StarWind Virtual Tape Library: Configuration Guide for Local Storage, VTL Deployed as a Linux ISO using GUI

2024

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 Tape Library (VTL)

Purpose

StarWind Virtual Tape Library (VTL) is software that allows you to emulate physical Tape Libraries while storing data on hard disk drives. The solution targets companies that want to completely discontinue using physical Tape libraries and simplify and accelerate data backup and recovery.

This document outlines how to configure the Linux version of StarWind Virtual Tape Library (VTL) on a physical bare-metal server using the StarWind Appliance ISO and includes steps on how to backup and restore data to VTL via Veeam Backup & Replication.

Audience

This technical guide is intended for storage and virtualization architects, system and backup administrators, and partners designing virtualized environments using StarWind Virtual Tape Library (VTL).

Expected result

The end result of following this guide will be a fully configured StarWind VTL on a bare-metal server with configured backup jobs to StarWind VTL using Veeam Backup & Replication.

Prerequisites

StarWind VTL system requirements

Prior to installing StarWind VTL, please make sure that the system meets the requirements, which are available via the following link:
https://www.starwindsoftware.com/system-requirements#virtual-tape-library

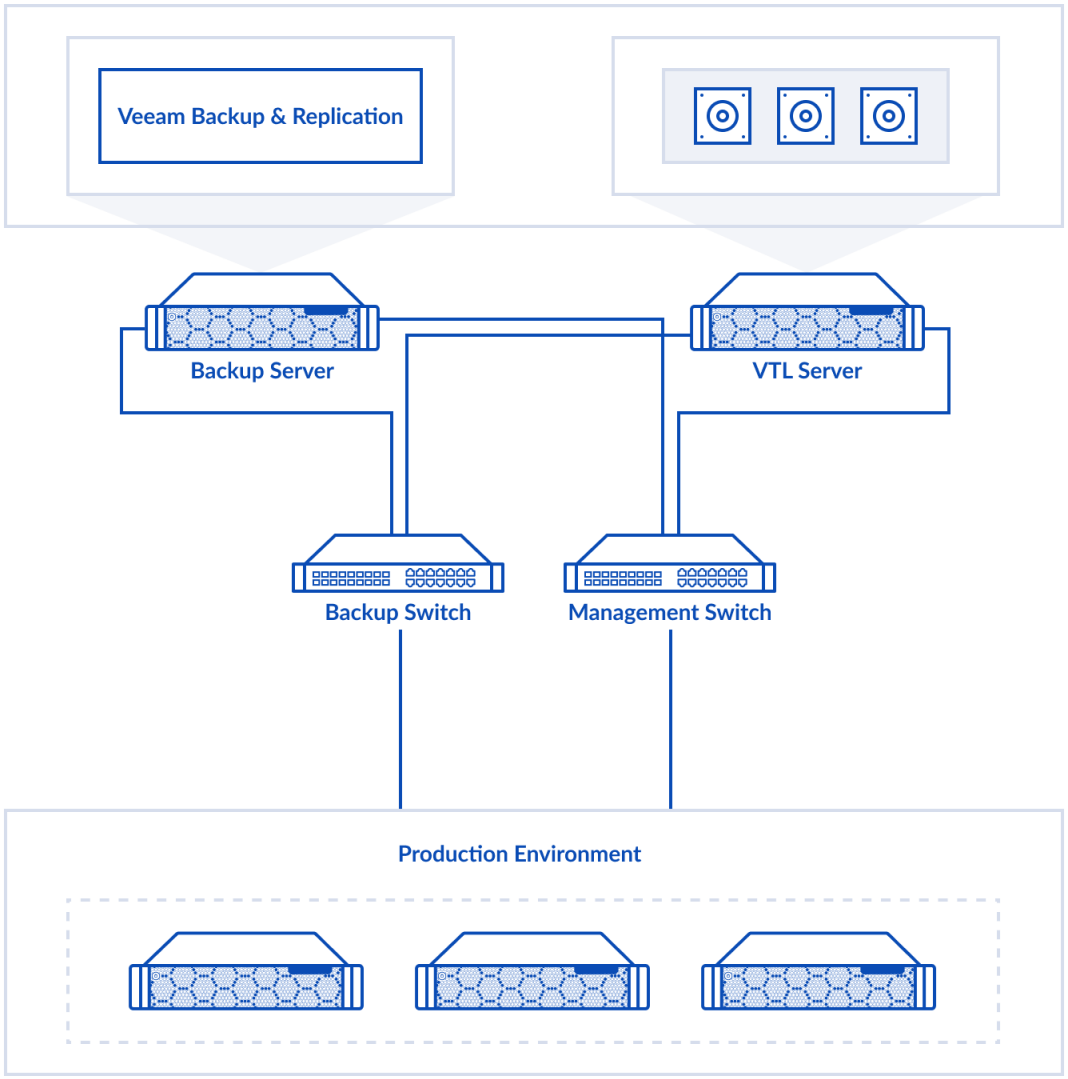
Recommended RAID settings for HDD and SSD disks:
https://knowledgebase.starwindsoftware.com/guidance/recommended-raid-settings-for-hdd-and-ssd-disks/

StarWind VTL requires StarWind Management Console that can be deployed on the server where Veeam Backup & Replication software is installed or on a separate workstation or virtual machine with Windows OS (Windows 7 or higher, Windows Server 2008 R2 and higher) using the Windows installer file received in the download letter. Please make sure that the system requirements for StarWind Management Console are met: https://www.starwindsoftware.com/system-requirements#management-console

NOTE: In order to fit the ransomware resiliency, the VTL should be located on the dedicated storage/host, which must be isolated from the production environment. Please read the following document for details: Backing up StarWind Virtual SAN Environment: Best Practice.

Solution diagram

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



Deploying Starwind Virtual Tape Library

1. Download the StarWind Appliance ISO at the following link:
https://www.starwindsoftware.com/vtl#download

2. Prepare installation media using Etcher, Rufus on a Windows workstation, or the dd command-line tool on Linux and macOS. For Network boot, mount the ISO to your server using iDRAC, iLo, or IPMI user interfaces.

3. Connect the installation media to your server and start the host.

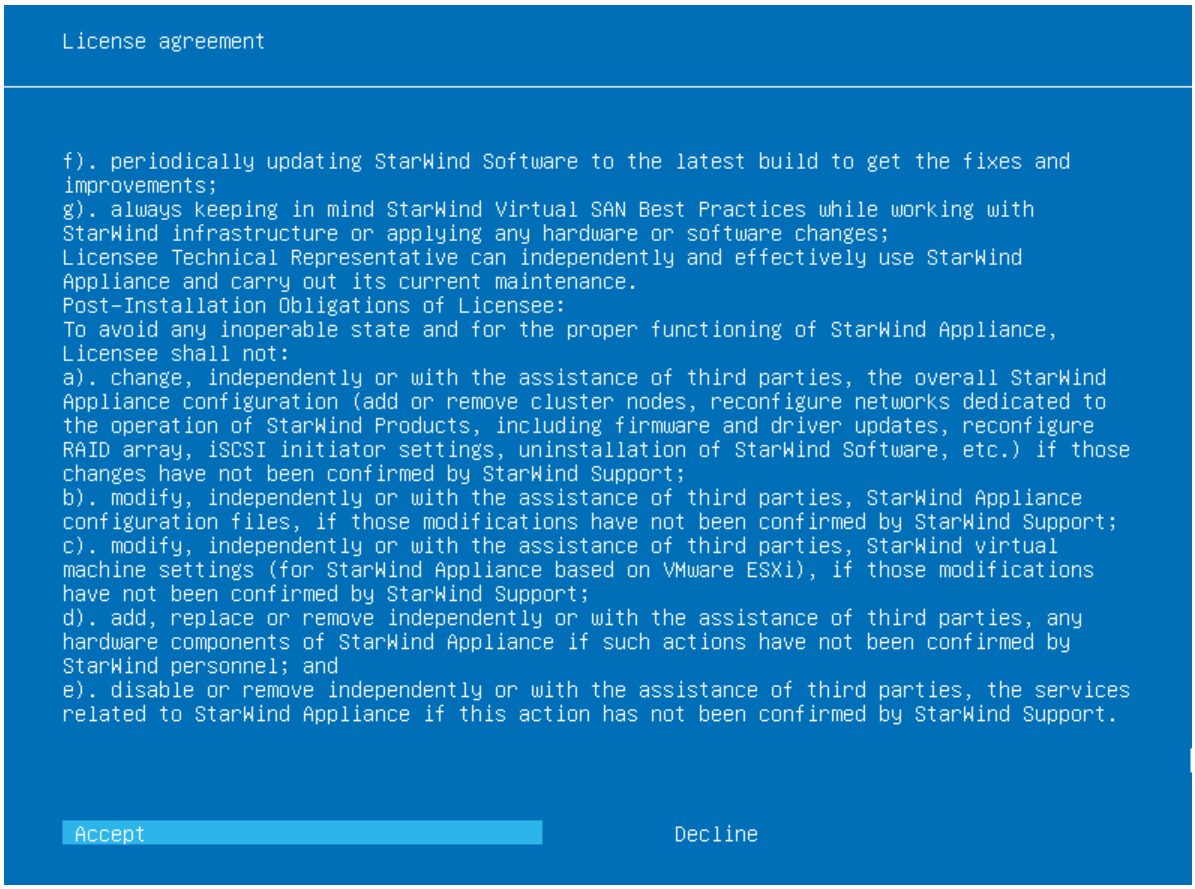
4. Boot into BIOS and enable the Legacy boot mode. Save changes and reboot the host.

5. On server boot, press F12 or F2 to start the one-time boot menu. Select CD\DVD-ROM as a boot device.

NOTE: Refer to the server documentation to find the boot menu key.

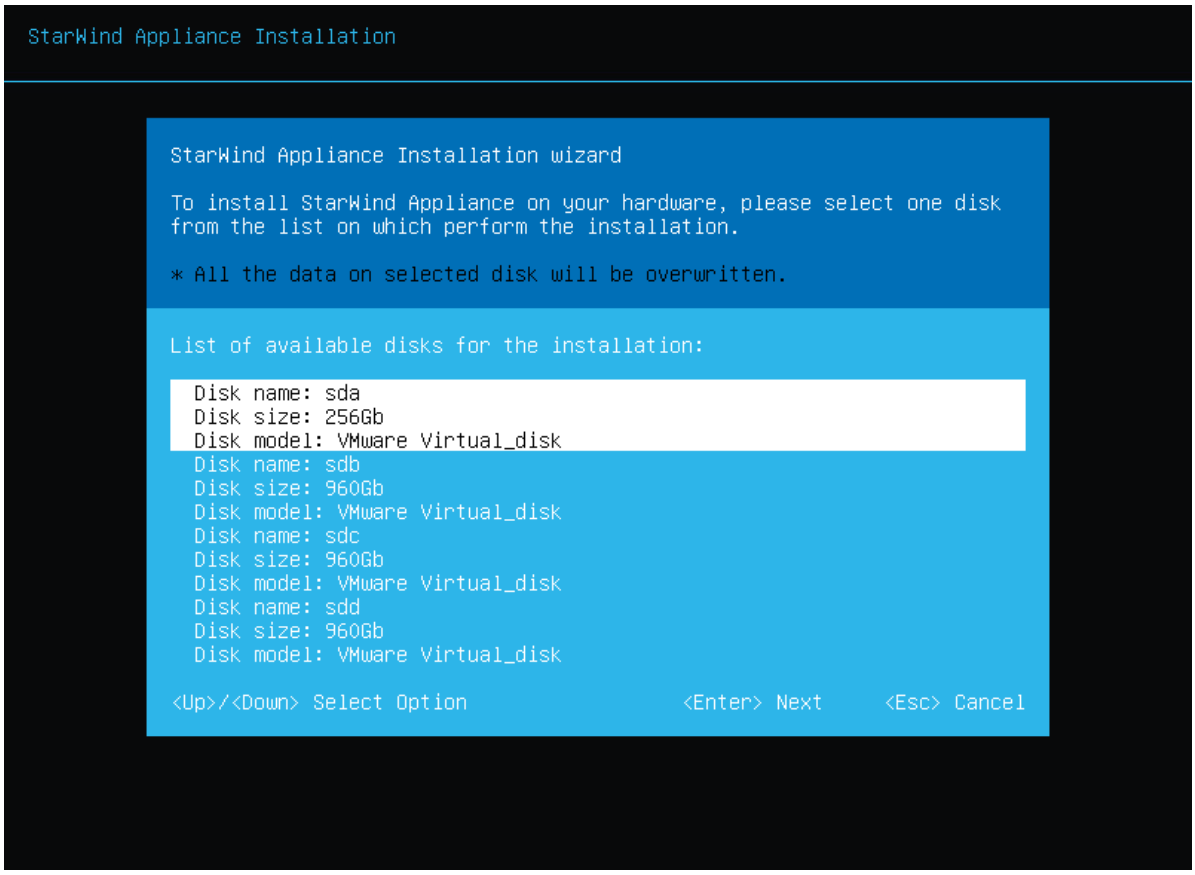
6. The server should start booting from StarWind Appliance ISO. Once the system boots, the StarWind Appliance Installer launches.

7. Read the End-user License Agreement. Use the Tab button and arrow keys to select the Accept option and press Enter.



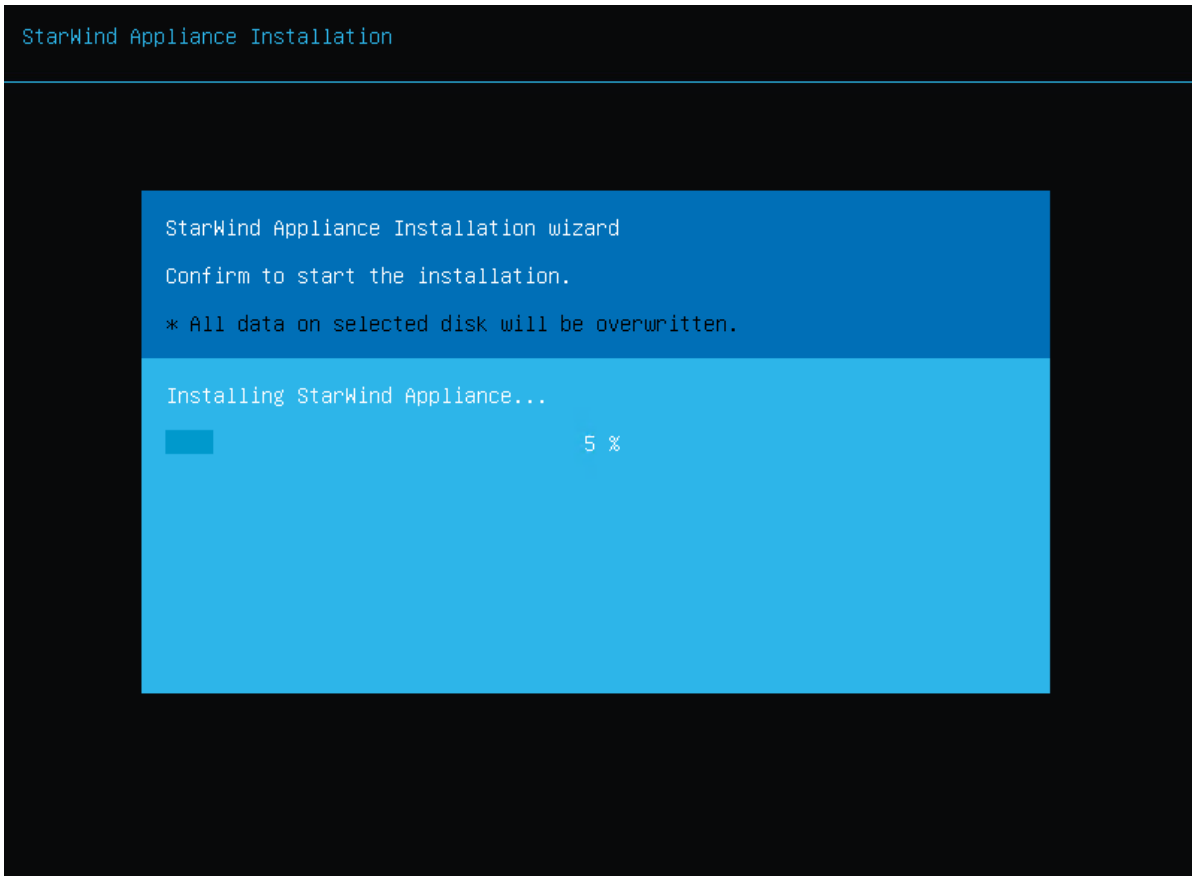
8. In the menu, select the “Install StarWind Appliance” option and press Enter.

9. Select one of the available disks on which to install StarWind Appliance. Press Enter.

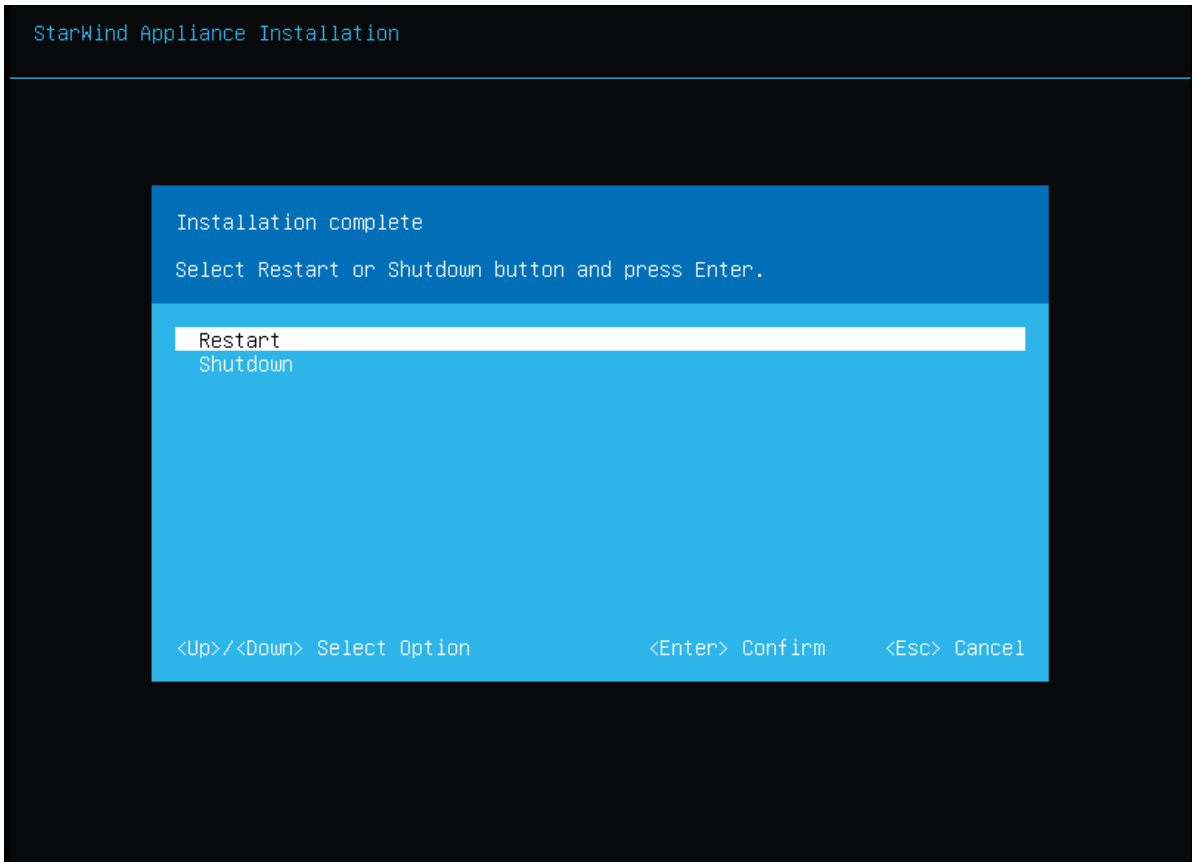


10. All the data on the selected disk will be overwritten. Confirm the installation by typing “yes” and pressing Enter.

11. Wait until the installation is complete.



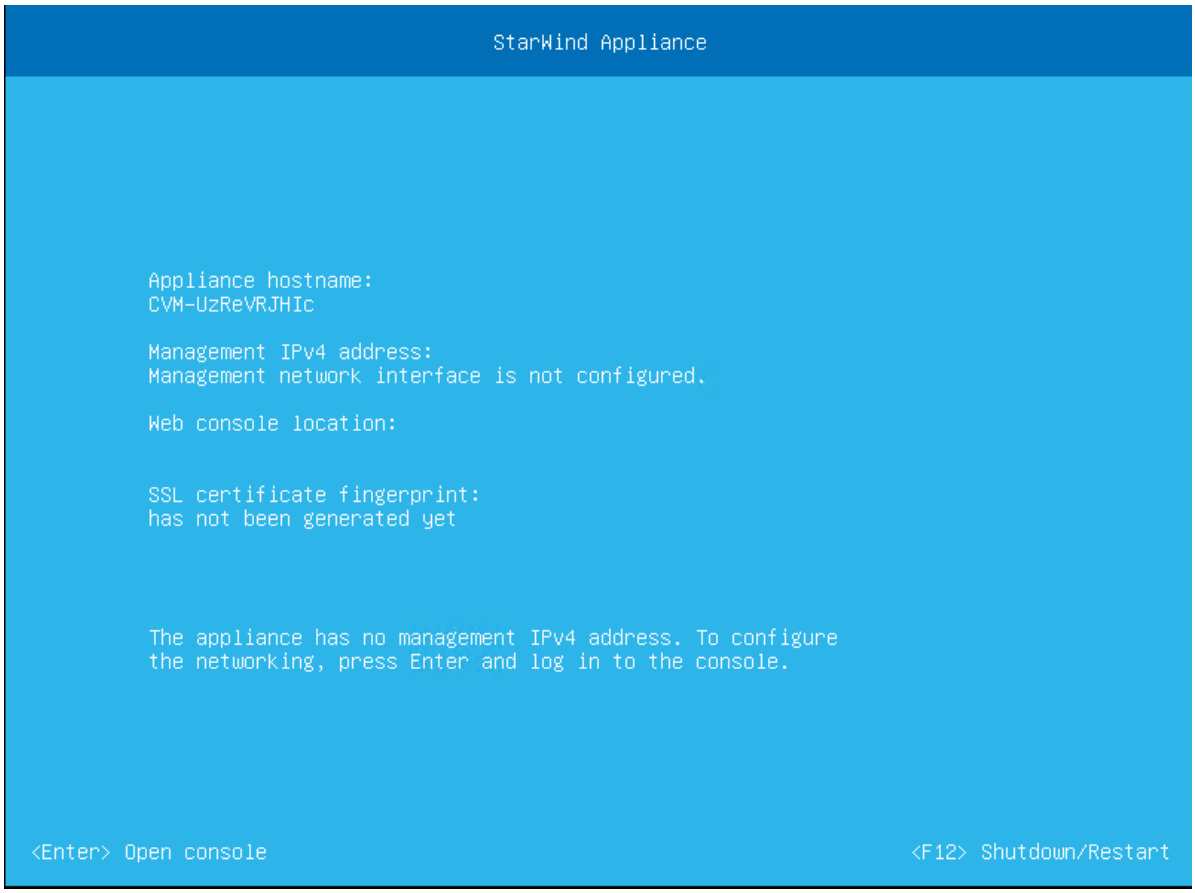
12. Once the installation is finished, select “Restart” to reboot the server.



13. Eject the installation media.

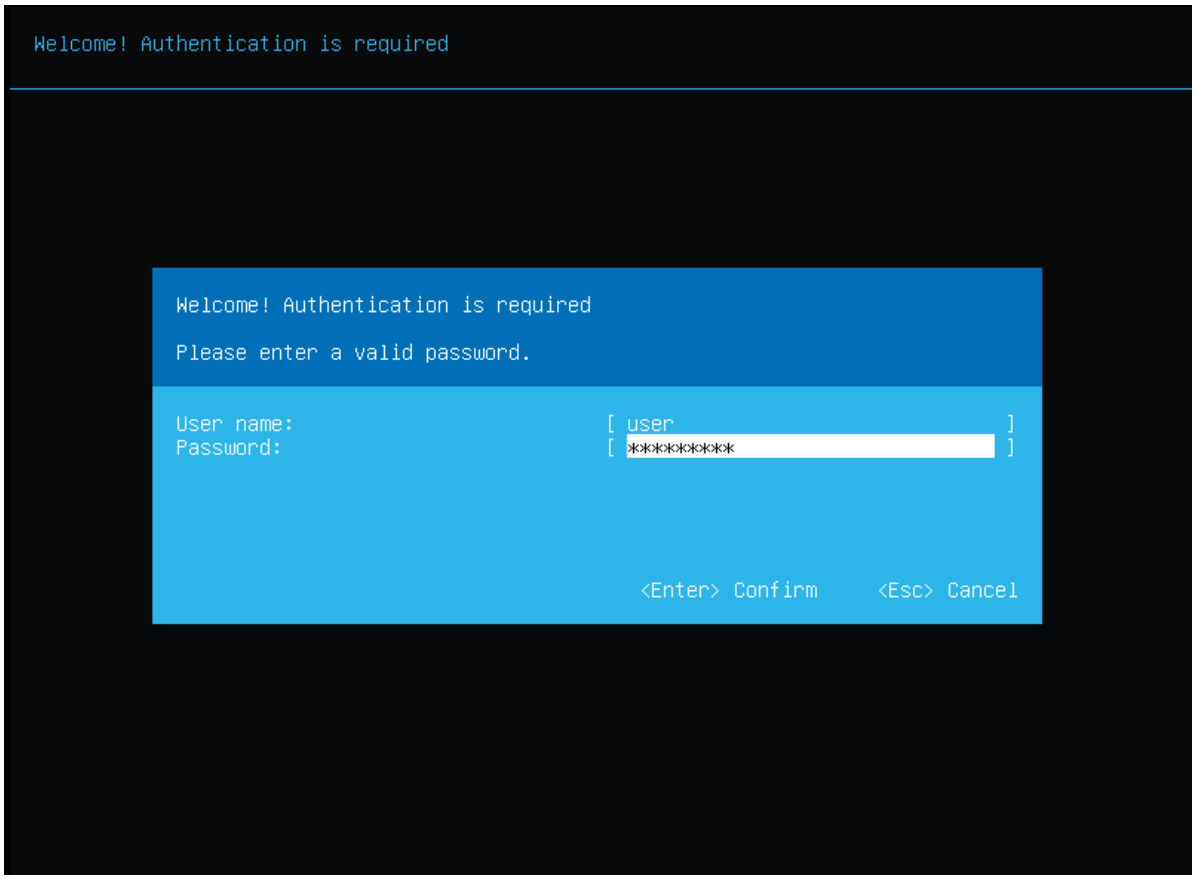
14. The server now boots StarWind Appliance.

15. Press Enter to open the console.

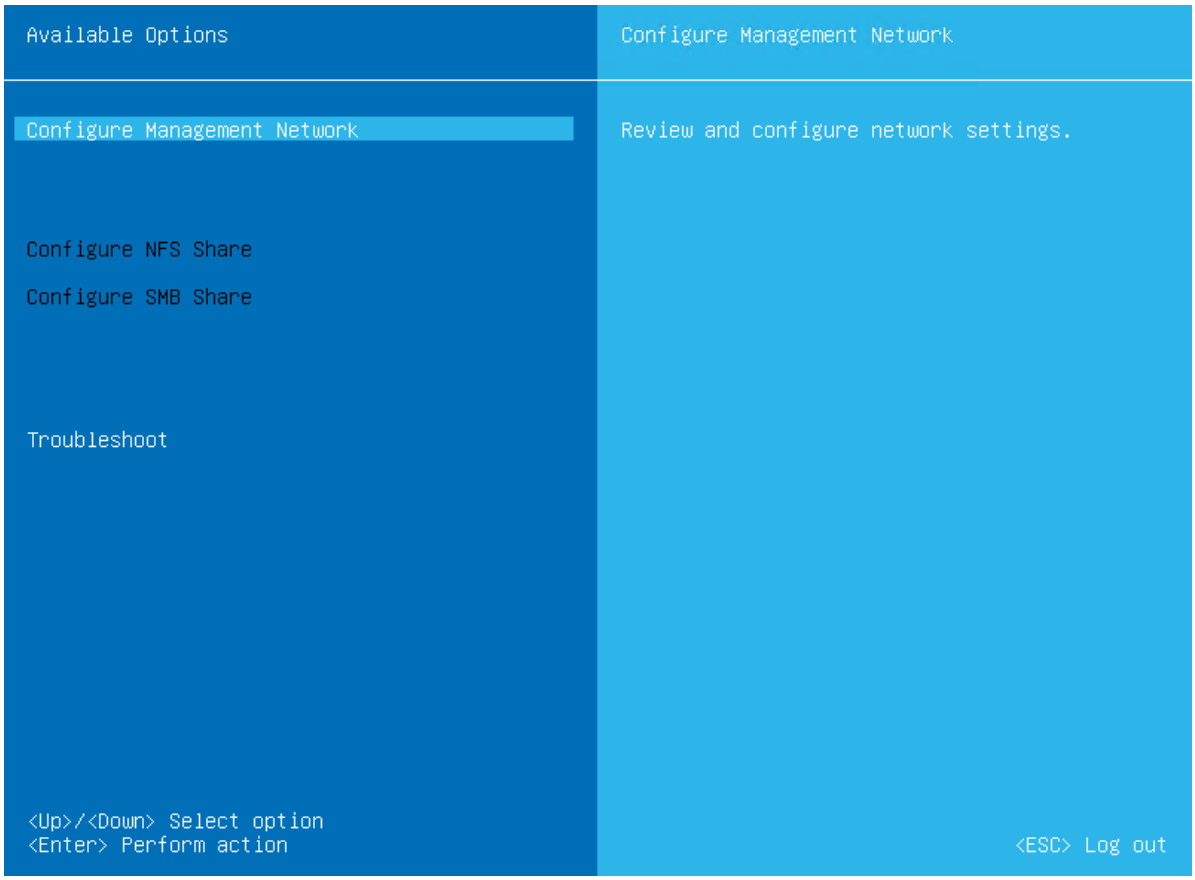


16. Specify the default user name and password.

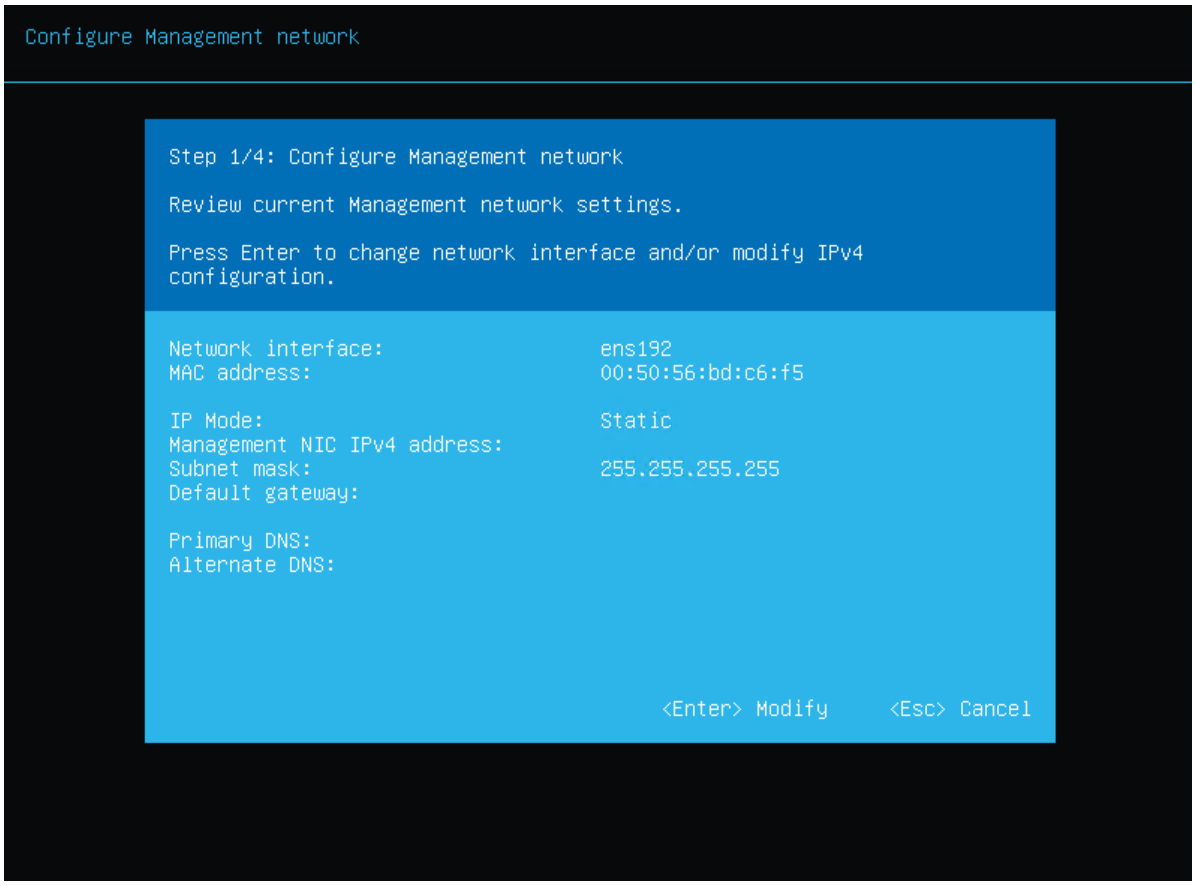
NOTE: The default account name is “user”, and its password is “rds123RDS” without quotes. This account is removed from the appliance upon the completion of the Initial configuration wizard.



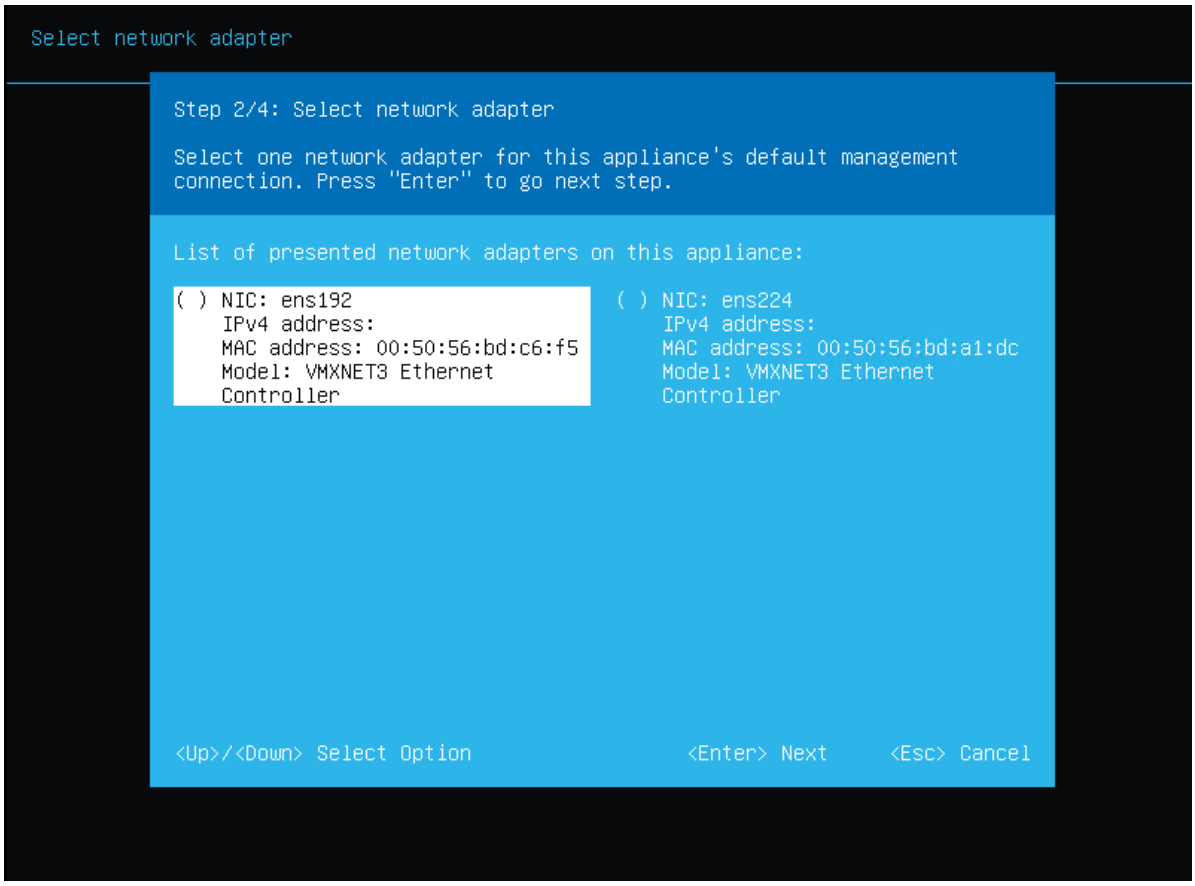
17. Select “Configure Management Network” and press Enter.



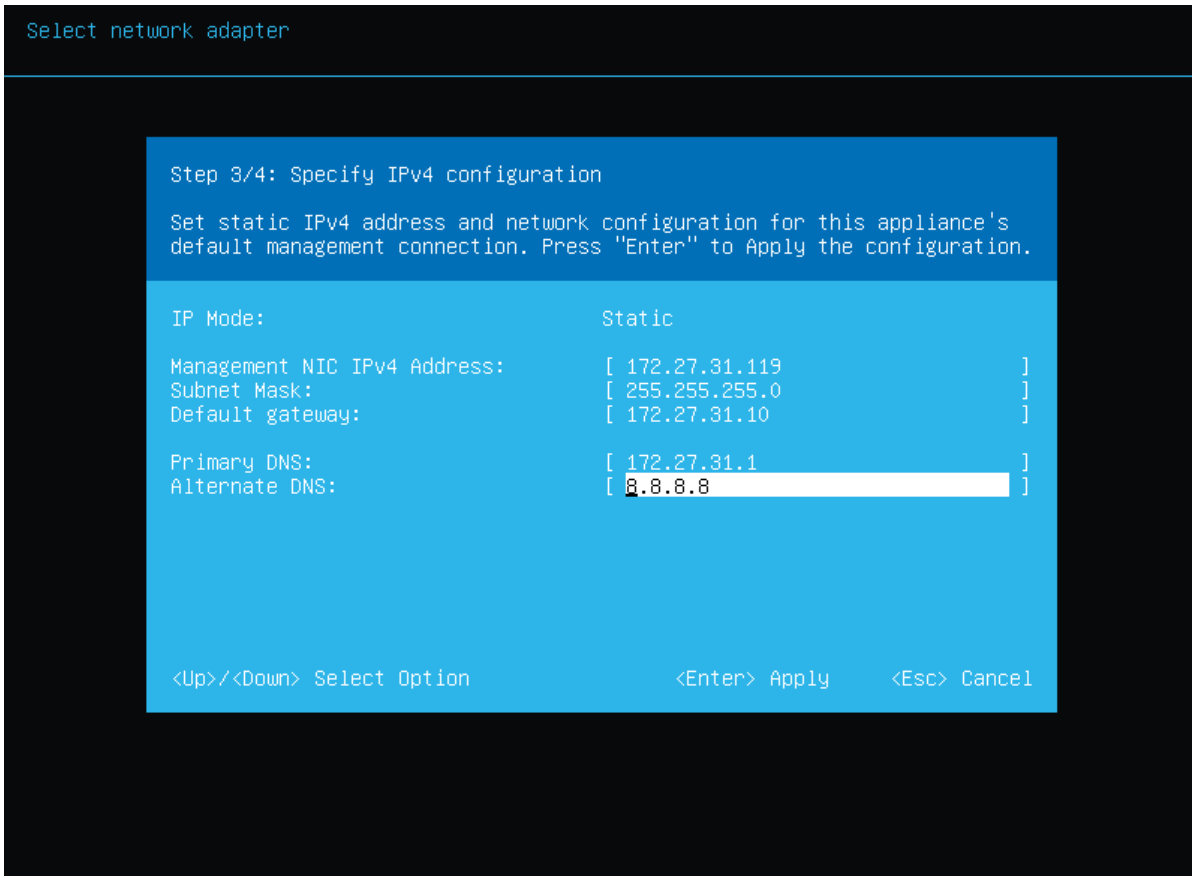
18. Press Enter once more to modify the settings.



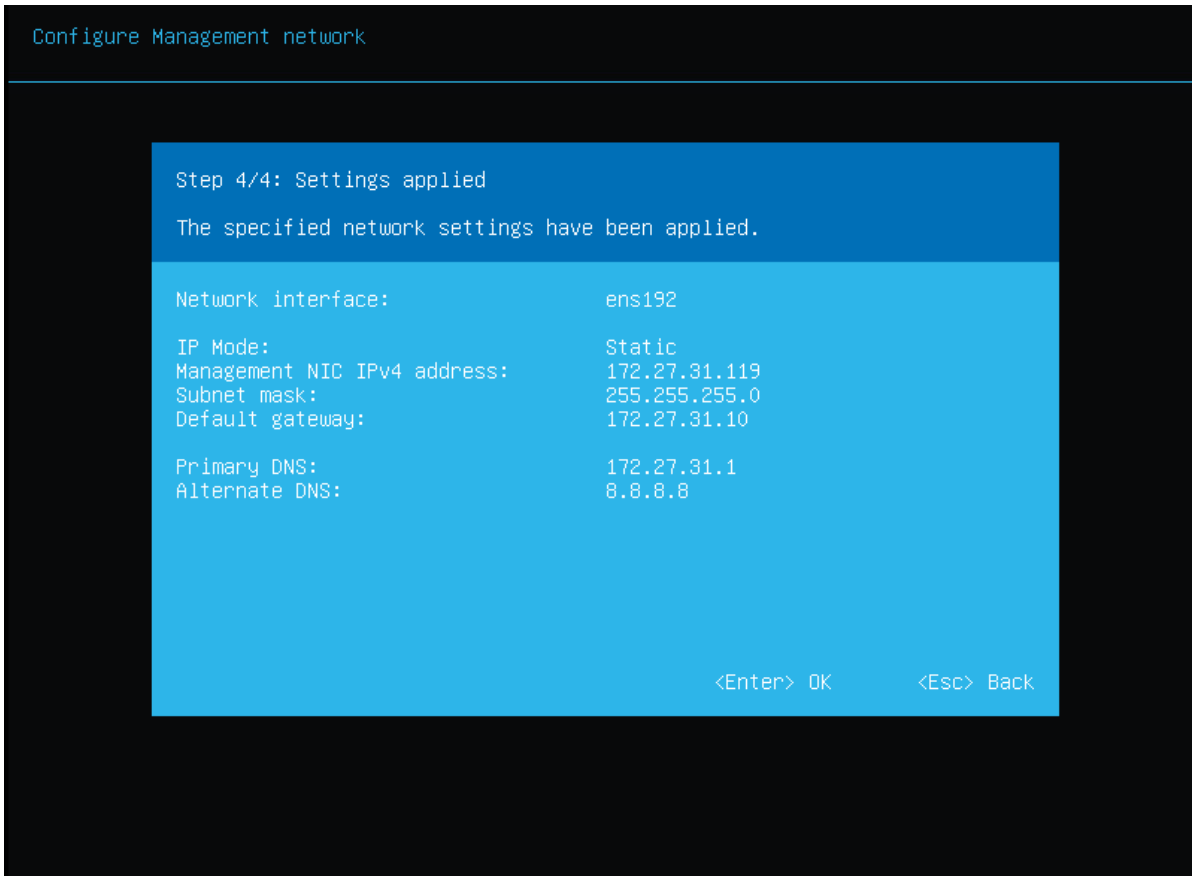
19. Select the network adapter that will be used for management connectivity and press Enter.



20. Specify the static IPv4 address, subnet mask, default gateway, and DNS addresses. Press Enter.

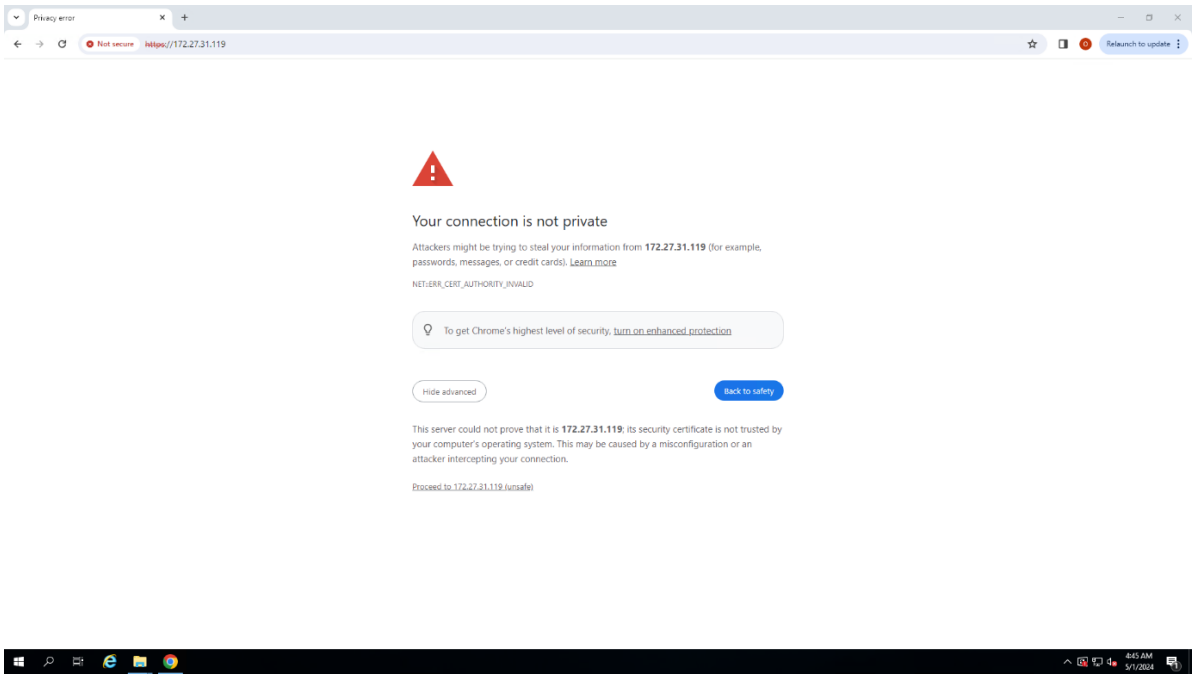


21. The management network settings have been applied. Press Enter.

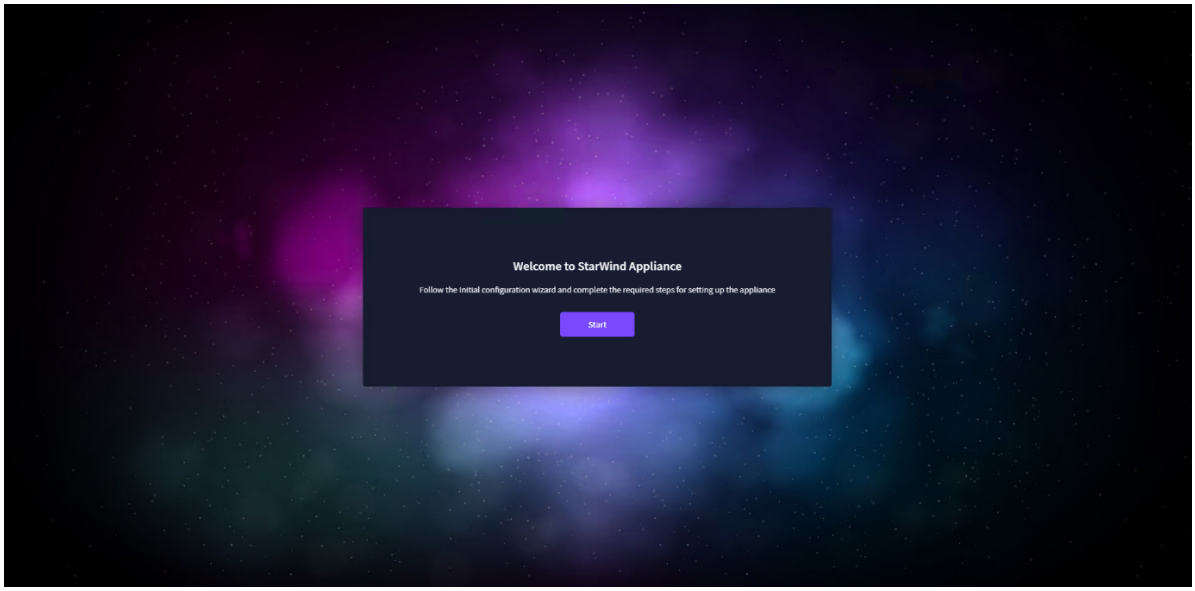


Initial Configuration Wizard

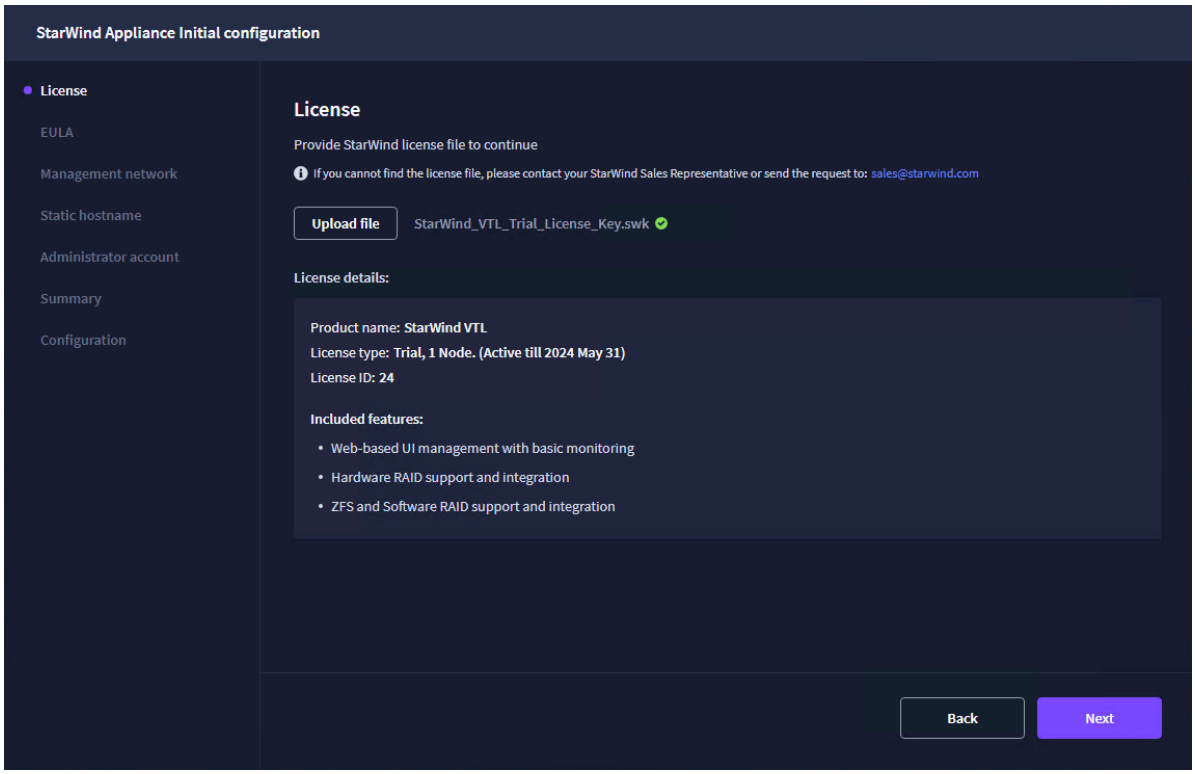
1. Using the web browser, open a new tab and enter the StarWind Appliance IPv4 address specified previously to open the Web Interface. Click “Advanced” and then “Continue to…”



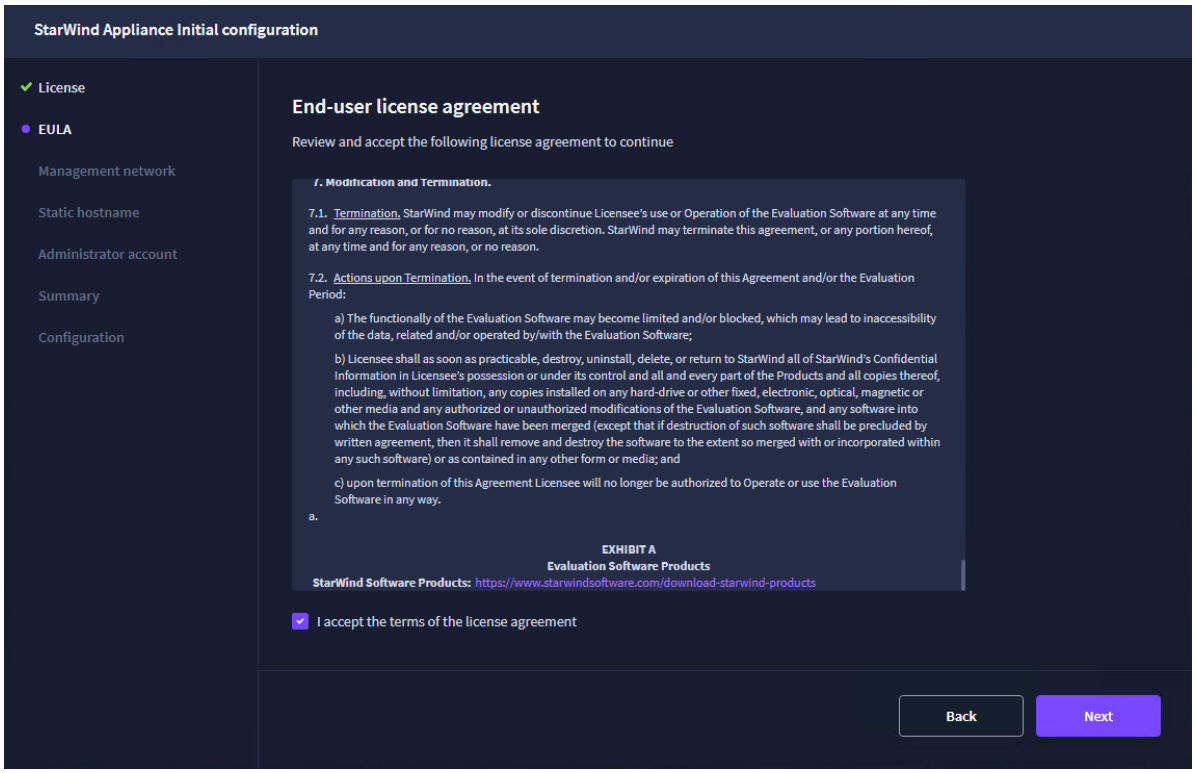
2. StarWind Appliance welcomes you, and the “Initial Configuration” wizard will guide you through the deployment process. Click Start.



3. Upload the license file and click Next.

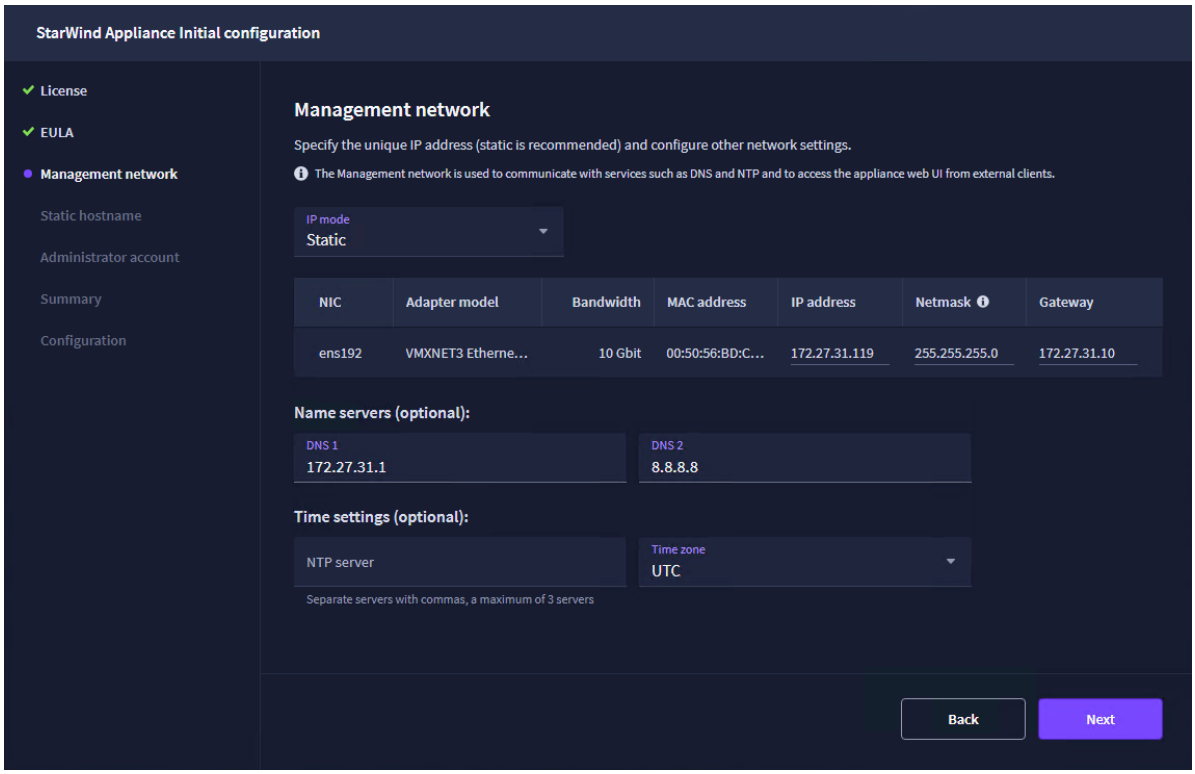


4. Read and accept the End User License Agreement to proceed. Click Next.

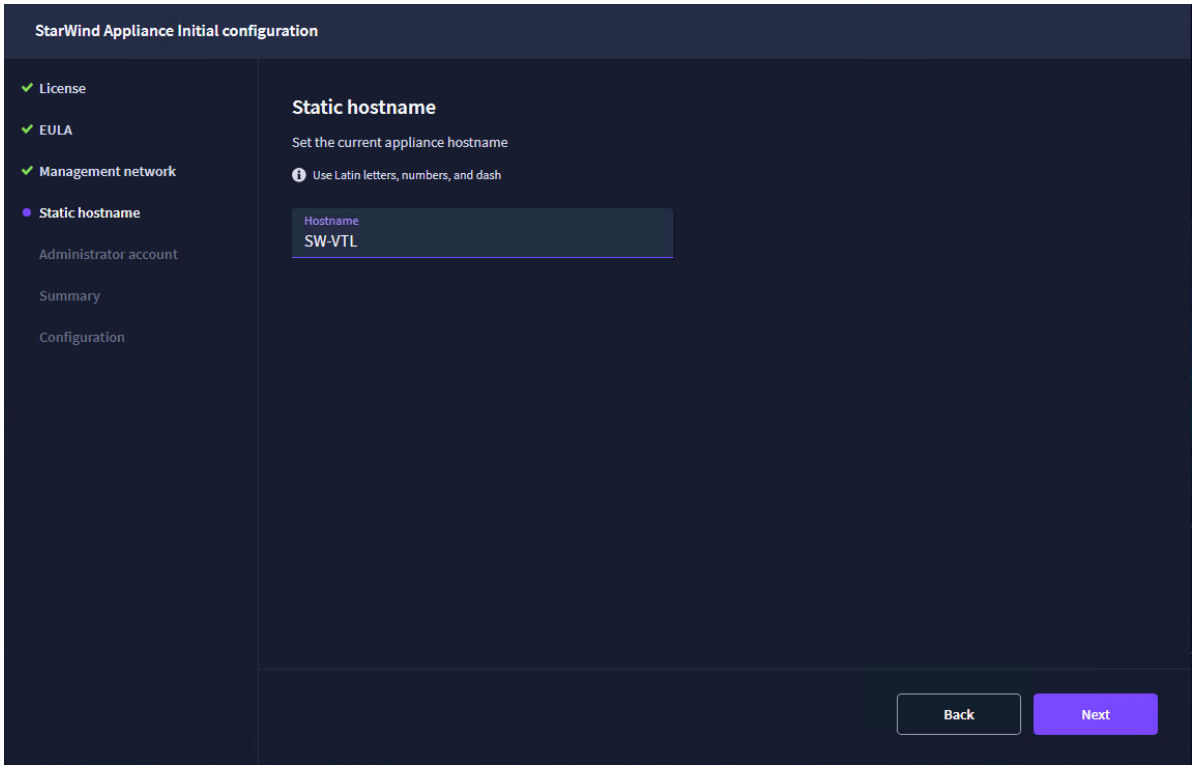


5. Review or edit the Network settings and click Next.

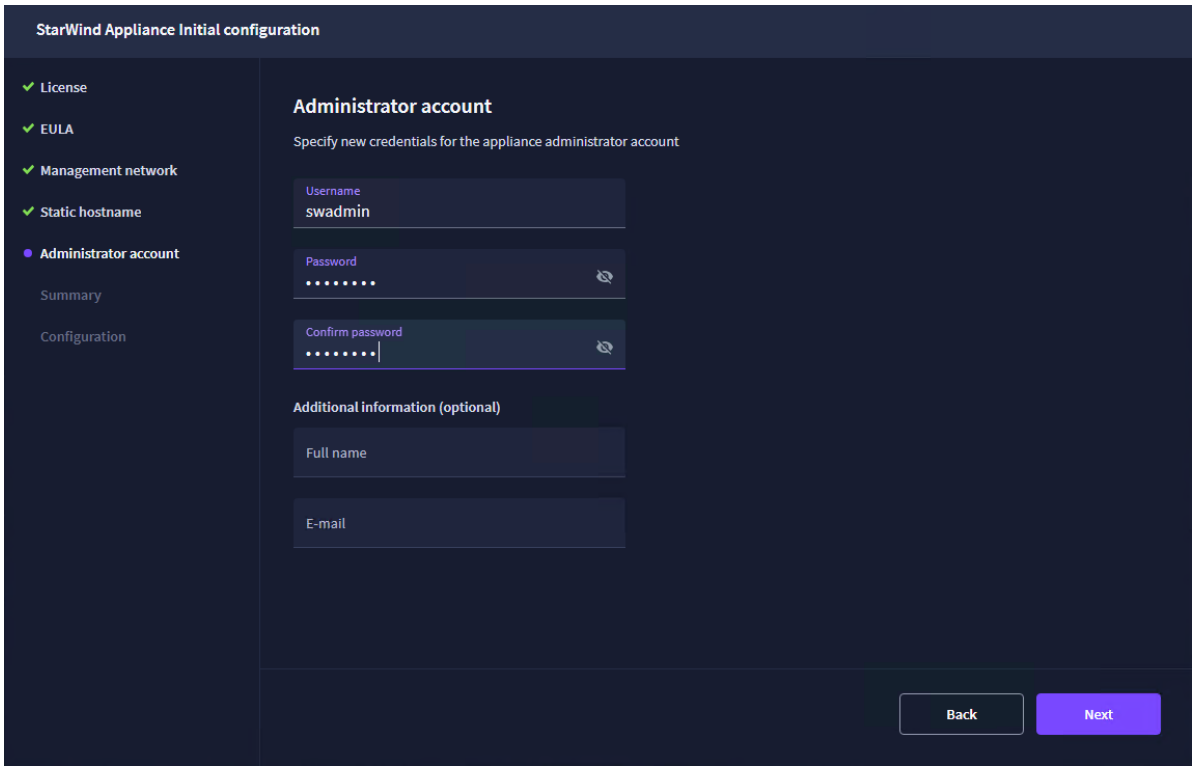
NOTE: Static network settings are recommended for the configuration.



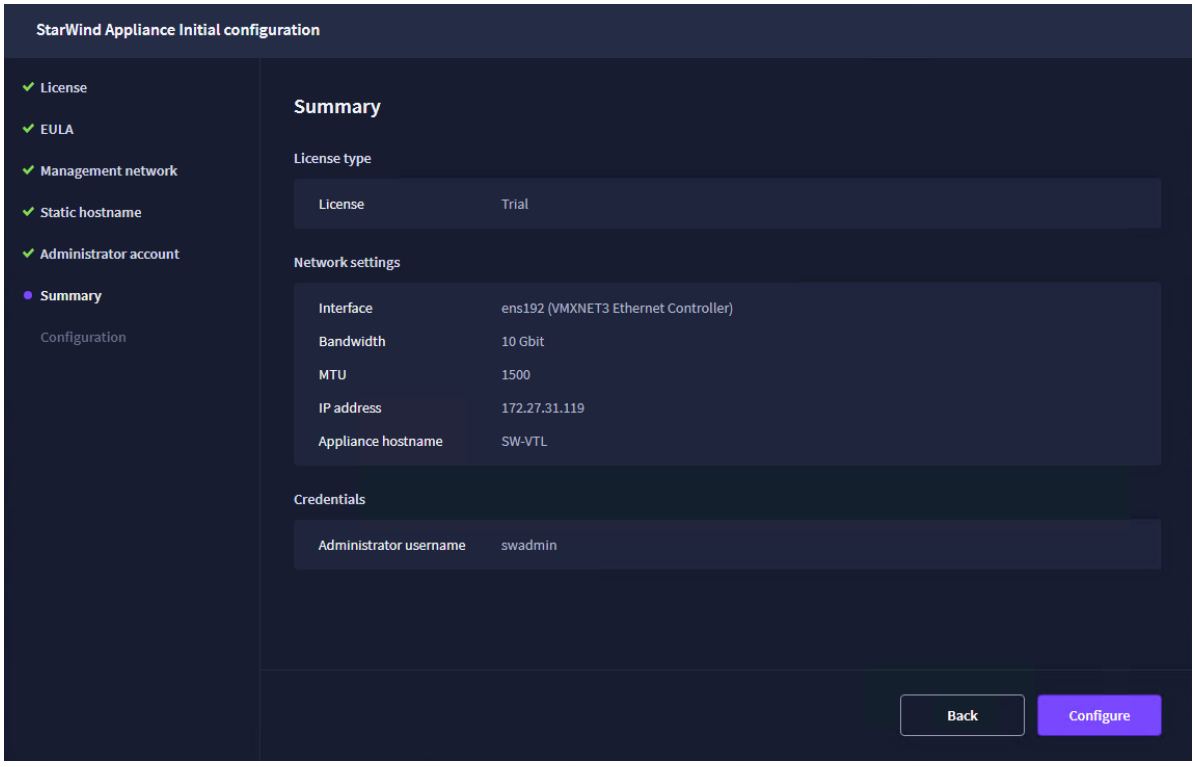
6. Specify the hostname for the StarWind Appliance and click Next.



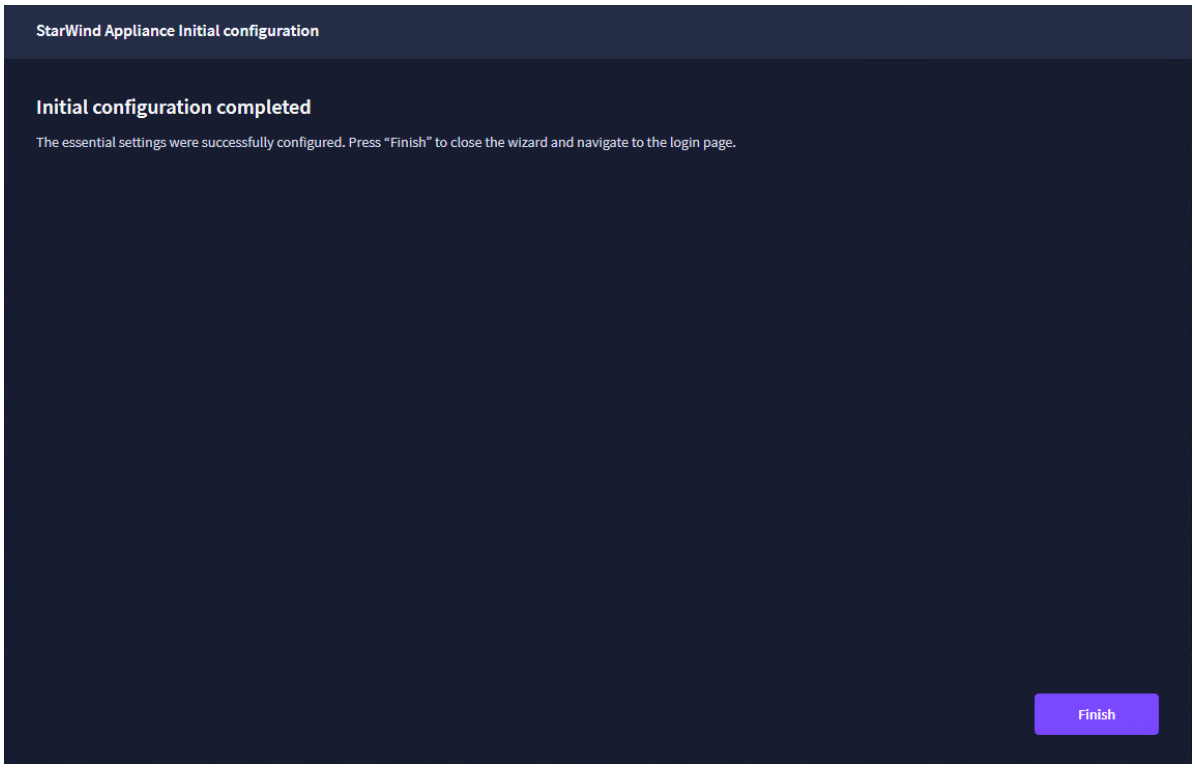
7. Create an administrator account. Click Next.



8. Review the settings and click Configure.

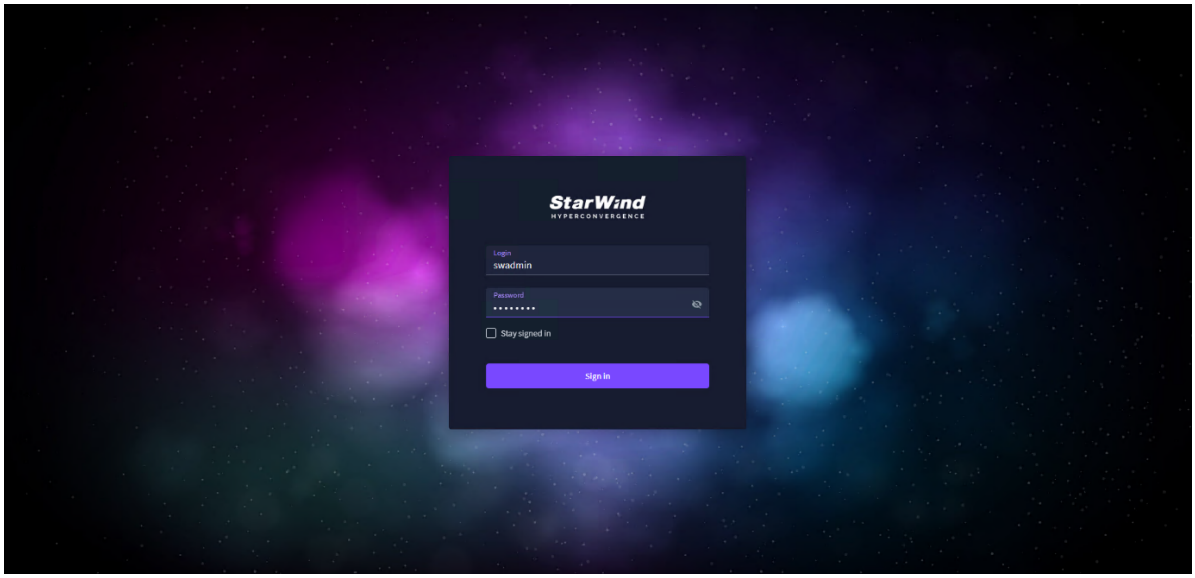


9. The initial StarWind Appliance configuration is now complete. Click Finish.

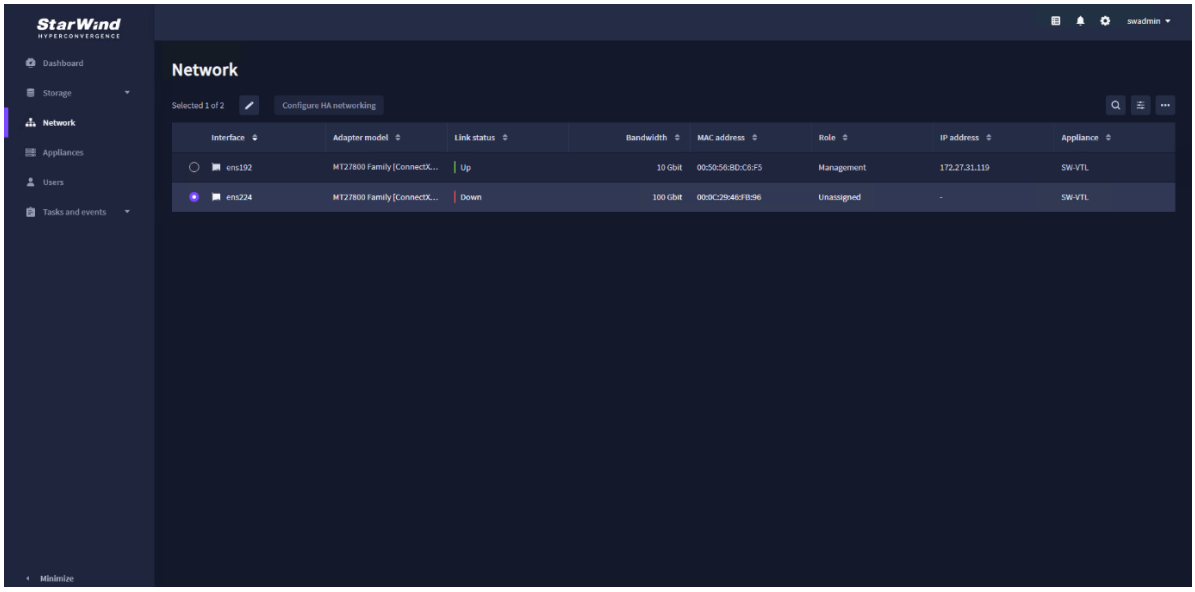


Configure Networking

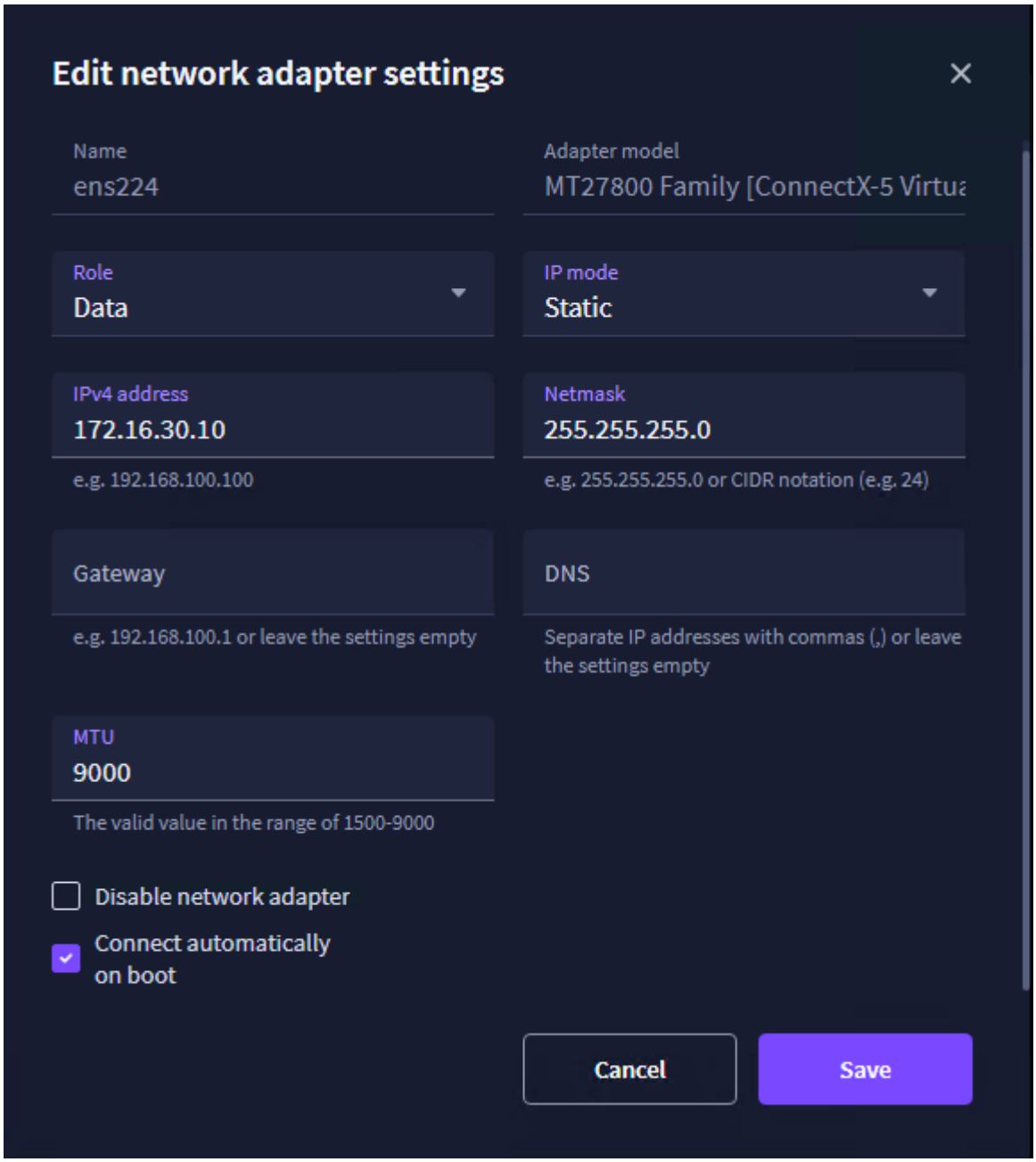
1. Log in to the appliance using the username and password specified during the initial configuration.



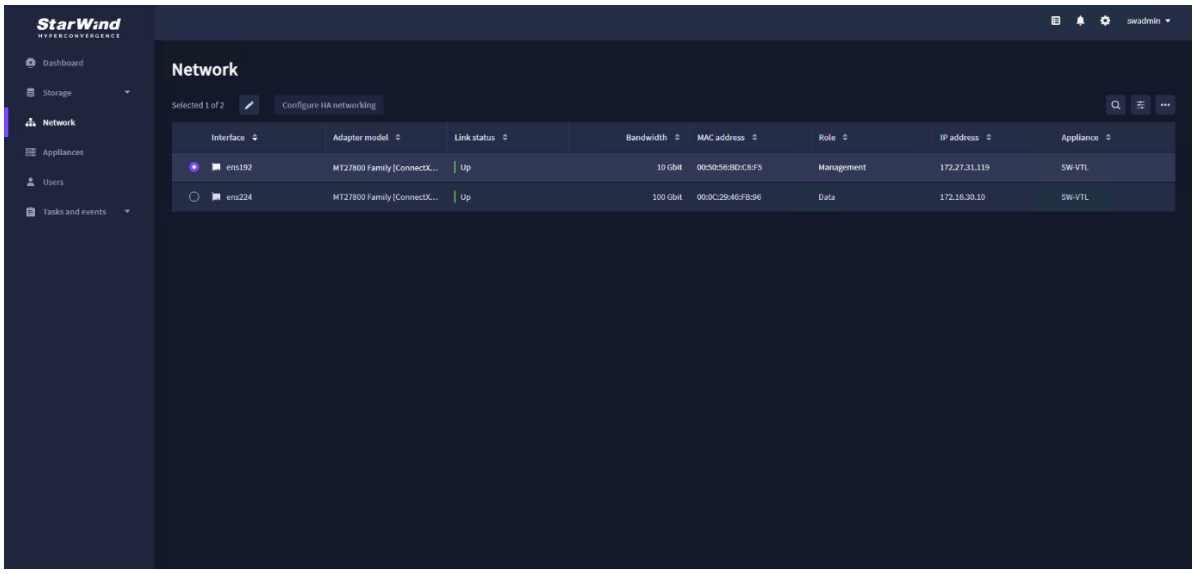
2. Navigate to the Network tab, select the network adapter that will be used for Data (VTL) traffic, and click the Edit icon.



3. Uncheck the “Disable network adapter” checkbox, check the “Connect automatically on boot” checkbox, set MTU to 9000, assign the Data role to the network adapter, and specify the IPv4 address and network mask. Click Save.

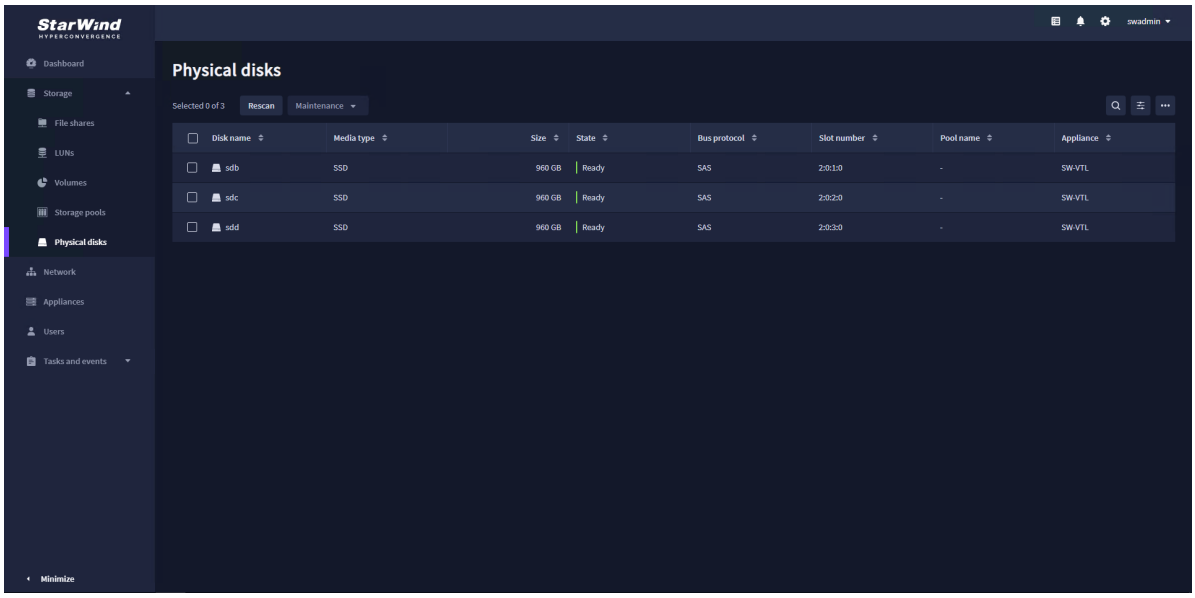


4. The network adapter changes the Link Status to Up.



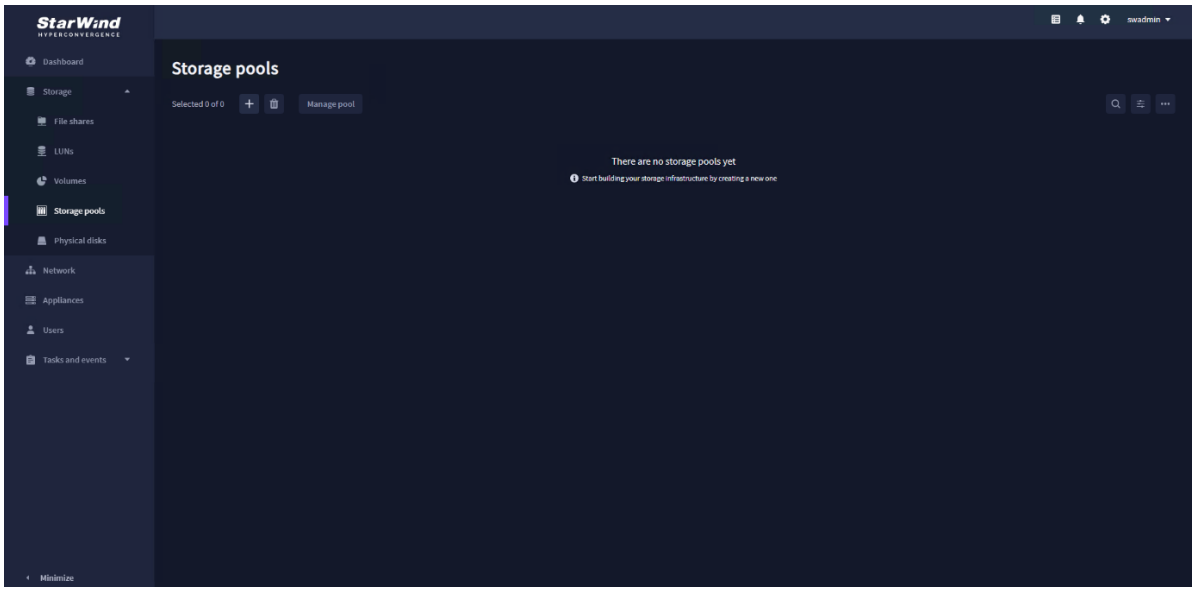
Configuring Storage

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

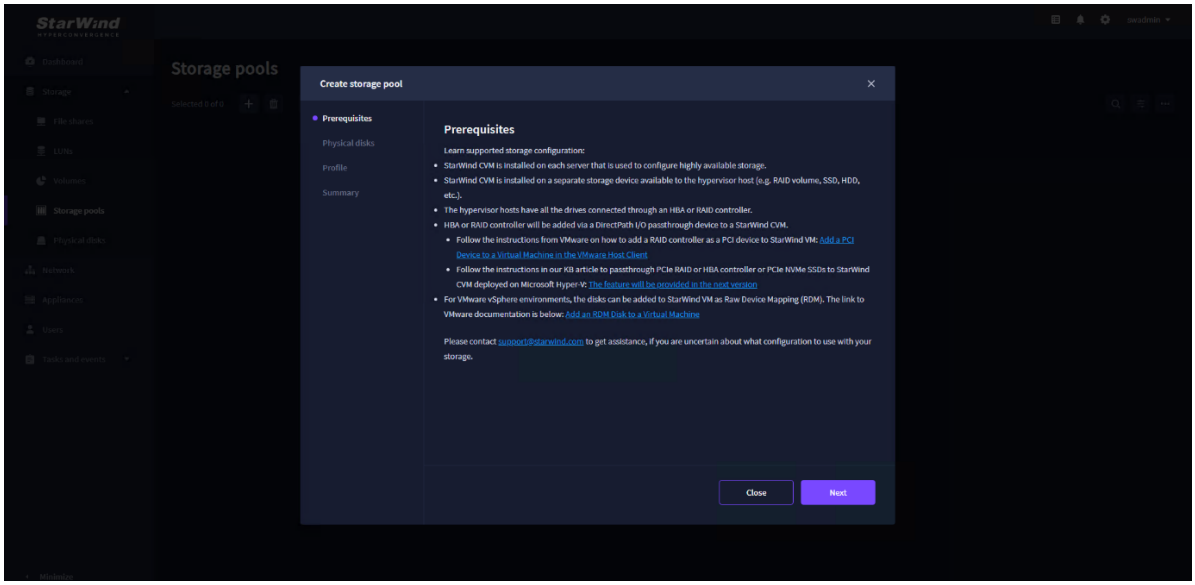


NOTE: StarWind Appliance can use storage from a hardware RAID or create a Linux Software RAID or ZFS storage pools from the drives connected to an HBA controller. This guide uses Linux Software RAID as an example.

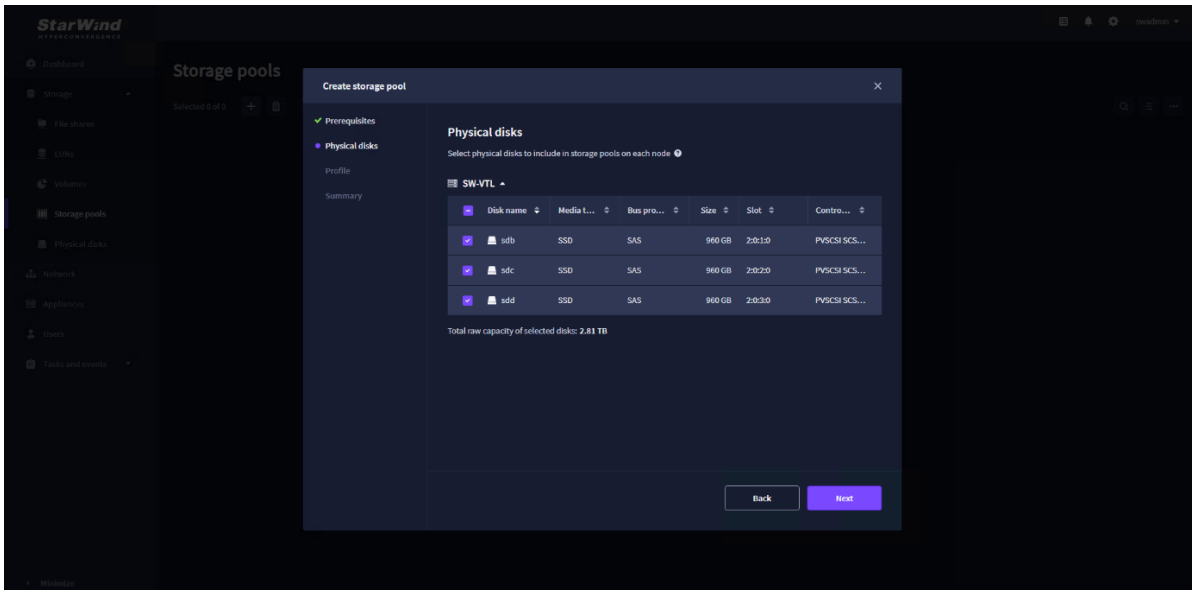
2. In the Storage tab, navigate to the Storage pools and click the “+” sign.



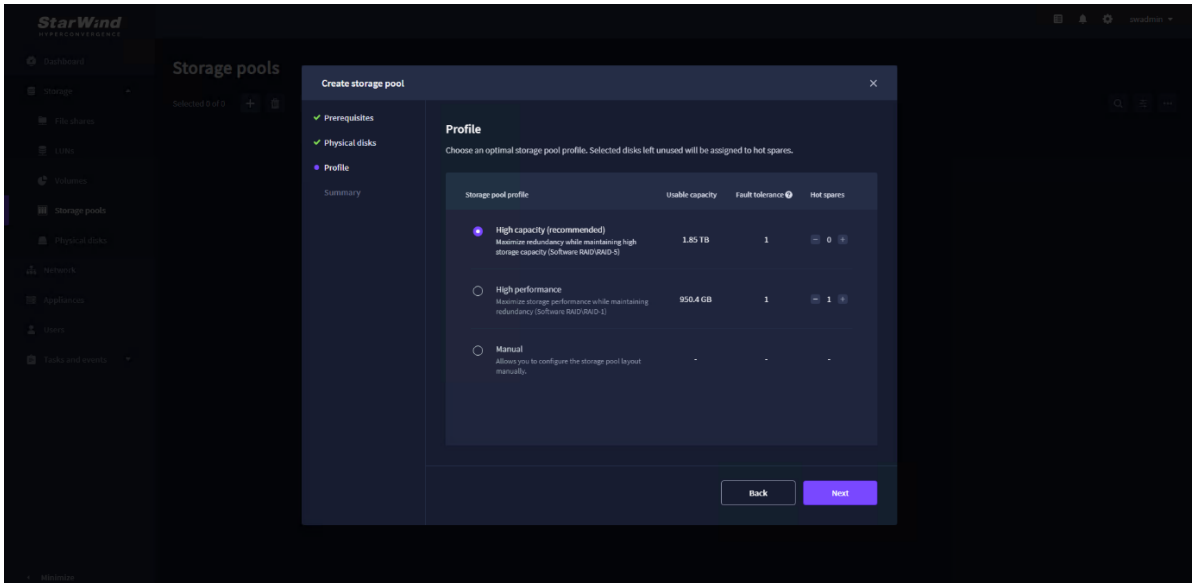
3. Verify the prerequisites and click Next.



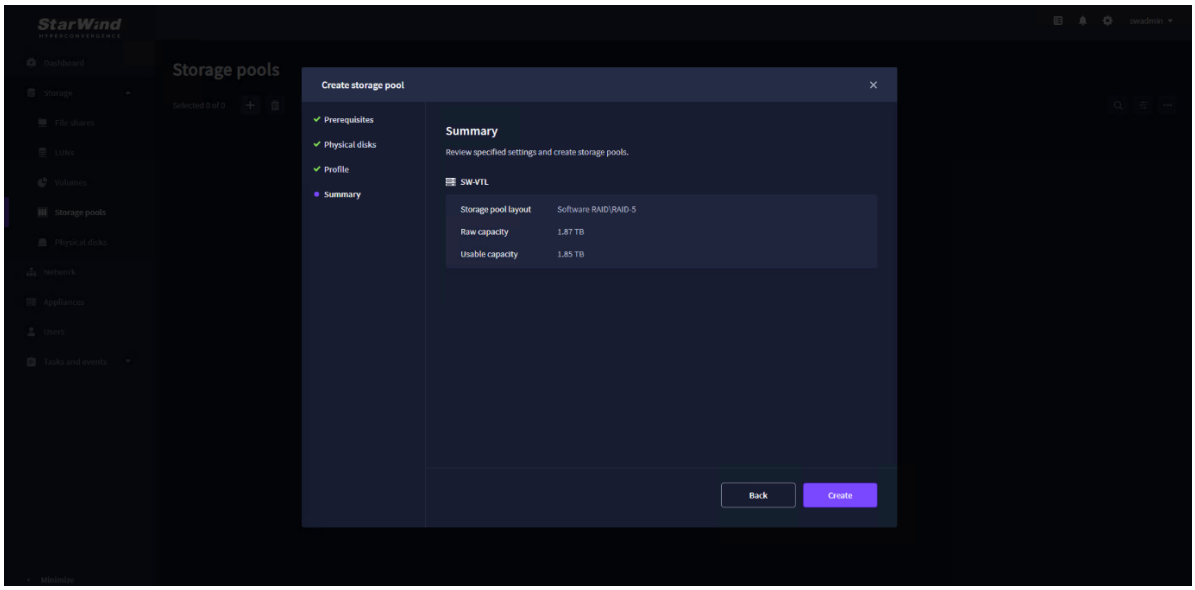
4. Select the drives to create a Linux Software RAID and click Next.



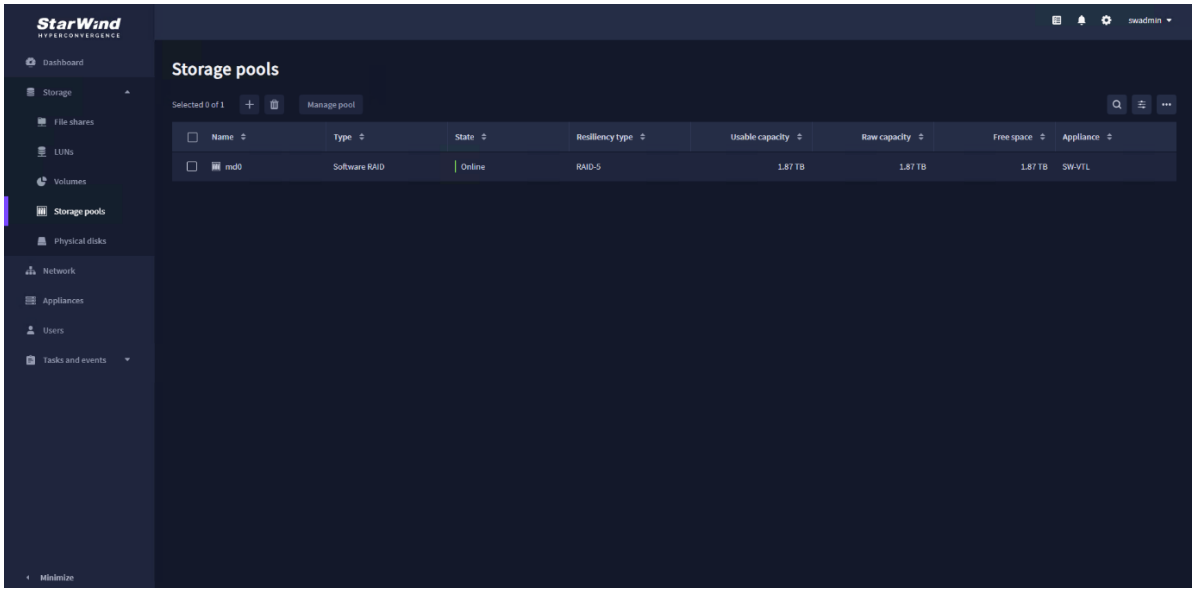
5. Select one of the preconfigured storage profiles or create a redundancy layout for the new storage pool manually according to your redundancy, capacity, and performance requirements. Click Next.



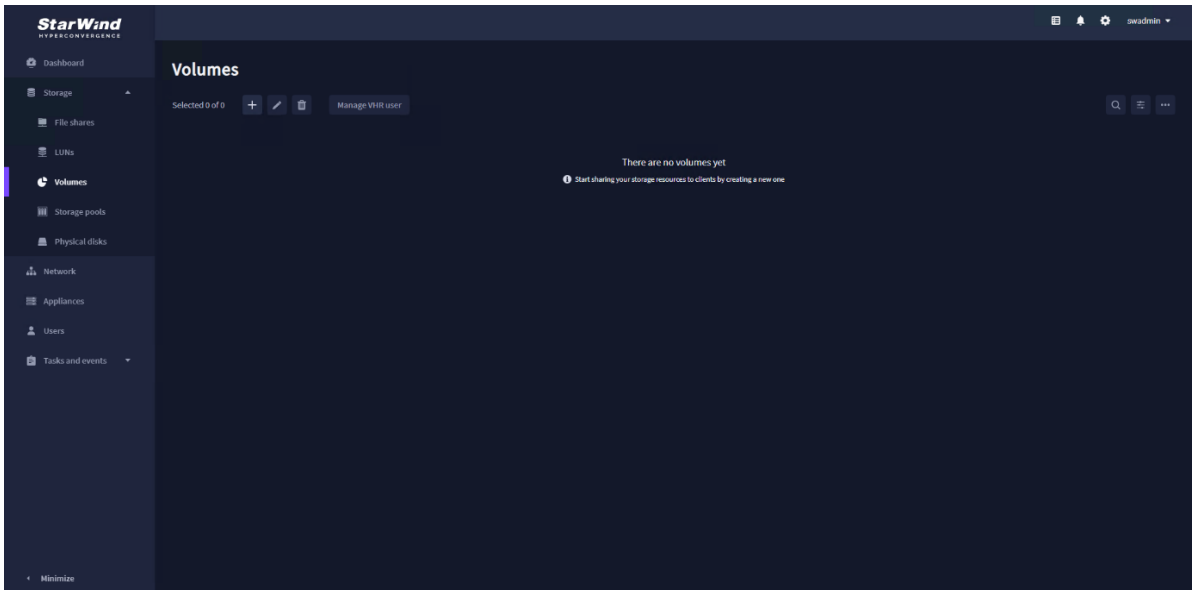
6. Review “Summary” and click the “Create” button to create the storage pool.



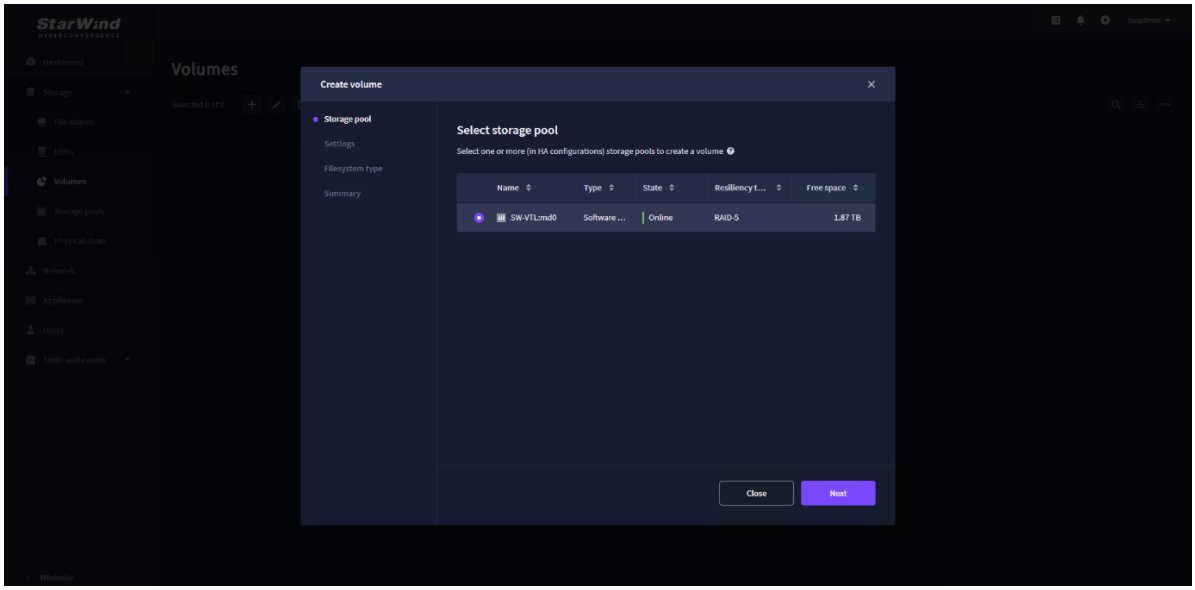
7. Wait until the Linux Software RAID synchronization process is fully complete and its state changes to Online.



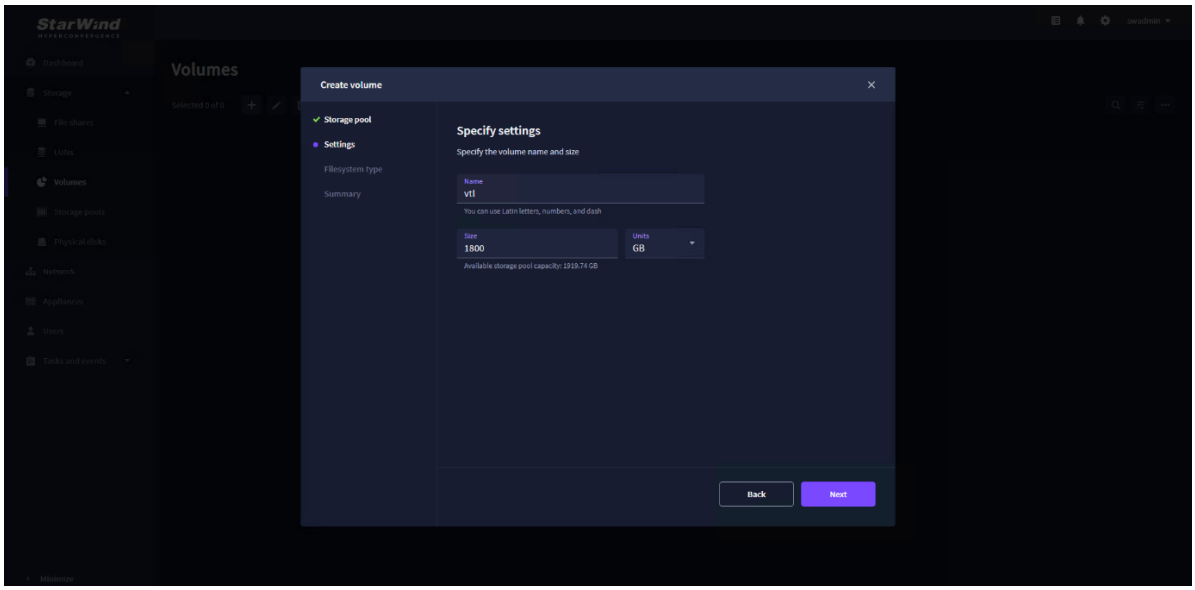
8. Once the storage pool is created, navigate to the “Volumes” tab and click the “+” button to open the “Create volume” wizard.



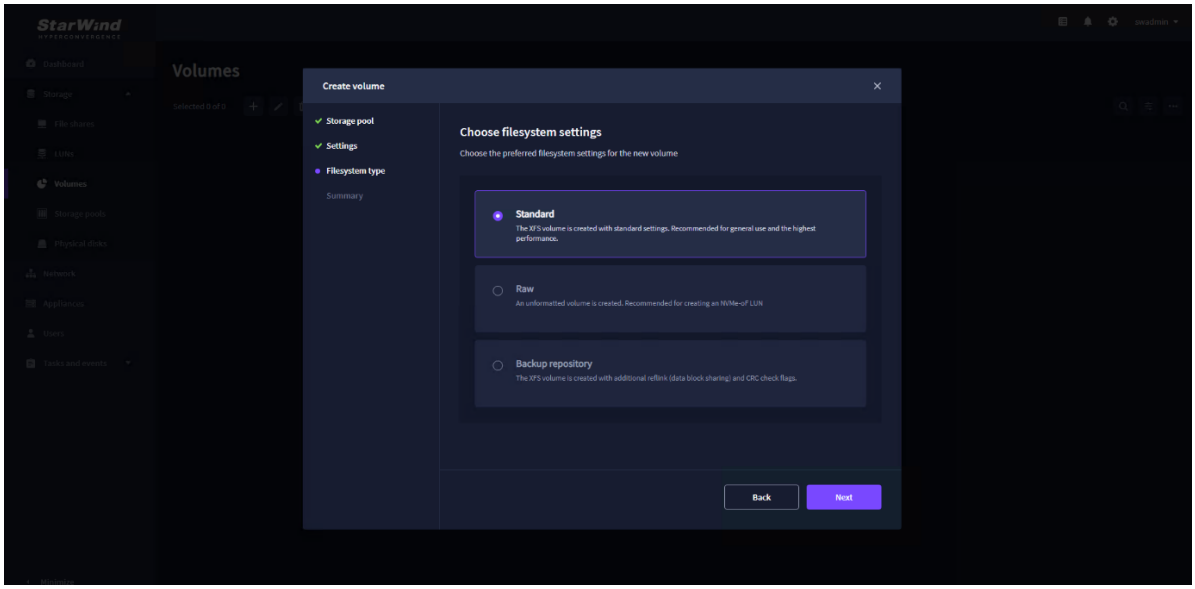
9. Select the storage pool that will be used for a new volume and click Next.



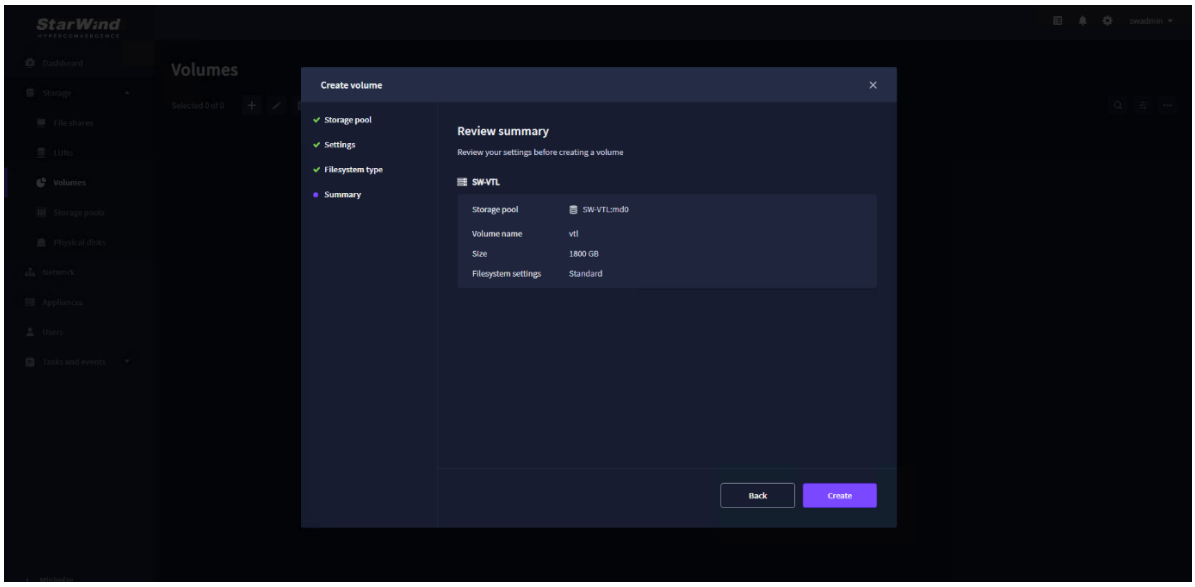
10. Specify the volume name and capacity. Click Next.



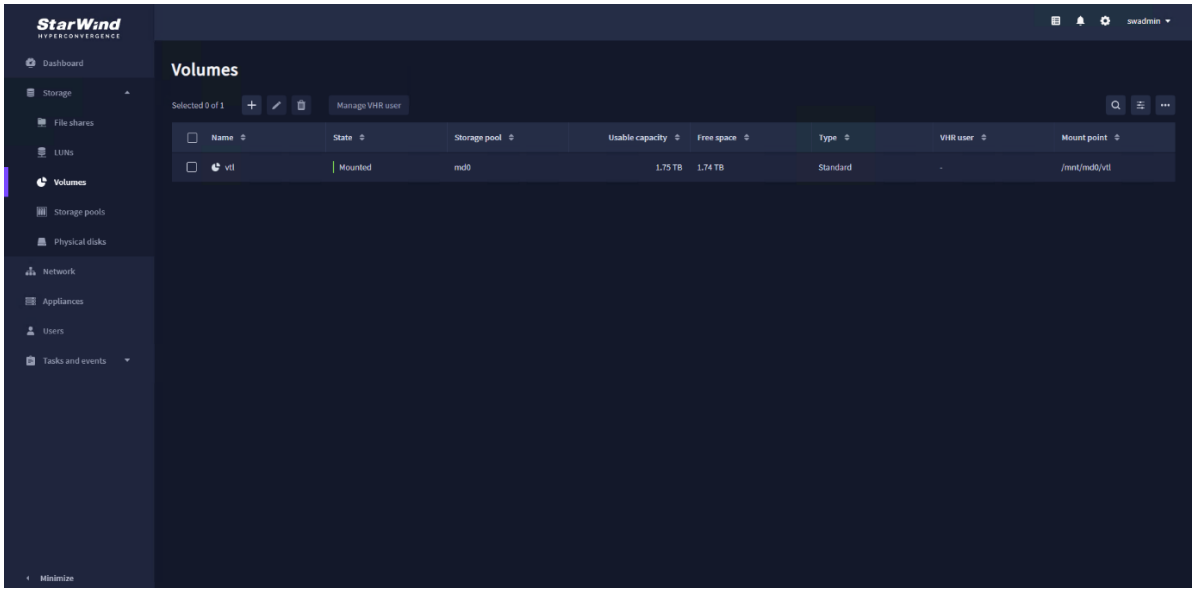
11. For StarWind VTL, only the “Standard” volume type is included in the licenses and selected automatically. Click Next.



12. Review Summary and click Create to create the volume.



13. The new Standard volume is created.

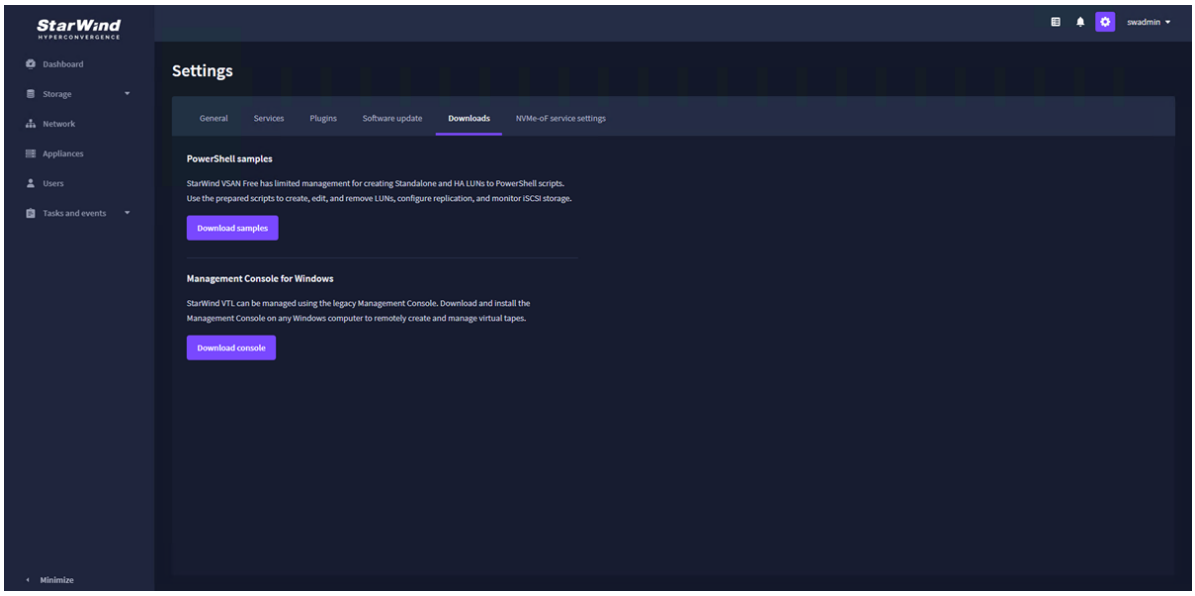


Creating Starwind Vtl Device

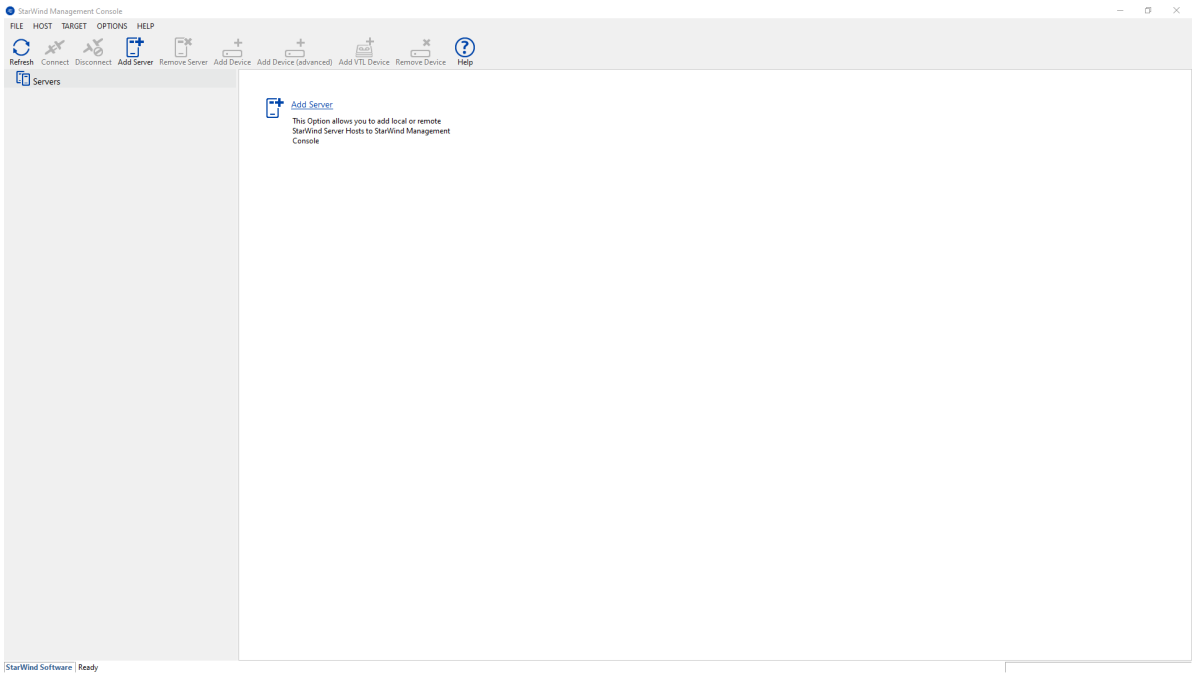
1. Click the “Settings” icon, navigate to Downloads and click Download Console. Install StarWind Management Console on the server where Veeam Backup & Replication software is installed or on a separate workstation or virtual machine with Windows OS (Windows 7 or higher, Windows Server 2008 R2 and higher).

NOTE: StarWind Management Console and PowerShell Management Library components

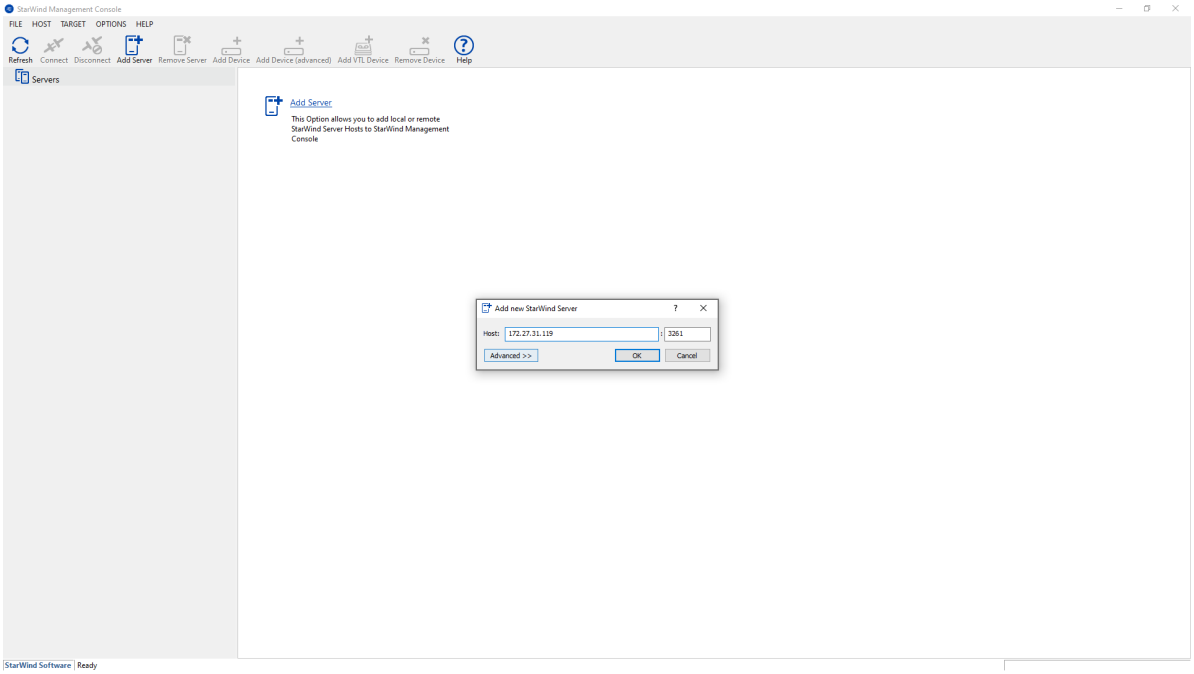
are required.



2. Open StarWind Management Console and click Add Server.

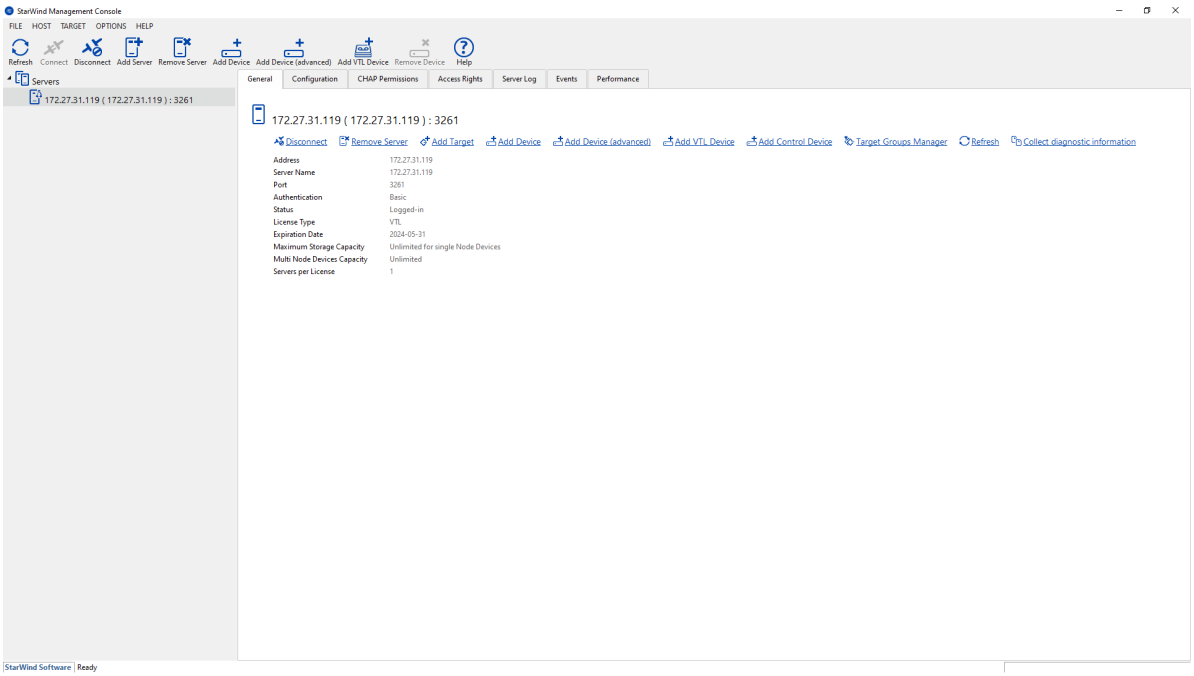


3. Enter the IP address of the StarWind Appliance in the pop-up window and click OK.

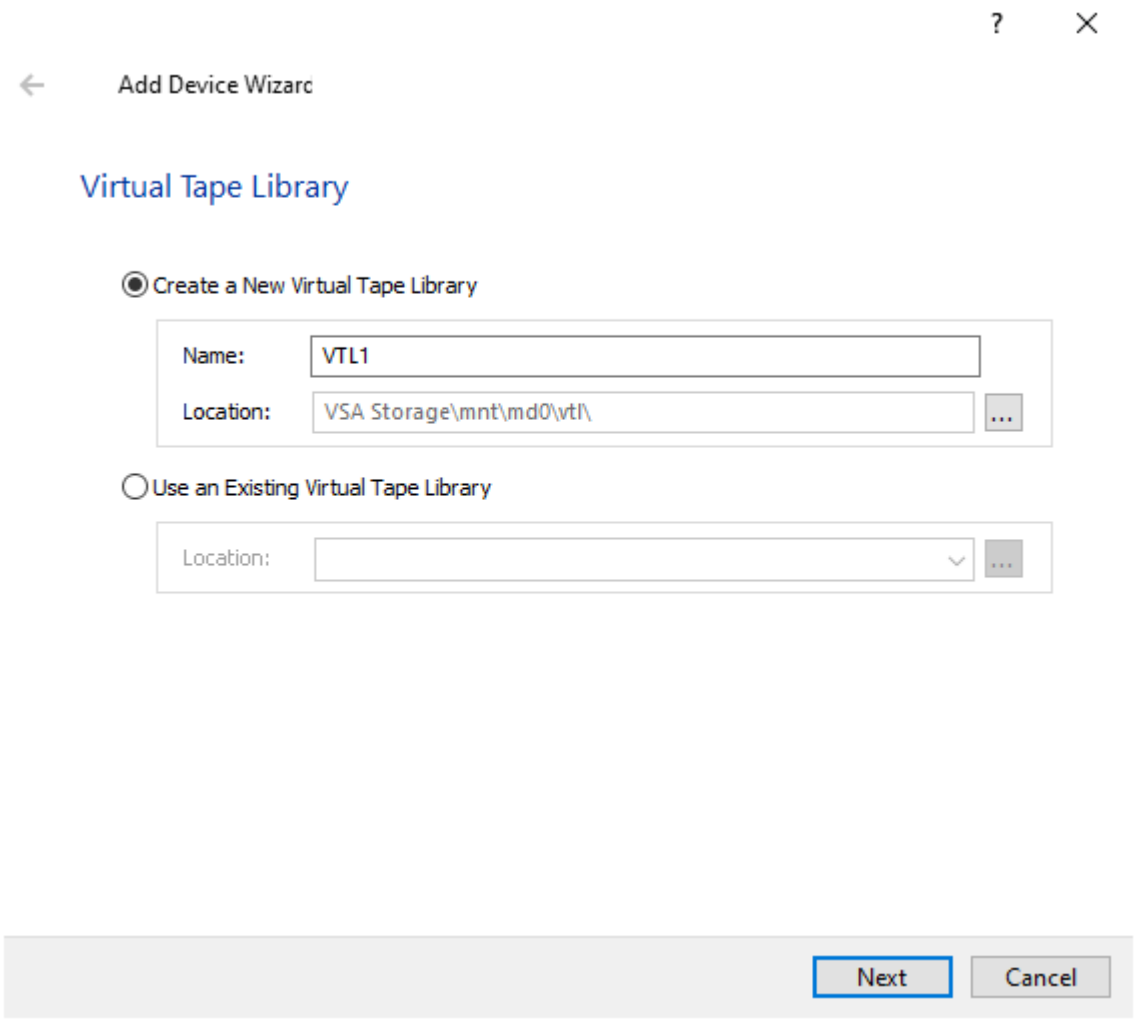


4. Select the server and click Connect.

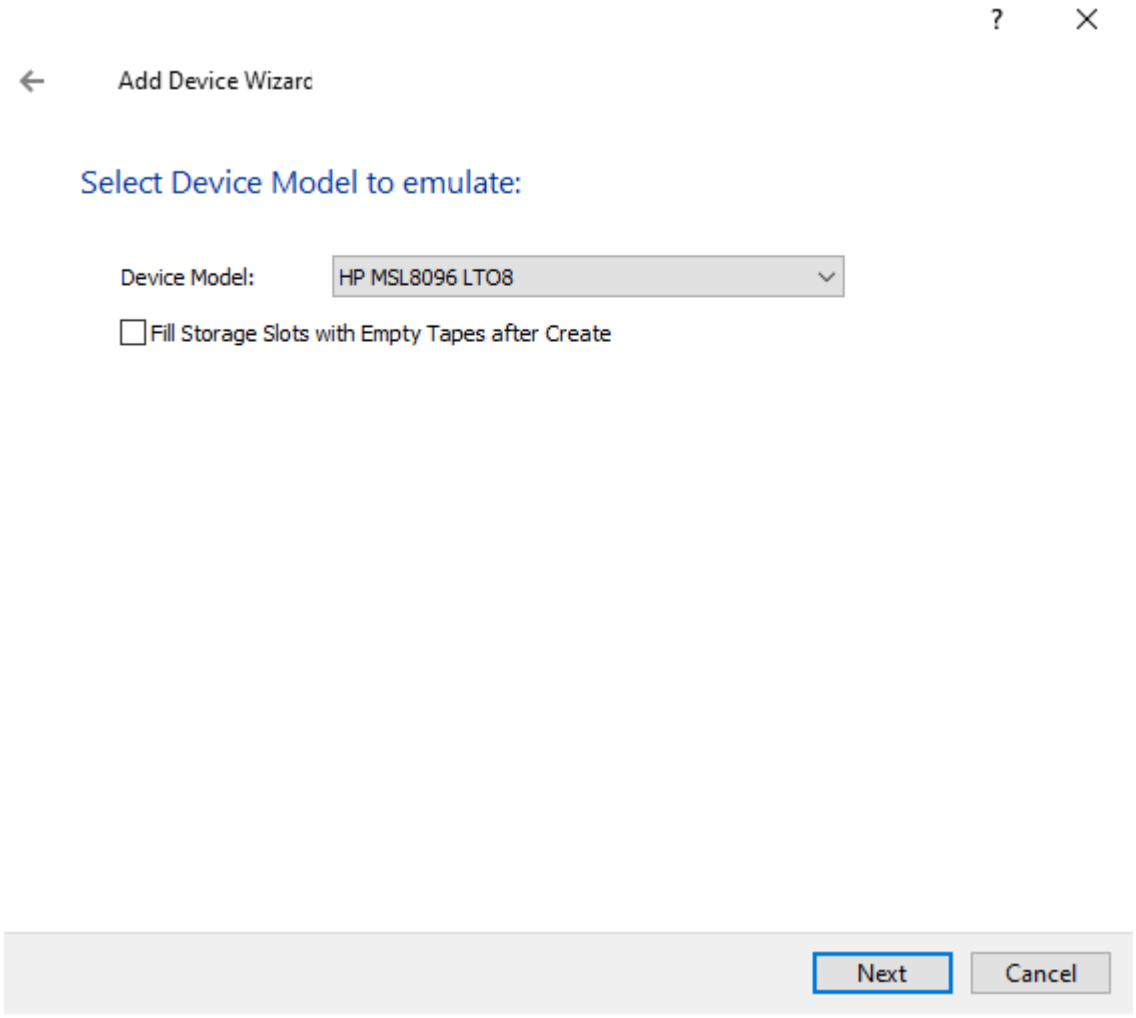
5. Click the “Add VTL Device” button on the toolbar.



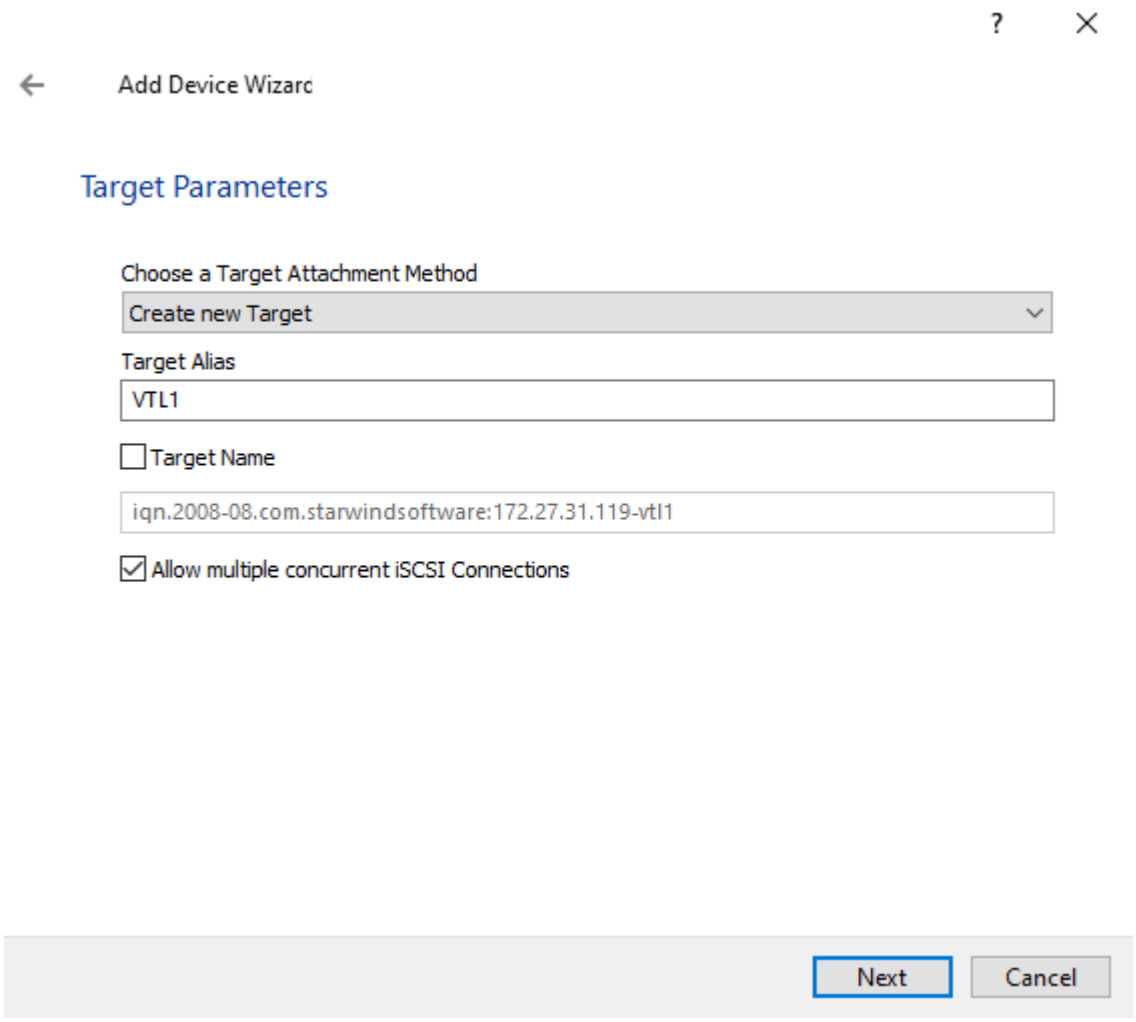
6. Specify the VTL device name and location to the storage pool and volume created in StarWind Appliance. Click Next.



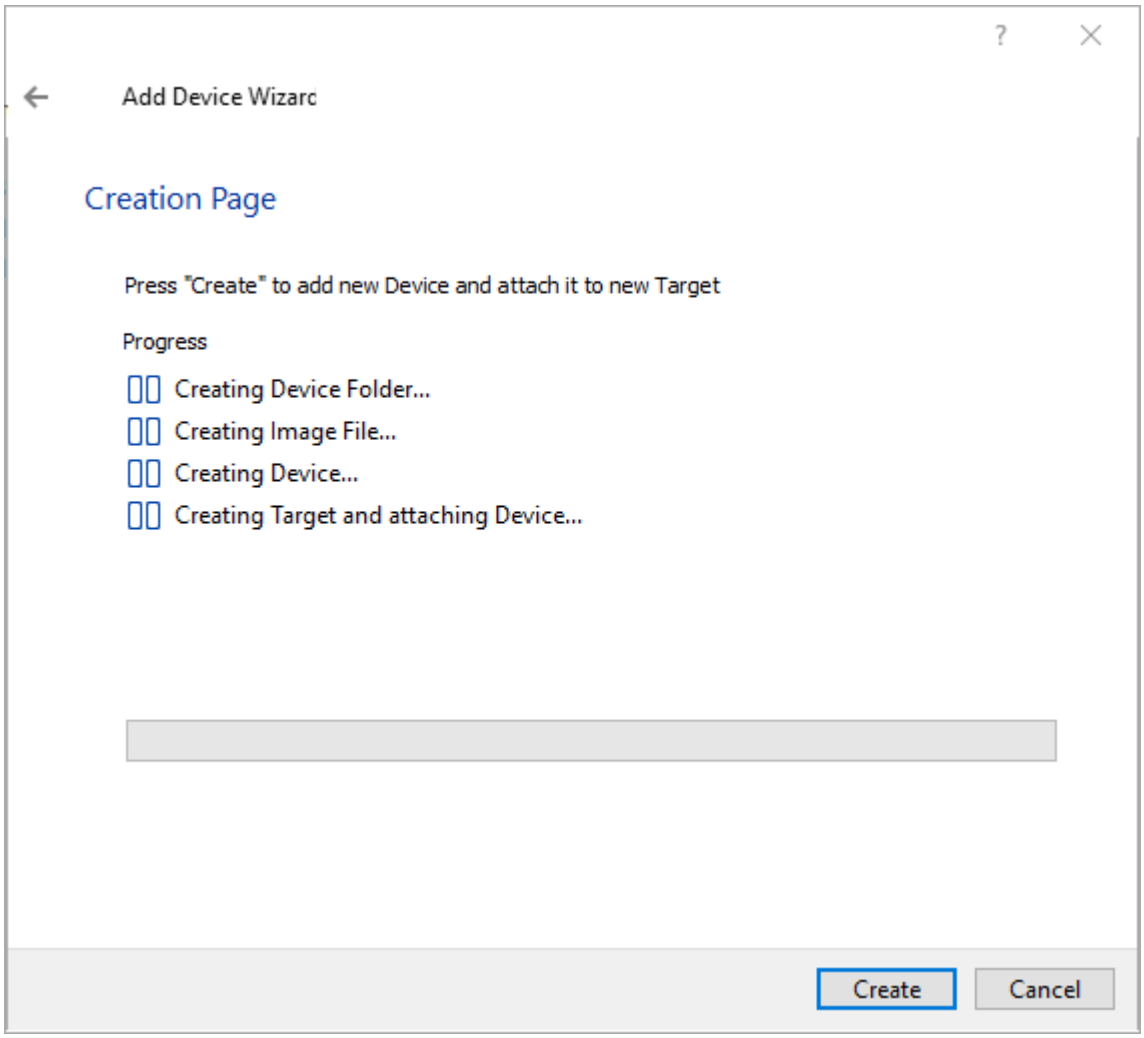
7. Select the Device Model from a drop-down list. You can also fill all slots in the newly created Tape Library with empty tapes. Click Next.



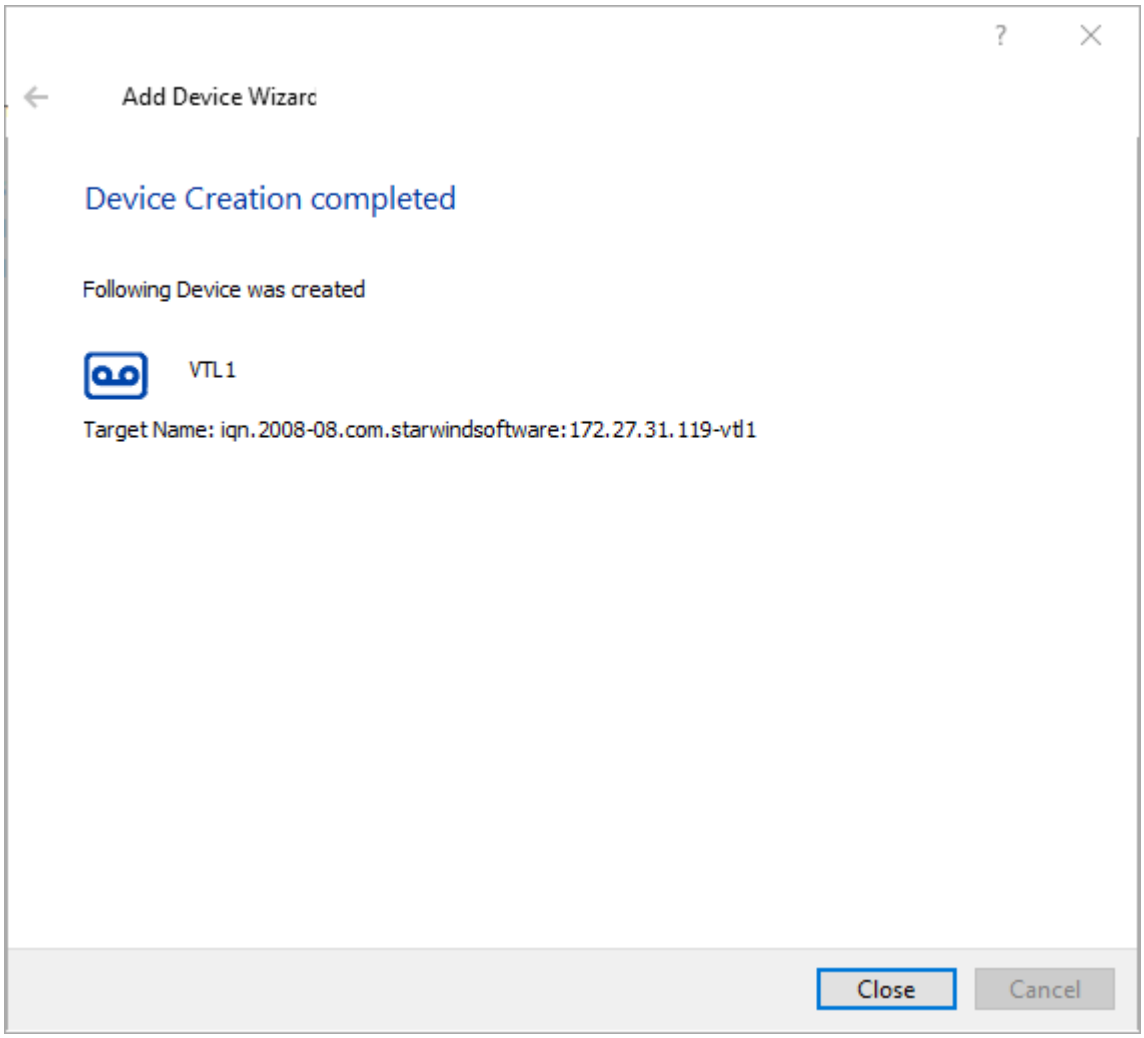
8. Provide a Target Alias or choose the default one.



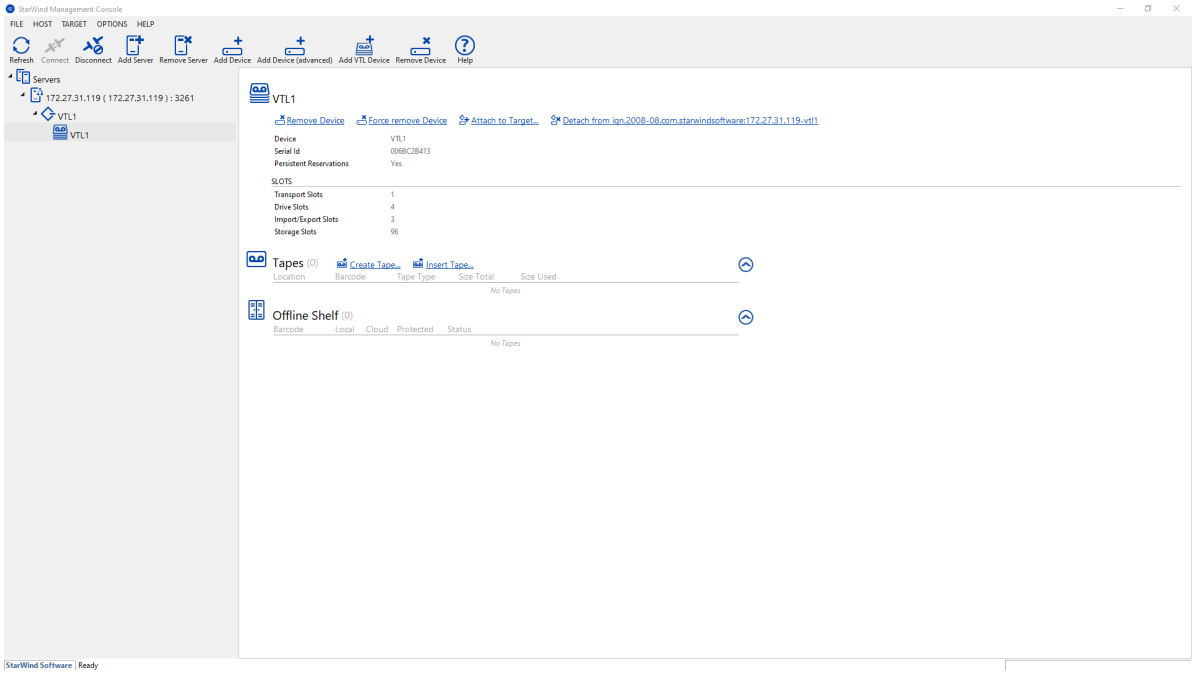
9. Press the Create button to start the creation process.



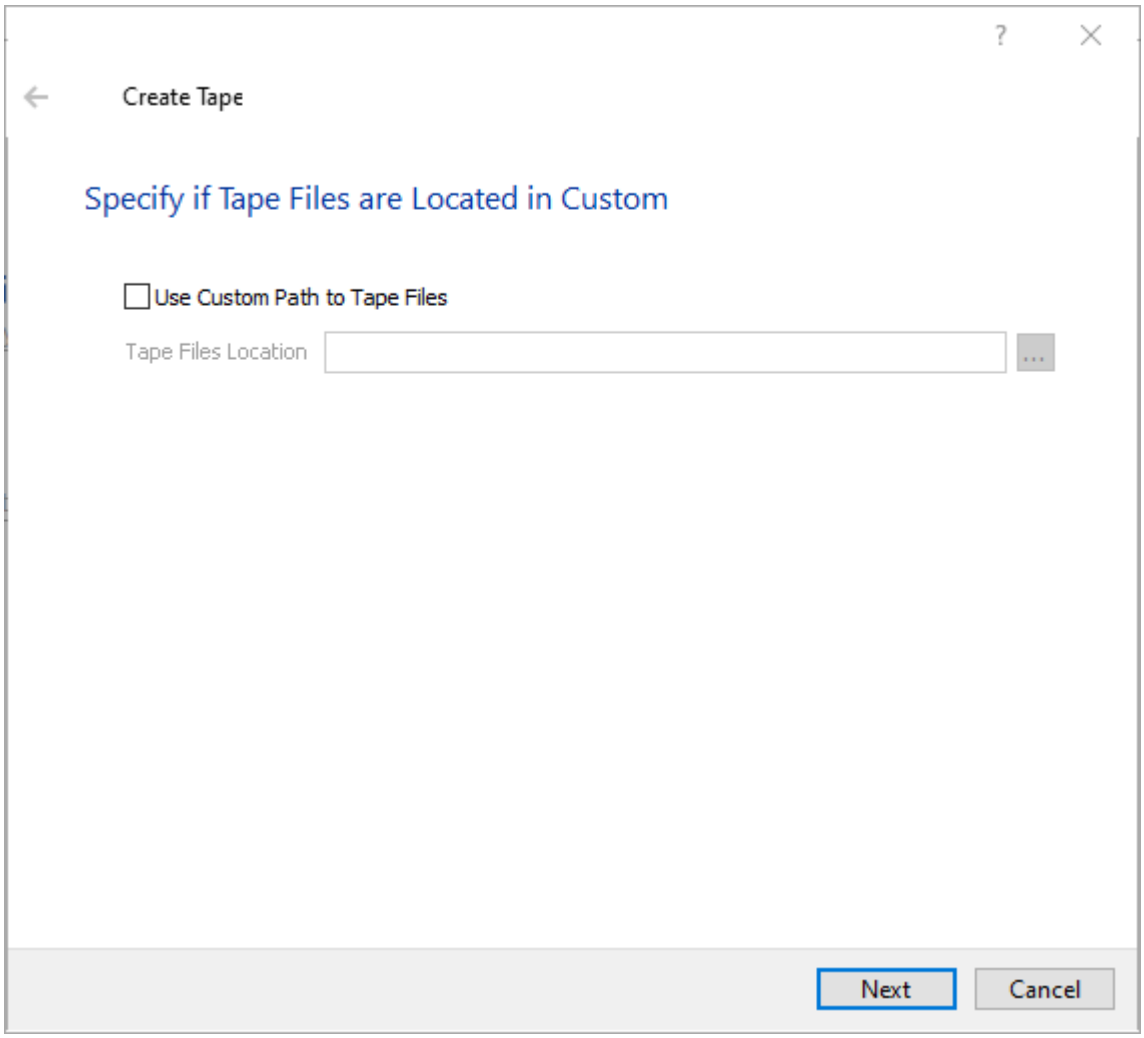
10. Once the device creation is completed, click Close.



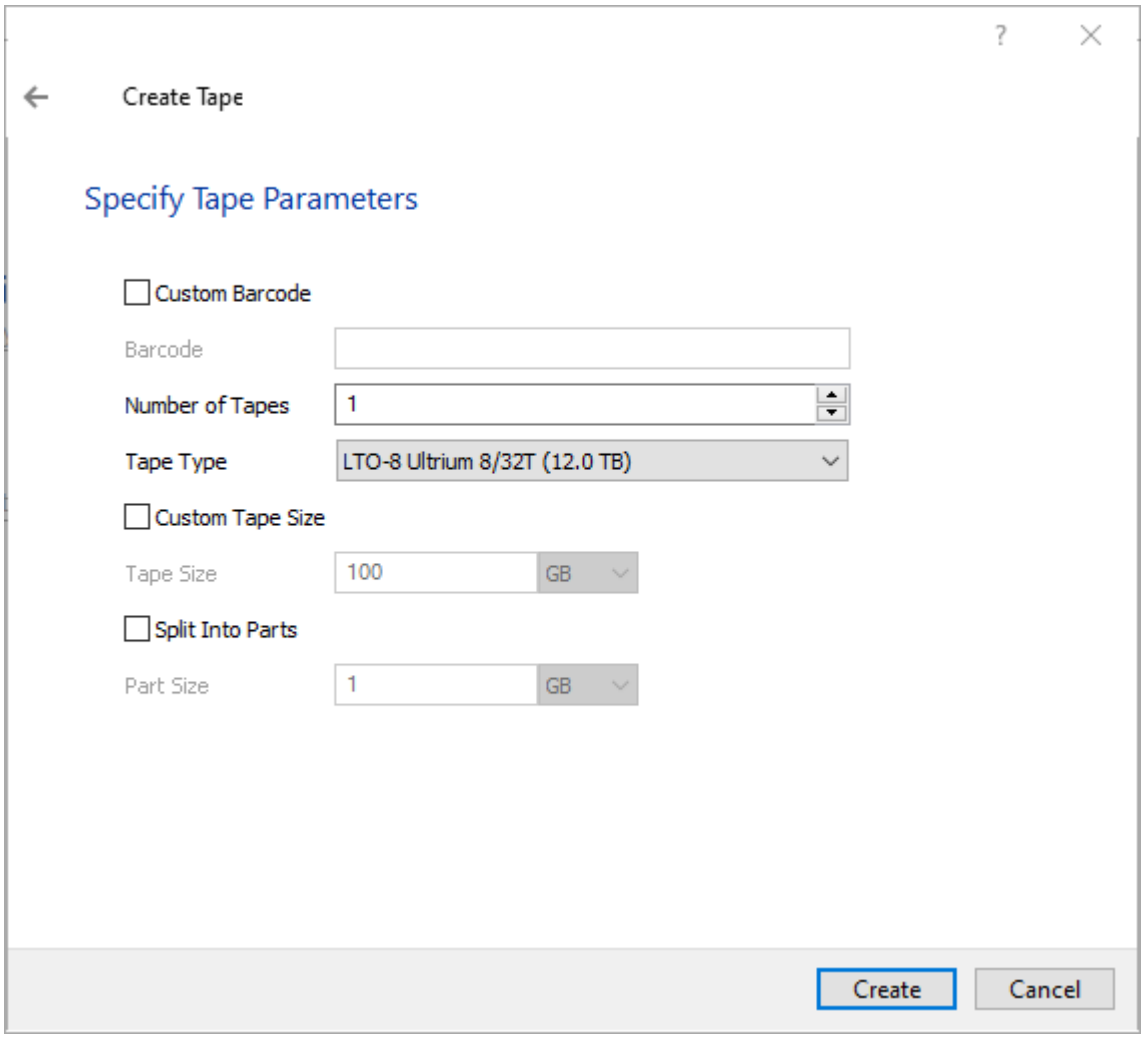
11. Once the VTL device is created, the tapes can be added. To do this, select the VTL device and click the “Create Tape...” button located in the Tapes section.



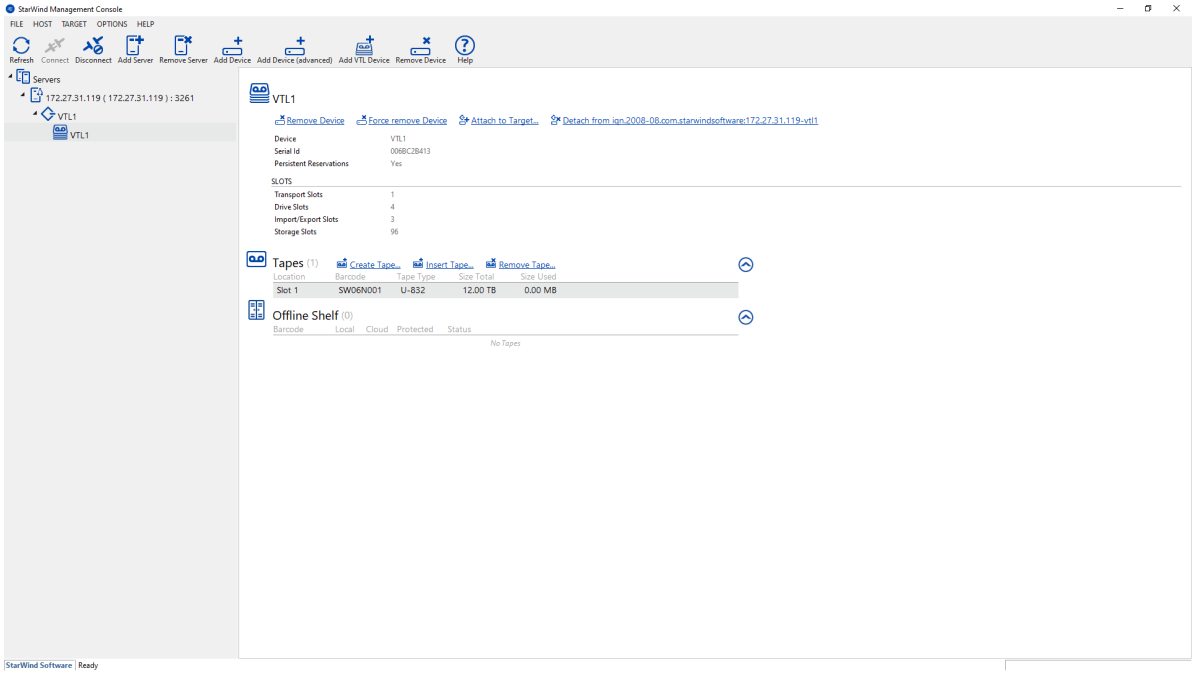
12. Leave the Tape Files Location as default. Optionally, select the checkbox and specify the custom path where the tape files must be stored.



13. Specify the Number of Tapes and Tape Type. Additionally, you can specify Custom Barcode prefix, Custom Tape Size, and Split into Parts of the required size. Click Create.



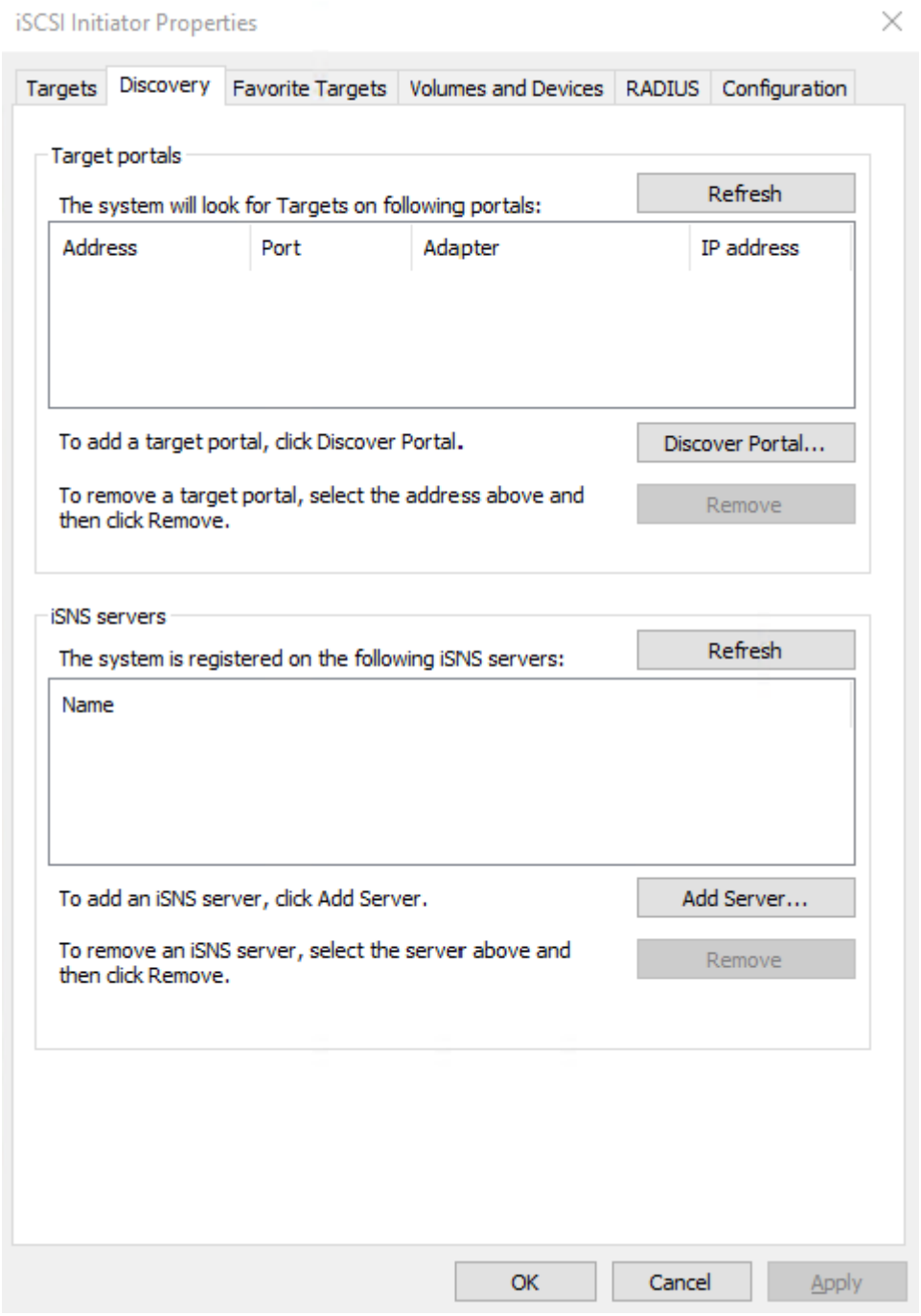
14. The created tape appears in the first slot of the VTL device in the StarWind Management Console.



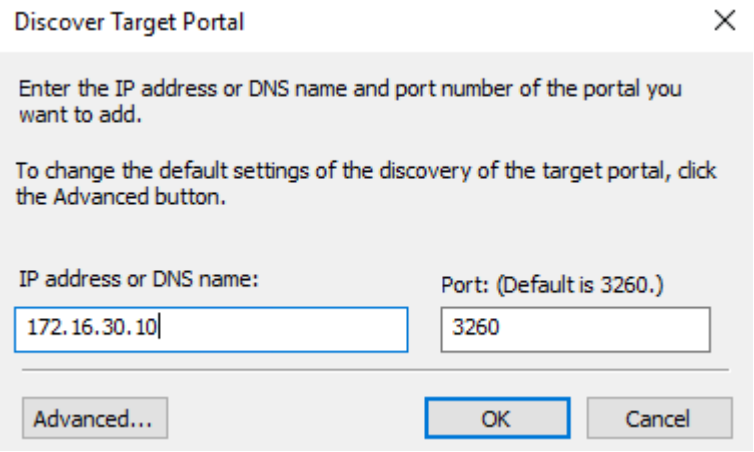
Mounting Vtl On The Backup Host

To pass-through the VTL device to the Windows server with Veeam Backup & Replication, the corresponding VTL iSCSI target should be mounted first.

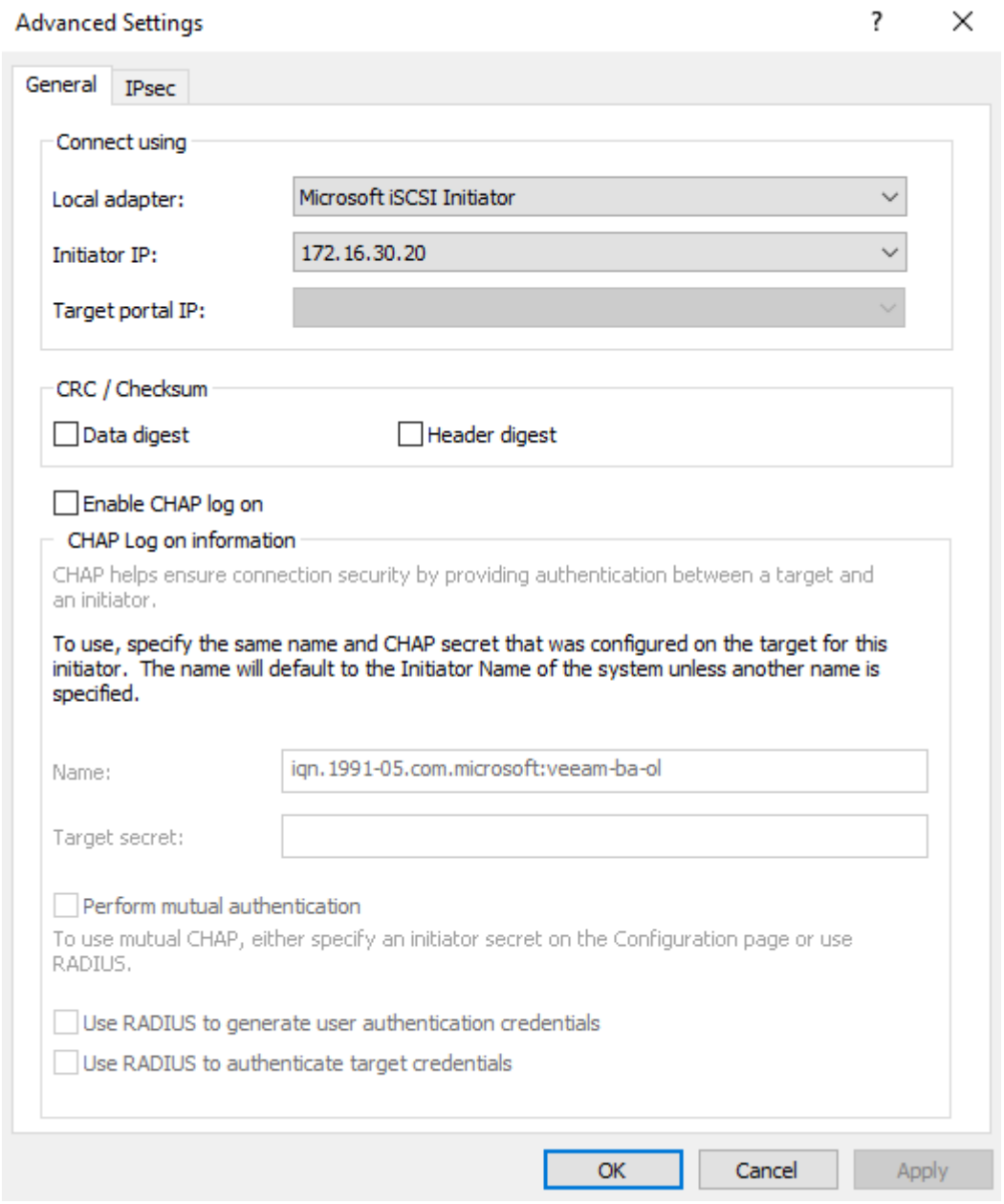
1. Open Microsoft iSCSI Initiator, navigate to the Discovery tab, and press the Discover Portal button.



2. Enter the IPv4 address of the Data (VTL traffic) network adapter in the StarWind Appliance and click the Advanced button.

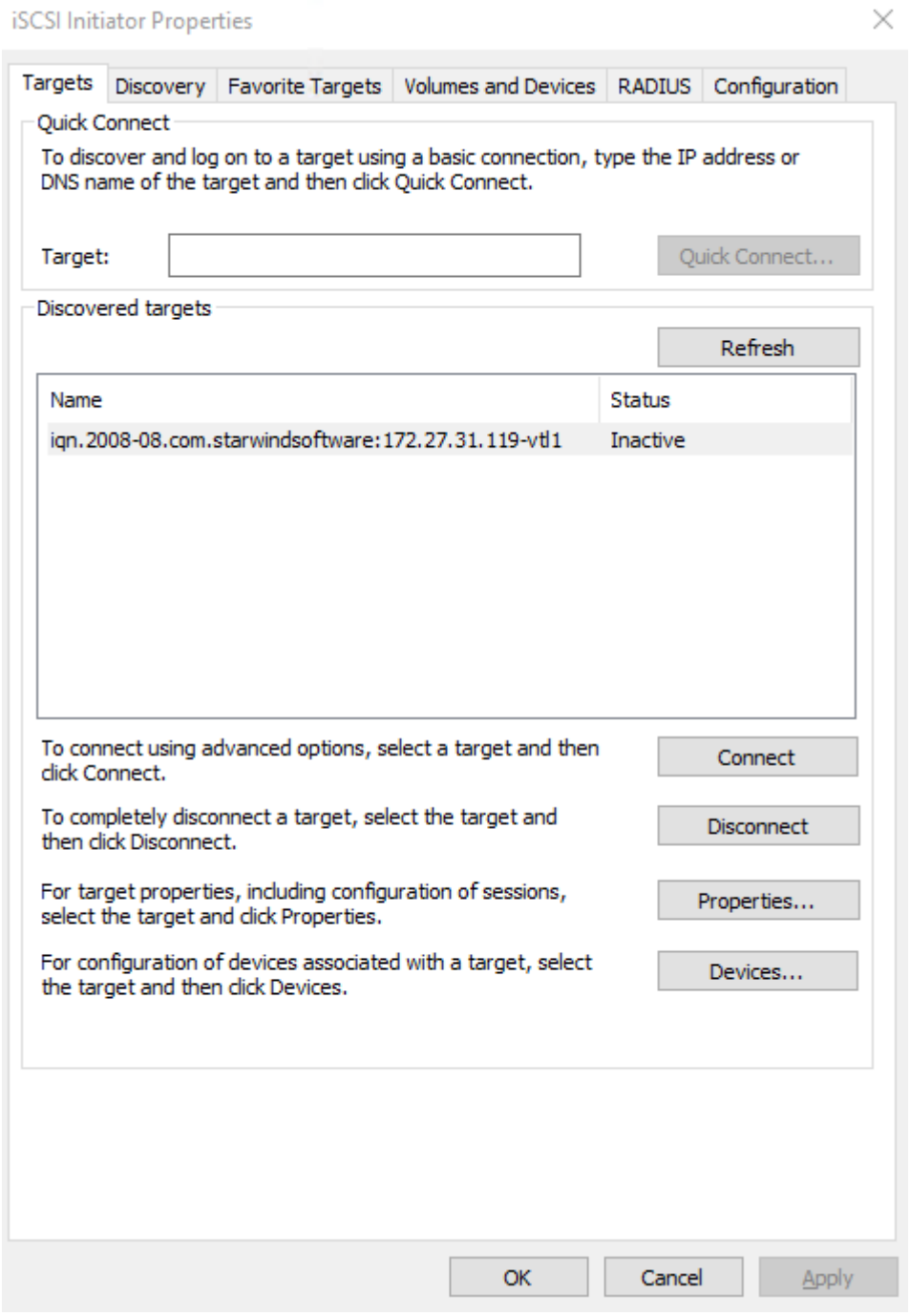


3. Select Microsoft iSCSI Initiator from the Local Adapter drop-down list. Then, select the corresponding IP address that is used for VTL traffic on the Veeam Backup & Replication server and that is on the same subnet as the IPV4 address for Data (VTL traffic) on the StarWind Appliance. Click OK.

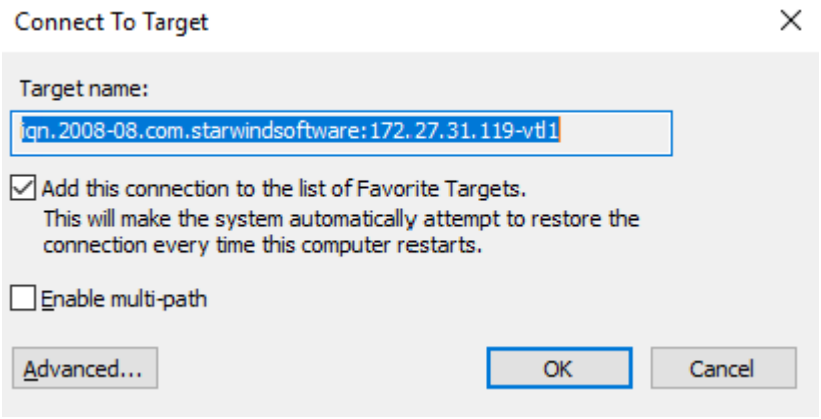


4. The newly added Discovery Portal will appear in the list.

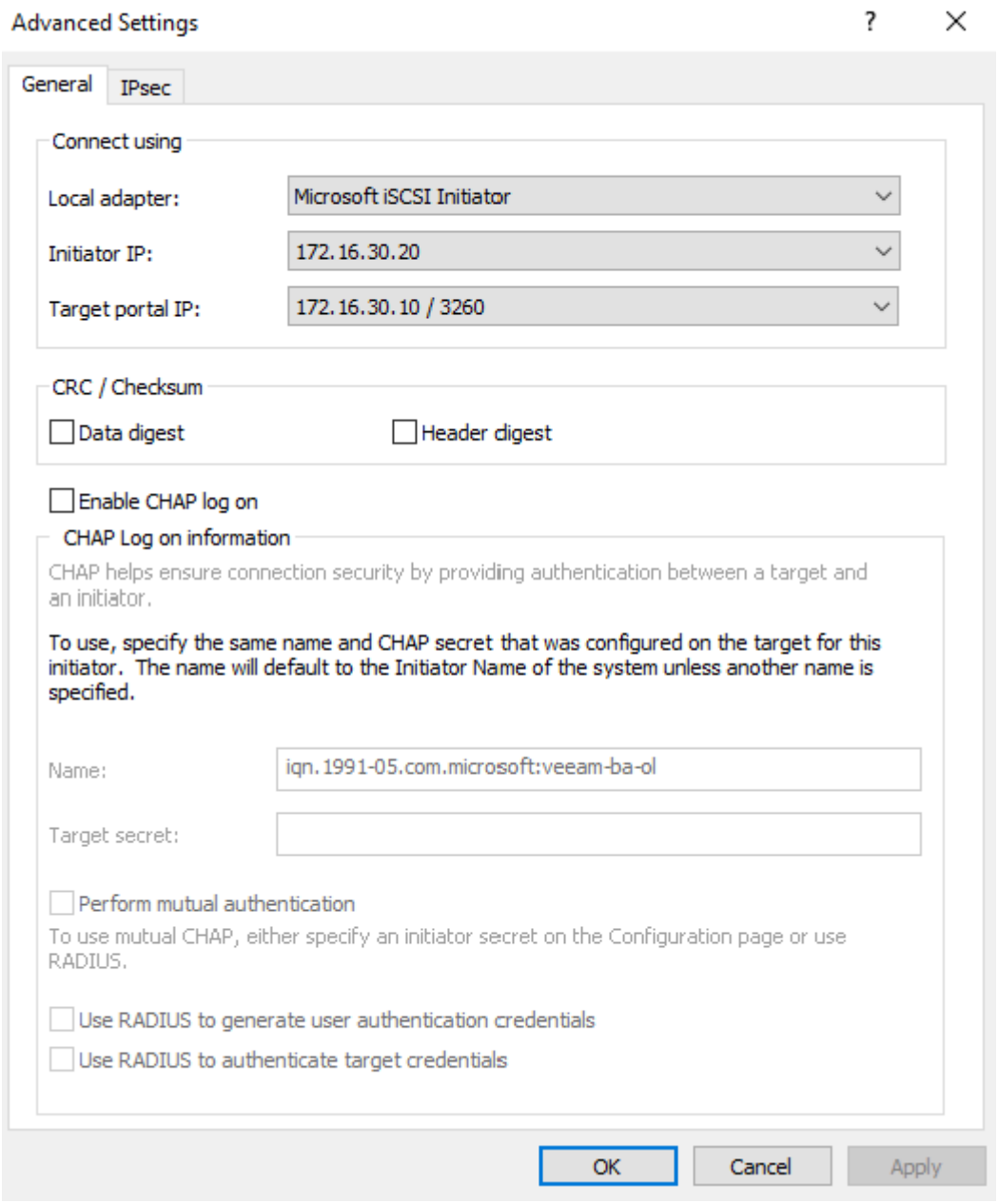
5. Navigate to the Targets tab, and find the iSCSI target which corresponds to the StarWind VTL device.



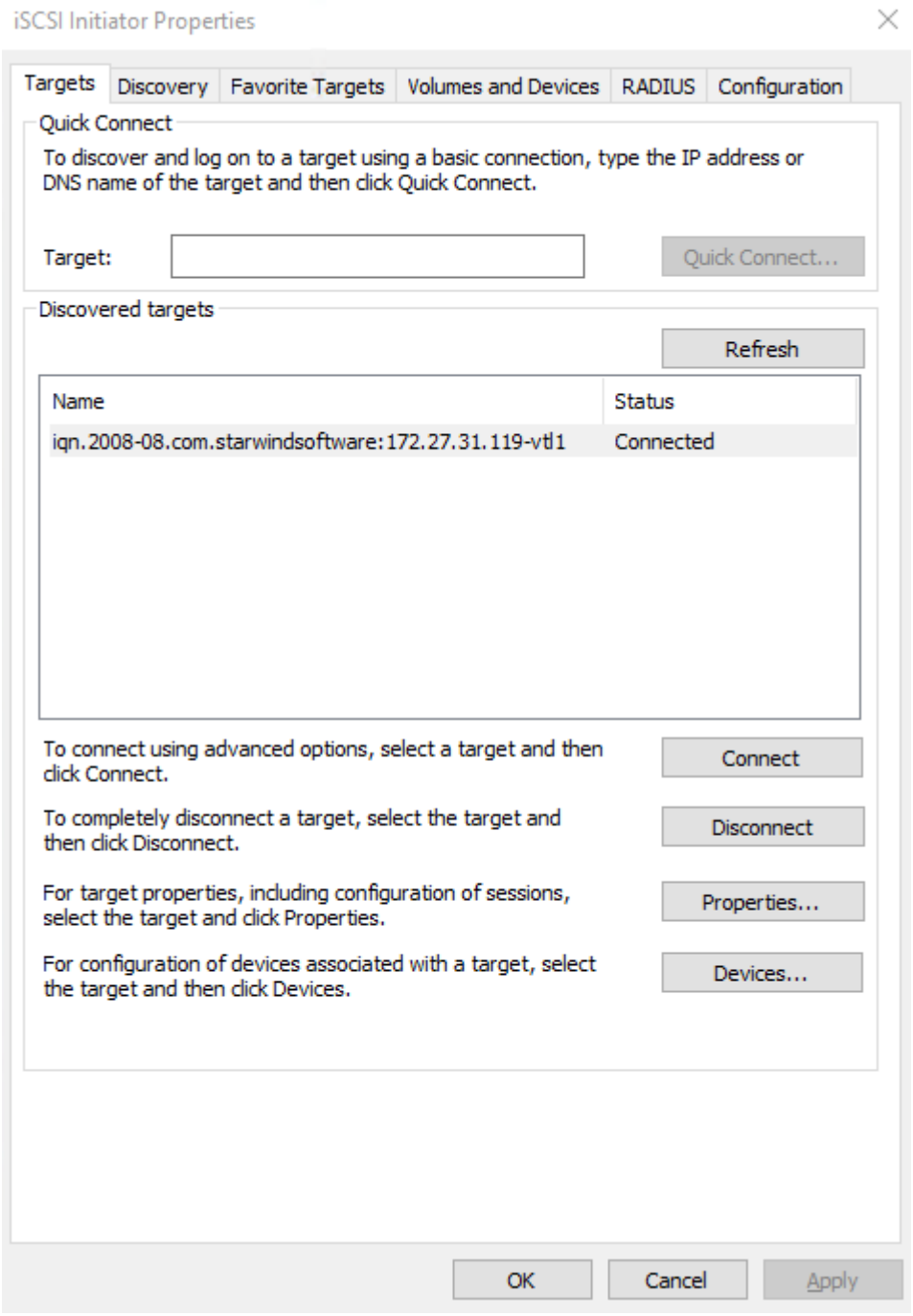
6. Click the Connect button. Leave the Enable Multipath checkbox empty and press the Advanced button.



7. Set Local adapter as Microsoft iSCSI Initiator, specify the corresponding Initiator and Target portal IP addresses that correspond to Data (VTL traffic) IPv4 addresses on StarWind Appliance and Veeam Backup & Replication server. Click OK.



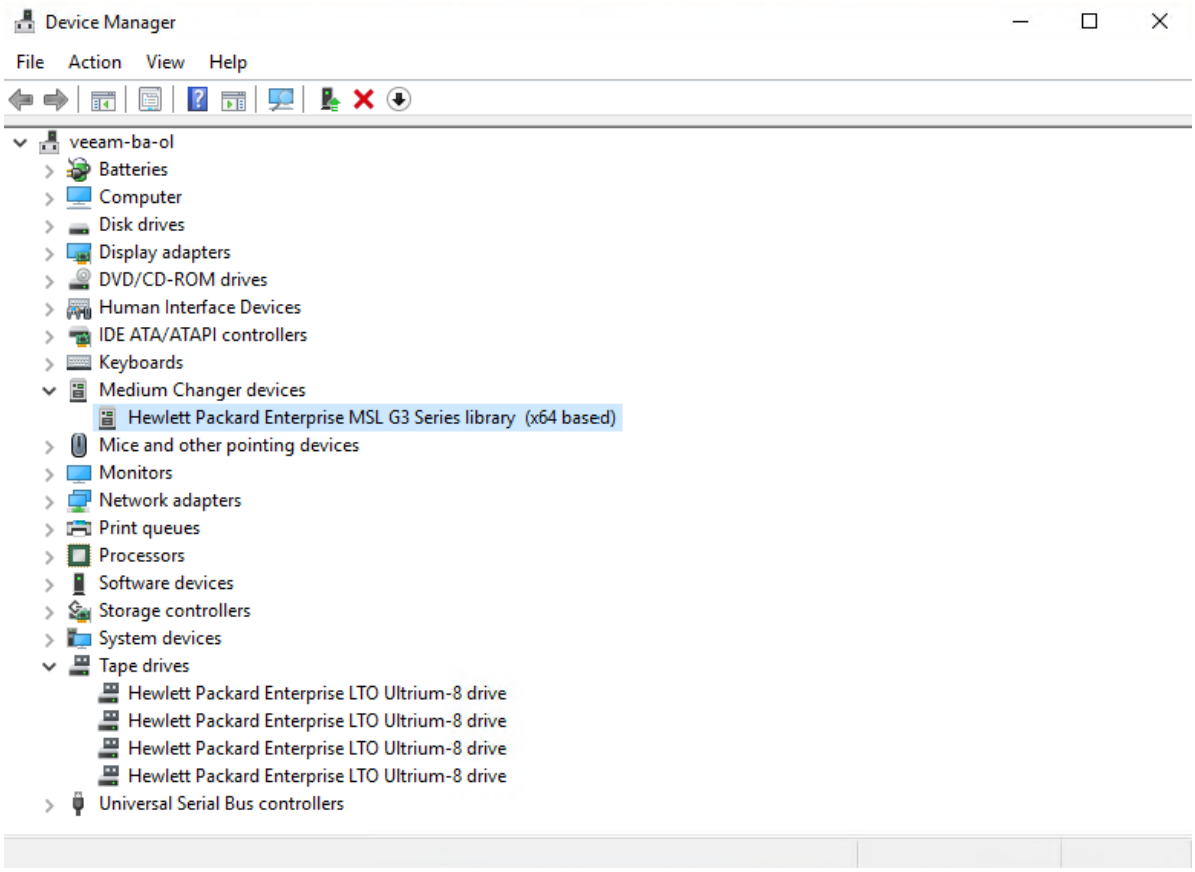
8. The VTL iSCSI target should be shown as Connected in the list.



9. Install the tape library drivers.

- The driver for HP MSL8096 can be downloaded here: HPE StoreEver Tape Drivers for Microsoft Windows
- The driver for IBM TS03584 can be downloaded here: https://www.ibm.com/docs/en/spectrum-archive-le/2.4.0.0?topic=system-installing-tape-driver-windows

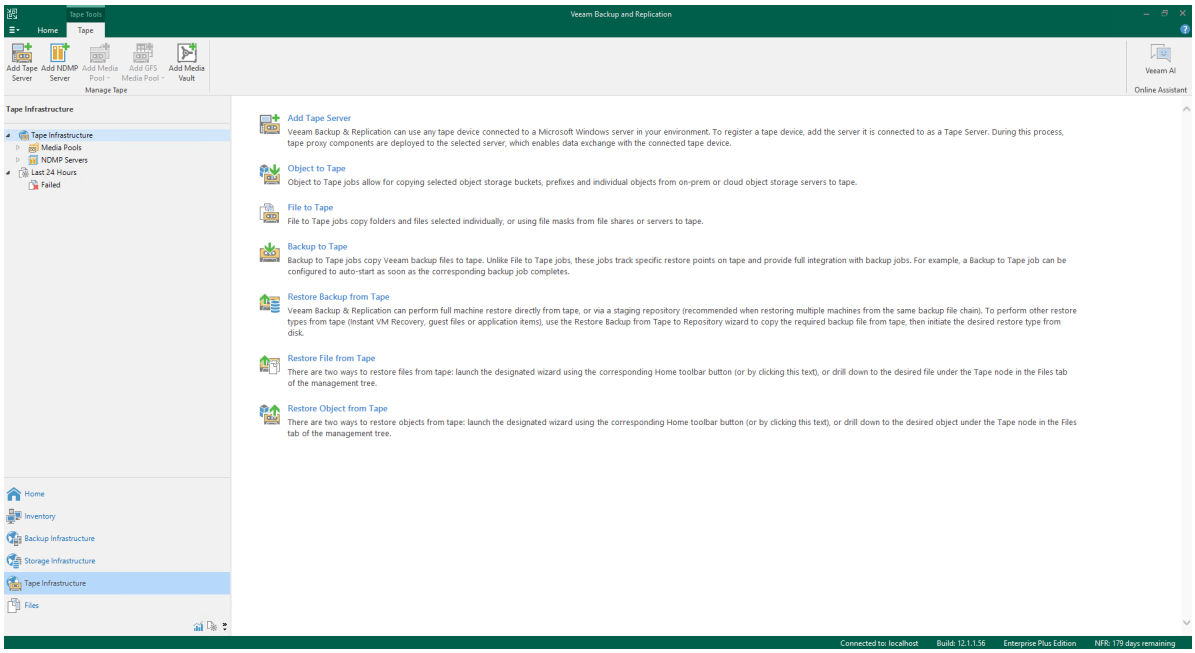
10. Once the drivers are installed, the Medium Changer devices is shown as Hewlett Packard MSL G3 Series library (x64 based) in this example.



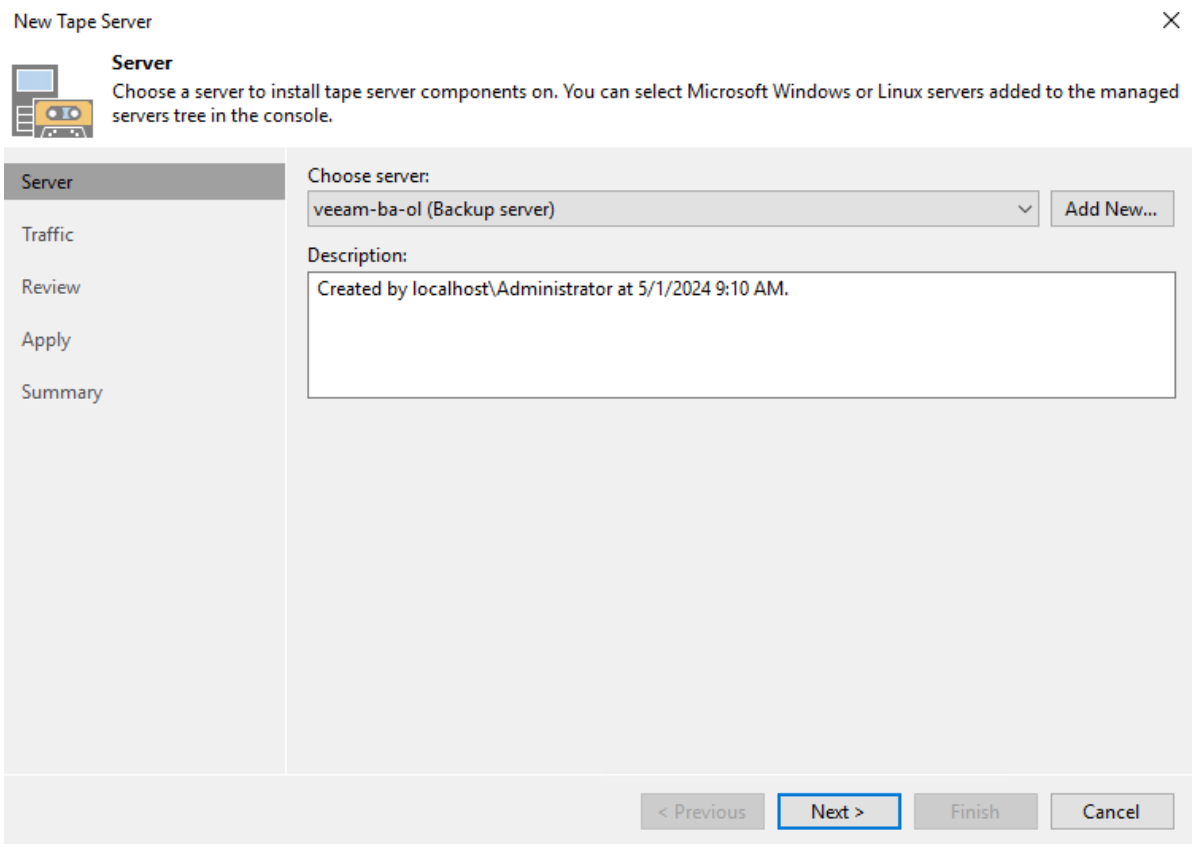
11. The tape library is ready to be added to Veeam Backup & Replication.

Adding Starwind Vtl To Veeam Backup & Replication

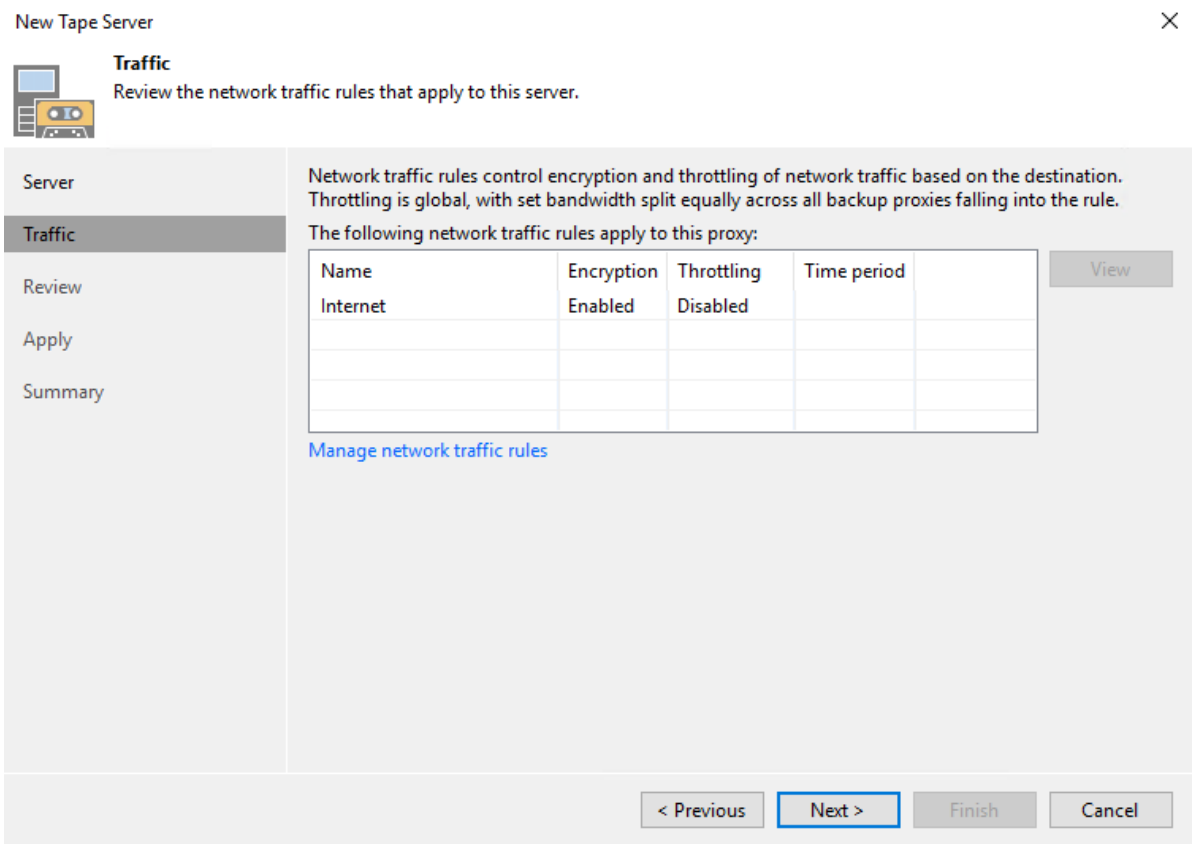
1. Open Veeam Backup & Replication. Open the Tape Infrastructure tab and click Add Tape Server.



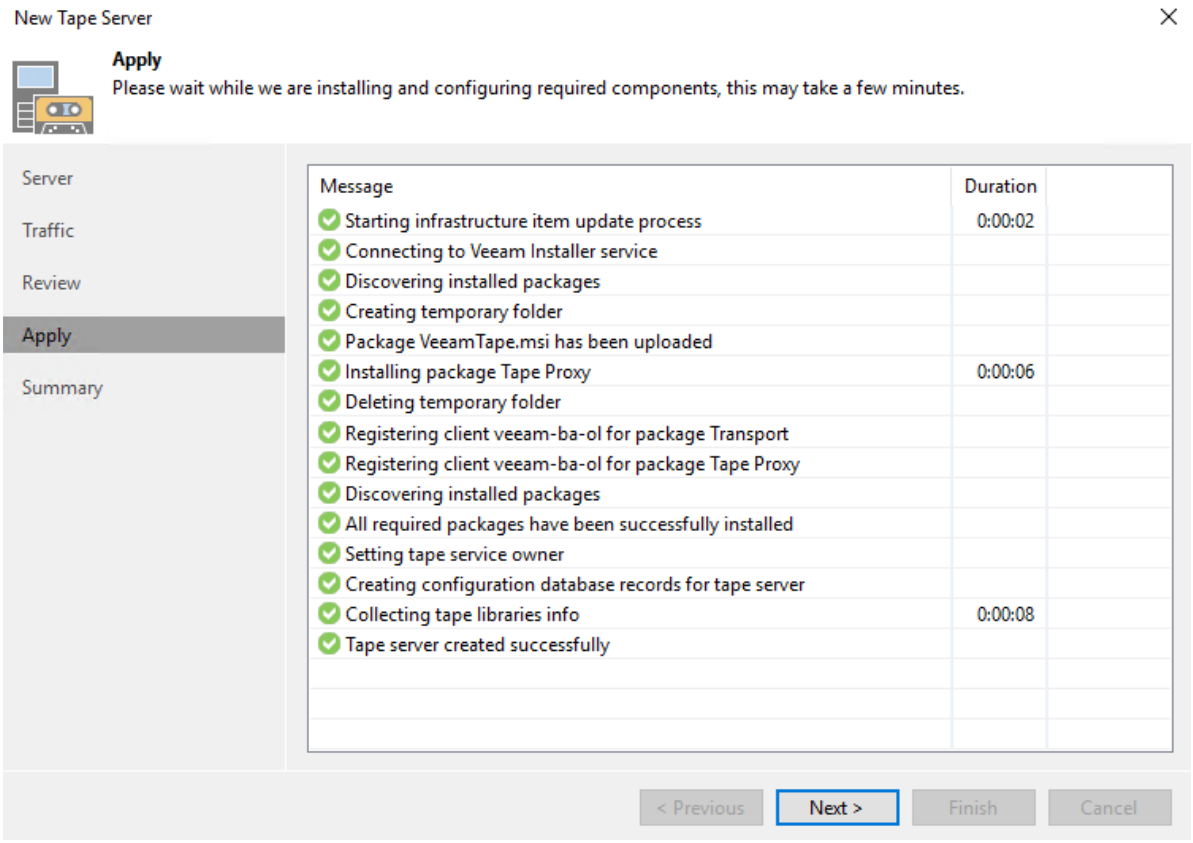
2. Choose the local server and press Next.



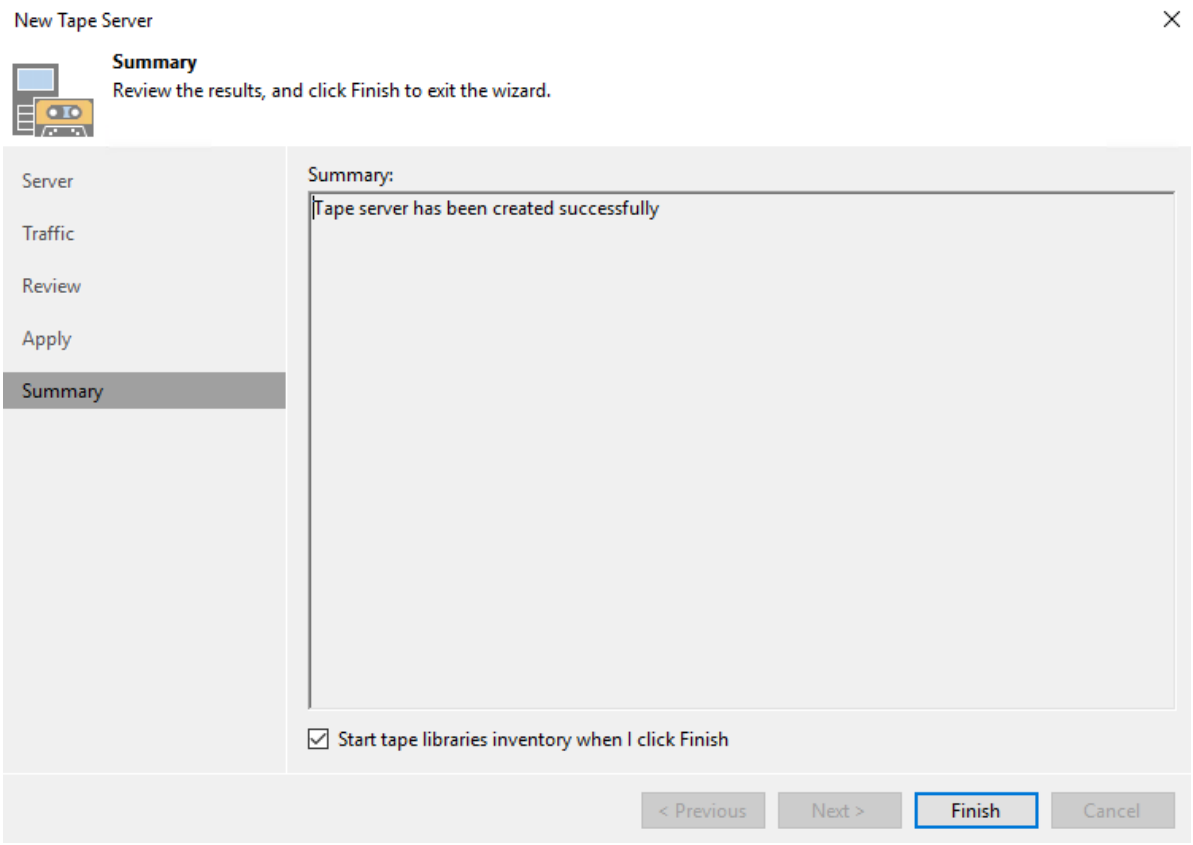
3. Review the network traffic rules and change them if required. Click Next, then click Apply.



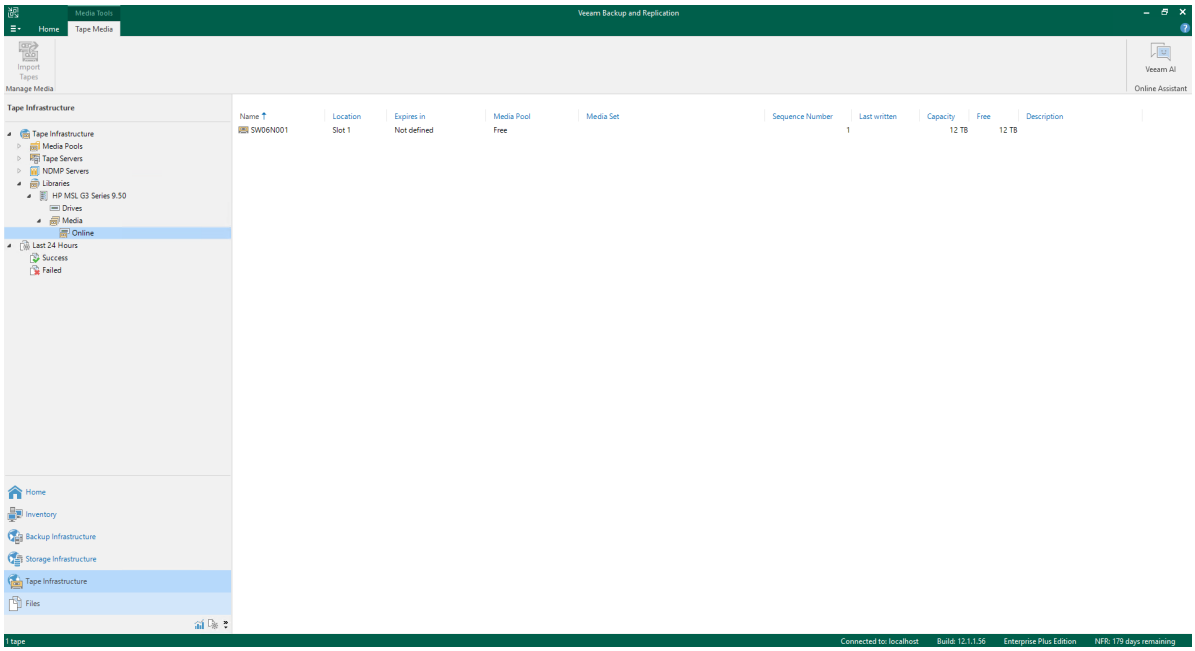
4. Once the Tape Server has been added, click Next.



5. Click Finish to start the tape libraries inventory.

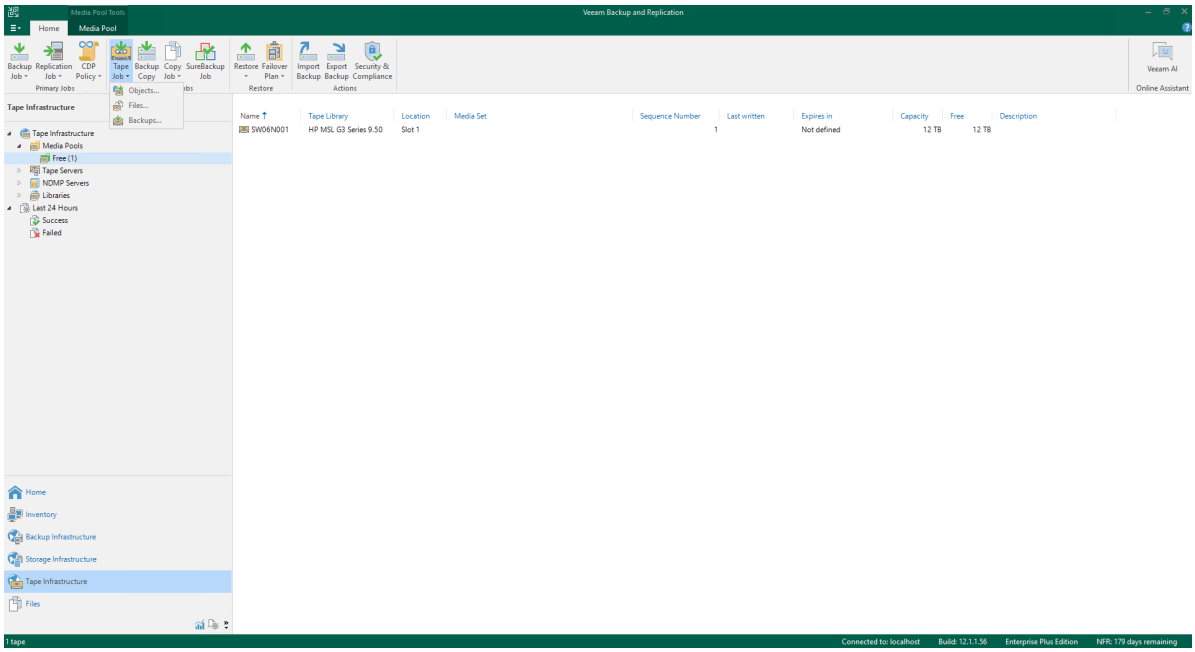


6. After the Tape Inventory job is finished, the newly added tape library device with StarWind tape will appear. The tape is automatically added to the Free Media Pool.

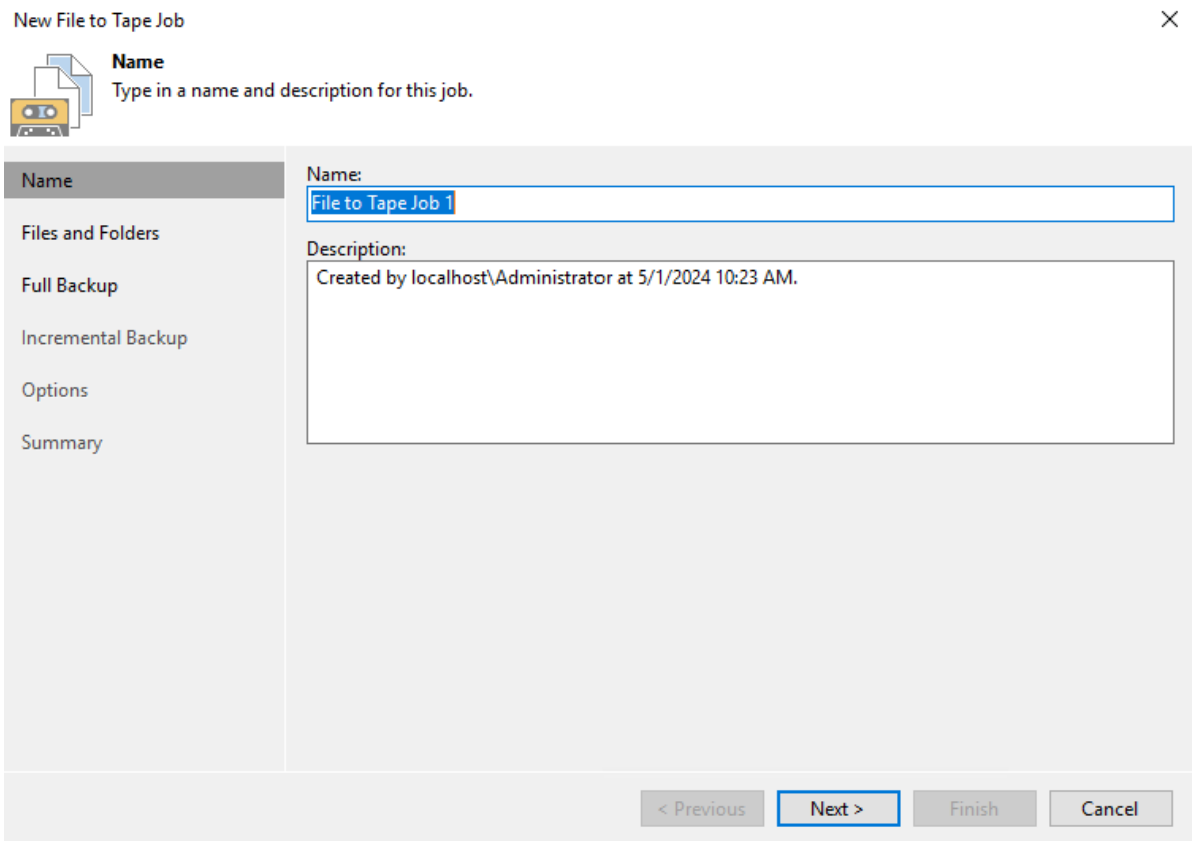


Performing Backup To Starwind Vtl

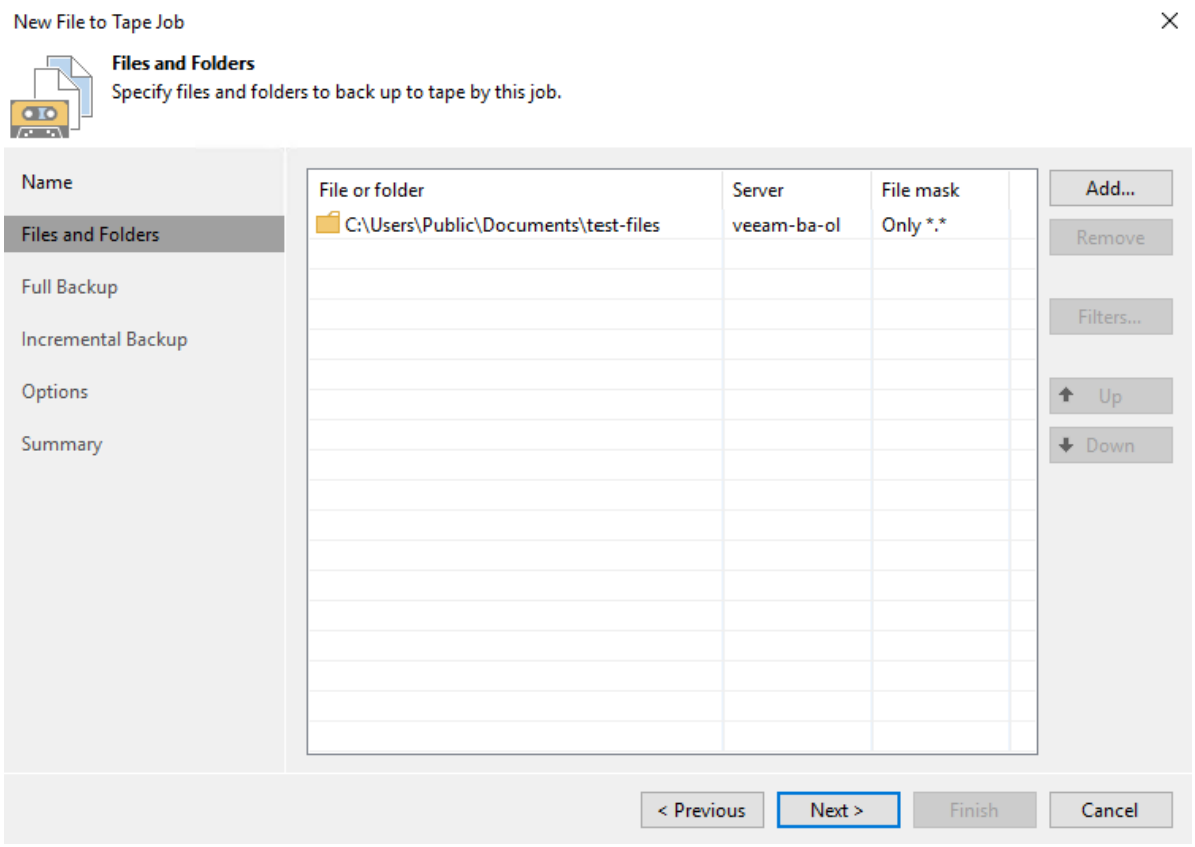
1. In Veeam Backup & Replication, navigate to the Home page, select Tape Job and then select Files.



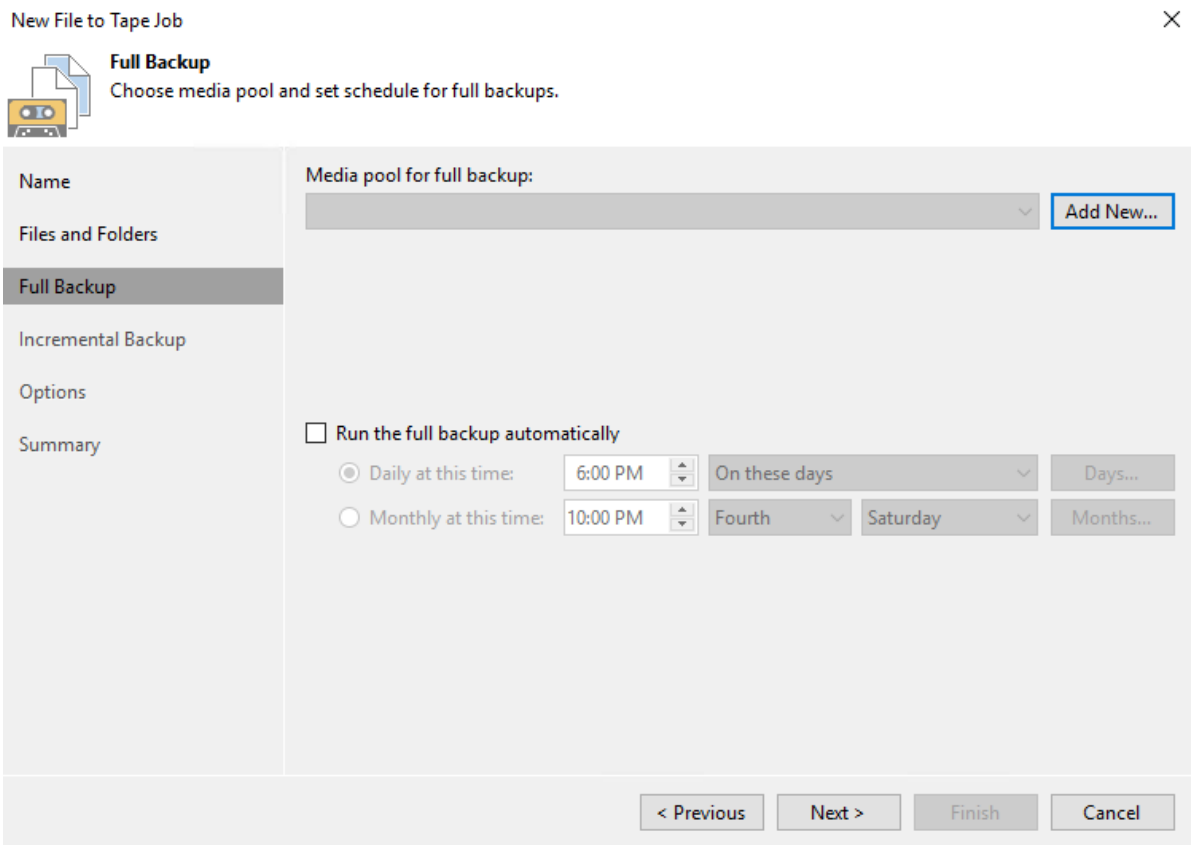
2. Specify the job Name and Description.



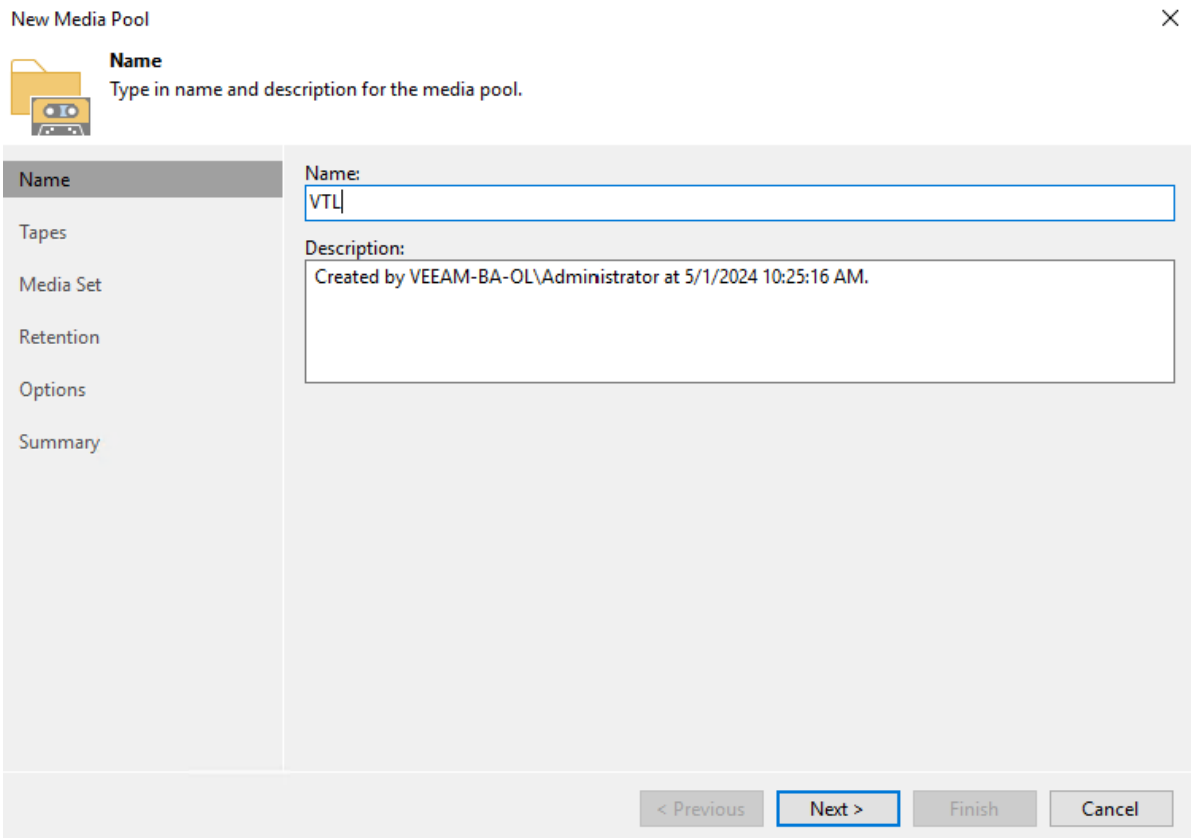
3. Specify the files and folders to be backed up. Click Next.



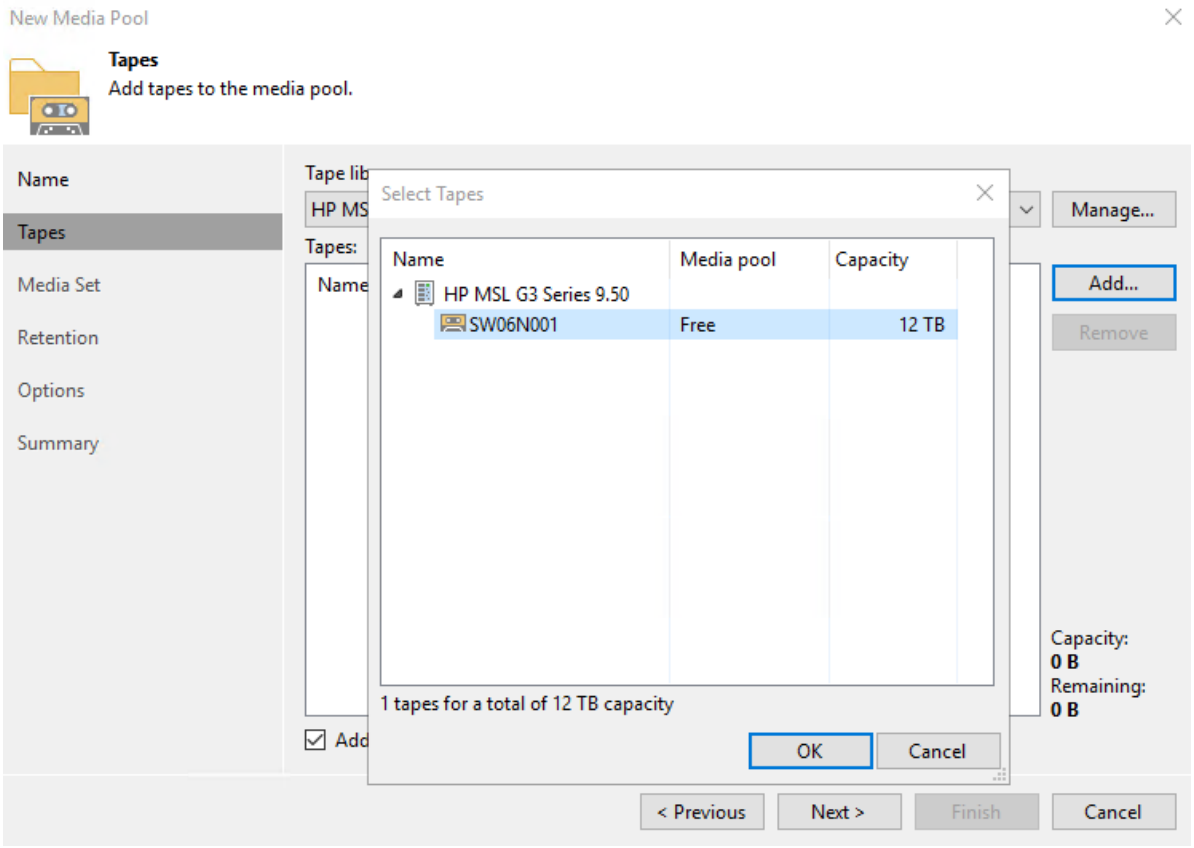
4. Create a new Standard Media Pool by clicking the “Add New…” button.



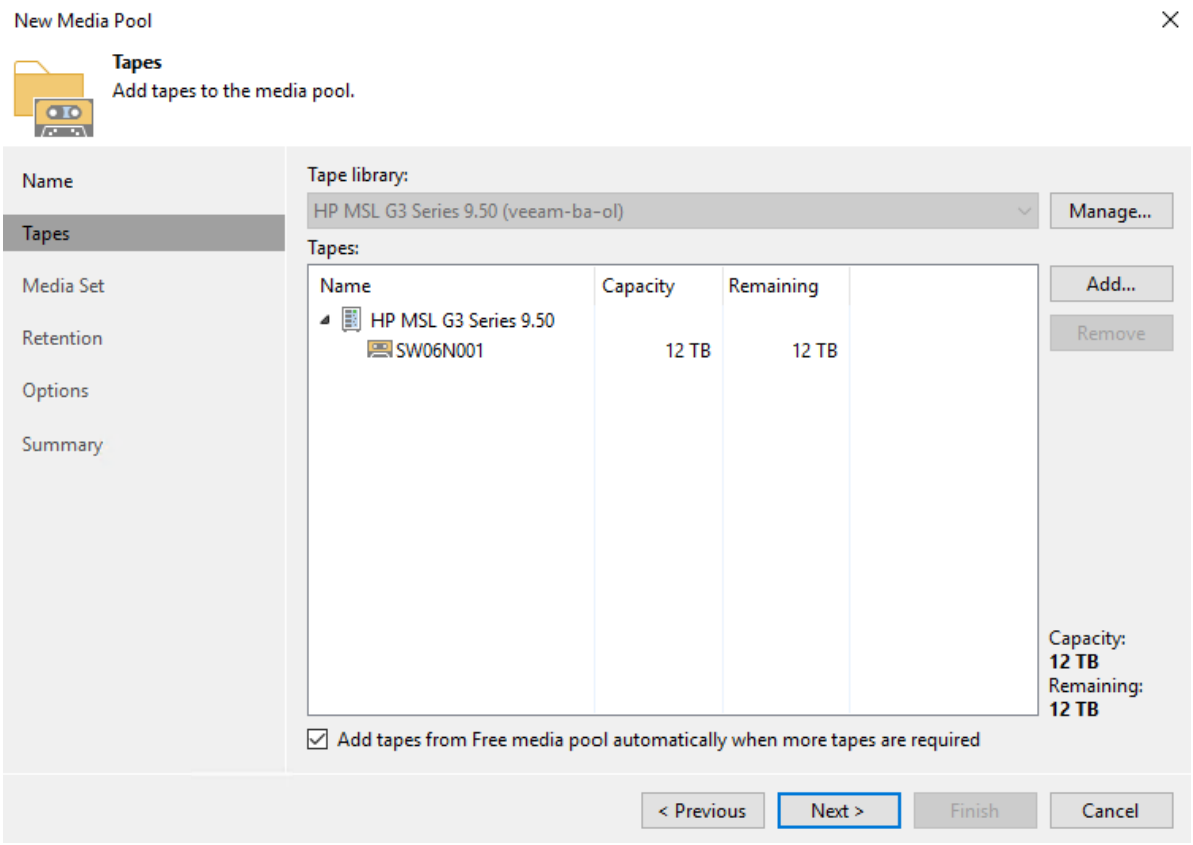
5. Specify the media pool name. Click Next.



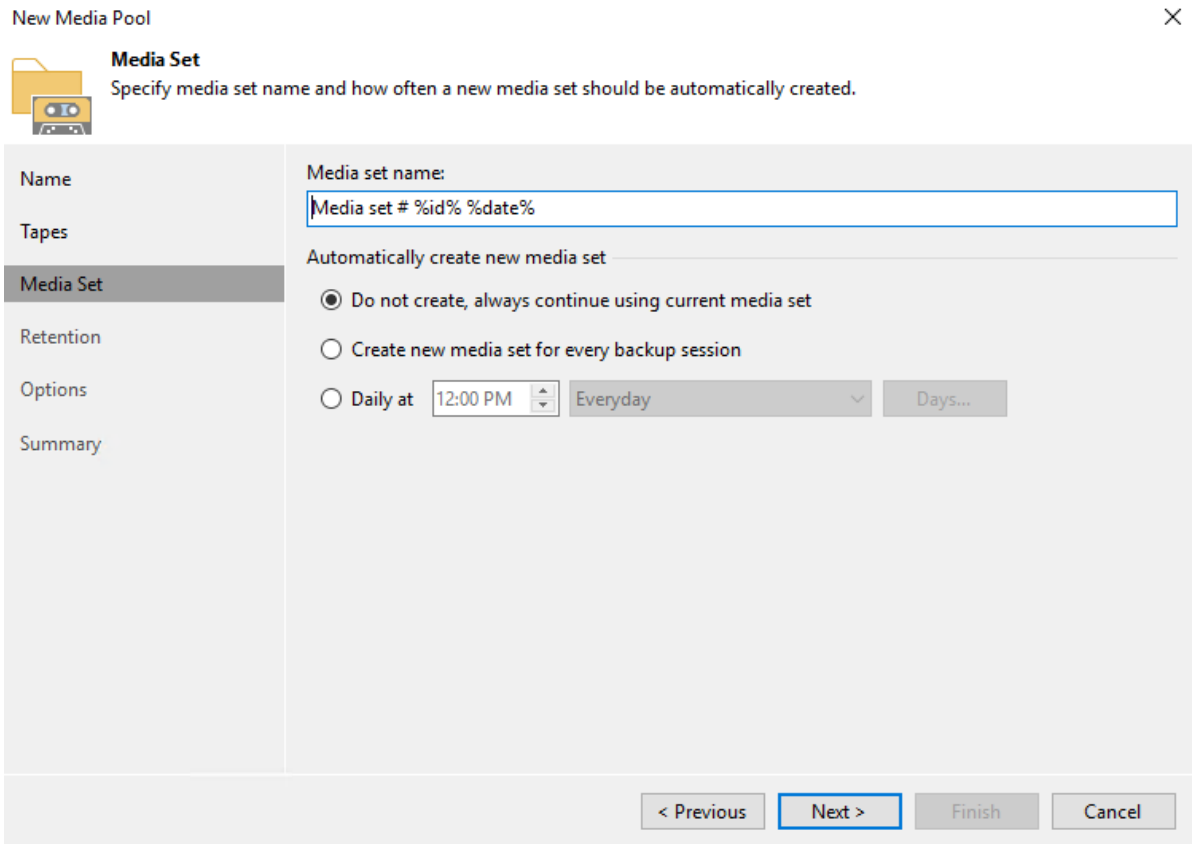
6. Select the StarWind VTL tape library and add tapes from the Free media pool. Click OK.



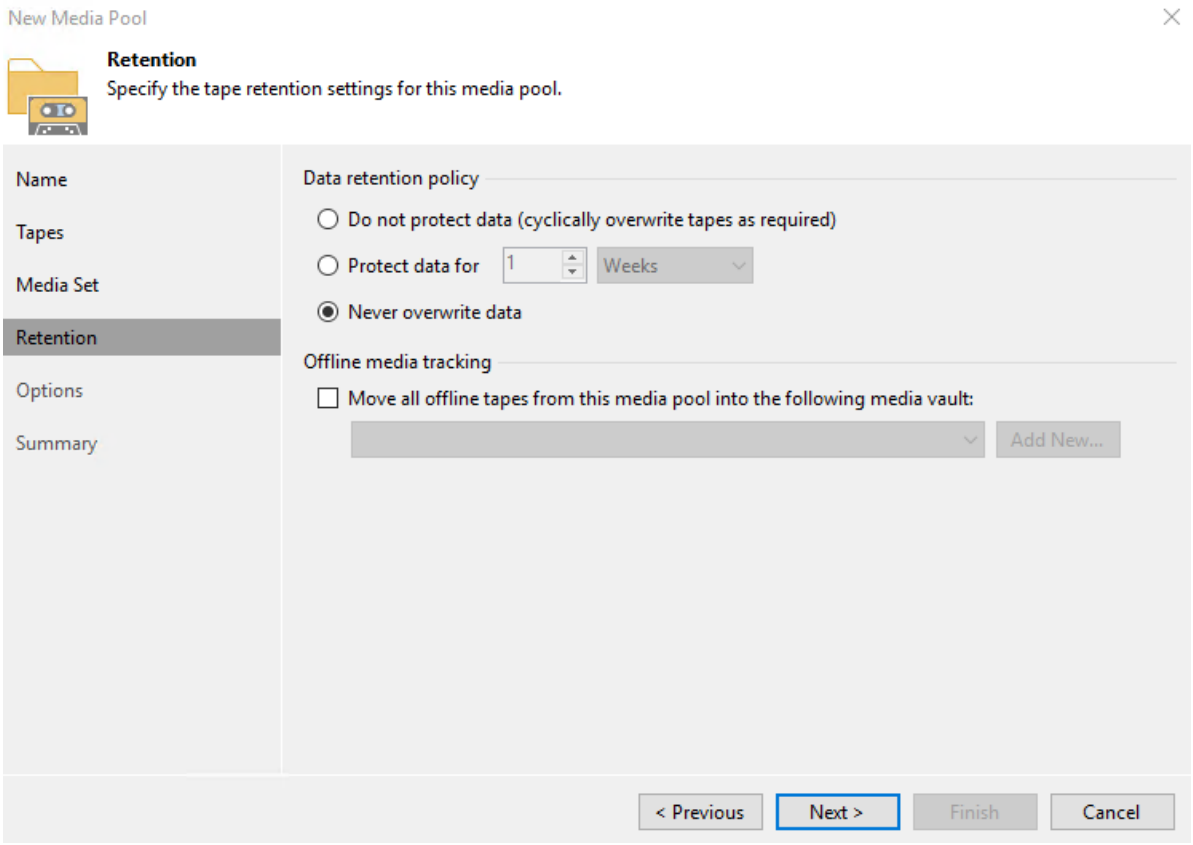
7. The new tape has been added. Click Next.



8. Enter Media set name. Specify the automatic creation settings if necessary. Click Next.

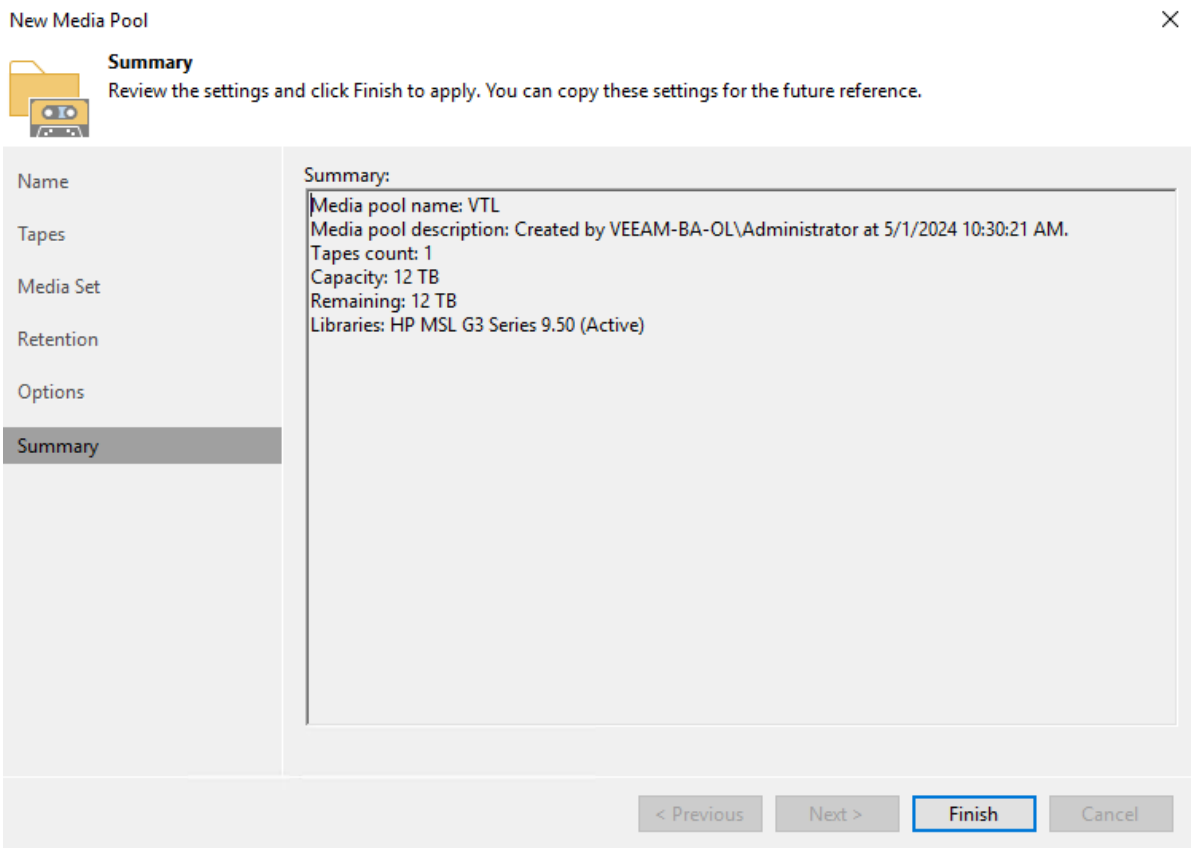


9. Specify the tape Retention settings. Click Next.

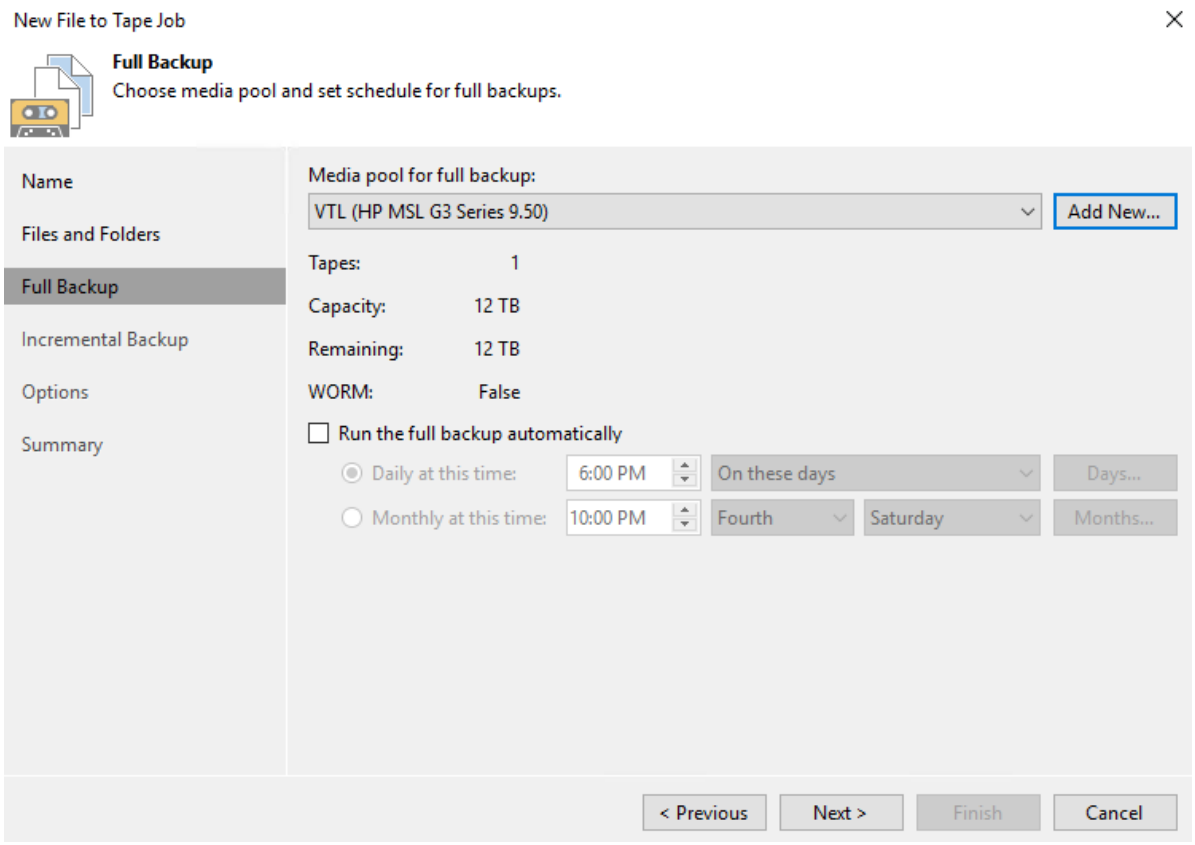


10. Specify additional settings if required and click Apply.

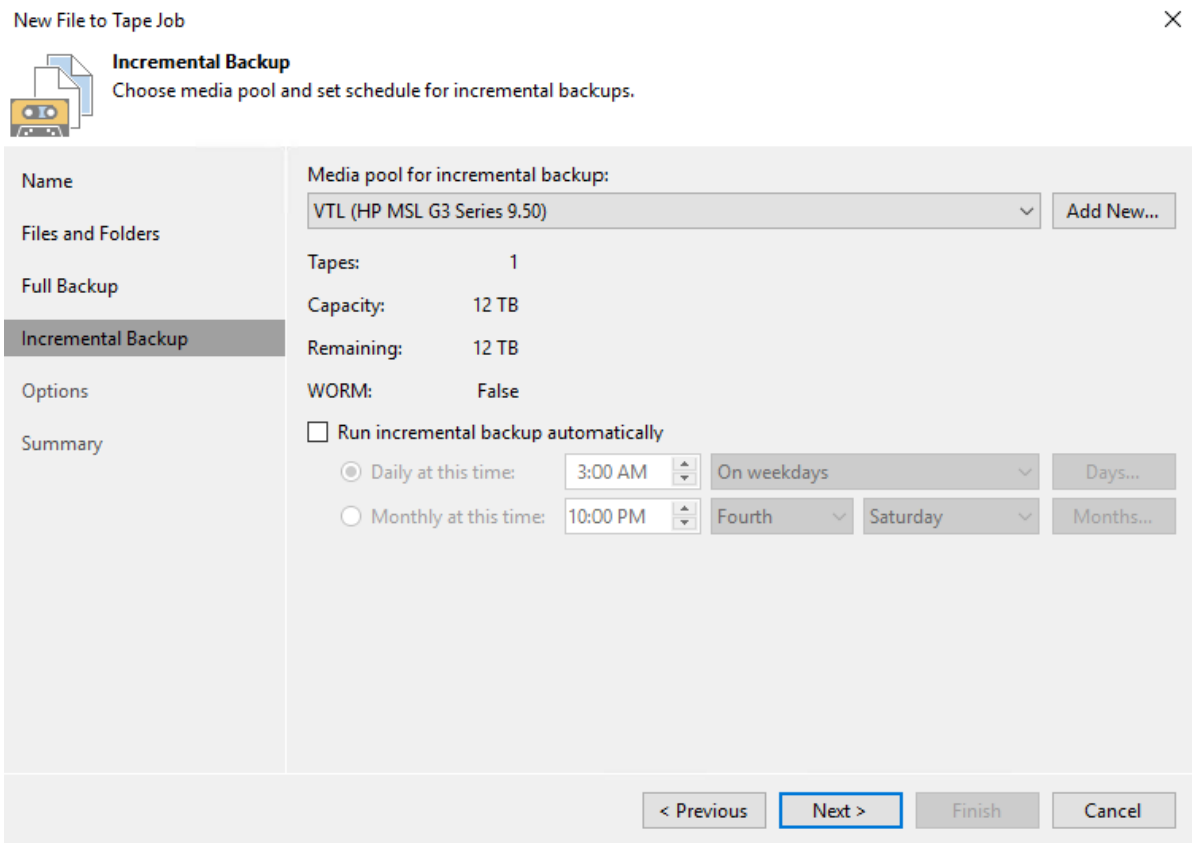
11. Review the Summary and click Finish.



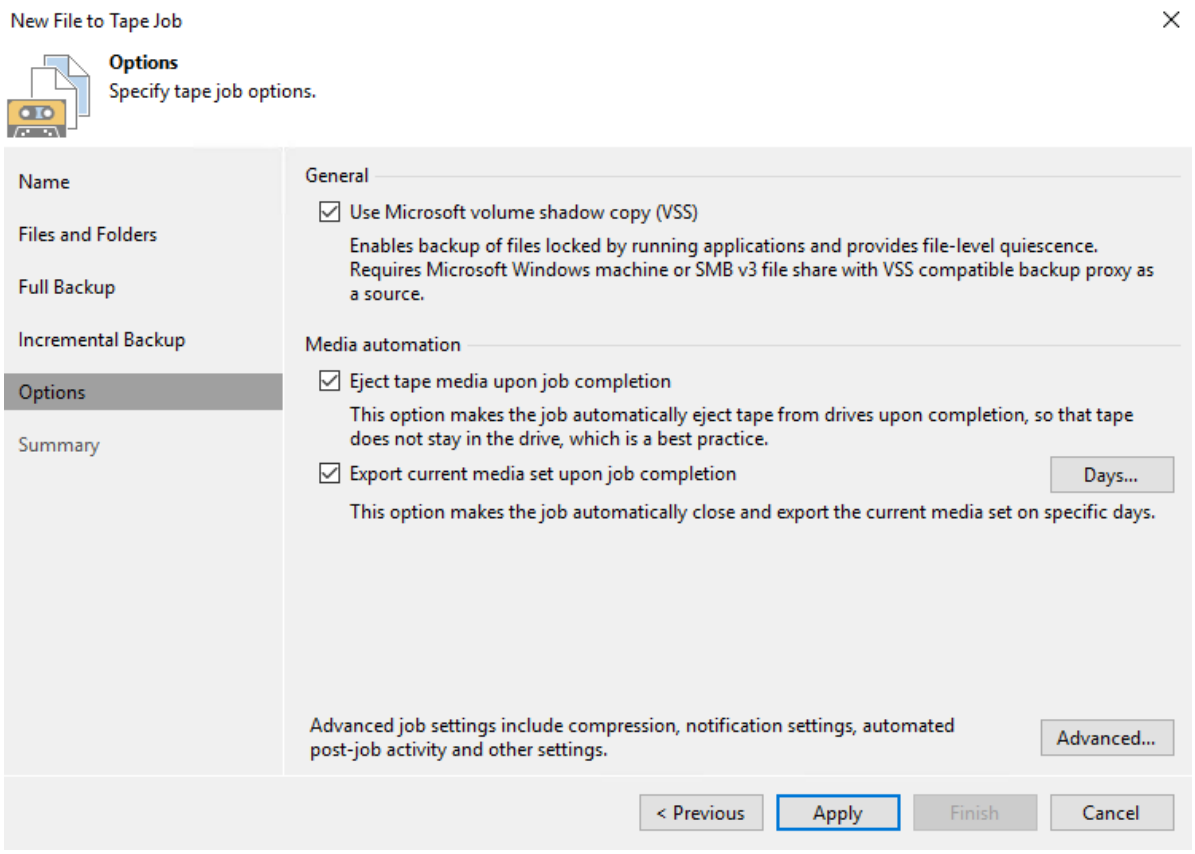
12. Select the Media pool for full backup and set the schedule if necessary. Click Next.



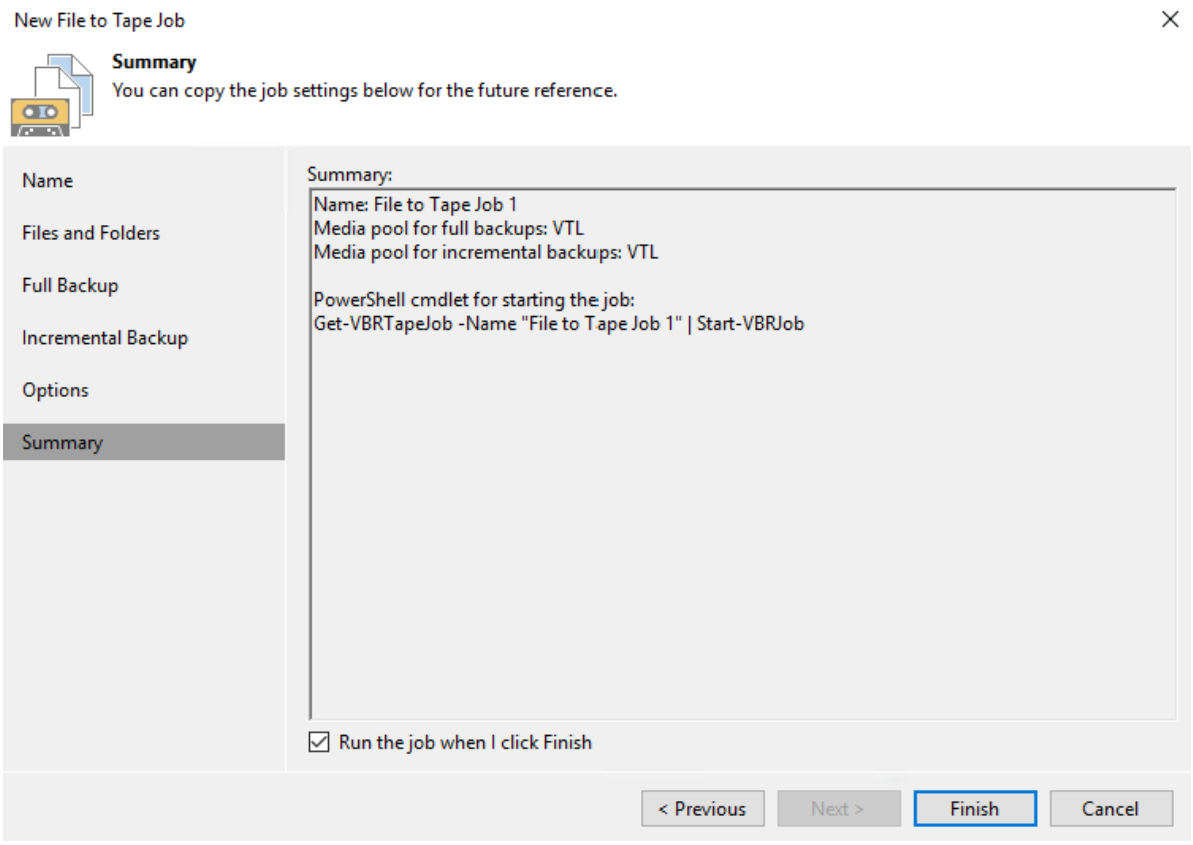
13. Select Media pool for incremental backup and set the schedule if necessary. Click Next.



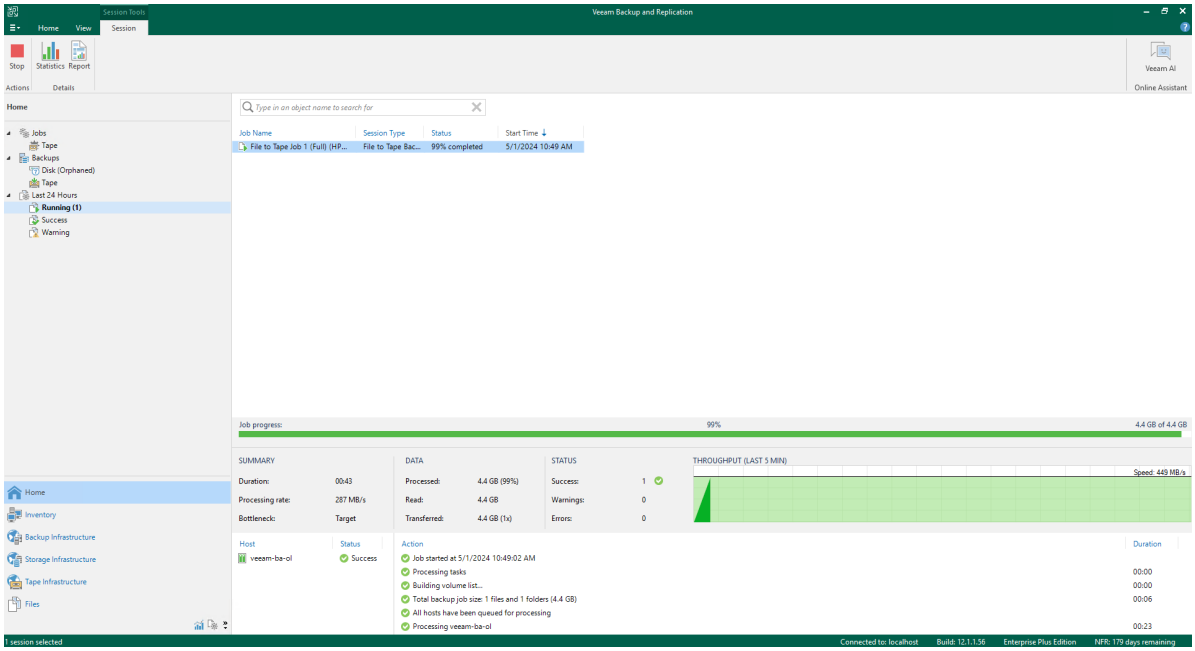
14. Specify the additional settings if required and check the Export current media set upon job completion box to automatically move StarWind virtual tape to the offline shelf. It is also recommended to Eject media upon job completion. Click Apply.



15. Check the summary. For immediate job execution, select Run the job when I click Finish and click Finish.

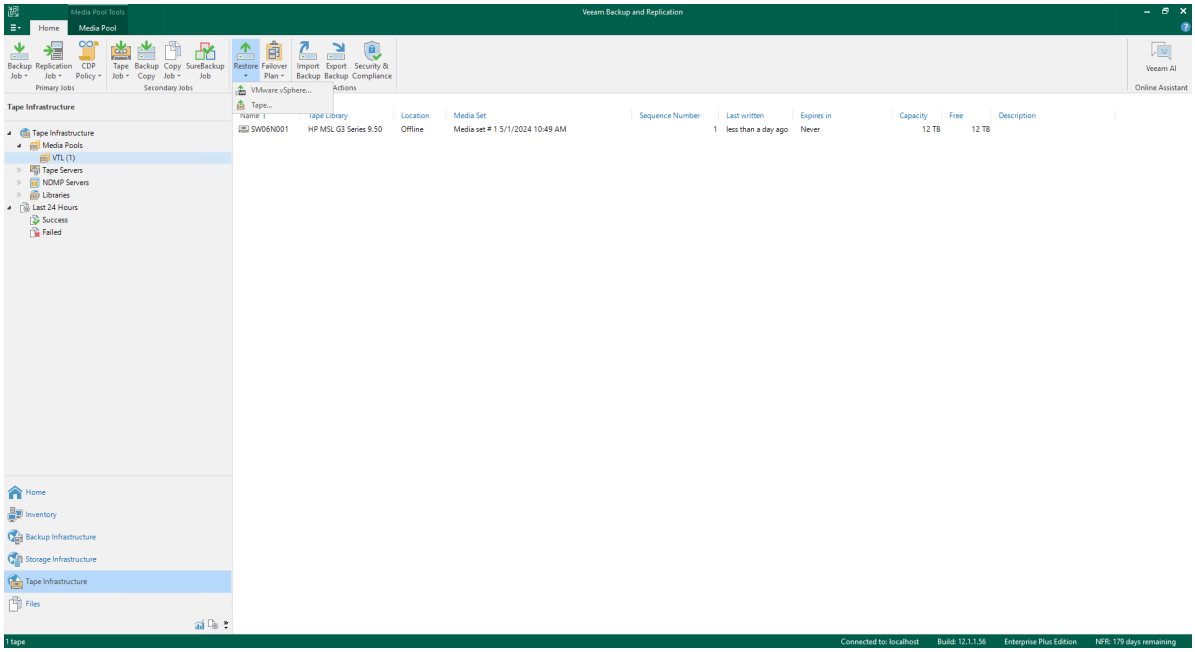


16. The job status can be monitored from the Jobs – Tape tab.

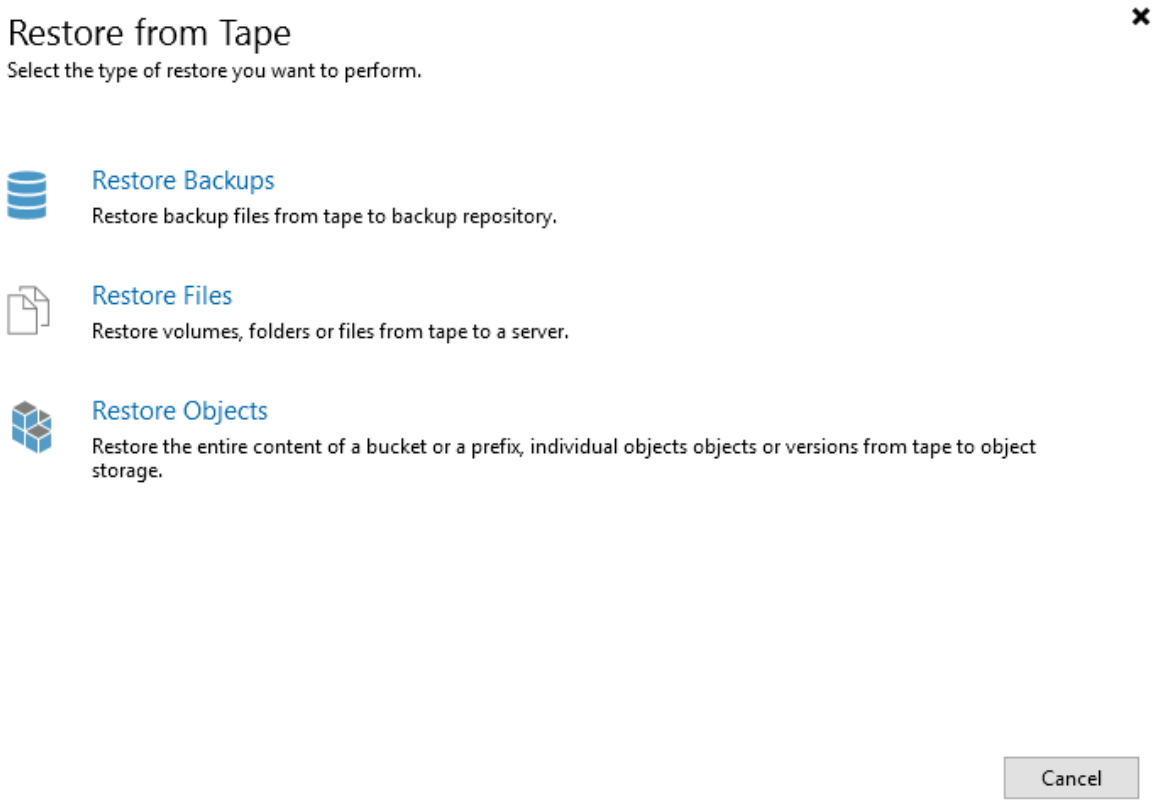


Restoring Data From Tape

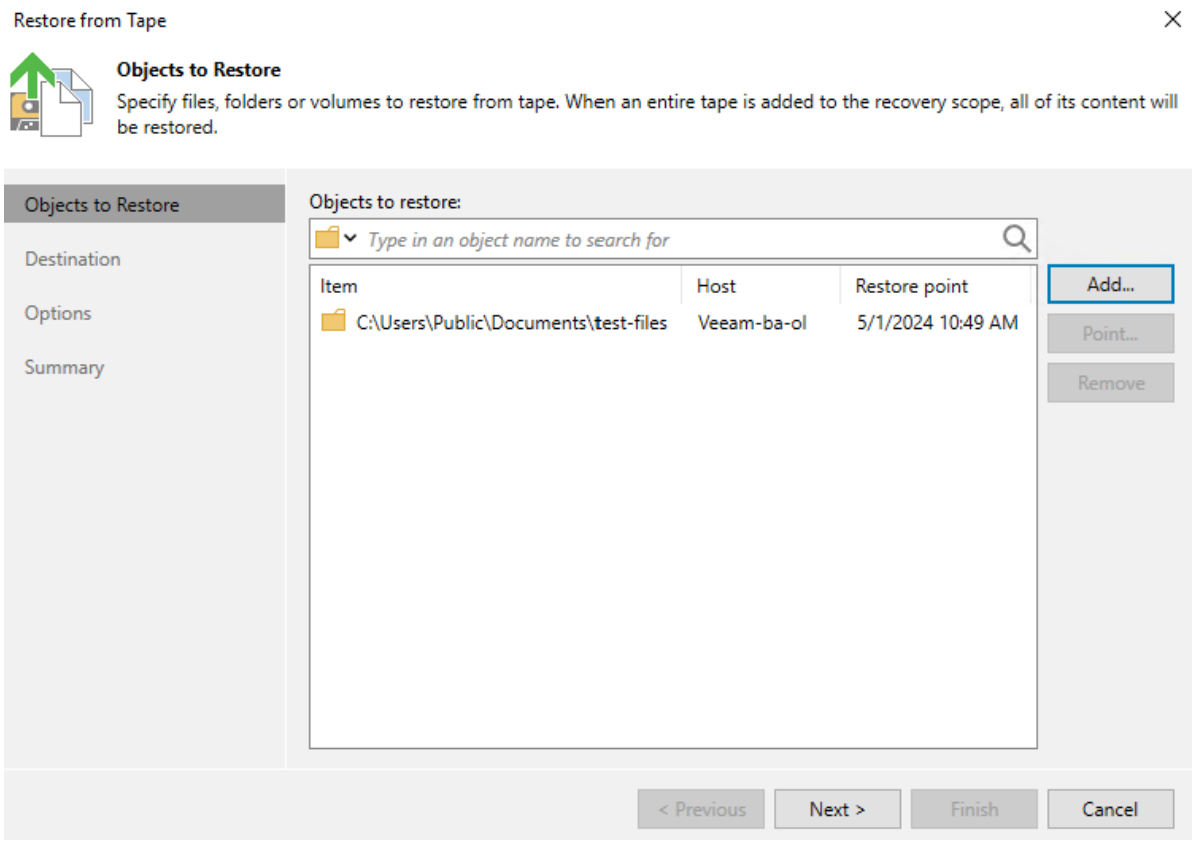
1. Navigate to the Home tab, select Restore, and select “Tape...”.



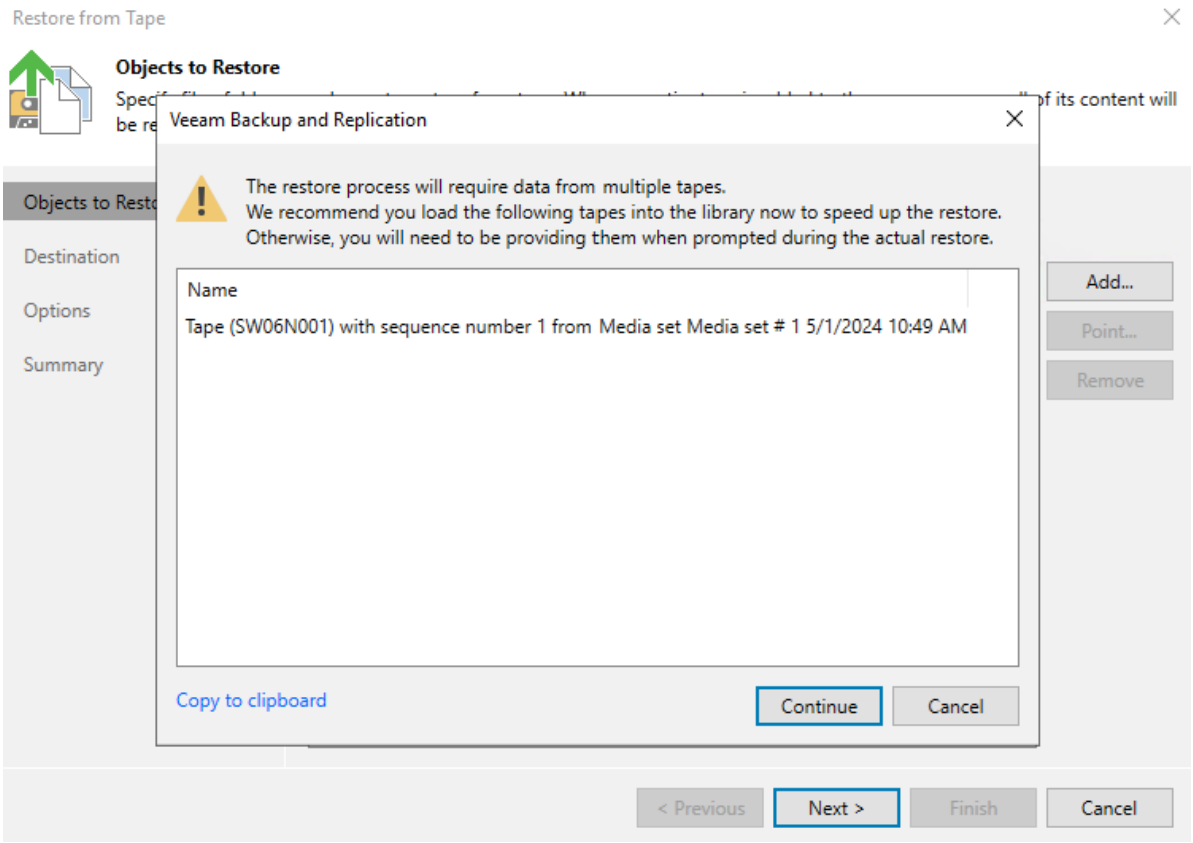
2. Select Restore Files.



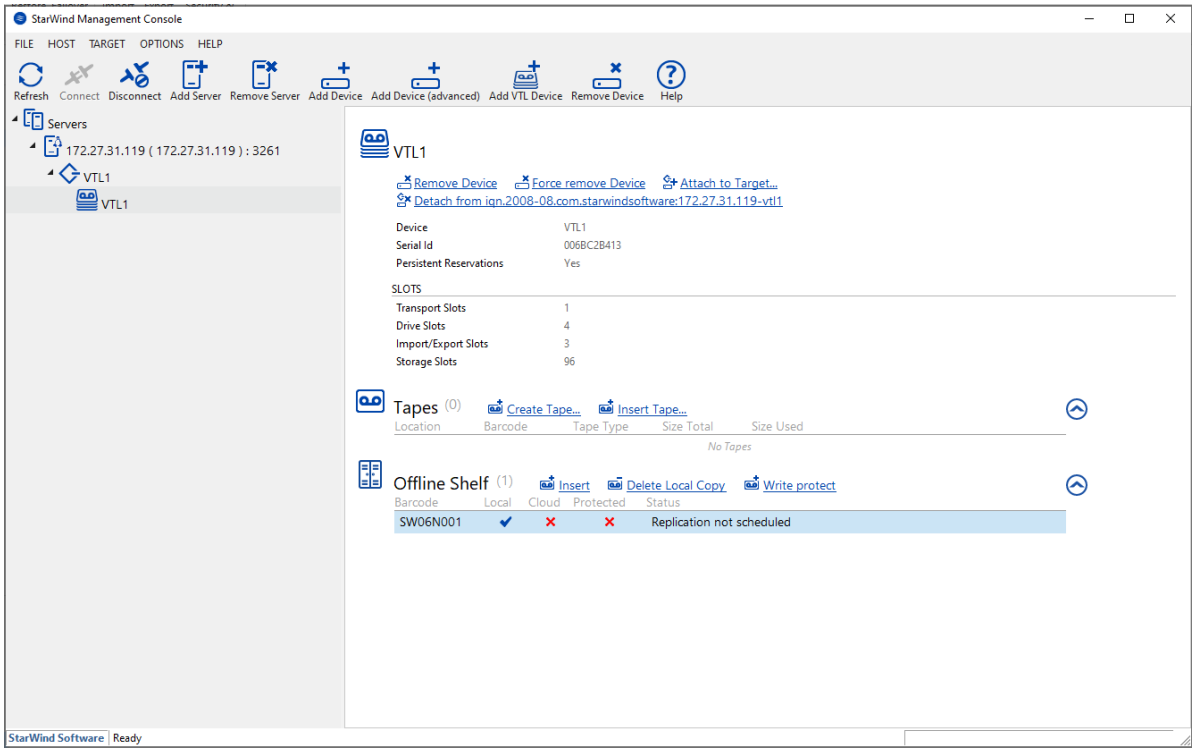
3. Specify the files and folders to restore and click Next.



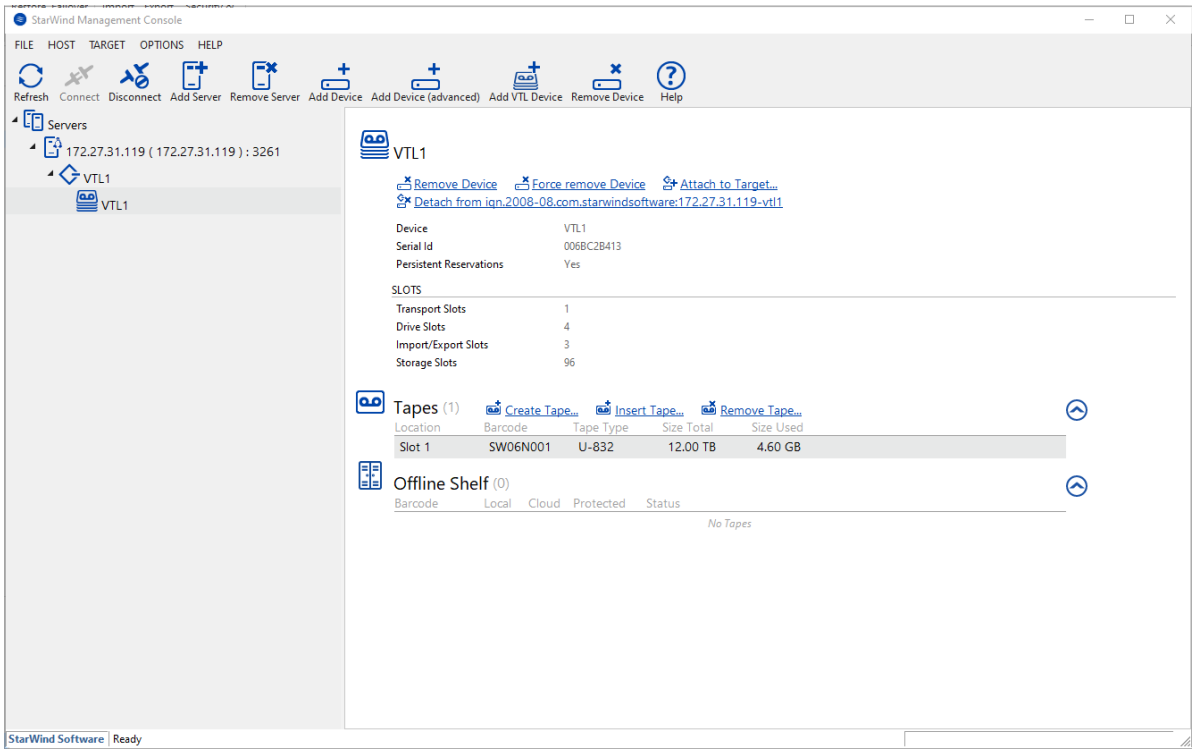
4. Veeam prompts to load the tape with the specific barcode which stores the backed up files. You can load the tape at this point or during the actual restore process. Click Continue.



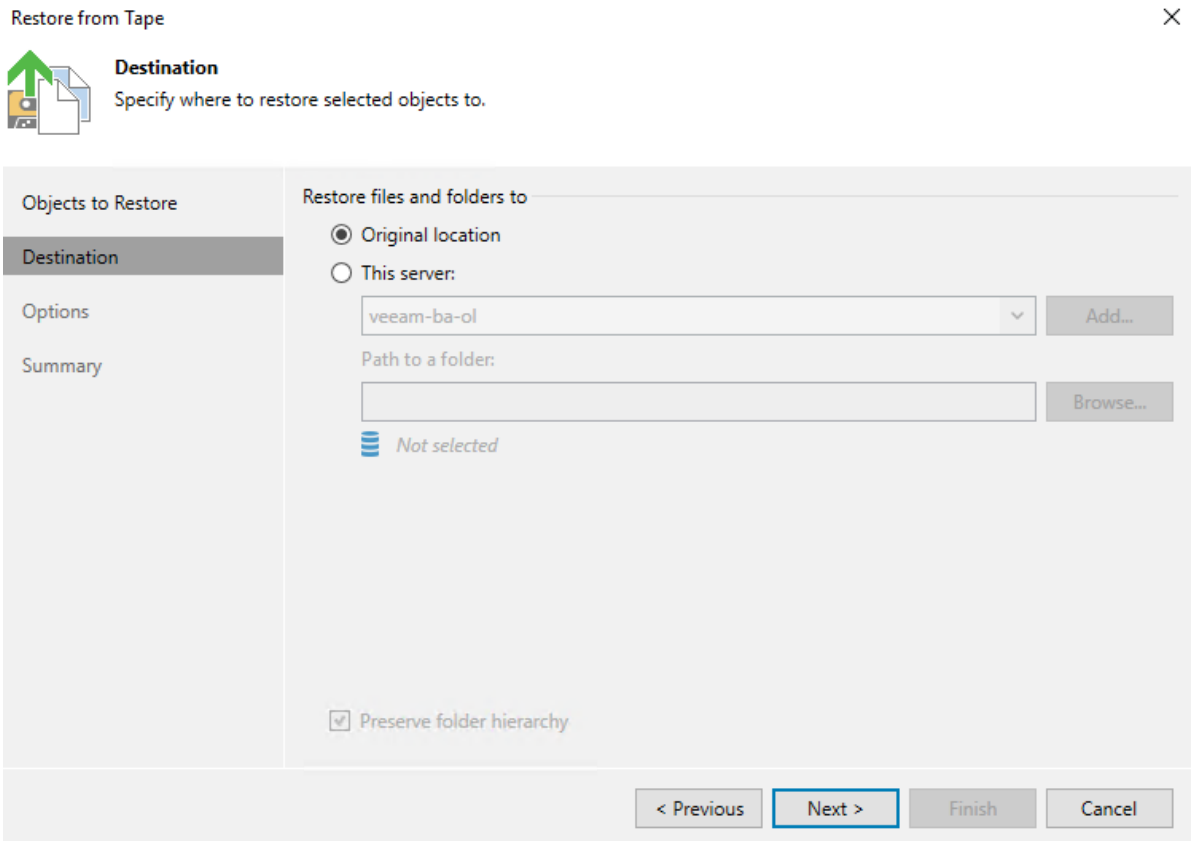
5. Navigate to StarWind Management Console, locate the StarWind virtual tape with the corresponding barcode on the offline shelf and click Insert.



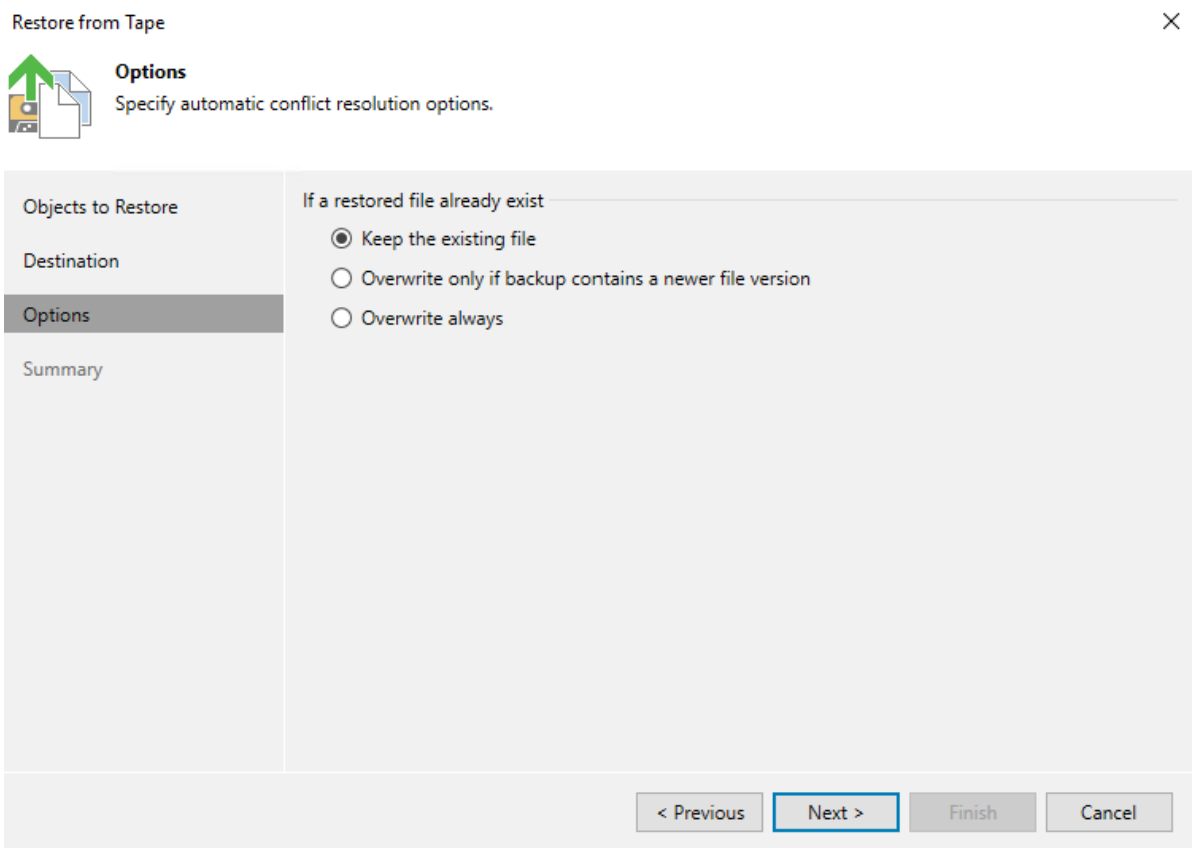
6. The StarWind virtual tape has been moved to the online shelf.



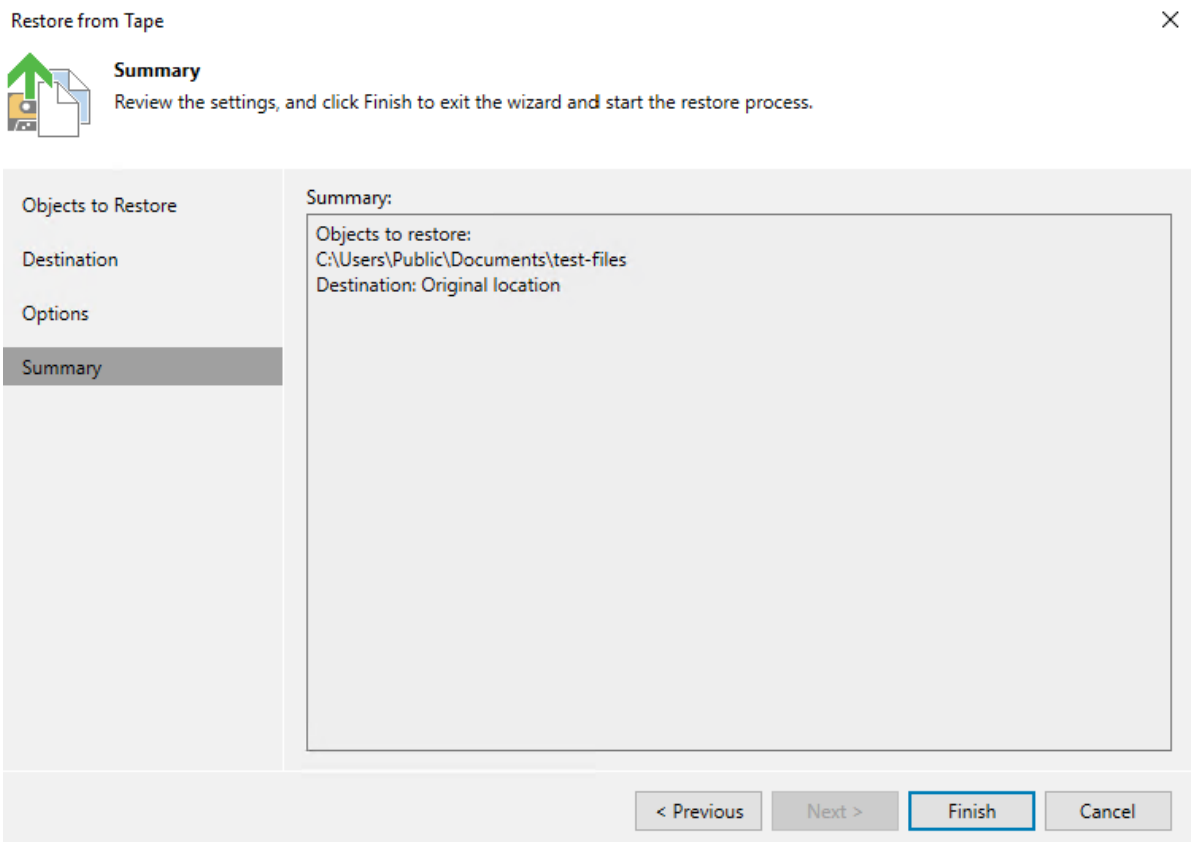
7. Navigate back to Veeam Backup & Replication and specify the Destination for restoring files. Click Next.



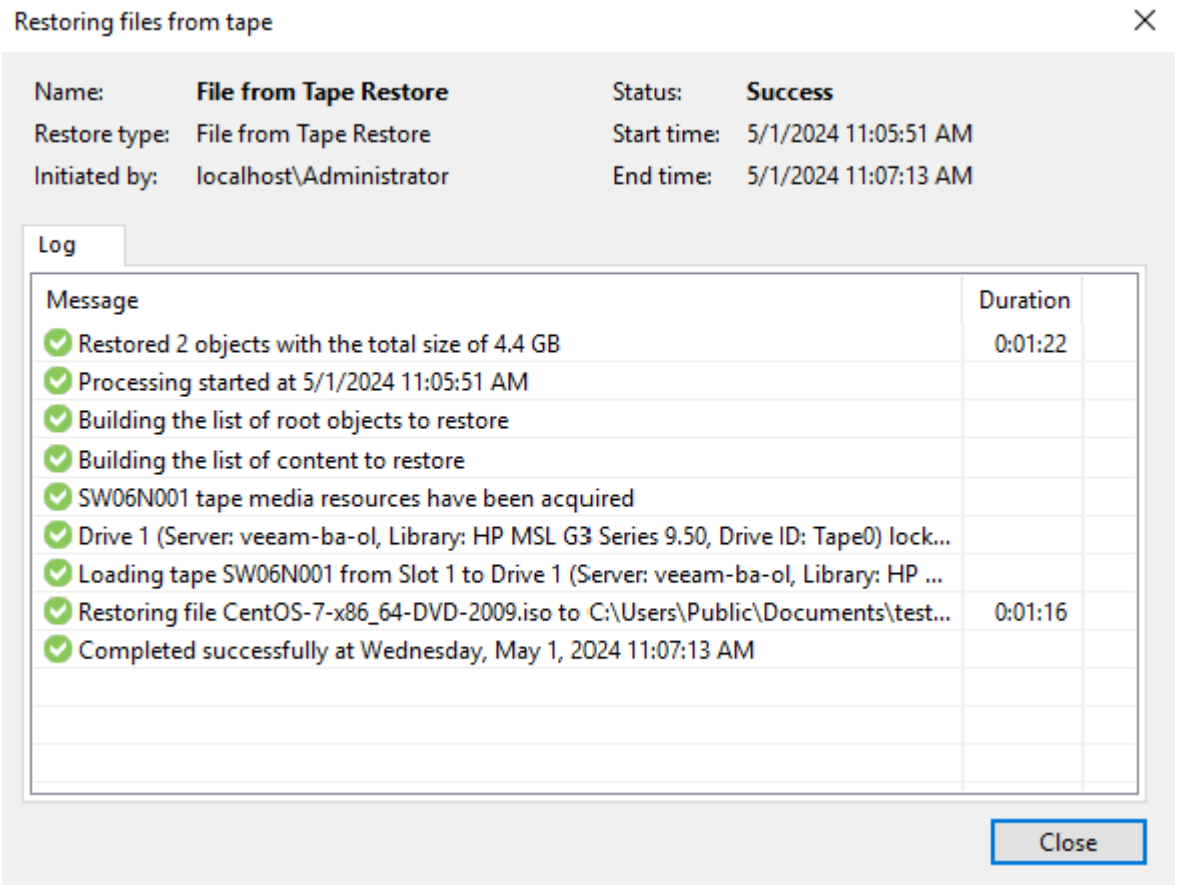
8. Select the required Automatic conflict resolution option and click Next.



9. Review the Summary and click Finish.



10. The restoration progress will appear in the pop-up window or can be checked in the Last 24 Hours history tab.



Conclusion

Following this guide, the Linux version of StarWind VTL has been deployed on a bare-metal physical server using StarWind Appliance ISO. Also, backup jobs were configured to StarWind VTL using Veeam Backup & Replication.

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StarWind

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