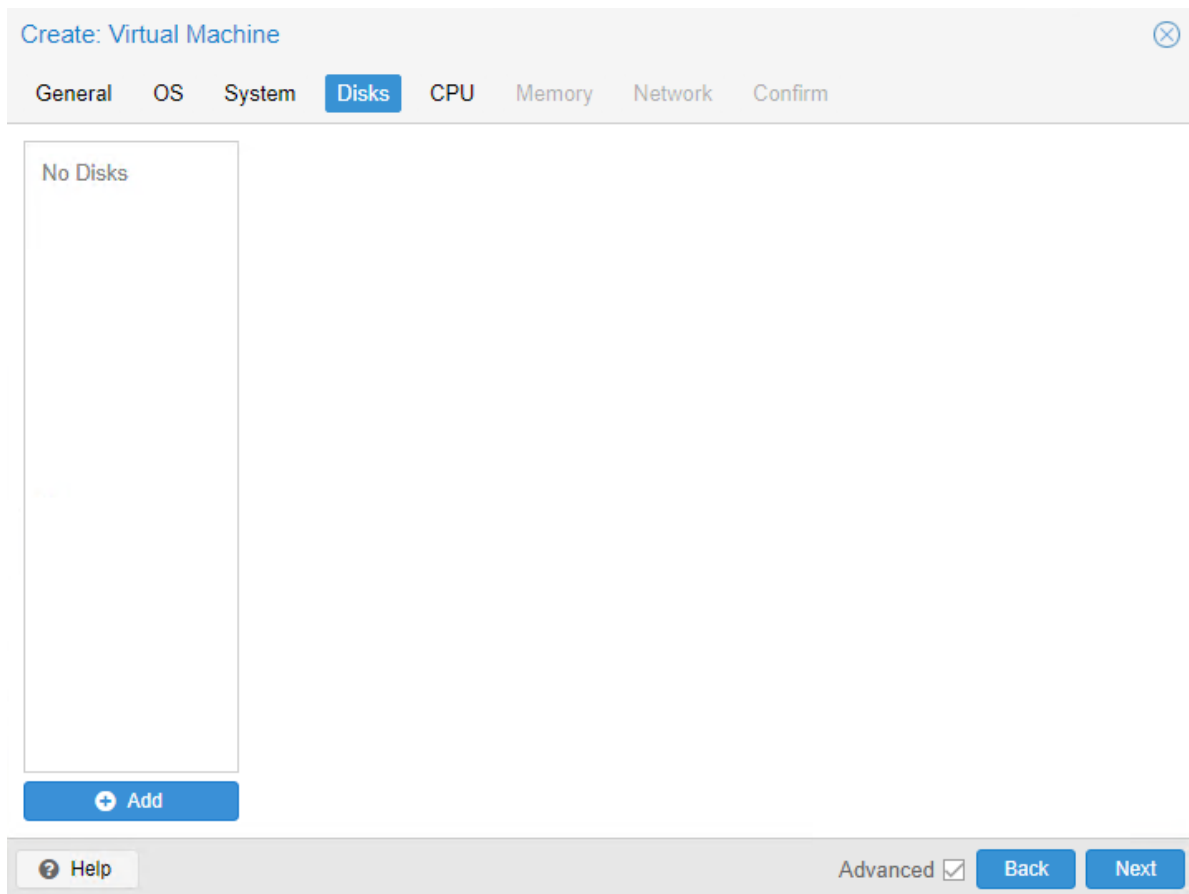
Machine: ▼ Qemu Agent:

Firmware

BIOS: ▼ Add TPM:

🔗 Help Advanced Back 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.

Create: Virtual Machine ✕

General OS System Disks **CPU** Memory Network Confirm

Sockets: Type:

Cores: Total cores: 8

VCPUs: CPU units:

CPU limit: Enable NUMA:

CPU Affinity:

Extra CPU Flags:

Default	- <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> +	md-clear	Required to let the guest OS know if MDS is mitigated correctly
Default	- <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> +	pcid	Meltdown fix cost reduction on Westmere, Sandy-, and IvyBridge Intel CPUs
Default	- <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> +	spec-ctrl	Allows improved Spectre mitigation with Intel CPUs
Default	- <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> +	ssbd	Protection for "Speculative Store Bypass" for Intel models
Default	- <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> +	ibpb	Allows improved Spectre mitigation with AMD CPUs
Default	- <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> +	virt-ssbd	Basis for "Speculative Store Bypass" protection for AMD models

Advanced

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

The screenshot shows a web-based configuration window titled "Create: Virtual Machine" with a close button in the top right corner. The window has a tabbed interface with the following tabs: "General", "OS", "System", "Disks", "CPU", "Memory" (which is currently selected and highlighted in blue), "Network", and "Confirm".

Under the "Memory" tab, there are four configuration fields:

- Memory (MiB):** A dropdown menu showing the value "8192".
- Minimum memory (MiB):** A dropdown menu showing the value "8192".
- Shares:** A dropdown menu showing the value "Default (1000)".
- Ballooning Device:** A checkbox that is currently unchecked.

At the bottom of the window, there is a "Help" button with a question mark icon on the left, and on the right, the text "Advanced" followed by a checked checkbox, and two blue buttons labeled "Back" and "Next".

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

Create: Virtual Machine ⊗

General OS System Disks CPU Memory **Network** Confirm

No network device

Bridge: Model:

VLAN Tag: MAC address:

Firewall:

Disconnect: Rate limit (MB/s):

MTU: Multiqueue:

Advanced

12. Confirm settings. Click Finish.

Create: Virtual Machine ⊗

General OS System Disks CPU Memory Network **Confirm**

Key ↑	Value
agent	1
balloon	0
cores	16
cpu	host
ide2	none,media=cdrom
machine	q35
memory	8192
name	VBA
net0	virtio,bridge=vibr0,firewall=1
nodename	sw-pve-02
numa	0
onboot	1
ostype	l26
scsihw	virtio-scsi-single

Start after created

Advanced Back 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.

Add: Unused Disk
⊗

Disk

Bandwidth

Bus/Device:	SCSI 0	Cache:	Default (No cache)												
SCSI Controller:	VirtIO SCSI single	Discard:	<input type="checkbox"/>												
Disk image:	local-lvm:vm-100-disk-0	IO thread:	<input checked="" type="checkbox"/>												
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">SSD emulation:</td> <td><input type="checkbox"/></td> <td style="width: 50%;">Backup:</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Read-only:</td> <td><input type="checkbox"/></td> <td>Skip replication:</td> <td><input type="checkbox"/></td> </tr> <tr> <td></td> <td></td> <td>Async IO:</td> <td>Default (io_uring)</td> </tr> </table>				SSD emulation:	<input type="checkbox"/>	Backup:	<input checked="" type="checkbox"/>	Read-only:	<input type="checkbox"/>	Skip replication:	<input type="checkbox"/>			Async IO:	Default (io_uring)
SSD emulation:	<input type="checkbox"/>	Backup:	<input checked="" type="checkbox"/>												
Read-only:	<input type="checkbox"/>	Skip replication:	<input type="checkbox"/>												
		Async IO:	Default (io_uring)												

Help
Advanced
Add

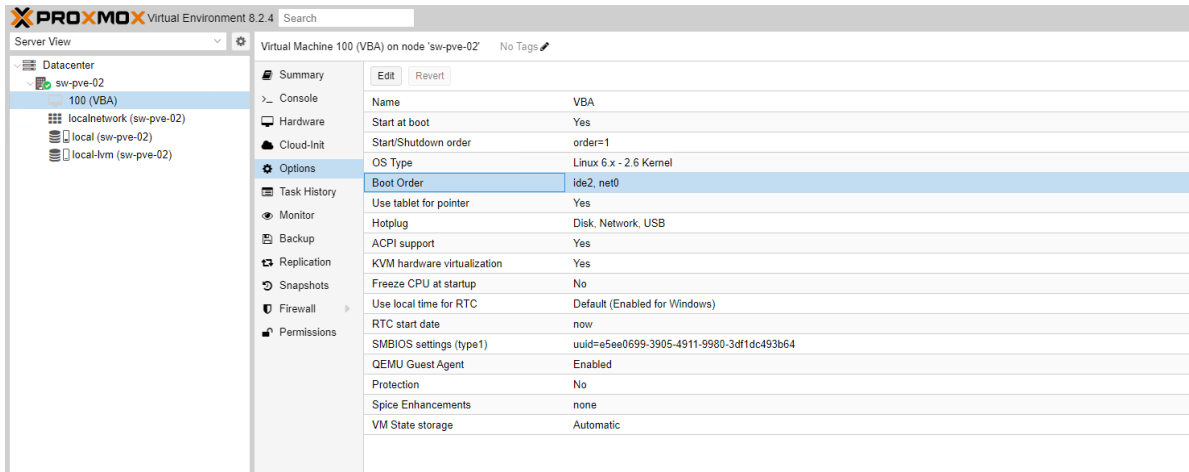
15. Attach Network interface for backup traffic.

Add: Network Device
⊗

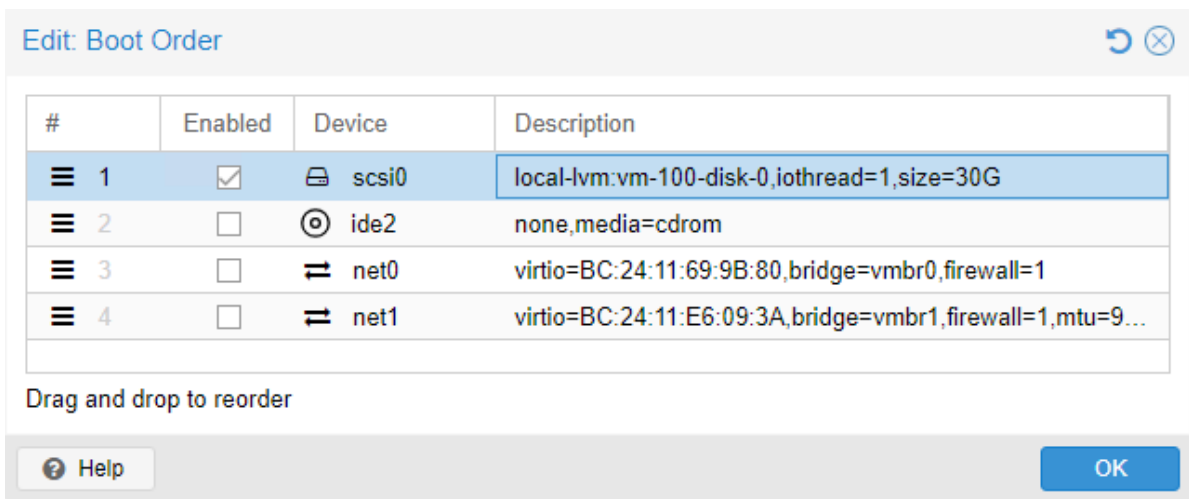
Bridge:	vibr1	Model:	VirtIO (paravirtualized)								
VLAN Tag:	no VLAN	MAC address:	auto								
Firewall:	<input checked="" type="checkbox"/>										
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Disconnect:</td> <td><input type="checkbox"/></td> <td style="width: 50%;">Rate limit (MB/s):</td> <td>unlimited</td> </tr> <tr> <td>MTU:</td> <td>9000</td> <td>Multiqueue:</td> <td></td> </tr> </table>				Disconnect:	<input type="checkbox"/>	Rate limit (MB/s):	unlimited	MTU:	9000	Multiqueue:	
Disconnect:	<input type="checkbox"/>	Rate limit (MB/s):	unlimited								
MTU:	9000	Multiqueue:									

Help
Advanced
Add

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.

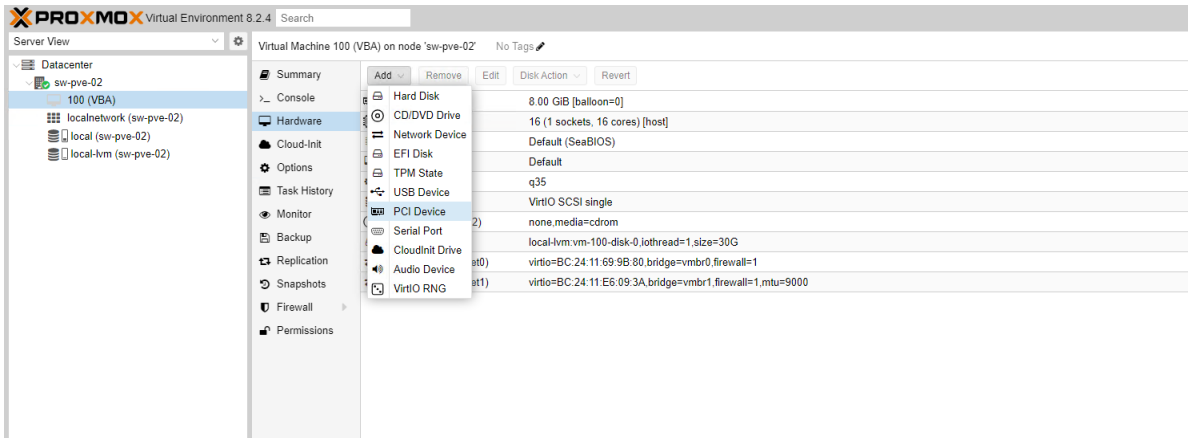
Repeat step 1 to attach additional Virtual Disks.

Start VM.

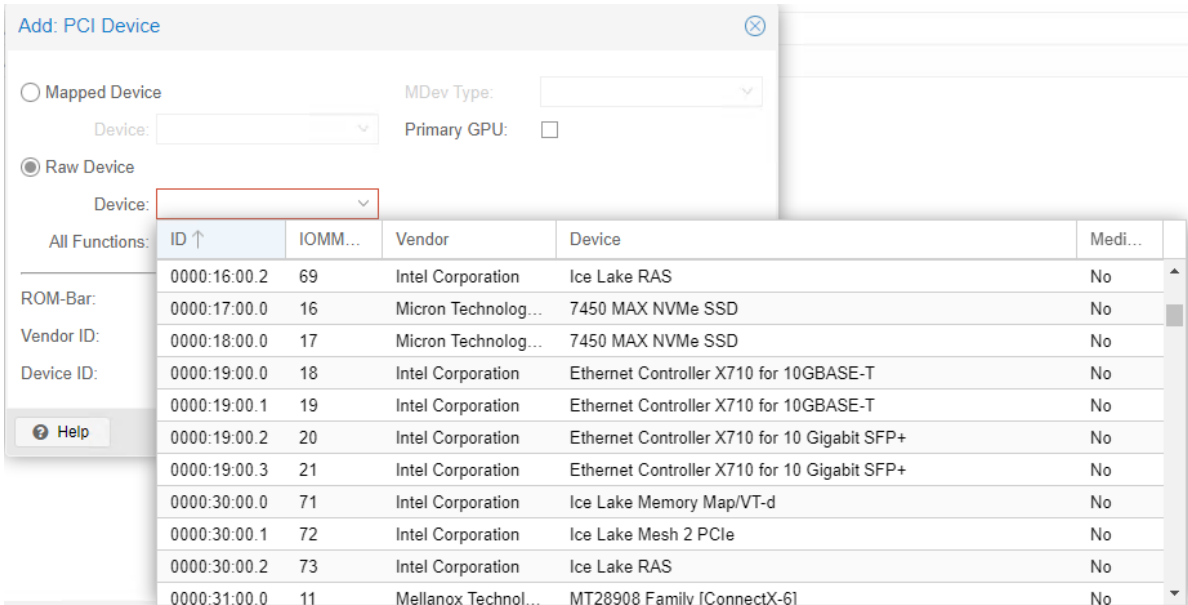
NOTE. When using Veeam Hardened backup repository, it is recommended to passthrough an entire RAID controller or HBA or NVMe drives directly to CVM to avoid hypervisor access to storage.

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.

Add: PCI Device
✕

Mapped Device

Device:

MDev Type:

Primary GPU:

Raw Device

Device:

All Functions:

ROM-Bar:

Vendor ID:

Device ID:

PCI-Express:

Sub-Vendor ID:

Sub-Device ID:

Help
Advanced
Add

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

Edit: Memory
↻ ✕

Memory (MiB):

Minimum memory (MiB):

Shares:

Ballooning Device:

Help
Advanced
OK

6. Start VM.

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

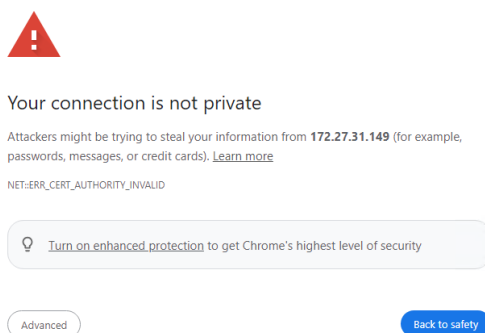
Initial Configuration Wizard

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.

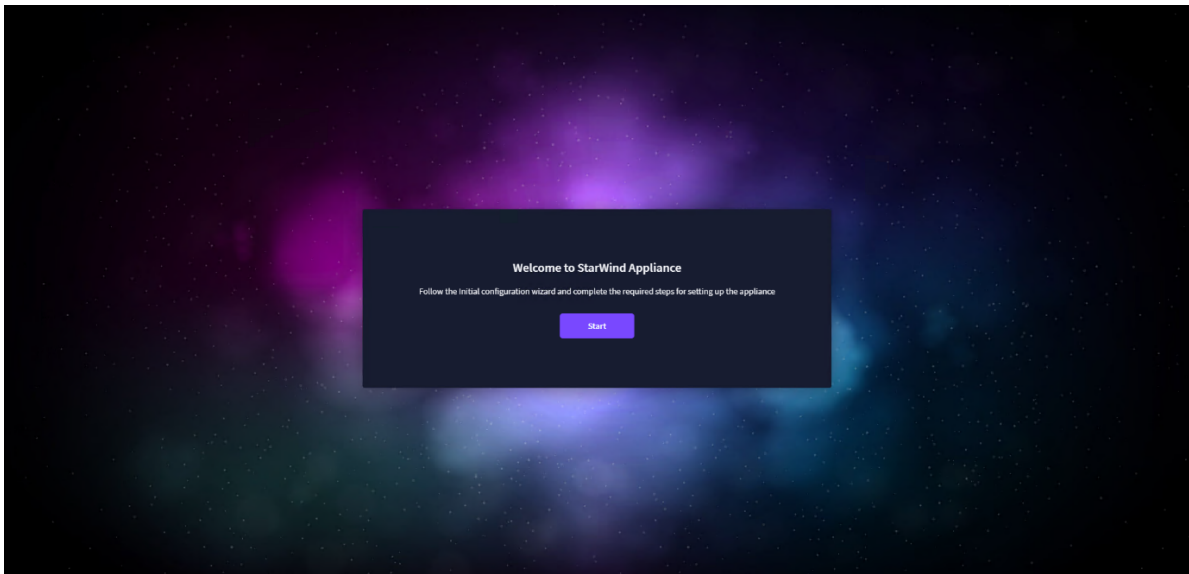
NOTE: in case VM has no IPv4 address obtained from a DHCP server, use the Text-based User Interface (TUI) to set up a Management network.

Default credentials for TUI: user/rds123RDS

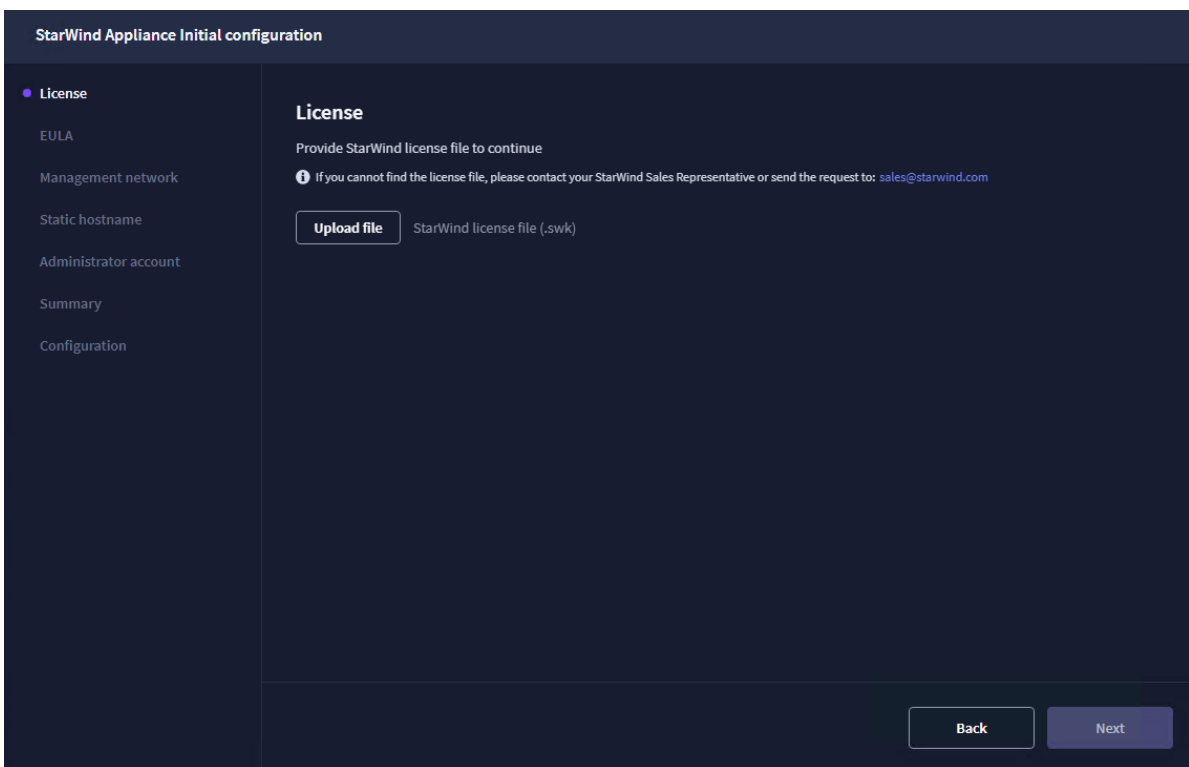
3. Using the web browser, open a new tab and enter the VM IPv4 address to open StarWind VBA Web Interface. Click “Advanced” and then “Continue to...”



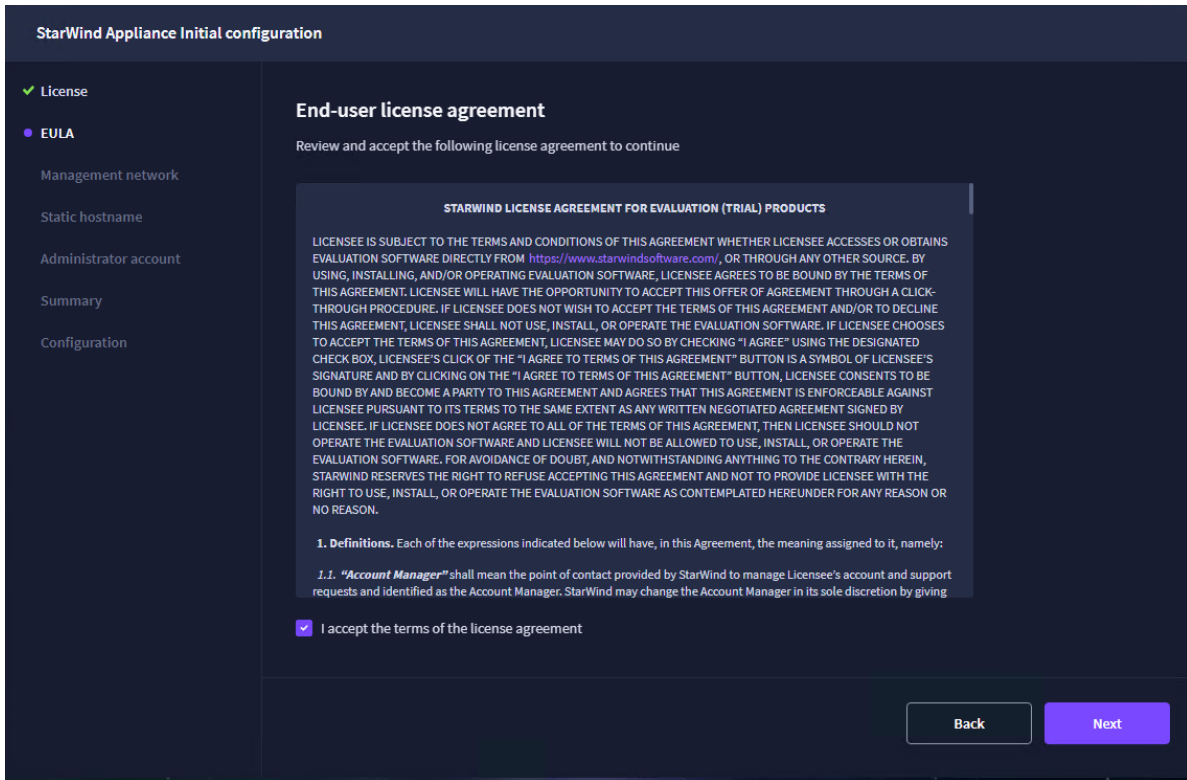
4. StarWind VBA web UI welcomes you, and the “Initial Configuration” wizard will guide you through the deployment process.



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.

StarWind Appliance Initial configuration

- ✓ License
- ✓ EULA
- Management network
- Static hostname
- Administrator account
- Summary
- Configuration

Management network

Specify the unique IP address (static is recommended) and configure other network settings.

i The Management network is used to communicate with services such as DNS and NTP and to access the appliance web UI from external clients.

IP mode: **Static**

NIC	Adapter model	Bandwidth	MAC address	IP address	Netmask i	Gateway
enp7s18	VirtIO Ethernet Co...	10 Gbit	BC:24:11:69:9...	172.27.31.64	255.255.255.0	172.27.31.10

Name servers (optional):

DNS 1: 172.27.31.1 DNS 2: 8.8.8.8

Time settings (optional):

NTP server: Time zone: UTC

Separate servers with commas, a maximum of 3 servers

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

StarWind Appliance Initial configuration

- ✓ License
- ✓ EULA
- ✓ Management network
- Static hostname
- Administrator account
- Summary
- Configuration

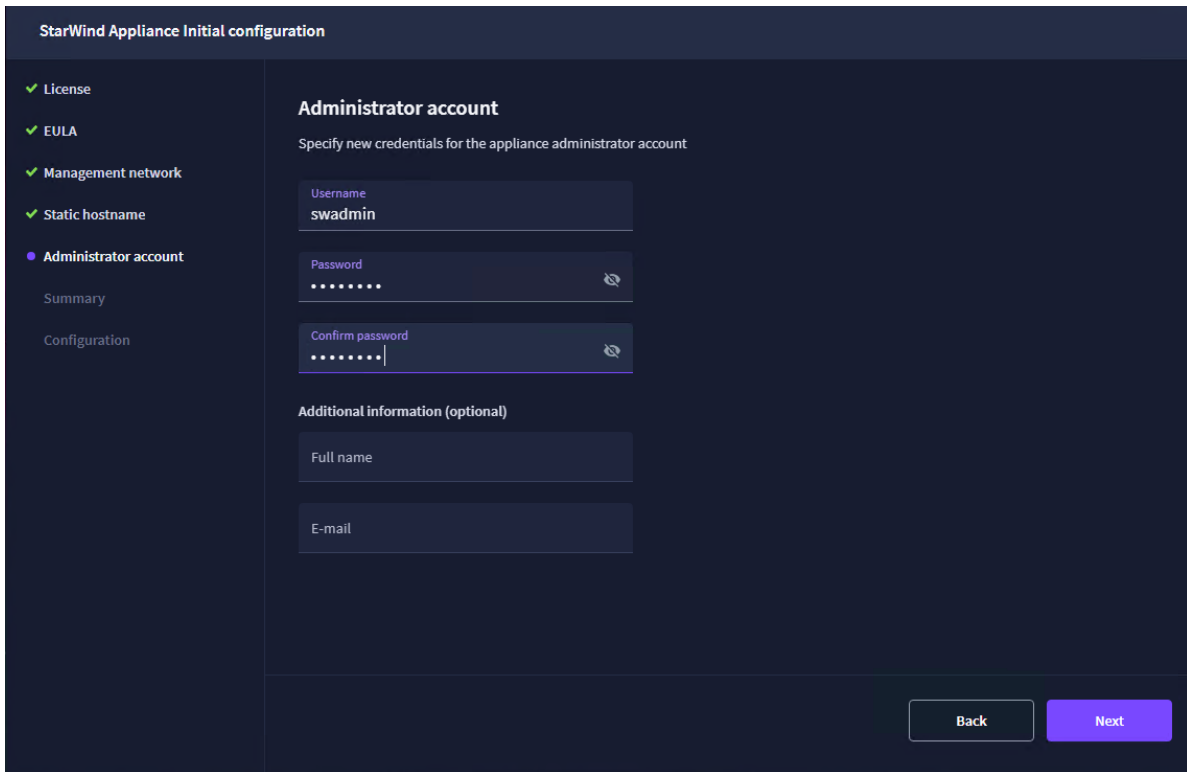
Static hostname

Set the current appliance hostname

i Use Latin letters, numbers, and dash

Hostname:

9. Create an administrator account. Click Next.

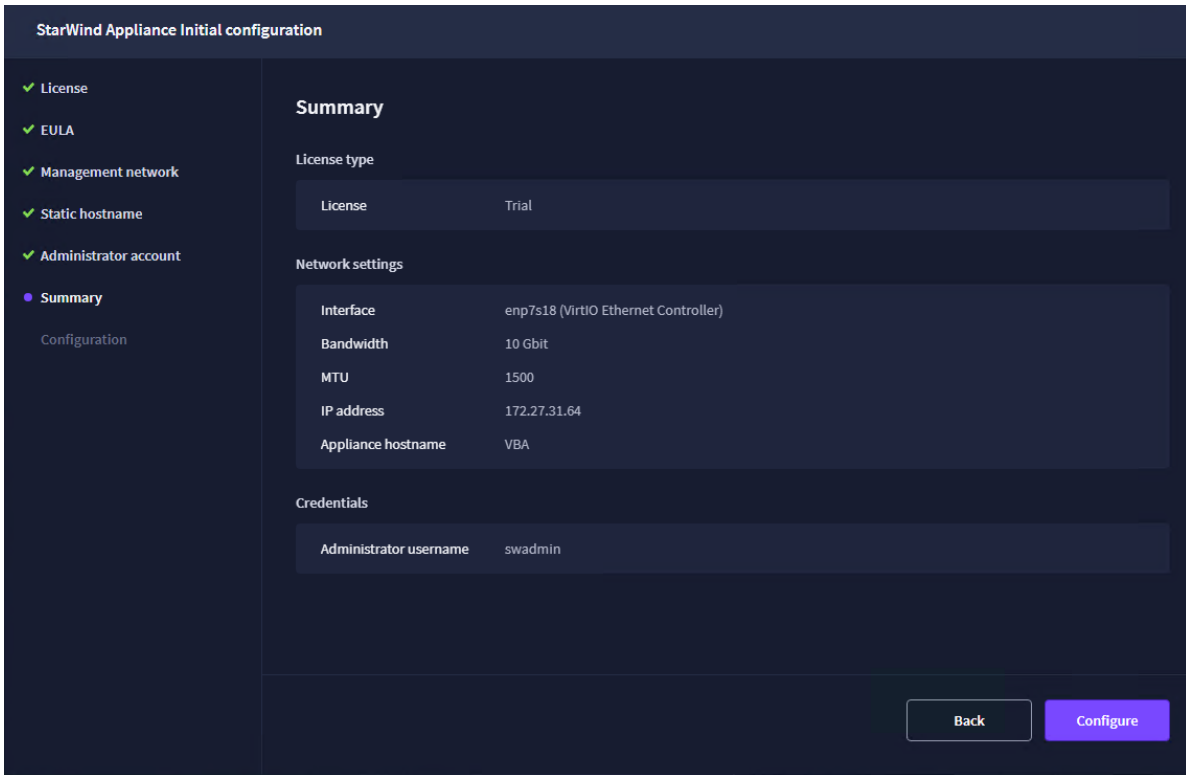


The image shows the 'StarWind Appliance Initial configuration' web interface. On the left, a sidebar lists configuration steps: License, EULA, Management network, Static hostname, Administrator account (selected), Summary, and Configuration. The main area is titled 'Administrator account' and contains the following fields:

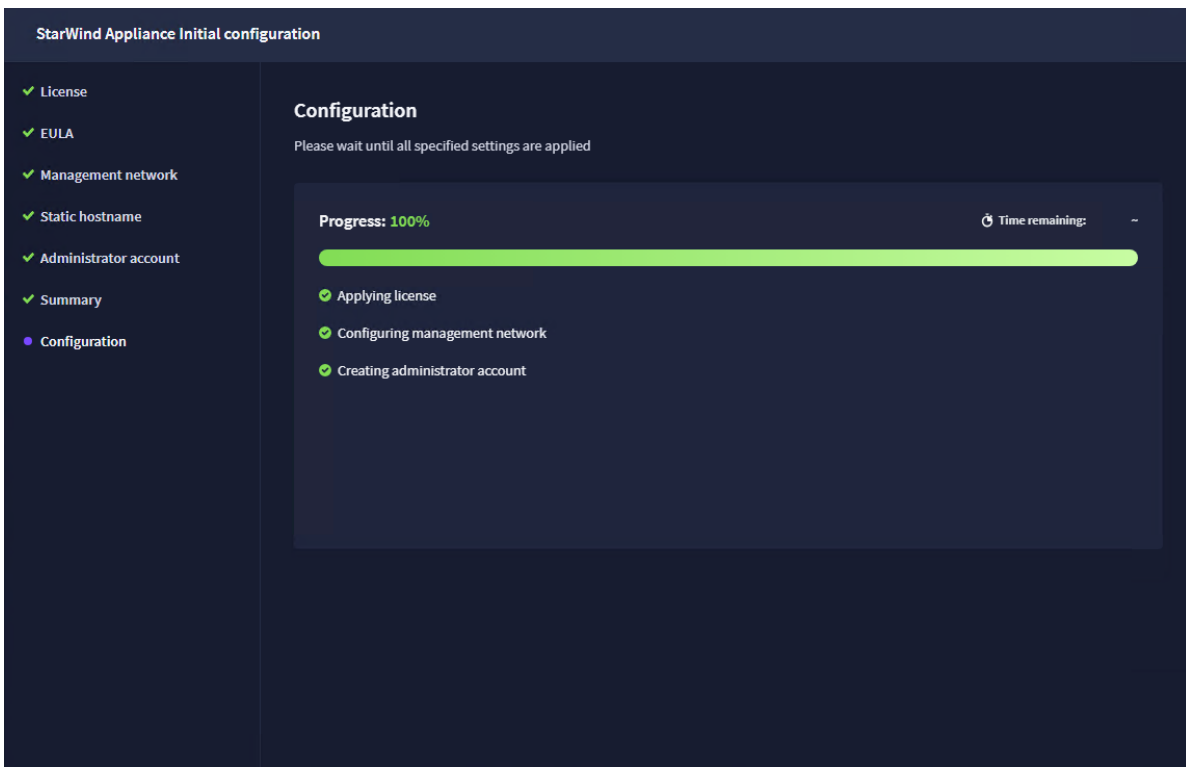
- Username: swadmin
- Password: [masked]
- Confirm password: [masked]
- Additional information (optional):
 - Full name
 - E-mail

At the bottom right, there are 'Back' and 'Next' buttons.

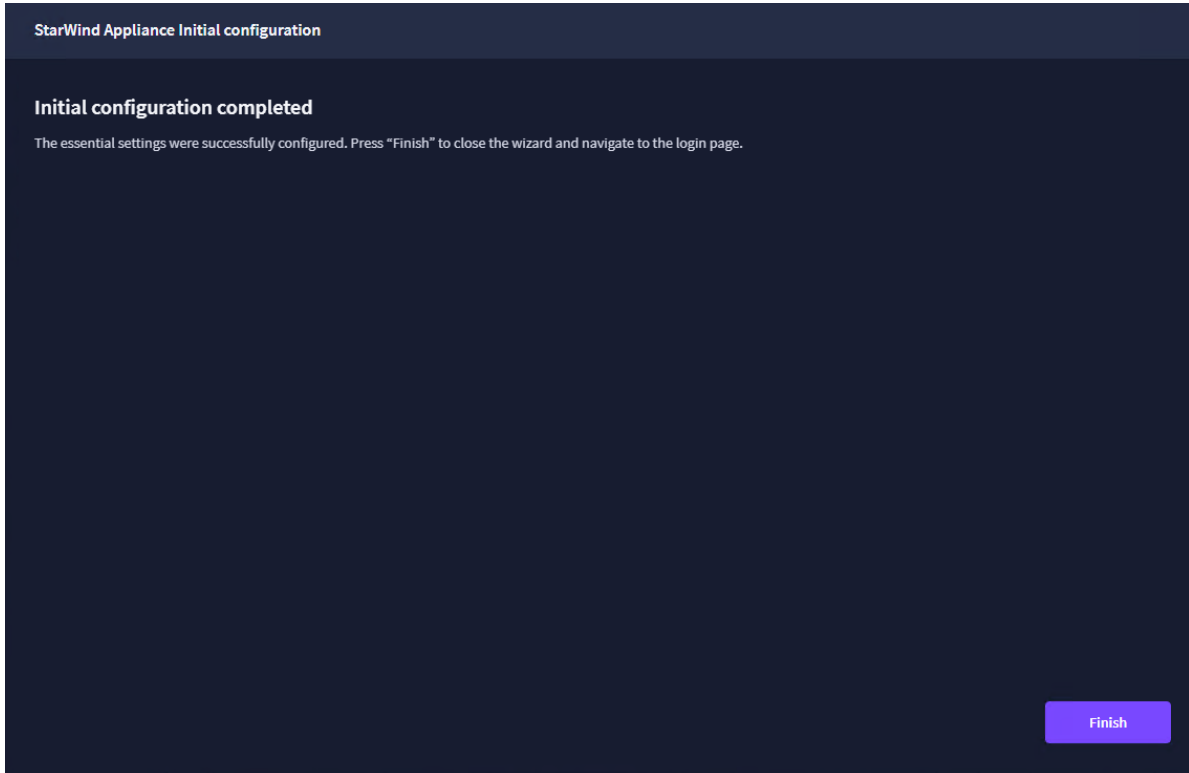
10. Review your settings selection before setting up StarWind VBA.



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

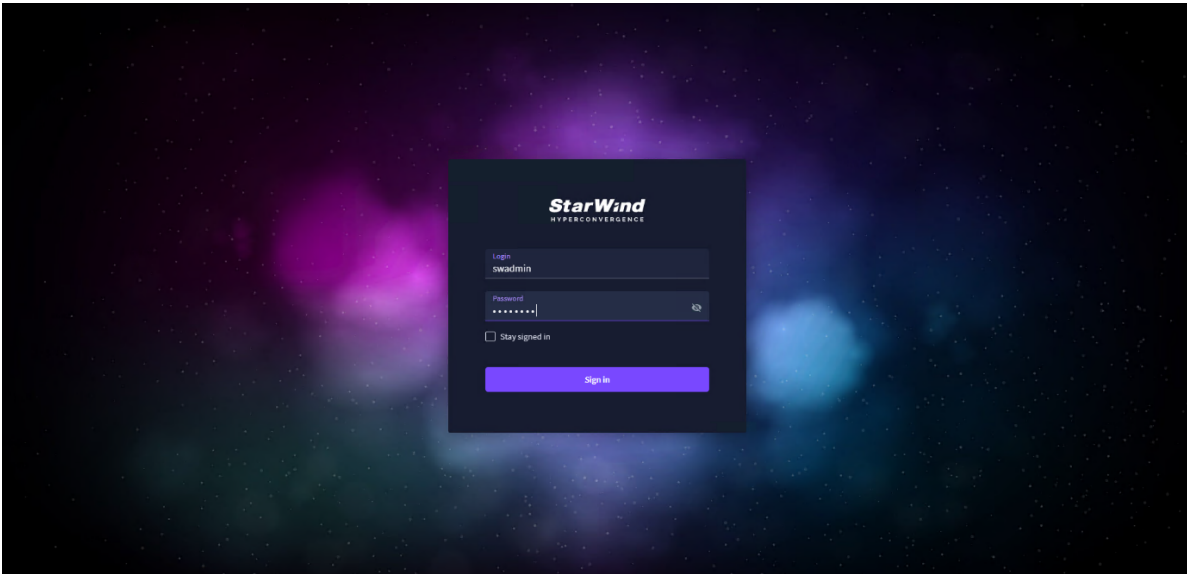


12. The appliance is set and ready. Click Finish to proceed to the Login page.

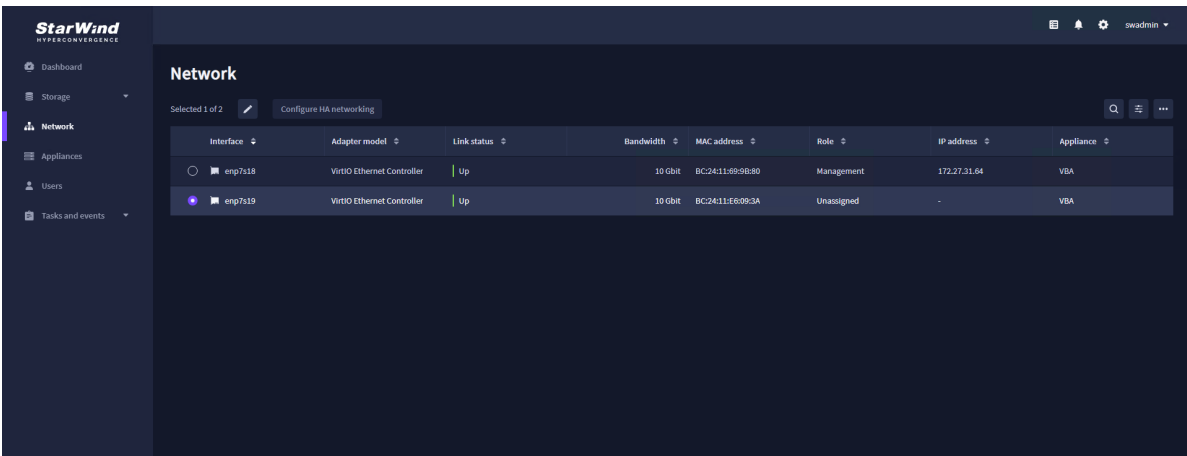


Configure Networking

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.

Edit network adapter settings [X]

Name: enp7s19 Adapter model: VirtIO Ethernet Controller

Role: Data IP mode: Static

IPv4 address: 172.16.30.10 Netmask: 255.255.255.0
e.g. 192.168.100.100 e.g. 255.255.255.0 or CIDR notation (e.g. 24)

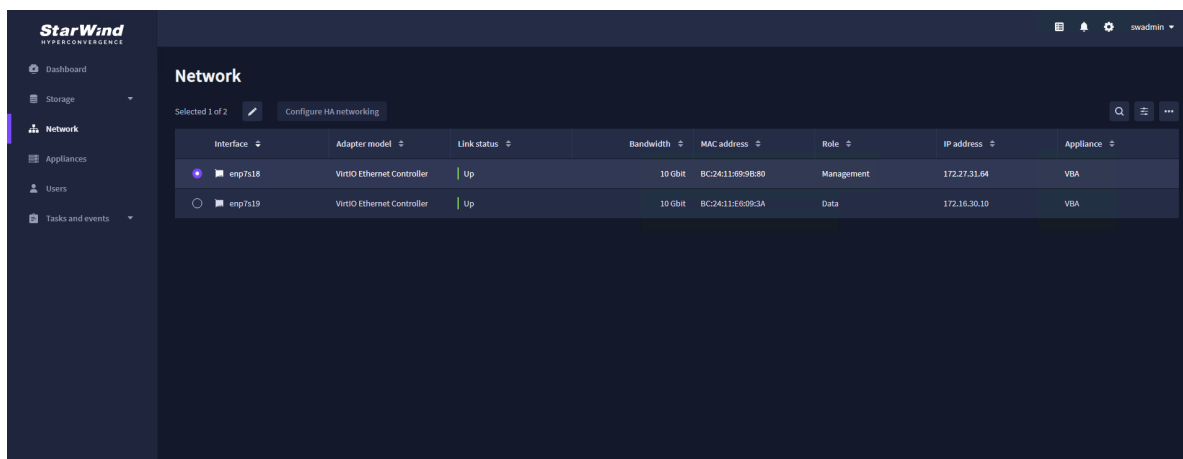
Gateway: DNS: Separate IP addresses with commas (,) or leave the settings empty
e.g. 192.168.100.1 or leave the settings empty

MTU: 9000
The valid value in the range of 1500-9000

Disable network adapter
 Connect automatically on boot

[Cancel] [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:

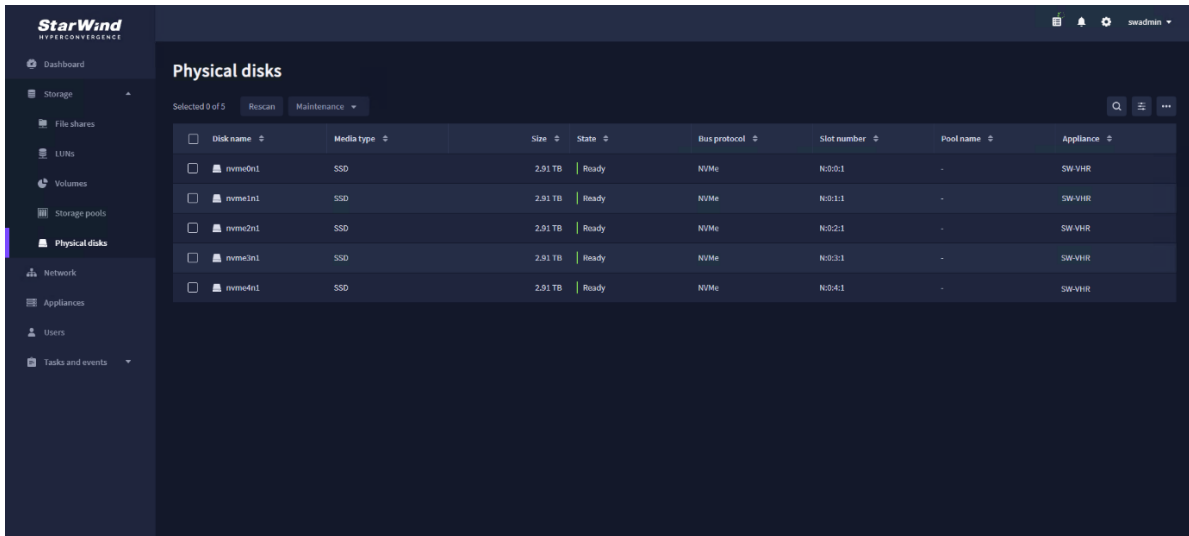
- Ensure that all physical drives are connected through an HBA or RAID controller.
- Add HBA, RAID controllers, or NVMe SSD drives to StarWind CVM via a passthrough device or add a virtual disk.

Learn more about storage provisioning guidelines in the [KB article](#).

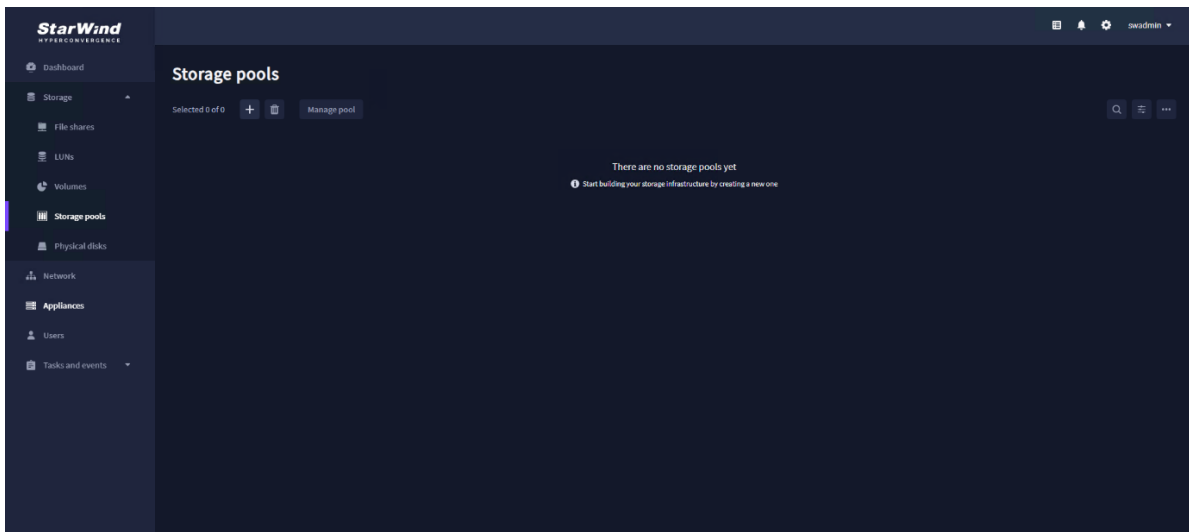
NOTE. In this guide, NVMe drives are passed through to StarWind VBA CVM as an example.

Create Storage Pool

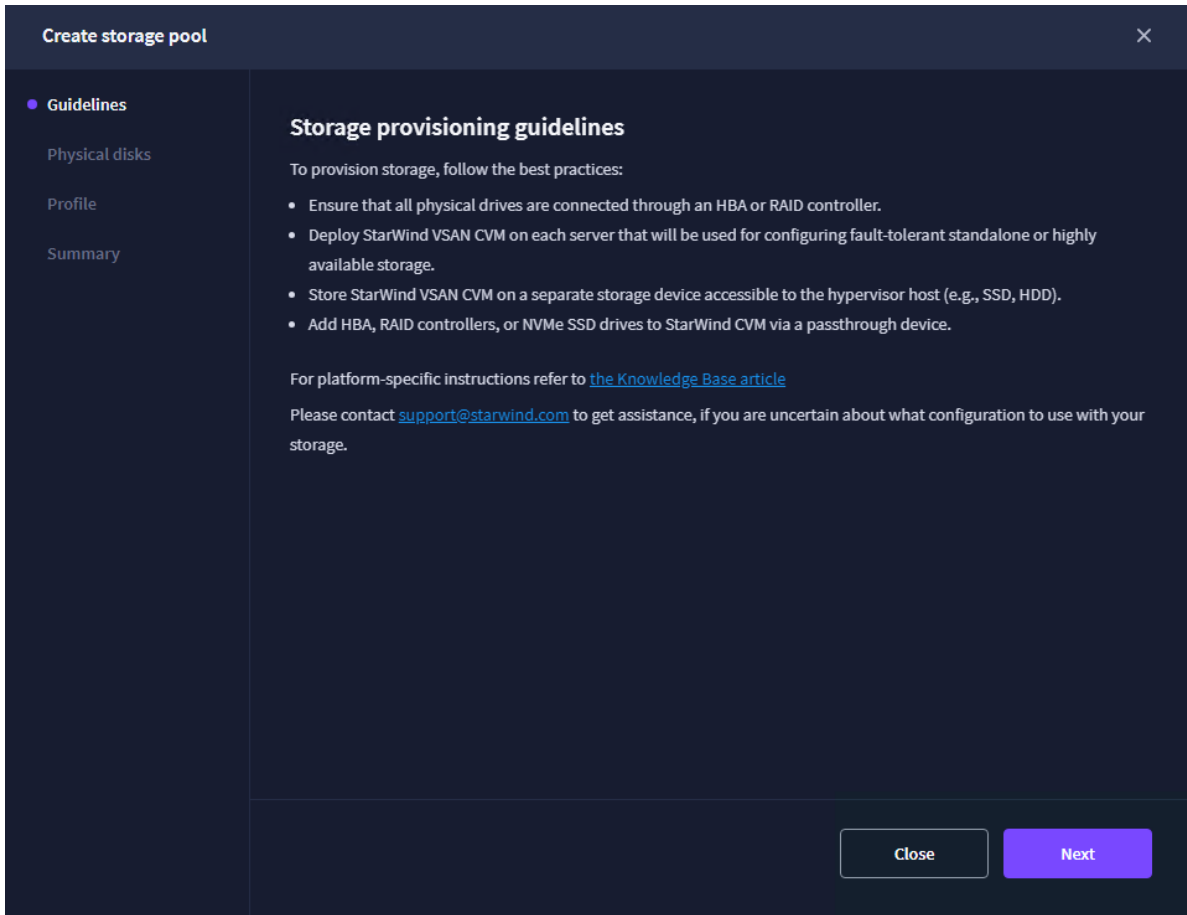
1. Navigate to the Storage tab, select Physical disks, and click Rescan.



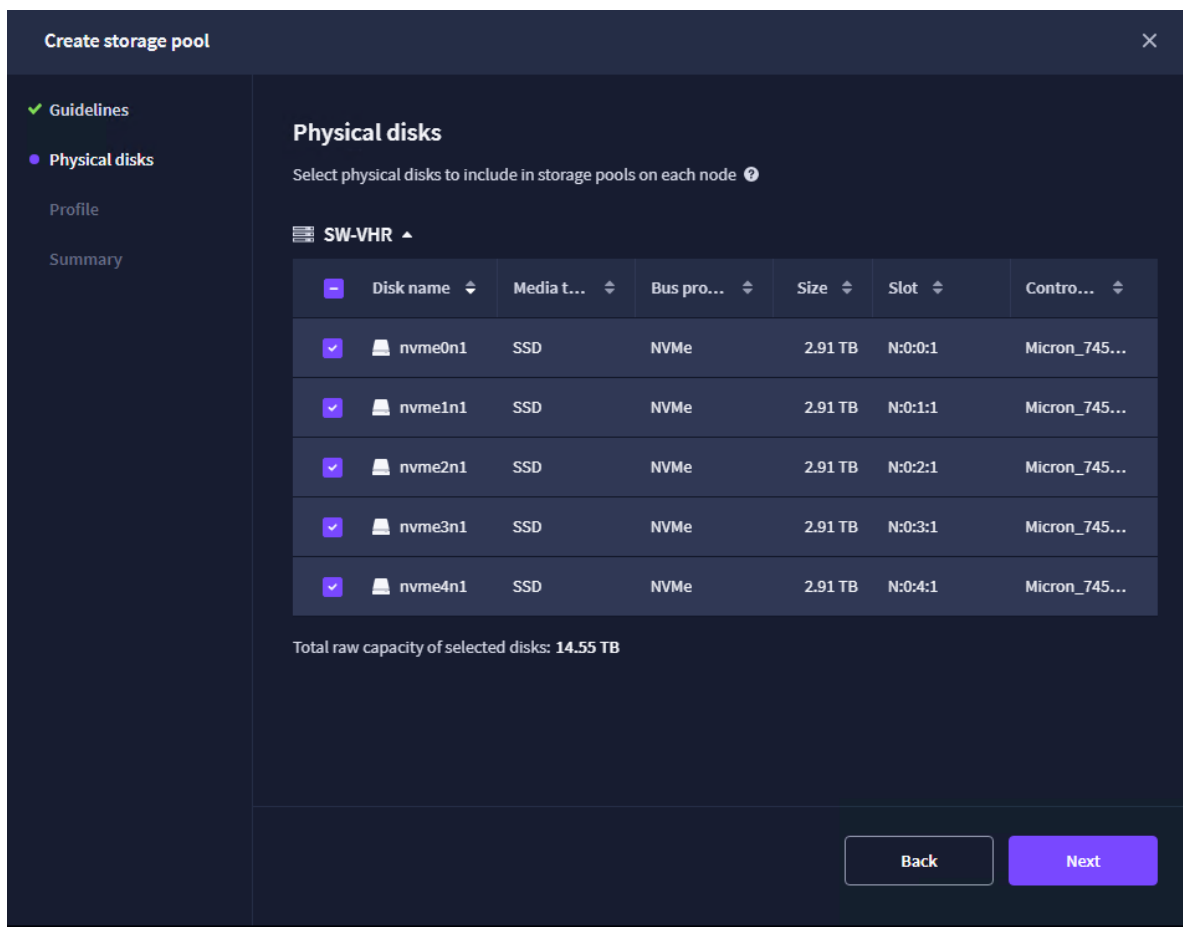
2. In the Storage tab, navigate to the Storage pools and click the “+” sign.



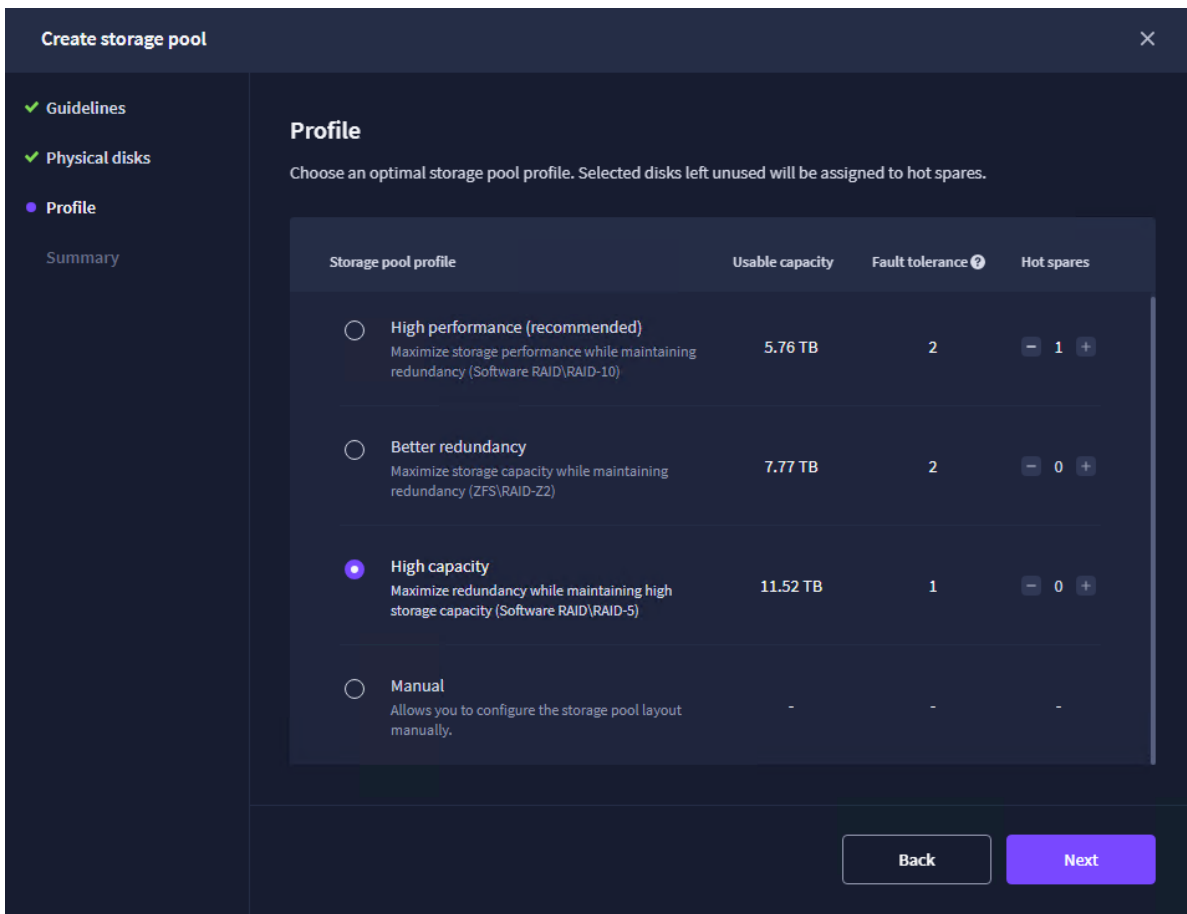
3. Verify the prerequisites and click Next.



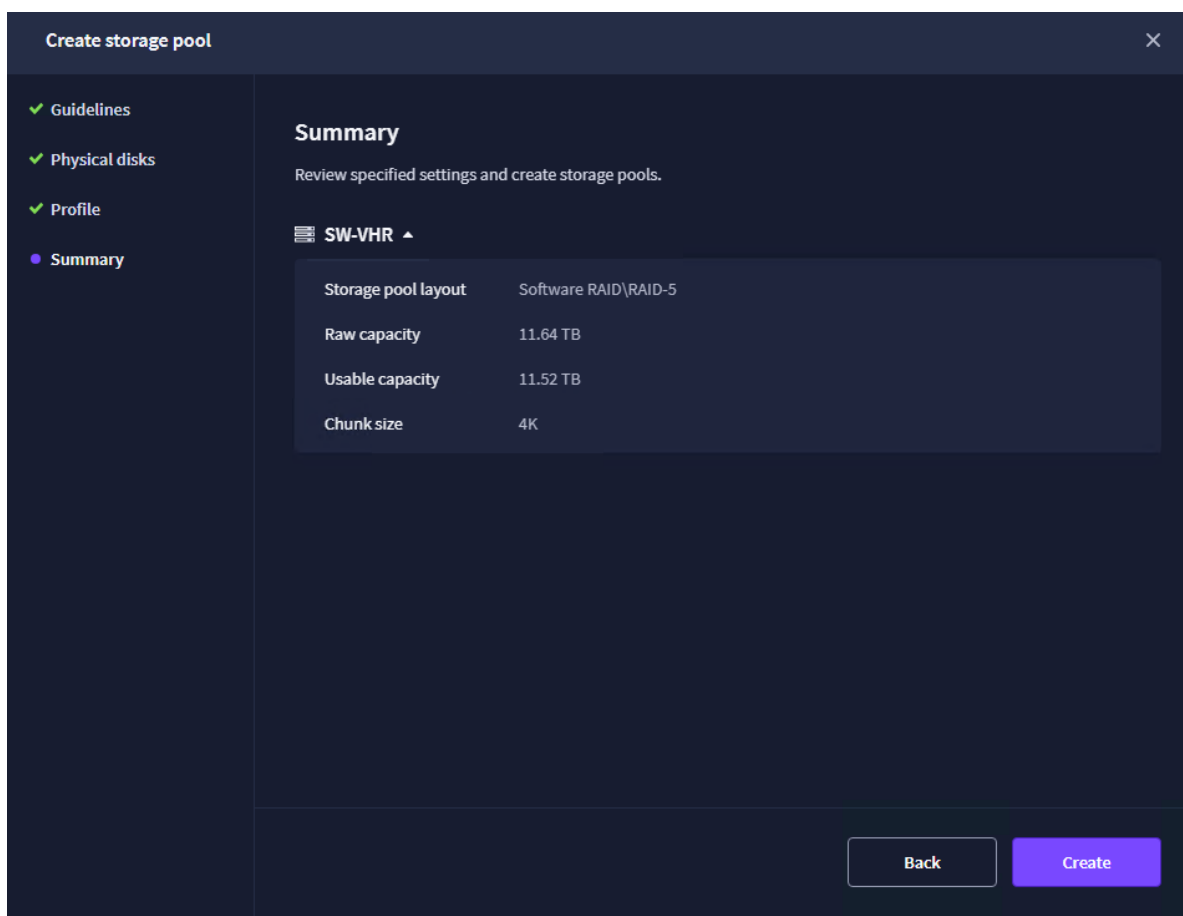
4. Select the drives to create a Linux Software RAID and click Next.



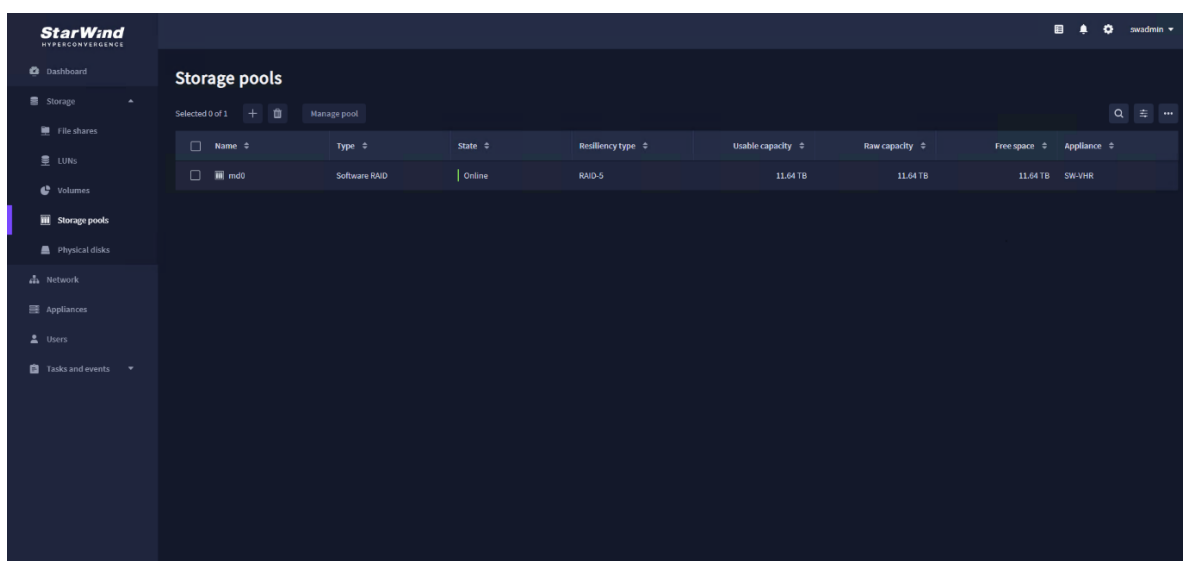
5. Select one of the preconfigured storage profiles or create a redundancy layout for the new storage pool manually according to your redundancy, capacity, and performance requirements. Click Next.



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.



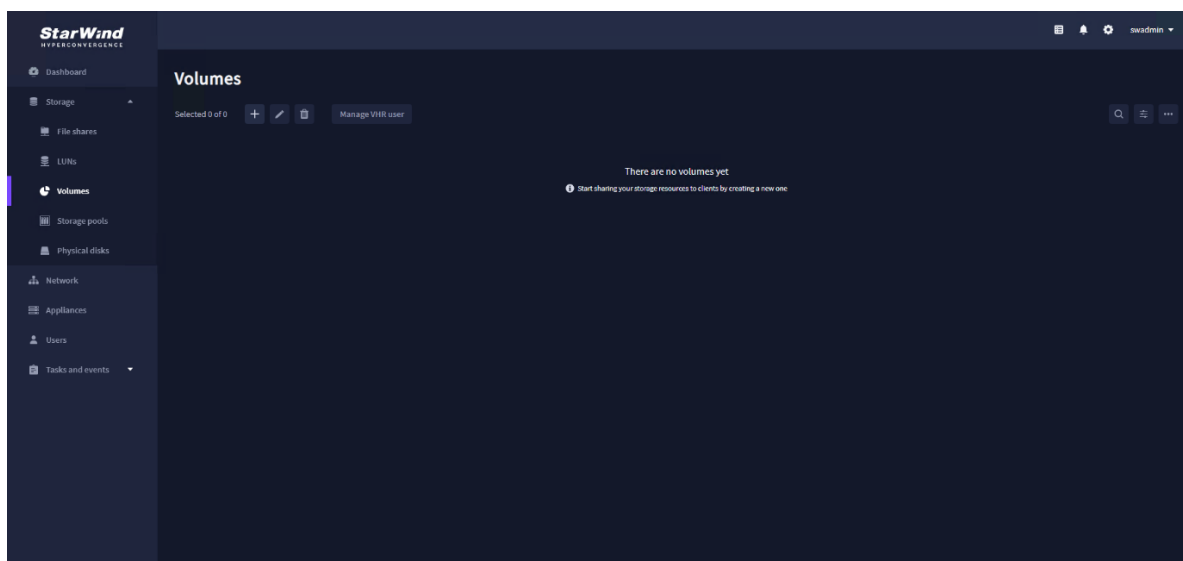
Create Backup Repository

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.

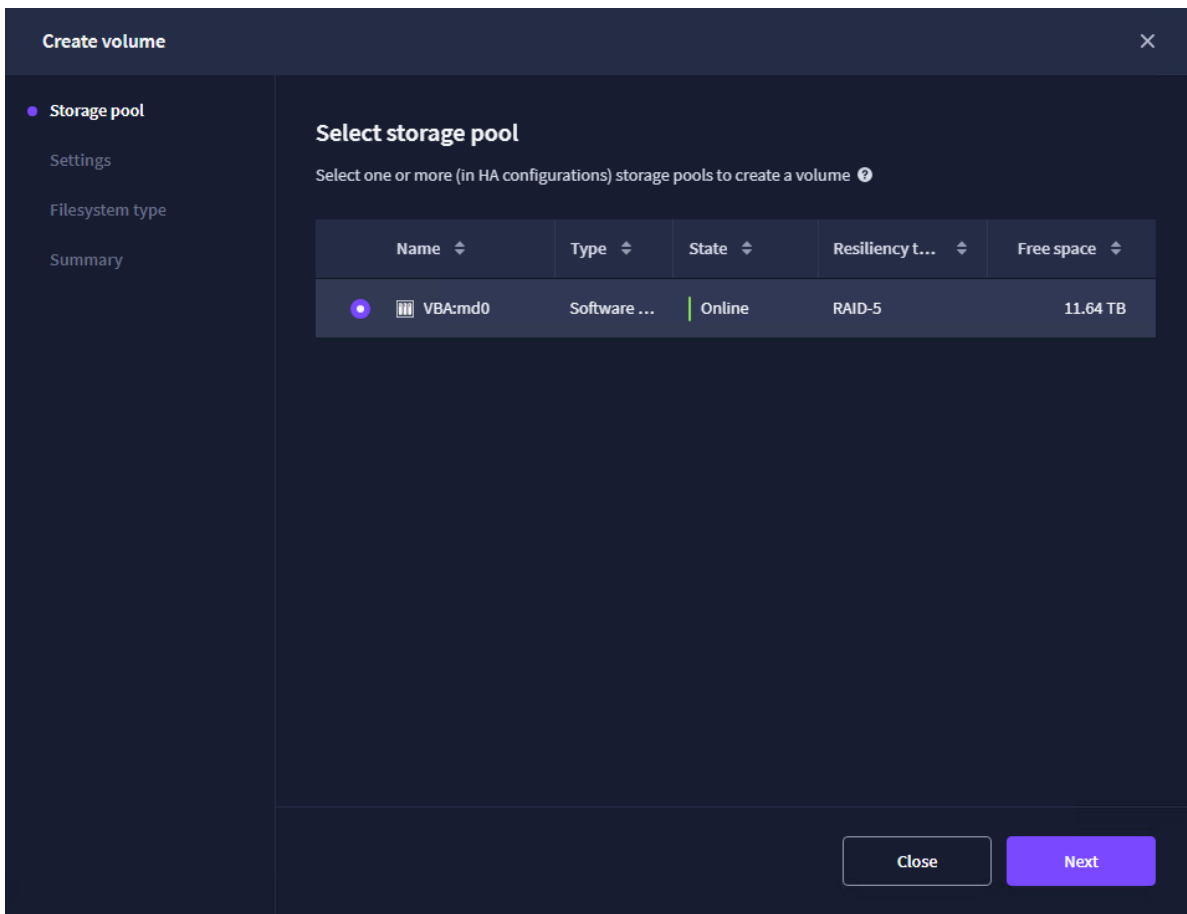
NOTE. Hardened Repository ensures immutability only when used with Veeam Backup & Replication.

Hardened Repository For Veeam Backup & Replication

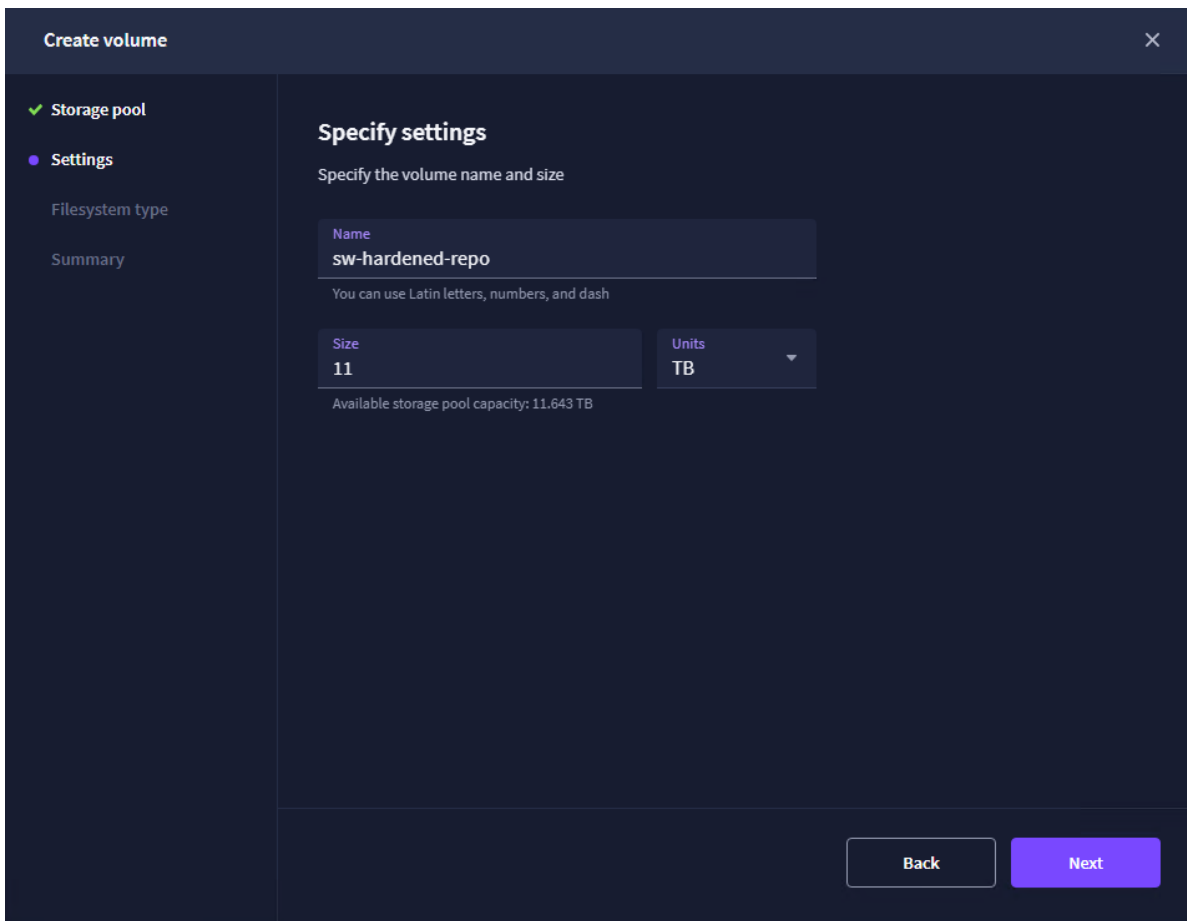
1. Navigate to the “Volumes” tab and click the “+” button to open the “Create volume” wizard.



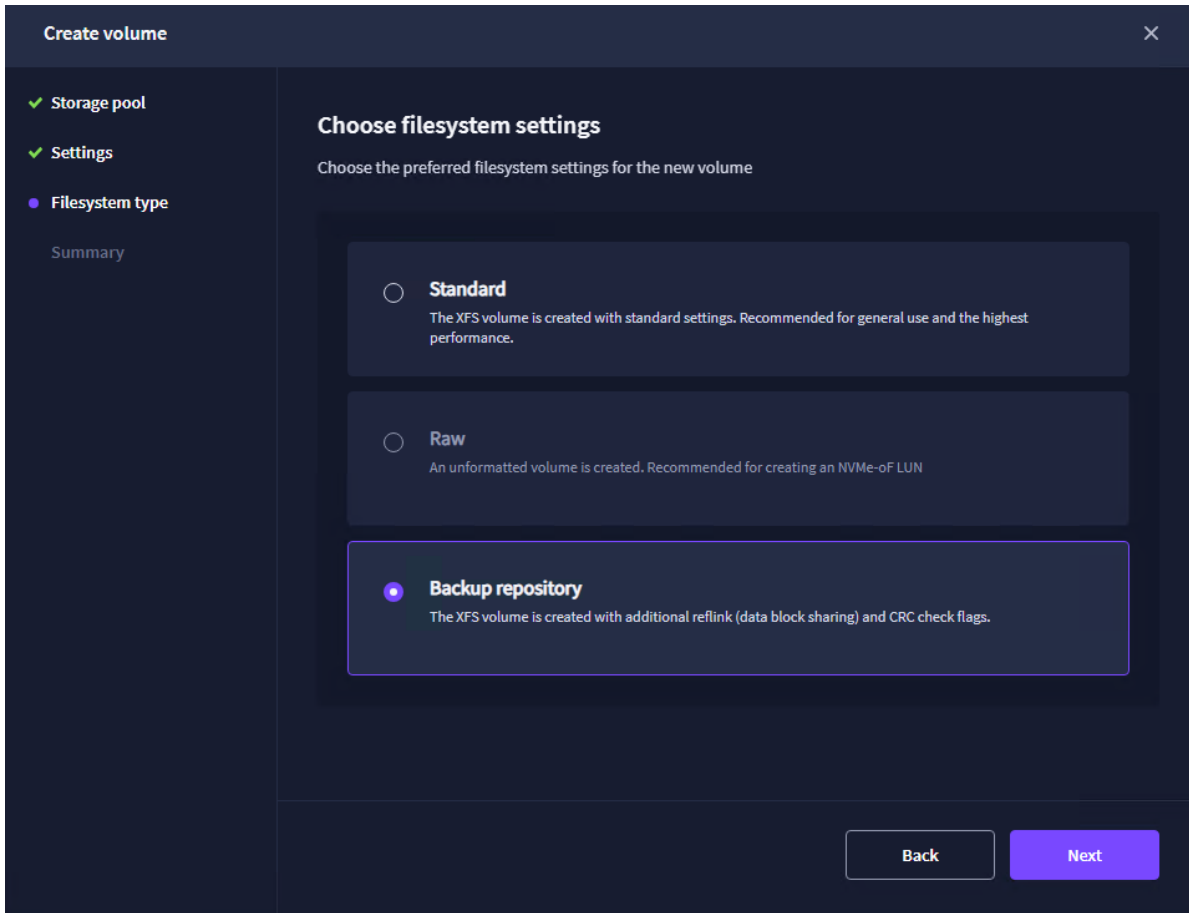
2. Select the storage pool that will be used for a new volume and click Next.



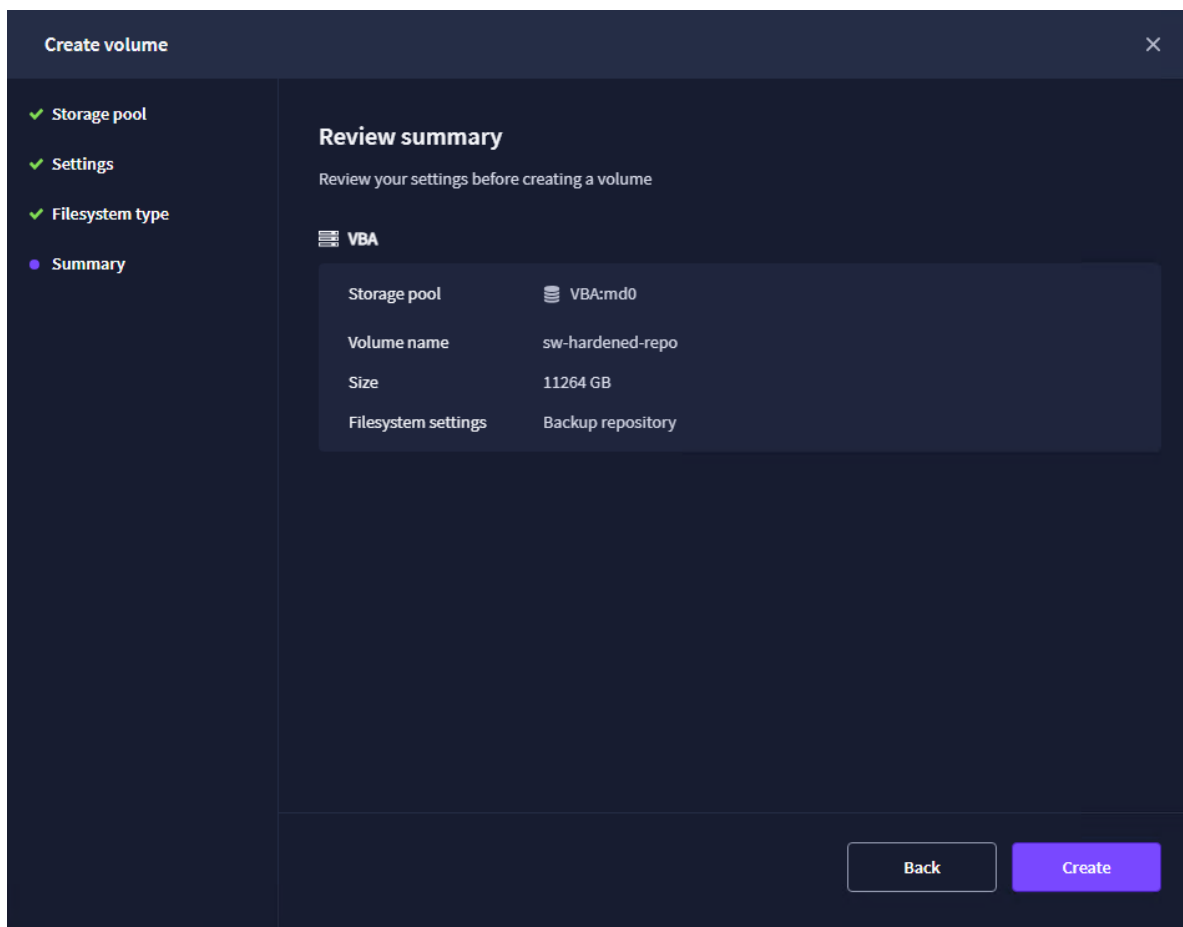
3. Specify the volume name and capacity. Click Next.



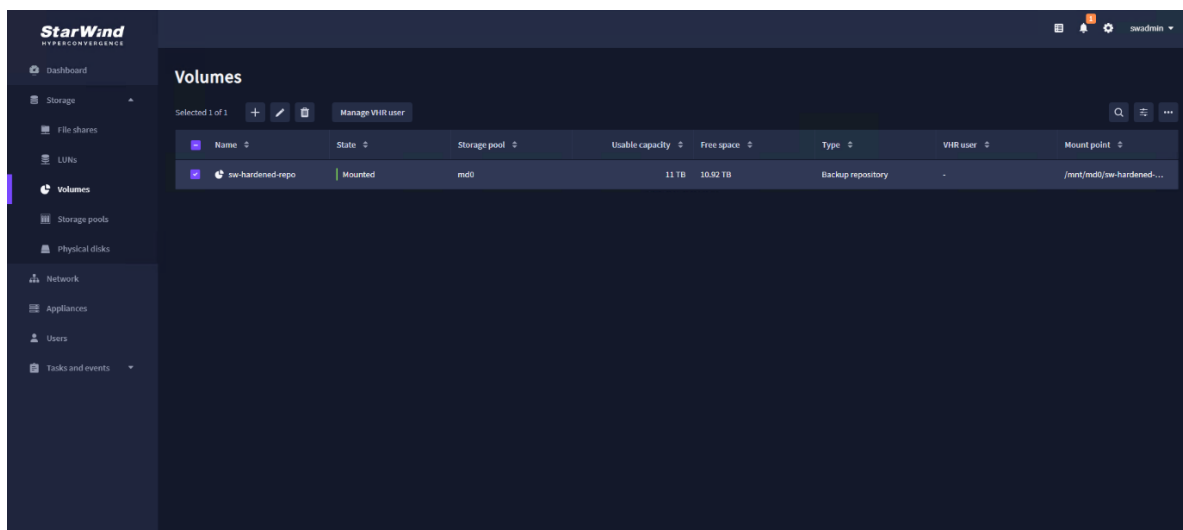
4. Select the “Backup repository” volume type and click Next. Backup repository volume type has been specifically designed for use with Veeam Backup & Replication.



5. Review Summary and click Create.

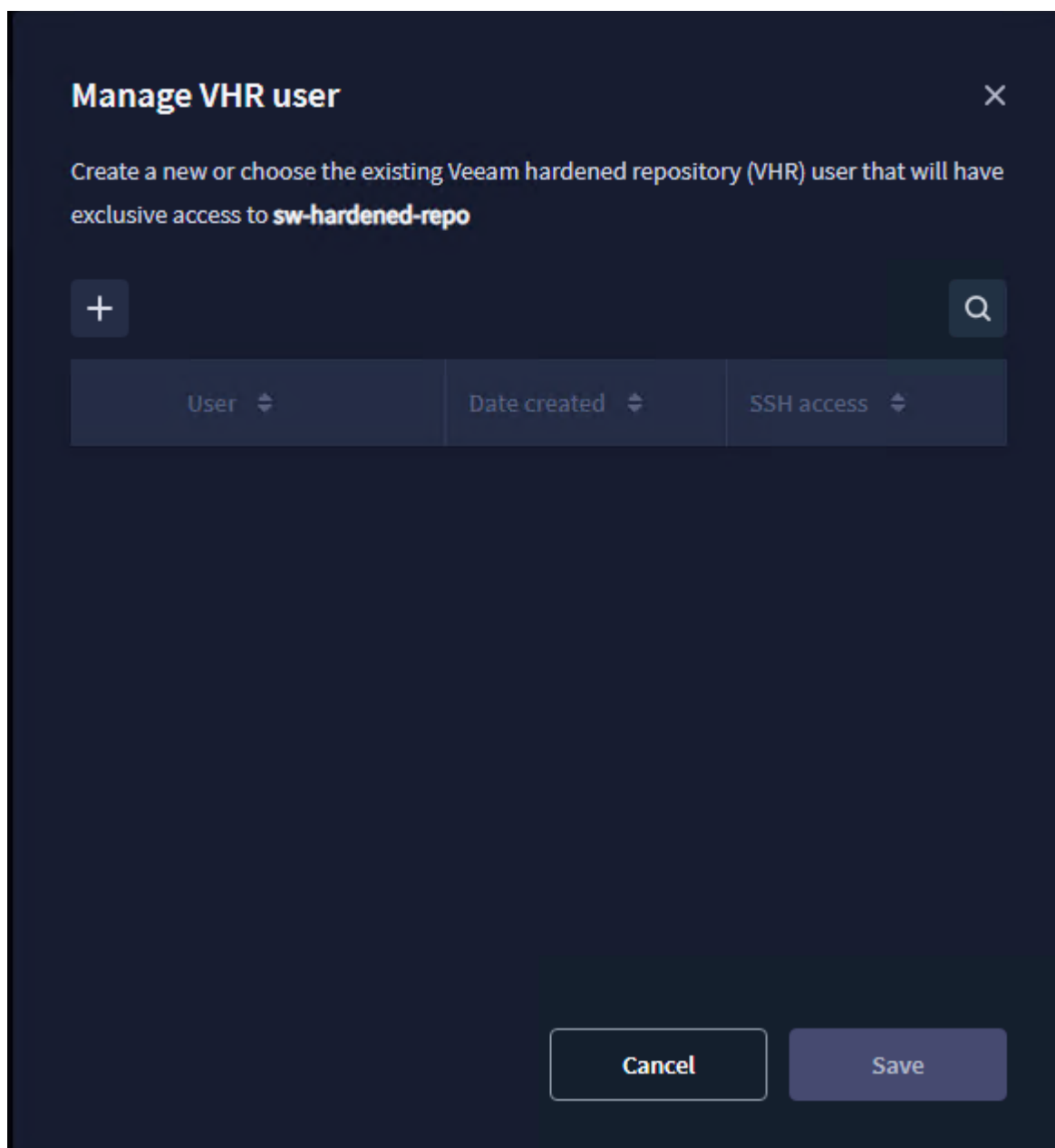


6. Select the recently created Volume and click “Manage VHR user”. This will create a dedicated Veeam Hardened Repository user with limited permissions for the selected volume.



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.

Create Veeam user ✕

The new user will be assigned to the **Veeam service** group. ⓘ

Veeam user name
veeamuser
Can contain lowercase Latin letters, digits, underscores, periods and dashes

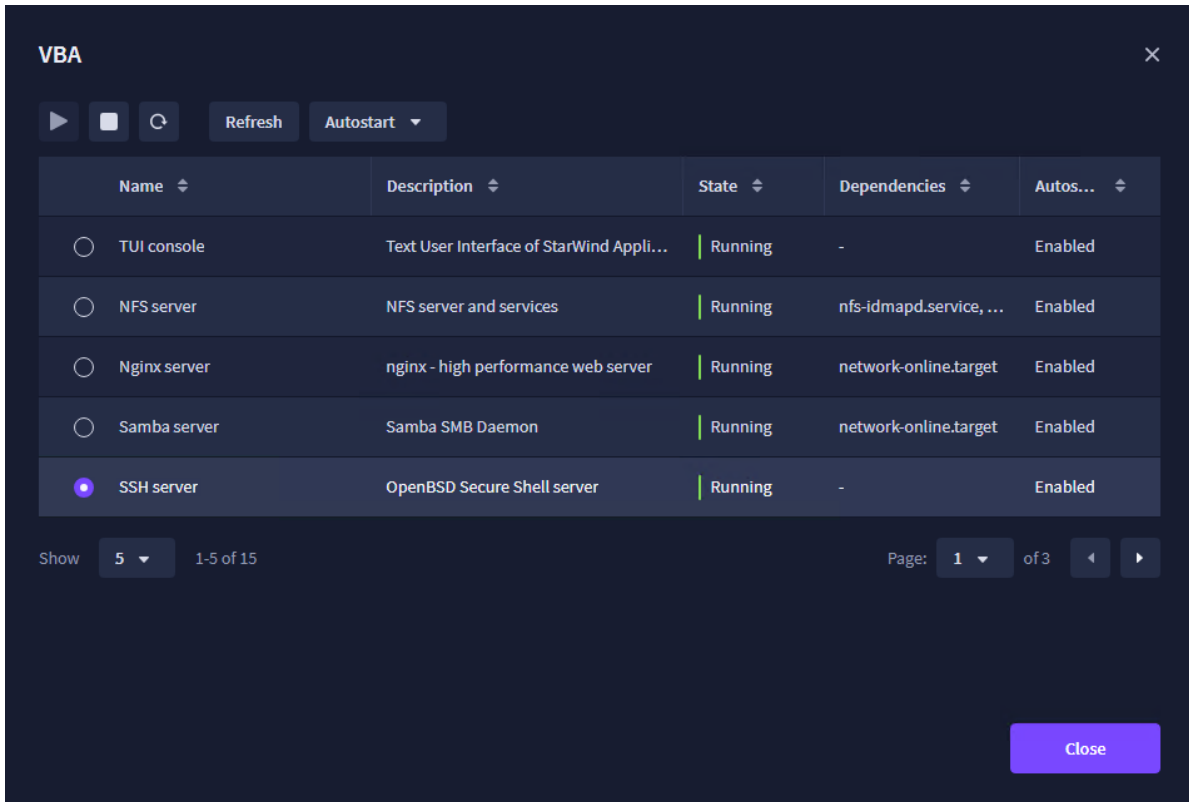
Password
•••••••• ⓘ
Must contain 8-64 characters, including numbers, symbols and capital letter

Enable SSH for this user

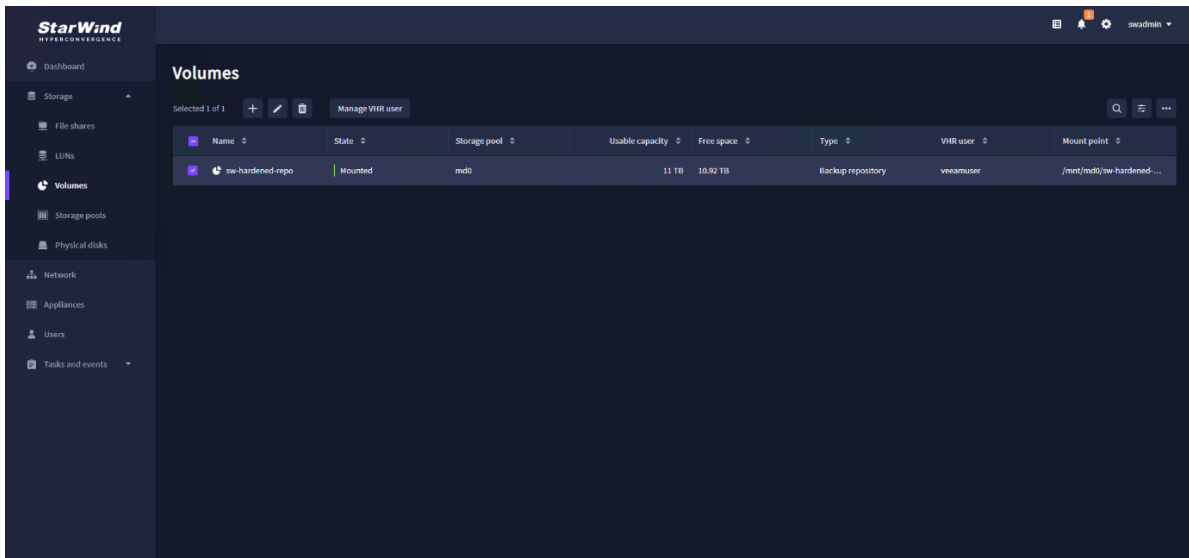
i Disable SSH after adding the host and creating the hardened repository in the Veeam Backup & Replication console.

Cancel **Save**

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

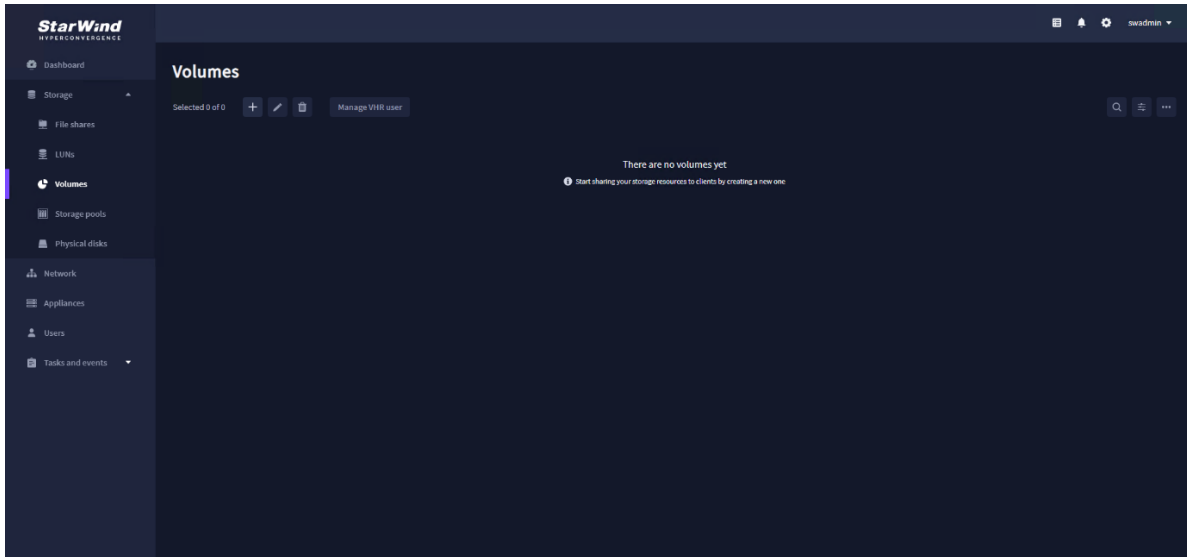


10. The recently created VHR user has been assigned to the volume.

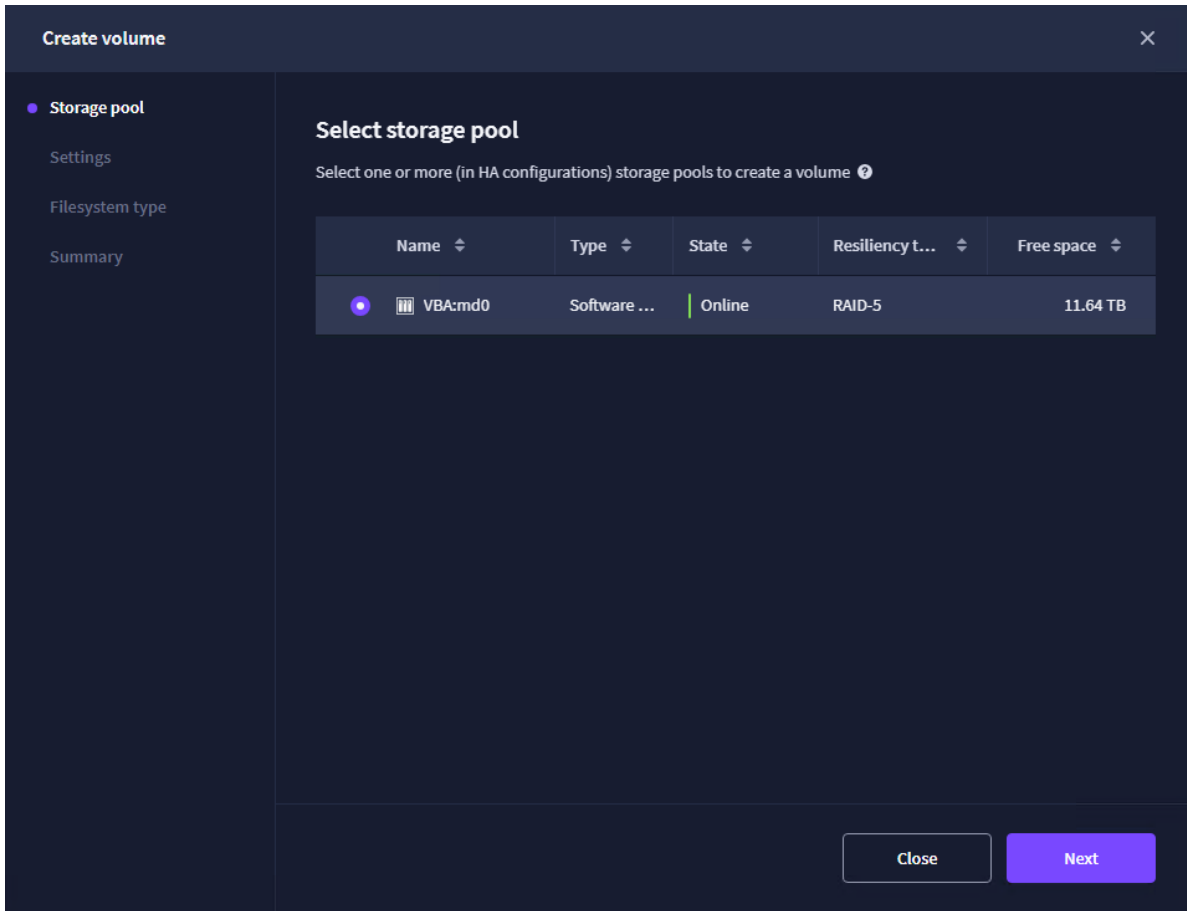


Creating Iscsi Backup Repository

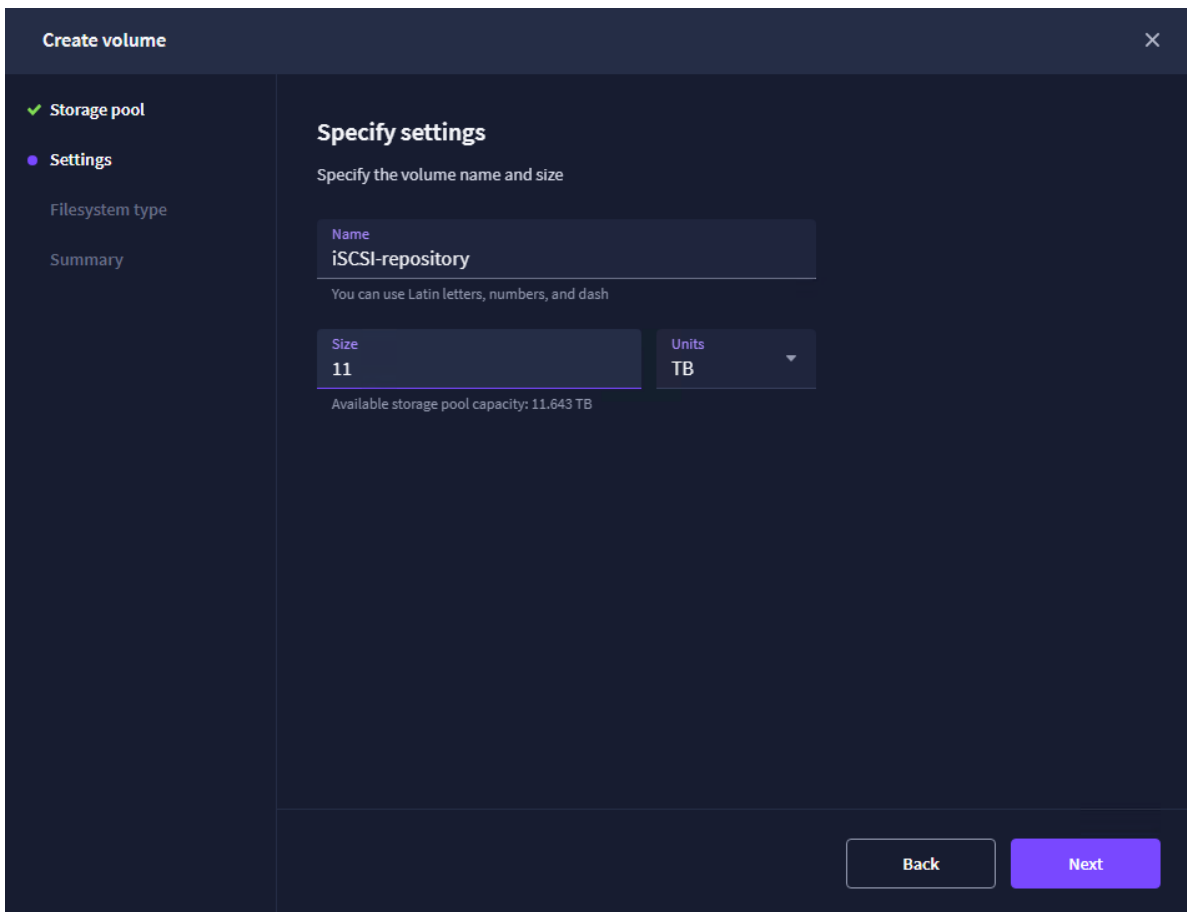
1. Navigate to the “Volumes” tab and click the “+” button to open the “Create volume” wizard.



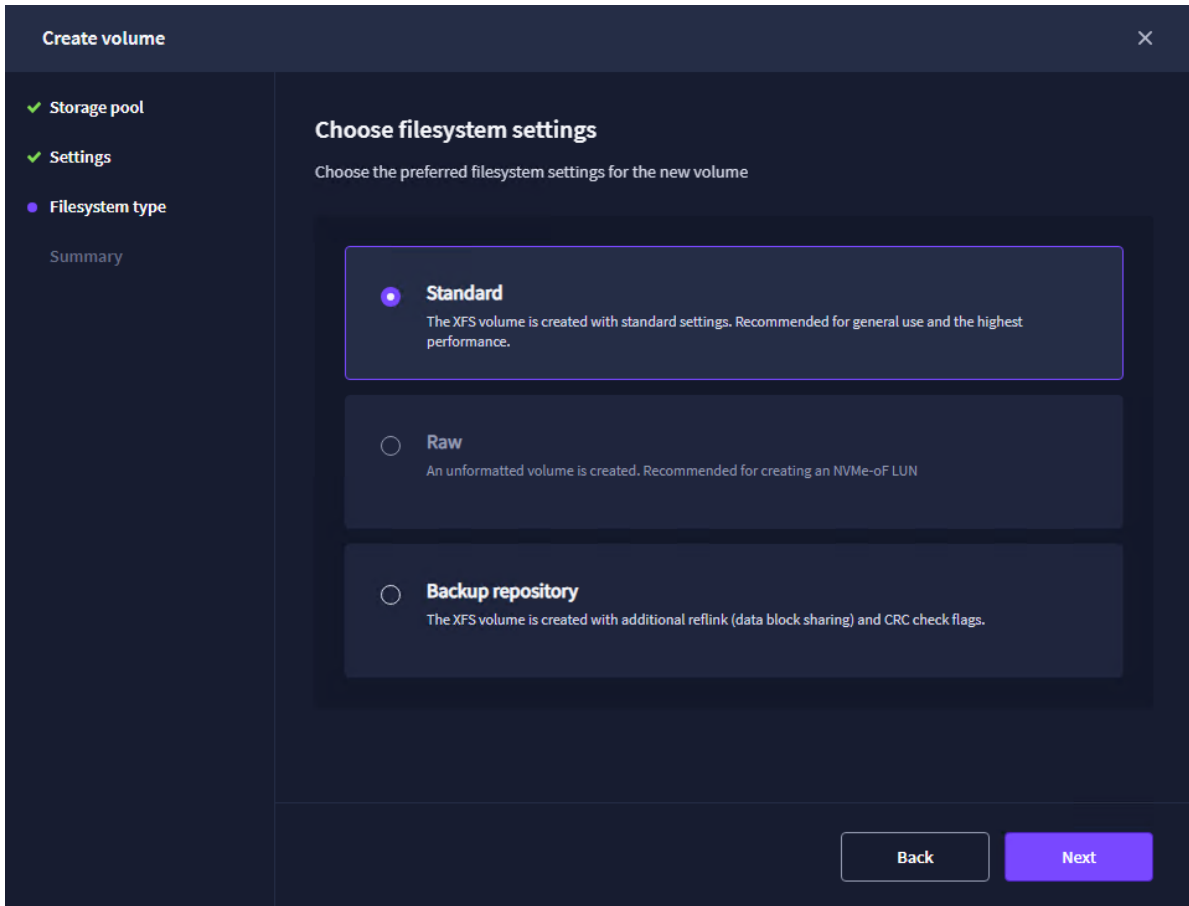
2. Select the storage pool that will be used for a new volume and click Next.



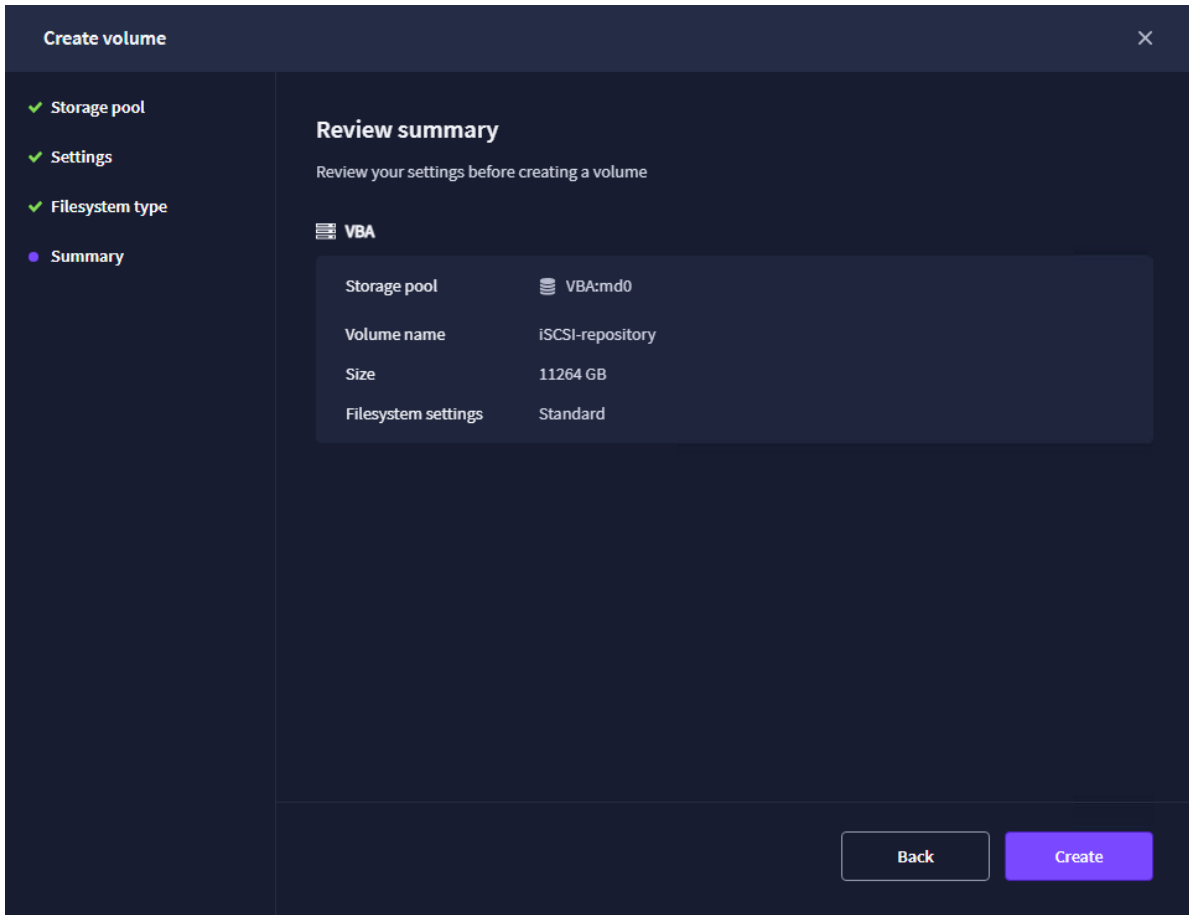
3. Specify the volume name and capacity. Click Next.



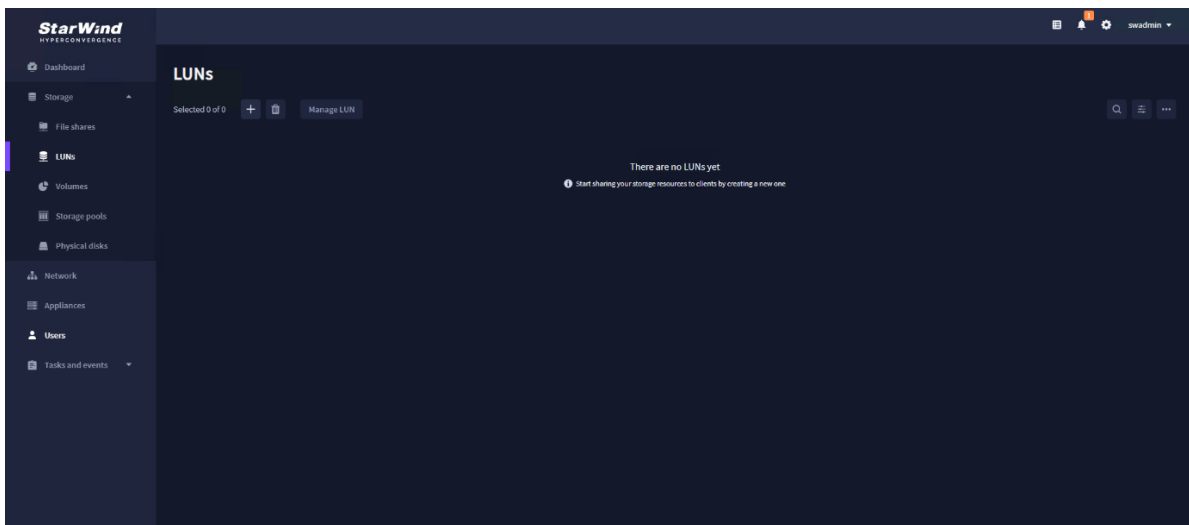
4. Select the “Standard” volume type and click Next.



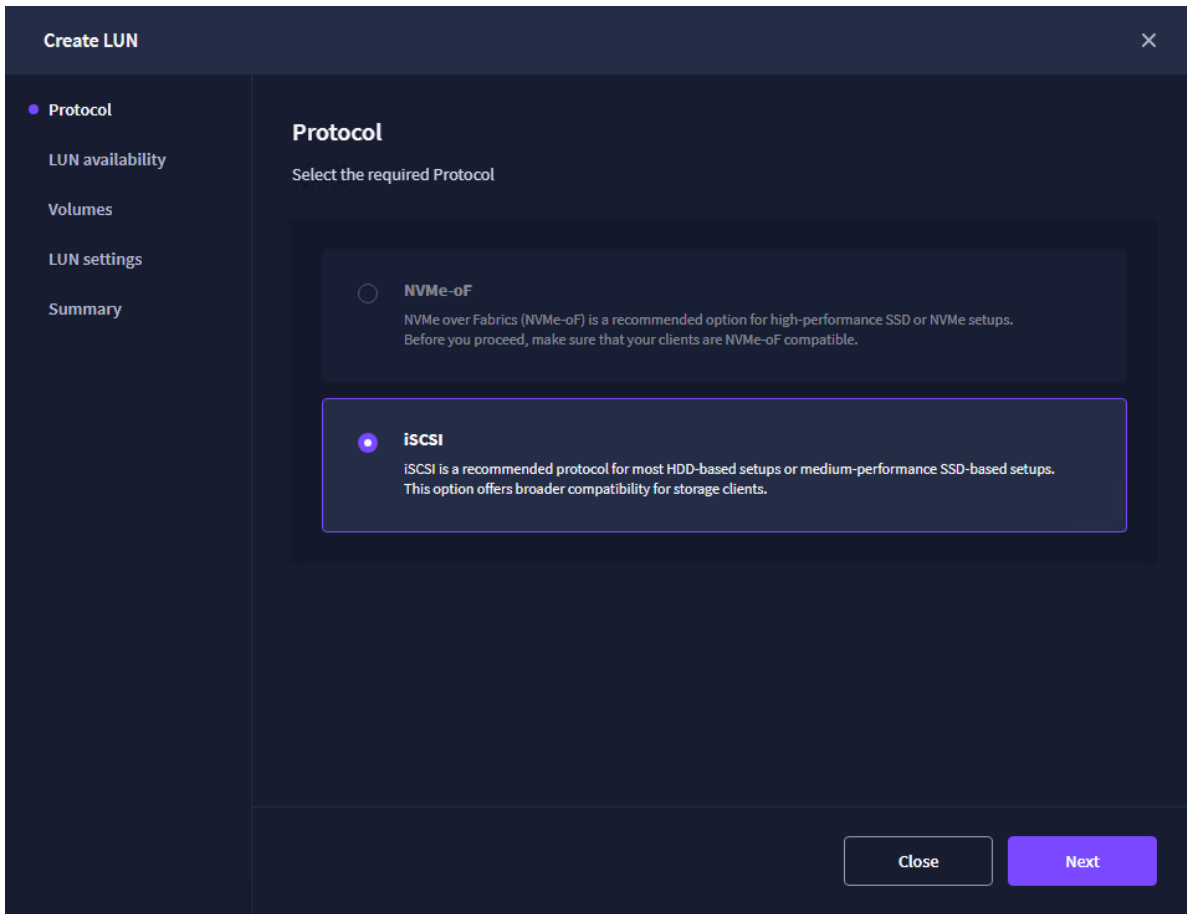
5. Review the Summary and click Create.



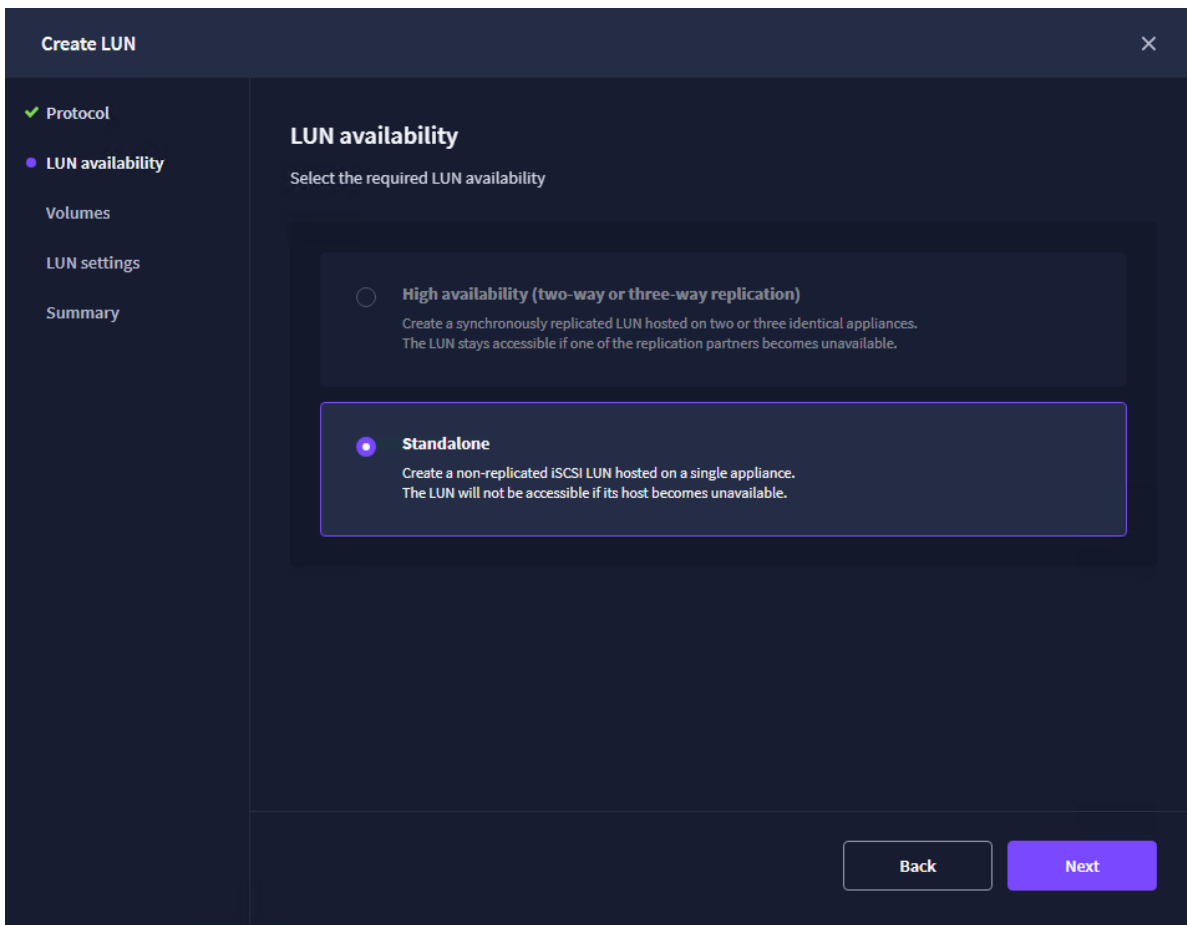
6. Navigate to the LUNs tab and click the “+” sign to create an iSCSI target.



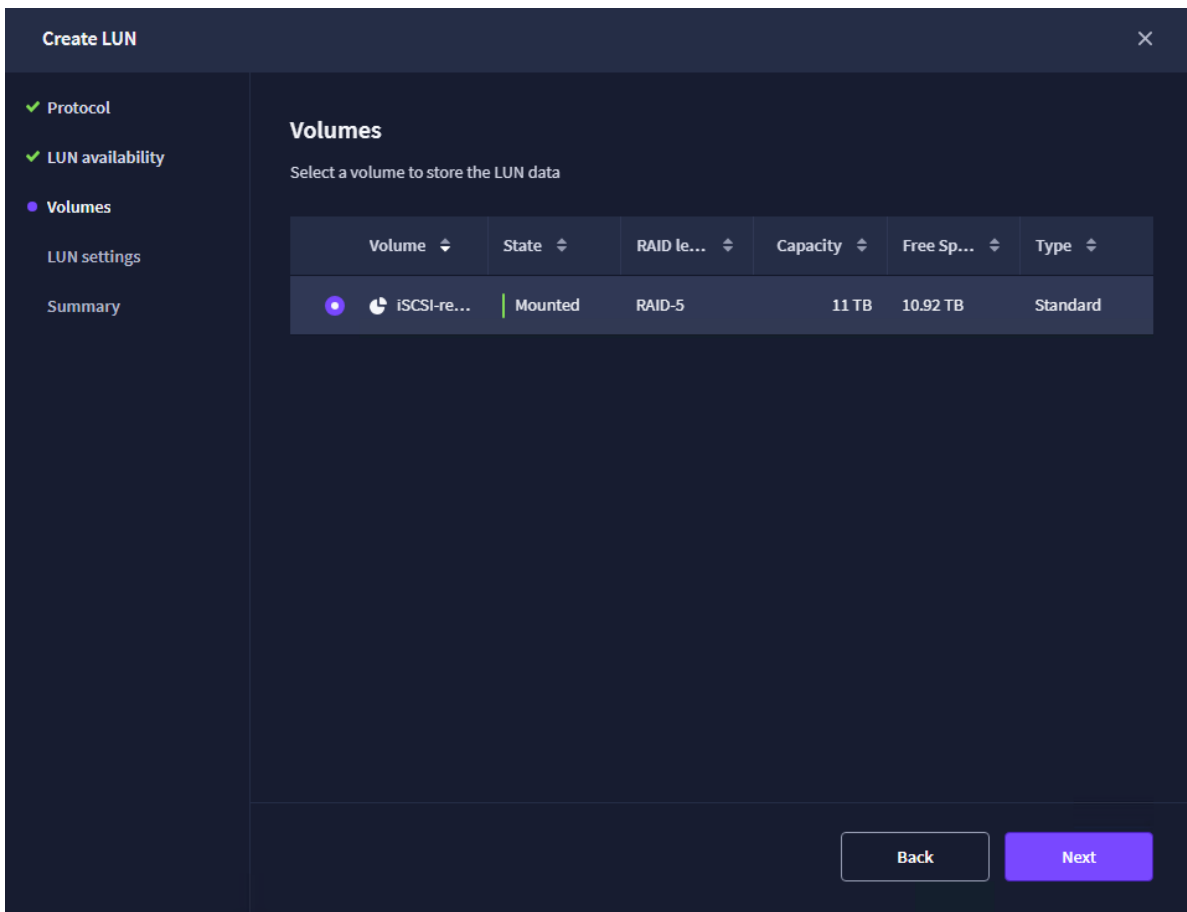
7. Click Next.



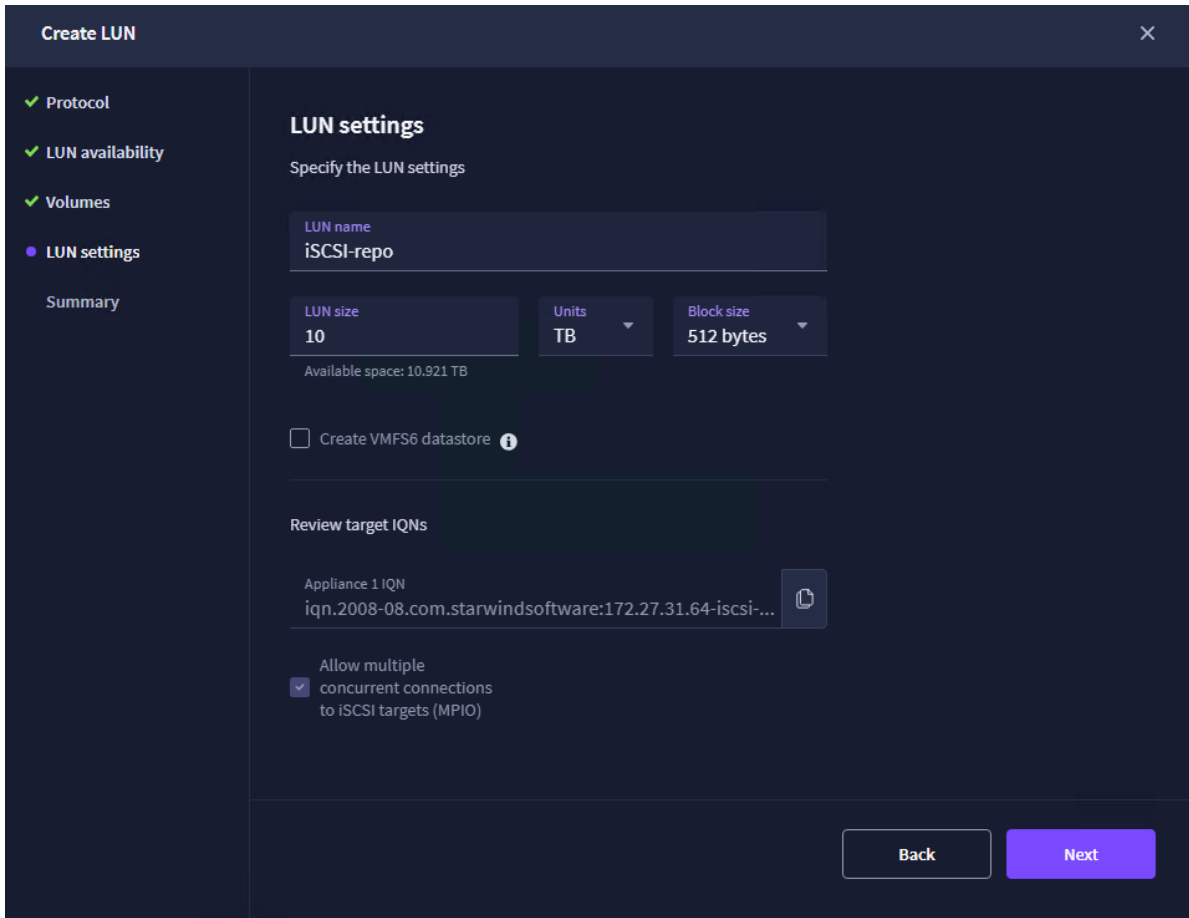
8. Standalone LUN availability is the only option for iSCSI backup repository. Click Next.



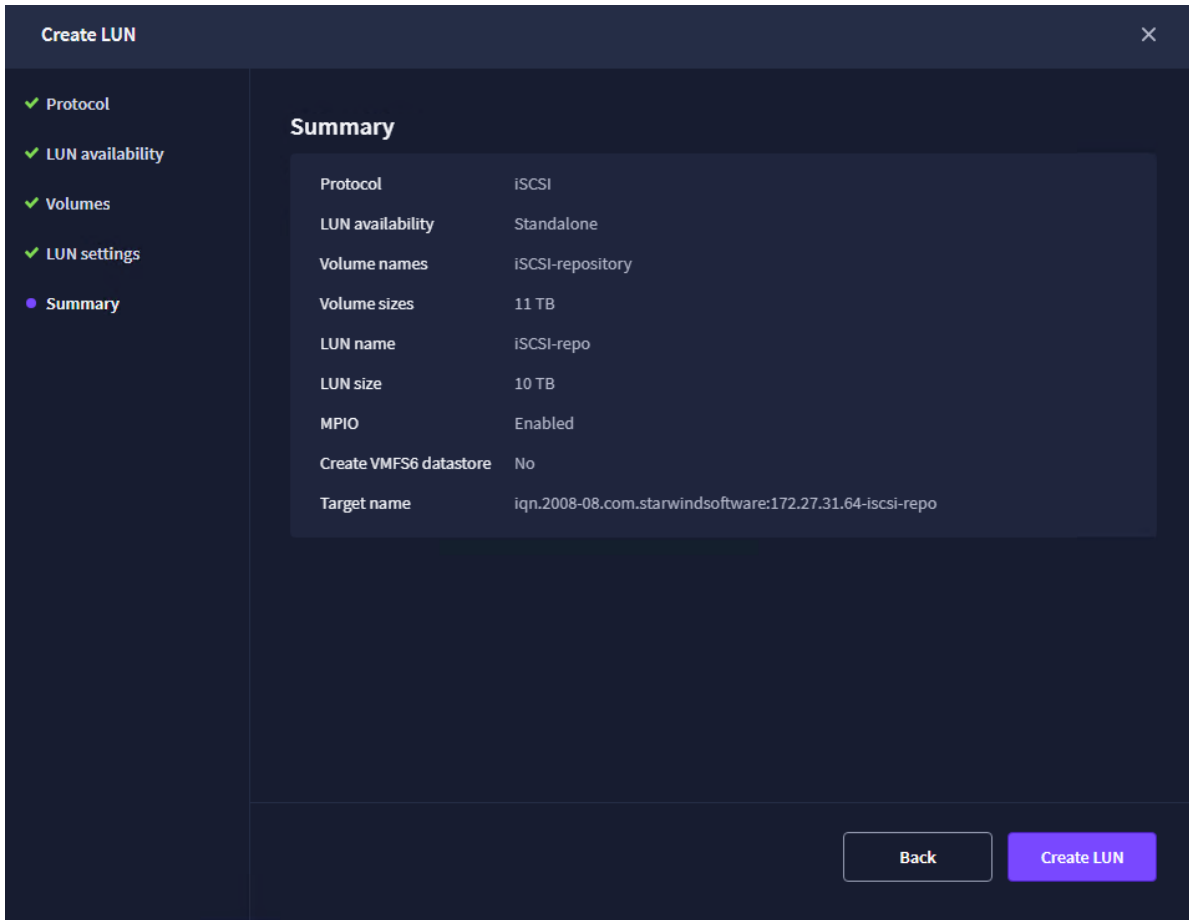
9. Select the volume on which the iSCSI LUN will be stored.



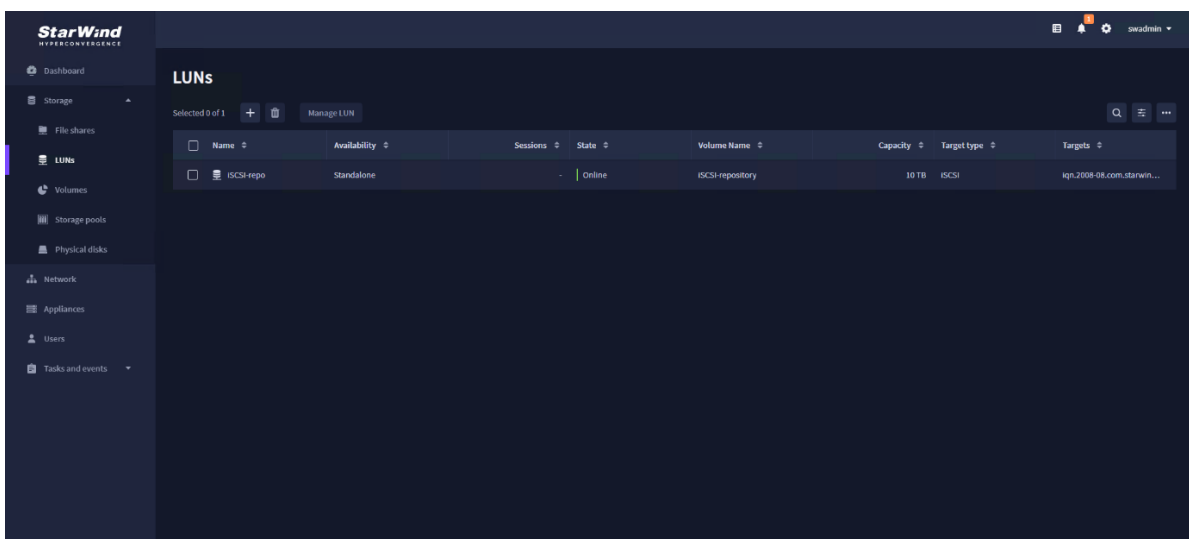
10. Specify the iSCSI LUN name and size. Click Next.



11. Review the Summary and click Create LUN.

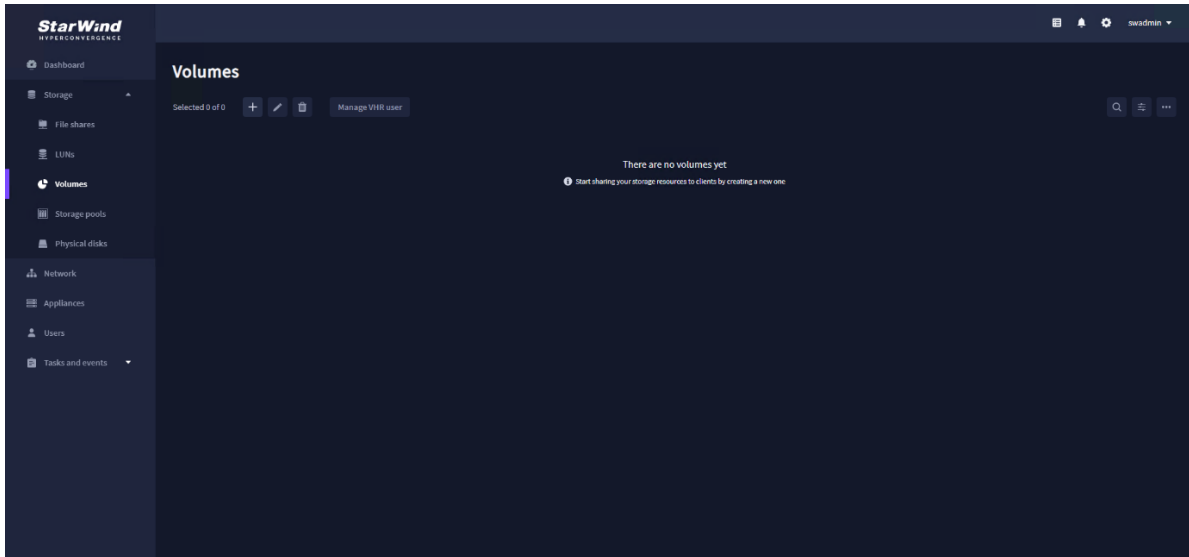


12. The iSCSI target has been created and is ready to be connected to the backup software.

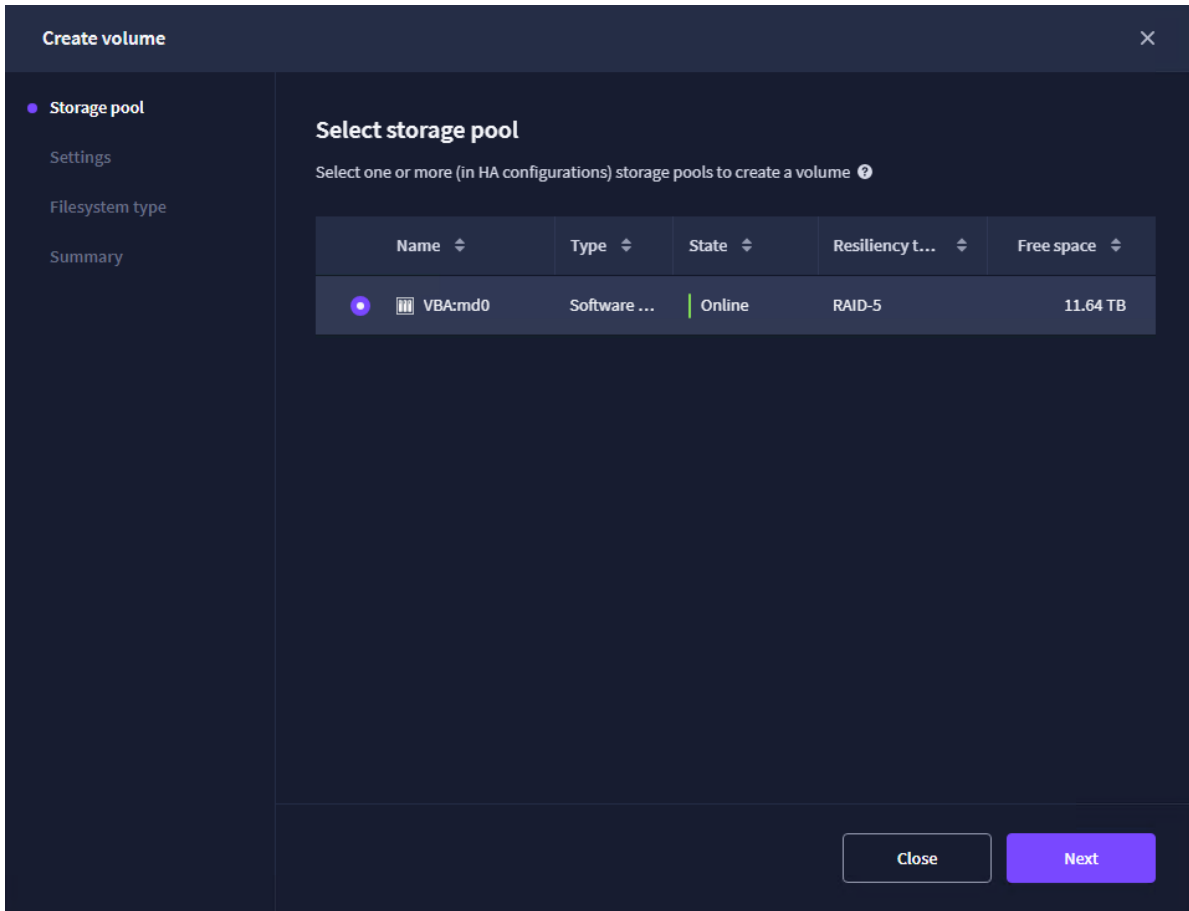


Creating Nfs Backup Repository

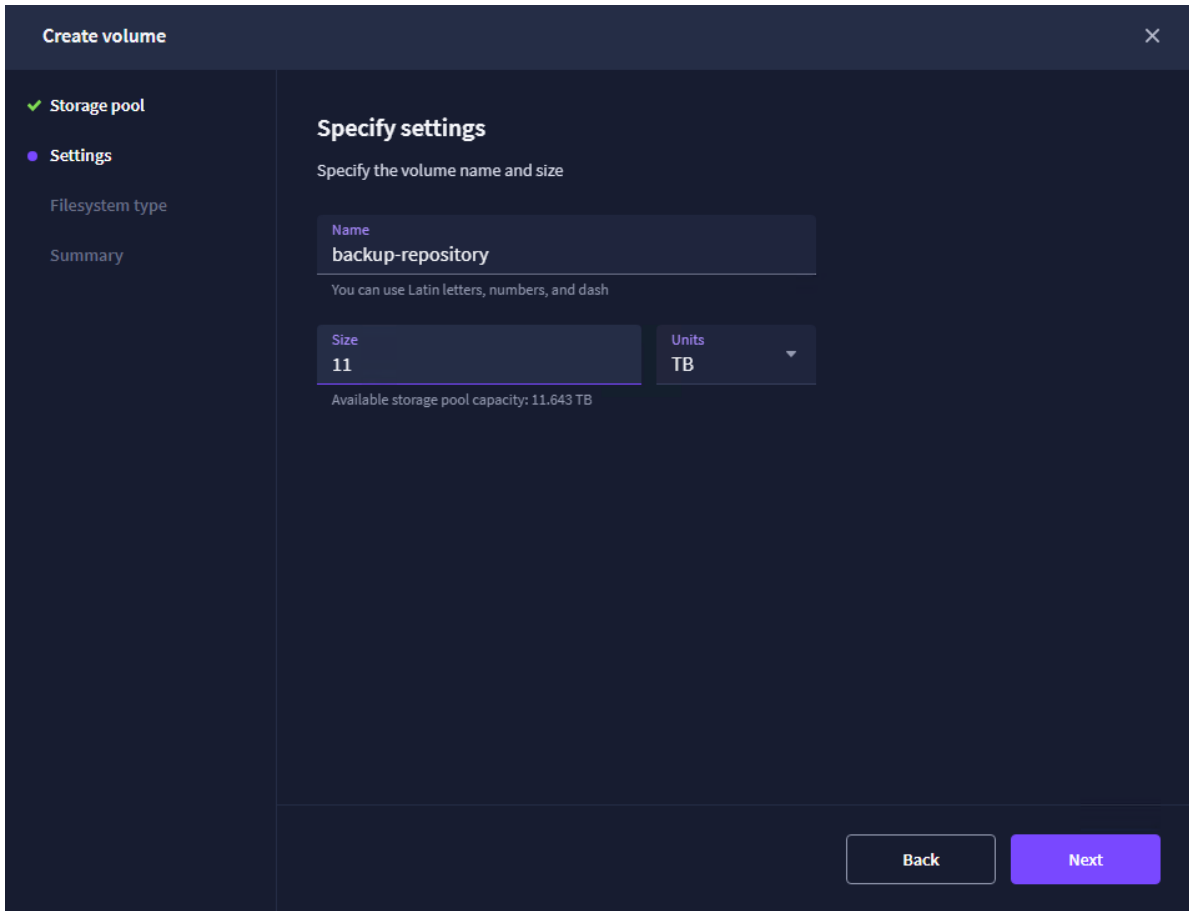
1. Navigate to the “Volumes” tab and click the “+” button to open the “Create volume” wizard.



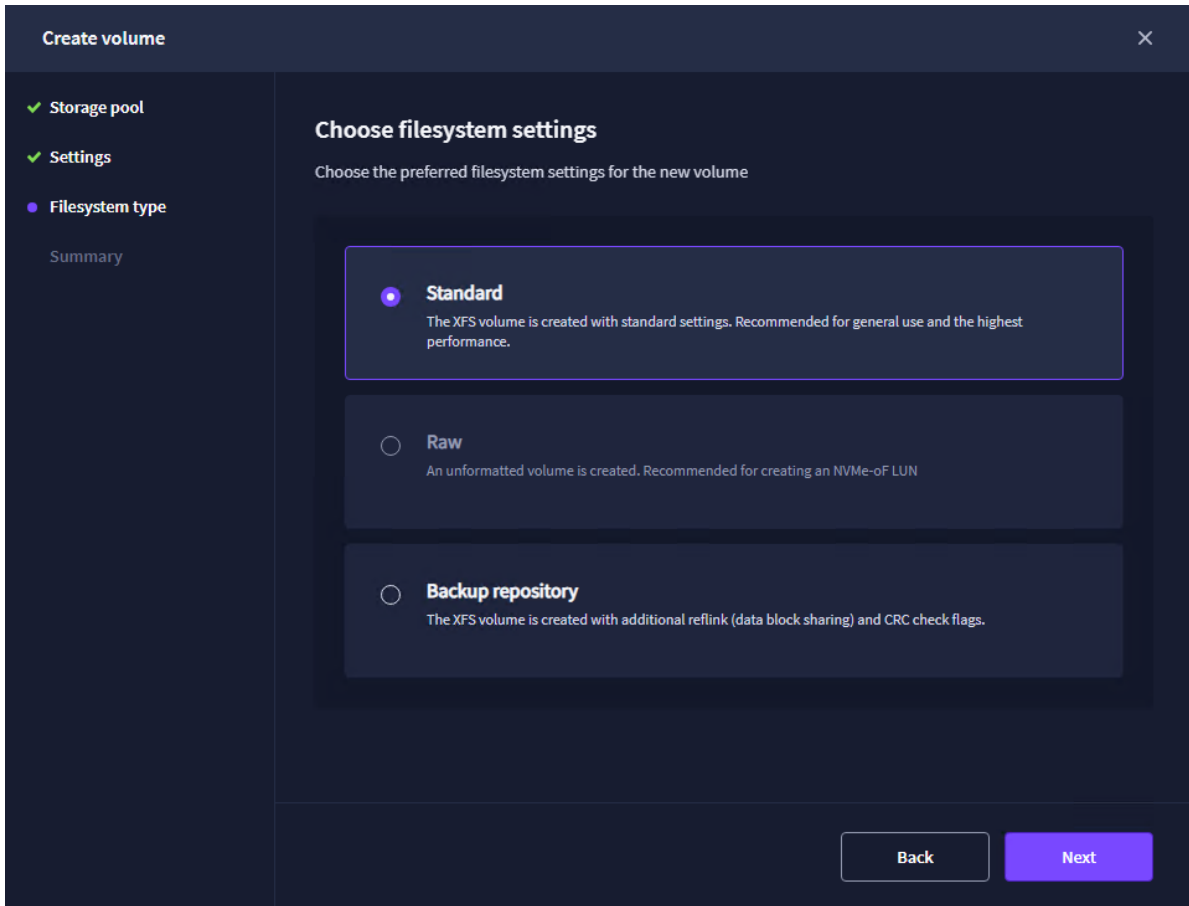
2. Select the storage pool that will be used for a new volume and click Next.



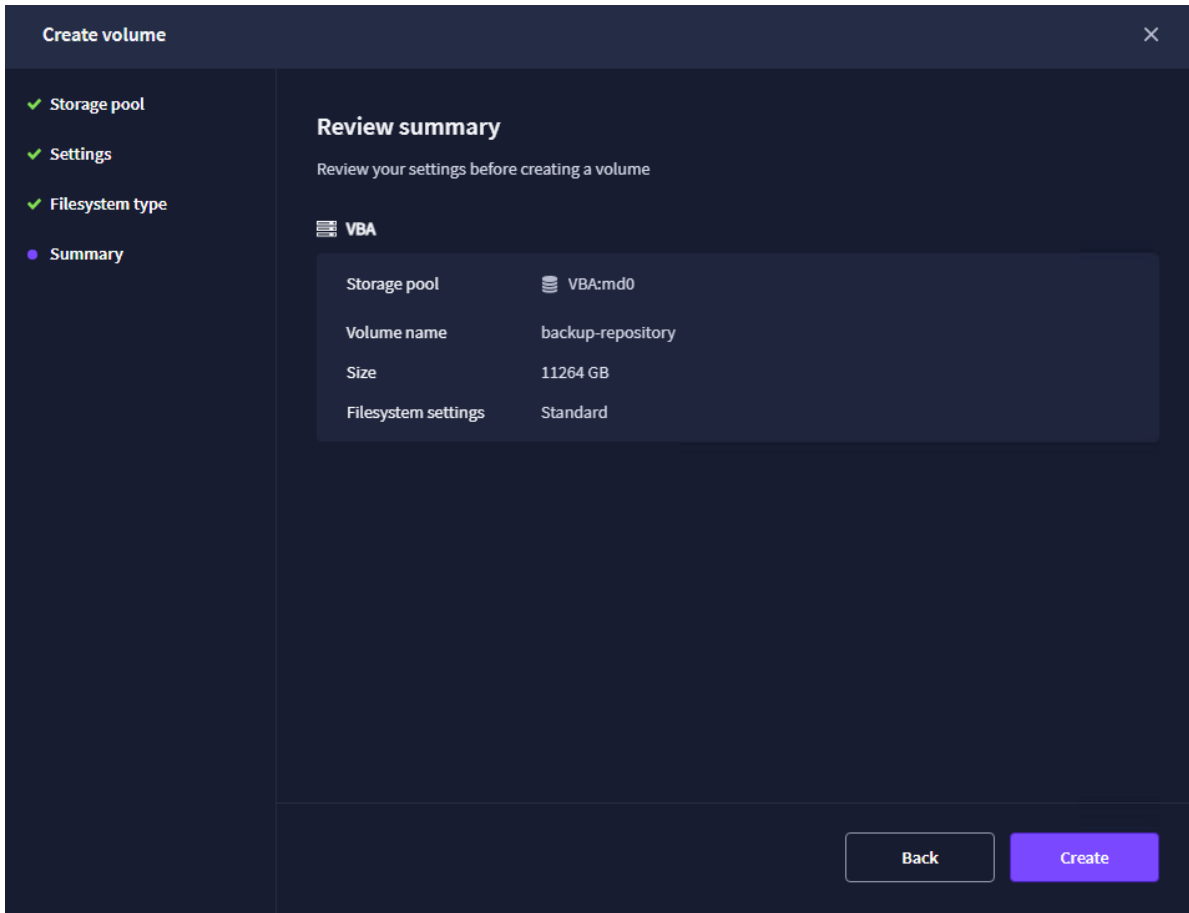
3. Specify the volume name and capacity. Click Next.



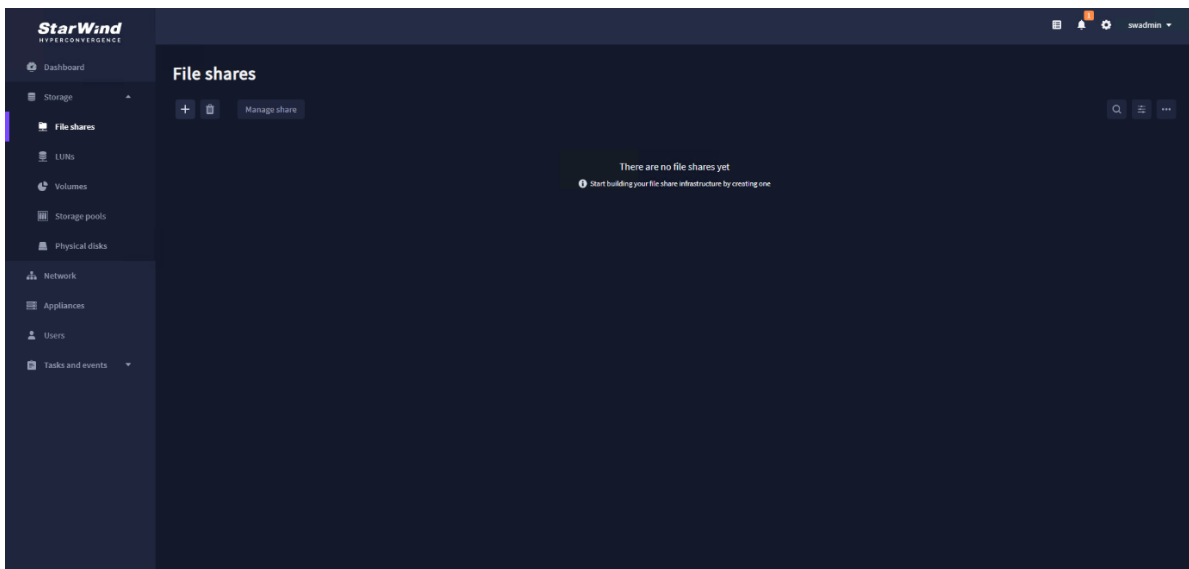
4. Select the “Standard” volume type and click Next.



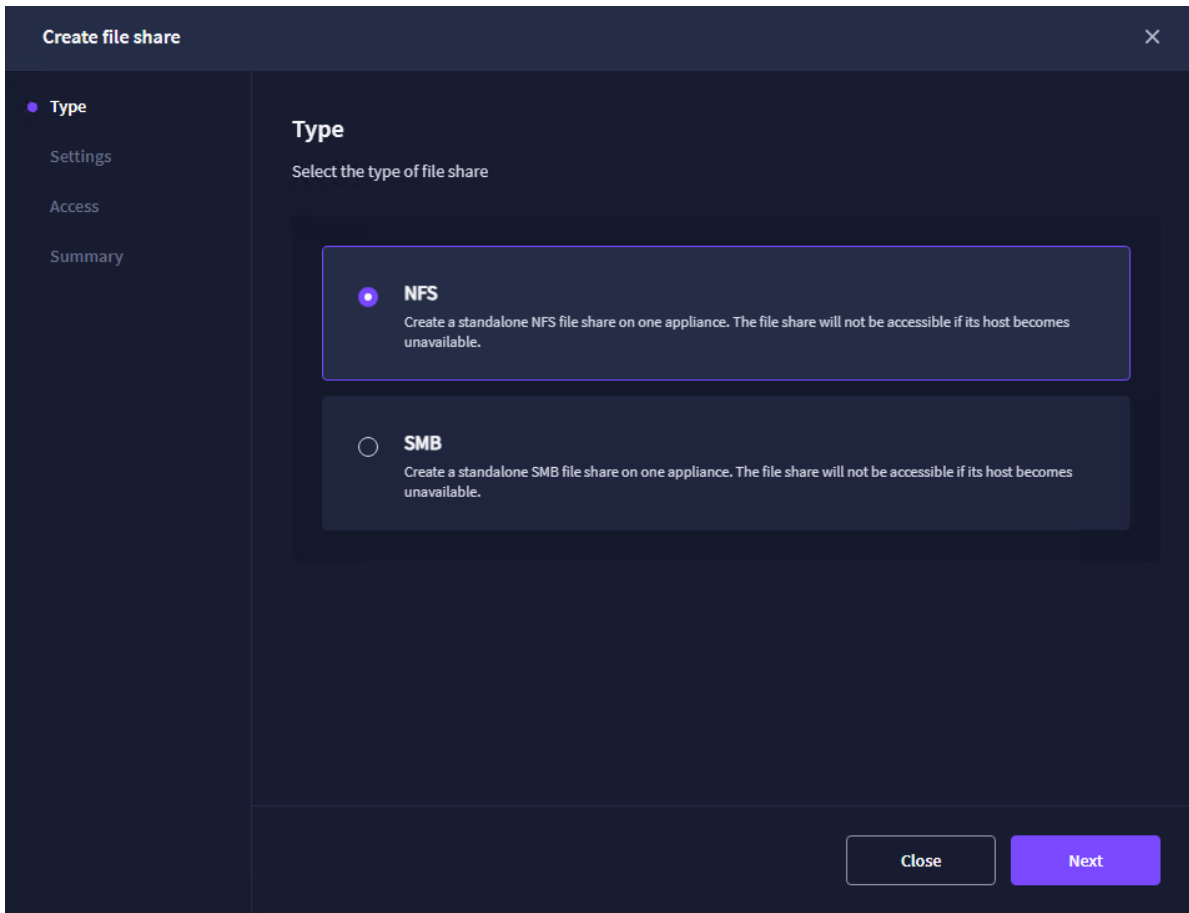
5. Review the Summary and click Create.



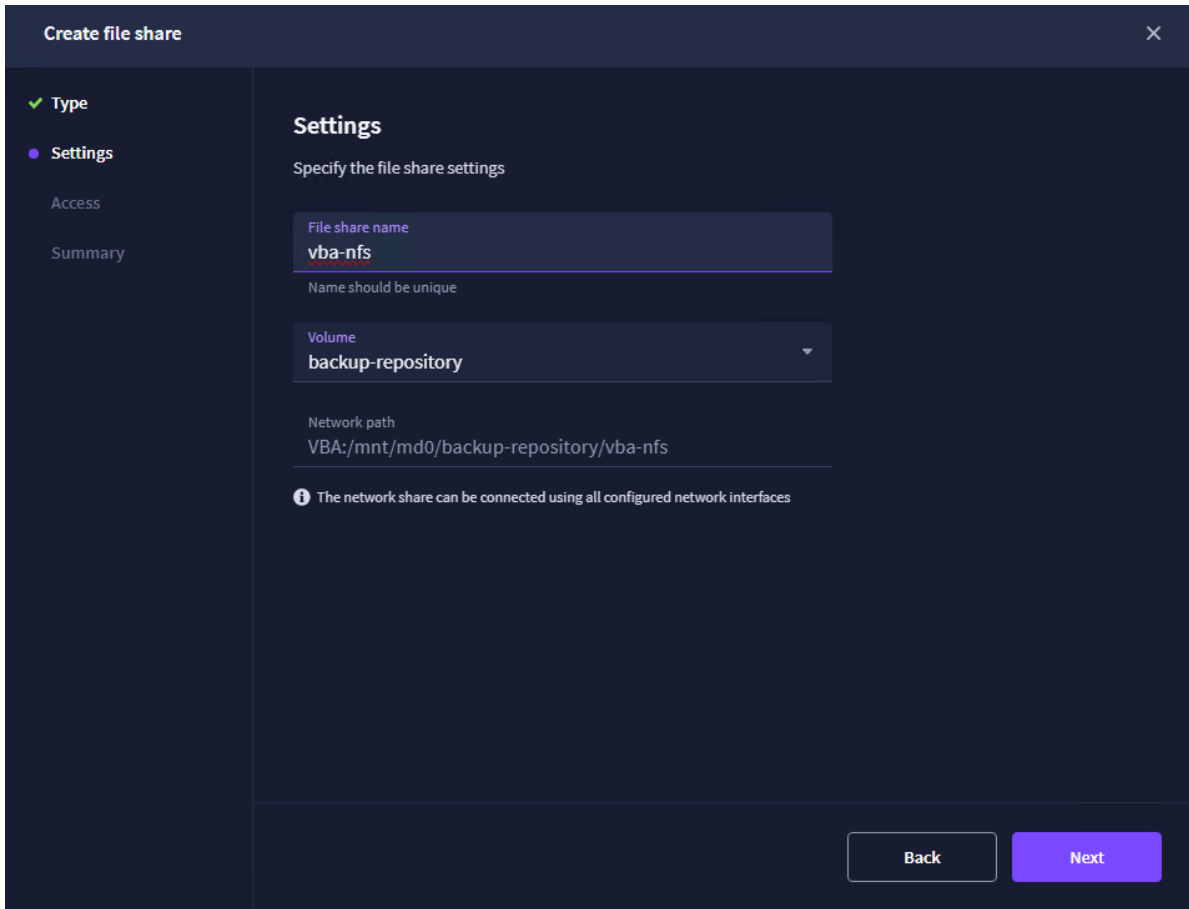
6. Navigate to the File shares tab and click the “+” sign.



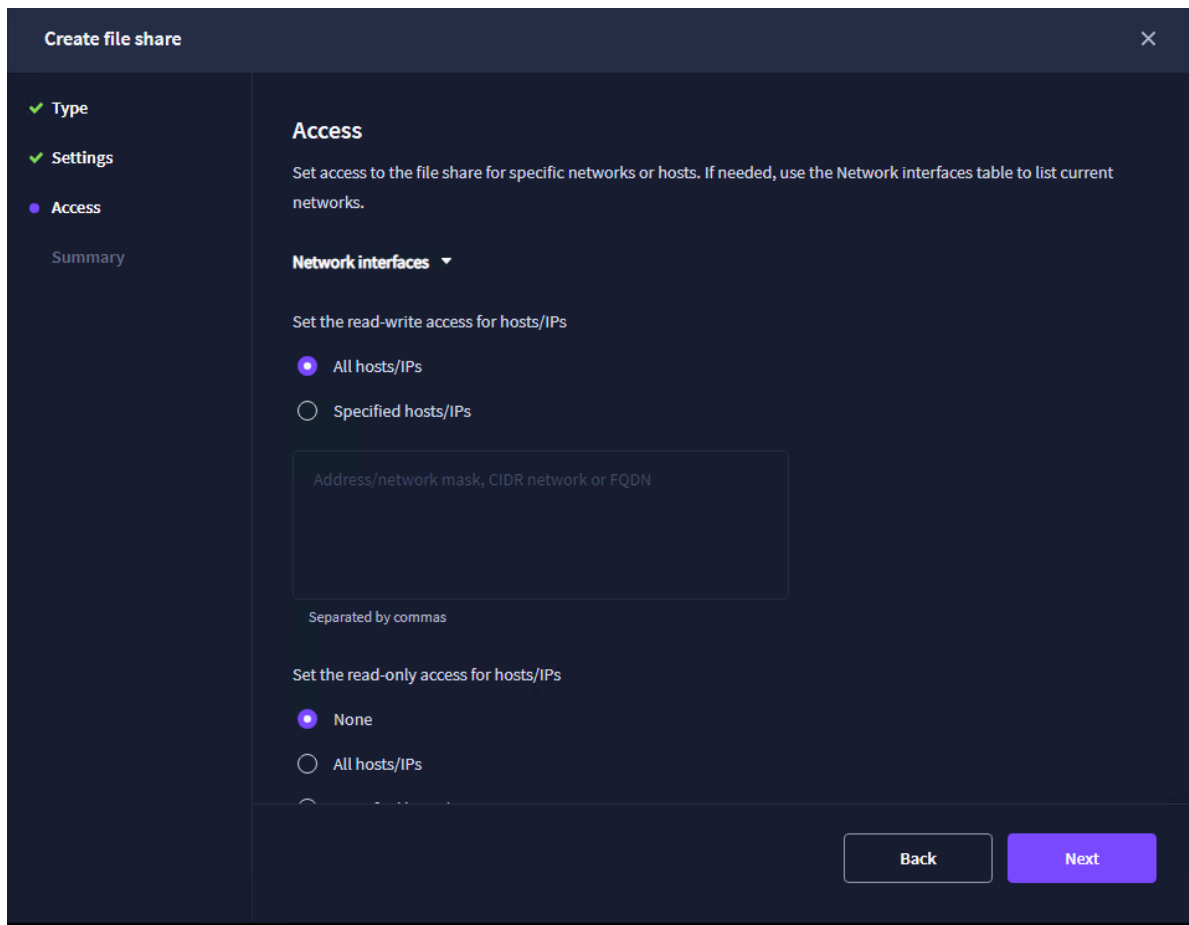
7. Select the NFS file share type and click Next.



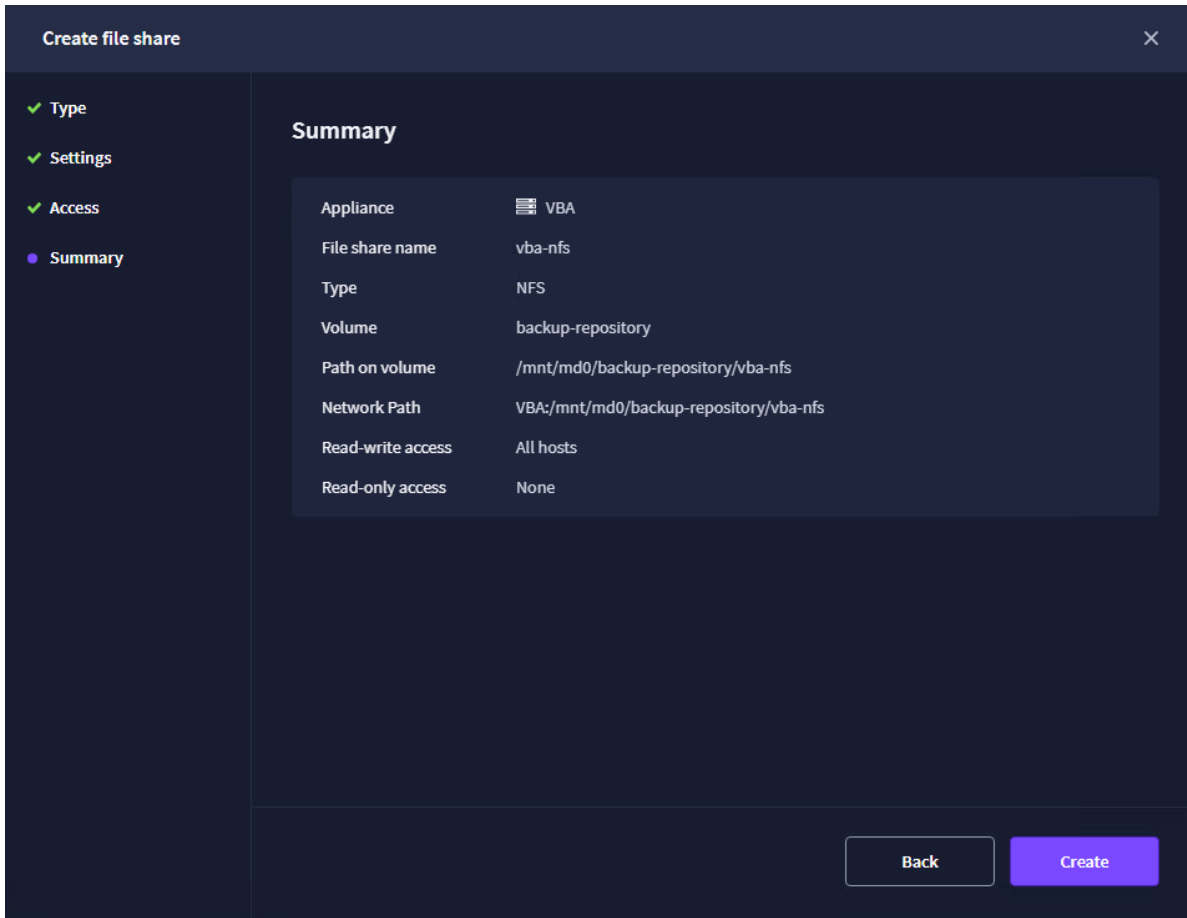
8. Specify the file share name and volume on which it will be located.



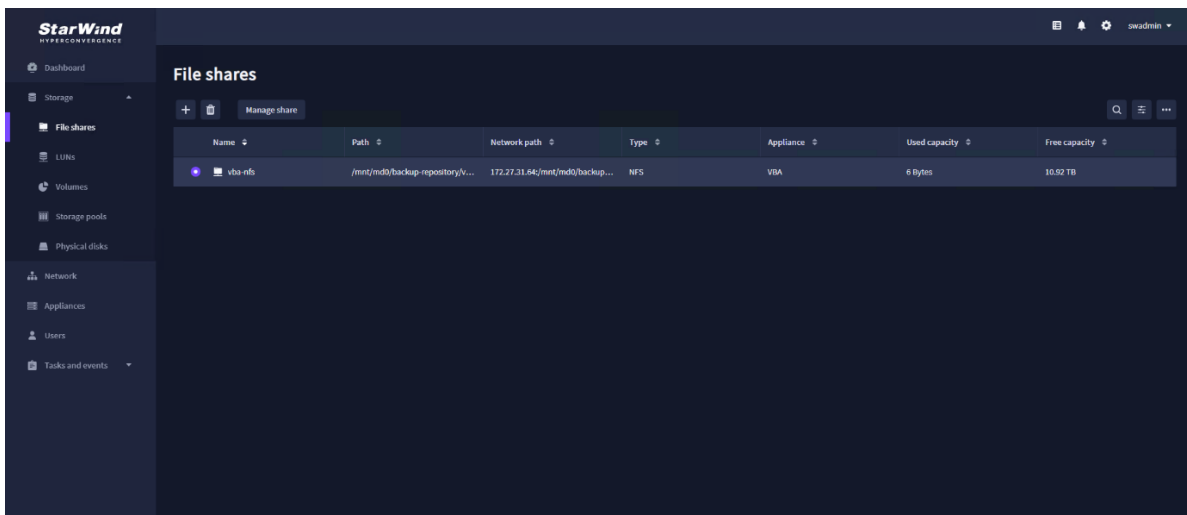
9. Specify the required access settings to the NFS share. Click Next.



10. Review Summary and click Create.

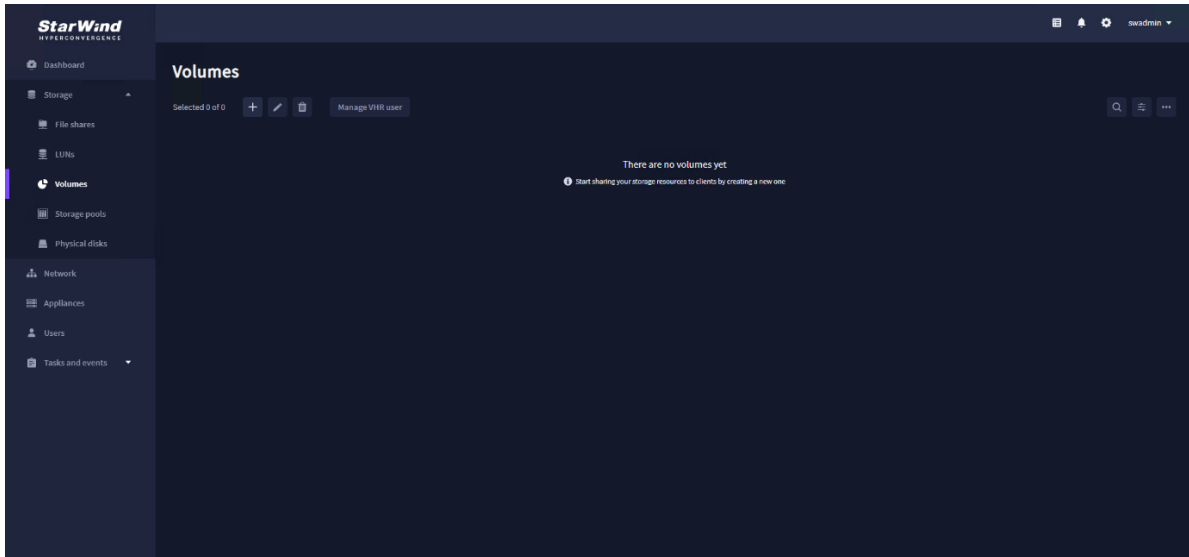


11. The NFS share repository is ready to be connected to the backup software.

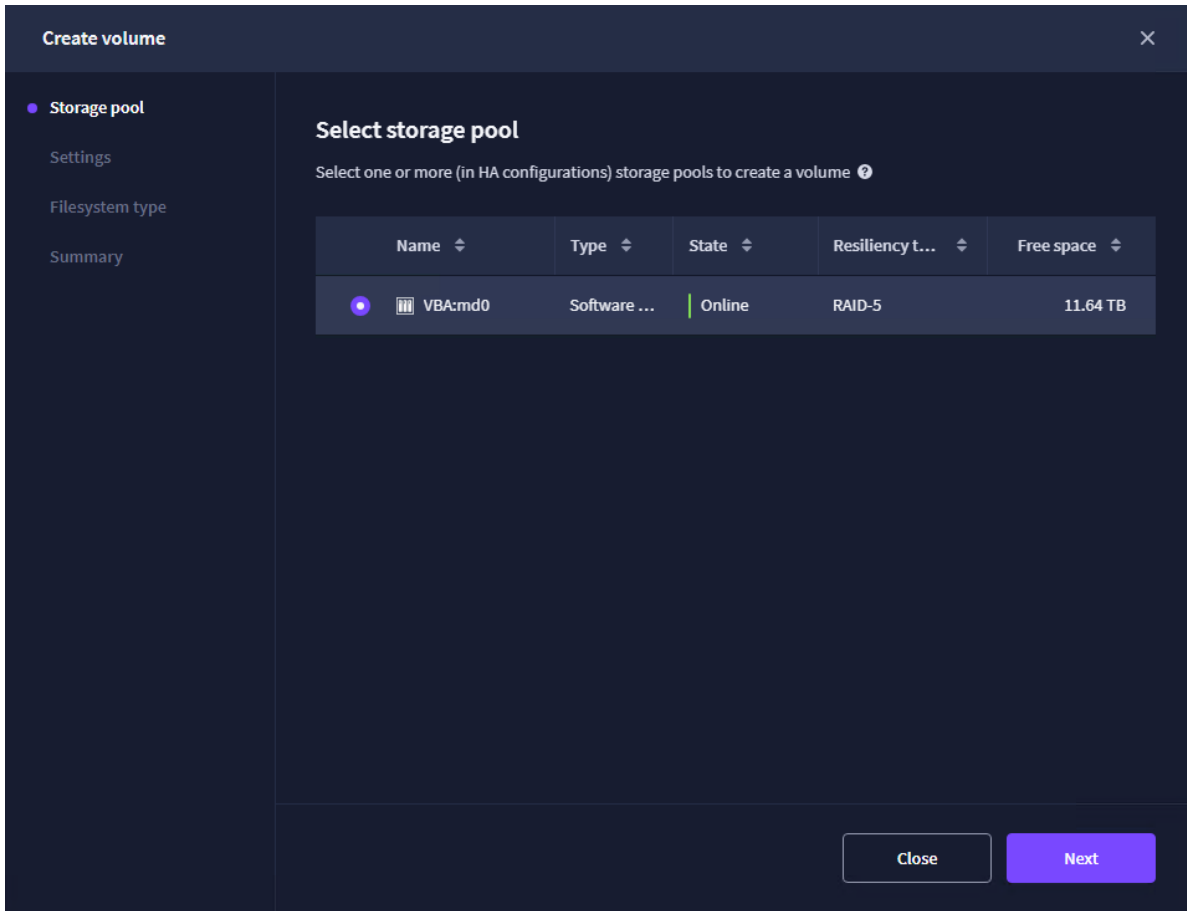


Creating Smb Backup Repository

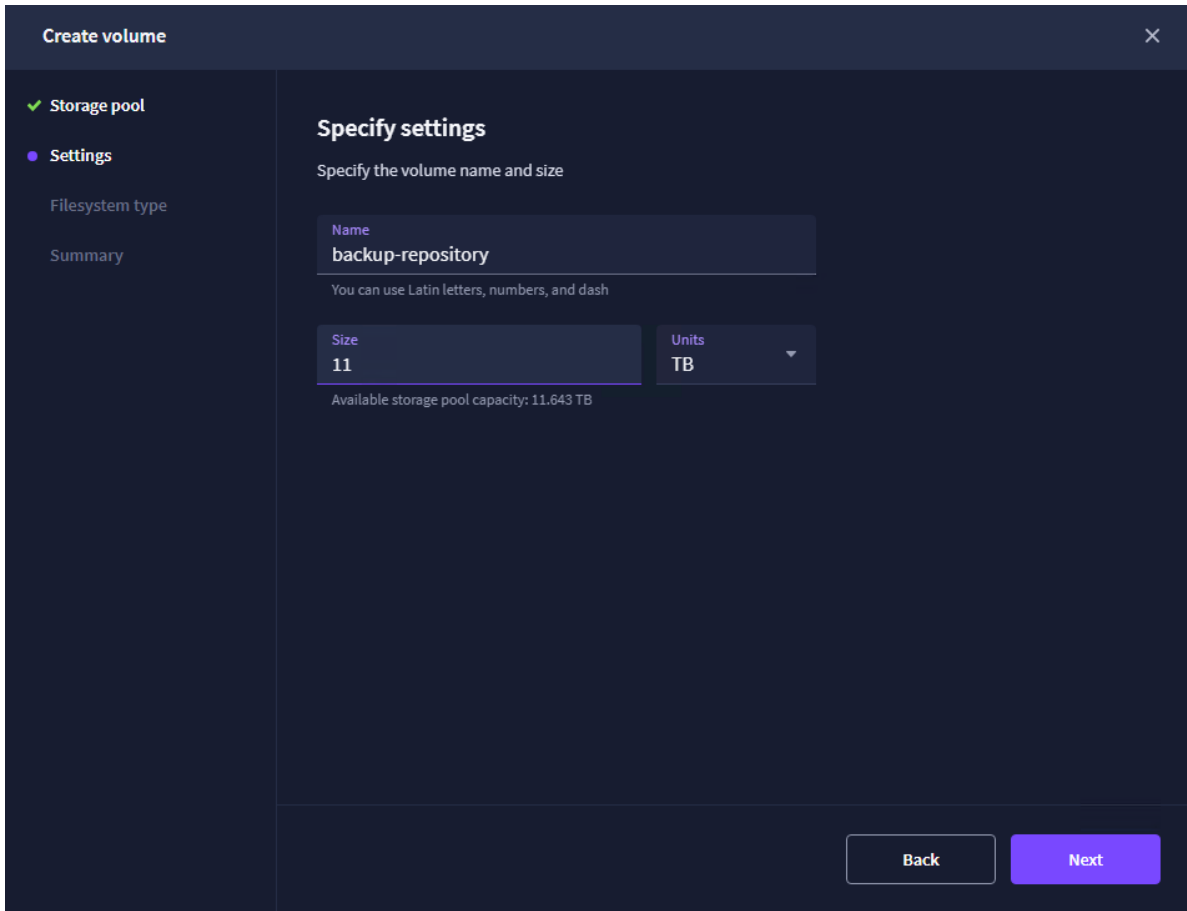
1. Navigate to the “Volumes” tab and click the “+” button to open the “Create volume” wizard.



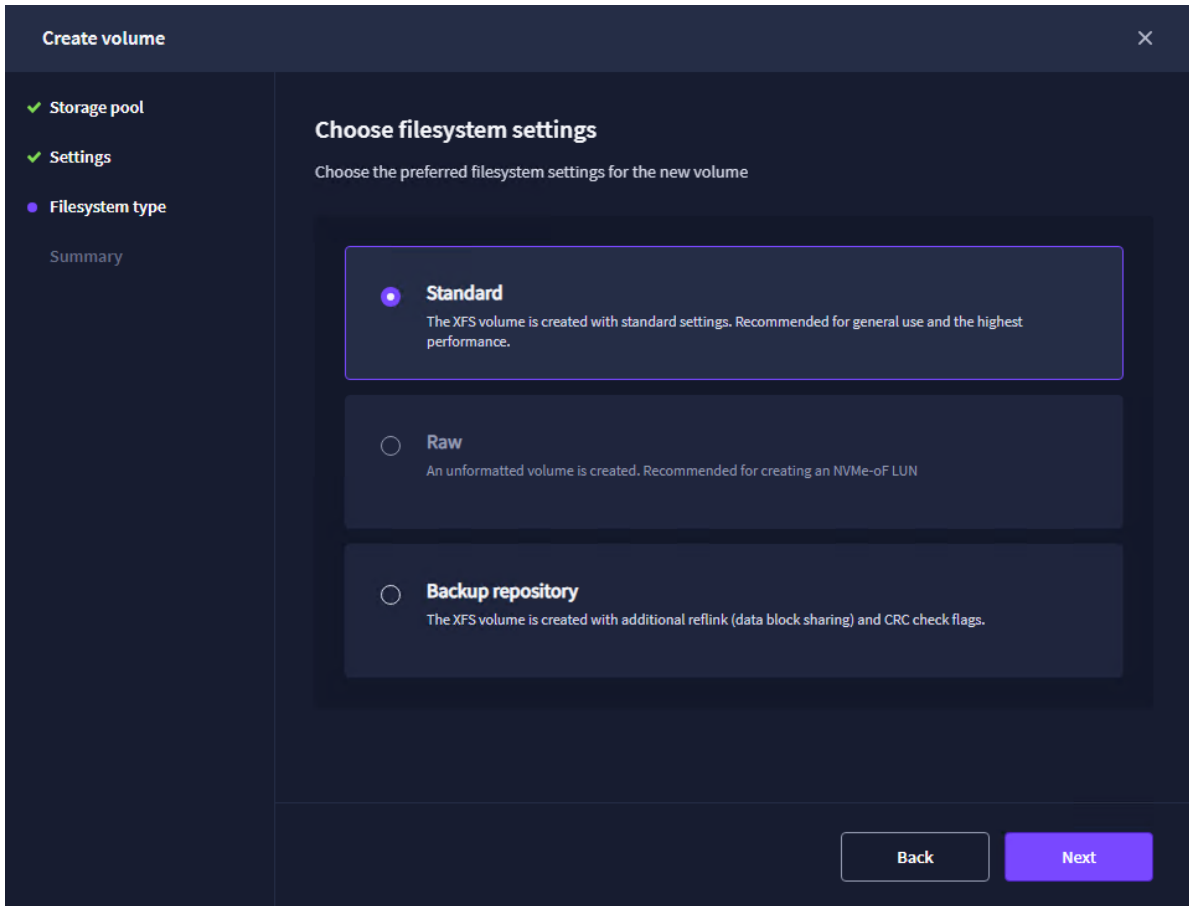
2. Select the storage pool that will be used for a new volume and click Next.



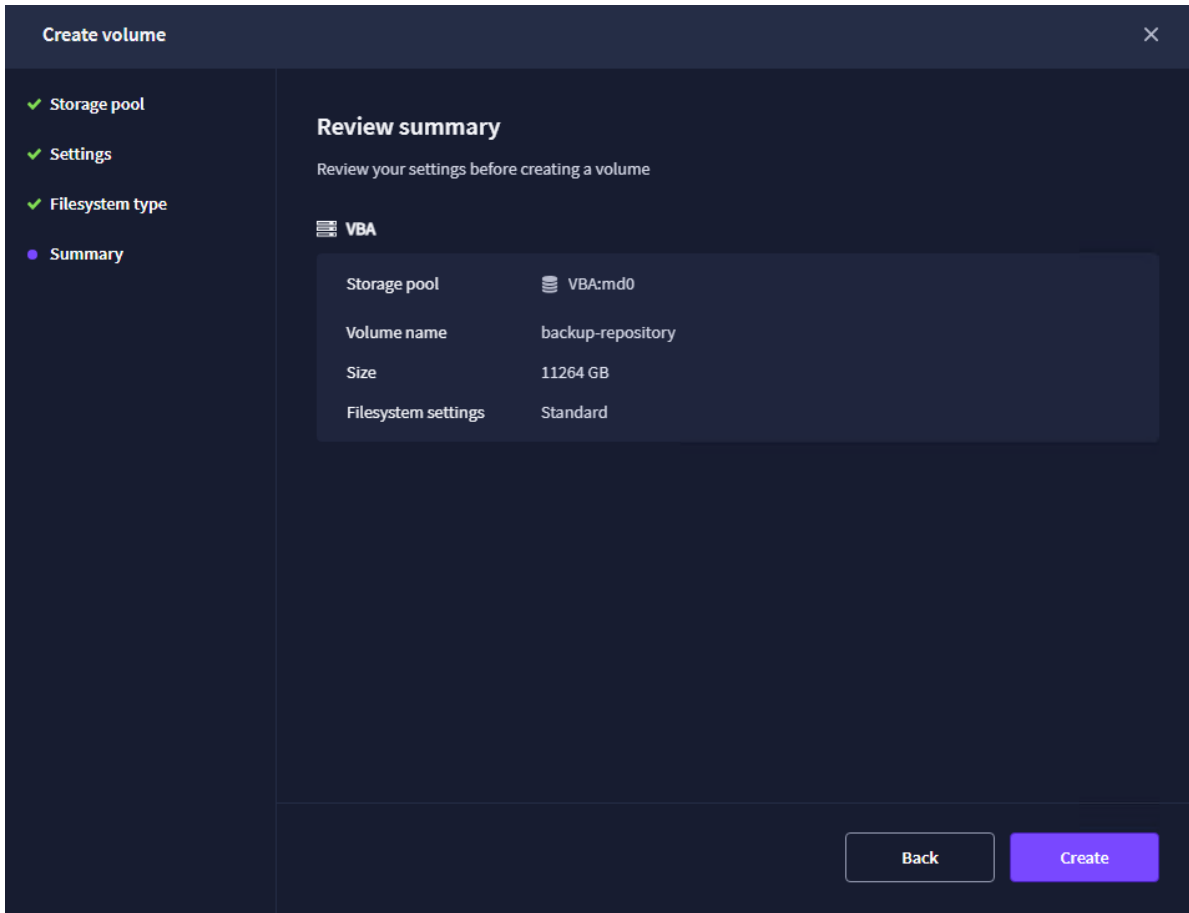
3. Specify the volume name and capacity. Click Next.



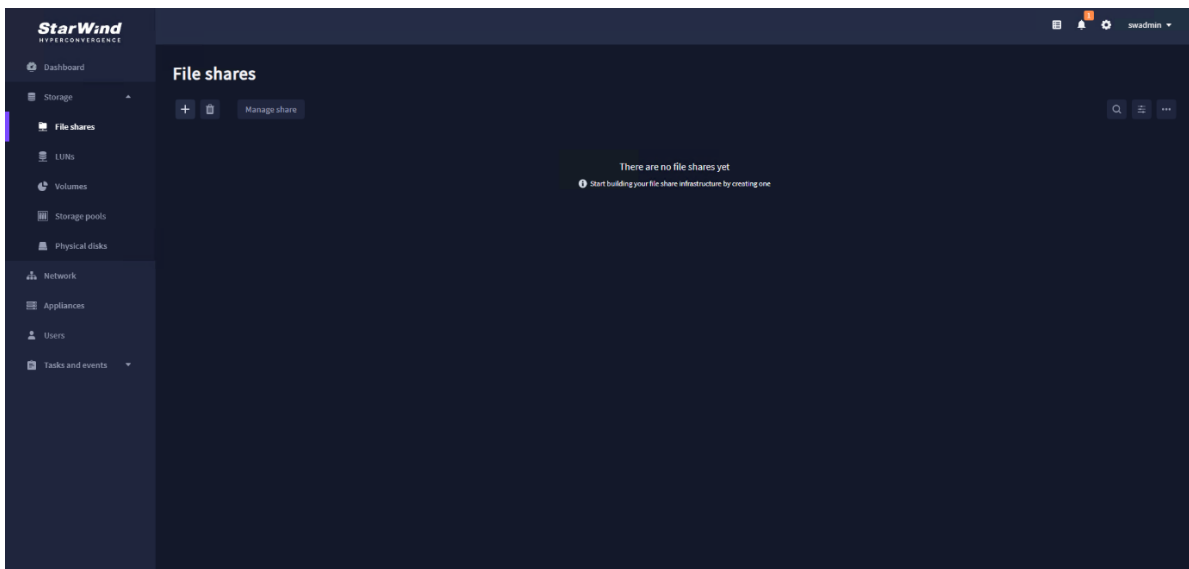
4. Select the “Standard” volume type and click Next.



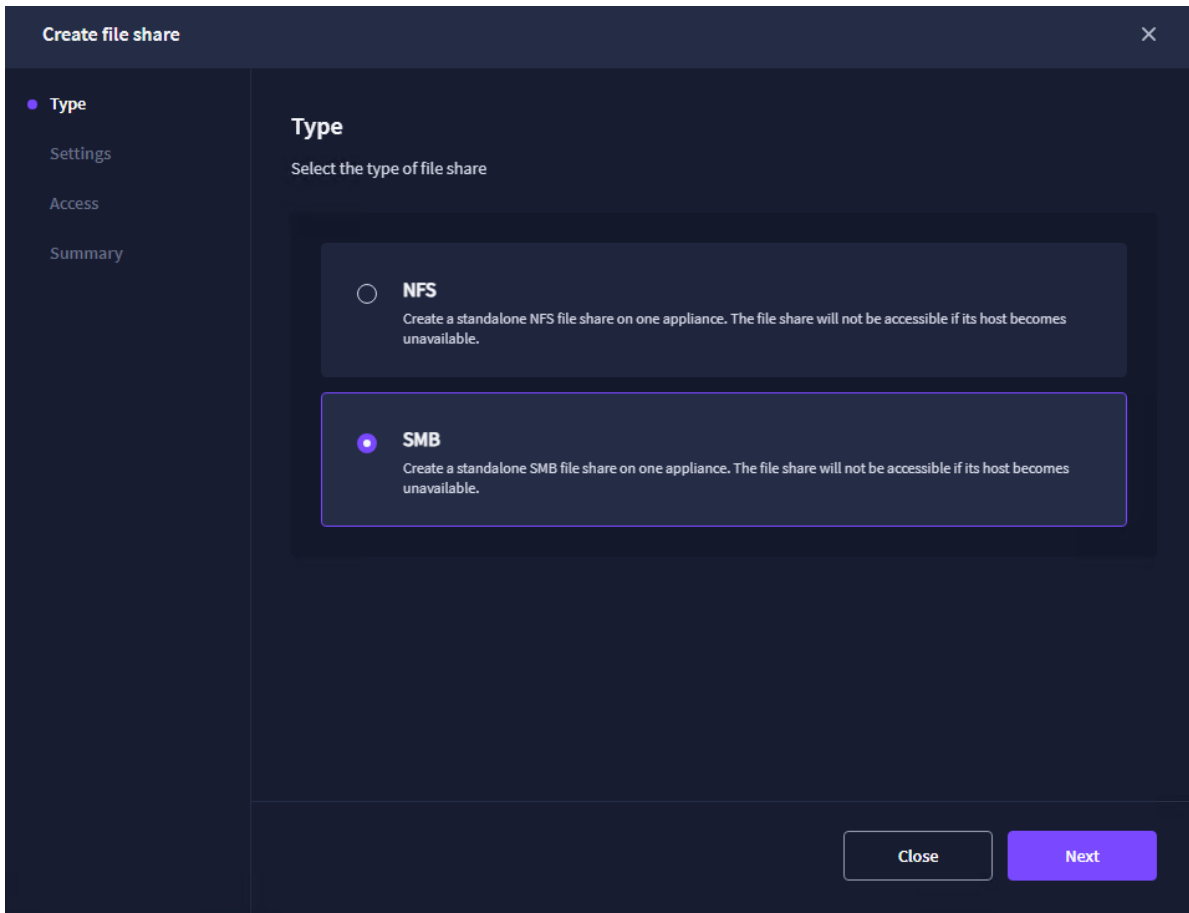
5. Review the Summary and click Create.



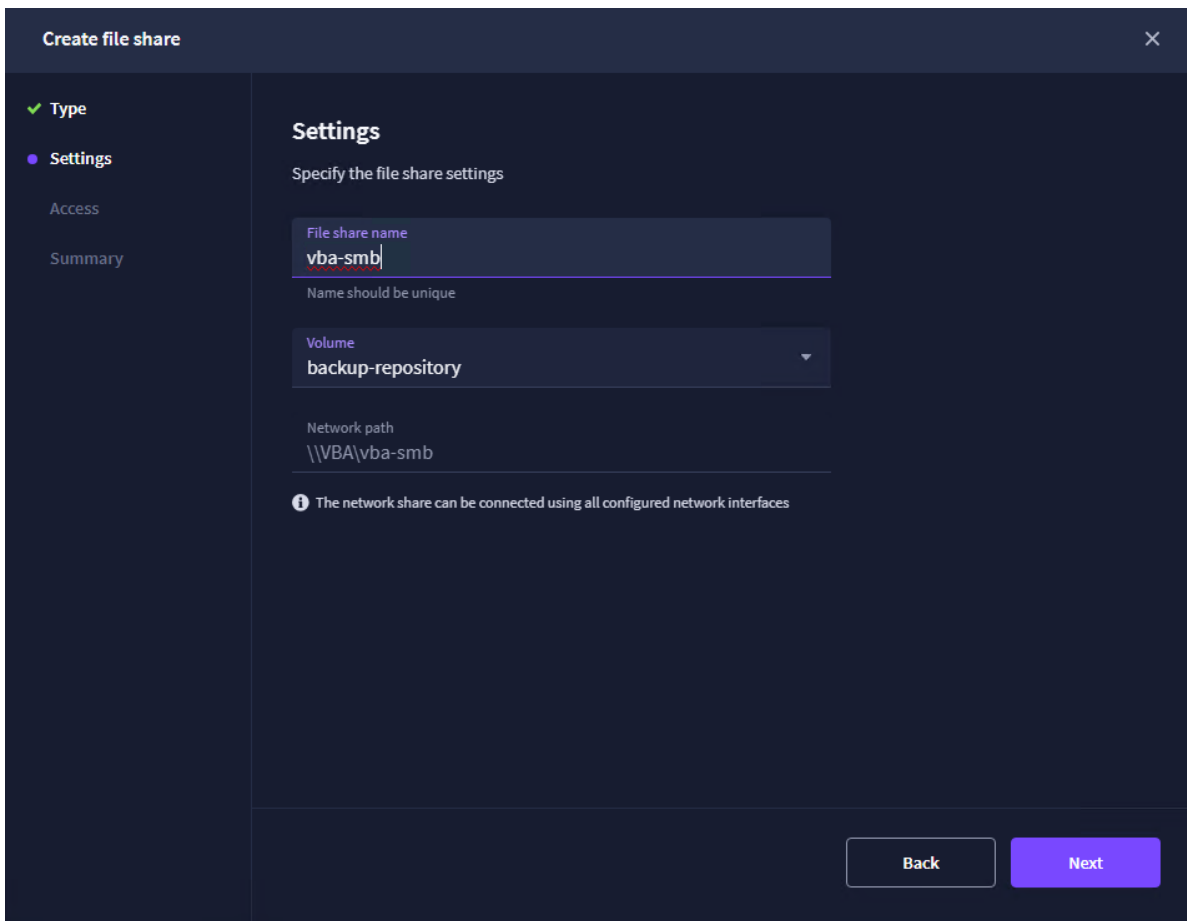
6. Navigate to the File shares tab and click the “+” sign.



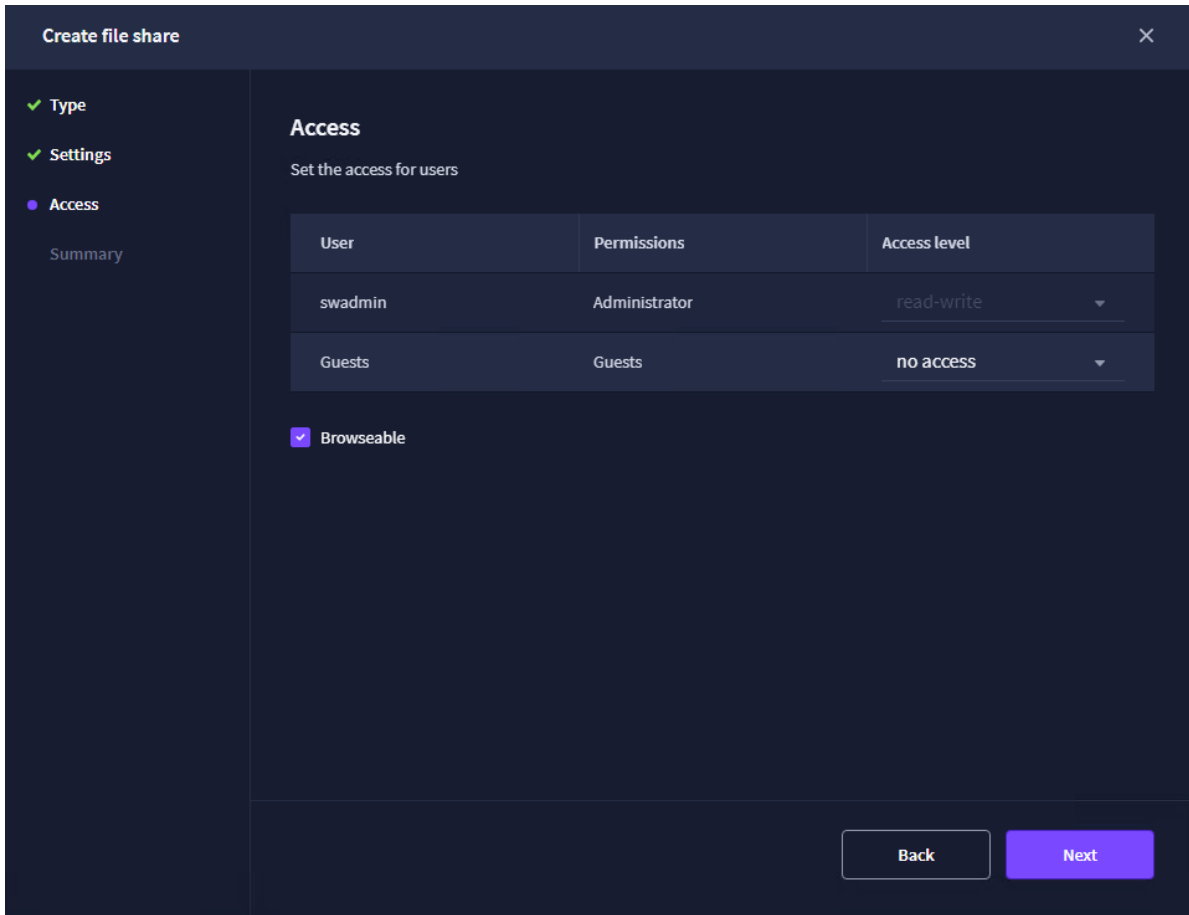
7. Select the SMB file share type and click Next.



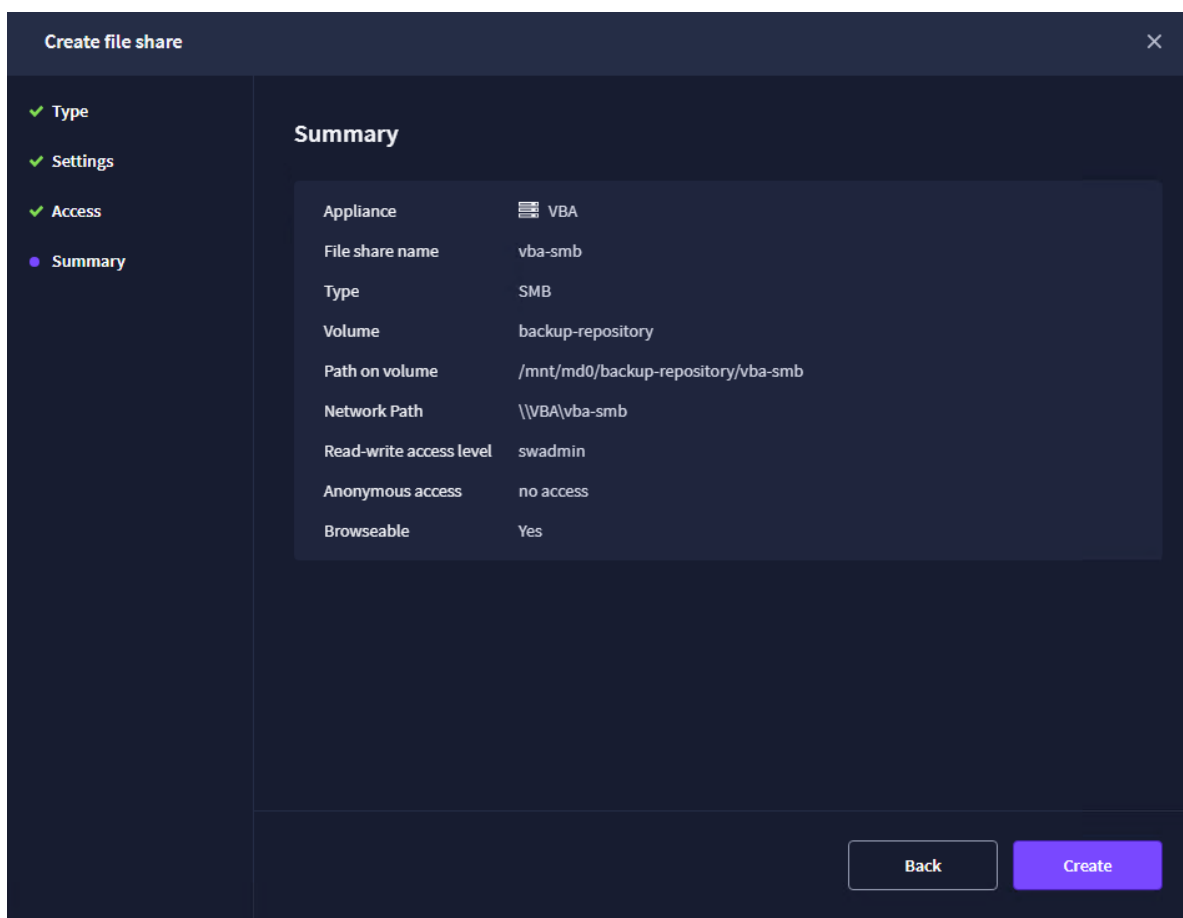
8. Specify the file share name and volume on which it will be located.



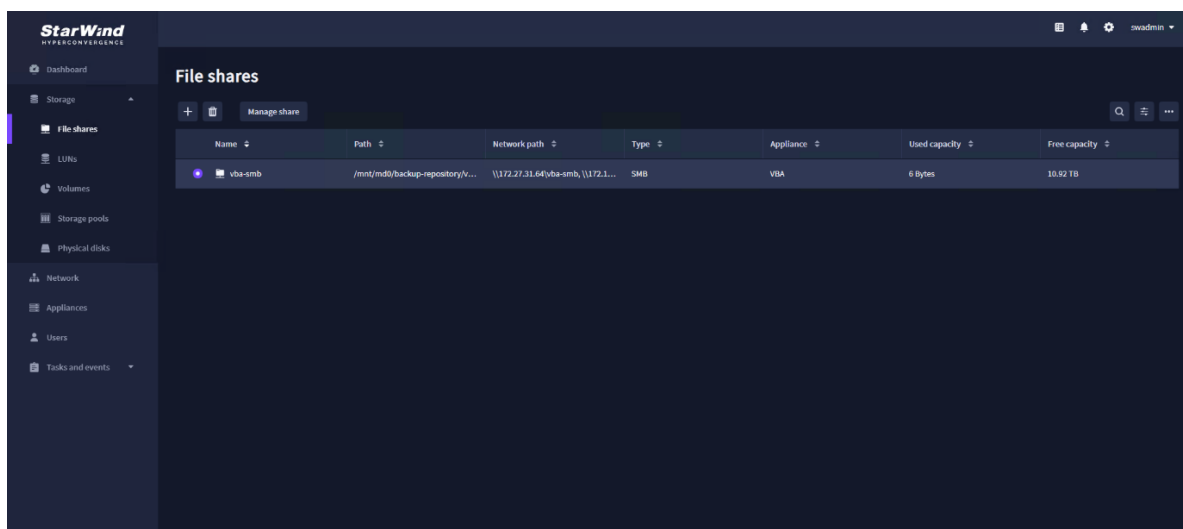
9. Specify the required access settings to the SMB share. Click Next.



10. Review Summary and click Create.

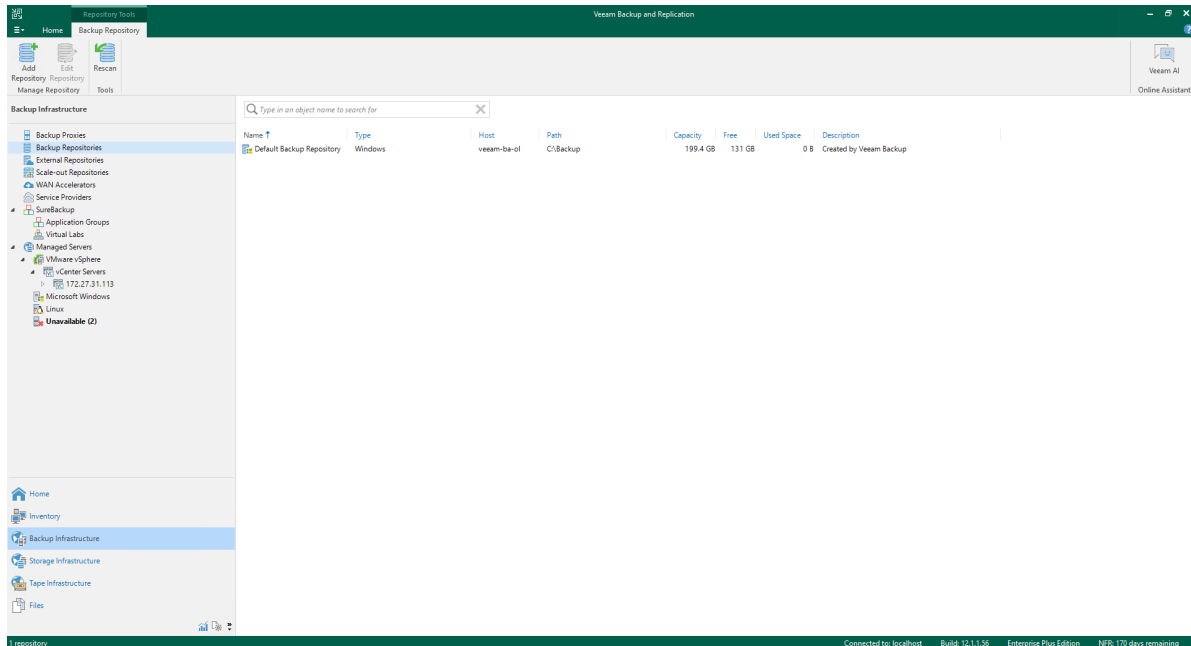


11. The SMB share repository is ready to be connected to the backup software.



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”.

Add Backup Repository ✕

Select the type of backup repository you want to add.



Direct attached storage

Microsoft Windows or Linux server with internal or direct attached storage. This configuration enables data movers to run directly on the server, allowing for fastest performance.



Network attached storage

Network share on a file server or a NAS device. When backing up to a remote share, we recommend that you select a gateway server located in the same site with the share.



Deduplicating storage appliance

Dell Data Domain, ExaGrid, Fujitsu ETERNUS CS800, HPE StoreOnce, Infinidat InfiniGuard or Quantum DXi. If you are unable to meet the requirements of advanced integration via native appliance API, use the network attached storage option instead.




Object storage

On-prem object storage system or a cloud object storage provider.


Cancel

3. Select "Linux (Hardened Repository)".




Direct Attached Storage ✕


Select the operating system type of a server you want to use as a backup repository.

- 

Microsoft Windows

Adds local storage presented as a regular volume or Storage Spaces. For better performance and storage efficiency, we recommend using ReFS.
- 

Linux


Adds local storage or locally mounted NFS share. For better performance and storage efficiency, we recommend using XFS. The Linux server must use bash shell, and have SSH and Perl installed.
- 

Linux (Hardened Repository)

Requires a Linux server with internal or direct attached storage. This configuration enables protection against cybersecurity threats with immutable backups. The Linux server must use bash shell and have SSH installed. For reduced attack surface, minimal Linux installation is highly recommended.

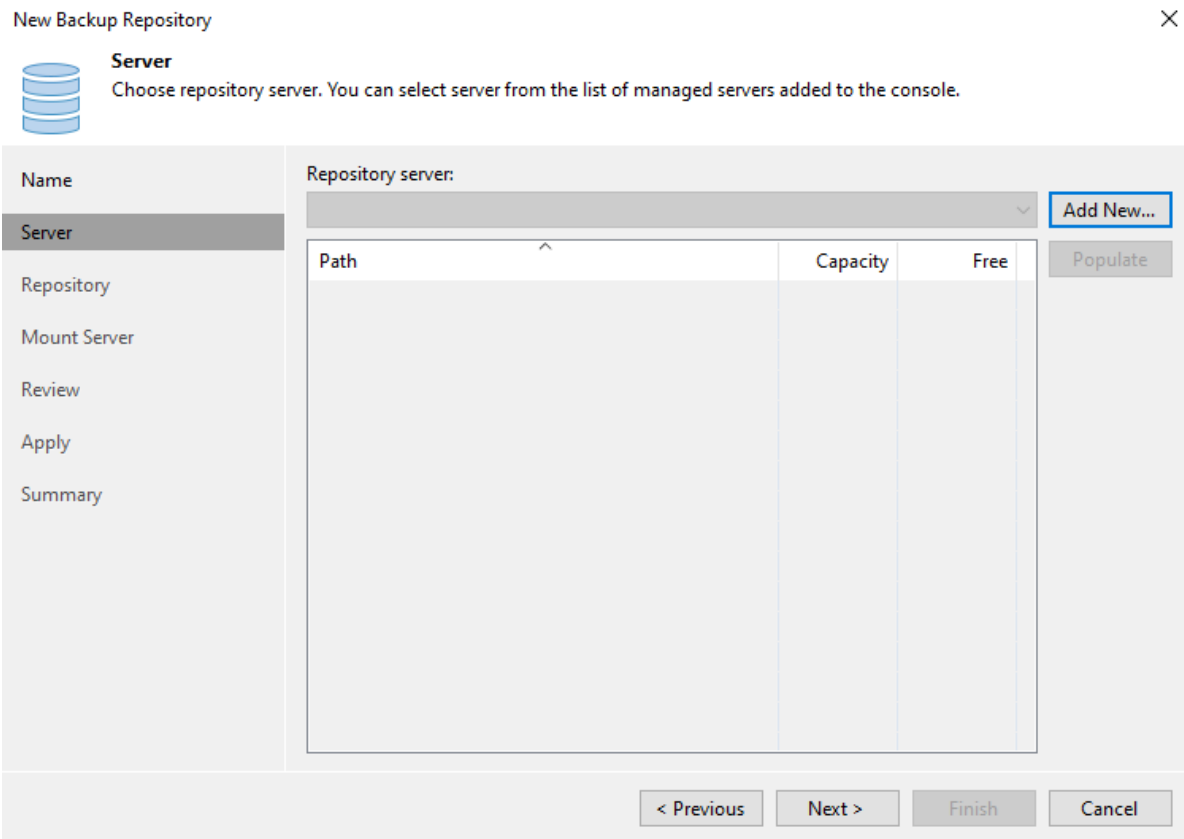
4. In the “New Backup Repository” wizard, specify the name and description for the new repository and click “Next”.

New Backup Repository ×

 **Name**
Type in a name and description for this backup repository.

Name	Name: <input type="text" value="sw-vba-hardened-repo"/>
Server	Description: <input type="text" value="Created by SW-VEEAMBR-OL\Administrator at 10/4/2024 8:08 AM."/>
Repository	
Mount Server	
Review	
Apply	
Summary	

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

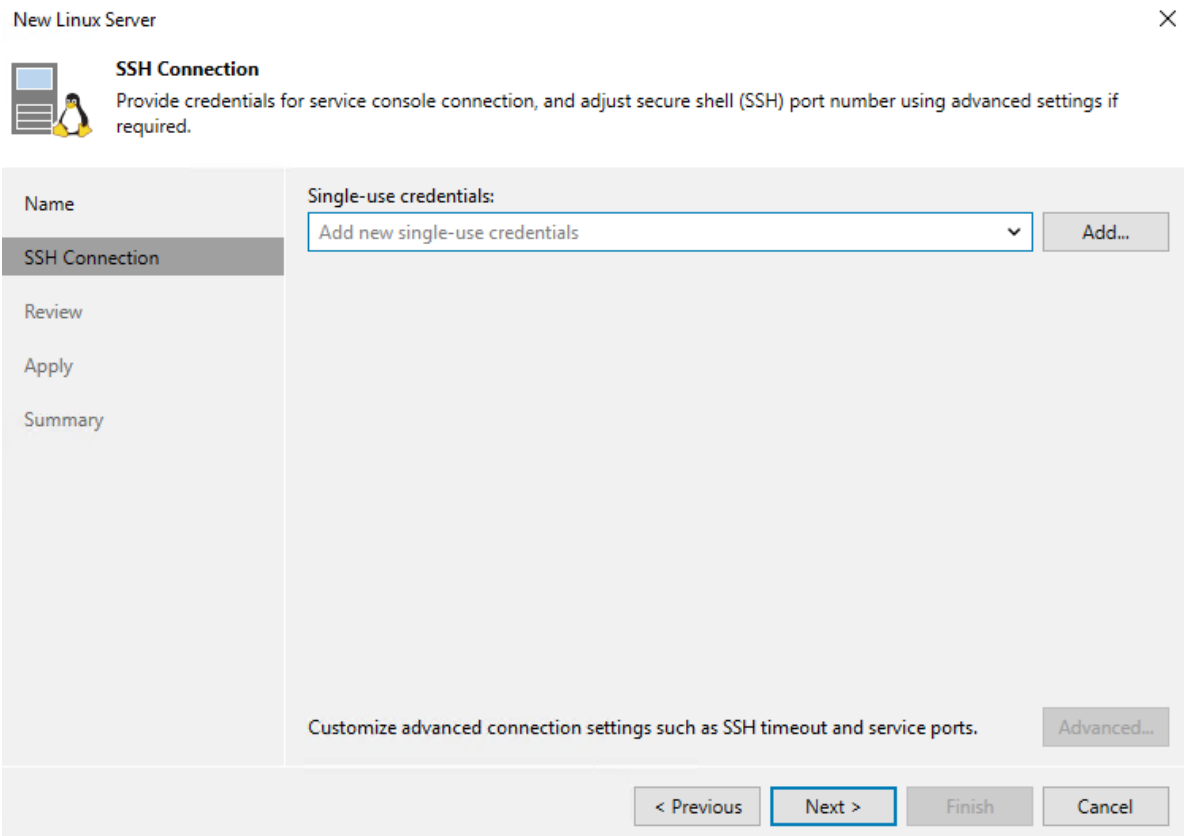
New Linux Server ×

 **Name**
Specify DNS name or IP address of Linux server. The server must have SSH and Perl installed.

Name	DNS name or IP address: <input type="text" value="172.16.30.10"/>
SSH Connection	Description: <input type="text" value="Created by SW-VEEAMBR-OL\Administrator at 10/4/2024 8:09 AM."/>
Review	
Apply	
Summary	

< Previous Next > Finish Cancel

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".

Credentials

Username: veeamuser

Password: [masked]

SSH port: 22

Non-root account

- Elevate account privileges automatically
- Add account to the sudoers file
- Use "su" if "sudo" fails


Root password: [empty]

Description: veeamuser

OK Cancel

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

New Linux Server ×

 **Review**
Please review your settings and click Apply to continue.


Name	Due to these modifications the following components will be installed or removed on the target host:						
SSH Connection							
Review	<table border="1"><thead><tr><th>Component name</th><th>Status</th></tr></thead><tbody><tr><td>Installer</td><td>will be installed</td></tr><tr><td>Transport</td><td>will be installed</td></tr></tbody></table>	Component name	Status	Installer	will be installed	Transport	will be installed
Component name	Status						
Installer	will be installed						
Transport	will be installed						
Apply							
Summary							

After you click Apply missing components will be installed on the target host.

< Previous Apply Finish Cancel

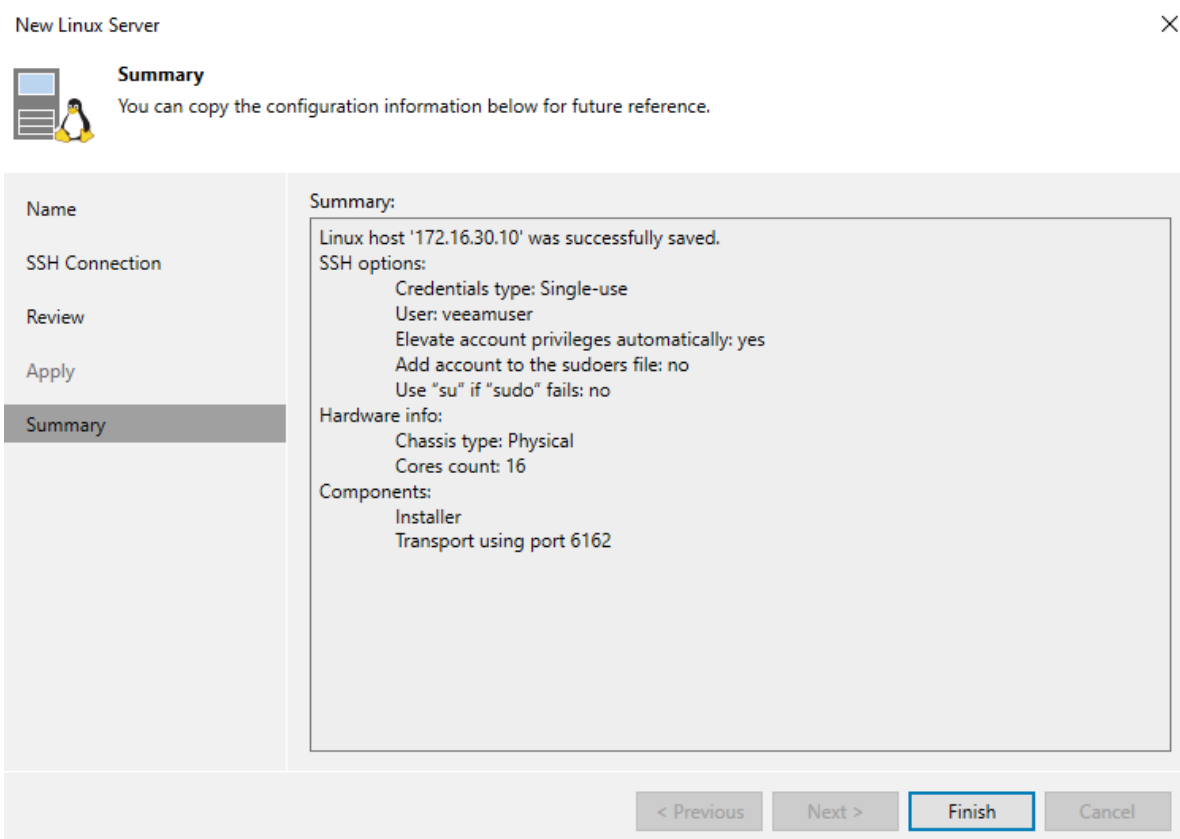
10. Wait until the installation is complete and click “Next”.

New Linux Server ✕

 **Apply**
Please wait while required operations are being performed. This may take a few minutes...

Name	Message	Duration
SSH Connection	✓ Discovering installed packages	
	✓ Installing Transport service	0:00:03
Review	✓ Setting backup server certificate	
	✓ Resolving backup server certificate's thumbprint	
Apply	✓ Setting backup client certificate	
	✓ Configuring Transport service	
	✓ Restarting Transport service	
	✓ Testing Veeam Transport service connection	0:00:03
	✓ Discovering installed packages	
	✓ Closing deployer service management port	
	✓ Collecting hardware info	0:00:03
	✓ Creating database records for server	0:00:09
	✓ Collecting disks and volumes info	0:00:07
Summary	✓ Linux server saved successfully	

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”

New Backup Repository




Server

Choose repository server. You can select server from the list of managed servers added to the console.

<p>Name</p> <p>Server</p> <p>Repository</p> <p>Mount Server</p> <p>Review</p> <p>Apply</p> <p>Summary</p>	Repository server:	172.16.30.10 (Created by SW-VEEAMBR-OL\Administrator at 10/4/2024 8:09 AM.)		Add New...	
		Path	Capacity	Free	Populate
		/ (/dev/mapper/main-root)	28.7 GB	18.5 GB	
		/boot (/dev/sda3)	456 MB	240.6 MB	
		/boot/efi (/dev/sda2)	240.2 MB	240.2 MB	
		/dev (udev)	3.8 GB	3.8 GB	
		/dev/shm (tmpfs)	3.9 GB	3.9 GB	
		/mnt/md0/sw-hardened-repo (/dev/mapper/vg...	11 TB	10.9 TB	
		/run (tmpfs)	793.4 MB	790.8 MB	
		/run/lock (tmpfs)	5 MB	5 MB	
	/run/user/1002 (tmpfs)	793.3 MB	793.3 MB		
	/run/user/1003 (tmpfs)	793.3 MB	793.3 MB		
	/sys/fs/cgroup (tmpfs)	3.9 GB	3.9 GB		
<p>< Previous Next > Finish Cancel</p>					

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”.

New Backup Repository
✕




Repository
Type in path to the folder where backup files should be stored, and set repository load control options.

Name	Location
Server	Path to folder: <input type="text" value="/mnt/md0/sw-hardened-repo/backups"/> Browse...
Repository	<div style="display: flex; justify-content: space-between;"> Capacity: <Unknown> Populate </div> <div style="display: flex; justify-content: space-between;"> Free space: <Unknown> </div> <p><input checked="" type="checkbox"/> Use fast cloning on XFS volumes (recommended) Reduces storage consumption and improves synthetic backup performance.</p> <p>Make recent backups immutable for: <input type="text" value="7"/> days Protects backups from modification or deletion by ransomware, malicious insiders and hackers. GFS backups are made immutable for the entire duration of their retention policy.</p>
Mount Server	<p>Load control</p> <p>Running too many concurrent tasks against the repository may reduce overall performance, and cause I/O timeouts. Control storage device saturation with the following settings:</p> <p><input checked="" type="checkbox"/> Limit maximum concurrent tasks to: <input type="text" value="4"/></p> <p><input type="checkbox"/> Limit read and write data rate to: <input type="text" value="1"/> MB/s</p>
Review	
Apply	
Summary	<p>Click Advanced to customize repository settings. Advanced...</p>

< Previous Next > Finish Cancel

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

New Backup Repository
✕




Mount Server
Specify a server to mount backups to when performing advanced restores (file, application item and instant VM recoveries). Instant recoveries require a write cache folder to store changed disk blocks in.

Name	Mount server:
Server	<input type="text" value="sw-veeambr-01 (Backup server)"/> Add New...
Repository	Instant recovery write cache folder: <input type="text" value="C:\ProgramData\Veeam\Backup\IRCache\"/> Browse...
Mount Server	Ensure that the selected volume has sufficient free disk space to store changed disk blocks of instantly recovered machines. We recommend placing the write cache folder on an SSD drive.
Review	<input checked="" type="checkbox"/> Enable vPower NFS service on the mount server (recommended) Ports...
Apply	Unlocks instant recovery of any backup (physical, virtual or cloud) to a VMware vSphere VM. vPower NFS service is not used for instant recovery to a Microsoft Hyper-V VM.
Summary	

< Previous
Next >
Finish
Cancel

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

New Backup Repository ×

 **Review**
Please review the settings, and click Apply to continue.

<p>Name</p> <p>Server</p> <p>Repository</p> <p>Mount Server</p> <p>Review</p> <p>Apply</p> <p>Summary</p>	<p>The following components will be processed on server sw-veeambr-01:</p> <table border="1"> <thead> <tr> <th>Component name</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>vPower NFS</td> <td>already exists</td> </tr> <tr> <td>Mount Server</td> <td>already exists</td> </tr> <tr> <td>VMware VDDK</td> <td>already exists</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table> <p><input type="checkbox"/> Search the repository for existing backups and import them automatically</p> <p><input type="checkbox"/> Import guest file system index data to the catalog</p> <p style="text-align: right;"> <input style="border: none;" type="button" value=" < Previous "/> <input style="border: 1px solid blue;" type="button" value=" Apply "/> <input style="border: none;" type="button" value=" Finish "/> <input style="border: none;" type="button" value=" Cancel "/> </p>	Component name	Status	vPower NFS	already exists	Mount Server	already exists	VMware VDDK	already exists				
Component name	Status												
vPower NFS	already exists												
Mount Server	already exists												
VMware VDDK	already exists												

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

New Backup Repository

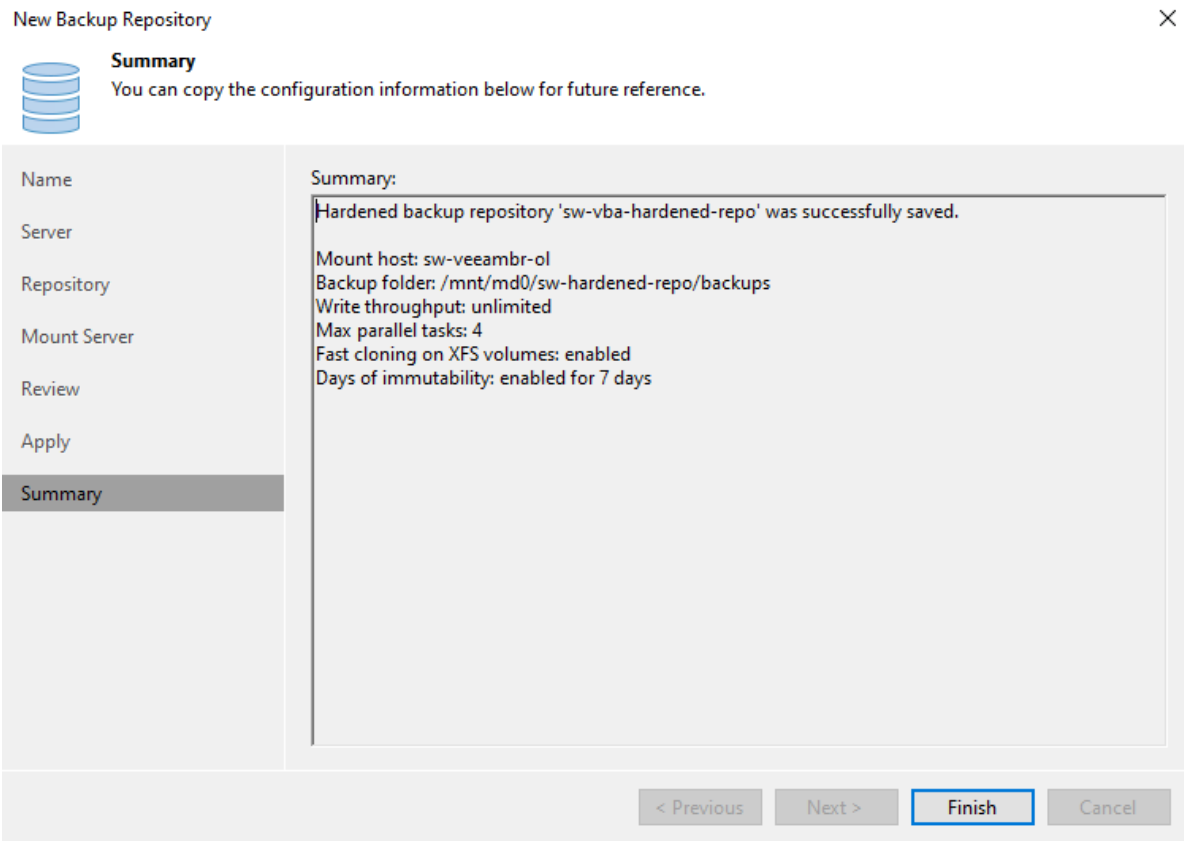


Apply

Please wait while backup repository is created and saved in configuration, this may take a few minutes.

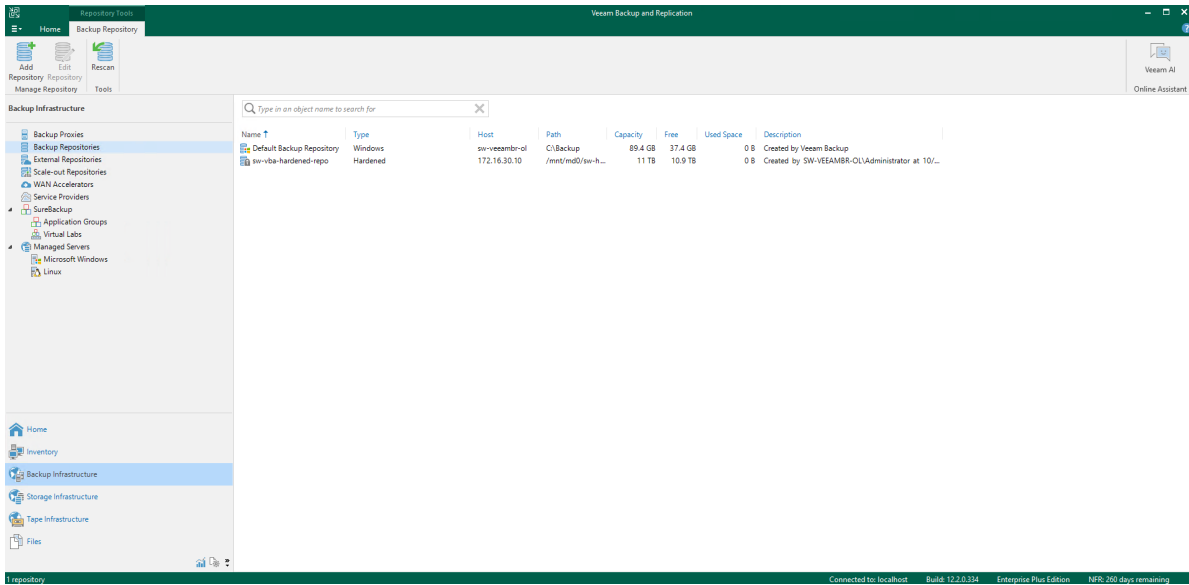
Name	Message	Duration
Server	Starting infrastructure item update process	0:00:02
Repository	Discovering installed packages	
Mount Server	Registering client sw-veeambr-ol for package vPower NFS	
Review	Registering client sw-veeambr-ol for package Mount Server	
Apply	Registering client sw-veeambr-ol for package VMware VDDK	
Summary	Discovering installed packages	
	All required packages have been successfully installed	
	Detecting server configuration	
	Reconfiguring vPower NFS service	0:00:07
	Creating configuration database records for installed packages	
	Collecting backup repository info	0:00:03
	Opening deployer service management port	
	Checking write permissions for the repository folder	
	Enabling restricted mode for Installer	
	Closing deployer service management port	
	Creating database records for repository	0:00:04
	Backup repository has been saved successfully	

17. Review the summary and click “Finish”.

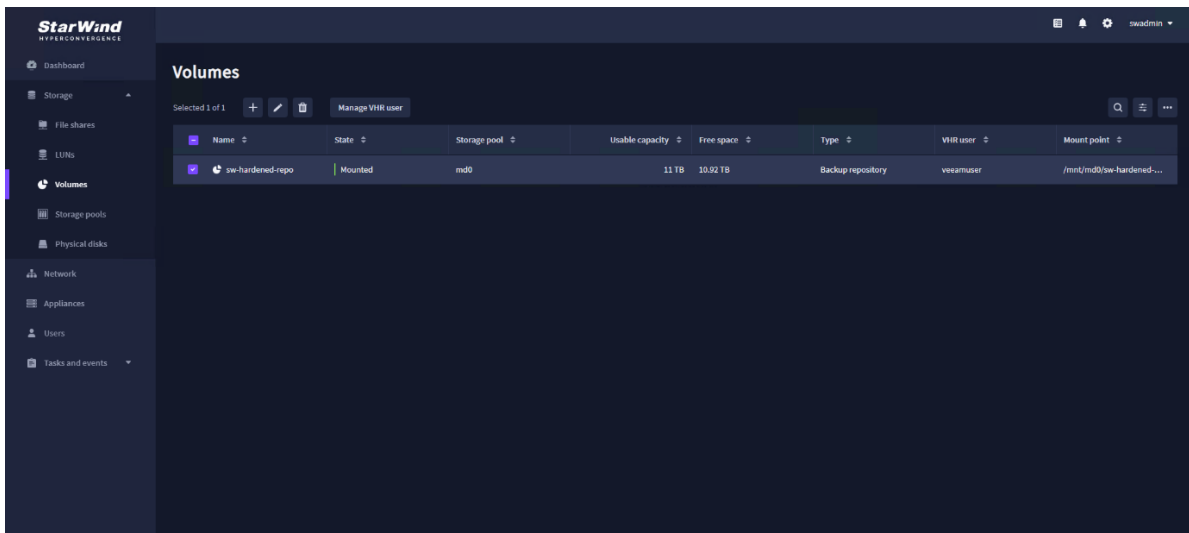


18. Veeam prompts whether you want to change the configuration backup location to the newly added repository. Select the preferred option according to your requirements.

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”.

Manage VHR user ✕

Create a new or choose the existing Veeam hardened repository (VHR) user that will have exclusive access to **sw-hardened-repo**

+ Q








User	Date created	SSH access
<input checked="" type="radio"/> veeamuser	10/04/2024 12:56:14	Disabled

Cancel 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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