



Veeam Backup for Nutanix AHV

Version 5

User Guide

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Customer Support

Should you have a technical concern, suggestion or question, visit the [Veeam Customer Support Portal](#) to open a case, search our knowledge base, reference documentation, manage your license or obtain the latest product release.

Company Contacts

For the most up-to-date information about company contacts and office locations, visit the [Veeam Contacts Webpage](#).

Online Support

If you have any questions about Veeam products, you can use the following resources:

- Full documentation set: veeam.com/documentation-guides-datasheets.html
- Veeam R&D Forums: forums.veeam.com

About This Document

This guide is designed for IT professionals who plan to use Veeam Backup for Nutanix AHV. The guide includes system requirements, licensing information and step-by-step deployment instructions. It also provides a comprehensive set of features to ensure easy execution of protection and disaster recovery tasks in Nutanix AHV environments.

Welcome to Veeam Backup for Nutanix AHV

Veeam Backup for Nutanix AHV is a solution developed for protection and disaster recovery tasks for the Nutanix AHV environment. With Veeam Backup for Nutanix AHV, you can perform the following operations:

- Create backups of Nutanix AHV VMs and store them in backup repositories.
- Create snapshots of Nutanix AHV VMs and protection domains.
- Create VeeamZIP backups of Nutanix AHV VMs.
- Create several instances (copies) of the same backed-up data in different locations.
- Restore VMs from Nutanix AHV backups and snapshots to the original Nutanix AHV environment.
- Restore VMs from VMware ESXi, Microsoft Hyper-V and Red Hat Virtualization backups to the Nutanix AHV environment.
- Restore VMs from Microsoft Azure, Amazon Web Services (AWS) and Google Cloud backups to the Nutanix AHV environment.
- Restore physical machines from backups created by Veeam Agents to the Nutanix AHV environment.
- Restore VMs from Nutanix AHV backups to Microsoft Azure, Amazon Web Services (AWS) and Google Cloud environments.
- Restore VMs from Nutanix AHV backups to VMware vSphere and Microsoft Hyper-V environments.
- Perform Instant Recovery of VMs and physical machines to Nutanix AHV, VMware vSphere and Microsoft Hyper-V environments.
- Restore files and folders of Nutanix AHV VM guest OSes.
- Restore application items (such as Microsoft Active Directory, Microsoft Exchange, Microsoft SharePoint, Oracle Database and Microsoft SQL Server).
- Restore Nutanix AHV VM disks and attach them to VMs running in Nutanix AHV clusters.
- Export disks of backed-up Nutanix AHV VMs to VMDK, VHD and VHDX formats.
- Mount disks of backed-up Nutanix AHV VMs to any server and access data in the read-only mode.

Architecture Overview

The Veeam Backup for Nutanix AHV architecture comprises the following set of components:

- [Nutanix AHV cluster](#)
- [Backup server](#)
- [Backup appliance](#)
- [Nutanix AHV Plug-in](#)
- [Backup repositories](#)
- [Workers](#)

Nutanix AHV Cluster

A Nutanix AHV cluster is a logical group of Nutanix HCI nodes managed by Nutanix Controller VMs (CVMs). While performing backup and restore operations, Veeam Backup for Nutanix AHV uses the Nutanix AHV cluster to access Nutanix AHV resources such as VMs, volume groups, storage containers and networks.

Backup Server

A backup server is a Windows-based physical or virtual machine on which Veeam Backup & Replication is installed. The backup server is the configuration, administration and management core of the backup infrastructure. It coordinates backup and restore operations, controls job scheduling and manages resource allocation.

Backup Appliance

A backup appliance is an architecture component that sits logically between the backup server and other components of the backup infrastructure. While the backup server administers tasks, the backup appliance performs management operations, processes jobs and delivers backup traffic. The backup appliance is a Linux-based VM that resides in the Nutanix AHV cluster and includes the following components:

- **Backup Appliance Web Console** is an interface that allows you to manage backup and restore operations, and to configure settings of the Nutanix AHV backup appliance.
- **Veeam Updater** is a service that is responsible for installing and scheduling updates for the backup appliance.

Nutanix AHV Plug-in

Nutanix AHV Plug-in is an architecture component that enables integration between the backup server and the backup appliance. Nutanix AHV Plug-in also allows the backup server to deploy and manage the backup appliance.

Backup Repositories

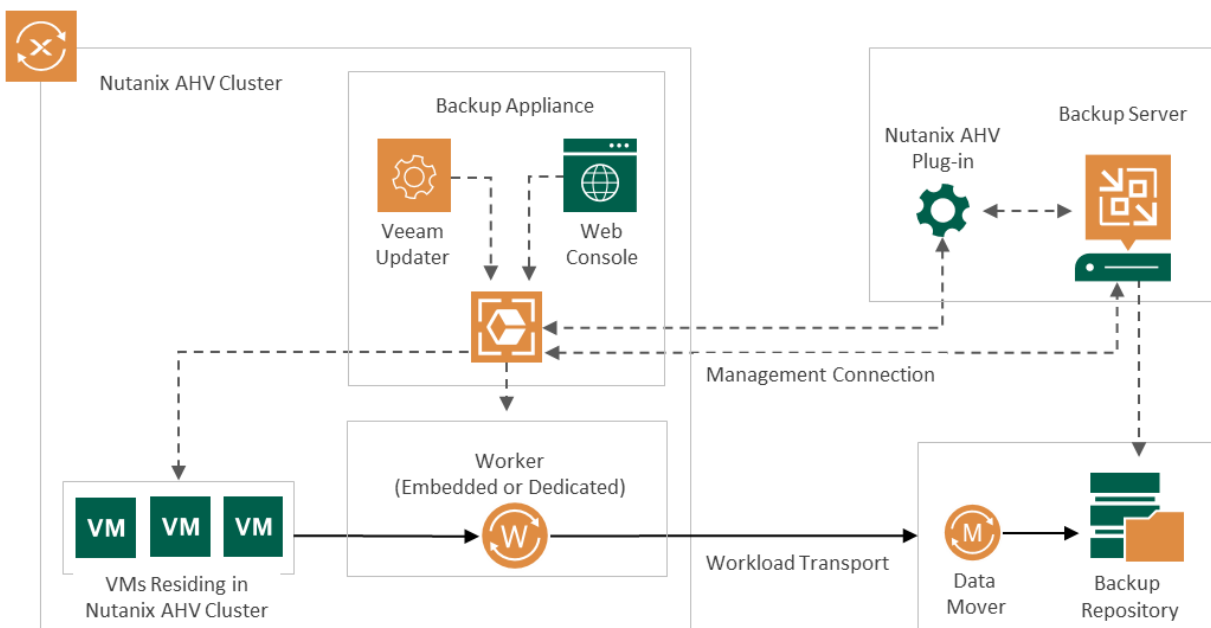
A backup repository is a storage location where Veeam Backup for Nutanix AHV stores backups of protected Nutanix AHV VMs.

To communicate with backup repositories, Veeam Backup for Nutanix AHV uses Veeam Data Mover – the service that is responsible for data processing and transfer. By default, Veeam Data Mover runs on the repositories themselves. If a repository cannot host Veeam Data Mover, it starts on a gateway server – a dedicated component that “bridges” the backup server and workers. For more information, see the Veeam Backup & Replication User Guide, section [Gateway Server](#).

Workers

A worker is an auxiliary Linux-based VM instance that is responsible for the interaction between the backup appliance and other components of the backup infrastructure. Workers process backup workload and distribute backup traffic when transferring data to and from backup repositories.

The backup appliance comes with a preconfigured embedded worker that can be used in small virtual environments. In large environments, it is recommended to deploy dedicated workers that are distributed among the cluster hosts (nodes) and are automatically launched for the duration of a backup or restore process. For more information on deployment sizing considerations, see [Sizing Guidelines](#).



Planning and Preparation

Before you start deploying Veeam Backup for Nutanix AHV, check supported virtualization platforms, system requirements, permissions and network ports used for data transmission.

System Requirements

Before you start deploying Veeam Backup for Nutanix AHV, make sure the Nutanix AHV cluster and the backup infrastructure components meet the following requirements.

Specification	Requirement
Virtualization Platform	<ul style="list-style-type: none">• Veeam Backup for Nutanix AHV is compatible with Nutanix AOS versions 6.5 and later.• An IP address of the cluster and the iSCSI Data Service must be configured in Nutanix AHV cluster settings. For more information, see Nutanix documentation.
Veeam Software	<ul style="list-style-type: none">• Veeam Backup & Replication version 12.1.0.2131 (or later) with Nutanix AHV Plug-in version 12.5.1.8 (or later) must be deployed on the backup server. Although Veeam Backup & Replication version 12.0.0.1420 is also supported, some new functionality will not be available until the backup server is upgraded to version 12.1.• Microsoft .NET Core Runtime 6.0 and Microsoft ASP.NET Core Shared Framework 6.0 must be installed on the backup server.
Nutanix AHV Backup Appliance	<p>The Nutanix AHV backup appliance performs management operations and handles backup and restore tasks (if the embedded worker is enabled). If you deploy Veeam Backup for Nutanix AHV using the default configuration, the following compute resources will be allocated to the Nutanix AHV backup appliance:</p> <ul style="list-style-type: none">• CPU: 4 vCPU• Memory: 4 GB RAM• Disk Space: 100 GB for product installation, internal database files and logs <p>With the default configuration, the Nutanix AHV backup appliance can perform management operations in a cluster with less than 1000 VMs and process less than 100 jobs, and handle up to 4 concurrent backup and restore tasks. While deploying a new Nutanix AHV backup appliance or editing settings of an existing one, you can adjust compute resources allocated to it according to the recommendations described in section Sizing Guidelines.</p>
Workers	<p>VMs running as dedicated workers must be allocated the following compute resources for each concurrent task:</p> <ul style="list-style-type: none">• CPU: 1 vCPU• Memory: 1 GB RAM <p>While configuring dedicated workers, follow the recommendations provided in section Sizing Guidelines.</p>

IMPORTANT

The Nutanix AHV backup appliance and workers are deployed as backup infrastructure components preconfigured for optimal performance. That is why you must not install any software on VMs running as the Nutanix AHV backup appliance and workers or make any configuration changes to them unless you are requested by Veeam Customer Support.

Permissions

The accounts used to deploy and administer backup infrastructure components must have the following permissions.

Backup Server Windows Account

The Windows account used to install Veeam Backup & Replication and Nutanix AHV Plug-in on the backup server must have the following permissions.

Account	Required Permission
Setup Account	The account used to install Veeam Backup & Replication and Nutanix AHV Plug-in must have the Local Administrator permissions on the backup server.
Veeam Backup & Replication User Account	The account used to run Veeam Backup & Replication services must be a <i>LocalSystem</i> account or must have the Local Administrator permissions on the backup server.

Nutanix AHV Cluster Administrator Account

The Nutanix AHV administrator account that Veeam Backup for Nutanix AHV uses to access the cluster must have privileges of the *Prism Admin* role or higher. For more information on user access control, see [Nutanix documentation](#).

Ports

Veeam Backup for Nutanix AHV automatically creates firewall rules for the ports required to allow communication between the Nutanix AHV backup appliance, workers and the backup server.

IMPORTANT

Some Linux distributions require manual configuration of firewall rules. For more information, see [this Veeam KB article](#).

Backup Appliance

The following table describes network ports that must be opened to ensure proper communication of the Nutanix AHV backup appliance with other backup infrastructure components.

From	To	Protocol	Port	Notes
Workstation web browser	Nutanix AHV backup appliance	TCP/HTTPS	443	Used to access the Nutanix AHV backup appliance web console.

From	To	Protocol	Port	Notes
Nutanix AHV backup appliance	Nutanix REST API	TCP/HTTPS	9440	Used to communicate with Nutanix AHV REST API.
	Backup server	TCP	10006	Used to connect to Veeam Backup & Replication.
	Workers	TCP	19000	Used to communicate with workers.
	Nutanix AHV server (Cluster Virtual IP, Cluster iSCSI Data Services IP, Cluster CVM IPs)	TCP/iSCSI	3205, 3260	Used to access disks attached to Nutanix AHV VMs.
	Veeam backup repository (or gateway server)	TCP	2500-3300	Default range of ports used as transmission channels for jobs and restore sessions. For every TCP connection that a job uses, one port from this range is assigned.
	Mail server	SMTP	25	Used to send email notifications. The port number can be changed.
	Ubuntu Security and OS Update repository <i>(security.ubuntu.com, archive.ubuntu.com)</i>	TCP/HTTP(S)	80 (443)	Used to get OS security updates.
	OS Update repository <i>(packages.microsoft.com)</i>	TCP/HTTPS	443	Used to get OS updates.
	Veeam Updater repository <i>(repository.veeam.com, cloudfront.net)</i>	TCP/HTTPS	443	Used to download Nutanix AHV backup appliance update packages.

From	To	Protocol	Port	Notes
	Nginx repository (nginx.org/packages/ , nginx.org/packages/keys/)	TCP/HTTPS	443	Used to download Nginx packages required for Nutanix AHV backup appliance web console updates.
	PostgreSQL repository (apt.postgresql.org/pub/repos/apt)	TCP/HTTP(S)	80 (443)	Used to download PostgreSQL packages required for database updates.

Workers

The following table describes network ports that must be opened to ensure proper communication of workers with other backup infrastructure components.

From	To	Protocol	Port	Notes
Worker	Nutanix REST API	TCP/HTTPS	9440	Used to communicate with Nutanix AHV REST API.
	Backup server	TCP	10006	Used to connect to Veeam Backup & Replication.
	Backup appliance	TCP	19001	Used to communicate with the backup appliance.
	Nutanix AHV server (Cluster Virtual IP, Cluster iSCSI Data Services IP, Cluster CVM IPs)	TCP/iSCSI	3205, 3260	Used to access disks attached to Nutanix AHV VMs.
	Veeam backup repository (or gateway server)	TCP	2500-3300	Default range of ports used as transmission channels for jobs and restore sessions. For every TCP connection that a job uses, one port from this range is assigned.
	Ubuntu Security and OS Update repository (security.ubuntu.com , archive.ubuntu.com)	TCP/HTTP(S)	80 (443)	Used to get OS security updates.

From	To	Protocol	Port	Notes
	OS Update repository (<i>packages.microsoft.com</i>)	TCP/HTTPS	443	Used to get OS updates.
	Veeam Updater repository (<i>repository.veeam.com</i> , <i>cloudfront.net</i>)	TCP/HTTPS	443	Used to download Nutanix AHV backup appliance update packages.
	Nginx repository (<i>nginx.org/packages/</i> , <i>nginx.org/packages/keys/</i>)	TCP/HTTPS	443	Used to download Nginx packages required for Nutanix AHV backup appliance web console updates.
	PostgreSQL repository (<i>apt.postgresql.org/pub/repos/apt</i>)	TCP/HTTP(S)	80 (443)	Used to download PostgreSQL packages required for database updates.

Backup Server

The following table describes network ports that must be opened to ensure proper communication of the backup server with other backup infrastructure components.

From	To	Protocol	Port	Notes
Veeam Backup & Replication console and Veeam ONE server	Backup server	TCP/HTTPS	8543	Used to communicate with the Platform Service REST API.
Backup server	FLR helper appliance	TCP	22	Used to connect to the helper appliance during file-level restore.
	Backup server	TCP/HTTPS	6172	Used by the AHV Platform Service to enable communication with the Veeam Backup & Replication database.
	Nutanix AHV cluster	TCP/HTTPS	9440	Used by the AHV Platform Service to connect to an Nutanix AHV cluster.

From	To	Protocol	Port	Notes
	Nutanix AHV backup appliance	TCP/HTTPS	443	Used by the AHV Platform Service to connect to Nutanix AHV backup appliance.

NOTE

For the list of ports used by the backup server to communicate with backup repositories, see the Veeam Backup & Replication User Guide, section [Used Ports](#).

vPower NFS Service

The vPower NFS Service is a Microsoft Windows service that runs on a Microsoft Windows machine and enables this machine to act as an NFS server. The vPower NFS Service is required to perform such operations as file-level restore and Instant Recovery.

NOTE

For the full list of ports required for [Performing File-Level Restore](#), see the Veeam Backup & Replication User Guide, section [Used Ports](#).

From	To	Protocol	Port	Notes
Nutanix AHV cluster	Microsoft Windows server with the mount server role running vPower NFS Service	TCP UDP	111	Used by the Port Mapper service.
		TCP UDP	1058+ or 1063+	Used as default mount port. The number of port depends on where the vPower NFS Service is located: <ul style="list-style-type: none"> 1058+: If the vPower NFS Service is located on the backup server. 1063+: If the vPower NFS Service is located on a separate Microsoft Windows machine. If port 1058/1063 is occupied, the succeeding port numbers will be used.
		TCP UDP	2049+	Used as NFS port. If port 2049 is occupied, the succeeding port numbers will be used.

Sizing Guidelines

This section is intended for professionals who search for a best practice answer to sizing-related issues, and assumes you have already read the whole Veeam Backup for Nutanix AHV User Guide.

Be aware that a best practice is not the only answer available. It will fit in the majority of cases but can also be totally wrong under different circumstances. Make sure you understand the implications of the recommended practices, or request assistance. If in doubt, reach out to Veeam professionals on [Veeam R&D Forums](#).

Backup Appliance

While allocating compute resources to the Nutanix AHV backup appliance, consider the following recommendations:

Number of VMs in Cluster	Number of Jobs	Resources for Management Tasks	Resources for Embedded Worker
< 1000	< 100	No additional resources for management tasks	1 vCPU and 1 GB RAM for each concurrent task
> 1000	>100	1 vCPU, 1 GB RAM	It is not recommended to use the embedded worker for large deployments. Disable the embedded worker and use dedicated workers instead.
> 5000	> 300	2 vCPU, 2 GB RAM	

If you plan to use dedicated workers, it is recommended that you modify the backup appliance settings as follows:

- Set the maximum number of concurrent tasks to 0.
- Allocate resources to the backup appliance that are sufficient for management tasks.

To learn how to modify the appliance settings, see section [Editing Backup Appliance](#).

Workers

While adding a dedicated worker to the backup infrastructure, consider the following:

- It is recommended that the number of configured workers does not exceed the number of hosts in the Nutanix AHV cluster.
- Each worker must be provided with sufficient compute resources to handle backup and restore tasks in parallel. The maximum number of concurrent tasks is configured in worker settings – if this number is exceeded, the worker will not start a new task until one of the current tasks finishes.
- It is recommended the total number of concurrent tasks configured for all workers deployed in the cluster does not exceed the [number of physical disks added to the cluster](#). You can change the maximum number of concurrent tasks (the best practice is to allocate 1 vCPU and 1 GB RAM for each additional task) while deploying a new worker or editing settings of an existing one.

Licensing

Veeam Backup for Nutanix AHV is licensed by the number of protected Nutanix AHV VMs. Each Nutanix AHV VM protected with backups consumes one Veeam Universal License instance from the license scope. A Nutanix AHV VM is considered protected if it has a restore point created during the past 31 days. If a Nutanix AHV VM is protected with snapshots only, no license is consumed.

Obtaining New License

You can obtain the following types of licenses for Veeam Backup for Nutanix AHV:

- **Evaluation license** is a free license that can be used for product evaluation. The license is valid for 30 days from the moment of the product download.

To obtain this license, request a trial key on the [Veeam downloads page](#) as described in the Veeam Backup & Replication User Guide, section [Obtaining and Renewing License](#).

- **Subscription license** is a paid license with a limited subscription term. The expiration date of the Subscription license is set to the end of the subscription term. The Subscription license term is normally 1-5 years from the license issue date.

To obtain this license, choose the required subscription term on the [Veeam Backup & Replication Pricing](#) page and contact the Veeam Sales Team.

- **Perpetual license** is a paid license without an expiration date. The Perpetual license typically includes one year period of basic support and maintenance that can be extended.

To obtain this license, [contact a reseller in your region](#).

After you obtain a license, install it on the backup server as described in the Veeam Backup & Replication User Guide, section [Installing License](#).

Using Existing License

If you already use Veeam Backup & Replication and you have spare Veeam Universal License instances on your backup server, they can be used to protect Nutanix AHV VMs. You can check the number of available license instances in the Veeam Backup & Replication console as described in the Veeam Backup & Replication User Guide, section [Viewing License Information](#).

If you have a legacy perpetual per-socket license, you must obtain Veeam Universal License instances and merge them with the existing perpetual socket license as described in the Veeam Backup & Replication User Guide, section [Merging Licenses](#).

Deployment

To deploy Veeam Backup for Nutanix AHV, do the following:

1. Deploy the backup server as described in the Veeam Backup & Replication User Guide, section [Installing Veeam Backup & Replication](#).

Alternatively, you can use a backup server that already exists in your backup infrastructure if it meets the [Veeam Backup for Nutanix AHV system requirements](#).

2. [Install Nutanix AHV Plug-in on the backup server](#).
3. Perform initial configuration of Veeam Backup for Nutanix AHV:
 - a. [Configure backup repositories](#) where Veeam Backup for Nutanix AHV will store backups of Nutanix AHV VMs.
 - b. [Add to the backup infrastructure a Nutanix AHV cluster](#) that administers resources you want to protect.
 - c. [Deploy a Nutanix AHV backup appliance](#) that will process backup and restore operations.
 - d. [Deploy dedicated workers](#) that will transfer backup traffic.

Installing Nutanix AHV Plug-In

The default installation package of Veeam Backup & Replication does not provide features that allow you to protect Nutanix AHV clusters. To be able to add Nutanix AHV clusters and backup appliances to the backup infrastructure, you must install Nutanix AHV Plug-in on the backup server.

NOTE

If you use a remote Veeam Backup & Replication console, you do not need to install Nutanix AHV Plug-in on the workstation where the remote Veeam Backup & Replication console is deployed. However, you must install Nutanix AHV plug-in on the backup server.

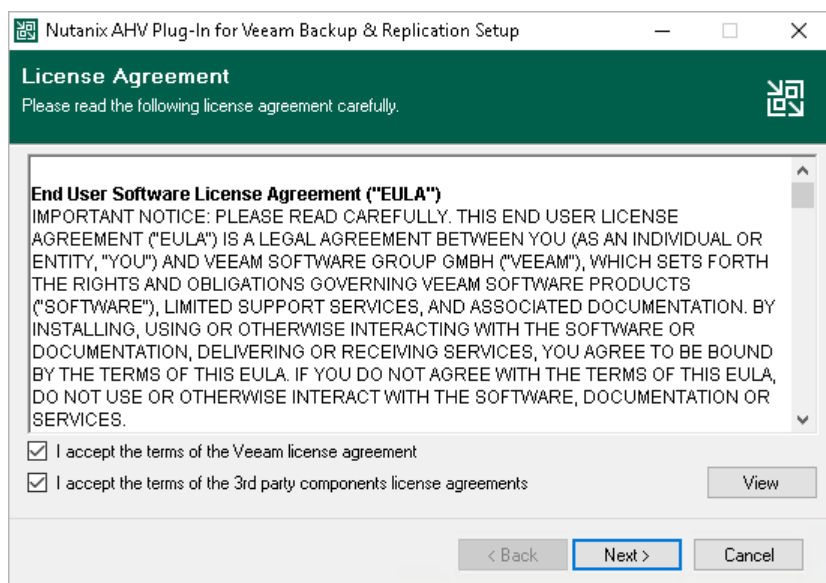
To install Nutanix AHV Plug-in, do the following:

1. Log in to the backup server using an account with the local Administrator permissions.
2. Download the product installation file `NutanixAHVPlugin_12.5.1.8_AHV_5.1.0.7.zip` from the [Veeam downloads page](#).
3. Open the downloaded archive file and launch the `NutanixAHVPlugin_12.5.1.8_AHV_5.1.0.7.exe` installation file.

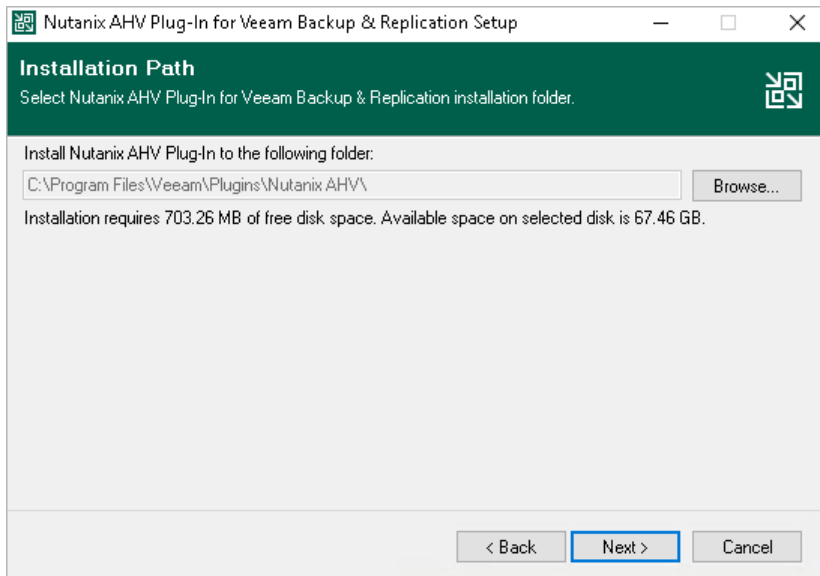
Before proceeding with installation, the installer will check whether you have Microsoft .NET Core Runtime installed on the backup server. In case the required version is missing, the installer will offer to install it automatically. To do that, click **OK**.

4. At the **License Agreement** step of the **Nutanix AHV Plug-In for Veeam Backup & Replication Setup** wizard, read and accept both the Veeam license agreement and the 3rd party components license agreement. If you reject the agreements, you will not be able to continue installation.

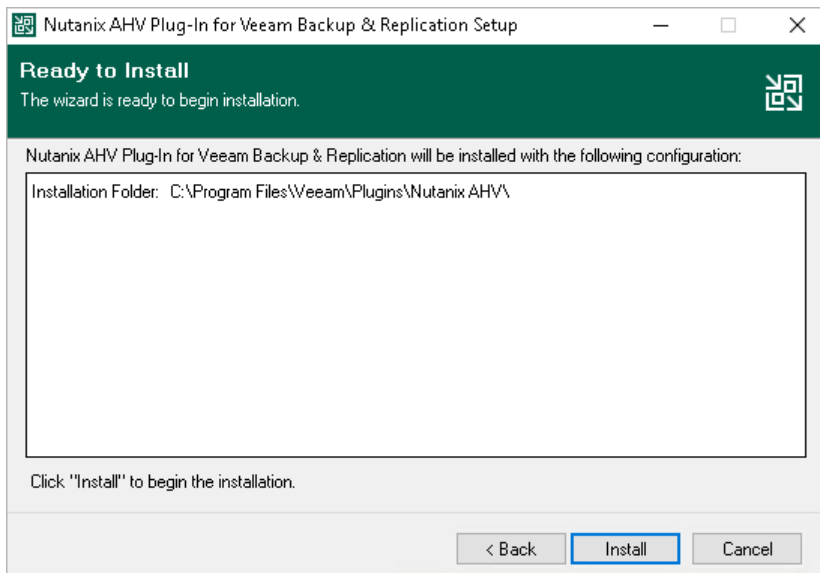
To read the terms of the license agreement for the 3rd party components, click **View**.



5. At the **Installation Path** step of the wizard, you can change the installation directory if necessary.



6. Click **Install** to begin installation.



Installing Plug-In in Unattended Mode

You can install Nutanix AHV Plug-in in the unattended mode using the command line interface. The unattended installation mode does not require user interaction – the installation runs automatically in the background, and you do not have to respond to the installation wizard prompts. You can use the unattended installation mode to automate the Nutanix AHV Plug-in installation process in large-scale environments.

To install Nutanix AHV Plug-in in the unattended mode, use either of the following options:

- If Nutanix AHV Plug-in is a part of Veeam Backup & Replication installation package, follow the instructions provided in the Veeam Backup & Replication User Guide, section [Installing Veeam Backup & Replication in Unattended Mode](#).
- If Nutanix AHV Plug-in is delivered as a separate .EXE file, follow the instructions provided in this section.

Before You Begin

Before you start unattended installation, do the following:

1. Download the `NutanixAHVPlugin_12.5.1.8_AHV_5.1.0.7.EXE` file as described in section [Installing Nutanix AHV Plug-In](#) (steps 1-3).
2. Check compatibility of the Nutanix AHV Plug-in and Veeam Backup & Replication versions. For more information, see [System Requirements](#).

Installation Command-Line Syntax

Open the command prompt and run the .EXE file using the following parameters:

```
%path% /silent /accepteula /acceptthirdpartylicenses /acceptlicensingpolicy /acceptrequiredsoftware
```

The following command-line parameters are used to run the setup file:

Parameter	Required	Description
<code>%path%</code>	Yes	Specifies a path to the installation .EXE file on the backup server or in a network shared folder.
<code>/silent</code>	Yes	Sets the user interface level to <i>None</i> , which means no user interaction is needed during installation.
<code>/accepteula</code>	Yes	Confirms that you accept the terms of the Veeam license agreement.
<code>/acceptthirdpartylicenses</code>	Yes	Confirms that you accept the license agreement for 3rd party components that Veeam incorporates.

Parameter	Required	Description
/acceptlicensingpolicy	Yes	[Applies only to Veeam Backup & Replication version 12.1 and later] Confirms that you accept the Veeam licensing policy.
/acceptrequiredsoftware	Yes	[Applies only to Veeam Backup & Replication version 12.1 and later] Confirms that you accept the license agreements for each required software that Veeam will install.
/uninstall	No	Uninstalls the plug-in.
/repair	No	Replaces missing files and firewall rules.

Examples

The following command installs Nutanix AHV Plug-in:

```
NutanixAHVPlugin_12.5.1.8_AHV_5.1.0.7.exe /silent /accepteula /acceptthirdparty licenses /acceptlicensingpolicy /acceptrequiredsoftware
```

The following command repairs Nutanix AHV Plug-in:

```
NutanixAHVPlugin_12.5.1.8_AHV_5.1.0.7.exe /silent /accepteula /acceptthirdparty licenses /acceptlicensingpolicy /acceptrequiredsoftware /repair
```

The following command uninstalls Nutanix AHV Plug-in:

```
NutanixAHVPlugin_12.5.1.8_AHV_5.1.0.7.exe /silent /accepteula /acceptthirdparty licenses /acceptlicensingpolicy /acceptrequiredsoftware /uninstall
```

Veeam Backup for Nutanix AHV provides the following status codes to report about the installation result:

0	Nutanix AHV Plug-in installation has successfully completed.
1603	Nutanix AHV Plug-in installation has failed.
3010	Nutanix AHV Plug-in installation has successfully completed. The backup server requires rebooting.

TIP

For detailed logs of Nutanix AHV Plug-in installation, navigate to the `Program Data\Veeam\Setup\Temp\` folder on the backup server and view the following files:

- `VeeamPluginBootstrap.log`
- `NutanixAHVPlugin.log`
- `NutanixAHVPluginUI.log`
- `NutanixAHVPluginProxy.log`

Upgrading to Veeam Backup for Nutanix AHV 5.1

You can upgrade Veeam Backup for Nutanix AHV from version 3.0, 3a, 4.0, 4a or 5.0 to 5.1.

Before you start the upgrade process, do the following:

- [Applies only to upgrading from version 3.0 or 3a] Download Veeam Backup & Replication version 12.1 from the [Veeam downloads page](#).
- Download the latest Nutanix AHV Plug-in version from the [Veeam downloads page](#).
- Plan a maintenance period. Typically, the upgrade process takes up to one hour. Make sure there are no jobs currently running or scheduled to run during this period. Wait for the jobs to complete or disable the jobs manually before you start upgrading Veeam Backup for Nutanix AHV.
- Make sure the Nutanix AHV backup appliance is powered on.
- Back up the configuration database of the Nutanix AHV backup appliance. For more information, see the following sections:
 - For Veeam Backup for Nutanix AHV version 3.0 and 3a, see Backup for Nutanix AHV 3.0 User Guide, section [Backing Up Configuration Settings](#).
 - For Veeam Backup for Nutanix AHV version 4.0 and 4a, see Backup for Nutanix AHV 4.0 User Guide, section [Backing Up Configuration Settings Manually](#).

To upgrade Veeam Backup for Nutanix AHV to version 5.1, do the following:

1. [Applies only to upgrading from version 3.0 or 3a] Upgrade your Veeam Backup & Replication server to version 12.1 as described in the Veeam Backup & Replication User Guide, section [Upgrading to Veeam Backup & Replication 12](#). Then, complete the **Components Update** wizard as described in the Veeam Backup & Replication User Guide, section [Server Components Upgrade](#).

Veeam Backup for Nutanix AHV will be upgraded to version 4.0.
2. Upgrade Nutanix AHV Plug-in to version 5.1. To do that, run the installation file and complete the **Nutanix AHV Plug-in for Veeam Backup & Replication** wizard using default settings.
3. Upgrade the Nutanix AHV backup appliance to version 5.1. To do that:
 - a. In the Veeam Backup & Replication console, open the **Backup Infrastructure** view.
 - b. Navigate to **Backup Proxies > Out of Date**.
 - c. Select the Nutanix AHV backup appliance and click **Upgrade Proxy** on the ribbon.
 - d. In the **Components Update** window, click **Apply**.

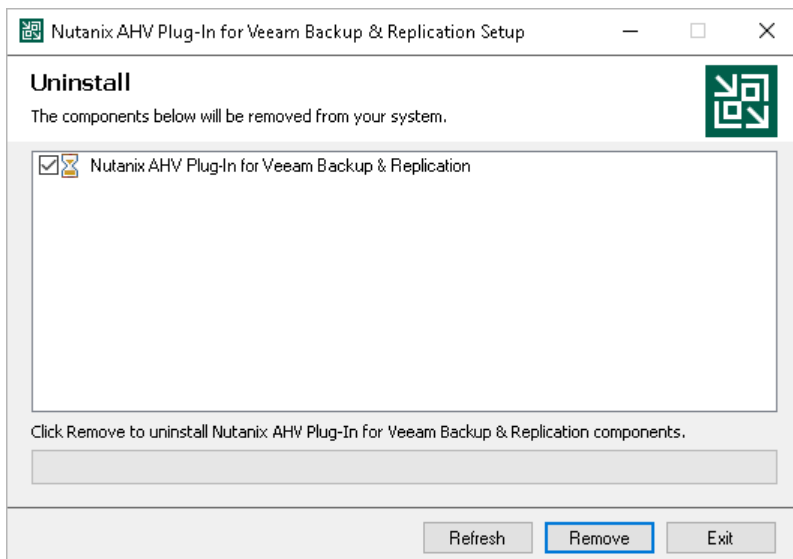
TIP

To protect the Nutanix AHV backup appliance, you must use the [Configuration Backup](#) functionality in the Veeam Backup & Replication console. Starting from version 4.0, an auto-protection PD snapshot job is no longer created for protecting the Nutanix AHV backup appliance and can be deleted if it is still present in the job list after upgrade from version 3.0 or 3a.

Uninstalling Nutanix AHV Plug-In

To uninstall Nutanix AHV Plug-in, do the following:

1. Log in to the backup server using an account with the Local Administrator permissions.
2. Open the **Start** menu and click the **Control Panel** icon.
3. In the **Settings** window, navigate to **System > Apps and Features**.
4. In the program list, click **Nutanix AHV Plug-in for Veeam Backup & Replication** and click **Uninstall**.
5. In the opened window, click **Remove**.



Configuring Backup Infrastructure

To set up the backup infrastructure, you must configure backup repositories that will store Nutanix AHV VM backups, connect the Nutanix AHV cluster that will allow the backup server to access Nutanix AHV resources, and add a Nutanix AHV backup appliance that will process backup and restore operations.

Configuring Backup Repositories

A backup repository is a storage location where Veeam Backup for Nutanix AHV keeps backup files. By default, the backup server performs the role of a backup repository. To keep your backups in another storage location, you can configure the following types of repositories:

- **Direct attached storage:** [Microsoft Windows](#) and [Linux](#) virtual and physical machines.
- **Network attached storage:** [CIFS \(SMB\) shares](#) and [NFS shares](#).
- **Deduplicating storage appliances:** [ExaGrid](#), [Quantum DXi](#), [Dell Data Domain](#), [HPE StoreOnce](#), [Fujitsu ETERNUS](#), [Infinidat InfiniGuard](#).
- **Cloud object storage:** [Amazon S3](#), [Amazon S3 Glacier](#), [AWS Snowball Edge](#), [S3 compatible](#), [Google Cloud](#), [Wasabi Cloud Storage](#), [IBM Cloud](#), [Microsoft Azure Blob](#), [Azure Archive Storage](#) and [Azure Data Box](#)

To combine repositories of different types in one repository, you can also set up a [scale-out backup repository](#).

For Linux server, Microsoft Windows server, SMB share, ExaGrid, Quantum DXi, Fujitsu ETERNUS and Infinidat InfiniGuard repositories, you can enable the Fast Clone technology that increases the speed of synthetic backup creation and transformation, reduces disk space requirements and decreases the load on storage devices. With this technology, Veeam Backup for Nutanix AHV references existing data blocks on volumes instead of copying data blocks between files. Data blocks are copied only when files are modified. To learn how to configure a repository to enable this functionality, see the Veeam Backup & Replication User Guide, section [Fast Clone](#).

IMPORTANT

- Veeam Backup for Nutanix AHV does not support storing backups in [Veeam Cloud Connect](#) repositories. However, you can use Veeam Cloud Connect repositories for [storing copies of backups](#) created with Veeam Backup for Nutanix AHV.
- [For scale-out backup repositories] Due to specifics of backup jobs for Nutanix AHV VMs, Veeam Backup for Nutanix AHV always creates a separate backup chain for each VM added to a backup job. Thus, even if you clear the **Use per-VM backup files** check box in the [advanced settings of a scale-out backup repository](#), backups of multiple Nutanix AHV VMs are not stored in a single backup file.

Managing Nutanix AHV Clusters

Connection to a Nutanix AHV cluster allows the backup server to access resources such as VMs, storage containers and networks. After you add the Nutanix AHV cluster to the backup infrastructure, you will be able to deploy a Nutanix AHV backup appliance and to manage data protection tasks for Nutanix AHV VMs and protection domains.

Adding Nutanix AHV Cluster

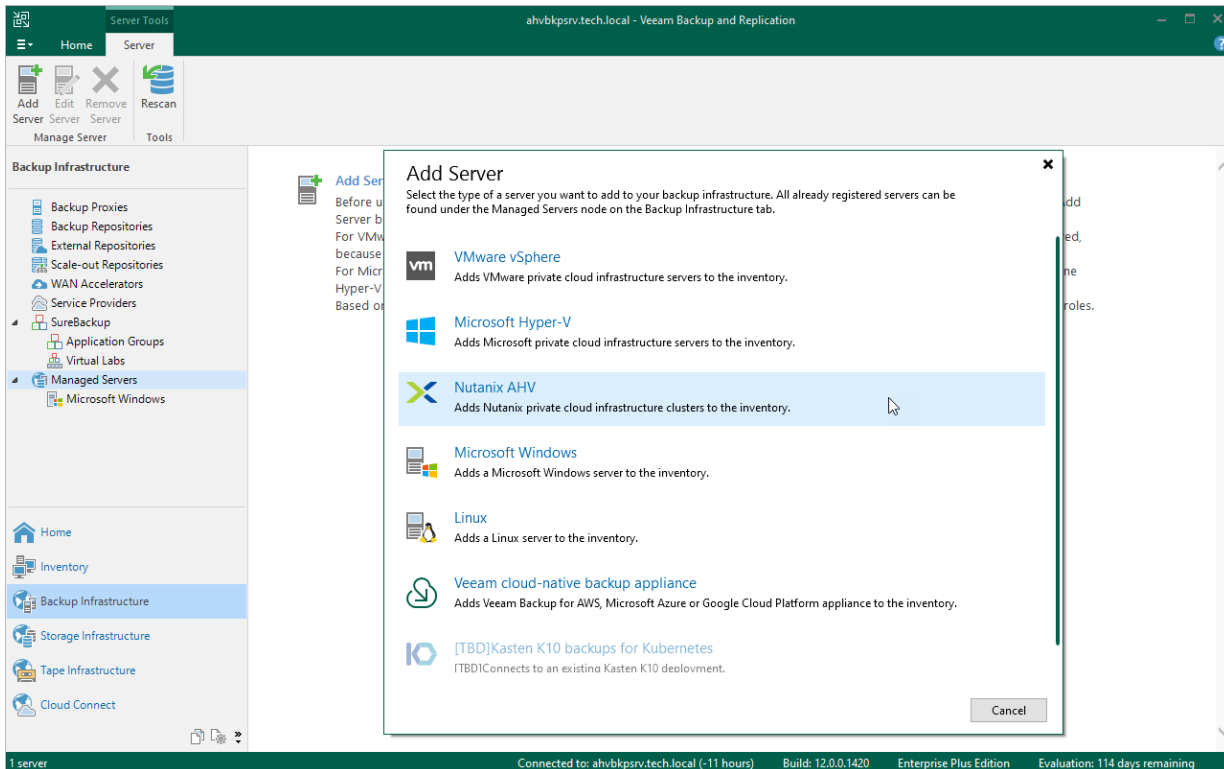
To add a Nutanix AHV cluster to the backup infrastructure, do the following:

1. [Launch the New Nutanix AHV Cluster wizard.](#)
2. [Specify the Nutanix AHV cluster domain name or IP address.](#)
3. [Enter credentials to access the Nutanix AHV cluster.](#)
4. [Configure helper appliance settings.](#)
5. [Apply Nutanix AHV cluster settings.](#)
6. [Finish working with the wizard.](#)

Step 1. Launch New Nutanix AHV Cluster Wizard

To launch the **New Nutanix AHV Cluster** wizard, do the following:

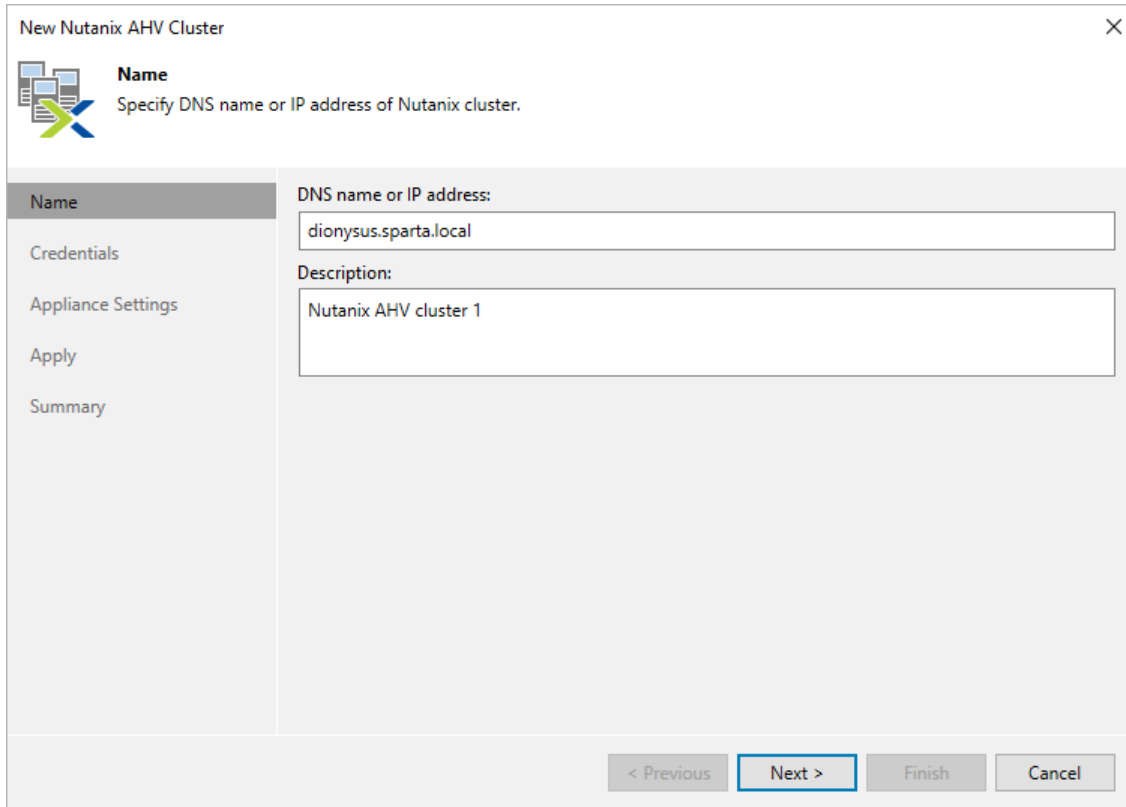
1. In the Veeam Backup & Replication console, open the **Backup Infrastructure** view.
2. In the inventory pane, select **Managed Servers**.
3. On the ribbon, click **Add Server**.
4. In the **Add Server** window, select **Nutanix AHV** to launch the **New Nutanix AHV Cluster** wizard.



Step 2. Specify Cluster Domain Name or Address

At the **Name** step of the wizard, do the following:

1. In the **DNS name or IP address** field, enter the FQDN or IP address of the Nutanix AHV cluster.
2. In the **Description** field, provide a description for future reference. The field already contains a default description with information about the user who added the manager, date and time when the manager was added.



The screenshot shows a wizard window titled "New Nutanix AHV Cluster" with a close button (X) in the top right corner. On the left side, there is a navigation pane with the following items: "Name" (selected), "Credentials", "Appliance Settings", "Apply", and "Summary". The main area of the wizard is titled "Name" and contains the instruction "Specify DNS name or IP address of Nutanix cluster." Below this instruction, there are two text input fields. The first field is labeled "DNS name or IP address:" and contains the text "dionysus.sparta.local". The second field is labeled "Description:" and contains the text "Nutanix AHV cluster 1". At the bottom of the wizard, there are four buttons: "< Previous", "Next >" (highlighted with a blue border), "Finish", and "Cancel".

Step 3. Specify Credentials

At the **Credentials** step of the wizard, specify credentials for an administrator account with the *Prism Admin* role that is used to access the Nutanix AHV cluster. For more information on Nutanix AHV system administrator roles, see [Nutanix documentation](#).

For credentials to be displayed in the **Credentials** list, they must be added to the Credentials Manager as described in the Veeam Backup & Replication User Guide, section [Standard Accounts](#). If you have not added the necessary credentials to the Credentials Manager beforehand, you can do this without closing the **New Nutanix AHV Cluster** wizard. To add an account, do the following:

1. Click **Add**.
2. In the **Credentials** window, specify a user name and password for the account.
3. Click **OK**.

The backup server will connect to the Nutanix AHV cluster and check its TLS certificate. If the certificate is not installed on the backup server, the **Certificate Security Alert Window** will display a warning notifying that secure communication cannot be guaranteed. To allow the backup server to connect to the Nutanix AHV cluster using the certificate, click **Continue**.

The screenshot shows the 'New Nutanix AHV Cluster' wizard at the 'Credentials' step. The main window has a sidebar with 'Name', 'Credentials', 'Appliance Settings', 'Apply', and 'Summary'. The 'Credentials' section is active, showing a list of credentials and an 'Add...' button. A secondary 'Credentials' dialog box is open, with the following fields:

- Username:** admin
- Password:** masked with dots
- Description:** Nutanix AHV Cluster 1 administrator credentials

Buttons for 'Browse...', 'OK', and 'Cancel' are visible in the dialog. At the bottom of the main window, there are navigation buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'.

Step 4. Configure Helper Appliance Settings

To restore [guest OS files](#) or [application items](#), Veeam Backup & Replication deploys on the AHV cluster a helper appliance. The helper appliance is a VM running the Linux operating system with a minimal set of components. The helper appliance occupies 50 MB of storage space and requires 3072 MB RAM.

At the **Appliance Settings** step of the wizard, do the following:

1. Click **Choose** next to the **Storage Container** field, and specify a storage container where helper appliance system files will be stored in the **Select Storage Container** window.

For a container to be displayed in the list of the available containers, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

2. Click **Choose** next to the **Network** field, and specify a network to which the helper appliance will be connected.

For a network to be displayed in the list of the available networks, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

3. If DHCP is enabled for the selected network, the IP address and DNS settings of the helper appliance can be obtained automatically.

If DHCP is disabled for the selected network, or you want to specify an IP address and configure DNS settings manually, select the **Use the following IP address** option and enter the helper appliance IP address, subnet mask and default gateway. If you select this option, you will be able to perform only one guest OS file restore or application items restore session at a time.

4. To enable FTP access to the helper appliance, select the **Enable FTP server on appliance (advanced)** check box.

The screenshot shows the 'Appliance Settings' window of the 'New Nutanix AHV Cluster' wizard. The window title is 'New Nutanix AHV Cluster' and it has a close button (X) in the top right corner. Below the title bar, there is a sub-header 'Appliance Settings' with a small icon of a server and a document. Below this, a descriptive text reads: 'Specify Nutanix AHV cluster, storage container and network settings for FLR helper appliance. Be sure to choose the same network where backup server located.'

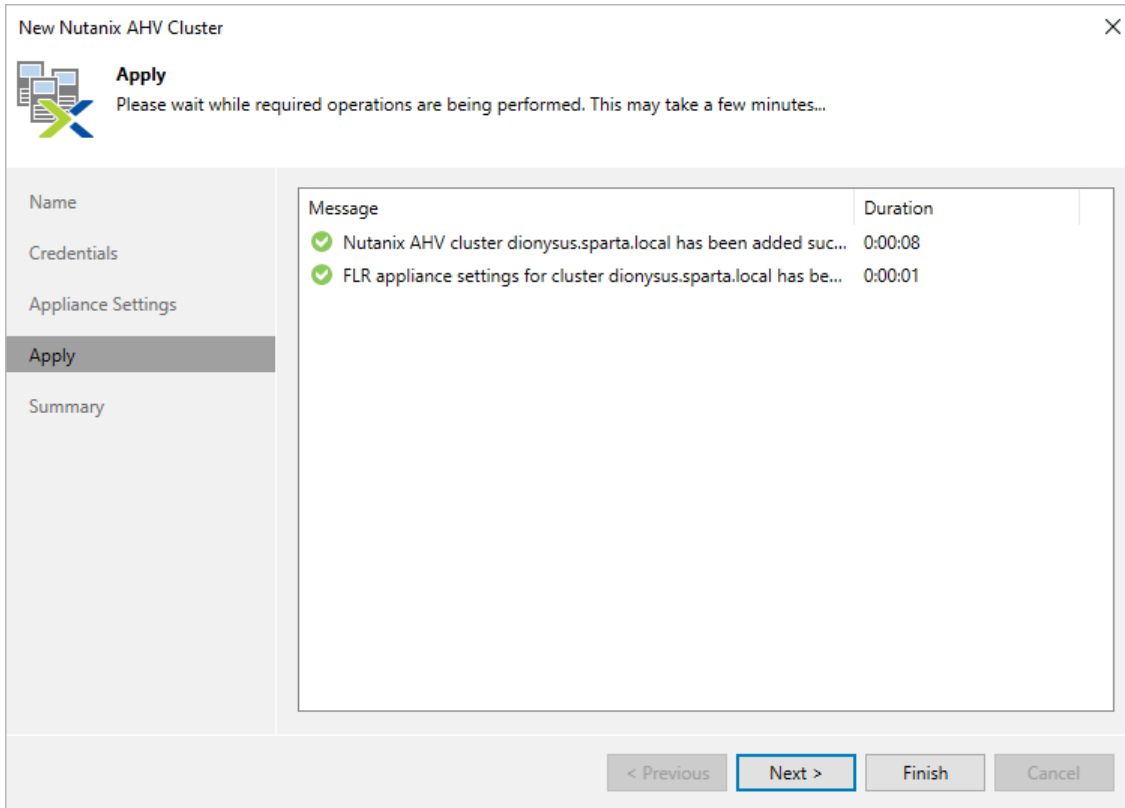
The main content area is divided into two columns. The left column contains a vertical list of steps: 'Name', 'Credentials', 'Appliance Settings' (which is currently selected and highlighted), 'Apply', and 'Summary'. The right column contains the configuration fields:

- Storage container:** A text box containing 'default-container-67277265432148' and a 'Choose...' button to its right.
- Network:** A text box containing 'VM network' and a 'Choose...' button to its right.
- IP Address Configuration:** Two radio buttons. The first is selected and labeled 'Obtain an IP address automatically'. The second is labeled 'Use the following IP address'.
- Manual IP Configuration:** Three text boxes for 'IP address:', 'Subnet mask:', and 'Default gateway:', each containing three dots as placeholders.
- FTP Server:** A checked checkbox labeled 'Enable FTP Server on appliance (advanced)'.

At the bottom of the window, there are four buttons: '< Previous', 'Apply', 'Finish', and 'Cancel'.

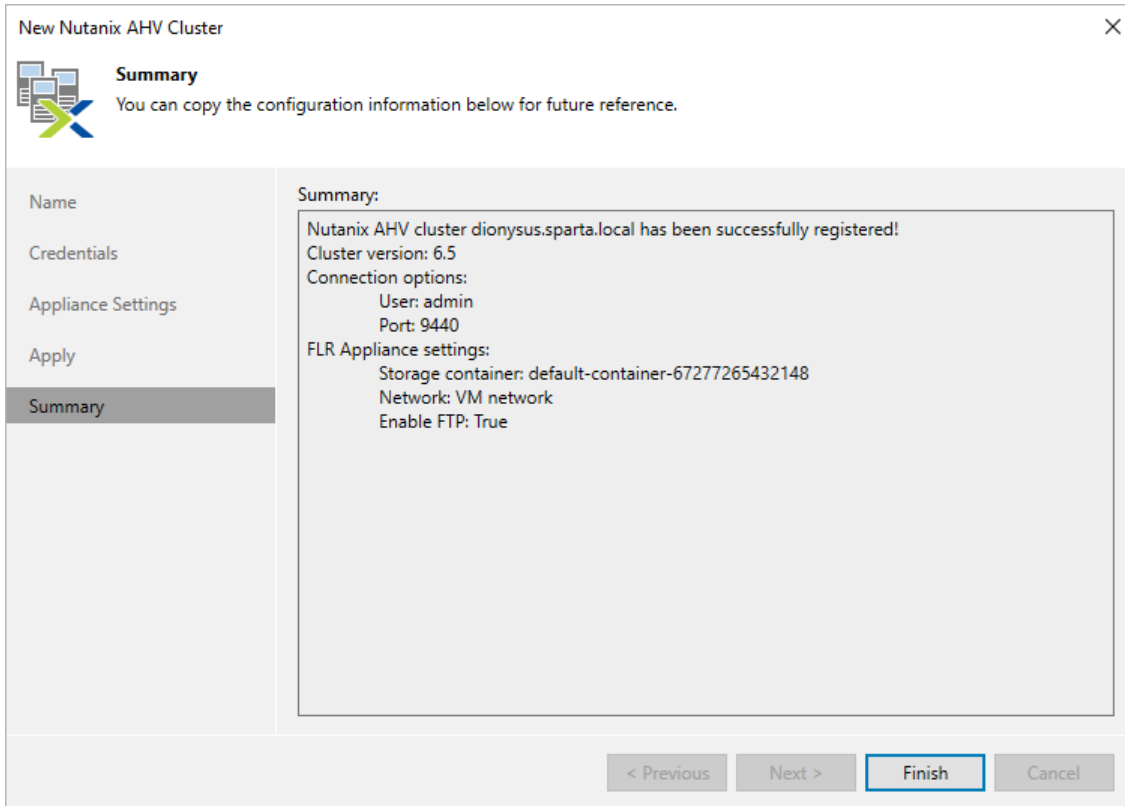
Step 5. Apply Settings

At the **Apply** step of the wizard, wait until the Nutanix AHV cluster is added to the backup infrastructure and then click **Next**.



Step 6. Finish Working with Wizard

At the **Summary** step of the wizard, check that the Nutanix AHV cluster has been successfully added and click **Finish**.



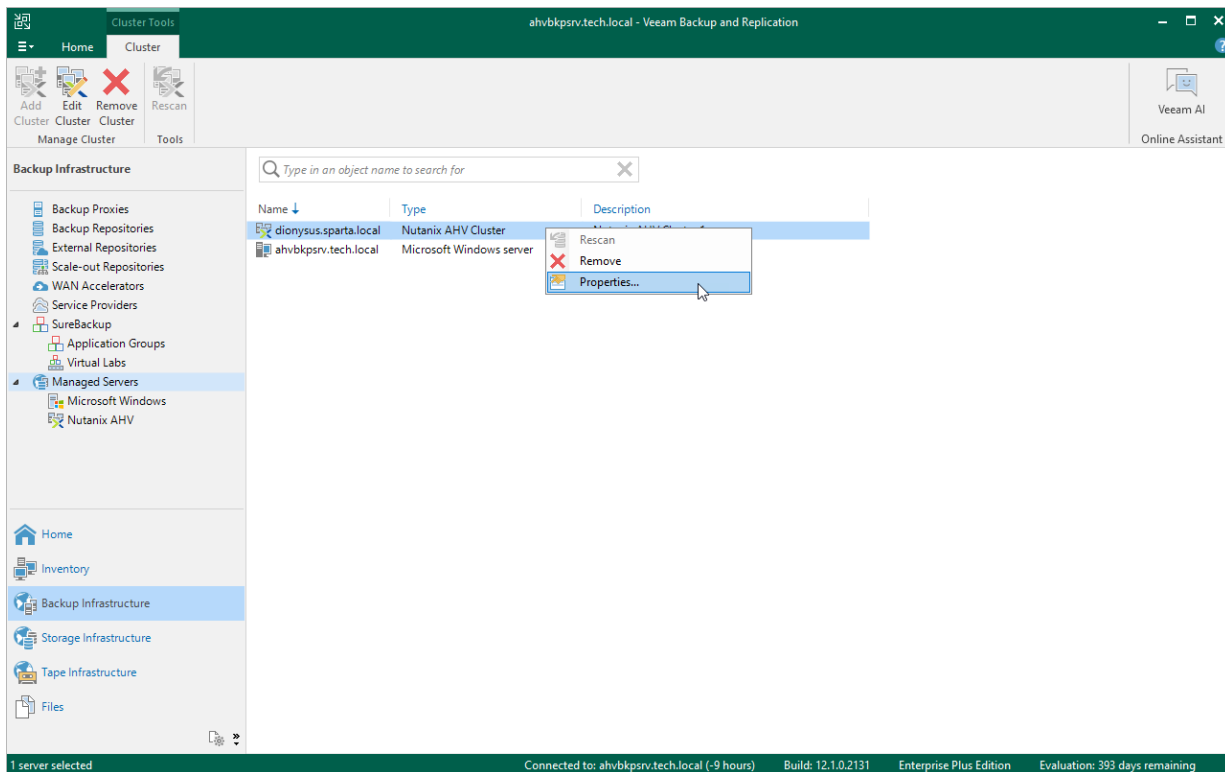
TIP

After you complete the wizard, it is required that you configure an Nutanix AHV backup appliance. You can proceed to the **Nutanix Proxy** wizard immediately, or launch the wizard later as described in section [Managing Backup Appliance](#).

Editing Nutanix AHV Cluster Properties

To edit properties of the Nutanix AHV cluster added to the backup infrastructure, do the following:

1. Open the **Backup Infrastructure** view.
2. In the inventory pane, select **Managed Servers > Nutanix AHV**.
3. In the working area, select the Nutanix AHV cluster and click **Edit Cluster** on the ribbon, or right-click the Nutanix AHV cluster and select **Properties**.
4. Complete the **Edit Nutanix AHV Cluster** wizard as described in section [Adding Nutanix AHV Cluster to Backup Infrastructure](#).

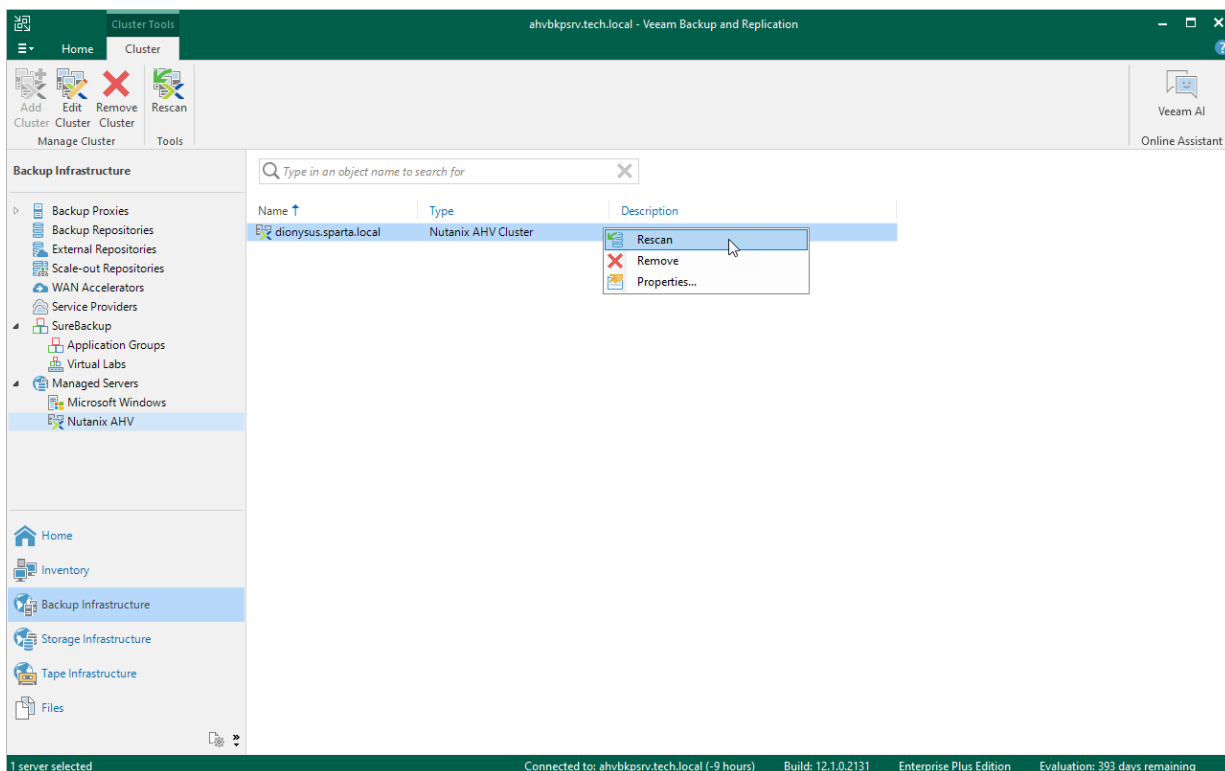


Rescanning Nutanix AHV Cluster

Veeam Backup for Nutanix AHV retrieves information about the protected Nutanix AHV environment from the Nutanix AHV cluster. However, the data synchronization process may take some time to complete. If you make any changes to the Nutanix AHV environment and want both the Veeam Backup & Replication console and the Nutanix AHV backup appliance web console to display the changes immediately, you can rescan the Nutanix AHV cluster manually.

To rescan the Nutanix AHV cluster, do the following:

1. Open the **Backup Infrastructure** view.
2. In the inventory pane, select **Managed Servers > Nutanix AHV**.
3. In the working area, select the Nutanix AHV cluster and click **Rescan** on the ribbon, or right-click the Nutanix AHV cluster and select **Rescan**.



TIP

Alternatively, in the [Nutanix AHV backup appliance web console](#), click **Configuration** at the top right corner of the Nutanix AHV backup appliance web console, select **Nutanix AHV Cluster** and click **Rescan Snapshots**.

Removing Nutanix AHV Cluster

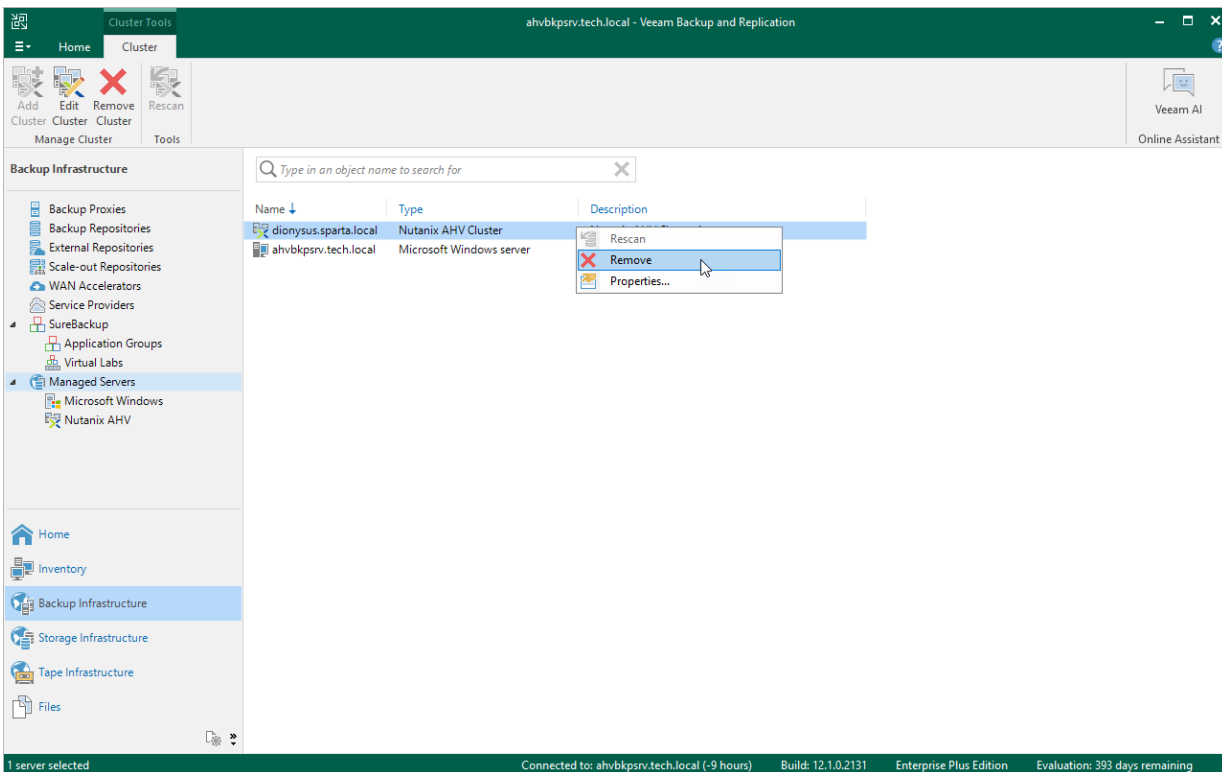
If you do not want to protect resources managed by the connected Nutanix AHV cluster anymore, you can remove it from the backup infrastructure.

IMPORTANT

Before you remove the Nutanix AHV cluster, you must [remove the Nutanix AHV backup appliance](#) that processes protection jobs for the resources managed by the Nutanix AHV cluster.

To remove the Nutanix AHV cluster from the backup infrastructure:

1. Open the **Backup Infrastructure** view.
2. In the inventory pane, select **Managed Servers > Nutanix AHV**.
3. In the working area, select the Nutanix AHV cluster and click **Remove Cluster** on the ribbon, or right-click the Nutanix AHV cluster and select **Remove**.



Managing Backup Appliances

To be able to back up VMs residing on a Nutanix AHV cluster, you must add to the backup infrastructure a Nutanix AHV backup appliance that will process backup jobs and deliver backup traffic to backup repositories.

To add a Nutanix AHV backup appliance, you can either deploy a new Nutanix AHV backup appliance or connect an existing one. Note that you can add only one Nutanix AHV backup appliance for each Nutanix AHV cluster.

Deploying New Backup Appliance

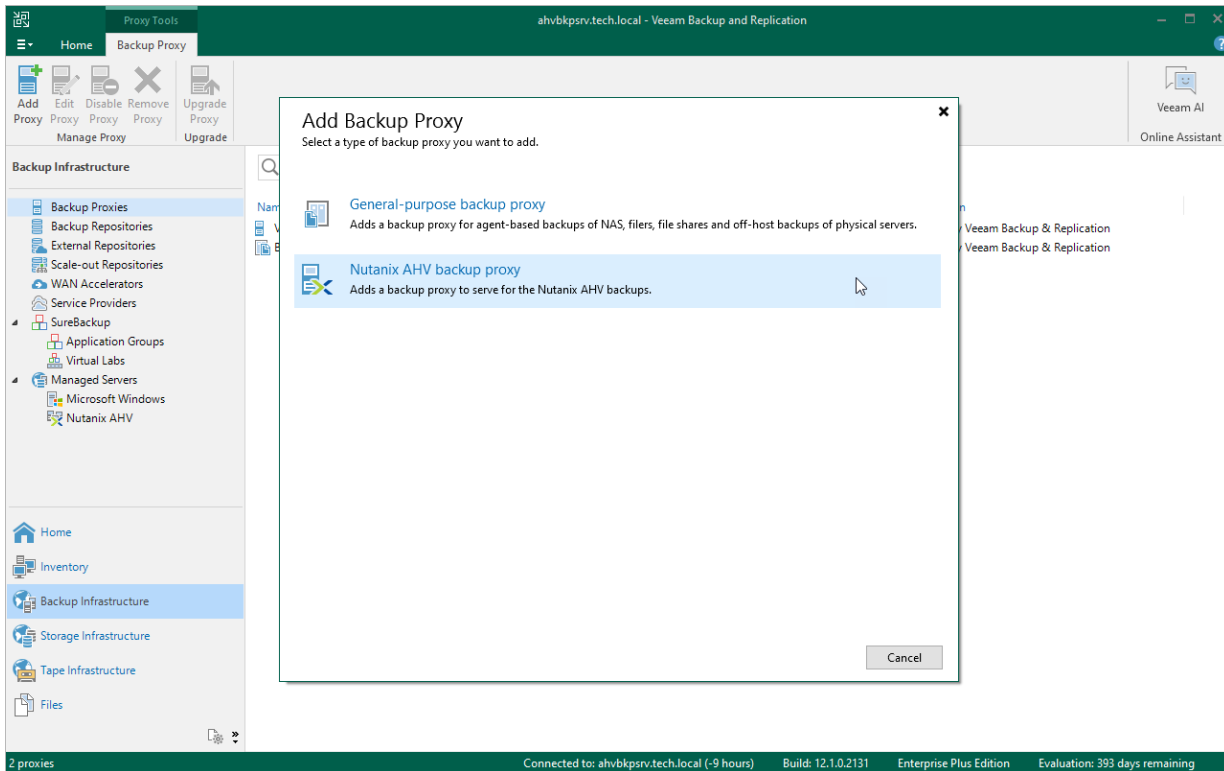
To deploy an Nutanix AHV backup appliance and to add it to the backup infrastructure, do the following:

1. [Launch the New Nutanix AHV Backup Appliance wizard.](#)
2. [Select the backup appliance deployment mode.](#)
3. [Specify backup appliance VM configuration.](#)
4. [Specify backup appliance network settings.](#)
5. [Specify credentials for the backup appliance account.](#)
6. [Grant permissions to the backup appliance.](#)
7. [Apply backup appliance settings.](#)
8. [Finish working with wizard.](#)

Step 1. Launch New Nutanix Proxy Wizard

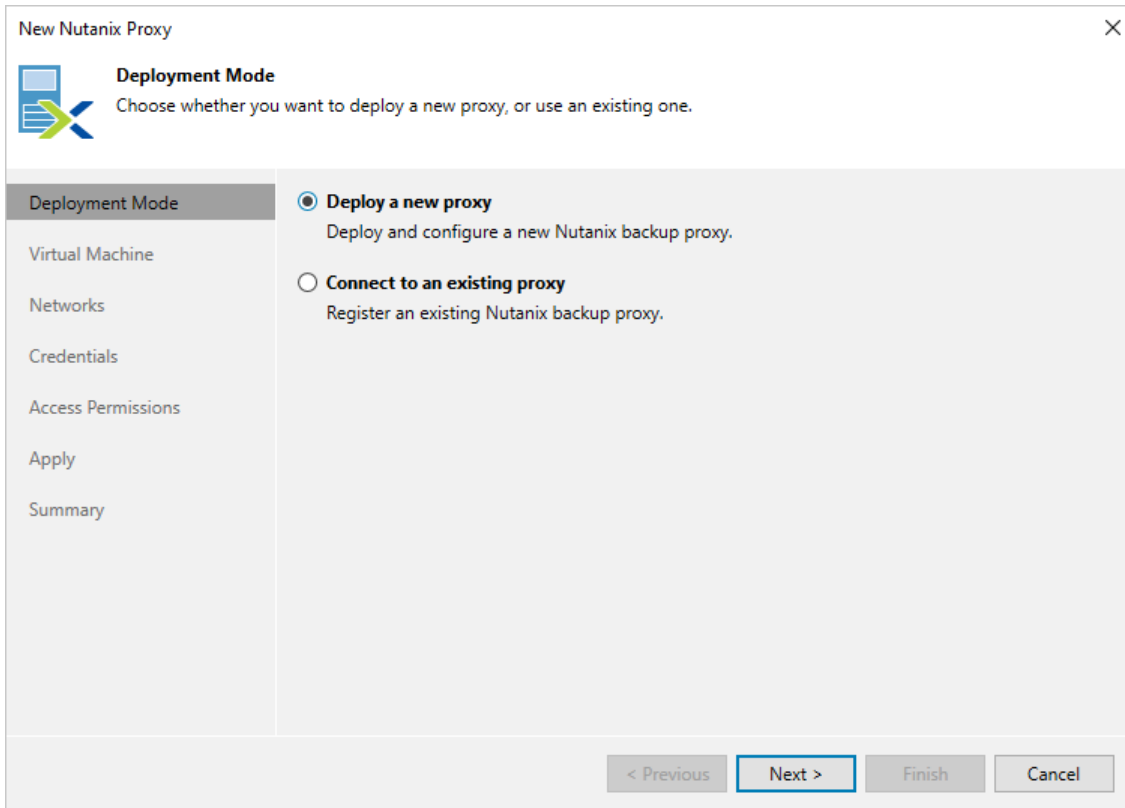
To launch the **New Nutanix AHV Backup Appliance** wizard, do the following:

1. In the Veeam Backup & Replication console, open the **Backup Infrastructure** view.
2. In the inventory pane, select **Backup Proxies**.
3. On the ribbon, select **Add Proxy**.
4. Click **Nutanix AHV backup proxy**.



Step 2. Select Deployment Mode

At the **Deployment Mode** step of the wizard, select the **Deploy a new proxy** option.



Step 3. Specify VM Configuration

At the **Virtual Machine** step of the wizard, do the following:

1. Click **Choose** next to the **Cluster** field, and specify a Nutanix AHV cluster where the Nutanix AHV backup appliance will be deployed in the **Select Cluster** window.

For a cluster to be displayed in the list of the available clusters, it must be added to the backup infrastructure as described in section [Adding Nutanix AHV Cluster](#).

2. In the **Name** field, specify a name for the Nutanix AHV backup appliance.

3. Click **Choose** next to the **Storage Container** field, and specify a storage container where Nutanix AHV backup appliance system files will be stored in the **Select Storage Container** window.

For a container to be displayed in the list of the available containers, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

4. In the **Proxy description** field, provide a description for future reference. The field already contains a default description with information about the user who added the proxy, date and time when the proxy was added.

5. In the **Max concurrent tasks** field, specify the number of tasks that the Nutanix AHV backup appliance will be able to handle in parallel. If this value is exceeded, the backup proxy will not start a new task until one of the currently running tasks finishes.

The default number of concurrent tasks is set to 4. When you change this value, the wizard automatically adjusts the amount of resources that will be allocated to the VM running as the Nutanix AHV backup appliance. If you want to specify the amount of resources manually, click **Advanced**. Note that you must take into account the [Nutanix AHV backup appliance system requirements](#).

The screenshot shows the 'New Nutanix Proxy' wizard at the 'Virtual Machine' step. The main window has a sidebar with options: Deployment Mode, Virtual Machine (selected), Networks, Credentials, Access Permissions, Apply, and Summary. The main area contains the following fields:

- Cluster:** dionysus.sparta.local (with a 'Choose...' button)
- Name:** Backup Appliance Cluster 1
- Storage container:** default-container-67277265432148 (with a 'Choose...' button)
- Proxy description:** Nutanix AHV Cluster 1 Backup Appliance
- Max concurrent tasks:** 4 (with a spinner)

A 'Hardware Settings' dialog box is open, showing:

- Number of vCPU cores:** 4 (with a spinner)
- Memory size (GB):** 4 (with a spinner)
- Buttons: OK, Cancel

At the bottom of the main window, there is a note: 'Advanced proxy settings include vCPU and memory sizing settings for proxy VM.' with an 'Advanced...' button. At the very bottom are navigation buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'.

Step 4. Specify Network Settings

At the **Networks** step of the wizard, do the following:

1. Click **Browse** to select a network adapter to which the Nutanix AHV backup appliance will be connected. For best performance, choose the network that is used for Nutanix Controller VM (CVM).

For a network to be displayed in the list of the available networks, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

2. In the **Hostname** field, specify a hostname (with domain name excluded) that will be assigned to the Nutanix AHV backup appliance.

The maximum length of the hostname is 63 characters. The hyphen-minus character (-) is supported, but you cannot use it as the first or the last character of the name.

3. If DHCP is enabled for the selected network adapter, the IP address and DNS settings of the Nutanix AHV backup appliance can be obtained automatically.

If DHCP is disabled for the selected network adapter, or you want to specify an IP address and configure DNS settings manually, click **Configure** and do the following in the **Network settings** window:

- To specify an IP address, select the **Use the following IP address** option and enter the Nutanix AHV backup appliance IP address, subnet mask and default gateway.
- To configure DNS settings, select the **Use the following DNS server address** option and enter the IP addresses of the preferred and alternate DNS servers.

IMPORTANT

If you specified the Nutanix AHV cluster domain name while [adding the cluster to the backup infrastructure](#), ensure that the appliance is able to resolve the name to the cluster IP address.

After you deploy the Nutanix AHV backup appliance, you will be able to change the configured network settings in the web console as described in section [Configuring General Settings](#).

The screenshot shows a web console window titled "New Nutanix Proxy" with a close button (X) in the top right corner. The window contains a sidebar on the left with navigation options: "Deployment Mode", "Virtual Machine", "Networks" (highlighted), "Credentials", "Access Permissions", "Apply", and "Summary". The main content area is titled "Networks" and includes the instruction "Specify network settings for Nutanix backup proxy." Below this, there are several configuration fields: "Network:" with a dropdown menu showing "VM network" and a "Browse..." button; "Specify network this backup proxy will be connected to."; "Hostname:" with a text input field containing "backup-appliance-cl1"; "IP address:" with the value "Obtain automatically"; and "DNS server:" with the value "Obtain automatically" and a "Configure..." button. At the bottom of the window, there are four buttons: "< Previous", "Next >" (highlighted with a blue border), "Finish", and "Cancel".

Step 5. Specify Credentials

At the **Credentials** step of the wizard, select credentials for an account that will be created on the Nutanix AHV backup appliance for accessing the web console.

IMPORTANT

Do not select Active Directory accounts – the Nutanix AHV backup appliance does not support LDAP integration.

For credentials to be displayed in the **Credentials** list, they must be added to the Credentials Manager as described in the Veeam Backup & Replication User Guide, section [Standard Accounts](#). If you have not added the necessary credentials to the Credentials Manager beforehand, you can do this without closing the **New Nutanix Proxy** wizard. To add credentials, do the following:

1. Click **Add**.
2. In the **Credentials** window, specify a user name and password for the account.

The user name must start with a lowercase Latin letter and must not match Linux system user names (such as *root*, *daemon*). The name can contain only lowercase Latin letters, numeric characters, underscores and dashes. The maximum length of the name is 32 characters.

3. Click **OK**.

New Nutanix Proxy

Credentials
Specify proxy credentials.

Deployment Mode

Virtual Machine

Networks

Credentials

Access Permissions

Apply

Summary

Specify an account that will be automatically created on the proxy during deployment and will be used for accessing the proxy. You can select an existing account, or create a new one.

Credentials:

Manage accounts

Credentials

Username: administrator Browse...

Password: [masked]

Description:
Backup appliance administrator credentials

OK Cancel

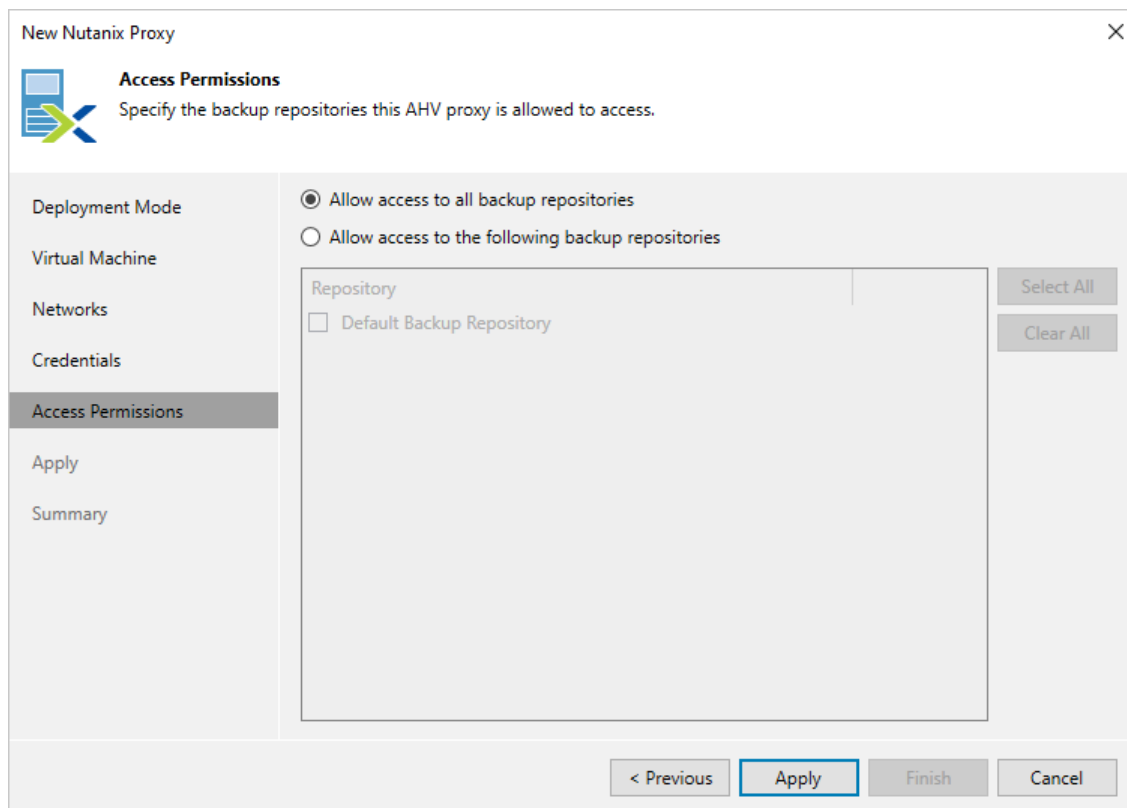
< Previous Next > Finish Cancel

Step 6. Grant Permissions

At the **Access Permissions** step of the wizard, do the following:

- Select the **Allow access to all backup repositories** option if you want the Nutanix AHV backup appliance to have access to all backup repositories added to the backup infrastructure.
- Select the **Allow access to the following backup repositories** option if you want the Nutanix AHV backup appliance to have access to specific backup repositories only.

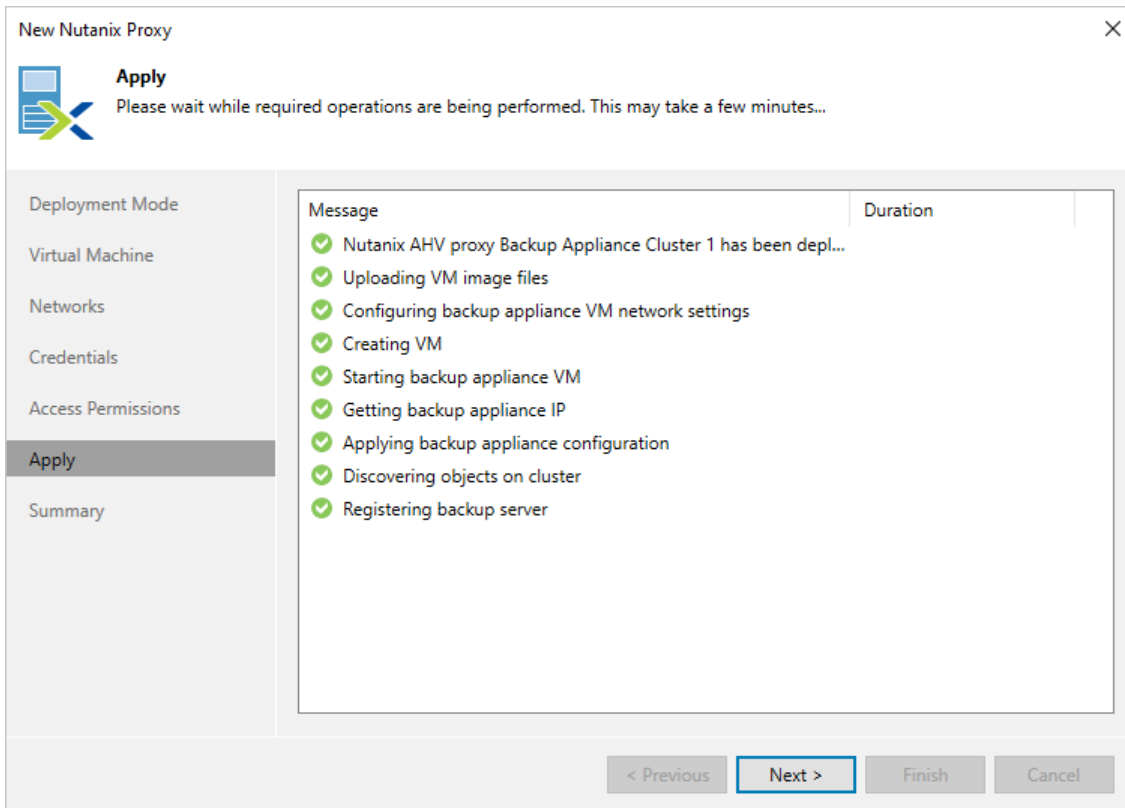
If you select the **Allow access to the following backup repositories** option, you must also specify backup repositories to which the Nutanix AHV backup appliance will have access. For a backup repository to be displayed in the **Repository** list, it must be added to the backup infrastructure as described in the Veeam Backup & Replication User Guide, section [Backup Repository](#).



The screenshot shows the 'New Nutanix Proxy' wizard at the 'Access Permissions' step. The window title is 'New Nutanix Proxy' with a close button (X) in the top right corner. Below the title bar is a logo and the text 'Access Permissions' and 'Specify the backup repositories this AHV proxy is allowed to access.' A sidebar on the left contains navigation options: 'Deployment Mode', 'Virtual Machine', 'Networks', 'Credentials', 'Access Permissions' (highlighted), 'Apply', and 'Summary'. The main area has two radio button options: 'Allow access to all backup repositories' (selected) and 'Allow access to the following backup repositories'. Below these is a list box titled 'Repository' containing one entry: 'Default Backup Repository' with an unchecked checkbox. To the right of the list box are 'Select All' and 'Clear All' buttons. At the bottom of the window are four buttons: '< Previous', 'Apply' (highlighted with a blue border), 'Finish', and 'Cancel'.

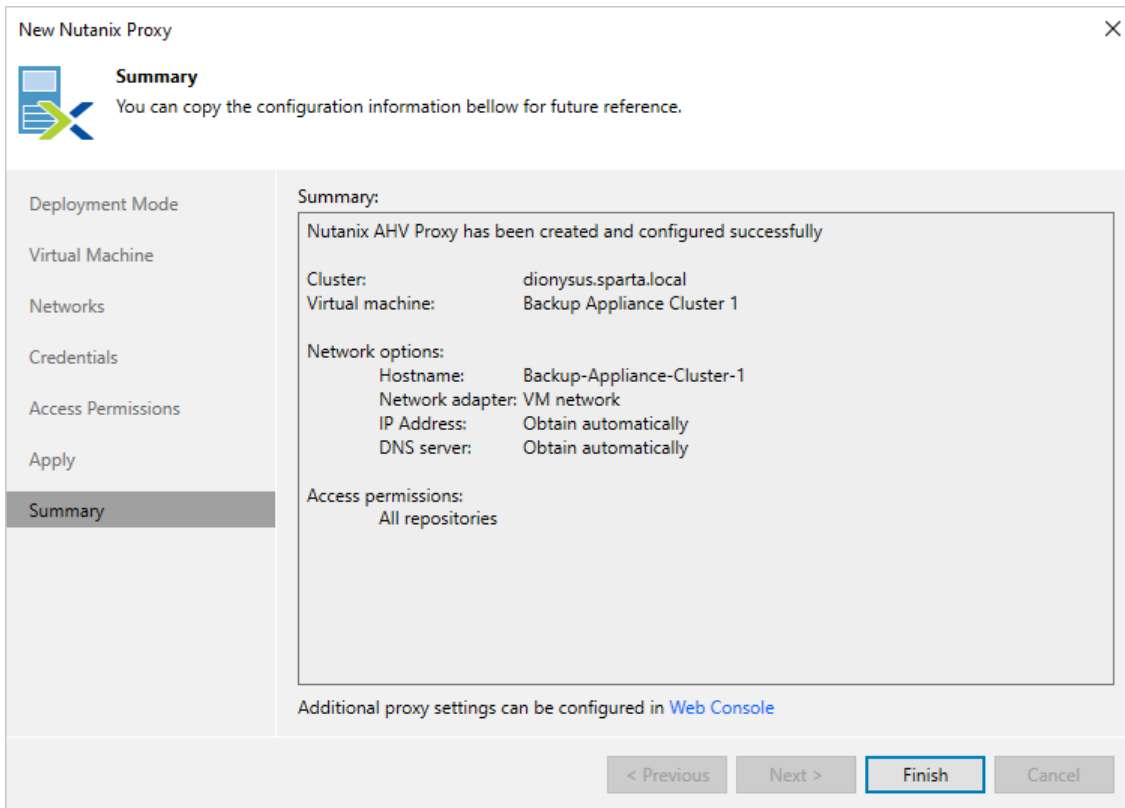
Step 7. Apply Settings

At the **Apply** step of the wizard, wait for the Nutanix AHV backup appliance to be added to the backup infrastructure and then click **Next**.



Step 8. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**. To open the Nutanix AHV backup appliance web console in your web browser, click **Web Console**.



The screenshot shows a window titled "New Nutanix Proxy" with a close button (X) in the top right corner. The window is divided into a left sidebar and a main content area. The sidebar contains a list of steps: "Deployment Mode", "Virtual Machine", "Networks", "Credentials", "Access Permissions", "Apply", and "Summary". The "Summary" step is currently selected and highlighted. The main content area has a sub-header "Summary:" followed by a message: "Nutanix AHV Proxy has been created and configured successfully". Below this message, the configuration details are listed:

- Cluster: dionysus.sparta.local
- Virtual machine: Backup Appliance Cluster 1
- Network options:
 - Hostname: Backup-Appliance-Cluster-1
 - Network adapter: VM network
 - IP Address: Obtain automatically
 - DNS server: Obtain automatically
- Access permissions: All repositories

At the bottom of the main content area, there is a link: "Additional proxy settings can be configured in [Web Console](#)".

At the bottom of the window, there are four buttons: "< Previous", "Next >", "Finish" (which is highlighted with a blue border), and "Cancel".

Connecting Existing Backup Appliance

If you have a Nutanix AHV backup appliance that has already been deployed but was removed from the backup infrastructure, you can connect it to the backup server. You may also want to connect an existing Nutanix AHV backup appliance in the following situations:

- To upgrade an Nutanix AHV backup appliance from version 3.0, 3a, 4.0, 4a and 5.0 to 5.1.
- To connect an Nutanix AHV backup appliance that was previously connected to another backup server.

To add an existing Nutanix AHV backup appliance to the backup infrastructure, do the following:

1. [Launch the New Nutanix AHV Backup Appliance wizard.](#)
2. [Select the proxy deployment mode.](#)
3. [Specify proxy VM configuration.](#)
4. [Check network settings.](#)
5. [Enter credentials for the proxy account.](#)
6. [Grant permissions to the proxy.](#)
7. [Apply proxy settings.](#)
8. [Finish working with wizard.](#)

After you connect the Nutanix AHV backup appliance, the backup server will retrieve information about all jobs the appliance has ever processed. If the backup server configuration database contains records about Nutanix AHV VM backups and if the backup files are still available in repositories, you can [import backups](#) to the Nutanix AHV backup appliance and use them to restore [entire VMs](#) and [VM disks](#).

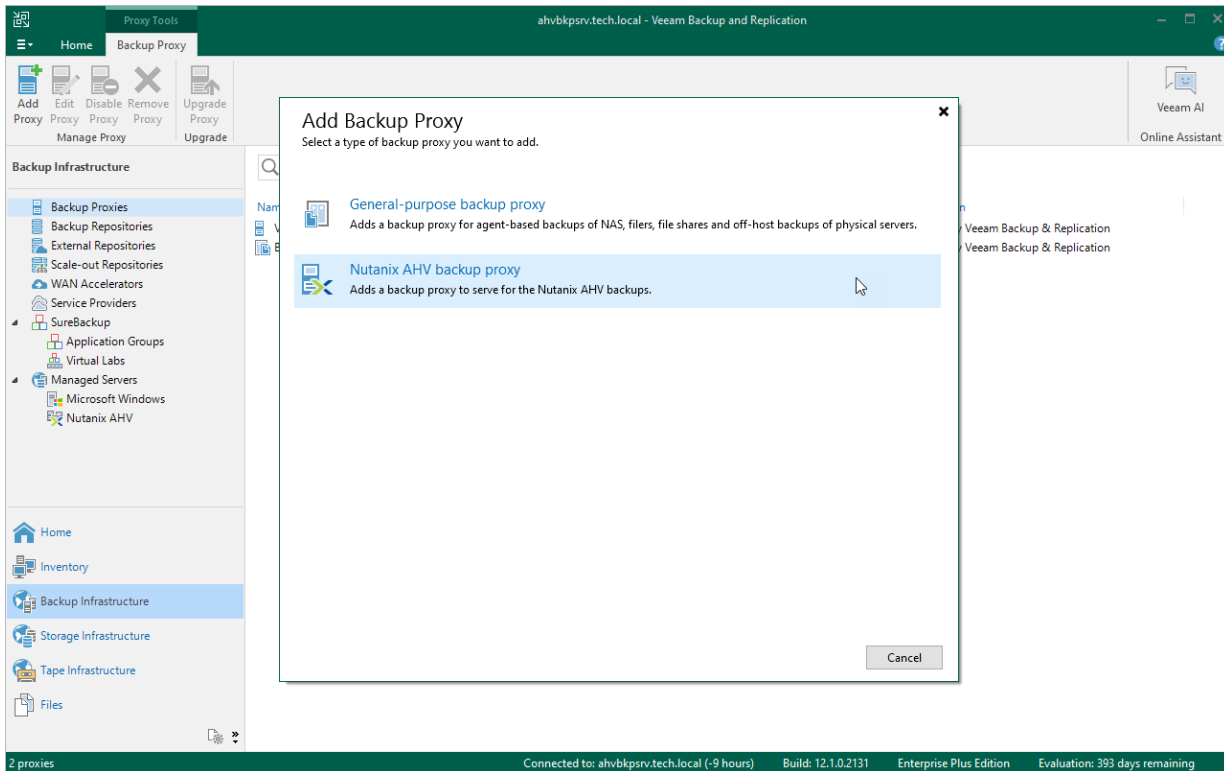
NOTE

If you connect a Nutanix AHV backup appliance migrated from another cluster to protect VMs migrated from the same cluster, you will need to reconfigure backup jobs. UUIDs of migrated VMs change, therefore, you will need to re-add VMs to a backup job that will start new backup chains for them.

Step 1. Launch New Nutanix Proxy Wizard

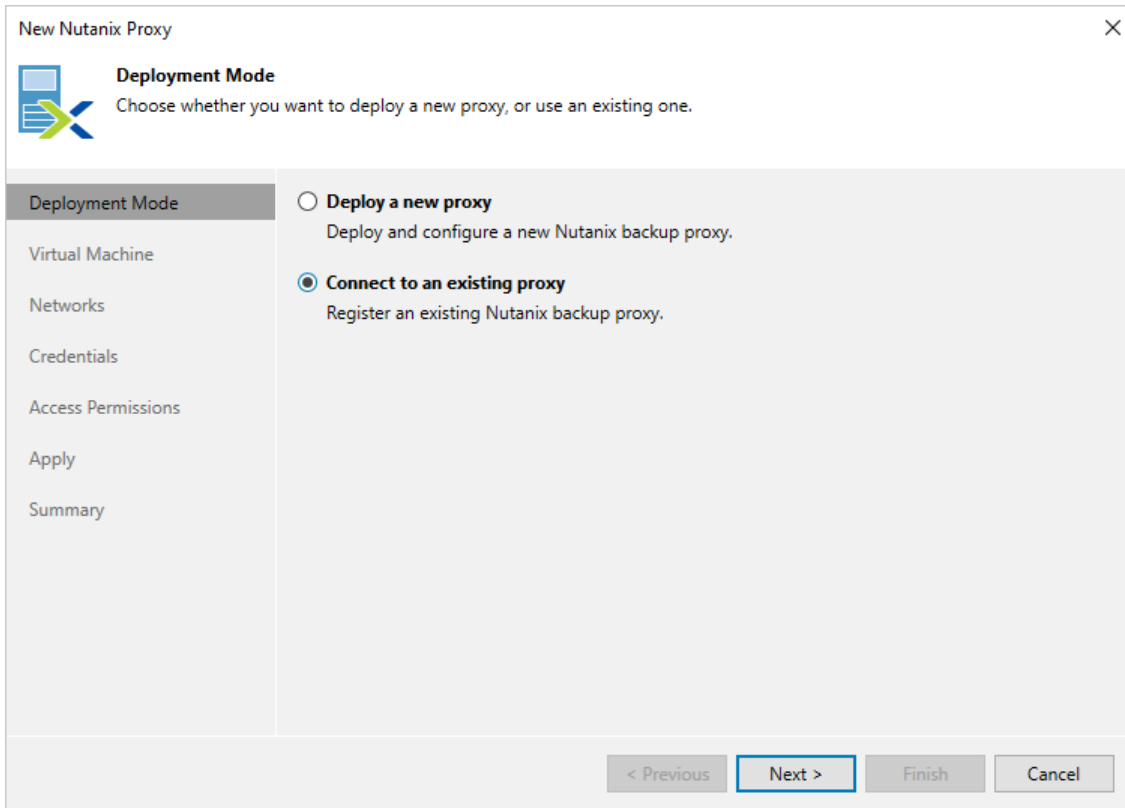
To launch the **New Nutanix AHV Backup Appliance** wizard, do the following:

1. In the Veeam Backup & Replication console, open the **Backup Infrastructure** view.
2. In the inventory pane, select **Backup Proxies**.
3. On the ribbon, select **Add Proxy**.
4. Click **Nutanix AHV backup proxy**.



Step 2. Select Deployment Mode

At the **Deployment Mode** step, select the **Connect to an existing proxy** option.



The screenshot shows a window titled "New Nutanix Proxy" with a close button (X) in the top right corner. Below the title bar is a Nutanix logo and the heading "Deployment Mode". Underneath, it says "Choose whether you want to deploy a new proxy, or use an existing one." On the left side, there is a vertical navigation pane with the following items: "Deployment Mode" (highlighted), "Virtual Machine", "Networks", "Credentials", "Access Permissions", "Apply", and "Summary". The main area contains two radio button options: "Deploy a new proxy" (with the subtext "Deploy and configure a new Nutanix backup proxy.") and "Connect to an existing proxy" (with the subtext "Register an existing Nutanix backup proxy."). The "Connect to an existing proxy" option is selected. At the bottom right, there are four buttons: "< Previous", "Next >" (highlighted with a blue border), "Finish", and "Cancel".

Step 3. Specify VM Configuration

At the **Virtual Machine** step of the wizard, do the following:

1. Click **Choose** next to the **Cluster** field, and specify a Nutanix AHV cluster where the Nutanix AHV backup appliance is deployed in the **Select Cluster** window.

For a cluster to be displayed in the list of the available clusters, it must be added to the backup infrastructure as described in section [Adding Nutanix AHV Cluster](#).

2. Click **Choose** next to the **Name** field, and specify the VM running as the Nutanix AHV backup appliance in the **Select Virtual Machine** window.

NOTE

You cannot change the storage container - it is automatically populated when you select the VM.

3. In the **Proxy description** field, provide a description for future reference. The field already contains a default description with information about the user who added the proxy, date and time when the proxy was added.
4. In the **Max concurrent tasks** field, specify the number of tasks that the Nutanix AHV backup appliance will be able to handle in parallel. If this value is exceeded, the backup proxy will not start a new task until one of the currently running tasks finishes. If you change the number of concurrent tasks, the wizard will automatically adjust the amount of resources allocated to the VM running as the Nutanix AHV backup appliance.

The screenshot shows the 'New Nutanix Proxy' wizard at the 'Virtual Machine' step. The left sidebar lists steps: Deployment Mode, Virtual Machine (selected), Networks, Credentials, Access Permissions, Apply, and Summary. The main area contains the following fields:

- Cluster:** dionysus.sparta.local (with a 'Choose...' button)
- Name:** Backup Appliance Cluster 1 (with a 'Choose...' button)
- Storage container:** default-container-67277265432148
- Proxy description:** Nutanix AHV Cluster 1 Backup Appliance
- Max concurrent tasks:** 4 (with up/down arrows)

A 'Hardware Settings' dialog box is open, showing:

- Number of vCPU cores:** 4 (with up/down arrows)
- Memory size (GB):** 4 (with up/down arrows)
- Buttons: OK, Cancel

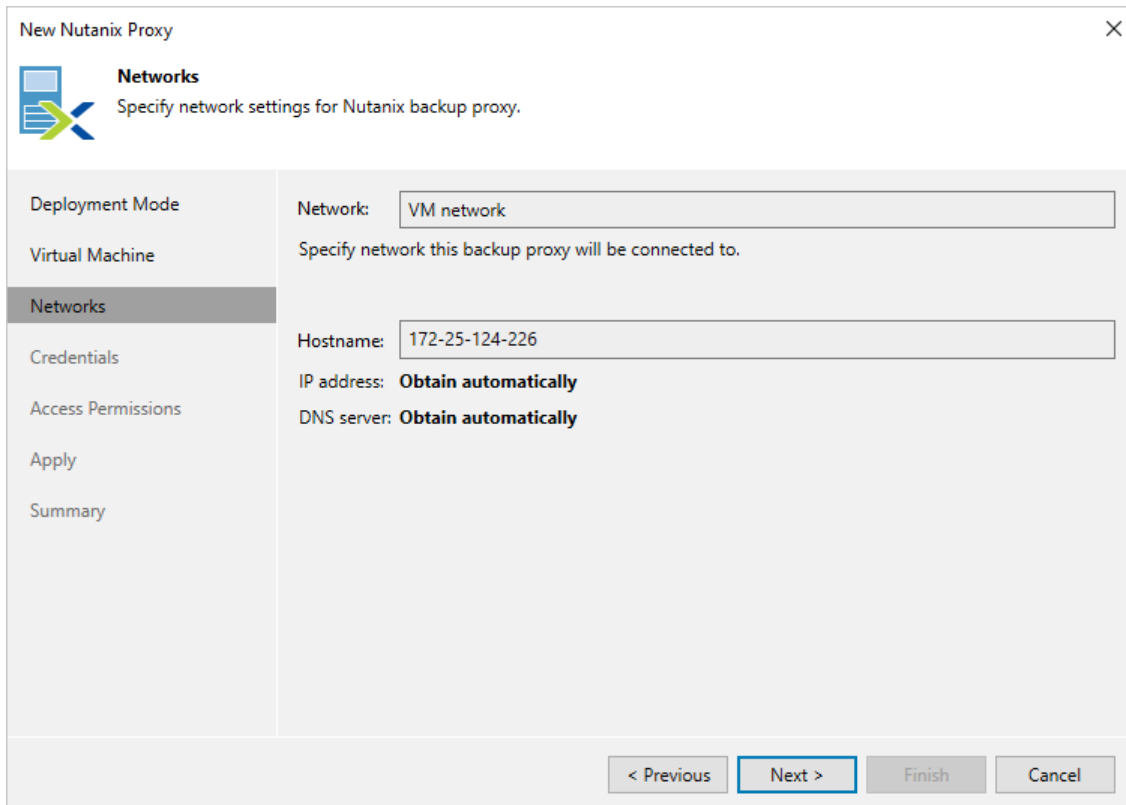
At the bottom of the wizard, there is a note: 'Advanced proxy settings include vCPU and memory sizing settings for proxy VM.' with an 'Advanced...' button. The bottom navigation bar includes: '< Previous', 'Next >', 'Finish', and 'Cancel'.

Step 4. Check Network Settings

When you connect an existing Nutanix AHV backup appliance, you cannot change the network it is connected to, its hostname, IP address and DNS settings. At the **Networks** step of the wizard, review network settings configured for the Nutanix AHV backup appliance and then click **Next**.

TIP

After you connect the Nutanix AHV backup appliance, you will be able to change the configured network settings in the web console as described in section [Configuring General Settings](#).



The screenshot shows a wizard window titled "New Nutanix Proxy" with a close button (X) in the top right corner. The window has a sidebar on the left with the following items: "Deployment Mode", "Virtual Machine", "Networks" (highlighted), "Credentials", "Access Permissions", "Apply", and "Summary". The main area is titled "Networks" and contains the instruction "Specify network settings for Nutanix backup proxy." Below this, there are four fields: "Network:" with a dropdown menu showing "VM network"; "Specify network this backup proxy will be connected to."; "Hostname:" with a text input field containing "172-25-124-226"; "IP address:" with the text "Obtain automatically"; and "DNS server:" with the text "Obtain automatically". At the bottom of the window, there are four buttons: "< Previous", "Next >" (highlighted with a blue border), "Finish", and "Cancel".

Step 5. Enter Credentials

At the **Credentials** step of the wizard, specify credentials of a Portal Administrator account that you use to access the Nutanix AHV backup appliance the web console.

NOTE

The following accounts cannot be used to access the Nutanix AHV backup appliance as Portal Administrators:

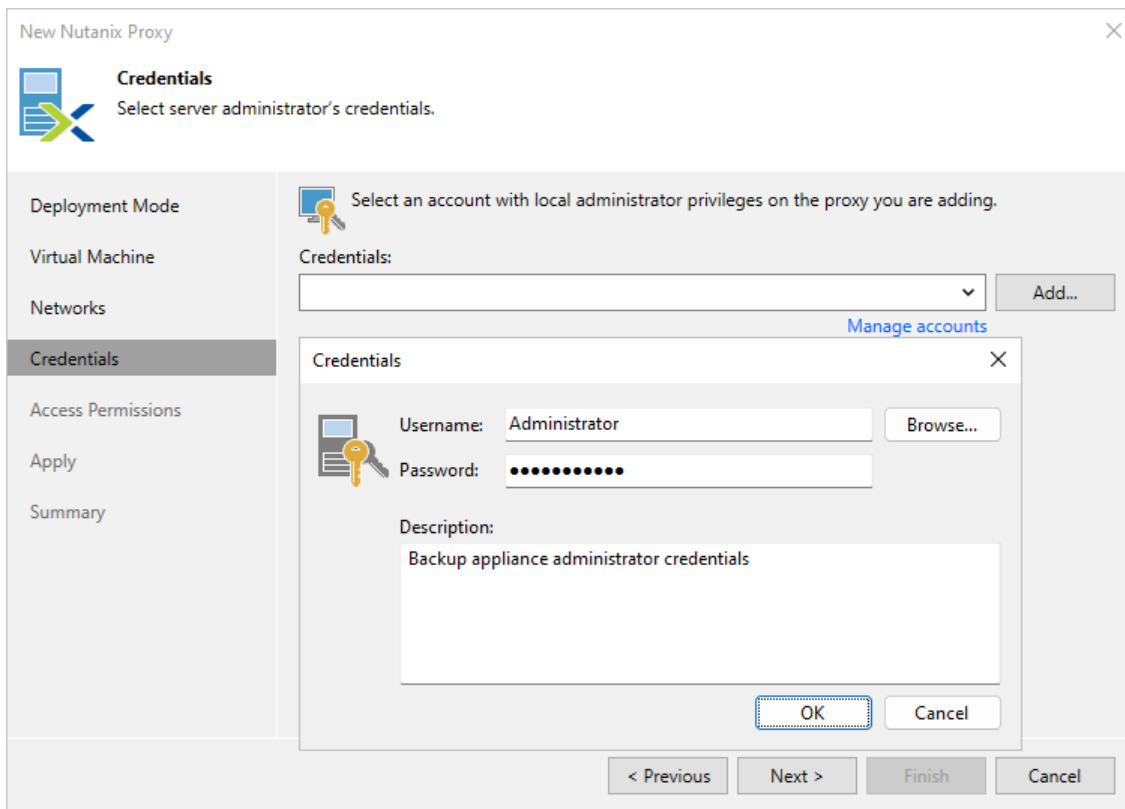
- Accounts for which [multi-factor authentication \(MFA\)](#) is enabled.
- Active Directory accounts since the Nutanix AHV backup appliance does not support LDAP integration.

For credentials to be displayed in the **Credentials** list, they must be added to the Credentials Manager as described in the Veeam Backup & Replication User Guide, section [Standard Accounts](#). If you have not added the necessary credentials to the Credentials Manager beforehand, you can do this without closing the **New Nutanix Proxy** wizard. To add credentials, do the following:

1. Click **Add**.
2. In the **Credentials** window, specify a user name and password for the account.

The user name must start with a lowercase Latin letter and must not match Linux system user names (such as *root*, *daemon*). The name can contain only lowercase Latin letters, numeric characters, underscores and dashes. The maximum length of the name is 32 characters.

3. Click **OK**.

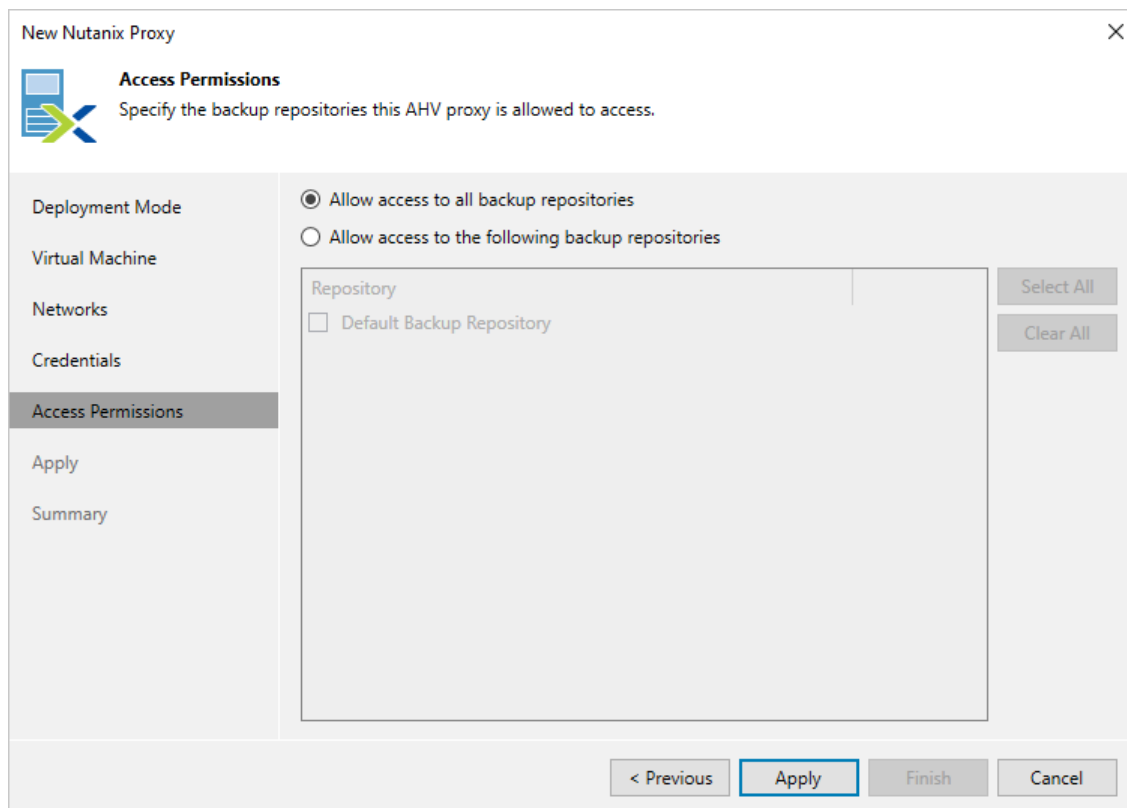


Step 6. Grant Permissions

At the **Access Permissions** step of the wizard, do the following:

- Select the **Allow access to all backup repositories** option if you want the Nutanix AHV backup appliance to have access to all backup repositories added to the backup infrastructure.
- Select the **Allow access to the following backup repositories** option if you want the Nutanix AHV backup appliance to have access to specific backup repositories only.

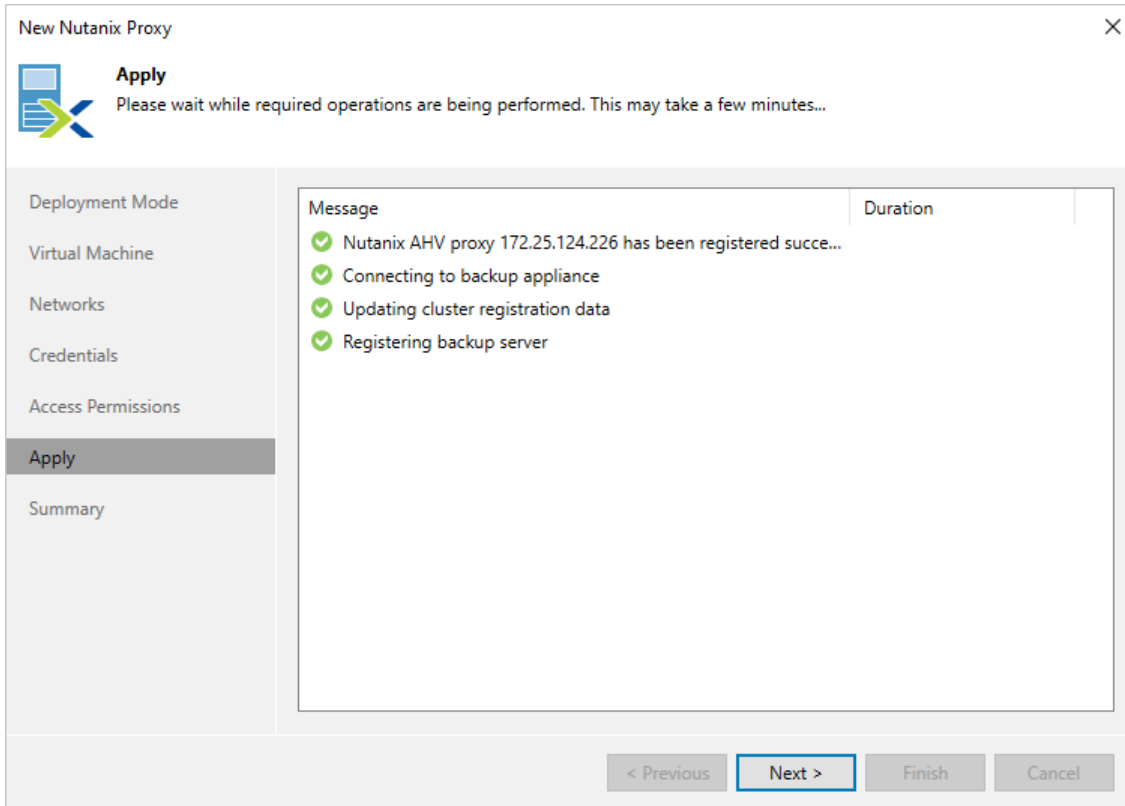
If you select the **Allow access to the following backup repositories** option, you must also specify backup repositories to which the Nutanix AHV backup appliance will have access. For a backup repository to be displayed in the **Repository** list, it must be added to the backup infrastructure as described in the Veeam Backup & Replication User Guide, section [Backup Repository](#).



The screenshot shows the 'New Nutanix Proxy' wizard at the 'Access Permissions' step. The window title is 'New Nutanix Proxy' with a close button (X) in the top right corner. Below the title bar is a logo and the text 'Access Permissions' and 'Specify the backup repositories this AHV proxy is allowed to access.' A left-hand navigation pane lists steps: 'Deployment Mode', 'Virtual Machine', 'Networks', 'Credentials', 'Access Permissions' (highlighted), 'Apply', and 'Summary'. The main area contains two radio button options: 'Allow access to all backup repositories' (selected) and 'Allow access to the following backup repositories'. Below these is a list box titled 'Repository' containing one entry: 'Default Backup Repository' with an unchecked checkbox. To the right of the list box are 'Select All' and 'Clear All' buttons. At the bottom of the window are four buttons: '< Previous', 'Apply' (highlighted with a blue border), 'Finish', and 'Cancel'.

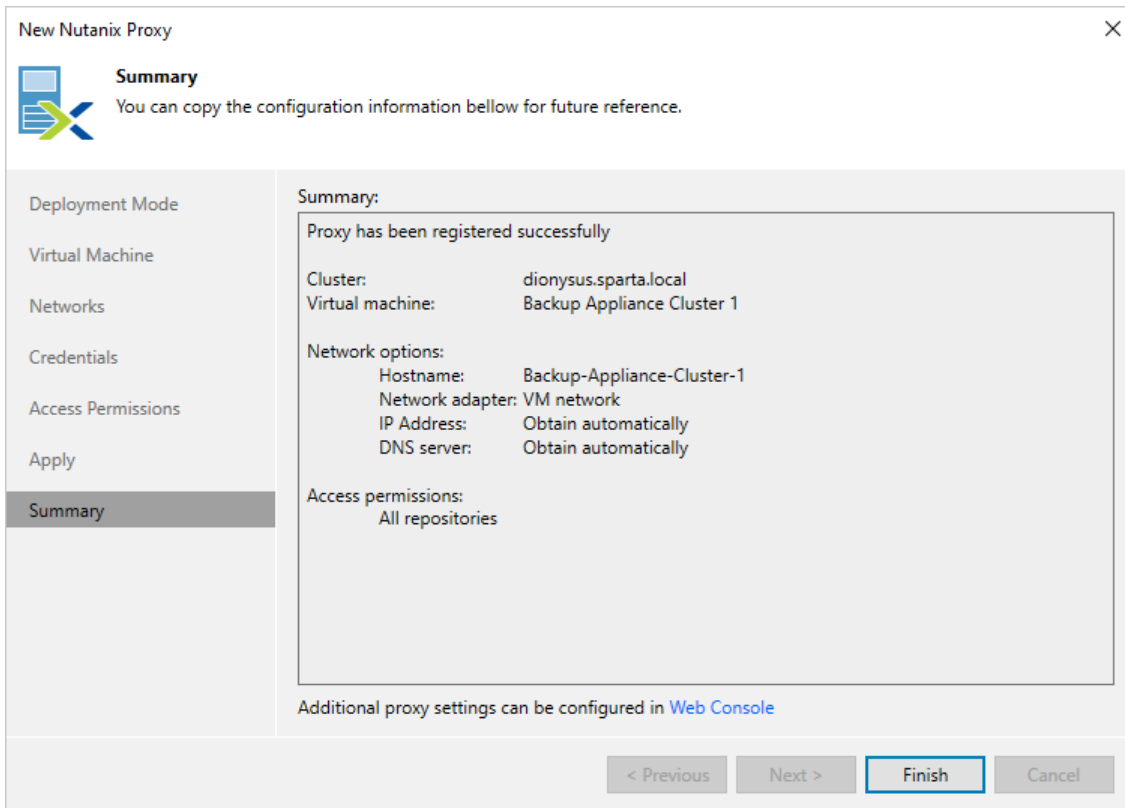
Step 7. Apply Settings

At the **Apply** step of the wizard, wait for the Nutanix AHV backup appliance to be added to the backup infrastructure and then click **Next**.



Step 8. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**. To open the Nutanix AHV backup appliance web console in your web browser, click **Web Console**.



Editing Backup Appliance

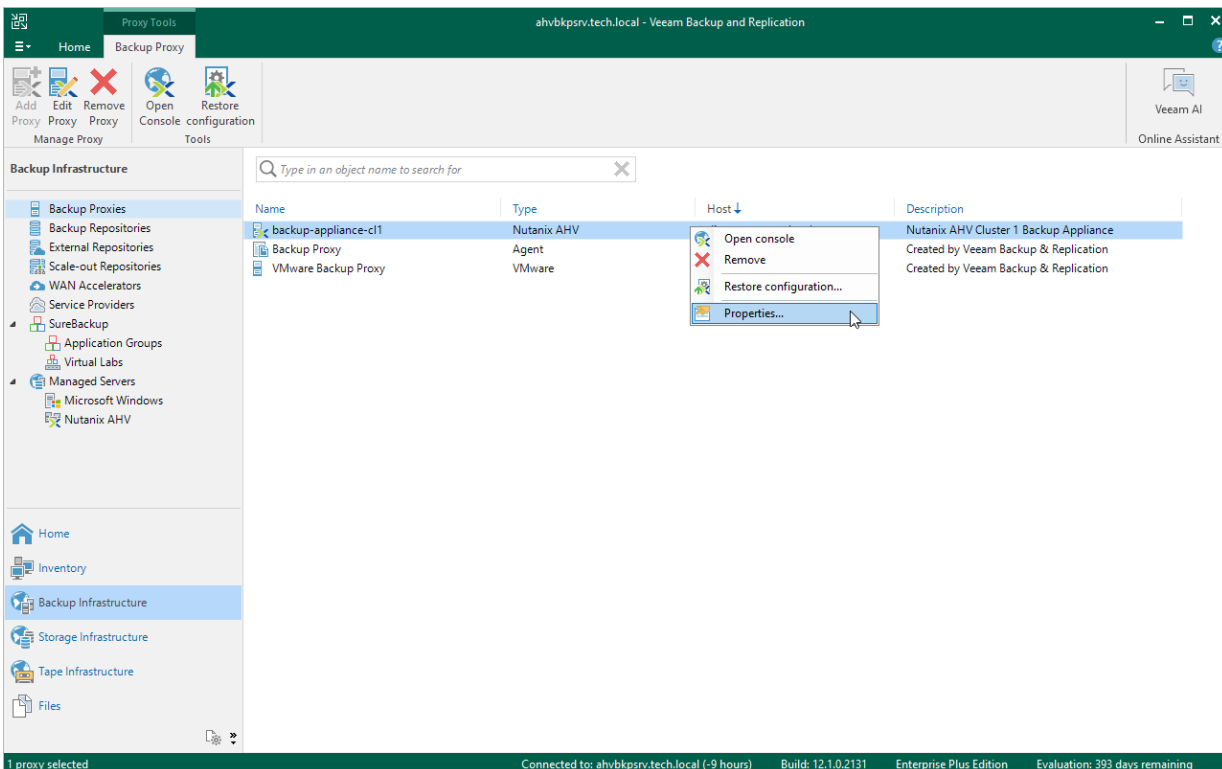
You can edit settings of the Nutanix AHV backup appliance that were specified while adding the appliance to the backup infrastructure.

To edit Nutanix AHV backup appliance settings, do the following:

1. Open the **Backup Infrastructure** view.
2. In the inventory pane, select **Backup Proxies**.
3. In the working area, select the Nutanix AHV backup appliance and click **Edit Proxy** on the ribbon, or right-click the Nutanix AHV backup appliance and select **Properties**.
4. Complete the **Edit Nutanix AHV Backup Appliance** wizard:
 - a. To provide a new description for the Nutanix AHV backup appliance and change the number of tasks that the embedded worker is able to handle in parallel, follow the instructions provided in section [Connecting Existing Backup Appliance](#) (step 3).
 - b. To change credentials for the account that is used to access the Nutanix AHV backup appliance web console, follow the instructions provided in section [Connecting Existing Backup Appliance](#) (step 5).
 - c. To specify backup repositories the Nutanix AHV backup appliance can access, follow the instructions provided in section [Connecting Existing Backup Appliance](#) (step 6).
 - d. To save changes made to the proxy settings, click **Finish**.

TIP

You cannot change the proxy IP address and DNS settings using the Veeam Backup & Replication console. However, you can do it using the Nutanix AHV backup appliance web console. For more information, see [Editing Network Settings](#).

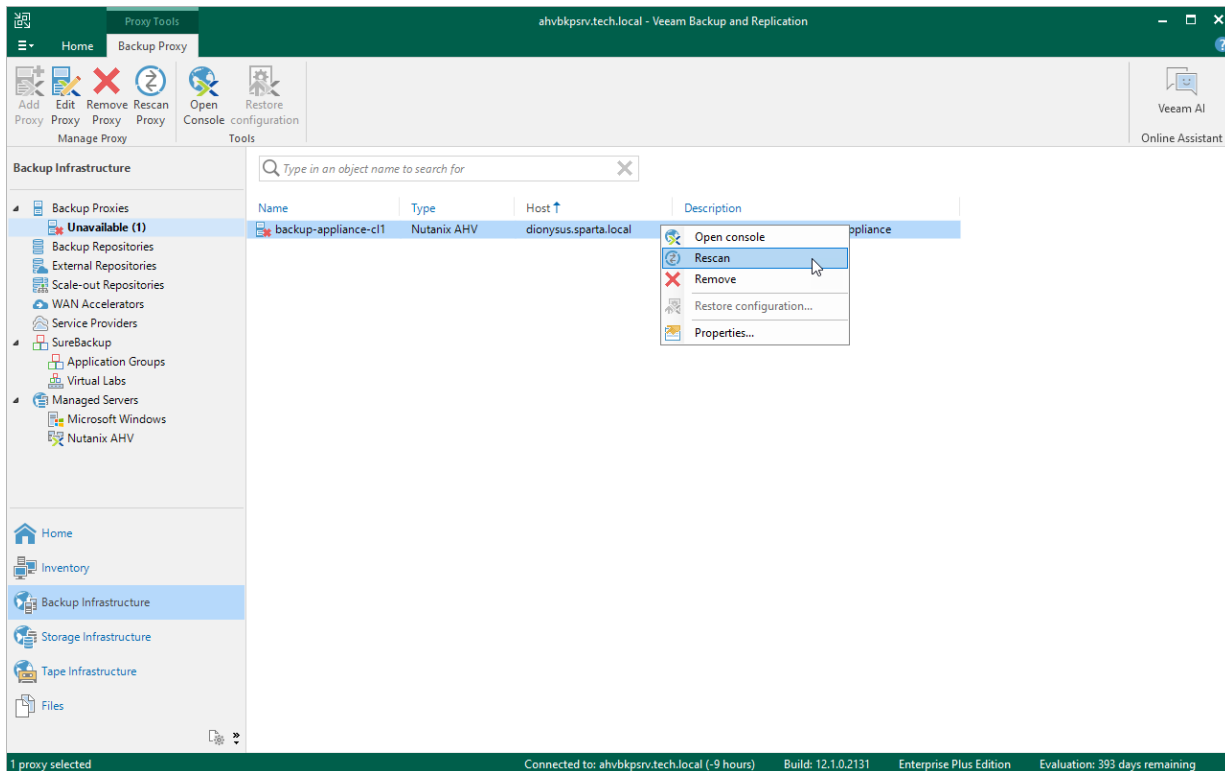


Rescanning Backup Appliance

If the Nutanix AHV backup appliance becomes unavailable, you can rescan it to synchronize data with the backup server. The rescan operation will update the appliance configuration and backup job statistics on the backup server.

To rescan the Nutanix AHV backup appliance, do the following:

1. Open the **Backup Infrastructure** view.
2. In the inventory pane, select **Backup Proxies > Unavailable**.
3. In the working area, select the Nutanix AHV backup appliance and click **Rescan Proxy** on the ribbon, or right-click the Nutanix AHV backup appliance and select **Rescan**.



Removing Backup Appliance

You can remove the Nutanix AHV backup appliance from the backup infrastructure if you no longer need it and want to add another appliance to the backup server, or if you want to connect this appliance to another backup server.

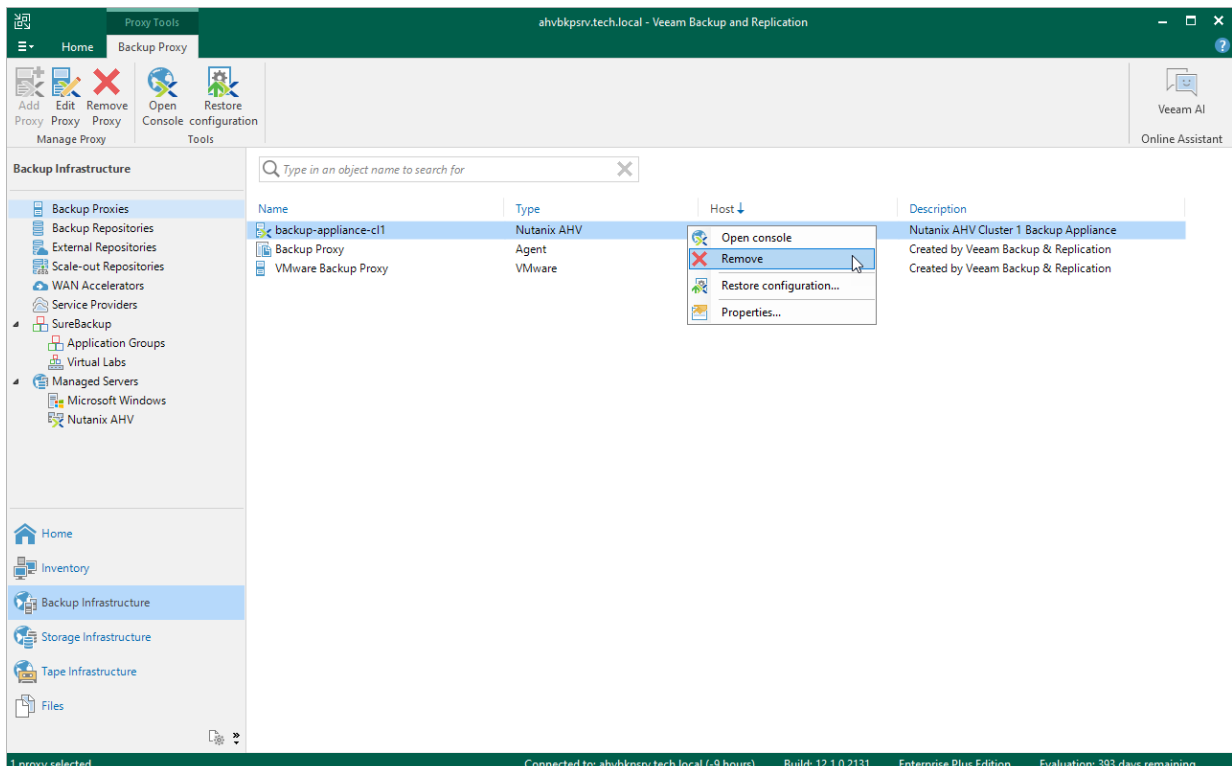
IMPORTANT

After you remove the Nutanix AHV backup appliance:

- You will not be able to perform [VM backup](#), [entire VM restore](#) and [VM disk restore](#) operations unless you deploy a new Nutanix AHV backup appliance. However, you will still be able to [manage Nutanix AHV VM backups](#) and perform all other restore operation described in section [Performing Restore](#).
- Records about all jobs that have been ever processed by the Nutanix AHV backup appliance will be deleted from the Veeam Backup & Replication configuration database. Backups created by these jobs are displayed under the **Backups > Disk (Orphaned)** node in the **Home** view of the Veeam Backup & Replication console.

To remove the Nutanix AHV backup appliance, do the following:

1. Open the **Backup Infrastructure** view.
2. In the inventory pane, select **Backup Proxies**.
3. In the working area, select the Nutanix AHV backup appliance and click **Remove Proxy** on the ribbon, or right-click the Nutanix AHV backup appliance and select **Remove**.



4. In the **Veeam Backup & Replication** window, choose whether you want to permanently remove the VM running as the Nutanix AHV backup appliance.

TIP

If you keep the VM, the configuration settings and records about backup jobs ever processed by the proxy will be retained in the proxy database. This can be helpful if you want to [connect the Nutanix AHV backup appliance to another backup server](#).

The screenshot shows the Veeam Backup and Replication console interface. The main window displays a table of backup proxies. A dialog box is open, warning that the selected proxy has dependent jobs and asking for confirmation to proceed with unregistering it.

Name	Type	Host	Description
backup-appliance-cl1	Nutanix AHV	dionysus.sparta.local	Nutanix AHV Cluster 1 Backup Appliance
Backup Proxy	Agent	ahvbkpsrv.tech.local	Created by Veeam Backup & Replication
VMware Backup Proxy	VMware	ahvbkpsrv.tech.local	Created by Veeam Backup & Replication

Veeam Backup and Replication

i This Nutanix backup proxy has one or more dependent jobs. Proceed with unregistering proxy backup-appliance-cl1 anyway?

Permanently delete the proxy VM from the cluster and all of its backup jobs (irreversible).

Name	Description
LMS Daily Backup	Backup of the LMS Server VM and Media Storage VM

Hide details Yes No

1 proxy selected Connected to: ahvbkpsrv.tech.local (-9 hours) Build: 12.1.0.2131 Enterprise Plus Edition Evaluation: 393 days remaining

Migrating Backup Appliance

You can migrate a Nutanix AHV backup appliance to a new backup infrastructure if you want to keep the specified appliance settings and configured jobs:

1. Install Nutanix AHV Plug-in on a new backup server as described in section [Installing Nutanix AHV Plug-In](#).
2. Add the Nutanix AHV cluster where the Nutanix AHV backup appliance resides to the new backup infrastructure as described in section [Adding Nutanix AHV Cluster](#).
3. Remove the Nutanix AHV backup appliance from the old backup infrastructure as described section in [Removing Backup Appliance](#).

If you do not remove the Nutanix AHV backup appliance, it will not function properly since the old backup server will try to manage the appliance.

IMPORTANT

While removing the appliance, do not select the **Permanently delete the proxy VM from the cluster and all of its backup jobs (irreversible)** check box. Otherwise, the Nutanix AHV backup appliance VM will be removed from the cluster.

4. Connect the Nutanix AHV backup appliance to the new backup server as described in section [Connecting Existing Backup Appliance](#).
5. Specify new backup repositories in the jobs configured on the appliance as described in section [Editing Job Settings](#).
6. Rescan the Nutanix AHV backup appliance to synchronize data with the backup server as described in section [Rescanning Backup Appliance](#).
7. Import Nutanix AHV backups from new backup repositories as described in section [Rescanning Backups](#).

Troubleshooting Backup Appliance

If the Nutanix AHV backup appliance becomes unavailable in the Veeam Backup & Replication console, you can do the following:

- [Review the backup appliance settings](#) to resolve connection issues.
- [Rescan the backup appliance](#) to resolve synchronization issues.

If the Nutanix AHV backup appliance remains unavailable, [open the web console](#) and switch to the **Configuration** page. Then, in the **Administration** section, check whether the backup appliance is able to connect both to the backup server and to the Nutanix AHV cluster. If you encounter any connection issues, check your network configuration – the appliance must be able to resolve the backup server and cluster domain names to their IP addresses.

The screenshot displays the Veeam Backup for Nutanix AHV Configuration page. The top navigation bar includes the Veeam logo, the title "Veeam Backup for Nutanix AHV", the server time "Dec 4, 2023, 08:49 AM", and the user "admin Portal Administrator". The main content area is titled "Configuration" and features a table with the following data:

Host	State	Version	Description
dionysus.sparta.local	Available	6.7	Nutnax AHV Cluster 1

The left sidebar contains the following navigation options: Exit Configuration, Administration (Backup Server, Nutanix AHV Cluster, Accounts, Workers), Appliance Settings (Settings, Support Information), and Auto-Protection (Rescan Snapshots).

Managing Workers

To perform most data protection and disaster recovery operations (such as creating image-level backups and restoring backed-up data from them), Veeam Backup for Nutanix AHV uses workers. Workers are Linux-based VMs that are responsible for the interaction between the backup appliance and other Veeam Backup for Nutanix AHV components. Workers process backup workload and distribute backup traffic when transferring data to backup repositories.

By default, the worker role is assigned to the backup appliance. However, this is sufficient only for small deployments with low traffic load. For large deployments, it is recommended to deploy dedicated workers as the embedded worker may not have enough bandwidth to process backup traffic. Deploying dedicated workers allows you to increase the maximum number of concurrent backup and restore operations, and to avoid high traffic load on the host running the backup appliance.

Each dedicated worker is launched on a specific host for the duration of a backup or restore operation. While configuring the worker, you can manually select the host or instruct Veeam Backup for Nutanix AHV to choose a host automatically. Manual selection may be helpful if you want to avoid launching workers on specific hosts (for example, production ones), while automatic selection allows Veeam Backup for Nutanix AHV to optimize data transfer and to balance the load on the hosts in the Nutanix AHV cluster. In the latter case, Veeam Backup for Nutanix AHV uses the [AHV affinity functionality](#) to distribute workers among all hosts in the cluster instead of launching multiple workers on one host.

Worker Lifecycle

When you add a dedicated worker to the backup infrastructure, its configuration is saved to the Veeam Backup for Nutanix AHV configuration database, but no VM is actually deployed in the cluster unless you choose to test the configuration. In the latter case, a VM (worker VM) is deployed and shut down after the test operation completes.

As soon as a backup or restore session starts, Veeam Backup for Nutanix AHV tries to launch the worker and test its configuration. If no worker VM has been previously deployed, Veeam Backup for Nutanix AHV deploys the VM using the worker configuration saved to the configuration database. Veeam Backup for Nutanix AHV checks host affinity settings specified for the worker and chooses a host where the worker VM will run. Then, Veeam Backup for Nutanix AHV powers on the worker VM and installs system updates (if available). When the backup or restore session completes, Veeam Backup for Nutanix AHV shuts down the worker VM so that it can be used for other sessions later.

During the lifecycle, a worker can obtain one of the following statuses:

- **Configured** – the worker configuration is added to the Veeam Backup for Nutanix AHV configuration database.
- **Testing** – the worker configuration is being tested.
- **Updating** – the worker or its configuration is being updated.
- **Working** – the worker is processing a backup or restore operation.
- **Shut Down** – the worker is powered off.
- [Applies only to the embedded worker] **Ready** – the worker is powered on and can be used for data protection operations.

Adding Workers

To deploy a worker and add it to the backup infrastructure, do the following:

1. [Check prerequisites and limitations.](#)
2. [Launch the Add Worker wizard.](#)
3. [Specify a worker name.](#)
4. [Specify worker VM configuration.](#)
5. [Specify worker network settings.](#)
6. [Finish working with wizard.](#)

Before You Begin

Before you add a dedicated worker to the backup infrastructure, consider the following:

- It is recommended that the number of configured workers does not exceed the number of hosts in the Nutanix AHV cluster.
- Each worker must be provided with sufficient compute resources to handle backup and restore tasks in parallel. The maximum number of concurrent tasks is configured in worker settings – if this number is exceeded, the worker will not start a new task until one of the current tasks finishes.
- It is recommended the total number of concurrent tasks configured for all workers deployed in the cluster does not exceed the [number of physical disks added to the cluster](#). You can change the maximum number of concurrent tasks (the best practice is to allocate 1 vCPU and 1 GB RAM for each additional task) while deploying a new worker or editing settings of an existing one.
- If you plan to use dedicated workers, it is recommended that you [modify the backup appliance settings](#) as follows:
 - Set the maximum number of concurrent tasks to 0.
 - Change the amount of allocated resources to according to the recommendations described in section [Sizing Guidelines](#).

Alternatively, you can [disable the embedded worker](#). However, in this case, the backup appliance will be allocated excessive compute resources that will be not used for handling backup traffic.

Step 1. Launch Add Worker Wizard

To launch the **Add Worker** wizard, do the following:

1. Switch to the **Configuration** page.
2. Navigate to **Workers**.
3. Click **Add**.

The screenshot shows the Veeam Backup for Nutanix AHV Configuration page. The top navigation bar includes the Veeam logo, the title "Veeam Backup for Nutanix AHV", the server time "Jun 29, 2023, 02:56 AM", the user "admin Portal Administrator", and the "Configuration" tab. The left sidebar contains navigation options: "Exit Configuration", "Administration" (Backup Server, Nutanix AHV Cluster, Accounts), "Workers" (highlighted), and "Appliance Settings" (Settings, Support Information). The main content area features a description of workers, a toggle for "Obtain updates from deb repositories" (Enabled), a search bar with "Worker" entered, and a table of workers. The table has columns for Worker, Affinity, Status, Last Test, Max Concurrent T..., and Description. One worker is listed: "Embedded" with a status of "Ready".

Workers are Nutanix AHV VMs responsible for the interaction with backup repositories. Veeam Backup for Nutanix AHV launches a worker for the duration of a backup or restore (from snapshot or backup) operation and shuts it down immediately when the operation completes.

Obtain updates from deb repositories Enabled *i*

Worker Filter (None)

+ Add Edit Enable Remove Test

<input type="checkbox"/>	Worker	Affinity	Status	Last Test	Max Concurrent T...	Description	...
Selected: 0 of 1							
<input type="checkbox"/>	Embedded	—	Ready	—	4	Veeam Backup for ...	

Step 2. Specify Worker Name

At the **Worker Info** step of the wizard, use the **Name** and **Description** fields to specify a name for the worker and to provide a description for future reference. The worker name must be unique in Veeam Backup for Nutanix AHV.

The maximum length of the name is 40 characters; the following characters are only supported: a-z, A-Z, 0-9, -. The maximum length of the description is 1024 characters.

NOTE

The description must be specified without line breaks.

The screenshot displays the 'Add Worker' wizard in the Veeam Backup for Nutanix AHV interface. The top bar shows the application name, server time (Jun 29, 2023, 02:46 AM), user 'admin' (Portal Administrator), and a 'Configuration' link. The main area is titled 'Add Worker' and features a sidebar with 'Worker Info' (selected), 'Virtual Machine', 'Network', and 'Summary'. The 'Worker Info' section contains the instruction 'Enter a name and description for the worker.' and two input fields: 'Name' with the value 'Worker2' and 'Description' with the value 'Worker residing on host 2'. At the bottom, there are 'Next' and 'Cancel' buttons.

Step 3. Specify Worker VM Settings

At the **Virtual Machine** step of the wizard, do the following:

1. Click the link in the **Storage container** field, and specify in the **Choose storage container** window a storage container where worker system files will be stored.

For a container to be displayed in the list of the available containers, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

2. In the **Maximum concurrent tasks** field, specify the number of tasks that the worker will be able to handle in parallel. If this value is exceeded, the worker will not start a new task until one of the currently running tasks finishes.

The default number of concurrent tasks is set to 4. When you change this value, the wizard automatically adjusts the amount of resources that will be allocated to the VM running as the worker. If you want to specify the amount of resources manually, click the link below the **Maximum concurrent tasks** field.

3. To specify a host where the worker will be launched, set the **Host affinity** toggle to *On* and click the link in the **The worker VM will run on the host** field.

If you do not specify host affinity settings, Veeam Backup for Nutanix AHV will automatically define the host to launch the worker.

The screenshot shows the 'Add Worker' wizard in the Veeam Backup for Nutanix AHV interface. The 'Virtual Machine' step is active, showing configuration options for the worker VM. The interface includes a top navigation bar with the Veeam logo, server time (Jun 29, 2023, 02:47 AM), user information (admin, Portal Administrator), and a Configuration icon. The main content area is divided into a left sidebar with navigation options (Worker Info, Virtual Machine, Network, Summary) and a main panel for configuration. The 'Virtual Machine' section includes: 'Storage container' (default-container-78026311482868), 'Compute resources' (Maximum concurrent tasks: 4, with a note: 'The VM will be allocated 4 vCPU and 4 GB RAM'), and 'Affinity settings' (Host affinity: On, with a note: 'The worker VM will run on the host: pdcqantx05-host02'). At the bottom, there are 'Previous', 'Next', and 'Cancel' buttons.

Step 4. Configure Network Settings

At the **Network** step of the wizard, do the following:

1. Click **Add** to configure a worker network interface:
 - a. In the **Description** field, provide a network interface description for future reference.
 - b. From the **Network** drop-down list, select a network to which the worker network interface will be connected.

For best performance, choose the network that is used for Nutanix Controller VM (CVM). For a network to be displayed in the list of the available networks, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

- c. If DHCP is enabled in the selected network, the IP address of the worker can be obtained automatically.

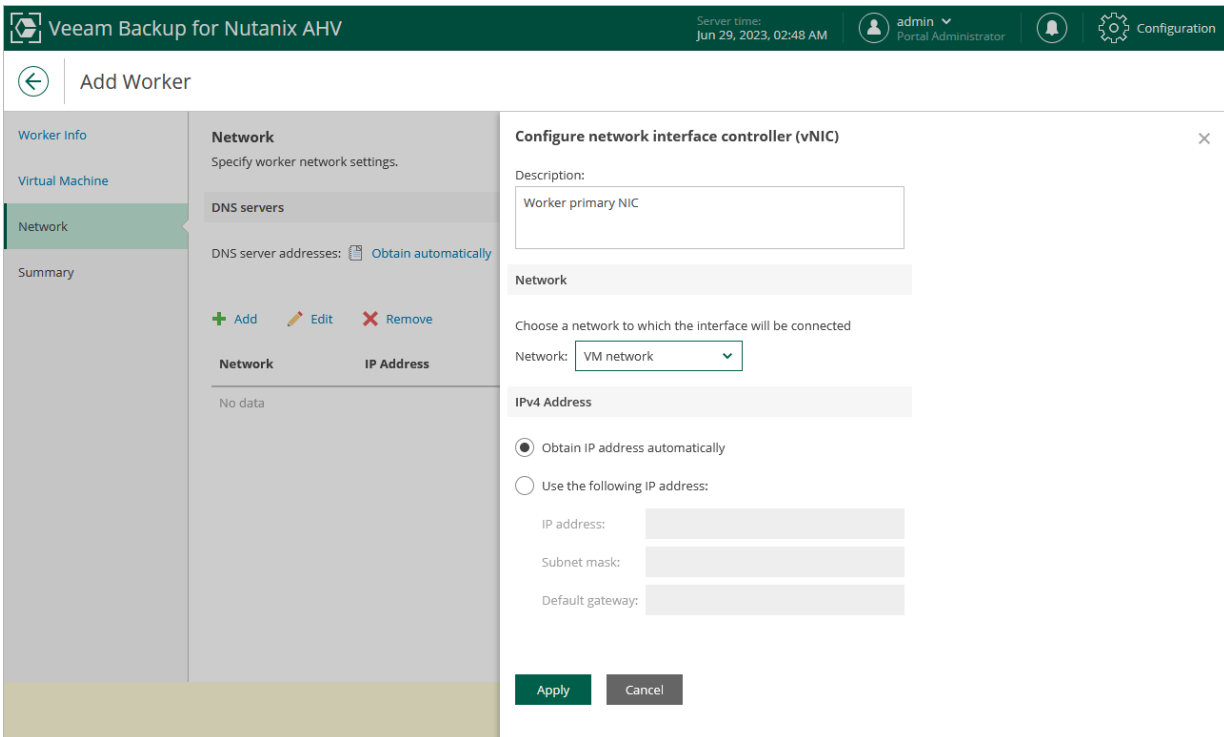
If DHCP is disabled in the selected network, or you want to specify an IP address, select the **Use the following IP address** option and enter the worker IP address, subnet mask and default gateway.

2. If DHCP is enabled in the selected network, DNS settings of the worker can be obtained automatically.

If DHCP is disabled in the selected network, or you want to configure DNS settings manually, click the link in the **DNS server addresses** field, select the **Use the following DNS server address** option and enter the IP addresses of the preferred and alternate DNS servers.

NOTE

In Nutanix AHV 5.0, you can add only one worker network interface.



Step 5. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**.

TIP

If you do not want to test the worker, clear the **Test worker configuration when I click Finish** check box and then click **Finish**.

The screenshot shows the 'Add Worker' wizard in the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the product name, server time (Jun 29, 2023, 02:49 AM), user (admin, Portal Administrator), and a Configuration icon. The main content area is titled 'Add Worker' and features a left-hand navigation menu with options: Worker Info, Virtual Machine, Network, and Summary (which is currently selected). The main panel displays a 'Summary' section with the following details:

- Summary**
Review the job summary, and click Finish to save and apply the job settings.
[Copy to clipboard](#)
- General settings**
 - Name: Worker2
 - Description: Worker residing on host 2
 - Storage container: default-container-78026311482868
 - Max concurrent tasks: 4
 - Resources: 4 vCPU, 4 GB RAM
 - Host affinity: pdcqantx05-host02
- Network settings**
 - vNIC description: Worker primary NIC
 - Network: VM network
 - IP address: Obtained automatically
 - Subnet mask: Obtained automatically
 - Default gateway: Obtained automatically
 - DNS: Obtained automatically

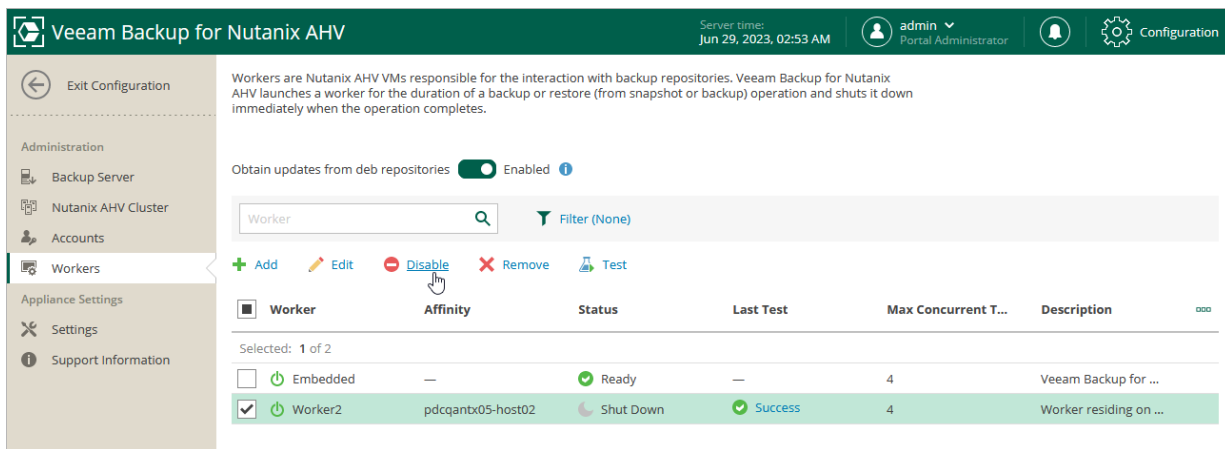
At the bottom of the summary section, there is a checkbox labeled 'Test worker configuration when I click Finish' which is currently checked. The bottom of the wizard features three buttons: 'Previous', 'Finish', and 'Cancel'.

Enabling and Disabling Workers

By default, workers are launched when jobs or restore sessions start. However, you can temporarily disable a worker – this may be helpful when you reconfigure a worker and you do not want it to be used for a backup or restore operation. You will still be able to test or enable the disabled worker at any time you need.

To enable or disable a worker, do the following:

1. Switch to the **Configuration** page.
2. Navigate to **Workers**.
3. Select the worker.
4. Click **Enable** or **Disable**.



The screenshot shows the Veeam Backup for Nutanix AHV Configuration page. The top navigation bar includes the Veeam logo, the title 'Veeam Backup for Nutanix AHV', the server time 'Jun 29, 2023, 02:53 AM', the user 'admin Portal Administrator', and a 'Configuration' link. The left sidebar contains navigation options: 'Exit Configuration', 'Administration' (Backup Server, Nutanix AHV Cluster, Accounts, Workers), and 'Appliance Settings' (Settings, Support Information). The main content area shows a description of workers, a toggle for 'Obtain updates from deb repositories' (Enabled), a search bar with 'Worker' entered, and a 'Filter (None)' button. Below the search bar are action buttons: '+ Add', 'Edit', 'Disable' (highlighted with a mouse cursor), 'Remove', and 'Test'. A table lists the workers:

<input type="checkbox"/>	Worker	Affinity	Status	Last Test	Max Concurrent T...	Description	⋮
<input type="checkbox"/>	Embedded	—	Ready	—	4	Veeam Backup for ...	
<input checked="" type="checkbox"/>	Worker2	pdcqantx05-host02	Shut Down	Success	4	Worker residing on ...	

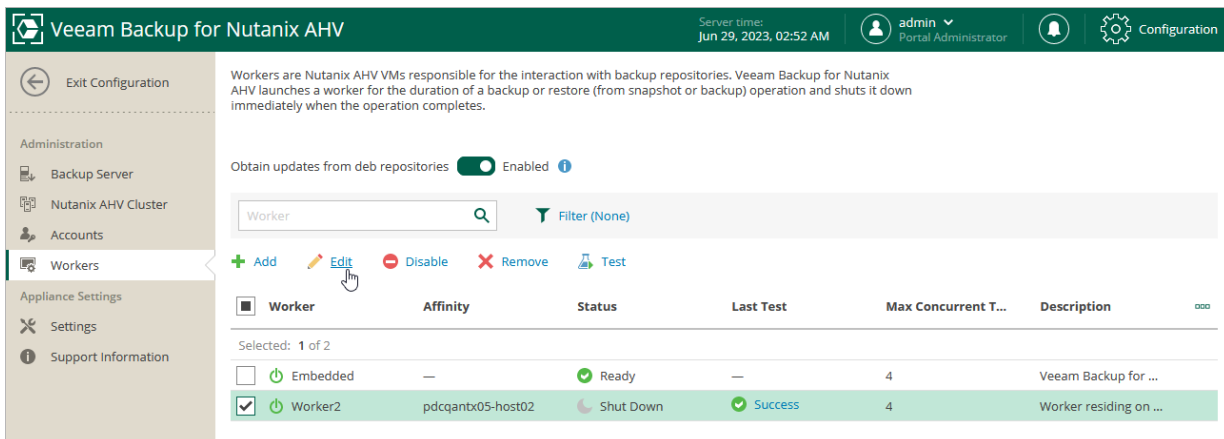
Editing Workers

For each worker, you can modify settings specified while adding the worker to the backup infrastructure:

1. Switch to the **Configuration** page.
2. Navigate to **Workers**.
3. Select the worker and click **Edit**.
4. Complete the **Edit Worker** wizard:
 - a. To provide a new name and description for the worker, follow the instructions provided in section [Adding Workers](#) (step 2).
 - b. To change the storage container where worker system files are stored, to specify a host where the worker is launched, or to modify the number of tasks that the worker is able to handle in parallel, follow the instructions provided in section [Adding Workers](#) (step 3).
 - c. To change the network to which the worker is connected or to specify a new IP address for the worker, follow the instructions provided in section [Adding Workers](#) (step 4).
 - d. To save changes made to the worker settings, click **Finish**.

IMPORTANT

It is not recommended that you change the worker storage container, decrease the amount of allocated resources, adjust the affinity settings or modify the network settings while the worker is currently transferring data. In this case, Veeam Backup for Nutanix AHV will terminate the related operations, power off the worker and update the settings immediately.



The screenshot shows the Veeam Backup for Nutanix AHV configuration interface. The top navigation bar includes the product name, server time (Jun 29, 2023, 02:52 AM), user (admin), and Configuration settings. The left sidebar shows the navigation menu with 'Workers' selected. The main content area displays a table of workers with columns for Worker, Affinity, Status, Last Test, Max Concurrent T..., and Description. The 'Worker2' row is selected and highlighted in green, showing a status of 'Shut Down' and a last test result of 'Success'.

Worker	Affinity	Status	Last Test	Max Concurrent T...	Description
Embedded	—	Ready	—	4	Veeam Backup for ...
Worker2	pdccqantx05-host02	Shut Down	Success	4	Worker residing on ...

Testing Workers

Before using a dedicated worker for a backup or restore operation, Veeam Backup for Nutanix AHV automatically tests its configuration – verifies that the worker service can start successfully, checks that the worker can connect to the backup server and to the cluster, and installs available updates.

If you want to ensure that the worker configuration is correct before it is used for a backup or restore operation, you can start a worker configuration test manually:

1. Switch to the **Configuration** page.
2. Navigate to **Workers**.
3. Select the worker and click **Test**.

Note that you can select multiple workers at once.

As soon as Veeam Backup for Nutanix AHV finishes the worker configuration test, the worker will be powered off. To see detailed information on a worker test session, click the worker test status in the **Last Test** column.

Workers are Nutanix AHV VMs responsible for the interaction with backup repositories. Veeam Backup for Nutanix AHV launches a worker for the duration of a backup or restore (from snapshot or backup) operation and shuts it down immediately when the operation completes.

Obtain updates from deb repositories Enabled ⓘ

Worker Filter (None)

+ Add Edit Disable Remove Test

Worker	Affinity	Status	Last Test	Max Concurrent T...	Description
<input type="checkbox"/> Embedded	—	Ready	—	4	Veeam Backup for ...
<input checked="" type="checkbox"/> Worker2	pdcqantx05-host02	Shut Down	Success	4	Worker residing on ...

Updating Workers

While starting workers, Veeam Backup for Nutanix AHV automatically downloads updates from Veeam repositories and installs them. If workers are not connected to the internet, you can instruct the Veeam Updater service to [use a web proxy](#) that will provide access to the required resources. If workers do not have access to the internet and no web proxy is used, disable automatic updates to eliminate update failures and session warnings:

1. Switch to the **Configuration** page.
2. Navigate to **Workers**.
3. Set the **Obtain updates from deb repositories** toggle to *Disabled*.

The screenshot shows the Veeam Backup for Nutanix AHV Configuration page. The top navigation bar includes the Veeam logo, the title 'Veeam Backup for Nutanix AHV', the server time 'Aug 6, 2023, 03:22 AM', the user 'admin Portal Administrator', and the 'Configuration' tab. The left sidebar contains navigation options: 'Exit Configuration', 'Administration' (Backup Server, Nutanix AHV Cluster, Accounts), 'Workers' (selected), and 'Appliance Settings' (Settings, Support Information). The main content area shows a description of workers and a toggle for 'Obtain updates from deb repositories' which is currently 'Enabled'. Below this is a search bar with 'Worker' entered and a 'Filter (None)' button. A toolbar contains '+ Add', 'Edit', 'Enable', 'Remove', and 'Test' icons. A table lists two workers:

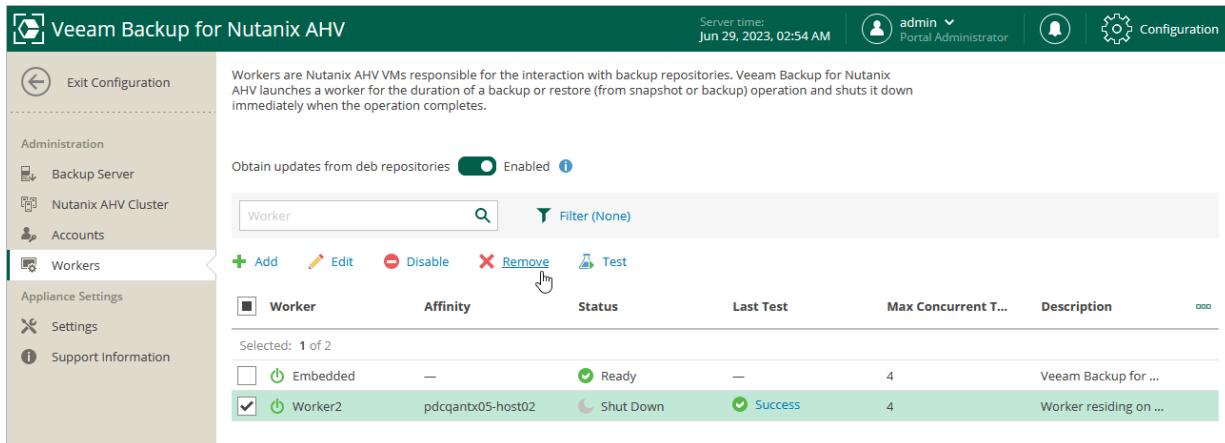
<input type="checkbox"/>	Worker	Affinity	Status	Last Test	Max Concurrent T...	Description	⋮
Selected: 0 of 2							
<input type="checkbox"/>	Embedded	—	Ready	—	4	Veeam Backup for ...	
<input type="checkbox"/>	Worker	—	Shut Down	Success	4	Worker residing on ...	

Removing Workers

Veeam Backup for Nutanix AHV allows you to permanently remove workers if you no longer need them. Note that you cannot remove a worker while it is transferring data for a backup or restore operation.

To remove a worker, do the following:

1. Switch to the **Configuration** page.
2. Navigate to **Workers**.
3. Select the worker and click **Remove**.



The screenshot shows the Veeam Backup for Nutanix AHV Configuration page. The top navigation bar includes the Veeam logo, the title 'Veeam Backup for Nutanix AHV', the server time 'Jun 29, 2023, 02:54 AM', the user 'admin Portal Administrator', and the 'Configuration' tab. The left sidebar contains navigation options: 'Exit Configuration', 'Administration' (Backup Server, Nutanix AHV Cluster, Accounts), 'Workers' (selected), and 'Appliance Settings' (Settings, Support Information). The main content area has a heading 'Workers are Nutanix AHV VMs responsible for the interaction with backup repositories...' and a toggle for 'Obtain updates from deb repositories' which is 'Enabled'. Below this is a search bar for 'Worker' and a 'Filter (None)' button. Action buttons include '+ Add', 'Edit', 'Disable', 'Remove' (highlighted with a mouse cursor), and 'Test'. A table lists the workers:

Worker	Affinity	Status	Last Test	Max Concurrent T...	Description
<input type="checkbox"/> Embedded	—	Ready	—	4	Veeam Backup for ...
<input checked="" type="checkbox"/> Worker2	pdccqantx05-host02	Shut Down	Success	4	Worker residing on ...

Accessing Backup Appliance

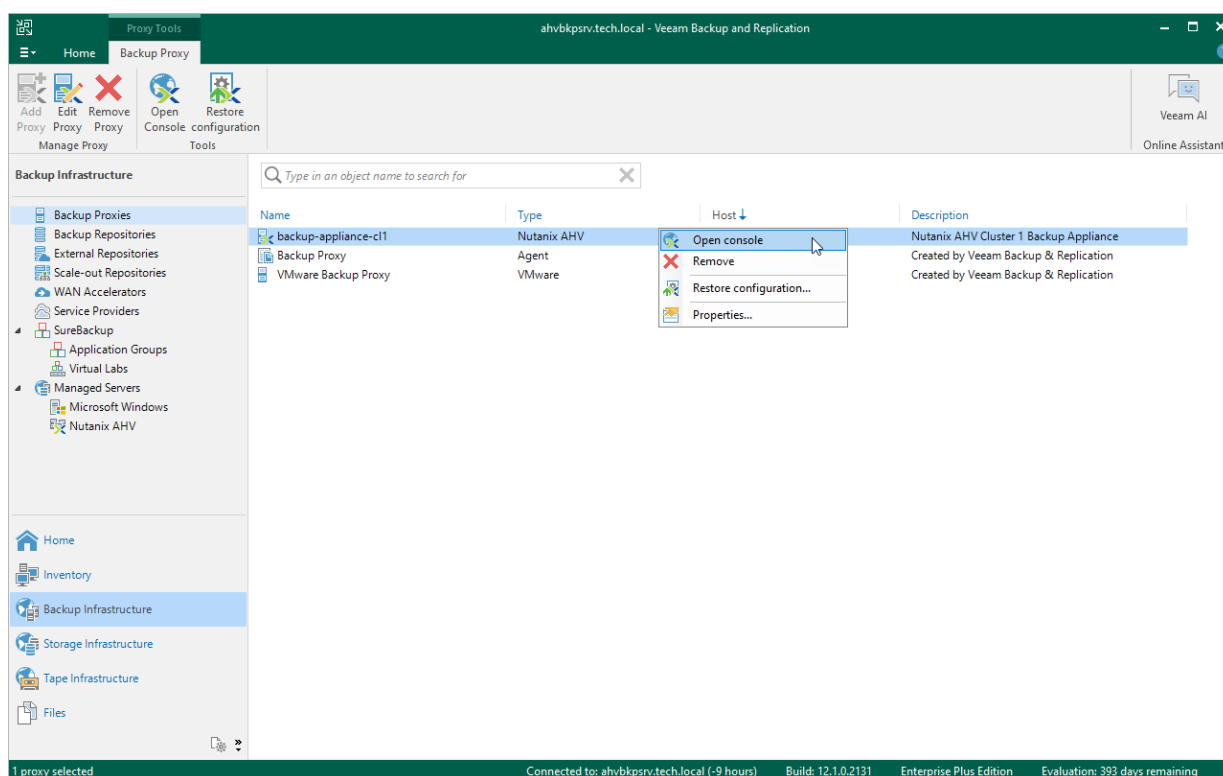
To access Veeam Backup for Nutanix AHV, in a web browser, navigate to the Nutanix AHV backup appliance web address. The address consists of an IPv4 address or DNS hostname of the backup appliance. Note that the website is available over HTTPS only.

IMPORTANT

The Internet Explorer browser is not supported. To access Nutanix AHV backup appliance, use Microsoft Edge (latest version), Mozilla Firefox (latest version) or Google Chrome (latest version).

To access the Nutanix AHV backup appliance from the Veeam Backup & Replication console, do the following:

1. In the Veeam Backup & Replication console, open the **Backup Infrastructure** view.
2. In the inventory pane, select **Backup Proxies**.
3. In the working area, select the Nutanix AHV backup appliance and click **Open Console** on the ribbon, or right-click the Nutanix AHV backup appliance and select **Open Console**.



Alternatively, you can navigate to the IP address or hostname of the Nutanix AHV backup appliance in a web browser.

NOTE

The web browser may display a warning notifying that the connection is untrusted. To eliminate the warning, you can replace the TLS certificate that is currently used to secure traffic between the browser and the backup appliance with a trusted TLS certificate. To learn how to replace certificates, see [Appendix B. Installing Custom Certificate](#).

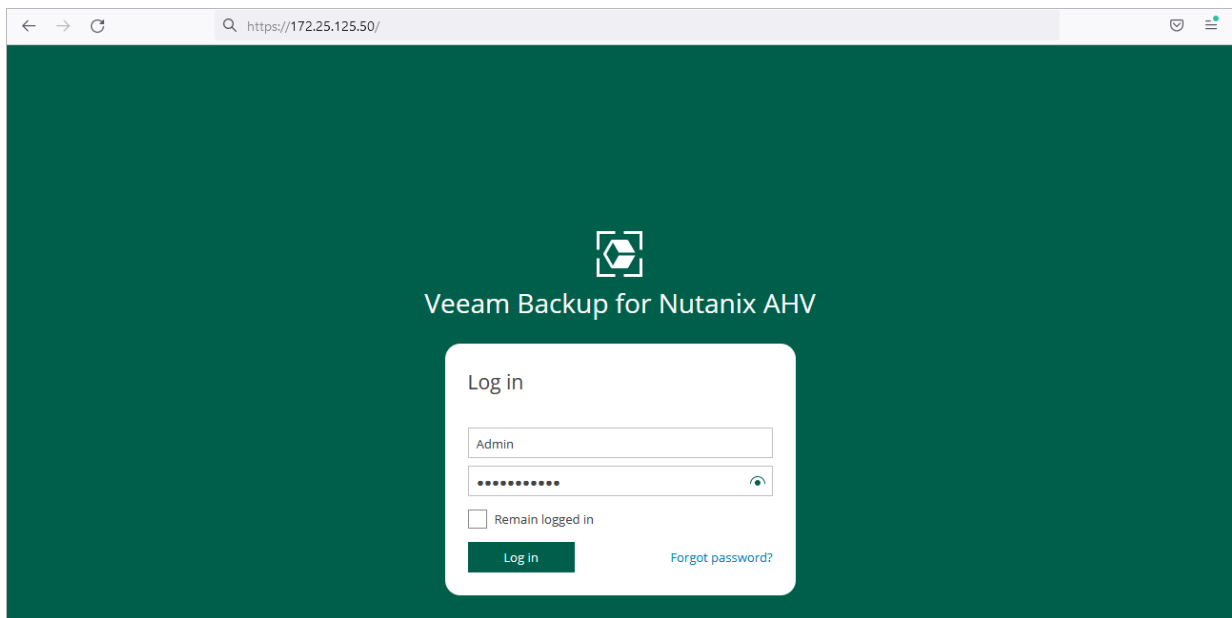
4. On the welcome screen, specify credentials of the user account.

If you are an administrator and you log in for the first time, use credentials of the account that you have specified during the [initial backup appliance configuration](#). In future, you can add other user accounts to grant access to Veeam Backup for Nutanix AHV. For more information, see [Managing User Accounts](#).

TIP

If you do not remember the password, you can reset it by running the Nutanix AHV backup appliance in recovery mode. For more information, see [this Veeam KB article](#).

5. [Applies only if [MFA is enabled for your user account](#)] Enter a verification code sent to your trusted device.
6. Select the **Remain logged in** check box to save the specified credentials in a persistent browser cookie so that you do not have to provide credentials every time you access the backup appliance in a new browser session.
7. Click **Log in**.



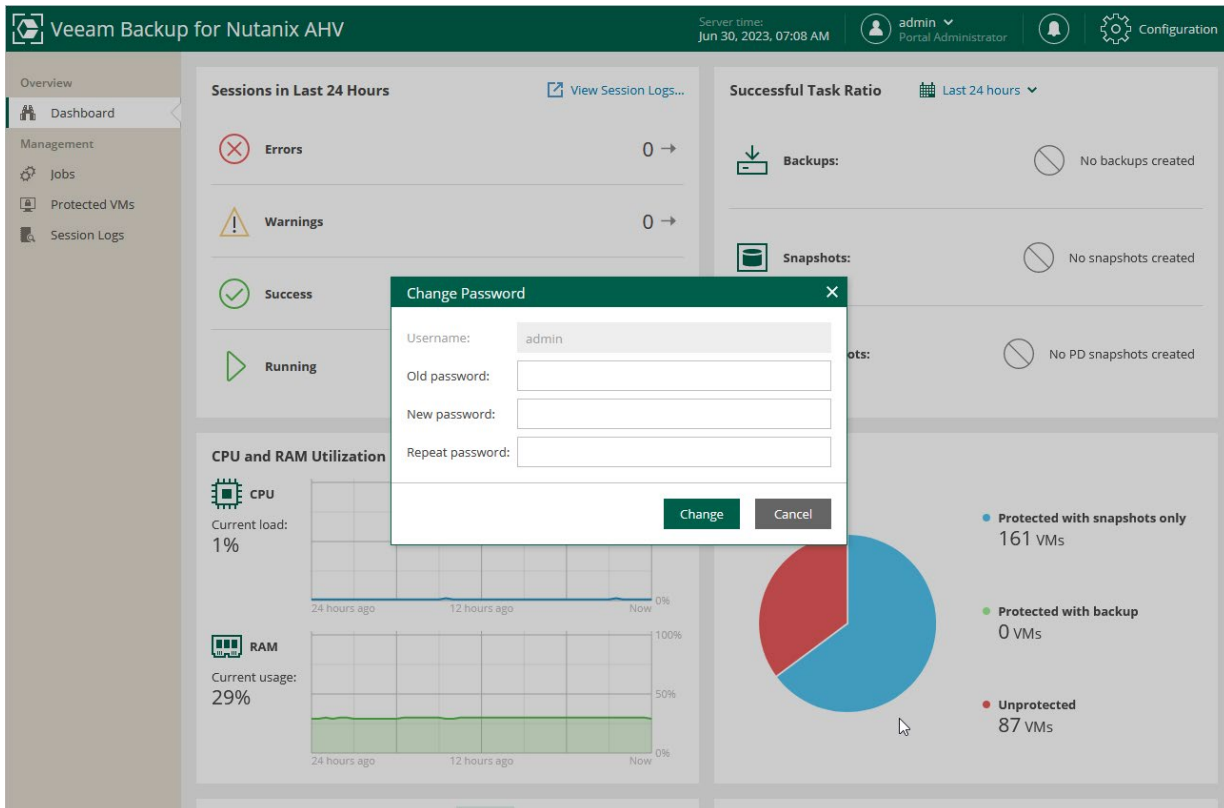
Logging Out

To log out, at the top right corner of the web console window, click your user name and then click **Log out**.

Changing Password

To change the password that you use to access the Veeam Backup for Nutanix AHV web console, do the following:

1. At the top right corner of the web console window, click your user name.
2. Click **Change Password**.
3. In the **Change Password** window, enter the currently used password, enter and confirm a new password, and then click **Change**.



Configuring Veeam Backup for Nutanix AHV

To configure Veeam Backup for Nutanix AHV, you can perform the following administrative tasks:

- [Manage users and permissions.](#)
- [Enable SSH access to the backup appliance.](#)
- [Edit network settings.](#)
- [Edit the Administrator account.](#)
- [Configure time synchronization settings.](#)
- [Configure settings for update and resource usage notifications.](#)
- [Configure notification settings for automated delivery of backup job results.](#)
- [Back up and restore proxy configuration.](#)

Managing Users

Veeam Backup for Nutanix AHV controls access to its functionality with the help of user roles. A role defines what operations users can perform and what range of data is available to them in Veeam Backup for Nutanix AHV.

There are 3 user roles that you can assign to users working with Veeam Backup for Nutanix AHV. Actions a user can perform depend on the role.

- **Portal Administrator** – can perform all configuration actions and can also act as a Portal Operator and Restore Operator.
- **Portal Operator** – can create and manage backup jobs, manage the protected data and perform all restore operations.
- **Restore Operator** – can only perform restore operations.

The following table describes the functionality available to users with different roles in the Veeam Backup for Nutanix AHV web console.

Tab	Functionality	Portal Administrator	Portal Operator	Restore Operator
Dashboard	Overview of protected resources	Full	Full	N/A
Jobs	Backup jobs, snapshot jobs, PD snapshot jobs	Full	Full (except for PD backup and snapshot job custom scripts)	N/A
Protected VMs	Restore	Full	Full	Full
	Remove snapshots	Full	Full	N/A
Session Log	Session log	Full	Full	Full
	Stop session execution	Full	Full	Restore sessions only
Configuration				
Backup Server	Backups rescan	Full	N/A	N/A
Nutanix AHV Cluster	Snapshots rescan, auto-protection settings	Full	N/A	N/A

Tab	Functionality	Portal Administrator	Portal Operator	Restore Operator
Accounts	Portal users	Full	N/A	N/A
Workers	Worker instances	Full	N/A	N/A
Settings	Network settings, notifications, time synchronization, mail server configuration	Full	N/A	N/A
Support Information	Updates and logs	Full	N/A	N/A

Adding User Accounts

To manage access to Veeam Backup for Nutanix AHV, you can create local user accounts.

To add a Veeam Backup for Nutanix AHV user account, do the following:

1. Switch to the **Configuration** page.
2. Navigate to **Accounts**.
3. Click **Add**.
4. Complete the **Add Account** wizard:
 - a. At the **Account Info** step of the wizard, specify a name and description for the user account.

The account name must start with a lowercase Latin letter and must not match Linux system user names (such as *root*, *daemon*). The name can contain only lowercase Latin letters, numeric characters, underscores and dashes. The maximum length of the name is 32 characters, the maximum length of the description is 1024 characters.
 - c. At the **General Settings** step of the wizard, select a role and specify a password for the user account. For more information on user roles, see section [Managing Users](#).
 - d. At the **Summary** step of the wizard, review summary information and click **Finish**.

The screenshot shows the 'Add Account' wizard in the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the product name, server time (Jun 28, 2023, 01:11 AM), user information (admin, Portal Administrator), and a Configuration icon. The wizard title is 'Add Account'. On the left, a sidebar lists 'Account Info', 'General Settings', and 'Summary', with 'Summary' selected. The main content area shows a 'Summary' section with a 'Copy to clipboard' button. Below this is an 'Account' summary table:

Account	
Name:	p_operator
Description:	Created by admin (backup-appliance-cl1) at 6/28/2023 1:06:32 AM
Role:	Portal Operator
Password:	*****

At the bottom of the wizard, there are three buttons: 'Previous', 'Finish', and 'Cancel'.

Editing User Account Settings

For each user account added to the Veeam Backup for Nutanix AHV configuration database, you can modify the settings of the account:

1. Switch to the **Configuration** page.
2. Navigate to **Accounts**.
3. Select the user account and click **Edit**.
4. Complete the **Edit Account** wizard.
 - a. At the **Account Info** step of the wizard, edit a description of the user account.
 - b. At the **General Settings** step of the wizard, select a new role for the user account.
 - c. At the **Summary** step of the wizard, review summary information and click **Finish**.

The screenshot shows the 'Edit Account' wizard in the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the Veeam logo, server time (Jun 28, 2023, 01:13 AM), user profile (admin, Portal Administrator), and a 'Configuration' link. The wizard title is 'Edit Account'. On the left, a sidebar lists 'Account Info', 'General Settings', and 'Summary', with 'Summary' selected. The main content area shows a 'Summary' section with the instruction: 'Review the configured settings, and click Finish to exit the wizard.' Below this is a 'Copy to clipboard' button. The 'Account' details are listed as follows:

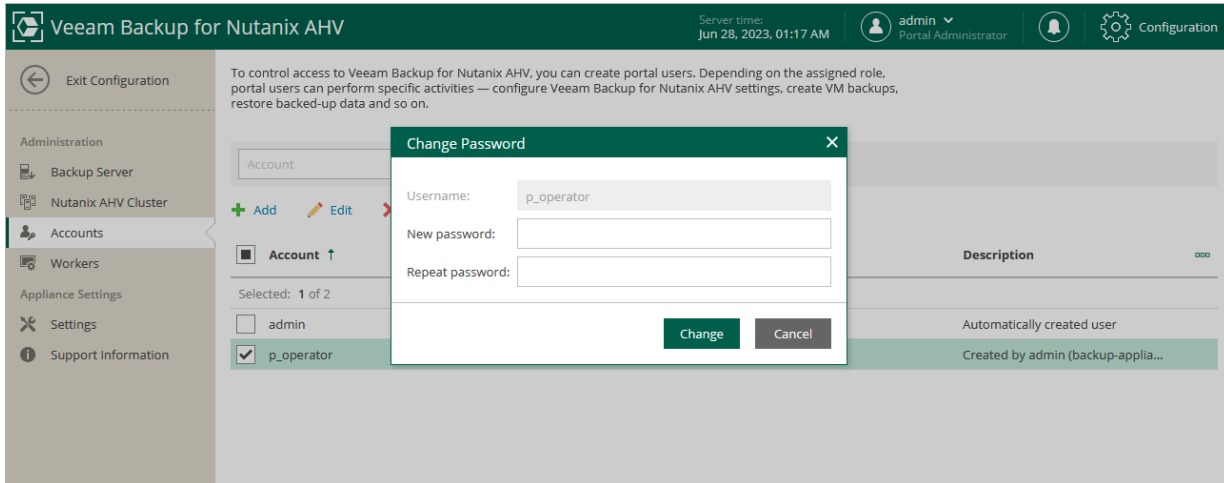
Name:	p_operator
Description:	Created by admin (backup-appliance-cl1) at 6/28/2023 1:06:32 AM
Role:	Portal Operator

At the bottom of the wizard, there are three buttons: 'Previous', 'Finish', and 'Cancel'.

Changing User Passwords

As an administrator, you can change the password for a Veeam Backup for Nutanix AHV user account:

1. Switch to the **Configuration** page.
2. Navigate to **Accounts**.
3. Select the user account and click **Change Password**.
4. In the **Change Password** window, enter and confirm a new password, and then click **Change**.



Configuring Multi-Factor Authentication

Multi-factor authentication (MFA) in Veeam Backup for Nutanix AHV uses the Time-based One-Time Password (TOTP) method that requires users to verify their identity by providing a temporary six-digit code sent by an authentication application to a trusted device.

Enabling MFA

To enable MFA for a user account, do the following:

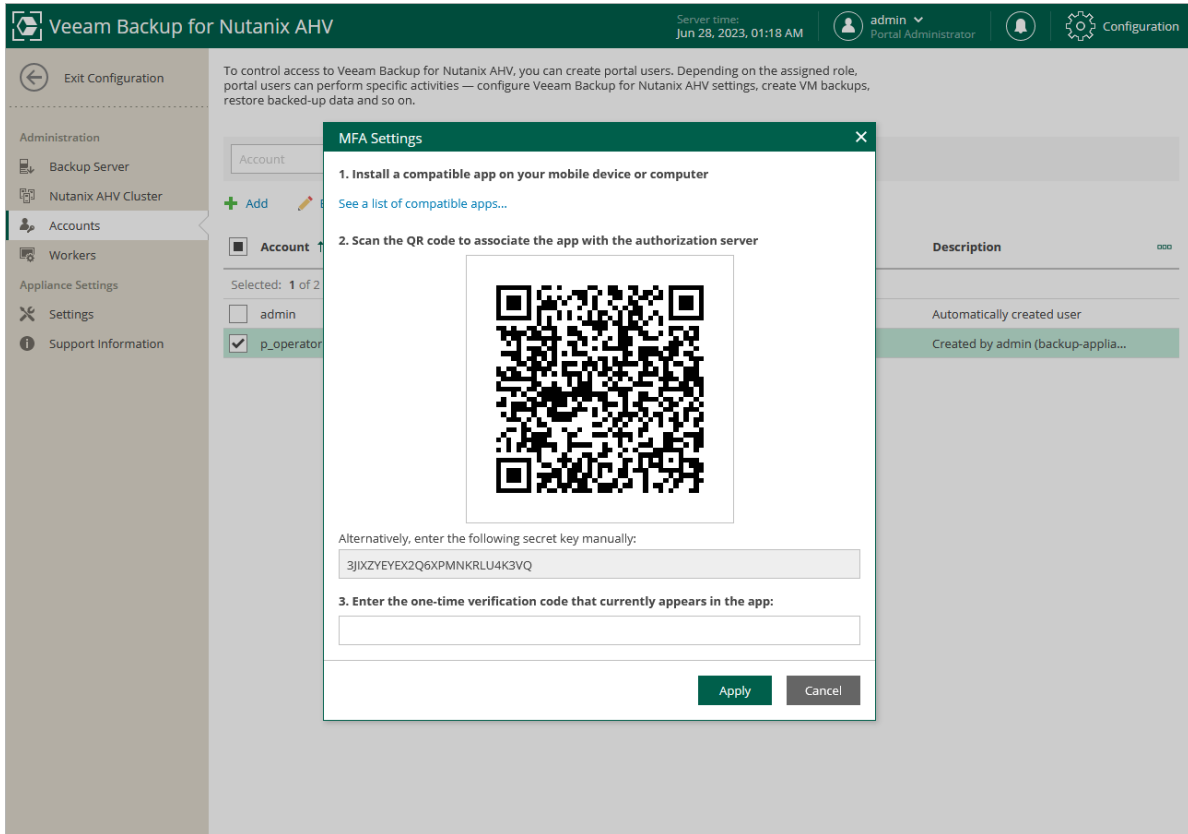
1. Switch to the **Configuration** page.
2. Navigate to **Accounts**.
3. Select the user account and click **MFA > Enable**.
4. Follow the instructions provided in the **MFA Settings** window:
 - a. Install an authentication application on a trusted device.

NOTE

Only Google Authenticator is fully supported by Veeam Backup for Nutanix AHV.

- b. To associate the authentication application with the authorization server, scan the displayed QR code using the camera of the trusted device. Alternatively, you can open the application on your device and enter a secret key displayed in the **MFA Settings** window.
- c. Enter a verification code generated by the authentication application.

d. Click **Apply**.



Disabling MFA

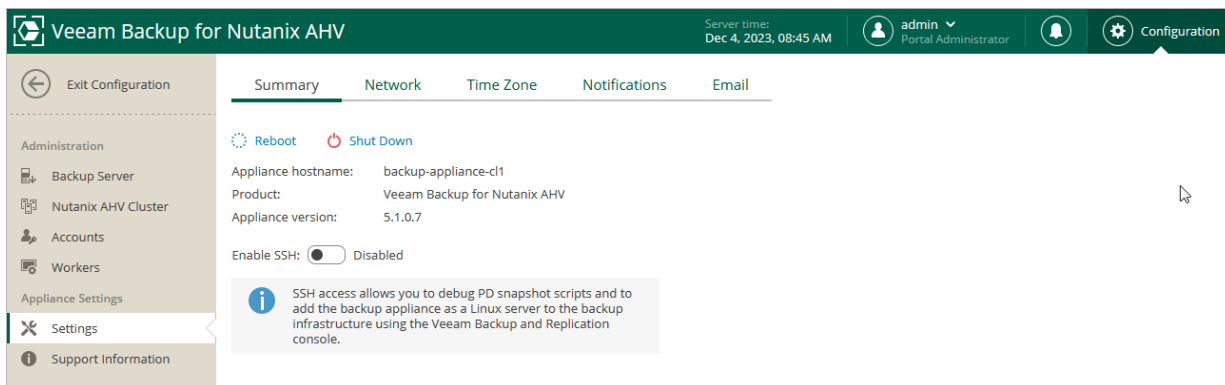
To disable MFA for a user account, select the account on the **Accounts** tab and click **MFA > Disable**.

Enabling SSH on Backup Appliance

For security reasons, SSH is disabled on the Nutanix AHV backup appliance by default. However, you can enable it for the purposes of manual management and troubleshooting:

1. Switch to the **Configuration** page.
2. Navigate to **Settings**.
3. On the **Summary** tab, set the **Enable SSH** toggle to *On*.

When you connect to the Nutanix AHV backup appliance using SSH, enter credentials of the administrator account that you have specified during the [initial backup appliance configuration](#).



Editing Network Settings

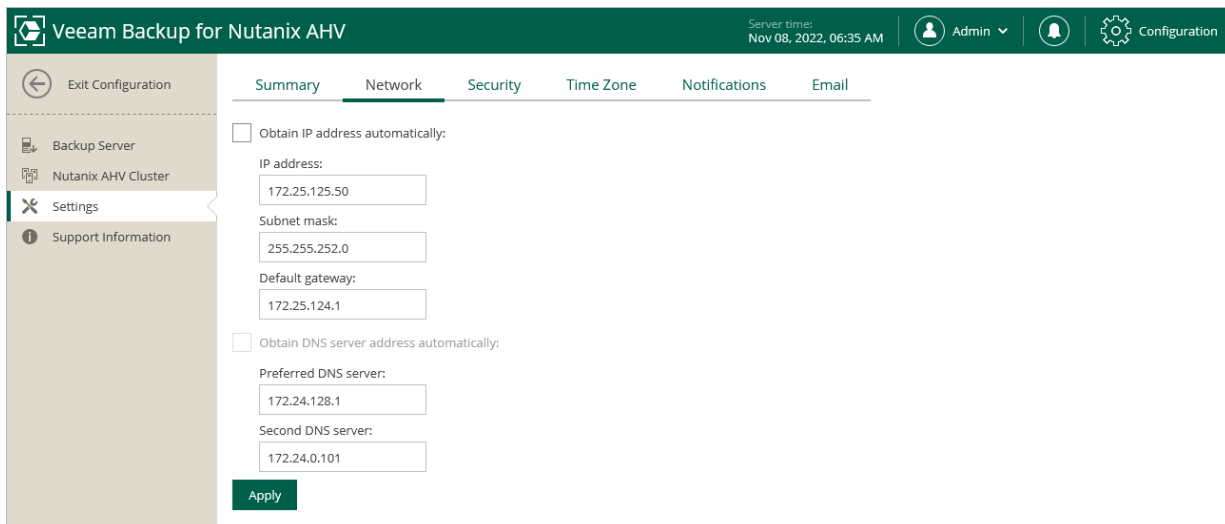
You can view and modify network settings configured for the proxy [while connecting it to the backup server](#):

1. Switch to the **Configuration** page.
2. Navigate to **Settings > Network**.
3. If DHCP is enabled for the network adapter, the IP address and DNS settings of the Nutanix AHV backup appliance can be obtained automatically.

If DHCP is disabled for the network adapter, or you want to specify an IP address and configure DNS settings manually, do the following:

- To specify an IP address, clear the **Obtain IP address automatically** check box and enter the Nutanix AHV backup appliance IP address, subnet mask and default gateway.
- To configure DNS settings, clear the **Obtain DNS server address automatically** and enter the IP addresses of the preferred and alternate DNS servers.

4. Click **Apply**.



The screenshot shows the Veeam Backup for Nutanix AHV Configuration page, specifically the Network tab. The interface includes a top navigation bar with the Veeam logo, server time (Nov 08, 2022, 06:35 AM), and user information (Admin). The left sidebar contains navigation options: Exit Configuration, Backup Server, Nutanix AHV Cluster, Settings (selected), and Support Information. The main content area has tabs for Summary, Network (selected), Security, Time Zone, Notifications, and Email. Under the Network tab, there are two sections: 'Obtain IP address automatically' and 'Obtain DNS server address automatically'. The first section is unchecked, and the second is checked. The IP address is set to 172.25.125.50, the subnet mask to 255.255.252.0, and the default gateway to 172.25.124.1. The preferred DNS server is 172.24.128.1 and the second DNS server is 172.24.0.101. An 'Apply' button is located at the bottom of the form.

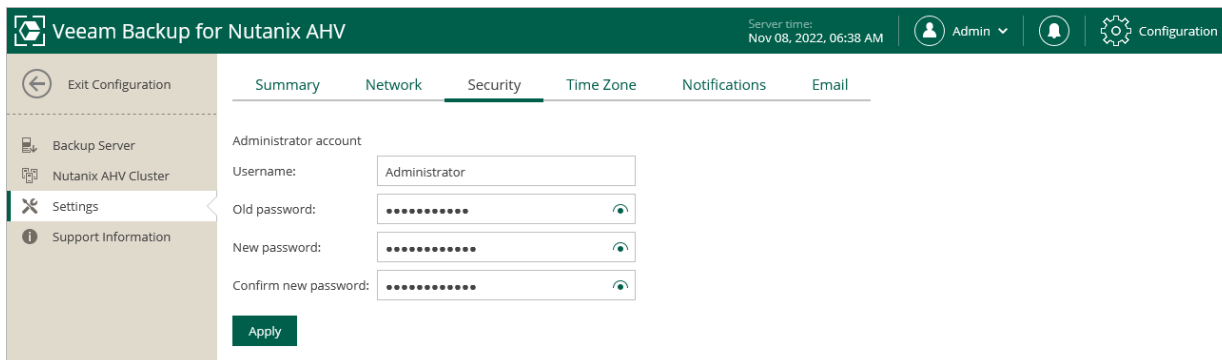
Editing Administrator Account

You can edit the account that is used to access the Nutanix AHV backup appliance web console or provide a new password for the account:

1. Switch to the **Configuration** page.
2. Navigate to **Settings > Security** tab and do the following:
 - o To change the password:
 - i. In the **Old password** field, enter the currently used password.
 - ii. In the **New password** and **Confirm new password** fields, enter and confirm a new password.
 - o To specify credentials for a new account:
 - i. In the **Username** field, specify a user name. The user name must contain only lowercase Latin letters and numeric characters, and must not match Linux system user names (such as *root*, *daemon*).
 - ii. In the **Old password** field, enter the currently used password.
 - iii. In the **New password** and **Confirm new password** fields, enter and confirm a password for a new account.
3. Click **Apply** to save the settings.

IMPORTANT

If you modify the account, you must also [update account credentials](#) in the Nutanix AHV backup appliance configuration using the Veeam Backup & Replication console.



The screenshot displays the Veeam Backup for Nutanix AHV web console interface. The top navigation bar includes the Veeam logo, the title "Veeam Backup for Nutanix AHV", the server time "Nov 08, 2022, 06:38 AM", and user information "Admin". The main content area is titled "Administrator account" and is divided into several tabs: Summary, Network, Security (selected), Time Zone, Notifications, and Email. Under the Security tab, there are three password fields: "Username" (containing "Administrator"), "Old password", "New password", and "Confirm new password". Each password field has a toggle icon to the right. An "Apply" button is located at the bottom of the form.

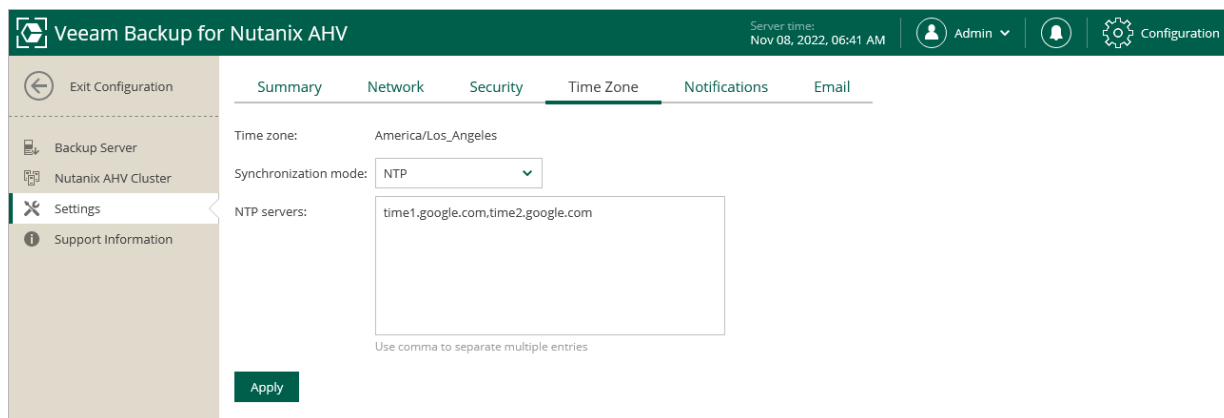
Configuring Time Synchronization Settings

You can configure what mode Veeam Backup for Nutanix AHV uses for time synchronization while performing data protection and disaster recovery operations:

1. Switch to the **Configuration** page.
2. Navigate to **Settings > Time Zone**.
3. From the **Synchronization mode** list, choose whether you want the time set on the Nutanix AHV backup appliance to be synchronized with the time of specific NTP servers or with the time of the guest OS running on the host where the proxy is deployed.
4. Click **Apply**.

NOTE

As the backup appliance time zone is automatically synchronized with the backup server time zone, it cannot be changed manually in the Nutanix AHV backup appliance web console.



Configuring Email Notification Settings

You can specify email notification settings for automated delivery of job results. To connect an SMTP server that will be used for sending email notifications:

1. Switch to the **Configuration** page.
2. Navigate to **Settings > Email**.
3. Select the **Enable email notifications** check box.
4. Click the link in the **SMTP server** field and configure [mail server settings](#).
6. In the **From** field, enter an email address of the notification sender. This email address will be displayed in the **From** field of notifications.
7. In the **To** field, enter an email address of a recipient. Use a semicolon to separate multiple recipient addresses.
8. In the **Subject** field, specify a subject for notifications. You can use the following runtime variables:
 - *%JobName%* – a job name.
 - *%JobResult%* – a job result.
 - *%ObjectCount%* – the number of VMs or PDs in a job.
9. Choose whether you want to receive email notifications in case jobs complete successfully, complete with warnings or complete with errors.
10. Select the **Suppress notifications until the last retry** check box to receive a notification about the final job status. If you do not enable this option, the Nutanix AHV backup appliance will send one notification per every job retry.
11. Click **Apply**.

TIP

Veeam Backup for Nutanix AHV allows you to send a test message to check whether you have configured the settings correctly. To do that, click **Send Test Email**. A test message will be sent to the specified email address.

Configuring Mail Server Settings

To employ the basic authentication to connect to your mail server, in the **Email Server Settings** window:

1. In the **Mail server name or address** field, enter a DNS name or an IP address of the SMTP server. All email notifications (including test messages) will be sent by this SMTP server.
2. In the **Port** field, specify a communication port for SMTP traffic. The default SMTP port is 587.
3. In the **Timeout** field, specify a connection timeout for responses from the SMTP server.
4. For an SMTP server with SSL/TLS support, select the **Connect using SSL** check box to enable SSL data encryption.
5. If your SMTP server requires authentication, select the **This server requires authentication** check box and specify credentials that will be used to connect to the SMTP server.

6. Click Apply.

The screenshot displays the Veeam Backup for Nutanix AHV configuration interface. The top navigation bar shows the server time as 'Aug 15, 2023, 08:41 AM' and the user as 'admin Portal Administrator'. The left sidebar contains navigation options: Administration (Backup Server, Nutanix AHV Cluster, Accounts, Workers), Appliance Settings (Settings, Support Information), and Exit Configuration. The main content area is titled 'Email' and includes tabs for Summary, Network, Time Zone, Notifications, and Email. Below the tabs, there is a section for 'Manage email notifications by providing the mail server details and when you want to get notified.' This section contains a 'Send Test Email' button and a list of notification preferences: 'Enable email notifications' (checked), 'Notify me immediately about job:' (Success, Warning, Failure, Suppress notifications until the last retry, all checked), and an 'Apply' button.

The 'Email Server Settings' dialog box is open, showing the following configuration:

- Mail server:** smtp.example.com
- Port:** 587
- Timeout:** 100000 ms
- Connect using SSL:** checked
- Credentials:** This SMTP server requires authentication (checked)
- Username:** ahv.backup.appliance
- Password:** [masked]

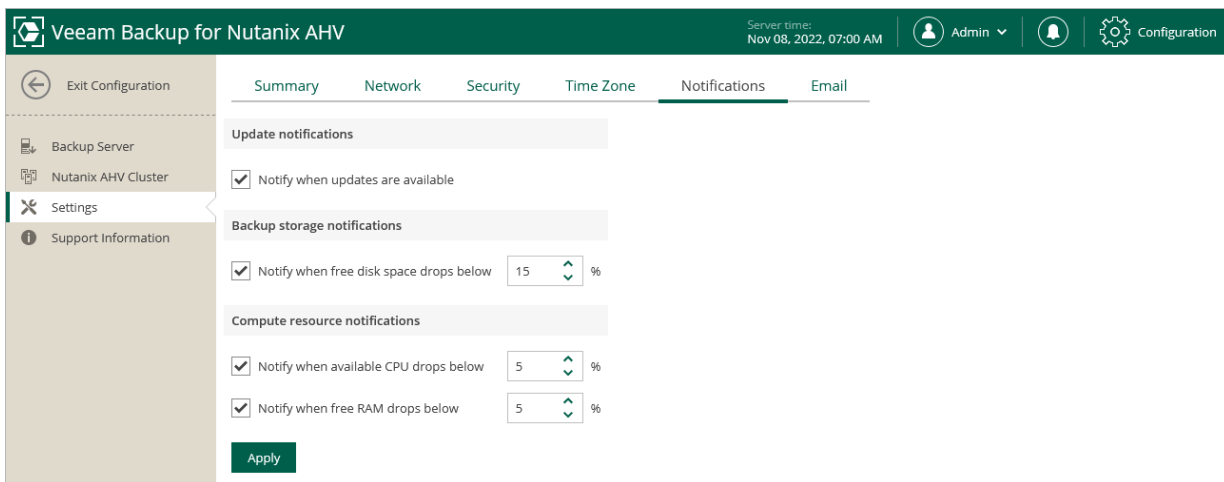
Buttons for 'Apply' and 'Cancel' are visible at the bottom of the dialog box.

Configuring Notifications

You can enable notifications to get informed about available product updates, backup repositories running low on free disk space, and CPU and RAM consumption on workers breaking configured thresholds for more than 10 minutes:

1. Switch to the **Configuration** page.
2. Navigate to **Settings > Notifications**.
3. Select notifications you want to receive.
4. Click **Apply**.

You can find backup storage and compute resource notifications in [backup job session logs](#). Update notifications appear at the top right corner of the Veeam Backup for Nutanix AHV window next to the user name.



Performing Configuration Backup and Restore

You can back up and restore the configuration database that stores data collected from the Nutanix AHV backup appliance for the existing jobs and session records. If the backup appliance goes down for some reason, you can redeploy it and quickly restore its configuration from a configuration backup. You can also use a configuration backup to migrate the configuration of one backup appliance to another backup appliance in the backup infrastructure.

It is recommended that you regularly perform configuration backup for every Nutanix AHV backup appliance present in the backup infrastructure. Periodic configuration backups reduce the risk of data loss and minimize the administrative overhead costs in case any problems with the backup appliances occur.

You can run configuration backup manually on demand, or instruct Veeam Backup for Nutanix AHV to do it automatically on a regular basis. Note that the Nutanix AHV backup appliance configuration database is backed up together with the backup server configuration database. However, the Nutanix AHV backup appliance configuration restore operation does not affect the backup server configuration.

Backing Up Configuration Settings Manually

While performing configuration backup, Veeam Backup for Nutanix AHV exports data from the configuration database and saves it to a backup file in a backup repository. To back up the configuration database of the backup appliance manually, do the following:

1. From the main menu of the Veeam Backup & Replication console, select **Configuration Backup**.
2. In the **Configuration Backup Settings** window, do the following:
 - a. Select the **Enable configuration backup to the following repository** check box and choose a repository where the configuration backup will be stored. Note that you cannot store configuration backups in scale-out backup repositories and external repositories.

For a backup repository to be displayed in the list of available repositories, it must be added to the backup infrastructure. For more information, see the Veeam Backup & Replication User Guide, section [Adding Backup Repositories](#).
 - b. In the **Restore points to keep** field, specify the number of configuration backups you want to keep.
 - c. Select the **Enable backup file encryption** check box.
 - d. From the **Password** drop-down list, select a password.

IMPORTANT

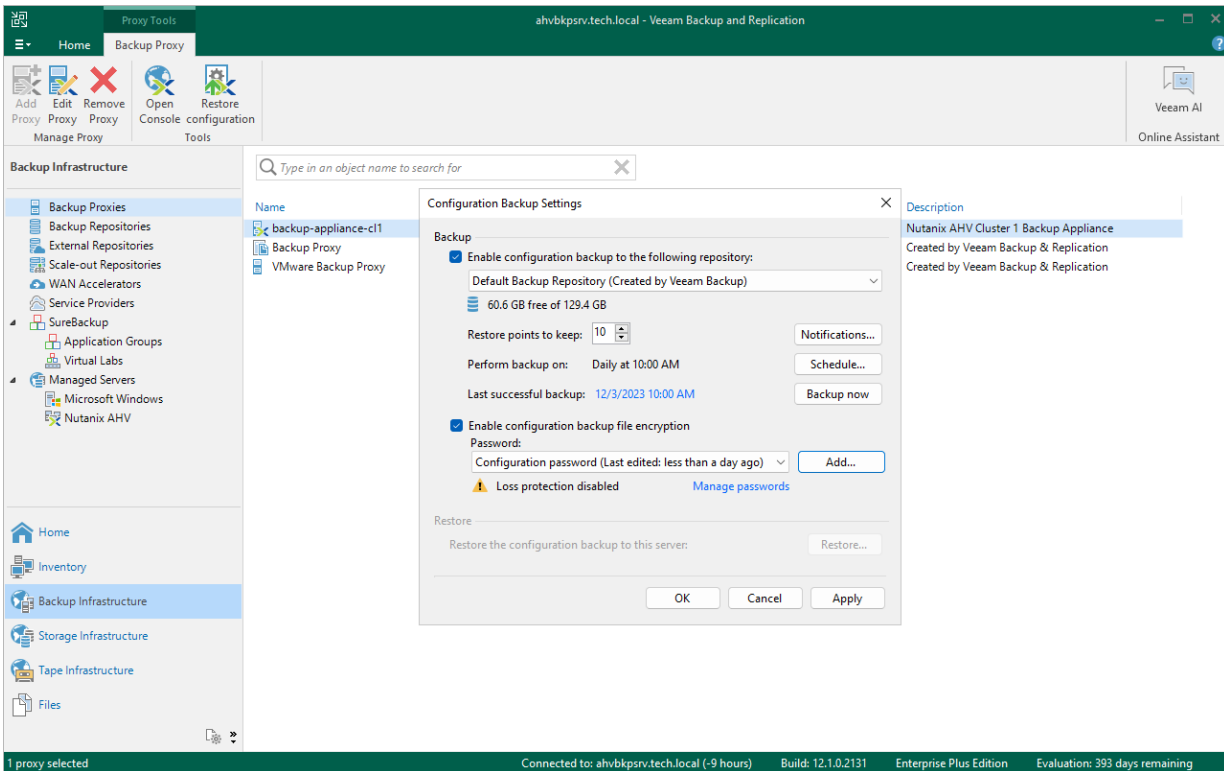
If you do not specify the password, the Veeam Backup for Nutanix AHV configuration database will be not backed up.

For passwords to be displayed in the **Password** list, they must be added to the Password Manager as described in the Veeam Backup & Replication User Guide, section [Password Manager](#). If you have not added the necessary password to the Password Manager beforehand, you can do this without closing **the Configuration Backup Settings** window. To add a password, click **Add** and specify a password and a password hint that will help you remember your password if you forget it.

If you use Veeam Backup Enterprise Manager, you can also enable the Loss protection functionality that can help you decrypt the data in case you have lost or forgotten the password. For more information, see the Veeam Backup Enterprise Manager Guide, section [Managing Encryption Keys](#).

- e. Click **Apply**.
- f. Click **Backup now**.

Once Veeam Backup for Nutanix AHV creates a successful configuration backup, you can use it to [restore configuration data](#).



Backing Up Configuration Settings Automatically

While performing configuration backup, Veeam Backup for Nutanix AHV exports data from the configuration database and saves it to backup files in a backup repository. To instruct Veeam Backup for Nutanix AHV to back up the configuration database of the backup appliance automatically by schedule, do the following:

1. From the main menu of the Veeam Backup & Replication console, select **Configuration Backup**.
2. In the **Configuration Backup Settings** window, do the following:
 - a. Select the **Enable configuration backup to the following repository** check box and choose a repository where the configuration backup will be stored. Note that you cannot store configuration backups in scale-out backup repositories and external repositories.

For a backup repository to be displayed in the list of available repositories, it must be added to the backup infrastructure. For more information, see the Veeam Backup & Replication User Guide, section [Adding Backup Repositories](#).
 - b. In the **Restore points to keep** field, specify the number of configuration backups you want to keep.
 - c. Click **Schedule** and choose whether configuration backups will be created every day or monthly on specific days.
 - d. Select the **Enable backup file encryption** check box.
 - e. From the **Password** drop-down list, select a password.

IMPORTANT

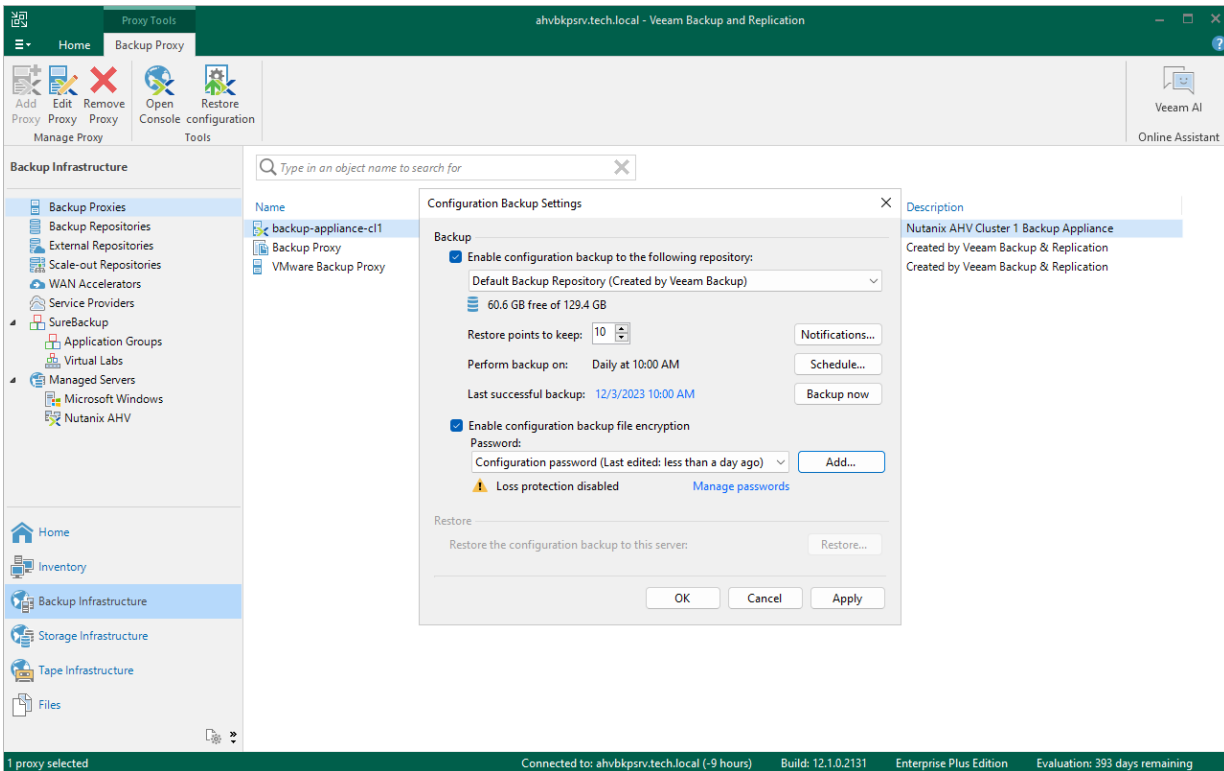
If you do not specify the password, the Veeam Backup for Nutanix AHV configuration database will be not backed up.

For passwords to be displayed in the **Password** list, they must be added to the Password Manager as described in the Veeam Backup & Replication User Guide, section [Password Manager](#). If you have not added the necessary password to the Password Manager beforehand, you can do this without closing **the Configuration Backup Settings** window. To add a password, click **Add** and specify a password and a password hint that will help you remember your password if you forget it.

If you use Veeam Backup Enterprise Manager, you can also enable the Loss protection functionality that can help you decrypt the data in case you have lost or forgotten the password. For more information, see the Veeam Backup Enterprise Manager Guide, section [Managing Encryption Keys](#).

- f. Click **OK**.

Once Veeam Backup for Nutanix AHV creates a successful configuration backup, you can use it to [restore configuration data](#).



Restoring Configuration Settings

Veeam Backup for Nutanix AHV offers restore of the configuration database that can be helpful in the following situations:

- The configuration database got corrupted, and you want to recover data from a configuration backup.
- The backup appliance got corrupted, and you want to recover its configuration from a configuration backup.
- The backup appliance went down, and you want to apply its configuration to a new backup appliance.
- You want to roll back the configuration database to a specific point in time.
- You want to apply the backed-up configuration of a Nutanix AHV backup appliance version 3.0 (or later) to a newly deployed Nutanix AHV backup appliance.

When you restore the configuration database of a Nutanix AHV backup appliance, consider the following:

- If the Nutanix AHV backup appliance is still present in the backup infrastructure, you cannot restore its configuration to another Nutanix AHV backup appliance added to same backup infrastructure. This limitation prevents collisions between jobs with the same database ID.
- Network settings of the Nutanix AHV backup appliance remain unchanged. However, you will be able to [change the settings in the web console](#) after the configuration restore.
- Configuration settings of dedicated workers will be restored from the configuration backup, and all existing workers will be removed. If any of the settings (such as worker network settings, host affinity or storage container configuration) is invalid in the current virtual environment, a warning message will be displayed in [configuration restore logs](#). To update worker settings, [modify worker configuration](#) after the configuration restore.
- If you restore the configuration database of a Nutanix AHV backup appliance originally residing in another cluster to protect migrated VMs, you will need to reconfigure backup jobs. UUIDs of migrated VMs change, therefore, you will need to re-add VMs to a backup job that will start new backup chains for them.

IMPORTANT

Before you start the restore process, stop and disable all jobs that are currently running.

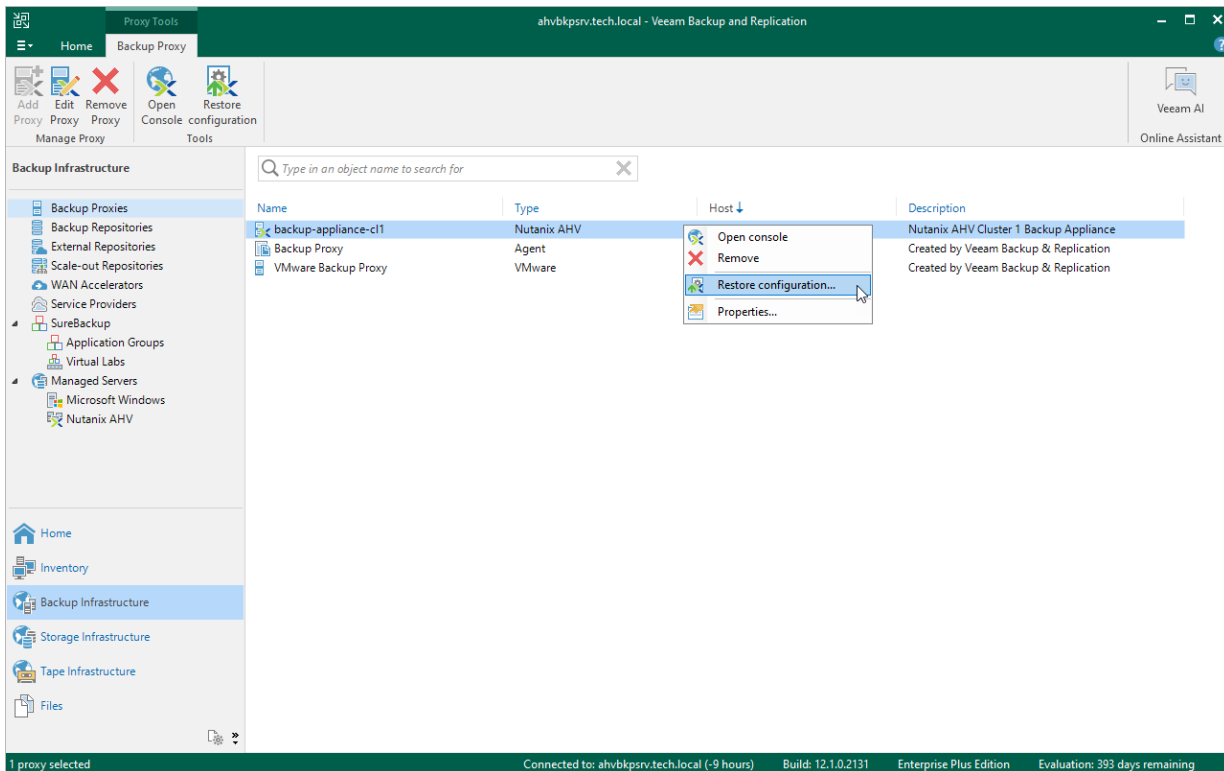
To restore the configuration database, do the following:

1. [Launch the Configuration Restore wizard.](#)
2. [Choose a backup file.](#)
3. [Review the backup file information.](#)
4. [Provide the encryption password.](#)
5. [Choose restore options.](#)
6. [Specify credentials for the backup appliance account.](#)
7. [Track the restore progress.](#)
8. [Finish working with the wizard.](#)

Step 1. Launch Configuration Restore Wizard

To launch the **Configuration restore** wizard, do the following:

1. In the Veeam Backup & Replication console, open the **Backup Infrastructure** view.
2. In the inventory pane, select **Backup Proxies**.
3. In the working area, select the Nutanix AHV backup appliance and click **Restore Configuration** on the ribbon, or right-click the Nutanix AHV backup appliance and select **Restore Configuration**.



Step 2. Choose Backup File

At the **Configuration Backup** step of the wizard, do the following:

1. From the **Backup repository** list, select the backup server or backup repository where the necessary configuration backup file is stored.

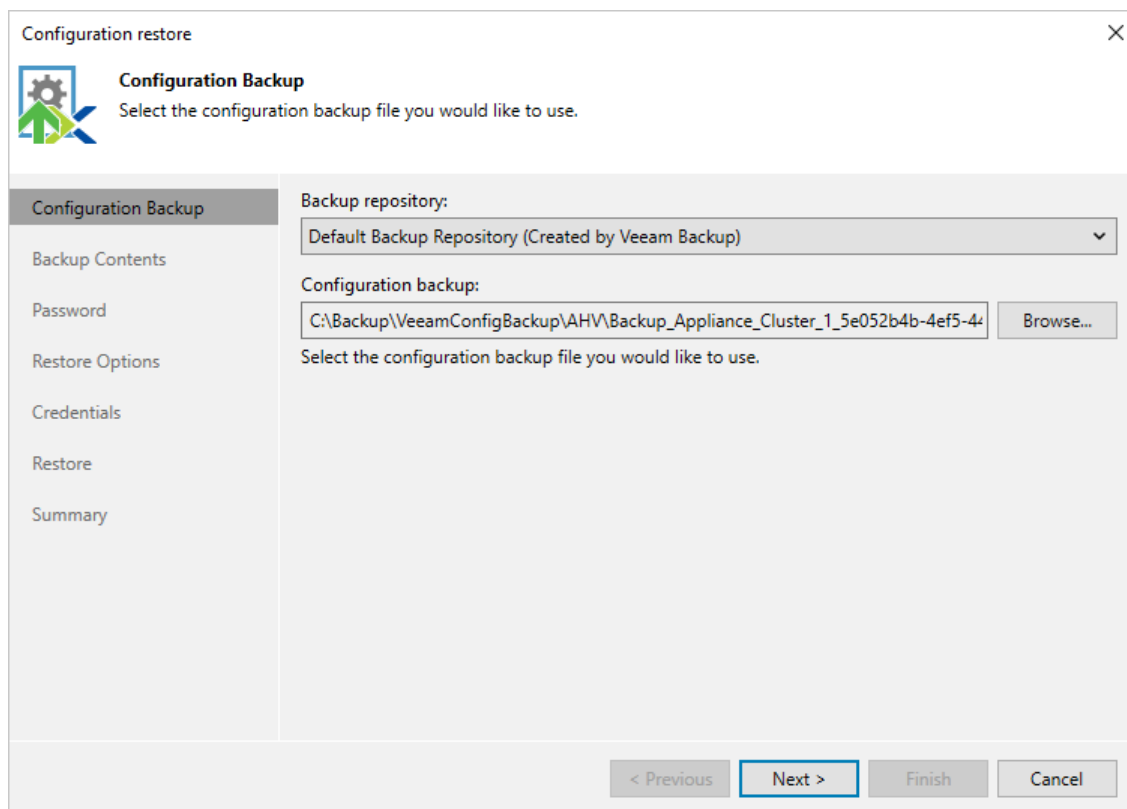
For a backup repository to be displayed in the **Backup repository** list, it must be added to the backup infrastructure as described in the Veeam Backup & Replication User Guide, section [Backup Repository](#). Note that the repository list does not include scale-out backup repositories and external repositories as they cannot store configuration backup files.

NOTE

Configuration restore is supported for backup appliances version 3.0 or 3a only if their configuration backup files are stored on the backup server.

2. Click **Browse** and select the necessary file in the **Select file** window.

If the selected configuration backup file is not stored on the backup server, Veeam Backup for Nutanix AHV will copy the file to a temporary folder on the server and automatically delete it from the folder as soon as the restore process completes.



The screenshot shows the 'Configuration restore' wizard window, specifically the 'Configuration Backup' step. The window title is 'Configuration restore' with a close button (X) in the top right corner. Below the title bar is a logo with a gear and an upward arrow, followed by the text 'Configuration Backup' and 'Select the configuration backup file you would like to use.' The main area is divided into two sections. On the left is a vertical navigation pane with the following items: 'Configuration Backup' (highlighted), 'Backup Contents', 'Password', 'Restore Options', 'Credentials', 'Restore', and 'Summary'. The right section contains a 'Backup repository:' dropdown menu set to 'Default Backup Repository (Created by Veeam Backup)'. Below that is a 'Configuration backup:' text box containing the path 'C:\Backup\VeeamConfigBackup\AHV\Backup_Appliance_Cluster_1_5e052b4b-4ef5-4...', with a 'Browse...' button to its right. Below the text box is the instruction 'Select the configuration backup file you would like to use.' At the bottom of the window are four buttons: '< Previous', 'Next >' (highlighted with a blue border), 'Finish', and 'Cancel'.

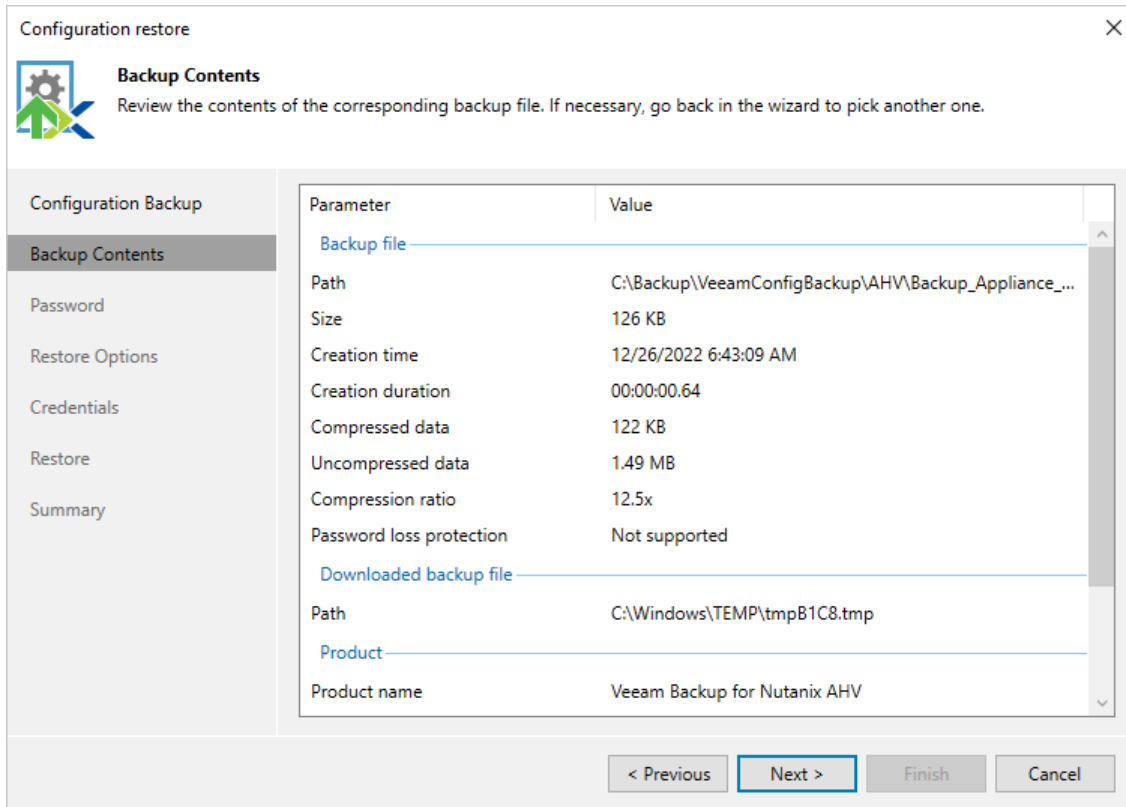
Step 3. Review Backup Details

[This step applies only if you restore the backup configuration database of a Nutanix AHV backup appliance version 4.0 or later]

Veeam Backup for Nutanix AHV will analyze the content of the selected backup file and display the following information:

- Backup file – the date and time when the backup file was created.
- Downloaded backup file – the temporary location of the configuration backup file on the backup server.
- Product – the version of Veeam Backup for Nutanix AHV that was installed the initial backup appliance.
- Catalogs – configuration data saved in the file (such as the number of configured jobs, users, logged session records and so on).

At the **Backup Content** step of the wizard, review the provided information and click **Next** to confirm that you want to use the selected file to restore the configuration data.



Configuration restore

Backup Contents
Review the contents of the corresponding backup file. If necessary, go back in the wizard to pick another one.

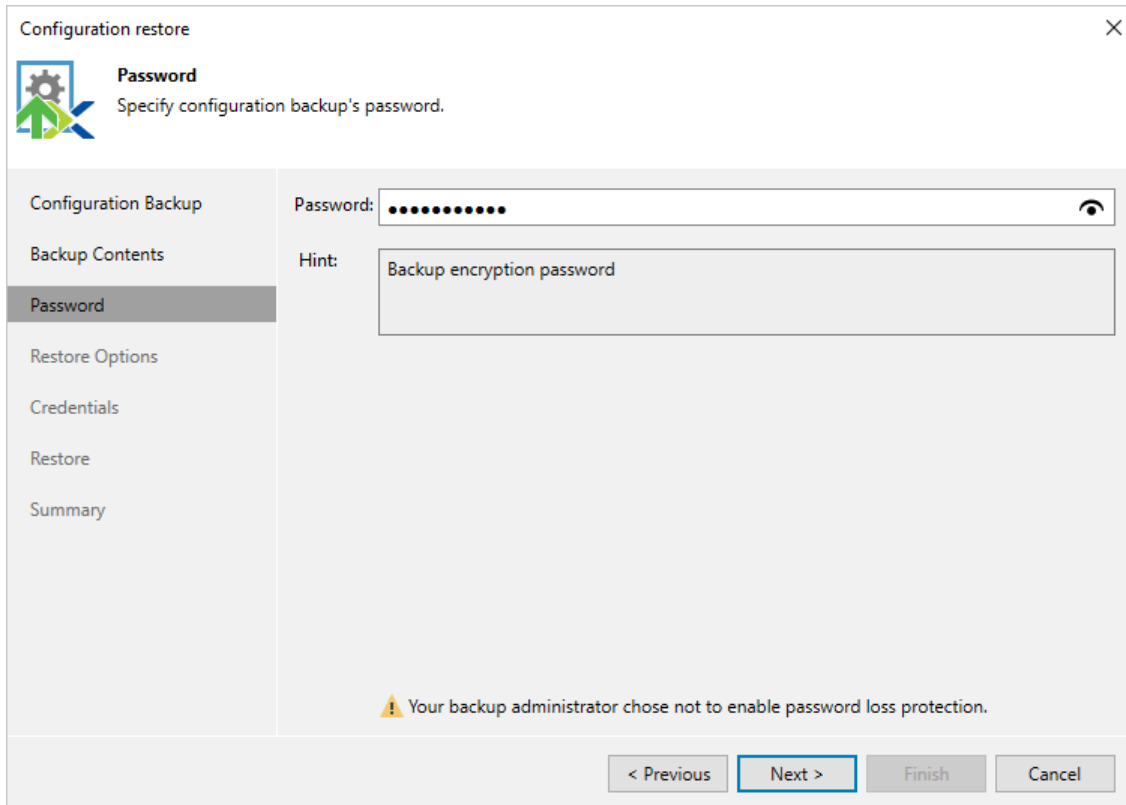
Configuration Backup	Parameter	Value
Backup Contents	Backup file	
Password	Path	C:\Backup\VeeamConfigBackup\AHV\Backup_Appliance_...
Restore Options	Size	126 KB
Credentials	Creation time	12/26/2022 6:43:09 AM
Restore	Creation duration	00:00:00.64
Summary	Compressed data	122 KB
	Uncompressed data	1.49 MB
	Compression ratio	12.5x
	Password loss protection	Not supported
	Downloaded backup file	
	Path	C:\Windows\TEMP\tmpB1C8.tmp
	Product	
	Product name	Veeam Backup for Nutanix AHV

< Previous **Next >** Finish Cancel

Step 4. Provide Encryption Password

At the **Password** step of the wizard, provide a password that was used to encrypt the file while creating configuration backup.

If you do not remember the password, you can use an alternative way for data encryption. However, this option is available only if password Loss protection was enabled when you created the backup. For more information, see the Veeam Backup & Replication User Guide, section [Decrypting Data Without Password](#).



The screenshot shows a 'Configuration restore' wizard window with a sidebar on the left containing the following steps: Configuration Backup, Backup Contents, Password (highlighted), Restore Options, Credentials, Restore, and Summary. The main area is titled 'Password' and contains the instruction 'Specify configuration backup's password.' Below this, there is a 'Password:' field with a masked password of ten dots and a visibility icon. A 'Hint:' field contains the text 'Backup encryption password'. At the bottom of the main area, a warning icon and message state: 'Your backup administrator chose not to enable password loss protection.' The bottom of the window features four buttons: '< Previous', 'Next >' (highlighted with a blue border), 'Finish', and 'Cancel'.

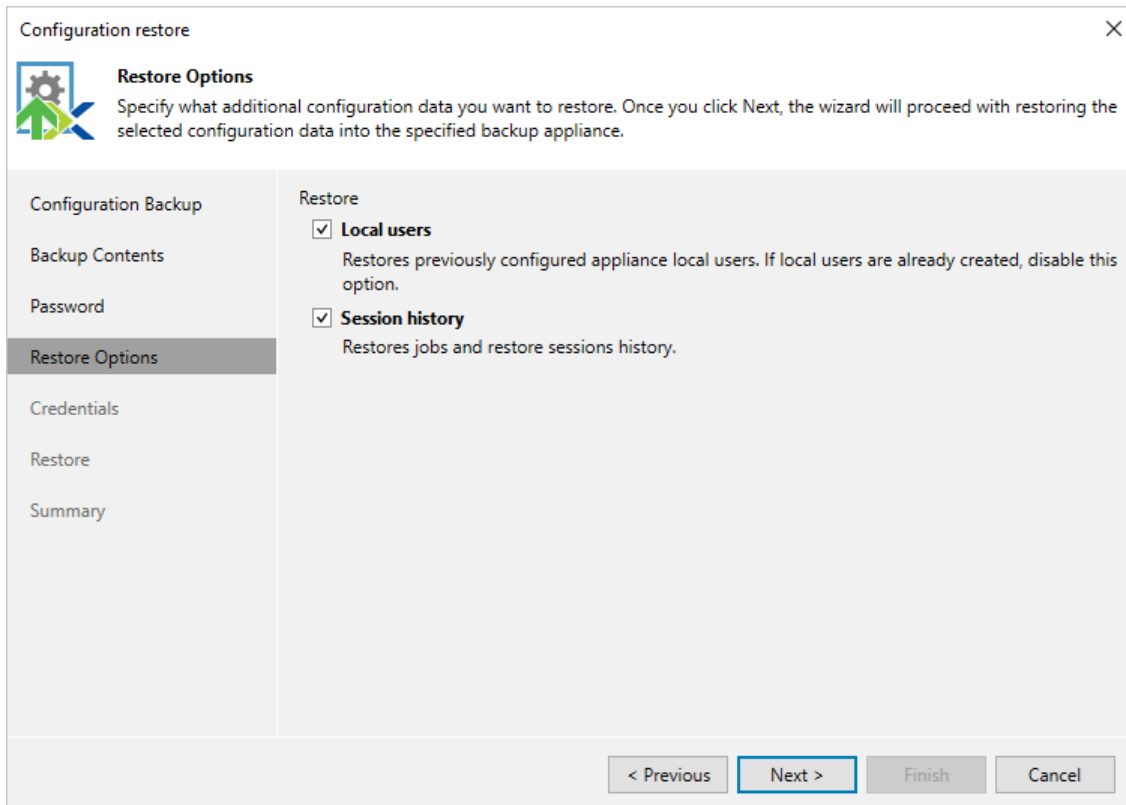
Step 5. Choose Restore Options

[This step applies only if you restore the backup configuration database of a Nutanix AHV backup appliance version 4.0 or later]

At the **Restore Options** step of the wizard, you can choose whether you want to restore session logs and user accounts configured on the initial backup appliance (Portal Administrators, Portal Operators and Restore Operators) as well.

IMPORTANT

If you do not select the **Local users** check box, the restore process will start as soon as you click **Next**. In this case, you will not be able to halt the process or edit the restore settings.



Step 6. Select Credentials

[This step applies only if you restore the backup configuration database of a Nutanix AHV backup appliance version 4.0 or later, and if you have selected the **Local users** option at the **Restore Options** step of the wizard]

At the **Credentials** step of the wizard, specify credentials of a Portal Administrator account used to access the Nutanix AHV backup appliance the web console.

NOTE

The following accounts cannot be used to access the Nutanix AHV backup appliance as Portal Administrators:

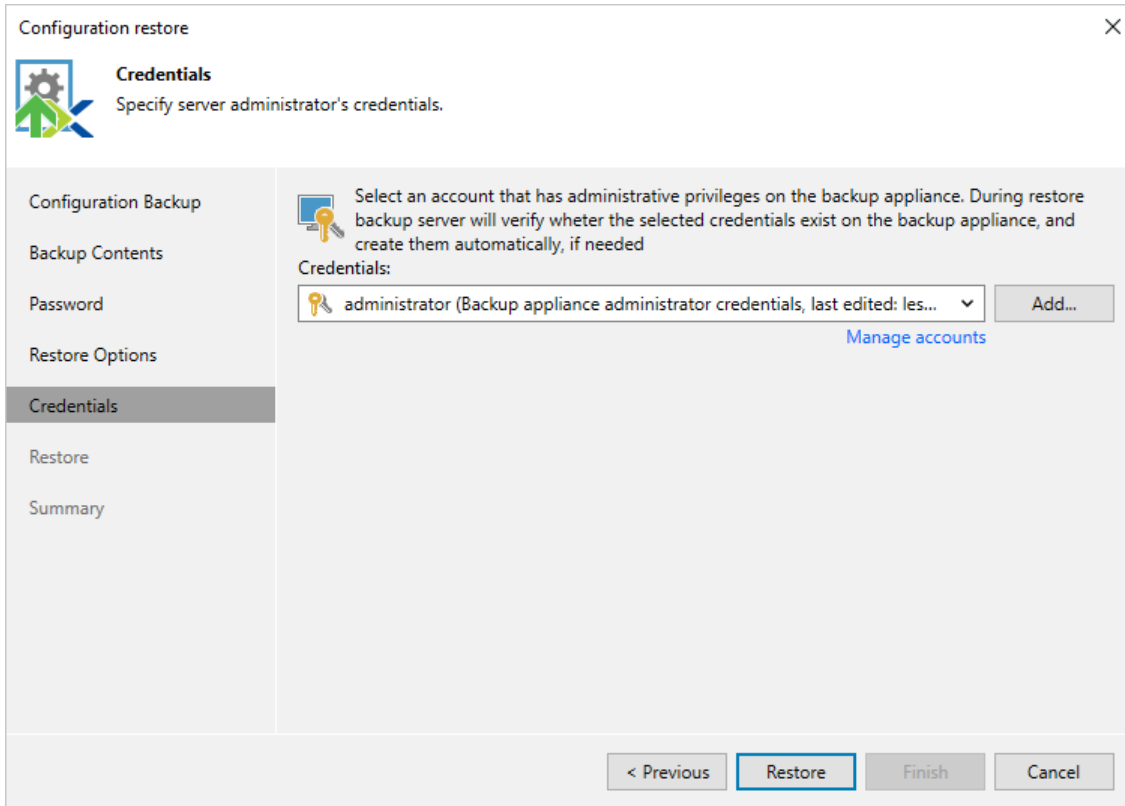
- Accounts for which [multi-factor authentication \(MFA\)](#) is enabled.
- Active Directory accounts since the Nutanix AHV backup appliance does not support LDAP integration.

For credentials to be displayed in the **Credentials** list, they must be added to the Credentials Manager as described in the Veeam Backup & Replication User Guide, section [Standard Accounts](#). If you have not added the necessary credentials to the Credentials Manager beforehand, you can do this without closing the **Configuration restore** wizard. To add credentials, click **Add** and specify a user name and password in the **Credentials** window. Note that the name must start with a lowercase Latin letter and must not match Linux system user names (such as *root*, *daemon*). The name can contain only lowercase Latin letters, numeric characters, underscores and dashes. The maximum length of the name is 32 characters.

If the specified credentials match the credentials stored in the backup configuration database, the user account will be restored. If you do not remember the password, you can specify a new user name and password. In this case, Veeam Backup for Nutanix AHV will restore user accounts from the configuration file and create a new one with credentials that you specify.

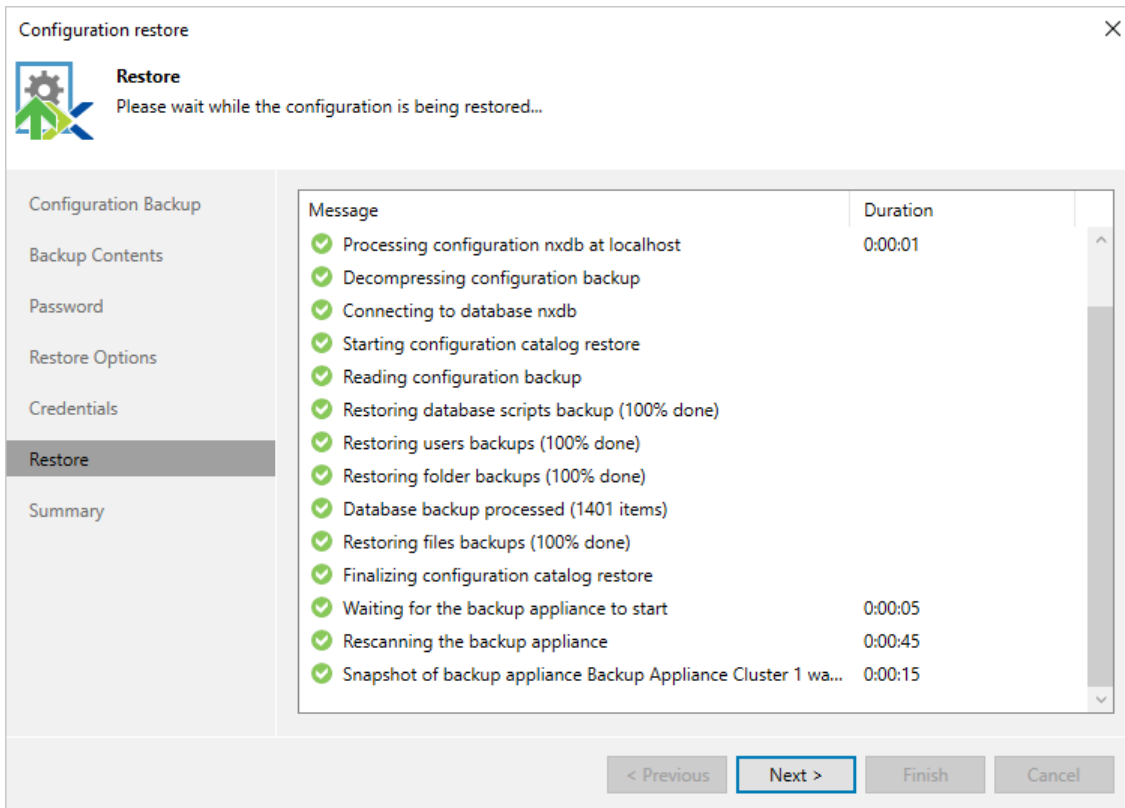
IMPORTANT

The restore process will start as soon as you click **Restore**. In this case, you will not be able to halt the process or edit the restore settings.



Step 7. Track Restore Progress

Veeam Backup for Nutanix AHV will display the results of every step performed while executing the configuration restore. At the **Restore** step of the wizard, wait for the restore process to complete and click **Next**.



The screenshot shows a window titled "Configuration restore" with a close button (X) in the top right corner. Below the title bar is a gear icon and the word "Restore" in bold, followed by the text "Please wait while the configuration is being restored...".

On the left side, there is a vertical navigation pane with the following items: "Configuration Backup", "Backup Contents", "Password", "Restore Options", "Credentials", "Restore" (highlighted with a dark background), and "Summary".

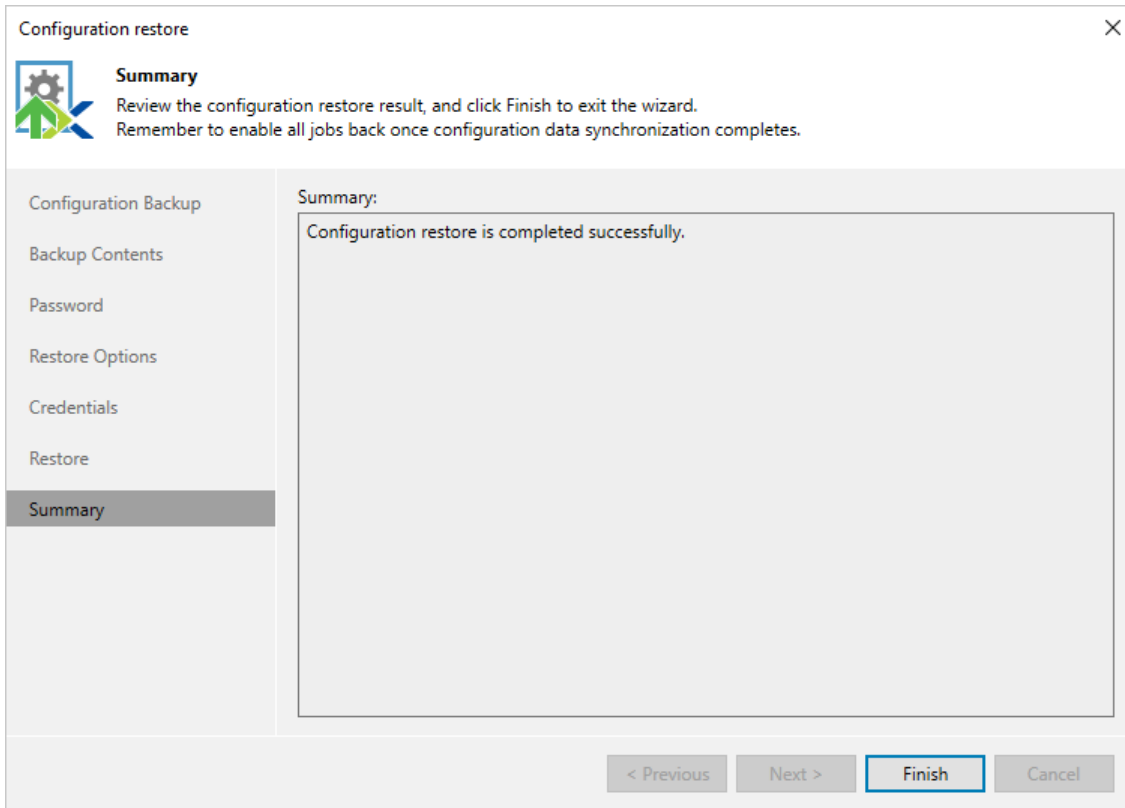
The main area of the window displays a table of restore progress messages. The table has two columns: "Message" and "Duration".

Message	Duration
✓ Processing configuration nxdb at localhost	0:00:01
✓ Decompressing configuration backup	
✓ Connecting to database nxdb	
✓ Starting configuration catalog restore	
✓ Reading configuration backup	
✓ Restoring database scripts backup (100% done)	
✓ Restoring users backups (100% done)	
✓ Restoring folder backups (100% done)	
✓ Database backup processed (1401 items)	
✓ Restoring files backups (100% done)	
✓ Finalizing configuration catalog restore	
✓ Waiting for the backup appliance to start	0:00:05
✓ Rescanning the backup appliance	0:00:45
✓ Snapshot of backup appliance Backup Appliance Cluster 1 wa...	0:00:15

At the bottom of the window, there are four buttons: "< Previous", "Next >" (highlighted with a blue border), "Finish", and "Cancel".

Step 8. Finish Working with Wizard

At the **Summary** step of the wizard, click **Finish** to finalize the process of configuration data restore.



Performing Backup

With Veeam Backup for Nutanix AHV, you can protect data in the following ways:

- **Create snapshots of VMs**

A snapshot captures point-in-time image of the processed VM. You can use the snapshot to restore the VM to the original Nutanix AHV environment.

To take VM snapshots, Veeam Backup for Nutanix AHV uses [native Nutanix AHV capabilities](#). VM snapshots are saved locally in the Nutanix AHV cluster where the source VMs reside. To create a VM snapshot, [configure a snapshot job](#).

- **Create snapshots of protection domains**

A protection domain (PD) snapshot captures point-in-time image of consistency groups (VMs and volume groups) that belong to the processed domain. You can use the PD snapshot to restore VMs and volume groups to the original Nutanix AHV environment.

To take PD snapshots, Veeam Backup for Nutanix AHV uses [native Nutanix AHV capabilities](#). PD snapshots are saved locally in the Nutanix AHV cluster where the source PD resources reside. To create a PD snapshot, [configure a protection domain snapshot job](#).

- **Create backups of VMs**

In addition to VM snapshots, you can protect your Nutanix AHV VMs with image-level backups. An image-level backup captures the whole image of the processed VM (including VM configuration, OS data, application data and so on) at a specific point in time.

To create backups, Veeam Backup for Nutanix AHV uses [workers](#) that retrieve VM data from the Nutanix AHV cluster and forward it to a backup repository in the [native Veeam format](#). You can use the backup to restore the VM to the original Nutanix AHV environment or any other supported virtual environment, for example, VMware or Hyper-V. To create a VM backup, [configure a backup job](#) or [perform a VeeamZIP operation](#).

NOTE

To back up data that resides on Nutanix Files, use the Veeam Backup & Replication file share backup functionality described in the Veeam Backup & Replication User Guide, section [NAS Backup](#).

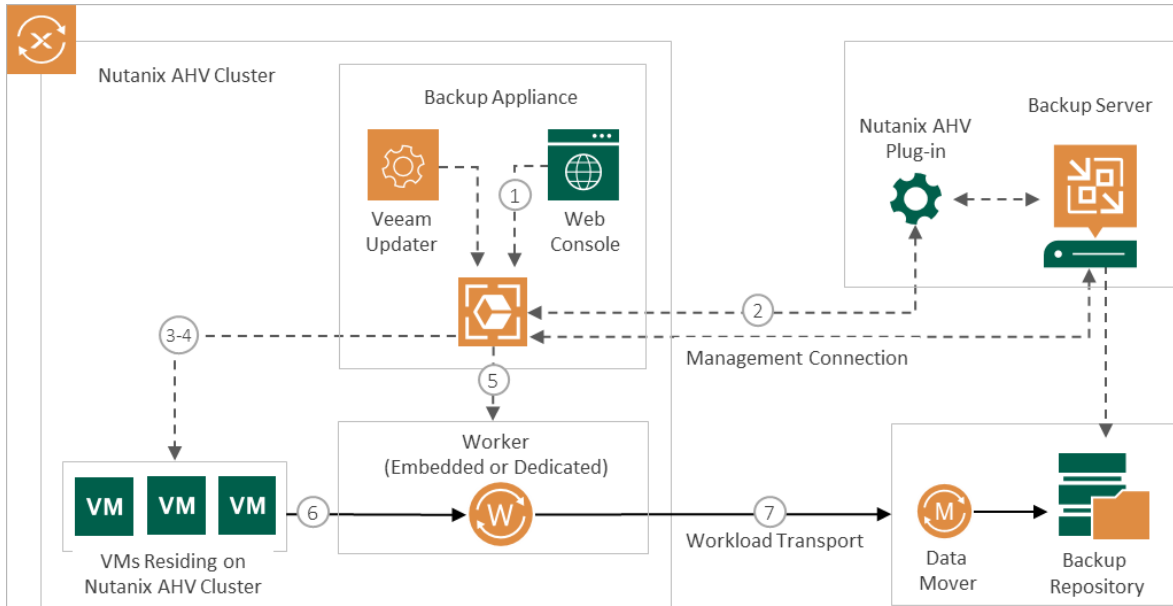
How Backup Works

While creating [image-level backups](#), Veeam Backup for Nutanix AHV does not install agent software inside VMs to retrieve data. Veeam Backup for Nutanix AHV uses [native Nutanix AHV capabilities](#) to take VM or protection domain snapshots and produces backups in following way:

1. The web console sends the backup job configuration data to Nutanix AHV backup appliance.
2. The Nutanix AHV backup appliance starts a backup job and forwards the backup session data to backup server.
3. The Nutanix AHV backup appliance connects to the Nutanix AHV cluster over Nutanix REST API and creates backup snapshots of all VMs or protection domains added to the job.
4. The Nutanix AHV backup appliance creates a volume group on the Nutanix AHV cluster.
5. The Nutanix AHV backup appliance launches a worker and mounts VM disks to the worker over iSCSI.
6. The worker retrieves VM data on the block level.
7. The worker compresses and deduplicates the data and forwards it to the backup repository in the native Veeam format.

NOTE

To limit the impact of backup tasks on network performance, Veeam Backup for Nutanix AHV applies [network traffic throttling rules](#) that prevent jobs from utilizing the entire bandwidth available in your environment.



Related Topics

- [Backup Chain](#)
- [Snapshot Chain](#)
- [Snapshot Types](#)
- [Retention Policy](#)

Backup Chain

When running a backup job, Veeam Backup for Nutanix AHV creates a new backup file in a backup repository during every backup session. A sequence of backup files created during a set of backup sessions makes up a backup chain. Each backup chain contains data for one VM only. If a backup job includes several VMs, Veeam Backup for Nutanix AHV creates one backup chain for each VM processed by the job.

The backup chain includes backup files of the following types:

- VBK – a full backup file stores a copy of the full VM image.
- VIB – incremental backup files store incremental changes of the VM image.
- VBM – backup metadata files store information about the backup job, VMs processed by the backup job, number and structure of backup files, restore points, and so on. Metadata files facilitate import of backups, backup mapping and other operations.

Full and incremental backup files act as restore points for backed-up VMs that let you roll back VM data to the necessary state. To recover a VM to a specific point in time, the chain of backup files created for the VM must contain a full backup file and a set of incremental backup files dependent on the full backup file.

If some file in the backup chain is missing, you will not be able to roll back to the necessary state. For this reason, you must not delete individual backup files from the backup repository manually. Instead, you must specify retention policy settings that will let you maintain the necessary number of backup files in the backup repository.

Backup Methods

Veeam Backup for Nutanix AHV provides the following methods for creating backup chains:

- **Forever forward incremental**

When the forever forward incremental backup method is used, Veeam Backup for Nutanix AHV creates a backup chain that consists of the first full backup file (VBK) and a set of forward incremental backup files (VIBs) following it. For more information, see [Forever Forward Incremental Backup](#).

This backup method helps you save space on the backup storage because Veeam Backup for Nutanix AHV stores only one full backup file and removes incremental backup files [once the retention period is exceeded](#).

- **Forward incremental**

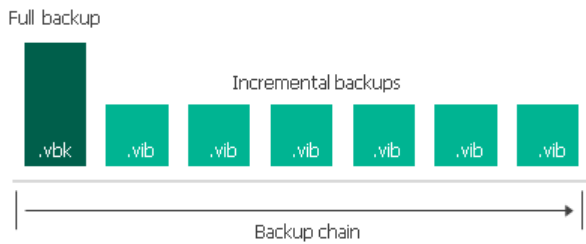
When the forward incremental backup method is used, Veeam Backup for Nutanix AHV creates a backup chain that consists of multiple full backup files (VBKs) and sets of forward incremental backup files (VIBs) following each full backup file. Full backups created using the synthetic full or active full method split the backup chain into shorter series. This lowers the chances of losing the backup chain completely and makes this backup method the most reliable. For more information, see [Forward Incremental Backup](#).

This backup method requires more storage space than other methods because the backup chains contains multiple full backup files and sometimes Veeam Backup for Nutanix AHV stores more restore points than specified in the retention policy settings due to the specifics of the [forward incremental retention policy](#).

Forever Forward Incremental Backup

To create a backup chain for a VM protected by a backup job without a full backup schedule, Veeam Backup for Nutanix AHV implements the forever forward incremental backup:

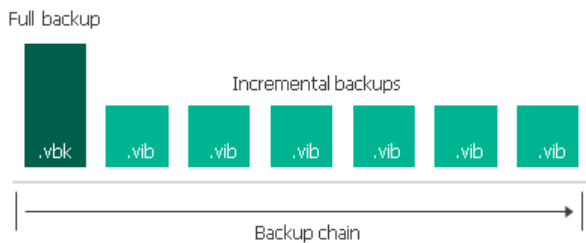
1. During the first (full) backup session, Veeam Backup for Nutanix AHV copies the full VM image and creates a full backup file in the backup repository. The full backup file becomes a starting point in the backup chain.
2. During subsequent backup sessions, Veeam Backup for Nutanix AHV copies only those data blocks that have changed since the previous backup session, and stores these data blocks to incremental backup files in the backup repository. The content of each incremental backup file depends on the content of the full backup file and the preceding incremental backup files in the backup chain.



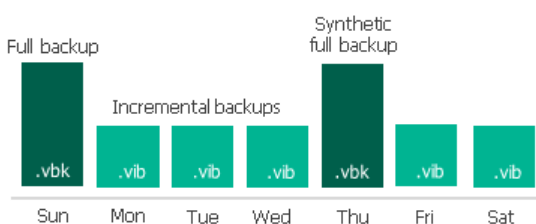
Forward Incremental Backup

To create a backup chain for a VM protected by a backup job with scheduled full backups, Veeam Backup for Nutanix AHV implements the forward incremental backup method:

1. During the first (full) backup session, Veeam Backup for Nutanix AHV copies the full VM image and creates a full backup file in the backup repository. The full backup file becomes a starting point in the backup chain.
2. During subsequent backup sessions, Veeam Backup for Nutanix AHV copies only those data blocks that have changed since the previous backup session, and stores these data blocks to incremental backup files in the backup repository. The content of each incremental backup file depends on the content of the full backup file and the preceding incremental backup files in the backup chain.



3. On a day when the synthetic full or active full backup is scheduled, Veeam Backup for Nutanix AHV creates a full backup file and adds it to the backup chain. Incremental restore points produced after this full backup file use it as a new starting point.



Changed Block Tracking

The changed block tracking (CBT) mechanism allows Veeam Backup for Nutanix AHV to increase the speed and efficiency of incremental backups:

- During a full backup session Veeam Backup for Nutanix AHV reads only written data blocks, while unallocated data blocks are filtered out.
- During an incremental backup session, Veeam Backup for Nutanix AHV reads only those data blocks that have changed since the previous backup session.

To detect unallocated and changed data blocks, CBT relies on the Nutanix AHV REST API:

1. During the first (full) backup session, Veeam Backup for Nutanix AHV creates a snapshot of a VM using native Nutanix AHV capabilities. To do that, Veeam Backup for Nutanix AHV sends API requests to access the content of the snapshot and to detect unallocated data blocks.
2. During subsequent sessions, new snapshots are created. Veeam Backup for Nutanix AHV sends API requests to access and to compare the content of the snapshot created during the previous backup session and the snapshot created during the current backup session. This allows Veeam Backup for Nutanix AHV to detect data blocks that have changed since the previous backup session.

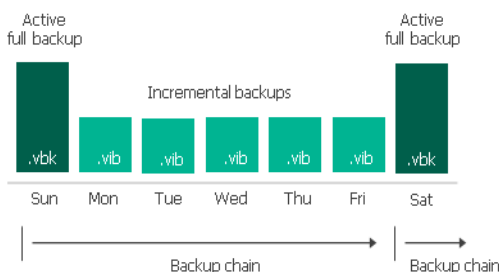
Limitations for Changed Block Tracking

Veeam Backup for Nutanix AHV does not use CBT for backup jobs which include a protection domain with consistency groups that contain two or more entities. If CBT cannot be used, Veeam Backup for Nutanix AHV reads the whole content of processed disks and compares it with backed-up data that already exists in the backup repository. In this case, the completion time of incremental backups may occur to grow.

Active Full Backup

In some cases, you may need to regularly create full backups. For example, your corporate backup policy may require that you create full backups on weekends and run incremental backups on work days. To let you conform to these requirements, Veeam Backup for Nutanix AHV allows you to create active full backups (either manually or automatically according to a specific schedule).

To create an active full backup Veeam Backup for Nutanix AHV retrieves VM data from the source cluster where the VM resides, compresses and deduplicates it and writes it to the VBK file in the backup repository. When creating an active full backup, Veeam Backup for Nutanix AHV starts a new backup chain for the VM. All further created incremental backups use the latest active full backup file as a new starting point. The old full backup file from the old backup chain remains on disk until it is automatically deleted according to the retention policy.



Veeam Backup for Nutanix AHV triggers a backup job to create an active full backup even if a regular backup session is not scheduled on this day. The active full backup session starts at the same time when the backup job is scheduled. For example, if you schedule the backup job to run at 12:00 AM Sunday through Friday, and schedule active full backup to be created on Saturday, Veeam Backup for Nutanix AHV will start a backup job session that will produce an active full backup at 12:00 AM on Saturday.

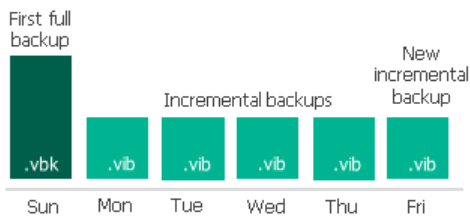
If the backup job is not scheduled to run automatically or is disabled, Veeam Backup for Nutanix AHV will not perform active full backup. If a regular backup session and an active full backup session are scheduled on the same day, Veeam Backup for Nutanix AHV will produce an active full backup only. However, if you run the backup job again on the same day manually, Veeam Backup for Nutanix AHV will perform incremental backup in a regular manner.

Synthetic Full Backup

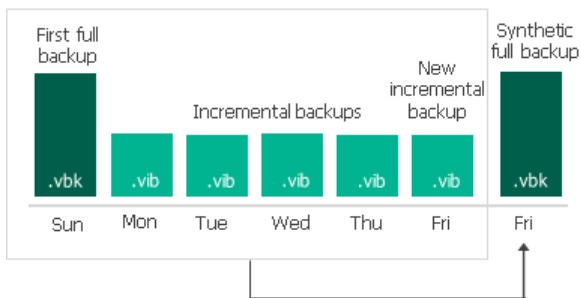
In some situations, running active full backups periodically may not be an option. Active full backups are resource-intensive and consume considerable amount of network bandwidth. As an alternative, you can create synthetic full backups that also produce VBK files and contain data of the whole VM. However, while creating synthetic full backups, Veeam Backup for Nutanix AHV connects to the cluster to retrieve only VM data that has changed since recent backup and processes it with the data that is already stored in the backup repository.

To create a synthetic full backup, Veeam Backup for Nutanix AHV performs the following operations:

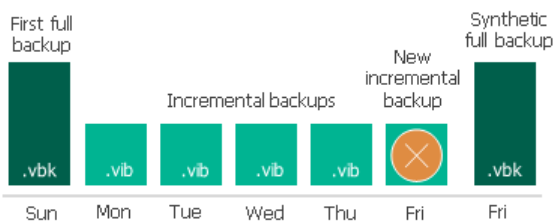
1. Veeam Backup for Nutanix AHV creates a regular incremental backup and adds it to the backup chain.



2. Veeam Backup for Nutanix AHV creates a new synthetic full backup using backup files that are already available in the backup chain, including the newly created incremental backup file.



3. Veeam Backup for Nutanix AHV deletes the created incremental backup as its data is already incorporated in the synthetic full backup.



When creating a synthetic full backup, Veeam Backup for Nutanix AHV starts a new backup chain for the VM. All further created incremental backups use the latest full backup file as a new starting point. The old full backup file from the old backup chain remains on disk until it is automatically deleted according to the retention policy.

Veeam Backup for Nutanix AHV triggers a backup job to create a synthetic full backup even if a regular backup session is not scheduled on this day. For example, if you schedule the backup job to run at 12:00 AM Sunday through Friday, and schedule synthetic full backup to be created on Saturday, Veeam Backup for Nutanix AHV will start a backup job session that will produce a synthetic full backup at 12:00 AM on Saturday.

If the backup job is not scheduled or is disabled, Veeam Backup for Nutanix AHV will not perform synthetic full backup automatically. If a regular backup session and a synthetic full backup session are scheduled on the same day, Veeam Backup for Nutanix AHV will produce a synthetic full backup only. However, if you run the backup job again on the same day manually, Veeam Backup for Nutanix AHV will perform incremental backup in a regular manner.

Snapshot Chain

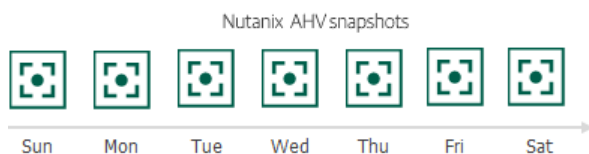
During every backup session, Veeam Backup for Nutanix AHV creates a snapshot for each VM added to the snapshot job or a protection domain snapshot if it is added to a protection domain snapshot job. The snapshot itself is a collection of point-in-time snapshots that Veeam Backup for Nutanix AHV takes using native Nutanix AHV capabilities.

A sequence of Nutanix AHV snapshots created during a set of backup sessions makes up a snapshot chain. Veeam Backup for Nutanix AHV creates the snapshot chain in the following way:

1. During the first backup session, Veeam Backup for Nutanix AHV creates a snapshot that contains all VM data and saves it in the Nutanix AHV cluster where the processed VM resides. This snapshot becomes a starting point in the snapshot chain.
2. During subsequent backup sessions, Veeam Backup for Nutanix AHV creates snapshots that contain only those data blocks that have changed since the previous backup session.

Each Nutanix AHV snapshot in the snapshot chain contains metadata. Metadata stores information about the protected instance and the job that created the snapshot. Veeam Backup for Nutanix AHV uses metadata to identify snapshots created by the Veeam backup service, to detect outdated snapshots, and to load the configuration of source VMs during recovery operations, and so on.

In Veeam Backup for Nutanix AHV, snapshots act as independent restore points for backed-up instances. If you remove any snapshot, it will not break the snapshot chain – Nutanix AHV will include data of the deleted snapshot to a following snapshot. Therefore, you will still be able to roll back instance data to any existing restore point. Note that while removing a protection domain snapshot, Veeam Backup for Nutanix AHV deletes data of all VMs and volume groups included in the domain.



The number of snapshots kept in the snapshot chain is defined by retention policy settings. For more information, see [Retention Policy for Snapshots](#).

Related Topics

- [Creating Snapshot Jobs](#)
- [Creating Protection Domain Snapshot Jobs](#)

Snapshot Types

In terms of data protection, Veeam Backup for Nutanix AHV allows you to create the following types of snapshots:

- **Backup snapshots**

A backup snapshot is a VM snapshot created by a [backup job](#). Backup snapshots are displayed neither in the Nutanix AHV backup appliance web console nor in the Veeam Backup & Replication console. However, you can still use backup snapshots to perform [entire VM restore](#) and [disk restore](#).

Backup snapshots allow Veeam Backup for Nutanix AHV to use the [CBT mechanism](#) while creating backups and to speed up the restore process (in comparison to restore from image-level backups).

- **Snapshots**

A snapshot is a VM snapshot created by a [snapshot job](#) or taken manually in the Prism Element console. Snapshots are displayed both in the Nutanix AHV backup appliance web console and in the Veeam Backup & Replication console. You can use snapshots to [restore VMs to the original Nutanix AHV environment](#).

While taking VM snapshots, Nutanix AHV captures data residing on virtual disks attached to the VMs. To protect data residing on volume groups that are attached to the VMs, volume group (VG) snapshots or protection domain (PD) snapshots are created. VG snapshots capture data of volume groups only, whereas PD snapshots capture data of consistency groups that include VMs and volume groups attached to them.

- **VG snapshots**

A VG snapshot is a volume group snapshot created by a [backup job](#) to produce VM backups. Veeam Backup for Nutanix AHV takes VG snapshots only if the backup scope includes individual virtual machines (not protection domains) with volume groups attached.

VG snapshots are displayed neither in the Nutanix AHV backup appliance web console nor in the Veeam Backup & Replication console. VG snapshots allow Veeam Backup for Nutanix AHV to use the [CBT mechanism](#) while creating backups and to [restore VMs with volume groups](#).

- **PD snapshots**

A PD snapshot is a protection domain snapshot created by a [PD snapshot job](#) or a [backup job](#) to protect data of consistency groups (VMs and volume groups) included into a protection domain. PD snapshots guarantee the consistency of VM and volume group data. Veeam Backup for Nutanix AHV takes PD snapshots only if the following requirements are met for each protection domain included into the backup scope:

- The protection domain does not contain multiple VMs with the same name.
- VMs and their volume groups belong to the same protection domain.
- VMs and their volume groups are included into one [consistency group](#) of the protection domain.
- [CHAP authentication is disabled](#) for the volume groups.
- [Applies to backup jobs only] At least one consistency group of the protection domain contains more than one VM or volume group.

PD snapshots are displayed both in the Nutanix AHV backup appliance web console and in the Veeam Backup & Replication console. You can use PD snapshots to [restore VMs to the original Nutanix AHV environment](#).

NOTE

[Recovery points](#) created manually in the Prism Central console cannot be used to protect and recover Nutanix AHV resources with Veeam Backup for Nutanix AHV.

In terms of data consistency, Veeam Backup for Nutanix AHV allows you to create the following types of snapshots:

- **Crash-consistent snapshots**

A crash-consistent snapshot contains the data of virtual disks and volume groups attached to a VM.

- **Application-consistent snapshots**

An application-consistent snapshot contains not only the data of virtual disks and volume groups attached to a VM, but also the data of applications (such as Microsoft Active Directory, Microsoft SQL Server, Microsoft SharePoint, Microsoft Exchange and Oracle) running in the VM guest OS, which allows you to restore the applications without data loss and corruption.

By default, Veeam Backup for Nutanix AHV always tries to create an application-consistent snapshot (of the [VSS_BT_COPY](#) backup type) when processing a VM. However, if the [requirements for application-consistent snapshots](#) are not met, Veeam Backup for Nutanix AHV creates a crash-consistent snapshot instead.

Retention Policy

Snapshots and image-level backups created by jobs are not kept forever – they are removed according to retention policy settings specified while creating the jobs.

Depending on the data protection scenario, retention policy can be specified:

- **In days** – for image-level backups.

Restore points in the backup chain can be stored only for the allowed period of time. If a restore point is older than the specified time limit, Veeam Backup for Nutanix AHV removes it from the backup chain. Since for retention policy specified in days, the backup chain must contain at least 3 restore points, Veeam Backup for Nutanix AHV may retain restore points for a longer period than configured in the retention policy settings.

- **In restore points** – for image-level backups and snapshots.

The chain can contain only the allowed number of restore points. If the number of allowed restore points is exceeded, Veeam Backup for Nutanix AHV removes the earliest restore point from the chain.

Retention Policy for Backups

For image-level backups, you can specify retention policy in days or restore points. Veeam Backup for Nutanix AHV retains the number of latest restore points defined in job scheduling settings as described in section [Creating Backup Jobs](#). For backup chains created by jobs without scheduled active or synthetic full backups, Veeam Backup for Nutanix AHV applies forever forward incremental backup retention policy. For backup chains created by jobs that regularly produce active or synthetic full backups, Veeam Backup for Nutanix AHV applies forward incremental backup retention policy.

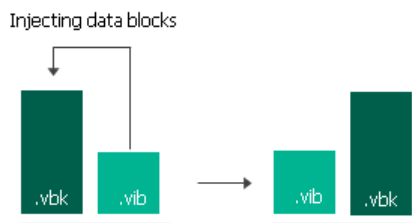
NOTE

To backup chains created by backup jobs that no longer exist, Veeam Backup for Nutanix AHV applies [background retention](#).

Forever Forward Incremental Backup Retention Policy

To track and remove redundant restore points from a forever forward incremental backup chain, Veeam Backup for Nutanix AHV performs the following actions at the end of each backup session:

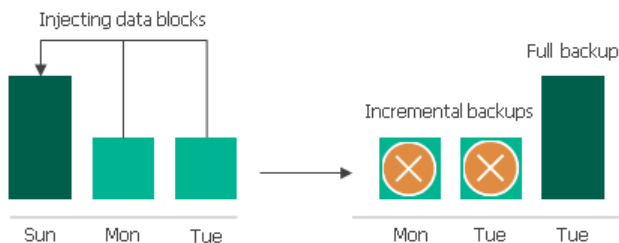
1. Veeam Backup for Nutanix AHV checks the configuration database to detect backup chains that contain redundant restore points:
 - If retention policy is specified in days, Veeam Backup for Nutanix AHV detects backup chains with restore points that are older than the specified time limit.
 - If retention policy is specified in restore points, Veeam Backup for Nutanix AHV detects backup chains where the number of allowed restore points is exceeded.
2. If a redundant restore point exists in a backup chain, Veeam Backup for Nutanix AHV transforms the backup chain in the following way:
 - a. Rebuilds the full backup to include the data of the incremental backup that follows the full backup. To do that, Veeam Backup for Nutanix AHV injects into the full backup data blocks from the earliest incremental backup in the chain. This way, the full backup 'moves' forward in the standard backup chain.



- b. Removes the earliest incremental backup from the chain as redundant – this data has already been injected into the full backup.



3. Veeam Backup for Nutanix AHV repeats step 2 for all other redundant restore points found in the backup chain until all the restore points are removed. As data from multiple restore points is injected into the rebuilt full backup, Veeam Backup for Nutanix AHV ensures that the backup chain is not broken and that you will be able to recover your data when needed.

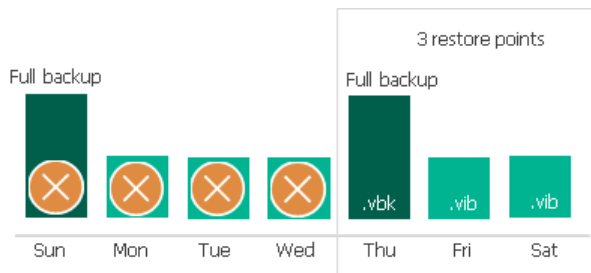


Forward Incremental Backup Retention Policy

To track and remove redundant restore points from a forward incremental backup chain, Veeam Backup for Nutanix AHV performs the following actions at the end of each backup session:

1. Veeam Backup for Nutanix AHV checks the configuration database to detect forward incremental backup chains where a new full backup has been created (which starts a new backup chain fragment).

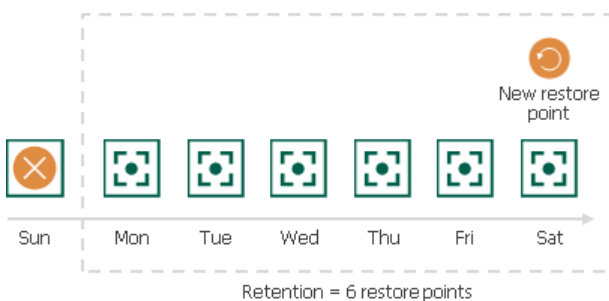
2. Veeam Backup for Nutanix AHV checks the following:
 - If retention policy is specified in days, Veeam Backup for Nutanix AHV checks whether the period to keep restore points in the new chain fragment has reached the allowed time limit.
 - If retention policy is specified in restore points, Veeam Backup for Nutanix AHV checks whether the number of restore points in the new chain fragment has reached the number of allowed restore points.
3. If the new backup chain fragment has reached the limit of allowed restore points, Veeam Backup for Nutanix AHV removes all restore points of the older backup chain fragment.



Retention Policy for Snapshots

For Nutanix AHV native snapshots, you specify retention policy restore points. Veeam Backup for Nutanix AHV retains the number of latest restore points defined in job scheduling settings as described in sections [Creating Snapshot Jobs](#) and [Creating Protection Domain Snapshots Jobs](#).

During every successful backup session, Veeam Backup for Nutanix AHV creates a new restore point. If Veeam Backup for Nutanix AHV detects that the number of restore points in the snapshot chain exceeds the retention limit, it removes the earliest restore point from the chain.



Creating Backup Jobs

To produce backups of VMs, Veeam Backup for Nutanix AHV runs backup jobs. A backup job is a collection of settings that define the way backup operations are performed: what data to back up, where to store backups, when to start the backup process, and so on. To create a backup job, you can either use the [Veeam Backup for Nutanix AHV web console](#) or the [Veeam Backup & Replication console](#).

Before You Begin

Before you create a backup job, consider the following limitations:

- You cannot back up workers and Nutanix Controller VMs.
- You cannot back up Windows 11 VMs due to AOS 6.6 technical limitations related to Virtual Trusted Platform Module (vTPM) support. For more information on vTPM VM configuration, see [Nutanix documentation](#).
- The way Veeam Backup for Nutanix AHV creates image-level backups depends on whether you choose to protect individual virtual machines, protection domains or the whole cluster while creating the job:

If the backup job includes individual virtual machines, as well as the whole cluster, Veeam Backup for Nutanix AHV creates a snapshot of each VM and a VG snapshot of each volume group, and then produces image-level backups using the created snapshots. This approach cannot guarantee full consistency of VM and volume group data.

If the backup job includes protection domains, Veeam Backup for Nutanix AHV creates a PD snapshot of all VMs and volume groups added to the same consistency group in each protection domain. This approach guarantees full data consistency. However, Veeam Backup for Nutanix AHV takes PD snapshots only if the following requirements are met for each protection domain included into the backup job:

- The protection domain does not contain multiple VMs with the same name.
- VMs and their volume groups belong to the same protection domain.
- VMs and their volume groups are included into one [consistency group](#) of the protection domain.
- [CHAP authentication is disabled](#) for the volume groups.

If any of those requirements are not met, Veeam Backup for Nutanix AHV backs up VMs and their volume groups as if processing individual virtual machines.

- When processing a VM, Veeam Backup for Nutanix AHV always tries to produce an application-consistent backup that allows you to perform [application item restore](#). However, if the [requirements for application-consistent snapshots](#) that are used to create application-consistent backups are not met, Veeam Backup for Nutanix AHV creates a crash-consistent backup instead. To work around the issue, you can create an application-consistent backup using [Veeam Agent for Linux](#) or [Veeam Agent for Windows](#).

Note that while creating application-consistent backups, Veeam Backup for Nutanix AHV does not perform database log truncation. To truncate logs, use Nutanix Guest Tool or [custom scripts](#).

- By default, Veeam Backup for Nutanix AHV applies the following [deduplication and compression settings](#) to backed-up data:
 - Deduplication: *Enabled*
 - Data compression level: *Optimal*

- Storage optimization: *1 MB*

Due to technical limitations, you cannot change these settings while configuring backup jobs.

- By default, [backup encryption](#) is disabled for backed-up data. However, you can enable encryption at the repository level as described in the Veeam Backup & Replication User Guide, section [Access Permissions](#).
- [VM guest OS file indexing](#) is not supported for backups created with Veeam Backup for Nutanix AHV.
- Since Veeam Backup & Replication does not allow you to assign [information about locations](#) to Nutanix AHV clusters and backup appliances, job statistics do not include information on the Nutanix AHV VM data migration between different geographic regions.

Creating Backup Jobs Using Backup Appliance Web Console

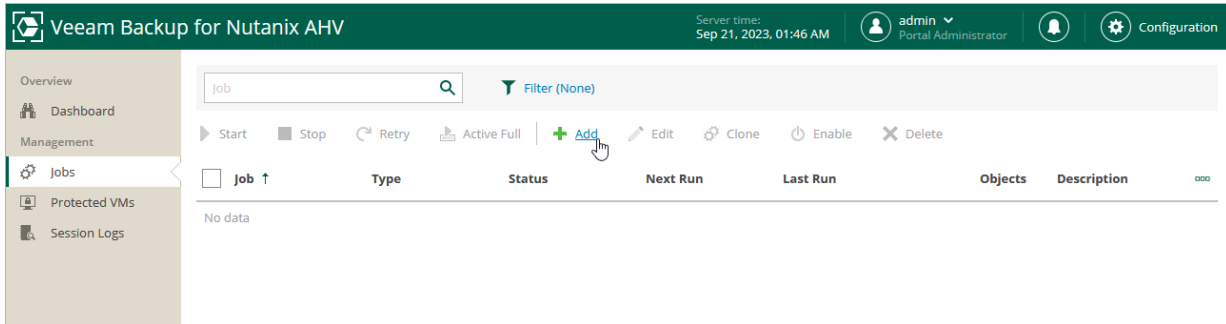
To create a backup job using the Nutanix AHV backup appliance web console, do the following:

1. [Check prerequisites and limitations.](#)
2. [Launch the Add Job wizard.](#)
3. [Configure general settings.](#)
4. [Selects VMs or protection domains to back up.](#)
5. [Specify a backup repository where backups will be stored.](#)
6. [Create a schedule for the backup job.](#)
7. [Finish working with the wizard.](#)

Step 1. Launch Add Job Wizard

To launch the **Add Job** wizard, do the following:

1. Navigate to **Jobs**.
2. Click **Add**.



Step 2. Specify Job Name and Description

At the **Job Info** step of the wizard, select the **Backup job** option. Then, use the **Name** and **Description** fields to specify a name for the new backup job and to provide a description for future reference. The job name must be unique in Veeam Backup for Nutanix AHV.

The maximum length of the name is 40 characters; the following characters are not supported: \ / " ' [] : | < > + = ; , ? * @ & _ . The maximum length of the description is 1024 characters.

The screenshot shows the 'Add Job' wizard in Veeam Backup for Nutanix AHV. The interface is in a dark theme. At the top, the title bar reads 'Veeam Backup for Nutanix AHV'. On the right side of the title bar, it shows 'Server time: Sep 21, 2023, 02:13 AM', a user profile for 'admin Portal Administrator', a notification bell, and a 'Configuration' gear icon. Below the title bar, there is a navigation bar with a back arrow and the text 'Add Job'. A sidebar on the left contains a list of steps: 'Job Info' (highlighted in green), 'Sources', 'Backup Destination', 'Schedule', and 'Summary'. The main content area is titled 'Job Info' and contains the instruction 'Enter a name for the job and select a job type.' There are two text input fields: 'Name:' with the value 'LMS Daily Backup' and 'Description:' with the value 'Backup of the LMS Server VM and Media Storage VM'. Below these fields are three radio button options: 'Backup job' (selected), 'Snapshot job', and 'PD snapshot job'. Each option has a brief description: 'Configure a regular backup job to create backups of individual VMs.', 'Configure a snapshot-only job to create snapshots of individual VMs.', and 'Configure a protection domain snapshot-only job to create a snapshot of a specific PD.' At the bottom of the form, there are two buttons: 'Next' and 'Cancel'.

Step 3. Configure Backup Source Settings

At the **Sources** step of the wizard, specify the following backup source settings:

1. [Choose resources to back up.](#)
2. [Choose disks and volume groups to protect.](#)

Step 3a. Choose Resources

In the **Resources** section of at the **Sources** step of the wizard, specify the backup scope – resources that Veeam Backup for Nutanix AHV will back up:

1. Click **Choose resources to protect**.
2. In the **Choose resources to protect** window, choose whether you want to back up all VMs in the cluster, only specific VMs or protection domains.

If you add a protection domain, Veeam Backup for Nutanix AHV will regularly check for new consistency groups (VMs and volume groups) added to the domain and automatically update the job settings to include these groups in the backup scope. For a protection domain to be displayed in the list of the available domains, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

TIP

As an alternative to specifying resources explicitly, you can exclude a number of resources from the backup scope. To do that, click **Choose resources to exclude** and specify the VMs or protection domains that you do not want to back up – the procedure is the same as described for including resources in the backup scope.

Consider that if a resource appears both in the list of included and excluded resources, Veeam Backup for Nutanix AHV will still not process the resource because the list of excluded resources has a higher priority.

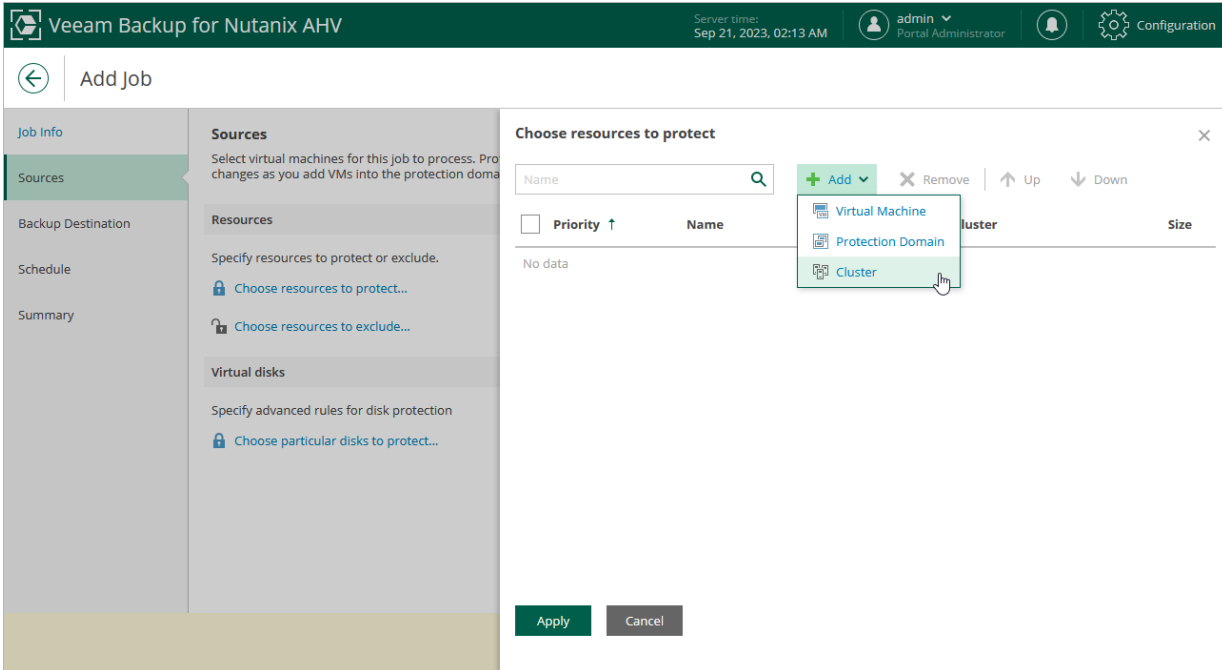
While running the job, Veeam Backup for Nutanix AHV processes resources in the order they are added to the backup scope. However, you can change the order, for example, if you add some mission-critical VMs to the job and want them to be processed first. To change the processing order, select a resource and use the **Up** or **Down** buttons.

NOTE

Consider the following:

- If you include a resource into the backup scope for multiple times (for example, an individual VM and a PD that contains this VM), Veeam Backup for Nutanix AHV will process this resource only once.
- If you include a cluster or a protection domain into the backup scope, VMs in this cluster or domain are processed at random. To ensure that the VMs are processed in a specific order, you must add them as standalone VMs – not as a part of the cluster or domain.

By default, jobs process all disks and volume groups attached to VMs included into the backup scope. However, you can protect only specific disks and volume groups of the selected resources. For more information, see [Step 3b. Choose Disks and Volume Groups](#).



Step 3b. Choose Disks and Volume Groups

In the **Virtual disks** section of the **Sources** step of the wizard, you can instruct Veeam Backup for Nutanix AHV to back up only specific virtual disks and volume groups related to the specified backup scope:

1. Click **Choose particular disks to protect**.
2. In the **Specify disk protection rules** window, click **Add** and select a resource that you have added to the backup scope at [step 3a](#).
3. Click **Protect Disks > Protect Selected Disks Only**.
4. In the **Protect Selected Disks Only** window, choose a bus type of the disks that you want to back up, select the necessary disks and volume groups, and click **Add**.

Disks and volume groups that you do not select will be excluded from the backup job.

NOTE

If you configure multiple disk protection rules, specific rules will override general ones. For example, if you add a rule for a protection domain and for a VM included in this domain, Veeam Backup for Nutanix AHV will process the VM disks according to the rule configured for the VM.

The screenshot shows the Veeam Backup for Nutanix AHV interface. The main window is titled "Add Job" and has a sidebar with "Job Info", "Sources", "Backup Destination", "Schedule", and "Summary". The "Sources" section is active, showing "Sources", "Resources", and "Virtual disks".

The "Specify disk protection rules" dialog box is open, showing a search bar, "Add" and "Remove" buttons, and a "Protect Disks..." dropdown menu. The dropdown menu is open, showing "Protect All Disks" and "Protect Selected Disks Only...".

The dialog box contains a table with the following data:

<input checked="" type="checkbox"/>	Name ↑	Type	Cluster	
<input checked="" type="checkbox"/>	pgp-ubuntu	Virtual Machine	Dionysus	Selected disks

At the bottom of the dialog box, there are "Apply" and "Cancel" buttons.

Step 4. Specify Backup Job Settings

At the **Backup Destination** step of the wizard, do the following:

1. From the **Backup repository** drop-down list, select a backup repository where you want to store backups.
For a backup repository to be displayed in the list of the available repositories, it must be [added to the backup infrastructure](#), and the Nutanix AHV backup appliance must [have access to the repository](#).
2. In the **Retention policy** section, choose a retention policy that Veeam Backup for Nutanix AHV will apply to backups created by the job:
 - Select *days* if you want to keep restore points in a backup chain for the allowed period of time. If a restore point is older than the specified limit, Veeam Backup for Nutanix AHV removes it from the chain.
 - Select *restore points* if you want a backup chain to contain only the allowed number of restore points. If the number of allowed restore points is exceeded, Veeam Backup for Nutanix AHV removes the earliest restore point from the chain.

For more information on how Veeam Backup for Nutanix AHV tracks and removes redundant restore points, see [Retention Policy](#).

NOTE

If the UUID of a VM changes (for example, if the VM was migrated to another cluster), Veeam Backup for Nutanix AHV will be unable to continue the backup chain for this VM. After you re-add the VM to the backup job, Veeam Backup for Nutanix AHV will start a new backup chain for it. However, you will still be able to perform restore operations using backups from the old backup chain.

To help you implement a comprehensive backup strategy, Veeam Backup for Nutanix AHV allows you to [enable long-term retention policy for backups](#) and to [configure backup job advanced settings](#) (for example, enable health check, schedule active and synthetic full backups, plan backup maintenance and upload protection domain custom scripts).

The screenshot shows the 'Add Job' wizard in Veeam Backup for Nutanix AHV, specifically the 'Backup Destination' step. The interface includes a top navigation bar with the product name, server time (Sep 21, 2023, 02:13 AM), user (admin, Portal Administrator), and a Configuration icon. The main content area is divided into a left sidebar with navigation links (Job info, Sources, Backup Destination, Schedule, Summary) and a main panel. The 'Backup Destination' section is active, showing 'Selected VMs: 224' and 'Total size: 22.73 TB'. The 'Backup repository' is set to 'Default Backup Repository'. A yellow warning box indicates '76.16 GB free of 129.45 GB'. The 'Retention policy' is set to '7 days'. The 'GFS settings' section has 'Keep certain full backups longer for archival purposes' set to 'Off'. The 'Advanced job settings' section is collapsed. At the bottom, there are 'Previous', 'Next', and 'Cancel' buttons.

Configuring GFS Policy Schedules

Grandfather-Father-Son (GFS) policy allows you to leverage full backups for long-term retentions instead of creating a new full backup every time. The mechanism simplifies the backup schedule and optimizes the backup performance.

Veeam Backup for Nutanix AHV re-uses full backups created according to the backup job schedule to achieve the desired retention for GFS policy schedules (weekly, monthly and yearly). Each full backup is marked with a flag of the related GFS policy schedule type: the (W) flag is used to mark full backups created weekly, (M) – monthly, and (Y) – yearly. Veeam Backup for Nutanix AHV uses these flags to control the retention period for the created full backups. Once a flag of a GFS policy schedule is assigned to a full backup, this full backup can no longer be removed – it is kept for the period defined in the retention settings. When the specified retention period is over, the flag is unassigned from the full backup. If the full backup does not have any other flags assigned, it is removed according to the short-term retention policy settings. For more information on the GFS flag assignment and removal, see Veeam Backup & Replication User Guide, section [Long-Term Retention Policy \(GFS\)](#).

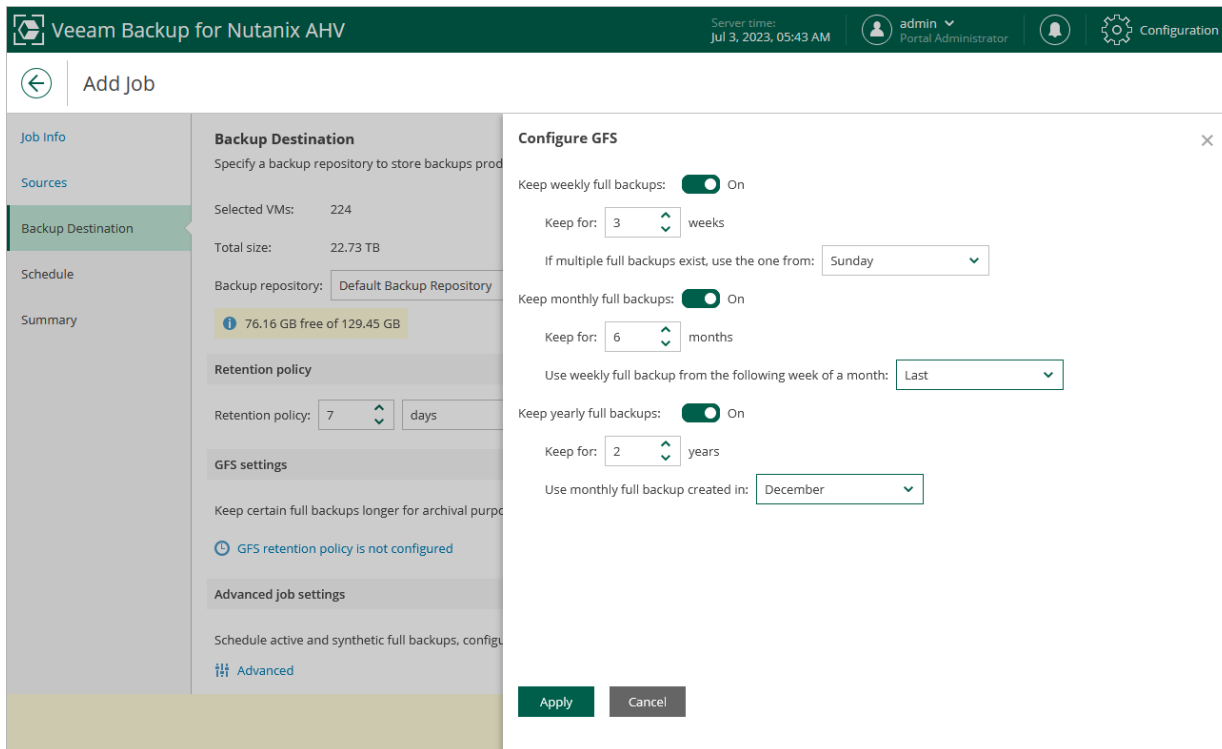
To configure a GFS policy schedule, set the **Keep certain full backups longer for archival purposes** toggle to *On*, and specify the following options in the **Configure GFS** section:

- **Keep weekly full backups** – Veeam Backup for Nutanix AHV will keep a full backup created within a week or on a specific day for a specified number of weeks.
- **Keep monthly full backups** – Veeam Backup for Nutanix AHV will keep a full backup created during a specific week for a specified number of months.
- **Keep yearly full backups** – Veeam Backup for Nutanix AHV will keep a full backup created in a specific month for a number of years.

After you configure the GFS retention policy settings, [schedule active full or synthetic full backups](#). Otherwise, no new full backups will be automatically produced, and Veeam Backup for Nutanix AHV will be unable to leverage them for long-term retentions.

NOTE

If you choose an object storage repository to store backups produced by the backup job, you cannot enable synthetic full backups. However, if you configure a GFS policy, synthetic backups will be automatically created according to the specified GFS schedule and marked with an appropriate GFS flag.



Configuring Advanced Settings

To configure backup job advanced settings, do the following:

1. Click **Advanced**.
2. To instruct Veeam Backup for Nutanix AHV to periodically [perform a health check](#) for backups created by the backup job, in the **Health check** section of the **Advanced job settings** window, set the **Enable health check** toggle to *On*, and specify a schedule for the health check to run.

IMPORTANT

- It is recommended that the backup and health check schedules configured for the job do not overlap to avoid data access issues.
 - If you have selected an off-premise cloud object storage repository as the target location for backups at [step 4](#), it is recommended that a [helper appliance is configured in the repository settings](#). Otherwise, additional data transfer costs may occur.
3. To configure retention settings for backups of VMs that are no longer processed by the backup job, in the **Backup file maintenance** section of the **Advanced job settings** window, set the **Delete backups of VMs that are no longer included in the backup job** toggle to *On*, and specify the number of days during which Veeam Backup for Nutanix AHV will keep backups of VMs excluded from the job.
 3. To [schedule synthetic full backups](#), in the **Synthetic full backups** section of the **Advanced job settings** window, set the **Create synthetic full backups periodically** toggle to *On*, and choose whether you want to create synthetic full backups on specific days every week or on specific days of specific months.

4. To [schedule active full backups](#), in the **Active full backups** section of the **Advanced job settings** window, set the **Create active full backups periodically** toggle to *On*, and choose whether you want to create active full backups on specific days every week or on specific days of specific months.

Alternatively, you can create active full backups manually when needed. For more information, see [Creating Active Full Backup](#).

IMPORTANT

Do not schedule synthetic and active full backups to run at the same time. Due to technical limitations, Veeam Backup for Nutanix AHV will be unable to create synthetic full backups according to the specified schedule.

5. [Applies only if you have included protection domains in the backup job] To instruct Veeam Backup for Nutanix AHV to execute a custom script while running the backup job, set the **Run the following script to create a PD snapshot** toggle to *On*, and click **Browse** to upload a script file. For more information, see [Custom Scripts](#).

NOTE

When running custom scripts, Veeam Backup for Nutanix AHV uses native Nutanix AHV capabilities to take PD snapshots. If Nutanix AHV fails to create a PD snapshot, the backup job will also fail to complete successfully. For more information on the prerequisites for creating PD snapshots, see [Snapshot Types](#).

The screenshot displays the 'Add Job' configuration interface for Veeam Backup for Nutanix AHV. The interface is organized into a sidebar on the left and a main configuration area on the right. The sidebar includes sections for 'Job Info', 'Sources', 'Backup Destination', 'Schedule', and 'Summary'. The main configuration area is divided into several sections: 'Backup Destination' (Selected VMs: 224, Total size: 22.73 TB, Backup repository: Default Backup Repository, 76.16 GB free of 129.45 GB), 'Retention policy' (7 days), 'GFS settings' (3 weekly, 6 monthly, 2 yearly), 'Advanced job settings' (Health check, Backup file maintenance, Synthetic full backups, Active full backups, Custom script). The 'Health check' section is expanded, showing 'Enable health check' (On), 'Weekly' (10:00 PM, On these days, Friday), and 'Monthly on' (10:00 PM, Last, Friday, January, February, March, April, May). The 'Backup file maintenance' section shows 'Delete backups of VMs that are no longer included in the backup job' (On) and 'Delete backed-up data after' (14 days). The 'Synthetic full backups' section shows 'Create synthetic full backups periodically' (On), 'Weekly' (On these days, Saturday), and 'Monthly on' (Fourth, Saturday, January, February, March, April, May, ...). The 'Active full backups' section shows 'Create active full backups periodically' (On), 'Weekly' (On these days, Saturday), and 'Monthly on' (First, Sunday, January, February, March, April, May, ...). The 'Custom script' section shows 'Run the following script to create a PD snapshot' (Off) and a yellow information box stating 'Custom scripts help you coordinate application activity before and after a PD snapshot is taken. To learn how to write a script, see the Veeam Backup for Nutanix AHV User Guide.' The window has 'Apply' and 'Cancel' buttons at the bottom.

How Health Check Works

When Veeam Backup for Nutanix AHV saves a new backup restore point to a backup repository, it calculates CRC values for metadata in the backup chain and saves these values to the chain metadata, together with the instance data. When performing a health check, Veeam Backup for Nutanix AHV verifies the availability of data blocks, which are required to restore from the recent point only, and uses the saved values to ensure that the full restore points being verified are consistent.

On the day scheduled for a health check to run, Veeam Backup for Nutanix AHV starts a new health check session. For each restore point in the backup chain, Veeam Backup for Nutanix AHV calculates CRC values for backup metadata and compares them to the CRC values that were previously saved to the restore point. Veeam Backup for Nutanix AHV also checks whether data blocks that are required to rebuild the restore point are available.

If Veeam Backup for Nutanix AHV does not detect data inconsistency, the health check session completes successfully. Otherwise, the session completes with an error. Depending on the detected data inconsistency, Veeam Backup for Nutanix AHV performs the following operations:

- If the health check detects corrupted metadata in a full restore point, Veeam Backup for Nutanix AHV marks the backup chain as corrupted in the configuration database. During the next backup job session, Veeam Backup for Nutanix AHV copies the full instance image, creates a full restore point in the backup repository and starts a new backup chain in the backup repository.
- If the health check detects corrupted disk blocks in a restore point, Veeam Backup for Nutanix AHV marks the restore point that includes the corrupted data blocks and all subsequent incremental restore points as incomplete in the configuration database. During the next backup job session, Veeam Backup for Nutanix AHV copies not only those data blocks that have changed since the previous backup session but also data blocks that have been corrupted, and saves these data blocks to the latest restore point that has been created during the current session.

Writing Custom Scripts

To coordinate application activity on VMs included into a protection domain before and after a PD snapshot is taken, you can run custom scripts. A custom script performs pre-freeze operations, takes the PD snapshot, and finally performs post-thaw operations.

IMPORTANT

Veeam does not provide support for cases related to custom scripts.

You can use any programming language to write a script. However, you must specify the used interpreter in the shebang line, for example: `#!/usr/bin/python3`. For more information, see [Appendix A. Custom Script Sample](#).

NOTE

You cannot use binary files for custom scripts.

While writing custom scripts, use the following arguments:

Argument	Description
<code>--pdName</code>	Name of a protection domain for which a PD snapshot is created.
<code>--jobName</code>	Name of a job that runs the script.
<code>--logDir</code>	Path to a folder where script logs are stored.
<code>--logLevel</code>	Level of logging.

To specify parameters required for connecting to the Nutanix AHV cluster where VMs included into the protection domain are running, use environment variables such as in the following example:

```
nutanixClusterIp = os.getenv('NUTANIX_CLUSTER_ADDRESS')
nutanixLogin = os.getenv('NUTANIX_CLUSTER_LOGIN')
nutanixPass = os.getenv('NUTANIX_CLUSTER_PASSWORD')
```

You can find script logs in the `custom_script.log` file stored in the `/var/log/nxbackupagent/Backup/<job_name_job_uuid>/<pd_name>/` folder on the backup appliance. The file also contains a JSON string that includes the script execution status, an error description (if any) and an identifier of the PD snapshot if it has been created, for example:

- Script execution succeeded:

```
Result: {"status": "Success", "errorMessage": "", "oob_schedule_id": 7885270}
```

- Script execution failed:

```
Result: {"status": "Failed", "errorMessage": "Unable to get vm_id list for Protection Domain='VeeamBackupProtection': Authentication failed.", "oob_schedule_id": ""}
```

- Script execution completed with a warning:

```
Result: {"status": "Warning", "errorMessage": "Pre-freeze took more time than expected", "oob_schedule_id": "44509"}
```

TIP

You can track the script execution progress on the [Session Logs page](#) in the backup appliance web console. Alternatively, you can [download log files](#) to your local machine.

Step 5. Define Job Schedule

At the **Schedule** step of the wizard, you can instruct Veeam Backup for Nutanix AHV to start the backup job automatically according to a specific backup schedule. The backup schedule defines how often data of the VMs added to the backup job will be backed up.

To help you implement a comprehensive backup strategy, Veeam Backup for Nutanix AHV allows you to create schedules of the following types:

- **Daily at this time** – the backup job will create restore points at a specific time on specific days.
- **Monthly at this time** – the backup job will create restore points once a month on a specific day.
- **Periodically every** – the backup job will create restore points repeatedly, with a specific time interval every day.

TIP

You can instruct Veeam Backup for Nutanix AHV to run the backup job again if it fails on the first try. To do that, select the **Automatic Retry** check box, and specify the maximum number of attempts to run the job and the time interval between retries. When retrying backup jobs, Veeam Backup for Nutanix AHV processes only those VMs that failed to be backed up during the previous attempt.

The screenshot shows the 'Add Job' wizard in Veeam Backup for Nutanix AHV, specifically the 'Schedule' step. The interface includes a top navigation bar with the product name, server time (Sep 21, 2023, 02:13 AM), user (admin, Portal Administrator), and a Configuration icon. The main content area is titled 'Add Job' and features a left-hand navigation pane with options for Job Info, Sources, Backup Destination, Schedule (selected), and Summary. The 'Schedule' section contains the following settings:

- Run job automatically:** On
- Daily at this time:** 10:00 PM, Everyday
- Monthly at this time:** 10:00 PM, Fourth, Saturday, January, February, March, April, May, ...
- Periodically every:** 1, Hour
- Automatic retry:** On
- Retry failed job:** 3 times
- Wait before each retry attempt for:** 10 minutes

At the bottom of the wizard, there are three buttons: 'Previous', 'Next', and 'Cancel'.

Step 6. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**. When Veeam Backup for Nutanix AHV starts the job according to the specified schedule, the backup progress will be displayed on the [Session Logs page](#).

TIP

If you want to start the job immediately, select the **Run the job when I click Finish** check box and then click **Finish**.

The screenshot shows the 'Add Job' wizard in the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the Veeam logo, the product name 'Veeam Backup for Nutanix AHV', the server time 'Sep 21, 2023, 02:13 AM', the user 'admin Portal Administrator', and a 'Configuration' link. The main content area is titled 'Add Job' and features a left-hand navigation menu with options: Job info, Sources, Backup Destination, Schedule, and Summary (which is currently selected). The main panel displays the 'Summary' step, which includes a 'Copy to clipboard' button and a 'General' section with the following details: Name: LMS Daily Backup, Description: Backup of the LMS Server VM and Media Storage VM. Below this is a 'Resources' section showing 'Clusters: 1'. The 'Backup Destination' section includes: Target repository: Default Backup Repository, Backup file maintenance: Remove deleted VMs data after 14 days, and Retention: 7 Days. At the bottom of the summary panel, there is a checked checkbox labeled 'Run the job when I click Finish'. The bottom of the wizard features three buttons: 'Previous', 'Finish', and 'Cancel'.

Creating Backup Jobs Using Veeam Backup & Replication Console

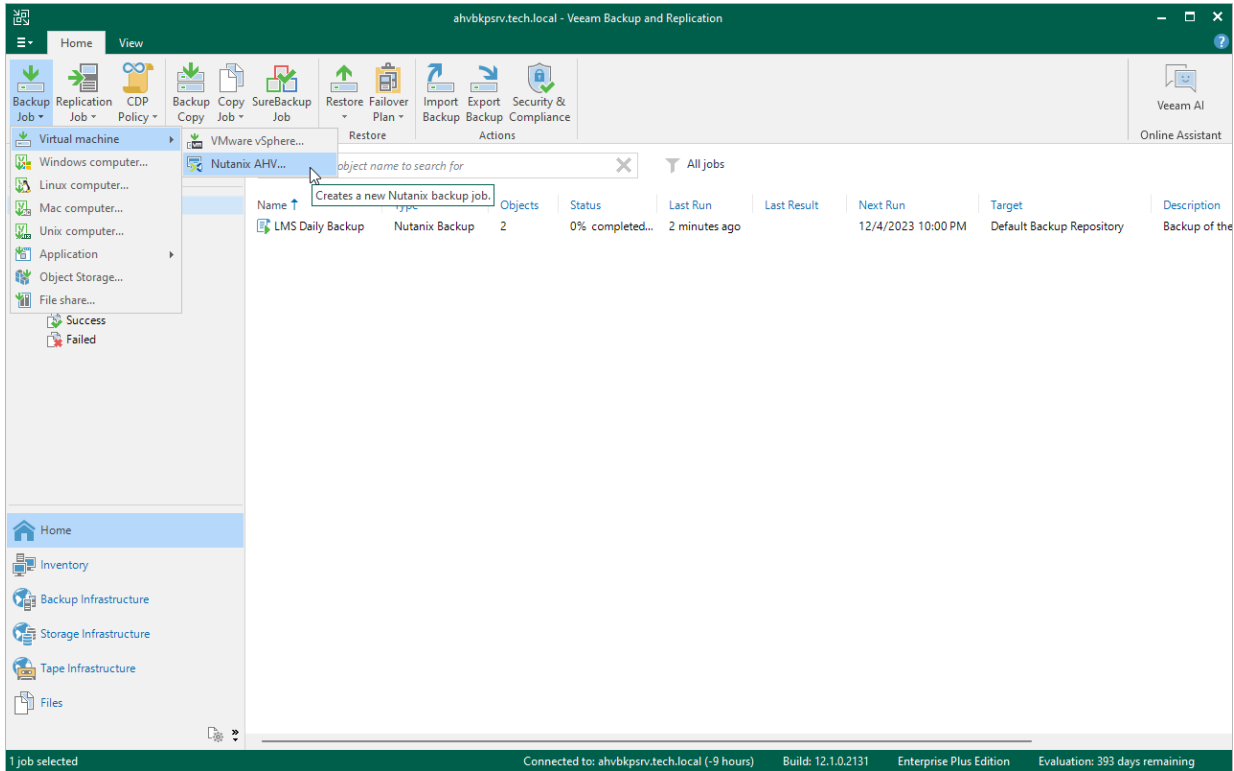
To create a backup job using the Veeam Backup & Replication console, do the following:

1. [Check prerequisites and limitations.](#)
2. [Launch the Add Job wizard.](#)
3. [Configure general settings.](#)
4. [Selects resources to back up.](#)
5. [Specify a backup repository where backups will be stored.](#)
6. [Create a schedule for the backup job.](#)
7. [Finish working with the wizard.](#)

Step 1. Launch New Job Wizard

To launch the **New Job** wizard, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Jobs** and click **Backup Job > Virtual Machine > Nutanix AHV** on the ribbon.



Step 2. Specify Job Name and Description

At the **Name** step of the wizard, select the **Backup job** option. Then, use the **Name** and **Description** fields to specify a name for the new backup job and to provide a description for future reference. The job name must be unique in Veeam Backup for Nutanix AHV.

The maximum length of the name is 40 characters; the following characters are not supported: \ / " ' [] : | < > + = ; , ? * @ & _ . The maximum length of the description is 1024 characters.

New Job

Name
Type in a name and description for this job.

Name

Virtual Machines

Backup Destination

Schedule

Summary

Name:
LMS Daily Backup

Description:
Backup of the LMS Server and Media Storage VM

Type:
 Backup job
 Snapshot job
 PD snapshot job

< Previous Next > Finish Cancel

Step 3. Configure Backup Source Settings

At the **Virtual Machines** step of the wizard, specify the following backup source settings:

1. [Choose resources to back up.](#)
2. [Choose disks and volume groups to protect.](#)

Step 3a. Choose Resources

First, at the **Virtual Machines** step of the wizard, specify the backup scope – resources that Veeam Backup for Nutanix AHV will back up:

1. Click **Add**.
2. In the **Add Objects** window, choose whether you want to back up all VMs in the cluster, only specific VMs or protection domains.

To view the list of available protection domains, click the **PDs** icon on the toolbar at the top right corner of the window. If you add a protection domain, Veeam Backup for Nutanix AHV will regularly check for new consistency groups (VMs and volume groups) added to the domain and automatically update the job settings to include these groups in the backup scope. For a protection domain to be displayed in the list of the available domains, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

TIP

As an alternative to specifying resources explicitly, you can exclude a number of resources from the backup scope. To do that, click **Exclusions** and specify the VMs or protection domains that you do not want to back up – the procedure is the same as described for including resources in the backup scope.

Consider that if a resource appears both in the list of included and excluded resources, Veeam Backup for Nutanix AHV will still not process the resource because the list of excluded resources has a higher priority.

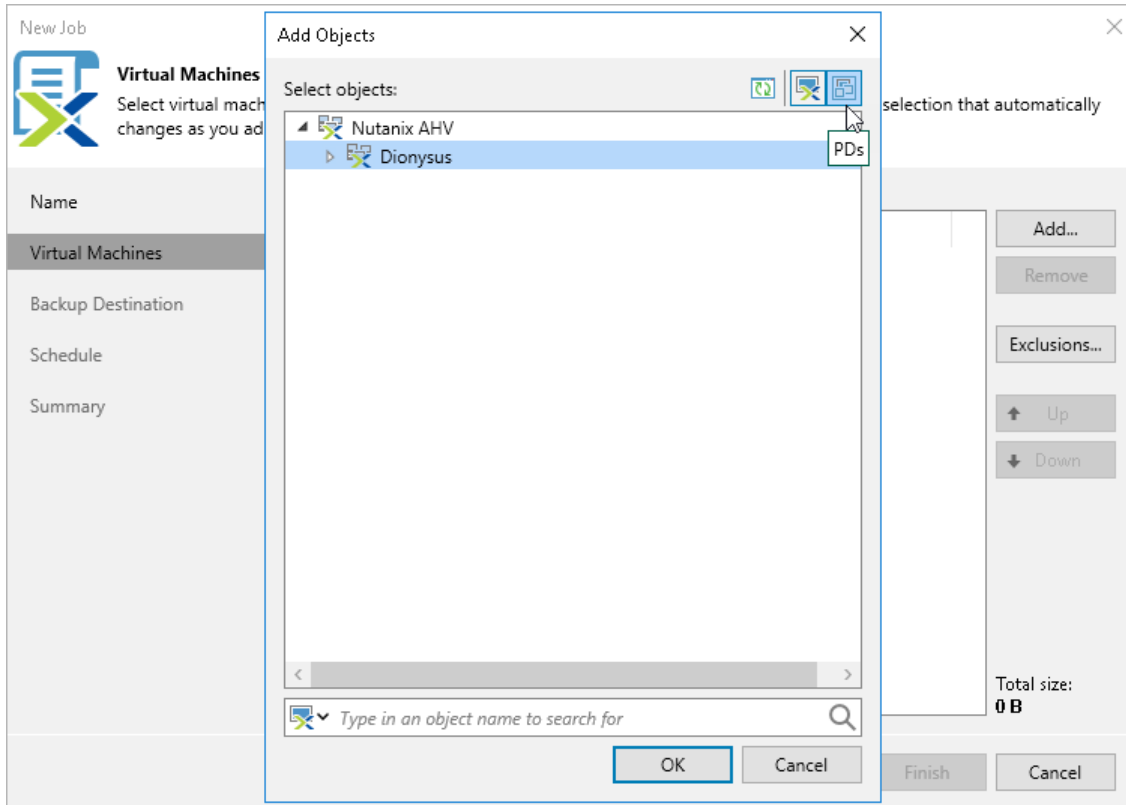
While running the job, Veeam Backup for Nutanix AHV processes resources in the order they are added to the backup scope. However, you can change the order, for example, if you add some mission-critical VMs to the job and want them to be processed first. To change the processing order, select a resource and use the **Up** or **Down** buttons.

NOTE

Consider the following:

- If you include a resource into the backup scope for multiple times (for example, an individual VM and a PD that contains this VM), Veeam Backup for Nutanix AHV will process this resource only once.
- If you include a cluster or a protection domain into the backup scope, VMs in this cluster or domain are processed at random. To ensure that the VMs are processed in a specific order, you must add them as standalone VMs – not as a part of the cluster or domain.

By default, jobs process all disks and volume groups attached to VMs included into the backup scope. However, you can protect only specific disks and volume groups of the selected resources. For more information, see [Step 3b. Choose Disks and Volume Groups](#).



Step 3b. Choose Disks and Volume Groups

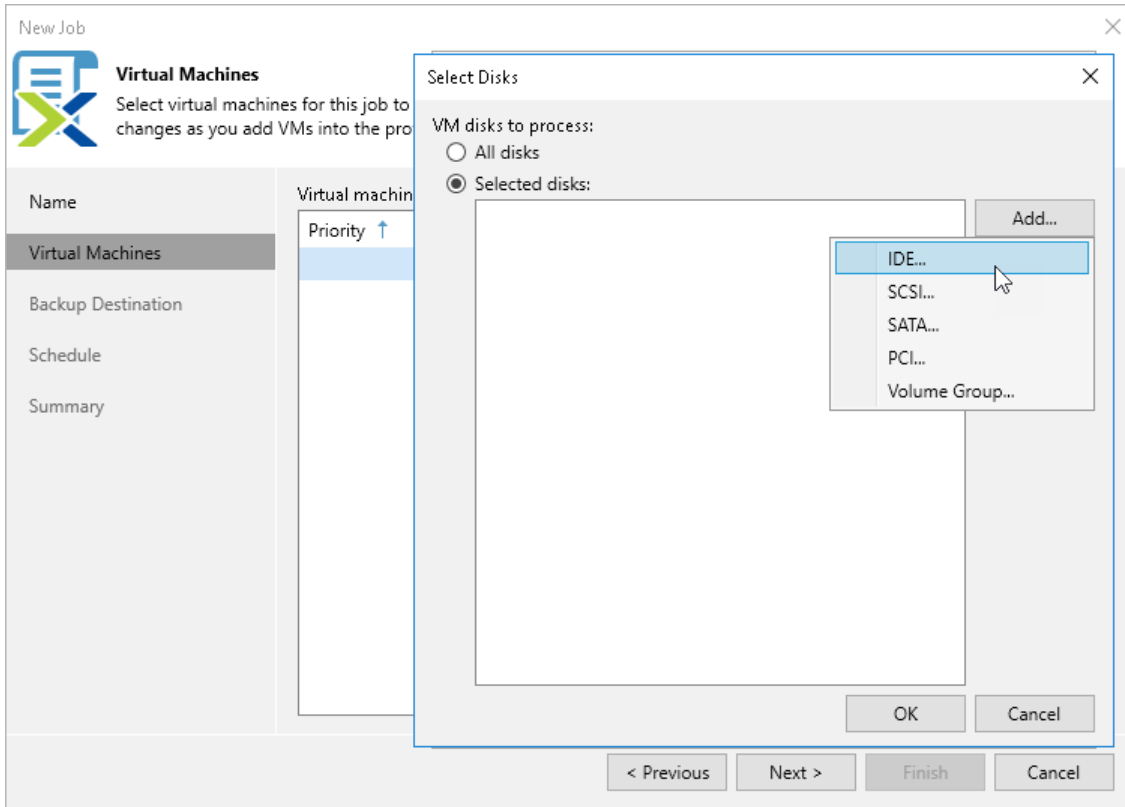
Second, at the **Virtual Machines** step of the wizard, you can instruct Veeam Backup for Nutanix AHV to back up only specific virtual disks and volume groups related to the selected backup scope:

1. Click **Exclusions**.
2. In the **Exclusions** window, switch to the **Disks** tab and click **Add**.
3. In the **Add Objects** window, select a resource that you have added to the backup scope at [step 3a](#), and click **OK**.
4. Back to the **Exclusions** window, select the resource and click **Edit**.
5. In the **Select Disks** window, select the **Selected Disks** option, click **Add** and choose a bus type of the disks that you want to back up. Then, select the necessary disks and volume groups.

Disks and volume groups that you do not select will be excluded from the backup job.

NOTE

If you configure multiple disk protection rules, specific rules will override general ones. For example, if you add a rule for a protection domain and for a VM included in this domain, Veeam Backup for Nutanix AHV will process the VM disks according to the rule configured for the VM.



Step 4. Specify Backup Job Settings

At the **Backup Destination** step of the wizard, do the following:

1. From the **Backup repository** drop-down list, select a backup repository where you want to store backups.
For a backup repository to be displayed in the list of the available repositories, it must be [added to the backup infrastructure](#), and the Nutanix AHV backup appliance must [have access to the repository](#).
2. In the **Retention policy** section, choose a retention policy that Veeam Backup for Nutanix AHV will apply to backups created by the job:
 - Select *days* if you want to keep restore points in a backup chain for the allowed period of time. If a restore point is older than the specified limit, Veeam Backup for Nutanix AHV removes it from the chain.
 - Select *restore points* if you want a backup chain to contain only the allowed number of restore points. If the number of allowed restore points is exceeded, Veeam Backup for Nutanix AHV removes the earliest restore point from the chain.

For more information on how Veeam Backup for Nutanix AHV tracks and removes redundant restore points, see [Retention Policy](#).

NOTE

If the UUID of a VM changes (for example, if the VM was migrated to another cluster), Veeam Backup for Nutanix AHV will be unable to continue the backup chain for this VM. After you re-add the VM to the backup job, Veeam Backup for Nutanix AHV will start a new backup chain for it. However, you will still be able to perform restore operations using backups from the old backup chain.

To help you implement a comprehensive backup strategy, Veeam Backup for Nutanix AHV allows you to [enable long-term retention policy for backups](#) and to [configure backup job advanced settings](#) (for example, enable health check, schedule active and synthetic full backups, plan backup maintenance and upload protection domain custom scripts).

New Job

Backup Destination

Specify a backup repository to store backups produced by this job and customize advanced job settings.

Name

Virtual Machines

Backup Destination

Schedule

Summary

Backup repository: Default Backup Repository

76.9 GB free of 129 GB

Retention policy: 7 days

Keep certain full backups longer for archival purposes

Configure...

GFS retention policy is not configured

Advanced job settings include schedules for active and synthetic full backups, backup file maintenance configuration and specify scripts for PD snapshot creation.

Advanced...

< Previous Next > Finish Cancel

Configuring GFS Policy Schedules

Grandfather-Father-Son (GFS) policy allows you to leverage full backups for long-term retentions instead of creating a new full backup every time. The mechanism simplifies the backup schedule and optimizes the backup performance.

Veeam Backup for Nutanix AHV re-uses full backups created according to the backup job schedule to achieve the desired retention for GFS policy schedules (weekly, monthly and yearly). Each full backup is marked with a flag of the related GFS policy schedule type: the (W) flag is used to mark full backups created weekly, (M) – monthly, and (Y) – yearly. Veeam Backup for Nutanix AHV uses these flags to control the retention period for the created full backups. Once a flag of a GFS policy schedule is assigned to a full backup, this full backup can no longer be removed – it is kept for the period defined in the retention settings. When the specified retention period is over, the flag is unassigned from the full backup. If the full backup does not have any other flags assigned, it is removed according to the short-term retention policy settings. For more information on the GFS flag assignment and removal, see Veeam Backup & Replication User Guide, section [Long-Term Retention Policy \(GFS\)](#).

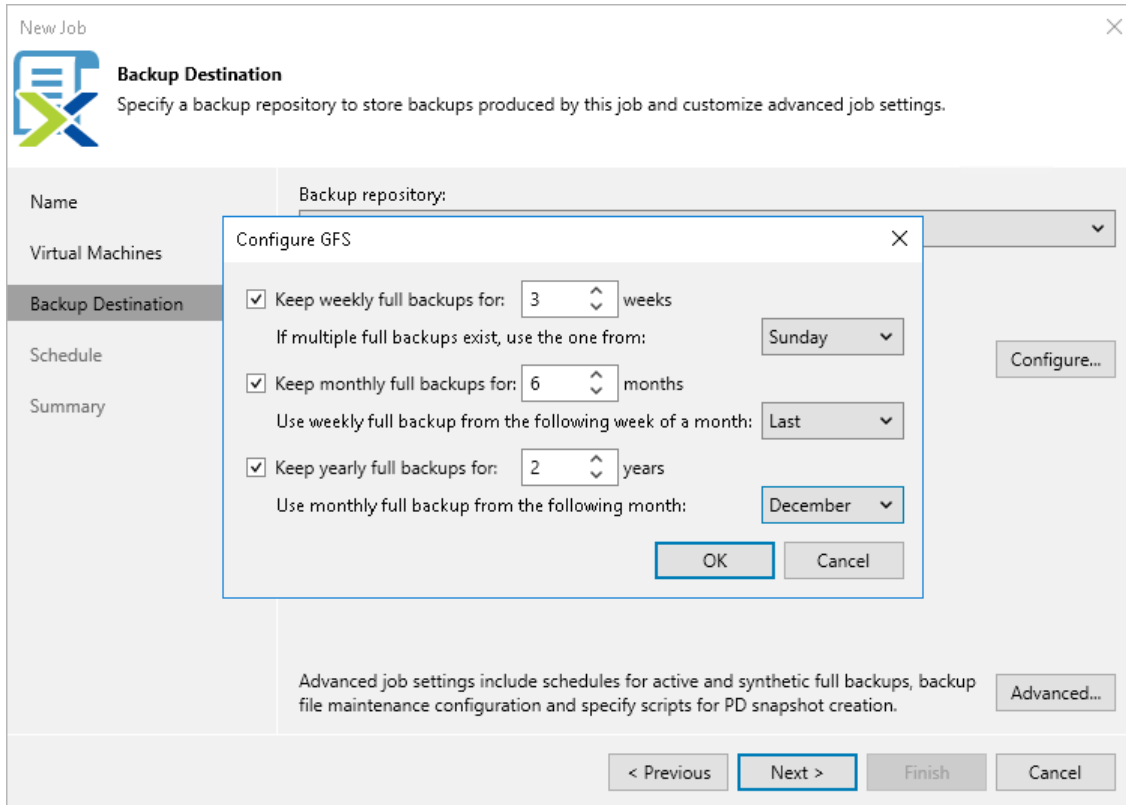
To configure a GFS policy schedule, select the **Keep certain full backups longer for archival purposes** check box and click **Configure**. Then specify the following options in the **Configure GFS** window:

- **Keep weekly full backups** – Veeam Backup for Nutanix AHV will keep a full backup created within a week or on a specific day for a specified number of weeks.
- **Keep monthly full backups** – Veeam Backup for Nutanix AHV will keep a full backup created during a specific week for a specified number of months.
- **Keep yearly full backups** – Veeam Backup for Nutanix AHV will keep a full backup created in a specific month for a number of years.

After you configure the GFS retention policy settings, [schedule active full or synthetic full backups](#). Otherwise, no new full backups will be automatically produced, and Veeam Backup for Nutanix AHV will be unable to leverage them for long-term retentions.

NOTE

If you choose an object storage repository to store backups produced by the backup job, you cannot enable synthetic full backups. However, if you configure a GFS policy, synthetic backups will be automatically created according to the specified GFS schedule and marked with an appropriate GFS flag.



Configuring Advanced Settings

To configure advanced settings for the backup job, do the following:

1. Click **Advanced**.
2. To [schedule synthetic full backups](#), on the **Backup** tab of the **Advanced settings** window, select the **Create synthetic full backups periodically** check box, click **Configure** and choose whether you want to create synthetic full backups on specific days every week or on specific days of specific months.
3. To [schedule active full backups](#), on the **Backup** tab of the **Advanced settings** window, select the **Create active full backups periodically** check box, click **Configure** and choose whether you want to create active full backups on specific days every week or on specific days of specific months.

Alternatively, you can create active full backups manually when needed. For more information, see [Creating Active Full Backup](#).

IMPORTANT

Do not schedule synthetic and active full backups to run at the same time. Due to technical limitations, Veeam Backup for Nutanix AHV will be unable to create synthetic full backups according to the specified schedule.

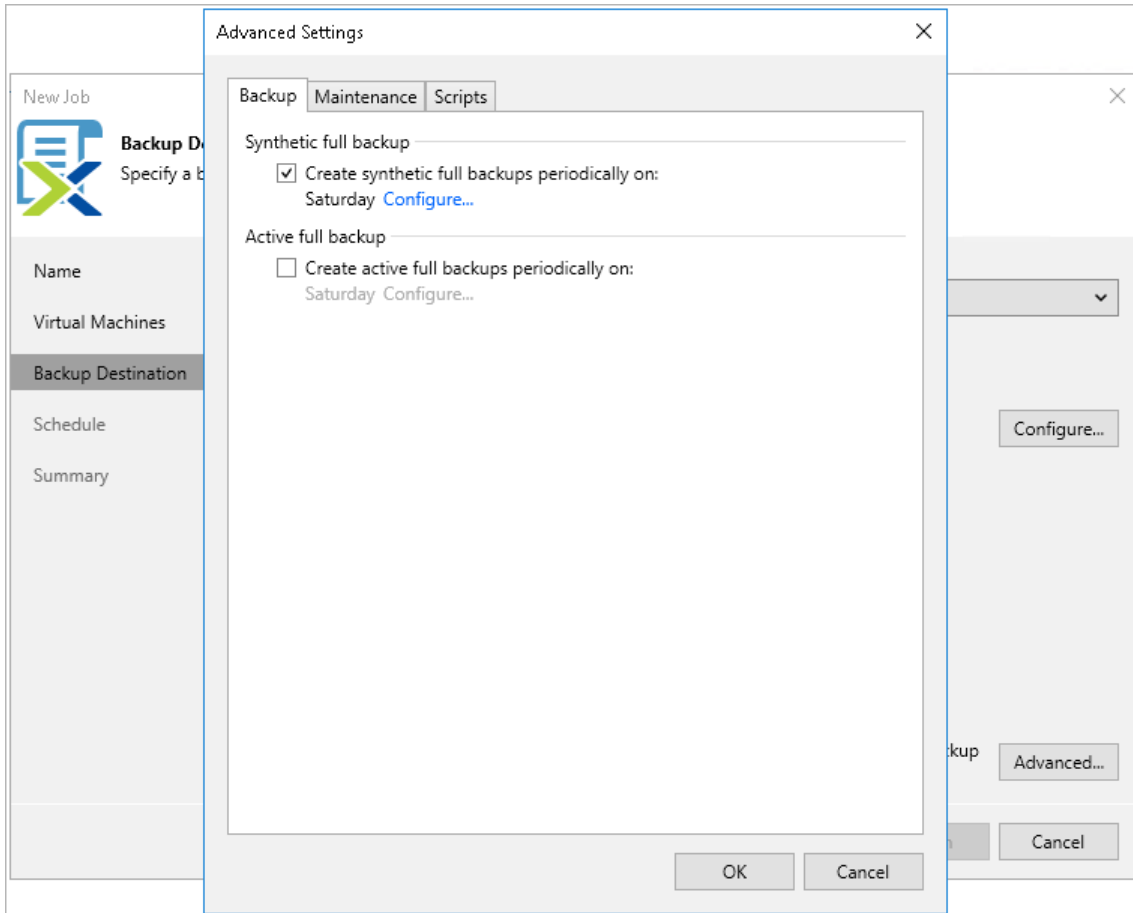
4. To instruct Veeam Backup for Nutanix AHV to periodically [perform a health check](#) for backups created by the backup job, on the **Maintenance** tab of the **Advanced settings** window, select the **Perform backup files health check (detects and auto-heals corruption)** check box, click **Configure** and specify a schedule for the health check to run.

IMPORTANT

- It is recommended that the backup and health check schedules configured for the job do not overlap to avoid data access issues.
 - If you have selected an off-premise cloud object storage repository as the target location for backups at [step 4](#), it is recommended that a [helper appliance is configured in the repository settings](#). Otherwise, additional data transfer costs may occur.
5. To configure retention settings for backups of VMs that are no longer processed by the backup job, on the **Maintenance** tab of the **Advanced settings** window, select the **Remove deleted items data after** check box, and specify the number of days during which Veeam Backup for Nutanix AHV will keep backups of VMs excluded from the job.
 6. [Applies only if you have included protection domains in the backup job] To instruct Veeam Backup for Nutanix AHV to execute a custom script while running the backup job, on the **Scripts** tab of the **Advanced settings** window, select the **Run the following script to create a PD snapshot** check box, and click **Browse** to upload a script file. For more information, see [Custom Scripts](#).

NOTE

When running custom scripts, Veeam Backup for Nutanix AHV uses native Nutanix AHV capabilities to take PD snapshots. If Nutanix AHV fails to create a PD snapshot, the backup job will also fail to complete successfully. For more information on the prerequisites for creating PD snapshots, see [Snapshot Types](#).



How Health Check Works

When Veeam Backup for Nutanix AHV saves a new backup restore point to a backup repository, it calculates CRC values for metadata in the backup chain and saves these values to the chain metadata, together with the instance data. When performing a health check, Veeam Backup for Nutanix AHV verifies the availability of data blocks, which are required to restore from the recent point only, and uses the saved values to ensure that the full restore points being verified are consistent.

On the day scheduled for a health check to run, Veeam Backup for Nutanix AHV starts a new health check session. For each restore point in the backup chain, Veeam Backup for Nutanix AHV calculates CRC values for backup metadata and compares them to the CRC values that were previously saved to the restore point. Veeam Backup for Nutanix AHV also checks whether data blocks that are required to rebuild the restore point are available.

If Veeam Backup for Nutanix AHV does not detect data inconsistency, the health check session completes successfully. Otherwise, the session completes with an error. Depending on the detected data inconsistency, Veeam Backup for Nutanix AHV performs the following operations:

- If the health check detects corrupted metadata in a full restore point, Veeam Backup for Nutanix AHV marks the backup chain as corrupted in the configuration database. During the next backup job session, Veeam Backup for Nutanix AHV copies the full instance image, creates a full restore point in the backup repository and starts a new backup chain in the backup repository.

- If the health check detects corrupted disk blocks in a restore point, Veeam Backup for Nutanix AHV marks the restore point that includes the corrupted data blocks and all subsequent incremental restore points as incomplete in the configuration database. During the next backup job session, Veeam Backup for Nutanix AHV copies not only those data blocks that have changed since the previous backup session but also data blocks that have been corrupted, and saves these data blocks to the latest restore point that has been created during the current session.

Writing Custom Scripts

To coordinate application activity on VMs included into a protection domain before and after a PD snapshot is taken, you can run custom scripts. A custom script performs pre-freeze operations, takes the PD snapshot, and finally performs post-thaw operations.

IMPORTANT

Veeam does not provide support for cases related to custom scripts.

You can use any programming language to write a script. However, you must specify the used interpreter in the shebang line, for example: `#!/usr/bin/python3`. For more information, see [Appendix A. Custom Script Sample](#).

NOTE

You cannot use binary files for custom scripts.

While writing custom scripts, use the following arguments:

Argument	Description
<code>--pdName</code>	Name of a protection domain for which a PD snapshot is created.
<code>--jobName</code>	Name of a job that runs the script.
<code>--logDir</code>	Path to a folder where script logs are stored.
<code>--logLevel</code>	Level of logging.

To specify parameters required for connecting to the Nutanix AHV cluster where VMs included into the protection domain are running, use environment variables such as in the following example:

```
nutanixClusterIp = os.getenv('NUTANIX_CLUSTER_ADDRESS')
nutanixLogin = os.getenv('NUTANIX_CLUSTER_LOGIN')
nutanixPass = os.getenv('NUTANIX_CLUSTER_PASSWORD')
```

You can find script logs in the `custom_script.log` file stored in the `/var/log/nxbackupagent/Backup/<job_name_job_uuid>/<pd_name>/` folder on the backup appliance. The file also contains a JSON string that includes the script execution status, an error description (if any) and an identifier of the PD snapshot if it has been created, for example:

- Script execution succeeded:

```
Result: {"status": "Success", "errorMessage": "", "oob_schedule_id": 7885270}
```

- Script execution failed:

```
Result: {"status": "Failed", "errorMessage": "Unable to get vm_id list for Protection Domain='VeeamBackupProtection': Authentication failed.", "oob_schedule_id": ""}
```

- Script execution completed with a warning:

```
Result: {"status": "Warning", "errorMessage": "Pre-freeze took more time than expected", "oob_schedule_id": "44509"}
```

TIP

You can track the script execution progress on the [Session Logs page](#) in the backup appliance web console. Alternatively, you can [download log files](#) to your local machine.

Step 5. Define Job Schedule

At the **Schedule** step of the wizard, you can instruct Veeam Backup for Nutanix AHV to start the backup job automatically according to a specific backup schedule. The backup schedule defines how often data of the VMs added to the backup job will be backed up.

To help you implement a comprehensive backup strategy, Veeam Backup for Nutanix AHV allows you to create schedules of the following types:

- **Daily at this time** – the backup job will create restore points at a specific time on specific days.
- **Monthly at this time** – the backup job will create restore points once a month on a specific day.
- **Periodically every** – the backup job will create restore points repeatedly, with a specific time interval every day.

TIP

You can instruct Veeam Backup for Nutanix AHV to run the backup job again if it fails on the first try. To do that, select the **Retry failed items processing** check box, and specify the maximum number of attempts to run the job and the time interval between retries. When retrying backup jobs, Veeam Backup for Nutanix AHV processes only those VMs that failed to be backed up during the previous attempt.

New Job ×

Schedule
Specify the job scheduling options. If you do not set the schedule, the job will need to be controlled manually.

Name

Virtual Machines

Backup Destination

Schedule

Summary

Run the job automatically

Daily at this time: 10:00 PM Everyday

Monthly at this time: 10:00 PM Fourth Saturday

Periodically every: 1 Hours

Automatic retry

Retry failed items processing: 3 times

Wait before each retry attempt for: 10 minutes

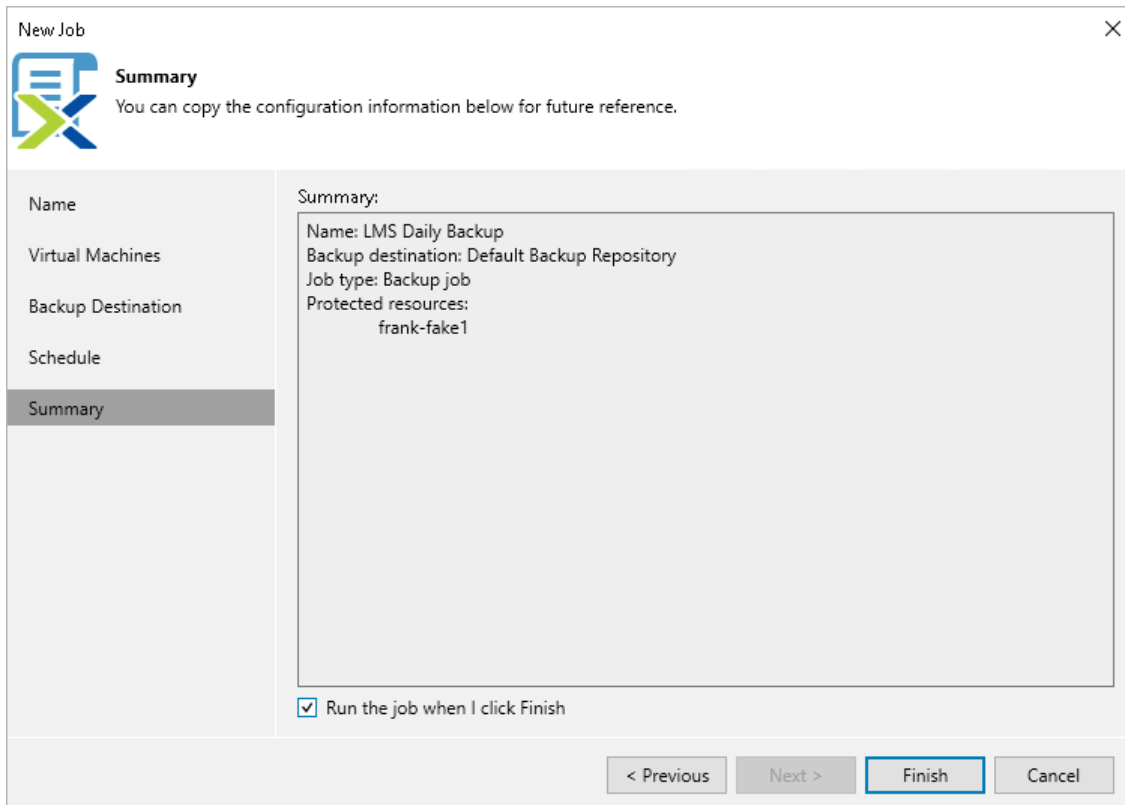
< Previous **Apply** Finish Cancel

Step 6. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**. When Veeam Backup for Nutanix AHV starts the job according to the specified schedule, the backup progress will be displayed on the [Session Logs page](#).

TIP

If you want to start the job immediately, select the **Run the job when I click Finish** check box and then click **Finish**.



The screenshot shows the 'New Job' wizard in the 'Summary' step. The window title is 'New Job' with a close button (X) in the top right corner. On the left, there is a navigation pane with the following items: Name, Virtual Machines, Backup Destination, Schedule, and Summary (which is currently selected and highlighted). The main area displays the job configuration summary:

Summary:
Name: LMS Daily Backup
Backup destination: Default Backup Repository
Job type: Backup job
Protected resources:
frank-fake1

Below the summary, there is a checkbox labeled 'Run the job when I click Finish' which is checked. At the bottom of the window, there are four buttons: '< Previous', 'Next >', 'Finish' (which is highlighted with a blue border), and 'Cancel'.

Creating Snapshot Jobs

To take snapshots of VMs, Veeam Backup for Nutanix AHV runs snapshot jobs. A snapshot job is a collection of settings that define the way data protection operations are performed: what data to protect, when to start the backup process, and so on. To create a snapshot job, you can either use the [Veeam Backup for Nutanix AHV web console](#) or the [Veeam Backup & Replication console](#).

Before You Begin

Before you create a snapshot job, consider the following limitations:

- You cannot use snapshot jobs to create [PD snapshots](#). If you add a protection domain to a snapshot job, Veeam Backup for Nutanix AHV will create snapshots of individual VMs included into the protection domain.
- You cannot create snapshots of [instantly recovered VMs](#) since the VM disks have not completed migration to the Nutanix AHV cluster yet, which may cause the snapshots to become incomplete in case the [mount server](#) is disconnected.

Creating Snapshot Jobs Using Backup Appliance Web Console

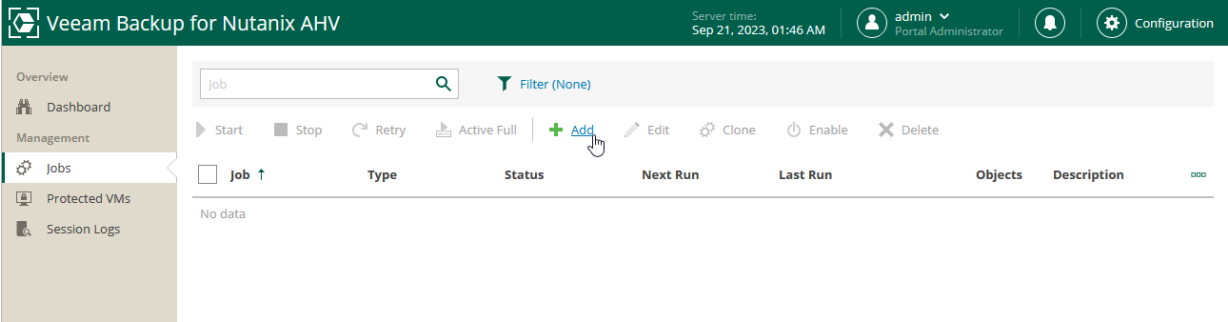
To create a snapshot job using the Nutanix AHV backup appliance web console, do the following:

1. [Check prerequisites and limitations](#).
2. [Launch the Add Job wizard](#).
3. [Specify a job name](#).
4. [Selects virtual machines](#).
5. [Configure snapshot retention settings](#).
6. [Define a job schedule](#).
7. [Finish working with the wizard](#).

Step 1. Launch Add Job Wizard

To launch the **Add Job** wizard, do the following:

- 1. Navigate to **Jobs**.
- 2. Click **Add**.



Step 2. Specify Job Name and Description

At the **Job Info** step of the wizard, select the **Snapshot job** option. Then, use the **Name** and **Description** fields to specify a name for the new snapshot job and to provide a description for future reference. The job name must be unique in Veeam Backup for Nutanix AHV.

The maximum length of the name is 40 characters; the following characters are not supported: \ / " ' [] : | < > + = ; , ? * @ & _ . The maximum length of the description is 1024 characters.

The screenshot shows the 'Add Job' wizard in the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the product name, server time (Sep 21, 2023, 02:13 AM), user (admin, Portal Administrator), and a Configuration icon. The left sidebar contains navigation options: Job Info (selected), Sources, Backup Destination, Schedule, and Summary. The main content area is titled 'Job Info' and contains the following elements:

- Instruction: 'Enter a name for the job and select a job type.'
- Name field: 'Mail Server Daily Snapshot'
- Description field: 'Snapshot of the Mail Server'
- Job type selection:
 - Backup job: Configure a regular backup job to create backups of individual VMs.
 - Snapshot job: Configure a snapshot-only job to create snapshots of individual VMs.
 - PD snapshot job: Configure a protection domain snapshot-only job to create a snapshot of a specific PD.
- Navigation buttons: 'Next' and 'Cancel'.

Step 3. Configure Backup Source Settings

At the **Sources** step of the wizard, specify the backup scope – choose whether you want to take snapshots of individual VMs, VMs included into protection domains or all VMs residing in the cluster.

If you add a protection domain, Veeam Backup for Nutanix AHV will regularly check for new VMs added to the domain and automatically update the job settings to include these VMs in the backup scope. For a protection domain to be displayed in the list of the available domains, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

TIP

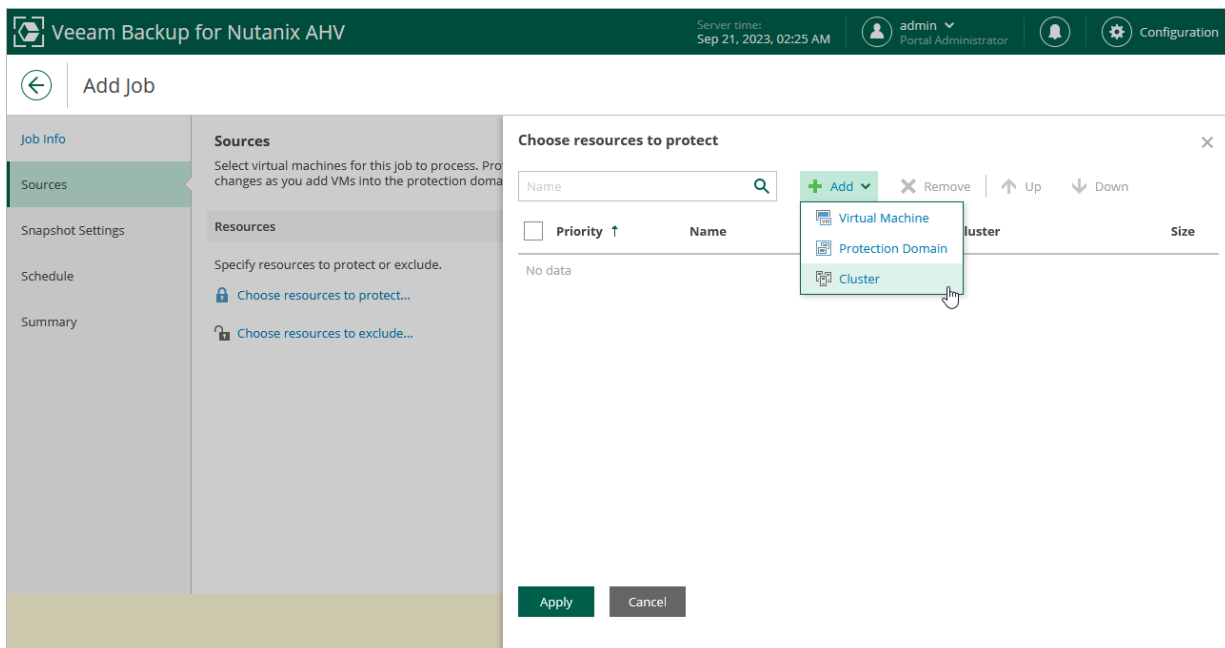
As an alternative to specifying resources explicitly, you can exclude a number of resources from the backup scope. To do that, click **Choose resources to exclude** and specify the VMs or protection domains that you do not want to protect – the procedure is the same as described for including resources in the backup scope.

Consider that if a resource appears both in the list of included and excluded resources, Veeam Backup for Nutanix AHV will still not process the resource because the list of excluded resources has a higher priority.

While running the job, Veeam Backup for Nutanix AHV processes resources in the order they are added to the backup scope. However, you can change the order, for example, if you add some mission-critical VMs to the job and want them to be processed first. To change the processing order, select a resource and use the **Up** or **Down** buttons.

NOTE

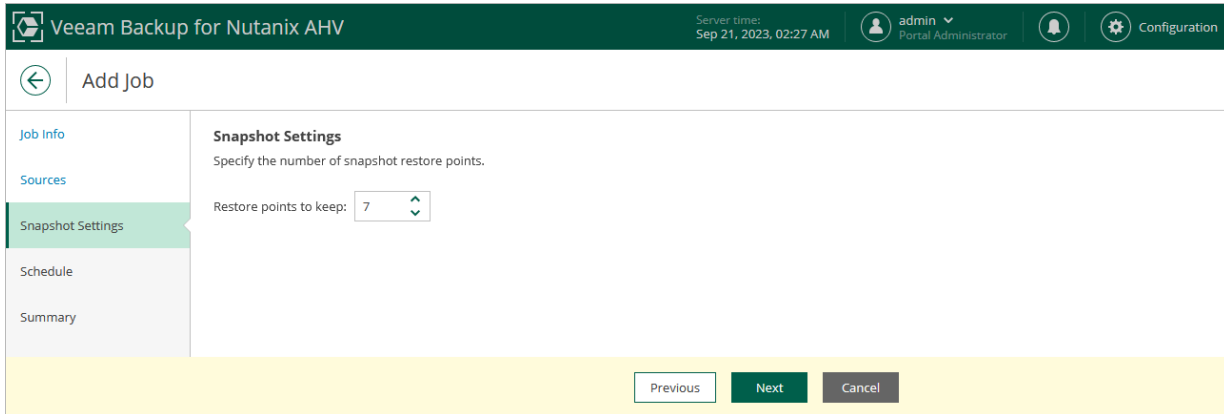
If you include a cluster or a protection domain into the backup scope, VMs in this cluster or domain are processed at random. To ensure that the VMs are processed in a specific order, you must add them as standalone VMs – not as a part of the cluster or domain.



Step 4. Configure Retention Settings

At the **Snapshot Settings** step of the wizard, specify the number of restore points that you want to keep in a snapshot chain.

If the restore point limit is exceeded, Veeam Backup for Nutanix AHV removes the earliest restore point from the chain. For more information, see [Retention Policy for Snapshots](#).



The screenshot shows the 'Add Job' wizard in Veeam Backup for Nutanix AHV. The interface is in a dark green theme. At the top, the title bar reads 'Veeam Backup for Nutanix AHV' and includes the server time 'Sep 21, 2023, 02:27 AM', the user 'admin Portal Administrator', and a 'Configuration' icon. Below the title bar, the wizard steps are listed on the left: 'Job Info', 'Sources', 'Snapshot Settings' (highlighted in green), 'Schedule', and 'Summary'. The main content area is titled 'Snapshot Settings' and contains the instruction 'Specify the number of snapshot restore points.' Below this, there is a label 'Restore points to keep:' followed by a numeric input field containing the value '7'. At the bottom of the wizard, there are three buttons: 'Previous' (disabled), 'Next' (active), and 'Cancel' (disabled).

Step 5. Define Job Schedule

At the **Schedule** step of the wizard, you can instruct Veeam Backup for Nutanix AHV to start the snapshot job automatically according to a specific job schedule. The schedule defines how often Veeam Backup for Nutanix AHV will create snapshots of the VMs added to the snapshot job.

To help you implement a comprehensive data protection strategy, Veeam Backup for Nutanix AHV allows you to create schedules of the following types:

- **Daily at this time** – the snapshot job will create restore points at a specific time on specific days.
- **Monthly at this time** – the snapshot job will create restore points once a month on a specific day.
- **Periodically every** – the snapshot job will create restore points repeatedly, with a specific time interval every day.

TIP

You can instruct Veeam Backup for Nutanix AHV to run the snapshot job again if it fails on the first try. To do that, select the **Automatic Retry** check box, and specify the maximum number of attempts to run the job and the time interval between retries. When retrying snapshot jobs, Veeam Backup for Nutanix AHV processes only those VMs whose snapshots were not taken during the previous attempt..

The screenshot shows the 'Add Job' wizard in Veeam Backup for Nutanix AHV, specifically the 'Schedule' step. The interface includes a top navigation bar with the product name, server time (Sep 21, 2023, 02:28 AM), user (admin, Portal Administrator), and configuration icons. The main area is titled 'Add Job' and contains a sidebar with 'Job Info', 'Sources', 'Snapshot Settings', 'Schedule' (selected), and 'Summary'. The 'Schedule' section has a heading 'Schedule' and a sub-heading 'Create a schedule to automatically start the job at the specified time. If you do not create a schedule, you will have to start the job manually.' Below this, there are three options for scheduling: 'Daily at this time' (selected), 'Monthly at this time', and 'Periodically every'. The 'Daily at this time' option is configured with a time of 10:00 PM and 'Everyday'. The 'Monthly at this time' option is configured with a time of 10:00 PM, 'Fourth', 'Saturday', and a list of months. The 'Periodically every' option is configured with a frequency of 1 and 'Hour'. Additionally, there is an 'Automatic retry' section with a toggle set to 'On', and two input fields: 'Retry failed job' set to 3 times and 'Wait before each retry attempt for' set to 10 minutes. At the bottom, there are 'Previous', 'Next', and 'Cancel' buttons.

Step 6. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**. When Veeam Backup for Nutanix AHV starts the job according to the specified schedule, the backup progress will be displayed on the [Session Logs page](#).

TIP

If you want to start the job immediately, select the **Run the job when I click Finish** check box and then click **Finish**.

The screenshot shows the 'Add Job' wizard in the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the Veeam logo, the product name 'Veeam Backup for Nutanix AHV', the server time 'Sep 21, 2023, 02:29 AM', the user 'admin Portal Administrator', and a 'Configuration' link. The main content area is titled 'Add Job' and features a left-hand navigation menu with options: Job info, Sources, Snapshot Settings, Schedule, and Summary (which is currently selected). The main panel displays the 'Summary' step, which includes a 'Copy to clipboard' button and three sections: 'General' (Name: Mail Server Daily Snapshot, Description: Snapshot of the Mail Server), 'Resources' (VMs: 1), and 'Backup Destination' (Retention: 7 Restore Points). At the bottom of the main panel, there is a checked checkbox labeled 'Run the job when I click Finish'. A yellow footer bar contains three buttons: 'Previous', 'Finish', and 'Cancel'.

Creating Snapshot Jobs Using Veeam Backup & Replication Console

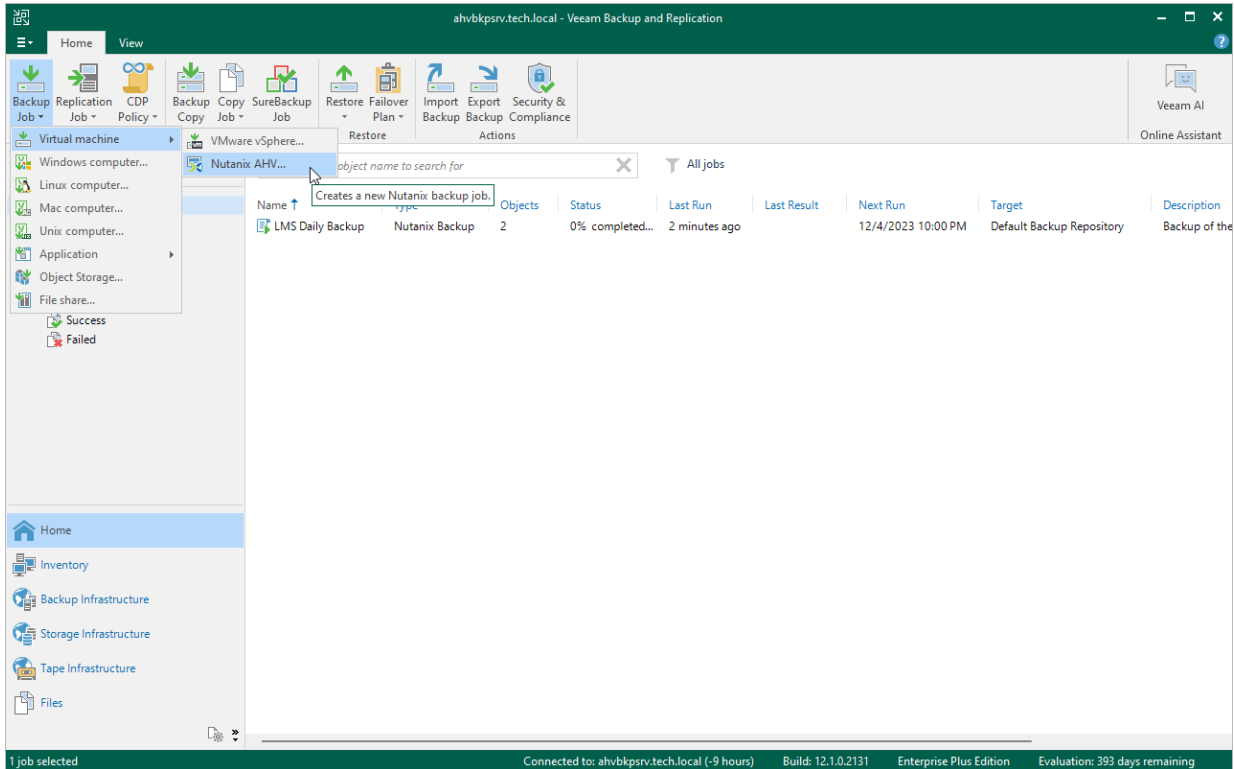
To create a snapshot job using the Veeam Backup & Replication console, do the following:

1. [Check prerequisites and limitations.](#)
2. [Launch the Add Job wizard.](#)
3. [Specify a job name.](#)
4. [Selects virtual machines.](#)
5. [Configure snapshot retention settings.](#)
6. [Define a job schedule.](#)
7. [Finish working with the wizard.](#)

Step 1. Launch New Job Wizard

To launch the **New Job** wizard, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Jobs** and click **Backup Job > Virtual Machine > Nutanix AHV** on the ribbon.



Step 2. Specify Job Name and Description

At the **Name** step of the wizard, select the **Snapshot job** option. Then, use the **Name** and **Description** fields to specify a name for the new backup job and to provide a description for future reference. The job name must be unique in Veeam Backup for Nutanix AHV.

The maximum length of the name is 40 characters; the following characters are not supported: \ / " ' [] : | < > + = ; , ? * @ & _ . The maximum length of the description is 1024 characters.

New Job

Name
Type in a name and description for this job.

Name

Virtual Machines

Backup Destination

Schedule

Summary

Name:
Mail Server Daily Backup

Description:
Snapshot of the Mail Server

Type:

Backup job

Snapshot job

PD snapshot job

< Previous Next > Finish Cancel

Step 3. Configure Backup Source Settings

At the **Virtual Machines** step of the wizard, specify the backup scope – choose whether you want to take snapshots of individual VMs, VMs included into protection domains or all VMs residing in the cluster.

If you add a protection domain, Veeam Backup for Nutanix AHV will regularly check for new VMs added to the domain and automatically update the job settings to include these VMs in the backup scope. For a protection domain to be displayed in the list of the available domains, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

TIP

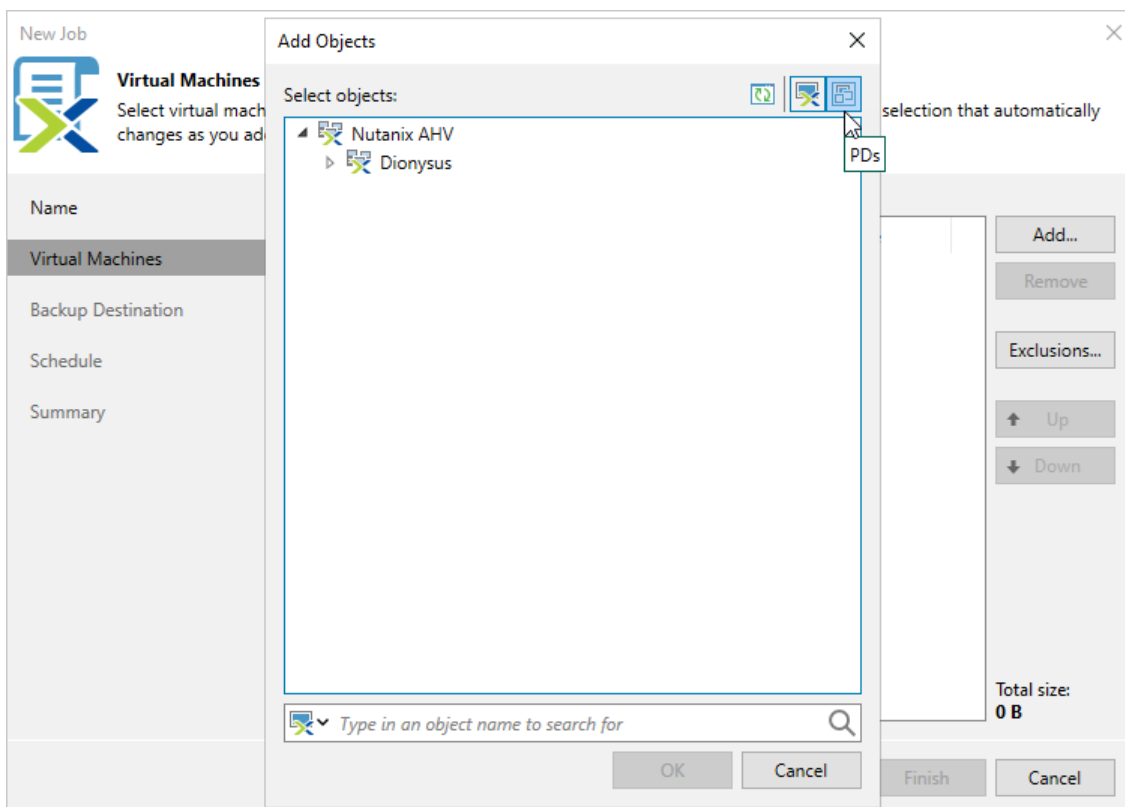
As an alternative to specifying resources explicitly, you can exclude a number of resources from the backup scope. To do that, click **Exclusions** and specify the VMs or protection domains that you do not want to protect – the procedure is the same as described for including resources in the backup scope.

Consider that if a resource appears both in the list of included and excluded resources, Veeam Backup for Nutanix AHV will still not process the resource because the list of excluded resources has a higher priority.

While running the job, Veeam Backup for Nutanix AHV processes resources in the order they are added to the backup scope. However, you can change the order, for example, if you add some mission-critical VMs to the job and want them to be processed first. To change the processing order, select a resource and use the **Up** or **Down** buttons.

NOTE

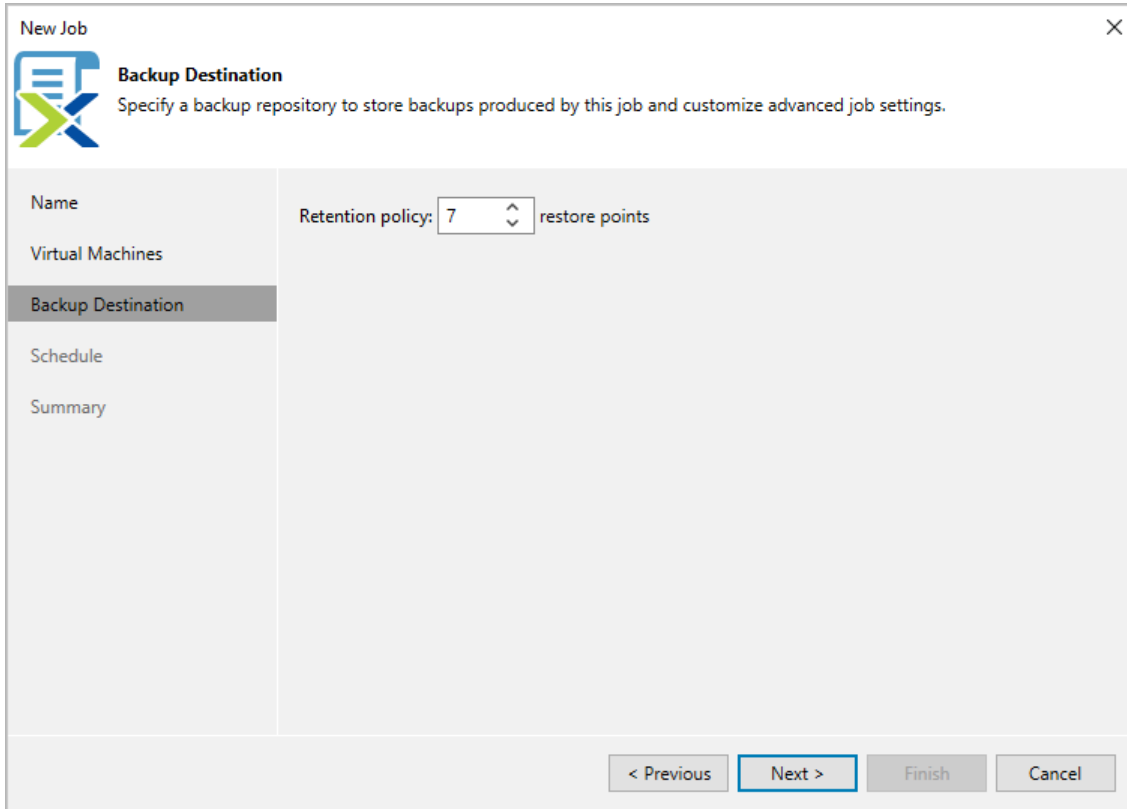
If you include a cluster or a protection domain into the backup scope, VMs in this cluster or domain are processed at random. To ensure that the VMs are processed in a specific order, you must add them as standalone VMs – not as a part of the cluster or domain.



Step 4. Configure Retention Settings

At the **Backup Destination** step of the wizard, specify the number of restore points that you want to keep in a snapshot chain.

If the restore point limit is exceeded, Veeam Backup for Nutanix AHV removes the earliest restore point from the chain. For more information, see [Retention Policy for Snapshots](#).



The screenshot shows a 'New Job' wizard window with a close button (X) in the top right corner. The window title is 'New Job'. Below the title bar is a Veeam logo and the text 'Backup Destination' followed by the instruction 'Specify a backup repository to store backups produced by this job and customize advanced job settings.' On the left side, there is a vertical navigation pane with the following items: 'Name', 'Virtual Machines', 'Backup Destination' (which is highlighted with a dark grey background), 'Schedule', and 'Summary'. The main area of the window shows the 'Retention policy' setting, which is a dropdown menu currently displaying the number '7' and the text 'restore points'. At the bottom of the window, there are four buttons: '< Previous', 'Next >' (which is highlighted with a blue border), 'Finish', and 'Cancel'.

Step 5. Define Job Schedule

At the **Schedule** step of the wizard, you can instruct Veeam Backup for Nutanix AHV to start the snapshot job automatically according to a specific job schedule. The schedule defines how often Veeam Backup for Nutanix AHV will create snapshots of the VMs added to the snapshot job.

To help you implement a comprehensive data protection strategy, Veeam Backup for Nutanix AHV allows you to create schedules of the following types:

- **Daily at this time** – the snapshot job will create restore points at a specific time on specific days.
- **Monthly at this time** – the snapshot job will create restore points once a month on a specific day.
- **Periodically every** – the snapshot job will create restore points repeatedly, with a specific time interval every day.

TIP

You can instruct Veeam Backup for Nutanix AHV to run the snapshot job again if it fails on the first try. To do that, select the **Automatic Retry** check box, and specify the maximum number of attempts to run the job and the time interval between retries. When retrying snapshot jobs, Veeam Backup for Nutanix AHV processes only those VMs whose snapshots were not taken during the previous attempt..

New Job

Schedule
Specify the job scheduling options. If you do not set the schedule, the job will need to be controlled manually.

Name

Virtual Machines

Backup Destination

Schedule

Summary

Run the job automatically

Daily at this time: 10:00 PM Everyday Days...

Monthly at this time: 10:00 PM Fourth Saturday Months...

Periodically every: 1 Hours

Automatic retry

Retry failed items processing: 3 times

Wait before each retry attempt for: 10 minutes

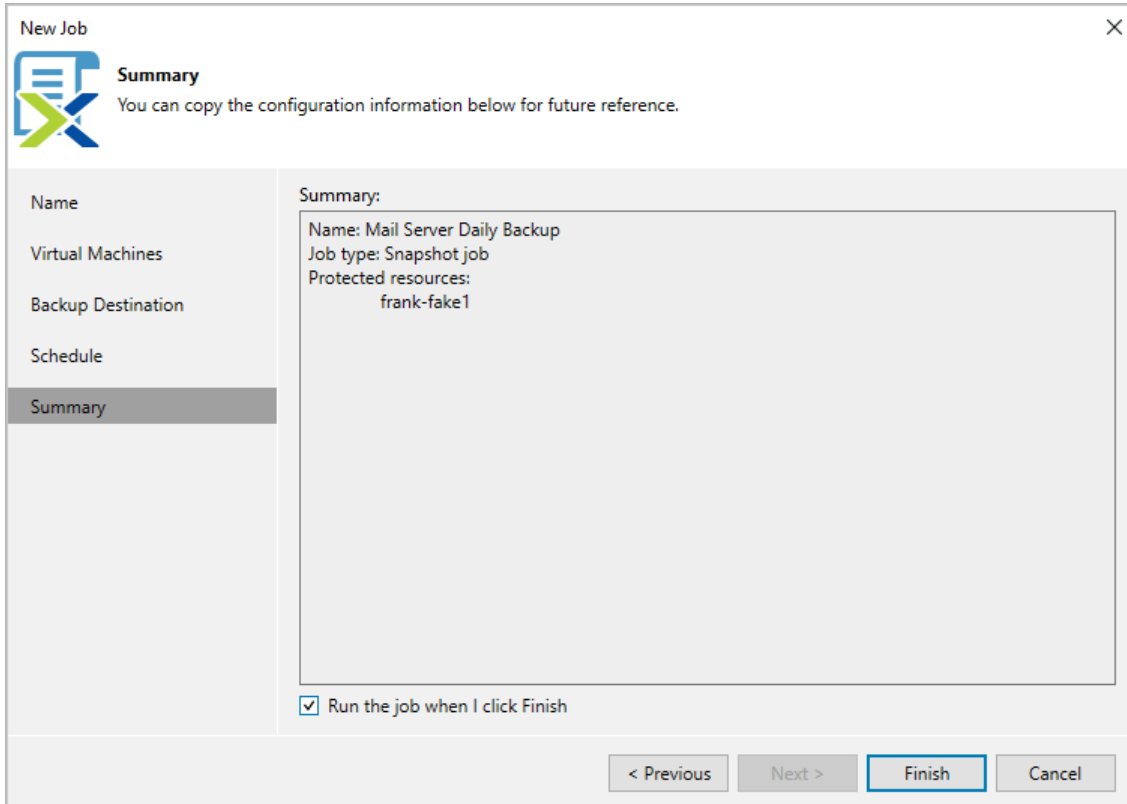
< Previous Apply Finish Cancel

Step 6. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**. When Veeam Backup for Nutanix AHV starts the job according to the specified schedule, the backup progress will be displayed on the [Session Logs page](#).

TIP

If you want to start the job immediately, select the **Run the job when I click Finish** check box and then click **Finish**.



The screenshot shows the 'New Job' wizard in the 'Summary' step. The window title is 'New Job' with a close button (X) in the top right corner. On the left, there is a navigation pane with the following items: Name, Virtual Machines, Backup Destination, Schedule, and Summary (which is currently selected and highlighted). The main area displays the following summary information:

Summary:
Name: Mail Server Daily Backup
Job type: Snapshot job
Protected resources:
frank-fake1

At the bottom of the main area, there is a checkbox labeled 'Run the job when I click Finish' which is checked. At the bottom of the window, there are four buttons: '< Previous', 'Next >', 'Finish' (which is highlighted with a blue border), and 'Cancel'.

Creating Protection Domain Snapshot Jobs

To take snapshots of protection domains, Veeam Backup for Nutanix AHV runs PD snapshot jobs. A PD snapshot job is a collection of settings that define the way data protection operations are performed: what data to protect, when to start the backup process, and so on. To create a PD snapshot job, you can either use the [Veeam Backup for Nutanix AHV web console](#) or the [Veeam Backup & Replication console](#).

Before You Begin

Before you create a PD snapshot job, consider the following limitations:

- You cannot create snapshots of a protection domain if it contains multiple VMs with the same name.
- You cannot create snapshots of a protection domain if it contains VMs with attached volume groups that are not included into the protection domain.
- You cannot create snapshots of [instantly recovered VMs](#) since the VM disks have not completed migration to the Nutanix AHV cluster yet, which may cause the snapshots to become incomplete in case the [mount server](#) is disconnected.
- You cannot create snapshots of a protection domain in the *Inactive* state (for example, after having been replicated to a remote site).

Creating PD Snapshot Jobs Using Backup Appliance Web Console

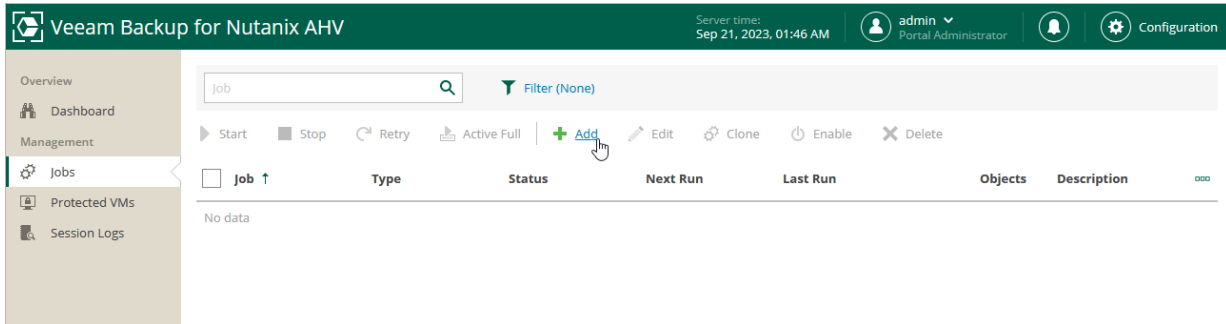
To create a protection domain snapshot job using the Nutanix AHV backup appliance web console, do the following:

1. [Check prerequisites and limitations.](#)
2. [Launch the Add Job wizard.](#)
3. [Specify a job name.](#)
4. [Selects protection domains.](#)
5. [Configure snapshot retention settings.](#)
6. [Define a job schedule.](#)
7. [Finish working with the wizard.](#)

Step 1. Launch Add Job Wizard

To launch the **Add Job** wizard, do the following:

1. Navigate to **Jobs**.
2. Click **Add**.



Step 2. Specify Job Name and Description

At the **Job Info** step of the wizard, select the **PD snapshot job** option. Then, use the **Name** and **Description** fields to specify a name for the new PD snapshot job and to provide a description for future reference. The job name must be unique in Veeam Backup for Nutanix AHV.

The maximum length of the name is 40 characters; the following characters are not supported: \ / " ' [] : | < > + = ; , ? * @ & _ . The maximum length of the description is 1024 characters.

The screenshot shows the 'Add Job' wizard in Veeam Backup for Nutanix AHV. The interface is in a dark theme. At the top, the title bar reads 'Veeam Backup for Nutanix AHV' and includes the server time 'Sep 21, 2023, 01:48 AM', the user 'admin Portal Administrator', and a 'Configuration' button. The main content area is titled 'Add Job' and has a left sidebar with navigation options: 'Job Info' (selected), 'Sources', 'Backup Destination', 'Schedule', and 'Summary'. The 'Job Info' section contains the following elements:

- Instruction: 'Enter a name for the job and select a job type.'
- 'Name:' field: A text input containing 'Workstations PD Snapshot'.
- 'Description:' field: A text area containing 'Snapshot of the protection domain with workstations'.
- Job type selection:
 - Backup job: Configure a regular backup job to create backups of individual VMs.
 - Snapshot job: Configure a snapshot-only job to create snapshots of individual VMs.
 - PD snapshot job: Configure a protection domain snapshot-only job to create a snapshot of a specific PD.

At the bottom of the wizard, there are two buttons: 'Next' (highlighted in green) and 'Cancel'.

Step 3. Select Protection Domains

At the **Sources** step of the wizard, specify the backup scope – choose whether you want to take snapshots of individual protection domains or all protection domains configured in the cluster.

Veeam Backup for Nutanix AHV will regularly check for new consistency groups (VMs and volume groups) added to the domain and automatically update the job settings to include them in the backup scope. For a protection domain to be displayed in the list of the available domains, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

TIP

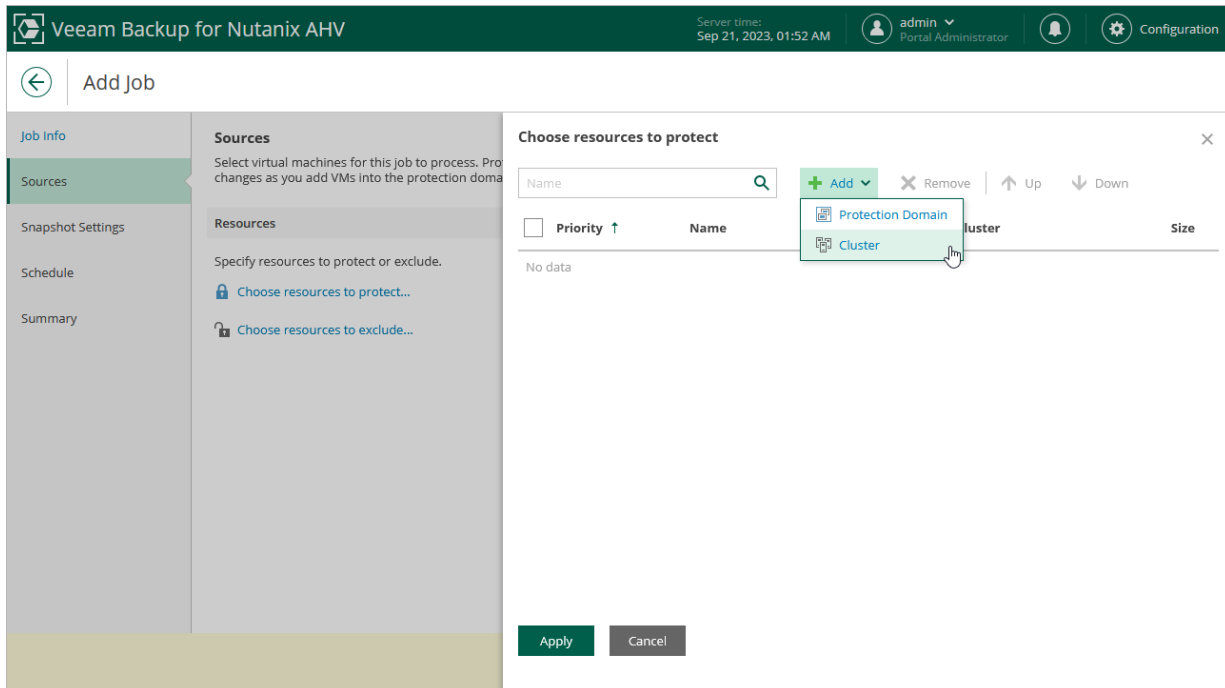
As an alternative to specifying resources explicitly, you can exclude a number of resources from the backup scope. To do that, click **Choose resources to exclude** and specify protection domains that you do not want to protect – the procedure is the same as described for including resources in the backup scope.

Consider that if a resource appears both in the list of included and excluded resources, Veeam Backup for Nutanix AHV will still not process the resource because the list of excluded resources has a higher priority.

While running the job, Veeam Backup for Nutanix AHV processes resources in the order they are added to the backup scope. However, you can change the order, for example, if you add some mission-critical VMs to the job and want them to be processed first. To change the processing order, select a resource and use the **Up** or **Down** buttons.

NOTE

If you include a cluster into the backup scope, PDs in this cluster are processed at random. To ensure that the PDs are processed in a specific order, you must add them as standalone PDs – not as a part of the cluster.



Step 4. Configure Retention Settings

At the **Snapshot Settings** step of the wizard, specify the number of restore points that you want to keep in a snapshot chain. If the restore point limit is exceeded, Veeam Backup for Nutanix AHV removes the earliest restore point from the chain. For more information, see [Retention Policy for Snapshots](#).

TIP

To instruct Veeam Backup for Nutanix AHV to execute a custom script while running the PD snapshot job, set the **Run the following script to create a PD snapshot** toggle to *On*, and click **Browse** to upload a script file. For more information, see [Custom Scripts](#).

The screenshot shows the 'Add Job' wizard in the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the product name, server time (Sep 21, 2023, 01:53 AM), user (admin, Portal Administrator), and a Configuration icon. The left sidebar contains navigation links: Job Info, Sources, Snapshot Settings (highlighted), Schedule, and Summary. The main content area is titled 'Snapshot Settings' and includes the instruction 'Specify the number of snapshot restore points.' Below this, there is a 'Restore points to keep:' field with a spinner control set to 7. A toggle switch for 'Run the following script to create a PD snapshot:' is currently set to 'Off'. A yellow information box contains a note: 'Custom scripts help you coordinate application activity before and after a PD snapshot is taken. To learn how to write a script, see the Veeam Backup for Nutanix AHV User Guide.' At the bottom of the wizard, there are three buttons: 'Previous', 'Next', and 'Cancel'.

Step 5. Define Job Schedule

At the **Schedule** step of the wizard, you can instruct Veeam Backup for Nutanix AHV to start the PD snapshot job automatically according to a specific schedule. The schedule defines how often Veeam Backup for Nutanix AHV will create snapshots of the protection domains added to the PD snapshot job.

To help you implement a comprehensive data protection strategy, Veeam Backup for Nutanix AHV allows you to create schedules of the following types:

- **Daily at this time** – the PD snapshot job will create restore points at a specific time on specific days.
- **Monthly at this time** – the PD snapshot job will create restore points once a month on a specific day.
- **Periodically every** – the PD snapshot job will create restore points repeatedly, with a specific time interval every day.

TIP

You can instruct Veeam Backup for Nutanix AHV to run the job again if it fails on the first try. To do that, select the **Automatic Retry** check box, and specify the maximum number of attempts to run the job and the time interval between retries. When retrying PD snapshot jobs, Veeam Backup for Nutanix AHV processes only those PDs whose snapshots were not taken during the previous attempt.

The screenshot shows the 'Add Job' wizard in Veeam Backup for Nutanix AHV, specifically the 'Schedule' step. The interface includes a top navigation bar with the product name, server time (Sep 21, 2023, 01:56 AM), user (admin, Portal Administrator), and a Configuration icon. The main area is titled 'Add Job' and contains a sidebar with navigation options: Job Info, Sources, Snapshot Settings, Schedule (selected), and Summary. The 'Schedule' section is active and contains the following settings:

- Run job automatically:** On
- Daily at this time:** 10:00 PM, Everyday
- Monthly at this time:** 10:00 PM, Fourth, Saturday, January, February, March, April, May, ...
- Periodically every:** 1, Hour
- Automatic retry:** On
- Retry failed job:** 3 times
- Wait before each retry attempt for:** 10 minutes

At the bottom of the wizard, there are three buttons: 'Previous', 'Next', and 'Cancel'.

Step 6. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**. When Veeam Backup for Nutanix AHV starts the job according to the specified schedule, the backup progress will be displayed on the [Session Logs page](#).

TIP

If you want to start the job immediately, select the **Run the job when I click Finish** check box and then click **Finish**.

The screenshot shows the 'Add Job' wizard in the Veeam Backup for Nutanix AHV interface. The 'Summary' step is selected in the left-hand navigation pane. The main content area displays the following information:

- Summary:** Review the job summary, and click Finish to save and apply the job settings. A 'Copy to clipboard' button is available.
- General:**
 - Name: Workstations PD Snapshot
 - Description: Snapshot of the protection domain with workstations
- Resources:**
 - PDs: 1
- Backup Destination:**
 - Retention: 7 Restore Points

At the bottom of the summary area, there is a checkbox labeled 'Run the job when I click Finish' which is currently unchecked. At the bottom of the wizard, there are three buttons: 'Previous', 'Finish', and 'Cancel'.

Creating PD Snapshot Jobs Using Veeam Backup & Replication Console

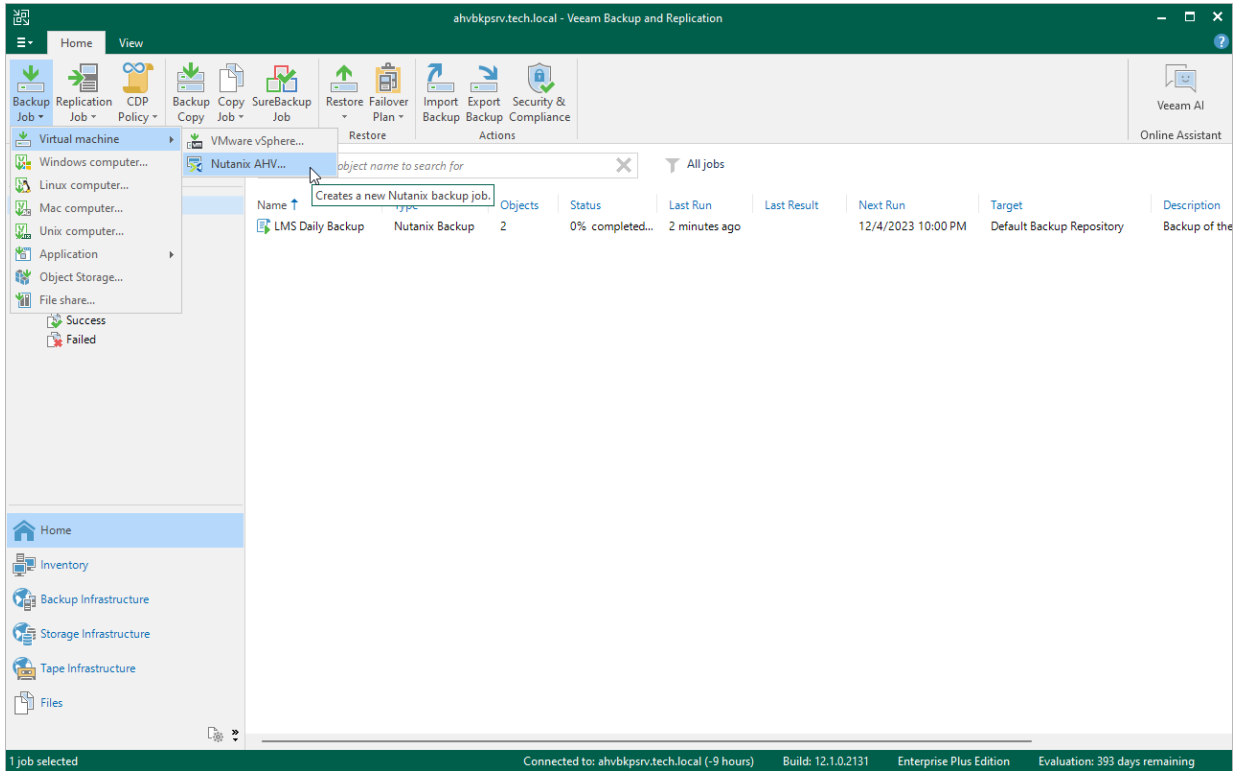
To create a protection domain snapshot job using the Veeam Backup & Replication console, do the following:

1. [Check prerequisites and limitations.](#)
2. [Launch the Add Job wizard.](#)
3. [Specify a job name.](#)
4. [Selects protection domains.](#)
5. [Configure snapshot retention settings.](#)
6. [Define a job schedule.](#)
7. [Finish working with the wizard.](#)

Step 1. Launch New Job Wizard

To launch the **New Job** wizard, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Jobs** and click **Backup Job > Virtual Machine > Nutanix AHV** on the ribbon.



Step 2. Specify Job Name and Description

At the **Name** step of the wizard, select the **PD snapshot job** option. Then, use the **Name** and **Description** fields to specify a name for the new backup job and to provide a description for future reference. The job name must be unique in Veeam Backup for Nutanix AHV.

The maximum length of the name is 40 characters; the following characters are not supported: \ / " ' [] : | < > + = ; , ? * @ & _ . The maximum length of the description is 1024 characters.

New Job

Name
Type in a name and description for this job.

Name

Virtual Machines

Backup Destination

Schedule

Summary

Name:
Workstations PD Snapshot

Description:
Snapshot of the protection domain with workstations

Type:

Backup job

Snapshot job

PD snapshot job

< Previous Next > Finish Cancel

Step 3. Configure Backup Source Settings

At the **Virtual Machines** step of the wizard, specify the backup scope – choose whether you want to take snapshots of individual protection domains or all protection domains configured in the cluster.

Veeam Backup for Nutanix AHV will regularly check for new consistency groups (VMs and volume groups) added to the domain and automatically update the job settings to include them in the backup scope. For a protection domain to be displayed in the list of the available domains, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

TIP

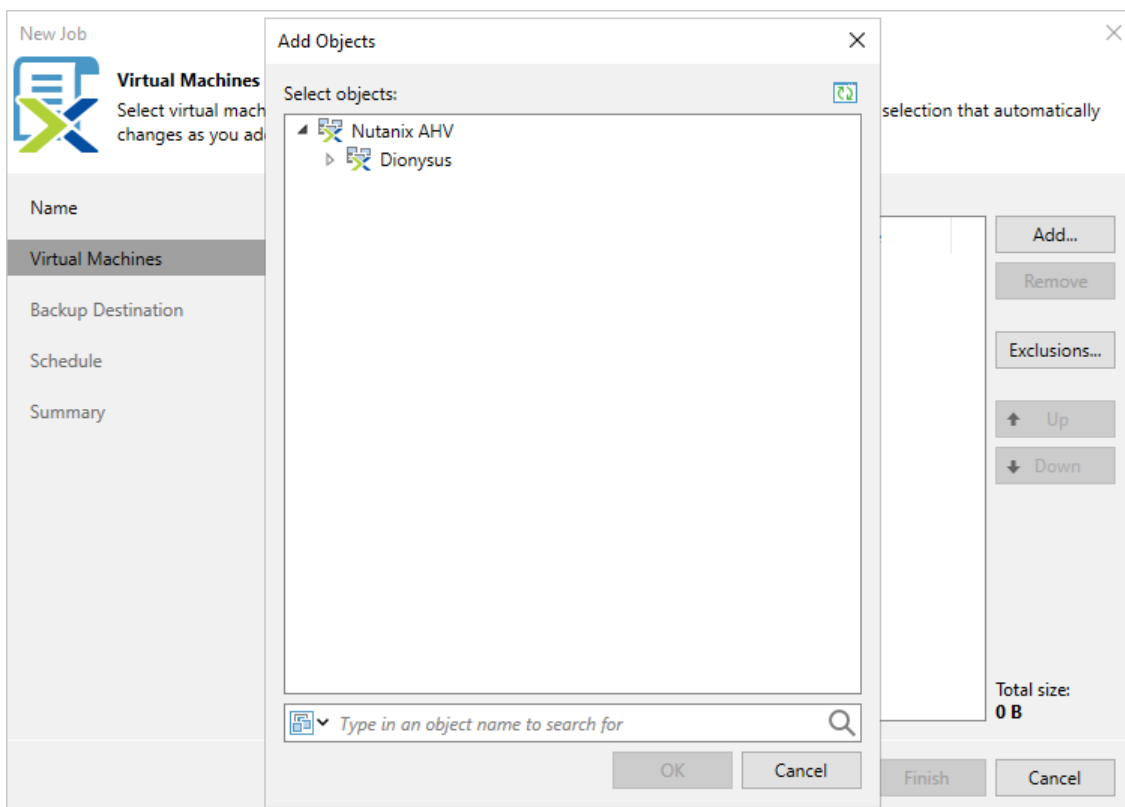
As an alternative to specifying resources explicitly, you can exclude a number of resources from the backup scope. To do that, click **Exclusions** and specify the protection domains that you do not want to protect – the procedure is the same as described for including resources in the backup scope.

Consider that if a resource appears both in the list of included and excluded resources, Veeam Backup for Nutanix AHV will still not process the resource because the list of excluded resources has a higher priority.

While running the job, Veeam Backup for Nutanix AHV processes resources in the order they are added to the backup scope. However, you can change the order, for example, if you add some mission-critical VMs to the job and want them to be processed first. To change the processing order, select a resource and use the **Up** or **Down** buttons.

NOTE

If you include a cluster into the backup scope, PDs in this cluster are processed at random. To ensure that the PDs are processed in a specific order, you must add them as standalone PDs – not as a part of the cluster.

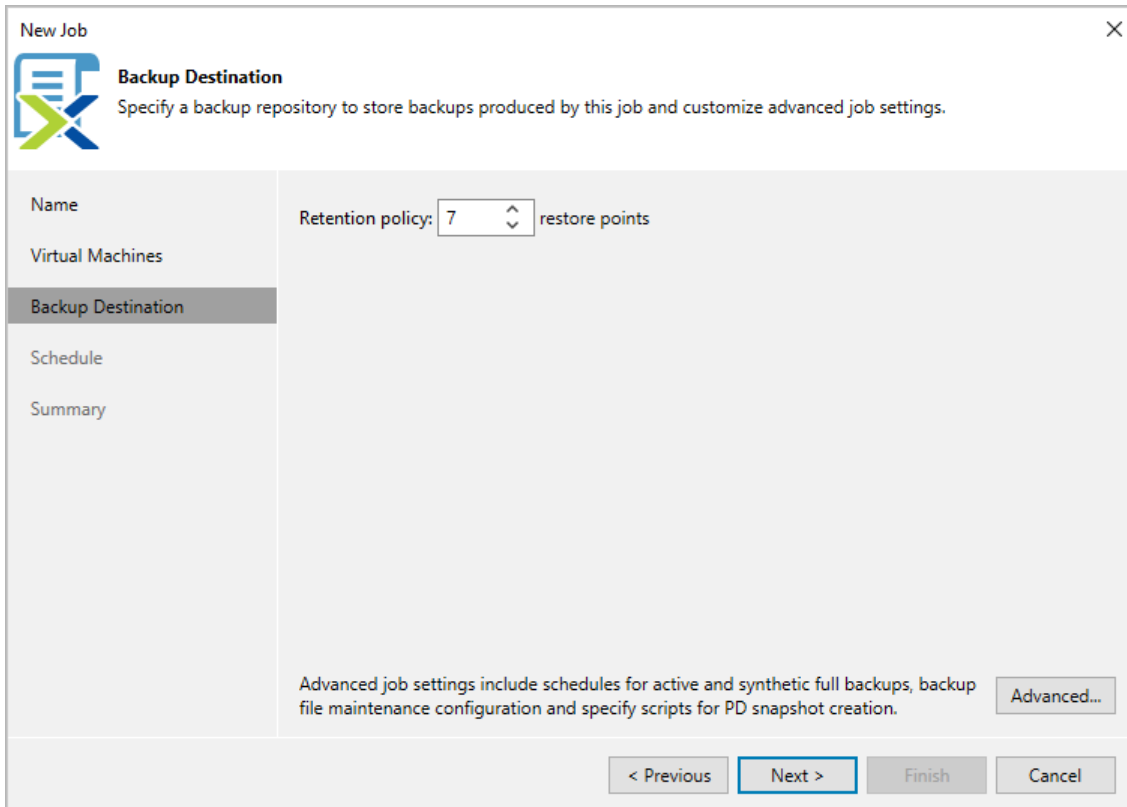


Step 4. Configure Retention Settings

At the **Backup Destination** step of the wizard, specify the number of restore points that you want to keep in a snapshot chain. If the restore point limit is exceeded, Veeam Backup for Nutanix AHV removes the earliest restore point from the chain. For more information, see [Retention Policy for Snapshots](#).

TIP

To instruct Veeam Backup for Nutanix AHV to execute a custom script while running the PD snapshot job, click **Advanced**, then, in the **Advanced settings** window, select the **Run the following script to create a PD snapshot** check box and click **Browse** to upload a script file. For more information, see [Custom Scripts](#).



The screenshot shows the 'New Job' wizard window with the 'Backup Destination' step selected. The 'Retention policy' is set to 7 restore points. The 'Next >' button is highlighted, indicating the user is ready to proceed to the next step.

New Job [Close]

Backup Destination
Specify a backup repository to store backups produced by this job and customize advanced job settings.

Name: [] Retention policy: 7 [] restore points

Virtual Machines

Backup Destination

Schedule

Summary

Advanced job settings include schedules for active and synthetic full backups, backup file maintenance configuration and specify scripts for PD snapshot creation. [Advanced...]

[< Previous] [Next >] [Finish] [Cancel]

Step 5. Define Job Schedule

At the **Schedule** step of the wizard, you can instruct Veeam Backup for Nutanix AHV to start the PD snapshot job automatically according to a specific schedule. The schedule defines how often Veeam Backup for Nutanix AHV will create snapshots of the protection domains added to the PD snapshot job.

To help you implement a comprehensive data protection strategy, Veeam Backup for Nutanix AHV allows you to create schedules of the following types:

- **Daily at this time** – the PD snapshot job will create restore points at a specific time on specific days.
- **Monthly at this time** – the PD snapshot job will create restore points once a month on a specific day.
- **Periodically every** – the PD snapshot job will create restore points repeatedly, with a specific time interval every day.

TIP

You can instruct Veeam Backup for Nutanix AHV to run the job again if it fails on the first try. To do that, select the **Automatic Retry** check box, and specify the maximum number of attempts to run the job and the time interval between retries. When retrying PD snapshot jobs, Veeam Backup for Nutanix AHV processes only those PDs whose snapshots were not taken during the previous attempt.

The screenshot shows the 'New Job' wizard window, specifically the 'Schedule' step. The window title is 'New Job' and it has a close button (X) in the top right corner. Below the title bar is a logo and the text 'Schedule Specify the job scheduling options. If you do not set the schedule, the job will need to be controlled manually.'

The main area is divided into a left sidebar and a right main panel. The sidebar has the following items: 'Name', 'Virtual Machines', 'Backup Destination', 'Schedule' (which is selected and highlighted), and 'Summary'. The main panel contains the following settings:

- Run the job automatically
 - Daily at this time: 10:00 PM (dropdown), Everyday (dropdown), Days... (button)
 - Monthly at this time: 10:00 PM (dropdown), Fourth (dropdown), Saturday (dropdown), Months... (button)
 - Periodically every: 1 (dropdown), Hours (dropdown)
- Automatic retry
 - Retry failed items processing: 3 (dropdown) times
 - Wait before each retry attempt for: 10 (dropdown) minutes

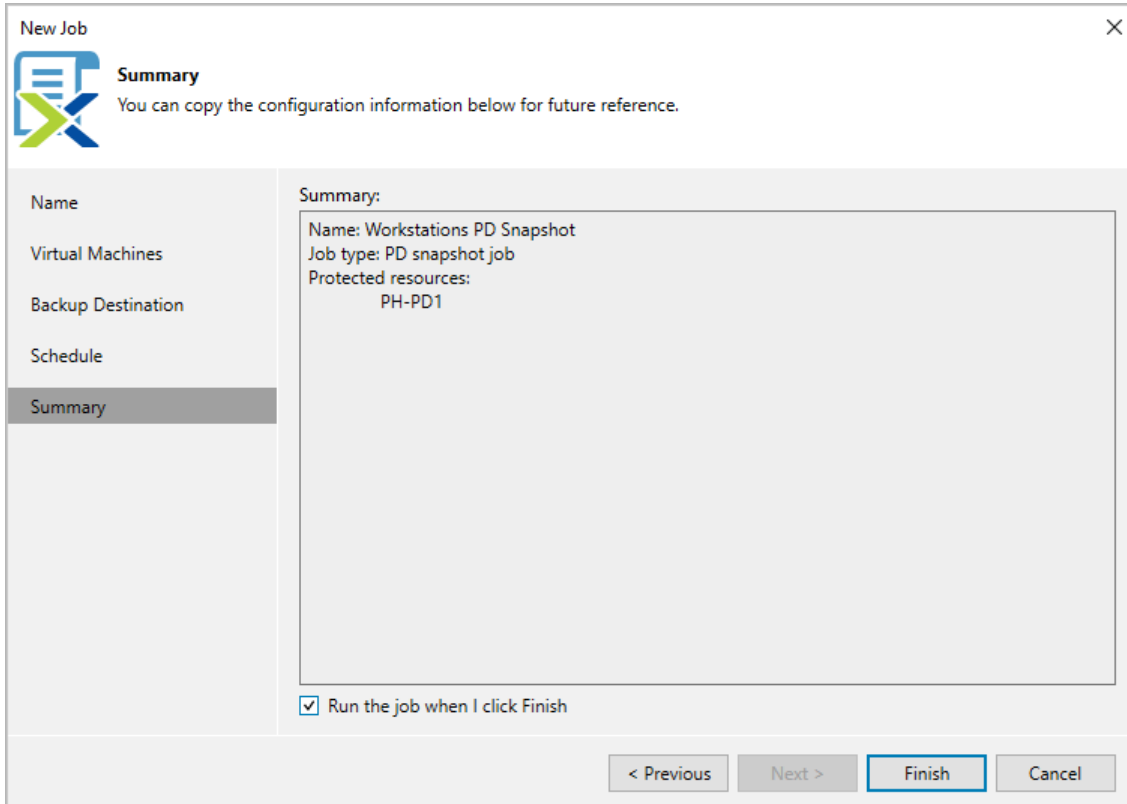
At the bottom of the window, there are four buttons: '< Previous', 'Apply' (highlighted with a blue border), 'Finish', and 'Cancel'.

Step 6. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**. When Veeam Backup for Nutanix AHV starts the job according to the specified schedule, the backup progress will be displayed on the [Session Logs page](#).

TIP

If you want to start the job immediately, select the **Run the job when I click Finish** check box and then click **Finish**.



The screenshot shows the 'New Job' wizard in the 'Summary' step. The window title is 'New Job' with a close button (X) in the top right corner. On the left, there is a navigation pane with the following items: Name, Virtual Machines, Backup Destination, Schedule, and Summary (which is currently selected and highlighted). The main area displays the following summary information:

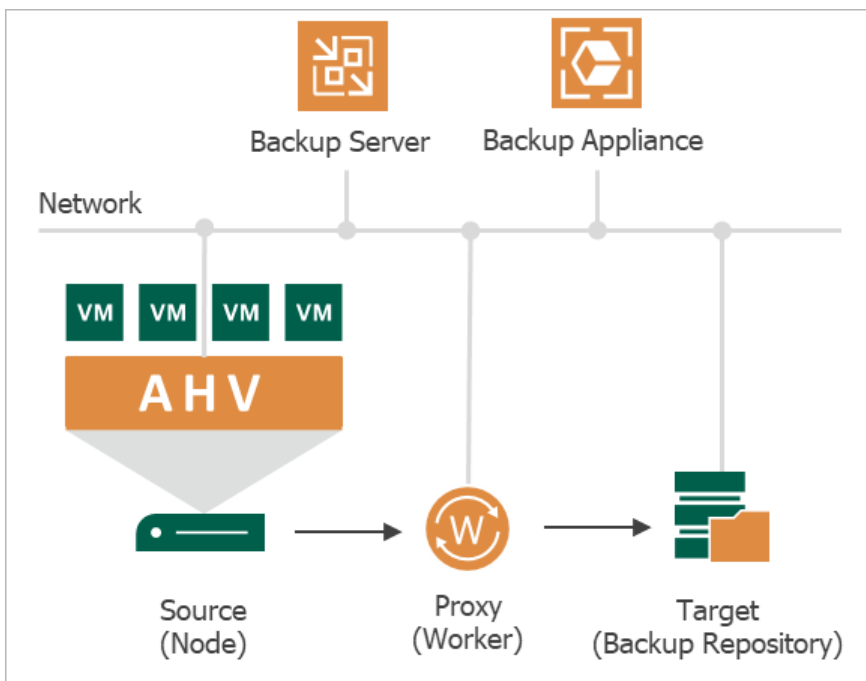
Summary:
Name: Workstations PD Snapshot
Job type: PD snapshot job
Protected resources:
PH-PD1

At the bottom of the main area, there is a checkbox labeled 'Run the job when I click Finish' which is checked. At the bottom of the window, there are four buttons: '< Previous', 'Next >', 'Finish' (which is highlighted with a blue border), and 'Cancel'.

Analyzing Performance Bottlenecks

As any backup application handles a great amount of data, it is important to make sure the data flow is efficient and all resources engaged in the backup process are optimally used. For backup jobs, Veeam provides advanced statistics about the data flow efficiency and lets you identify bottlenecks at the following stages of the data transmission process:

1. Reading VM data blocks from the source.
2. Processing VM data on a worker.
3. Transporting data over the network.
4. Writing data to the target.



While evaluating the data transmission process, Veeam Backup for Nutanix AHV leverages the Veeam Backup & Replication functionality to analyze performance of all the data flow components:

- **Source** – the source disk reader component responsible for retrieving data from the source node.
- **Proxy** – the worker component responsible for processing VM data.
- **Network** – the network queue writer component responsible for getting processed VM data from the worker and sending it over the network to the Target (directly or through the Gateway Server).
- **Target** – the gateway server component responsible for processing VM data, or the target disk writer component responsible for storing data in the backup repository.

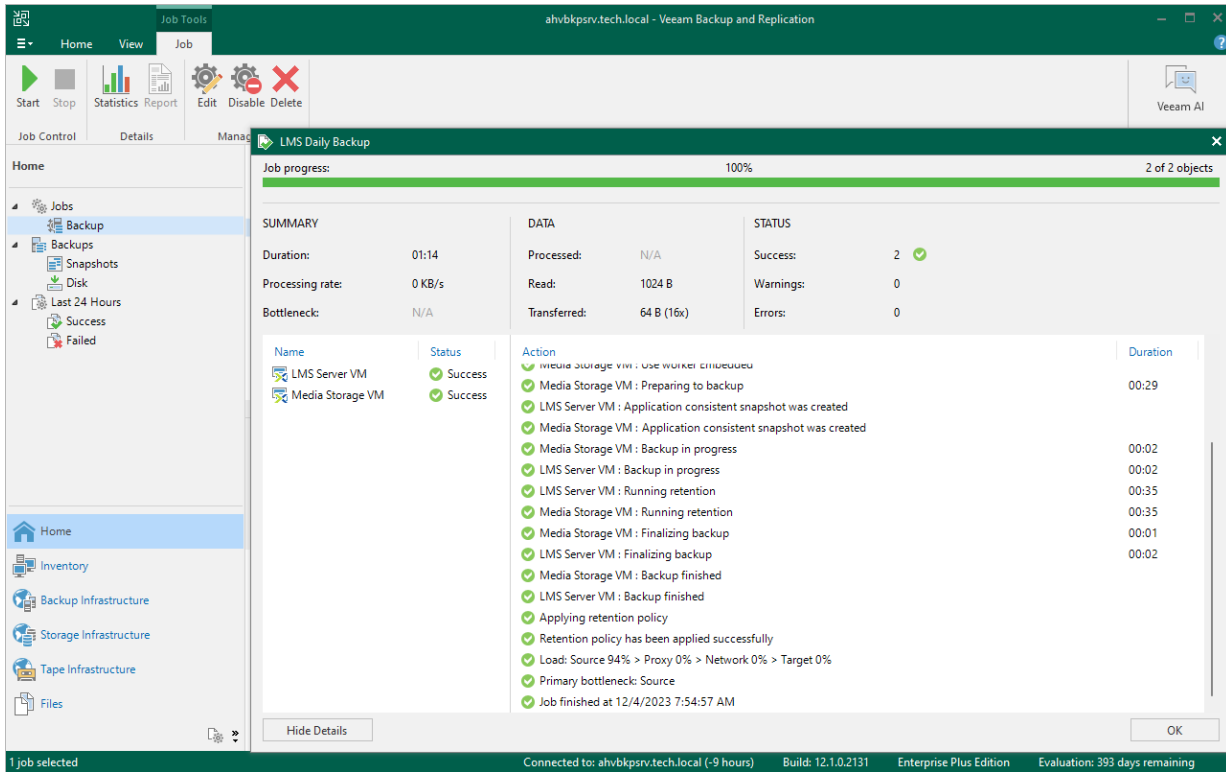
To see the bottleneck statistics for a job or a specific VM processed by the job, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Jobs**.
3. In the working area, right-click a backup job for which you want to see the bottleneck statistics, and select **Statistics**.

4. In the job session window, click **Show Details**:

- To see the aggregated statistics for the whole job, check the **Load** field in the **Action** column.
- To see the bottleneck statistics for a specific VM, click a VM name and check the **Load** field in the **Action** column.

To learn how to analyze the bottleneck statistics, see [Veem Backup & Replication User Guide, section Performance Bottlenecks](#).



Cloning Jobs

You can create a new job by cloning an existing one. Job cloning allows you to create an exact copy of any job with the same job settings.

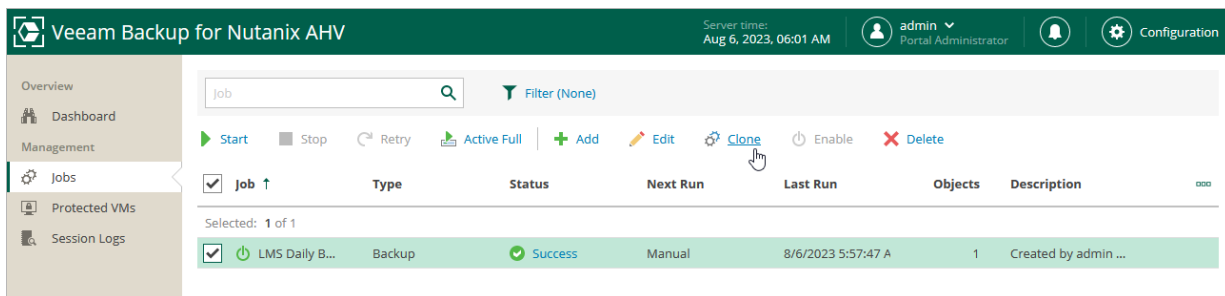
To clone a job, do the following:

1. Navigate to **Jobs**.
2. Select the job.
3. Click **Clone**.

The name of the cloned job is formed by the following rule: *<job_name_clone1>*, where *job_name* is the name of the original job and *clone1* is a suffix added to the original job name. If you clone the same job again, the number in the name will be incremented, for example, *job_name_clone2*, *job_name_clone3* and so on. To change the name of a cloned job, edit the job as described in section [Editing Job Settings](#).

NOTE

If the original job is scheduled to run automatically, Veeam Backup for Nutanix AHV disables the cloned job. To enable the cloned job, select it in the job list and click **Enable**.



The screenshot shows the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the Veeam logo, the text "Veeam Backup for Nutanix AHV", the server time "Aug 6, 2023, 06:01 AM", and user information "admin Portal Administrator". The left sidebar shows navigation options: Overview, Dashboard, Management, Jobs (selected), Protected VMs, and Session Logs. The main area displays a search bar with "job" and a "Filter (None)" button. Below the search bar are action buttons: Start, Stop, Retry, Active Full, Add, Edit, Clone (highlighted with a mouse cursor), Enable, and Delete. A table below shows a list of jobs with columns: Job, Type, Status, Next Run, Last Run, Objects, and Description. One job is selected, indicated by a checkmark in the Job column. The job details are: Job: LMS Daily B..., Type: Backup, Status: Success, Next Run: Manual, Last Run: 8/6/2023 5:57:47 A, Objects: 1, Description: Created by admin ...

Job	Type	Status	Next Run	Last Run	Objects	Description	
<input checked="" type="checkbox"/>	LMS Daily B...	Backup	Success	Manual	8/6/2023 5:57:47 A	1	Created by admin ...

Enabling Auto-Protection for Unprotected VMs

You can instruct Veeam Backup for Nutanix AHV to automatically add all unprotected VMs to a protection domain. The protection domain can be further protected by a [backup, snapshot or PD snapshot job](#). To select a protection domain for VM auto-protection, do the following:

1. Switch to the **Configuration** page.
2. Navigate to **Nutanix AHV Cluster**.
3. Click **Auto-Protection**.
4. In the **VM Auto-Protection** window, set the **Auto-Protection** toggle to *On*.
5. Select a protection domain.
6. Click **Apply**.

NOTE

If a VM is already protected using the [Disaster Recovery](#) functionality, Veeam Backup for Nutanix AHV may fail to add the VM to the selected protection domain.

The screenshot shows the Veeam Backup for Nutanix AHV configuration interface. The top bar displays the server time as Nov 28, 2022, 04:28 AM and the user as Administrator. The left sidebar contains navigation options: Exit Configuration, Backup Server, Nutanix AHV Cluster, Settings, and Support Information. The main area shows the configuration for a Nutanix AHV Cluster. A dialog box titled "VM Auto-Protection" is open, displaying the following information:

This feature will automatically include unprotected VMs to the specified protection domain.

Auto-Protection: Enabled

mlu

Protection Domain ↑	VM Count	Total Size
mlu-protection-domain	3	112 GB
mlu-protection-domain-01	1	60 GB
mlu-protection-domain-02	2	9.9 GB
mlu-protection-domain-03	1	3.5 GB
mlu-protection-domain-C02	0	0 B

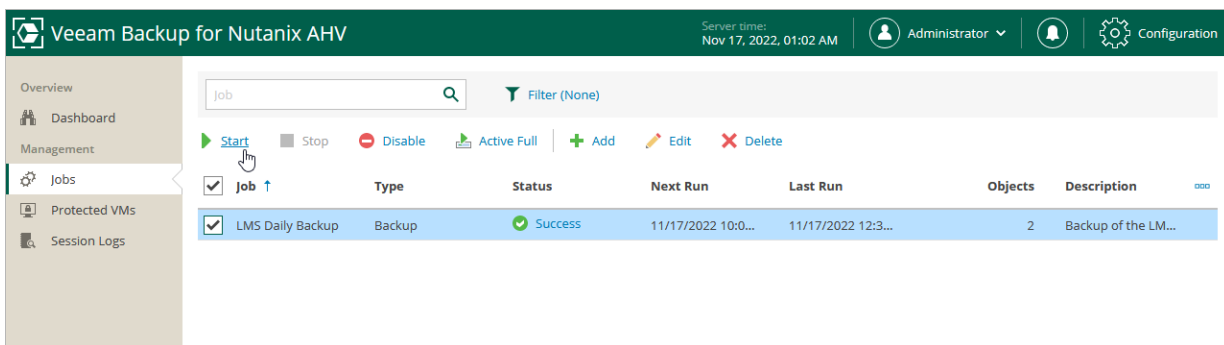
Buttons: Rescan, Apply, Cancel

Starting and Stopping Jobs

You can start a job manually, for example, if you want to create an additional restore point and do not want to modify the configured job schedule. You can also stop a job manually if processing of a VM is about to take too long, and you do not want the job to have an impact on the production environment during business hours. When you stop a running job, Veeam Backup for Nutanix AHV creates a new restore point only for those VMs that have already been processed by the time you stop the job.

To start or stop a job, do the following:

1. Navigate to **Jobs**.
2. Select the job.
3. Click **Start** or **Stop**.



TIP

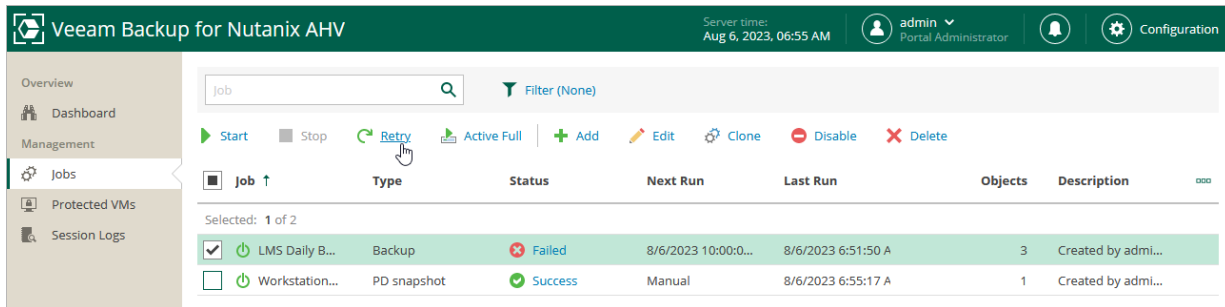
You can also start or stop a job using the Veeam Backup & Replication console. To do that, in the inventory pane of the **Home** view, select **Jobs > Backup**, select the job and click **Start** or **Stop** on the ribbon.

Retrying Jobs

If a job fails, you can retry the backup operation. When you perform a retry, Veeam Backup for Nutanix AHV restarts the operation only for the failed resources added to the job and does not process VMs that have been processed successfully. As a result, retrying a job takes less time compared to restarting the job for all resources.

To retry a job, do the following:

1. Navigate to **Jobs**.
2. Select the failed job.
3. Click **Retry**.



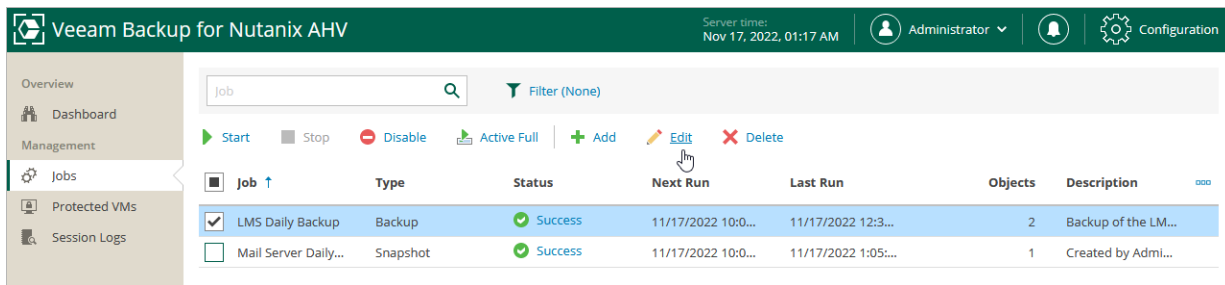
Editing Job Settings

For each job, you can modify settings configured while creating the job:

1. Navigate to **Jobs**.
2. Select the job.

You can select the job for editing even when it is running.

3. Click **Edit**:
 - To update configuration of a backup job, complete the wizard as described in section [Creating Backup Jobs](#).
 - To update configuration of a snapshot job, complete the wizard as described in section [Creating Snapshot Jobs](#).
 - To update configuration of a protection domain snapshot job, complete the wizard as described in section [Creating Protection Domain Snapshot Jobs](#).



The screenshot shows the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the Veeam logo, the product name, the server time (Nov 17, 2022, 01:17 AM), the user (Administrator), and a Configuration icon. The left sidebar shows navigation options: Overview, Dashboard, Management, Jobs (selected), Protected VMs, and Session Logs. The main area displays a table of jobs with columns for Job, Type, Status, Next Run, Last Run, Objects, and Description. The 'Edit' button on the ribbon is highlighted with a mouse cursor.

Job	Type	Status	Next Run	Last Run	Objects	Description
<input checked="" type="checkbox"/> LMS Daily Backup	Backup	Success	11/17/2022 10:0...	11/17/2022 12:3...	2	Backup of the LM...
<input type="checkbox"/> Mail Server Daily...	Snapshot	Success	11/17/2022 10:0...	11/17/2022 1:05...	1	Created by Admi...

TIP

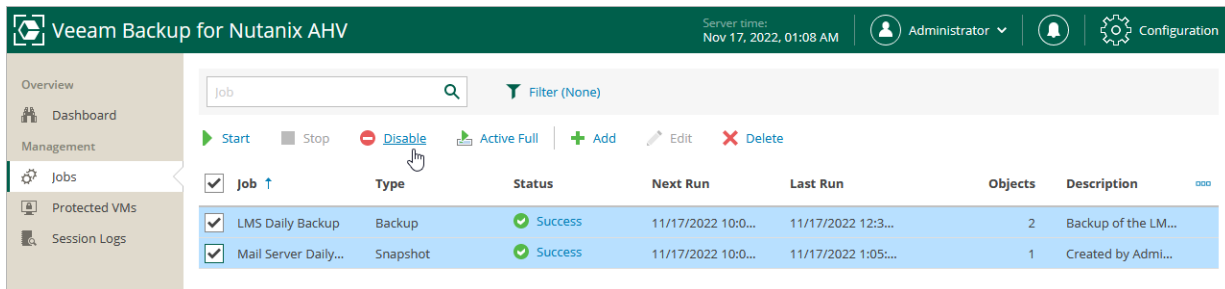
You can also start the **Edit Job** wizard using the Veeam Backup & Replication console. To do that, in the inventory pane of the **Home** view, select **Jobs > Backup**, select the job and click **Edit** on the ribbon.

Enabling and Disabling Jobs

By default, all created jobs run according to the specified schedules. However, you can temporarily disable a job so that it does not run automatically. You will still be able to enable the disabled job at any time you need.

To enable or disable a backup job, do the following:

1. Navigate to **Jobs**.
2. Select the job.
3. Click **Enable** or **Disable**.



TIP

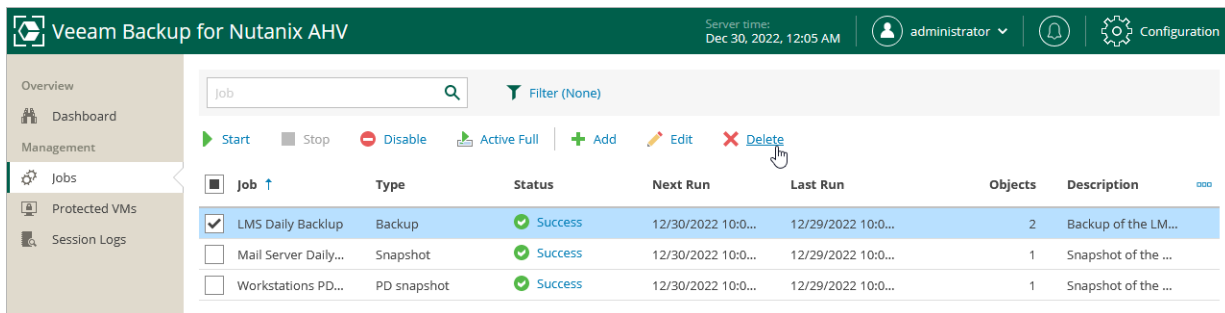
You can also enable or disable a job using the Veeam Backup & Replication console. To do that, in the inventory pane of the **Home** view, select **Jobs > Backup**, select the job and click **Enable** or **Disable** on the ribbon.

Deleting Jobs

You can permanently delete a job from the Veeam Backup for Nutanix AHV configuration database if you no longer need it. When you delete a job, backups created by this job are displayed under the **Backups > Disk (Orphaned)** node in the **Home** view of the Veeam Backup & Replication console. If you want to delete backup files as well, follow the instructions provided in section [Deleting Backups](#).

To delete job, do the following:

1. Navigate to **Jobs**.
2. Select the job.
3. Click **Delete**.



TIP

You can also delete a job using the Veeam Backup & Replication console. To do that, in the inventory pane of the **Home** view, select **Jobs > Backup**, select the job and click **Delete** on the ribbon.

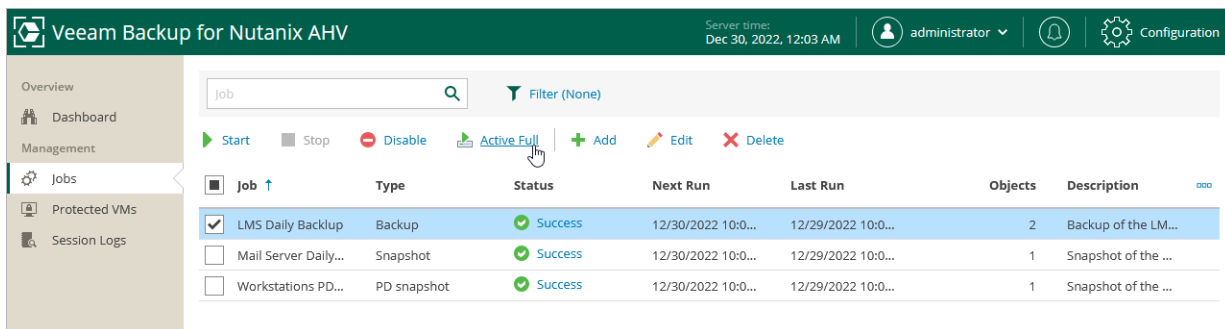
Creating Active Full Backup

You can manually create an [active full backup](#) for all VMs added to a backup job.

1. Switch to the **Jobs** page.
2. Select the necessary backup job and click **Active Full**.
3. Click **Yes**.

TIP

To create active full backup automatically according to a specific schedule, configure backup job settings as described in section [Creating Backup Jobs](#) (step 3).



The screenshot shows the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the Veeam logo, the product name, the server time (Dec 30, 2022, 12:03 AM), the user (administrator), and a Configuration icon. The left sidebar shows navigation options: Overview, Dashboard, Management, Jobs (selected), Protected VMs, and Session Logs. The main content area displays a search bar, a filter dropdown (Filter (None)), and a toolbar with buttons for Start, Stop, Disable, Active Full (highlighted), Add, Edit, and Delete. Below the toolbar is a table of backup jobs.

Job	Type	Status	Next Run	Last Run	Objects	Description
<input checked="" type="checkbox"/> LMS Daily Backup	Backup	Success	12/30/2022 10:0...	12/29/2022 10:0...	2	Backup of the LM...
<input type="checkbox"/> Mail Server Daily...	Snapshot	Success	12/30/2022 10:0...	12/29/2022 10:0...	1	Snapshot of the ...
<input type="checkbox"/> Workstations PD...	PD snapshot	Success	12/30/2022 10:0...	12/29/2022 10:0...	1	Snapshot of the ...

Creating VeeamZIP Backups

You can back up one or multiple Nutanix AHV VMs without configuring backup jobs. To do that, you can leverage the VeeamZIP feature – it can be helpful, for example, if you want to create backups for VMs immediately, archive VMs before decommissioning and so on. VeeamZIP produces a full backup that acts as an independent restore point. You can store the backup in a repository added to the backup infrastructure, in a local folder on the backup server or in a network share.

NOTE

You cannot store VeeamZIP backups in [Veeam Cloud Connect repositories](#).

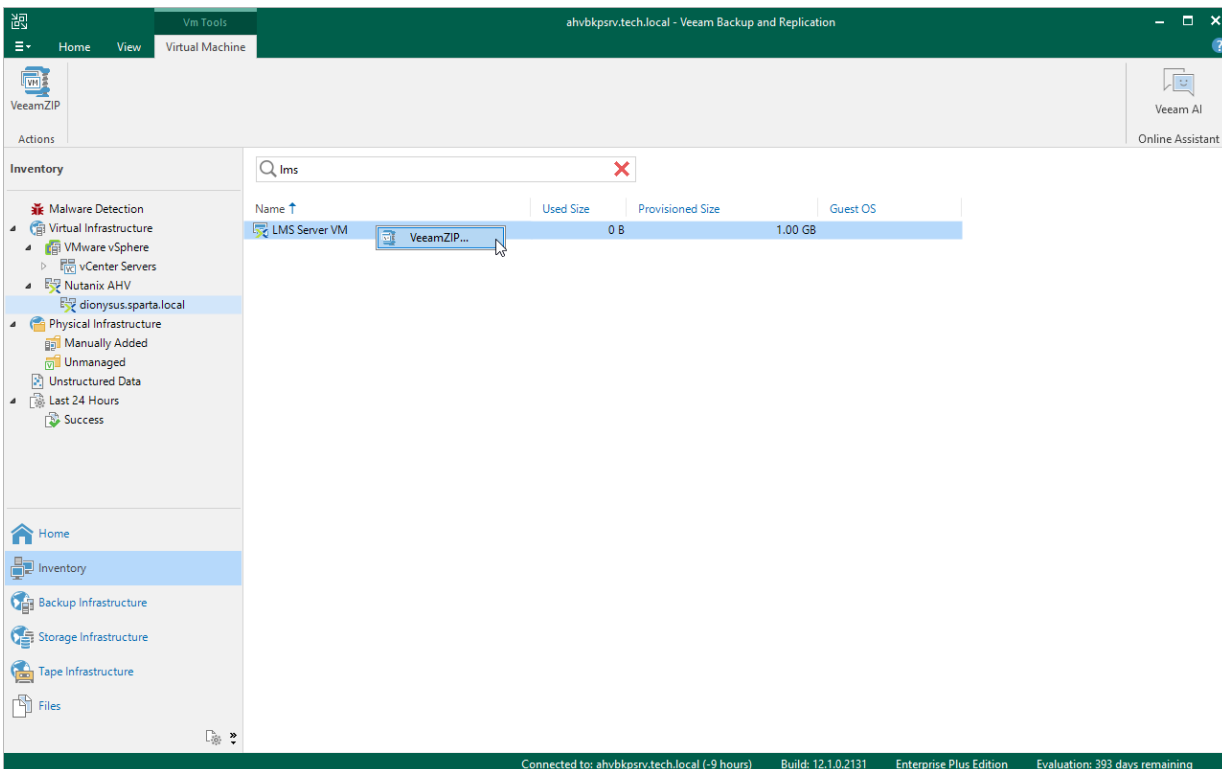
To create a VeeamZIP backup, do the following:

1. In the Veeam Backup & Replication console, open the **Inventory** view.
2. In the inventory pane, select **Nutanix AHV**.
3. In the working area, right-click the VM that you want to back up, and select **VeeamZIP**.
4. Select the destination where the VeeamZIP backup will be stored.

TIP

You cannot specify an SMB share that requires authentication as a local or shared folder. However, you can [add the SMB share to the backup infrastructure](#) and specify it as backup repository.

The created VeeamZIP backup will be displayed under the **Backups > Disk (Exported)** node in the **Home** view of the Veeam Backup & Replication console.



Managing Backups and Snapshots

You can perform the following operations with backup files and snapshots:

- [Viewing Backup Properties](#)
- [Rescanning Backups](#)
- [Verifying Backups](#)
- [Exporting Backups](#)
- [Copying Backups](#)
- [Copying Backups to Tapes](#)
- [Deleting Backups](#)
- [Deleting Snapshots](#)

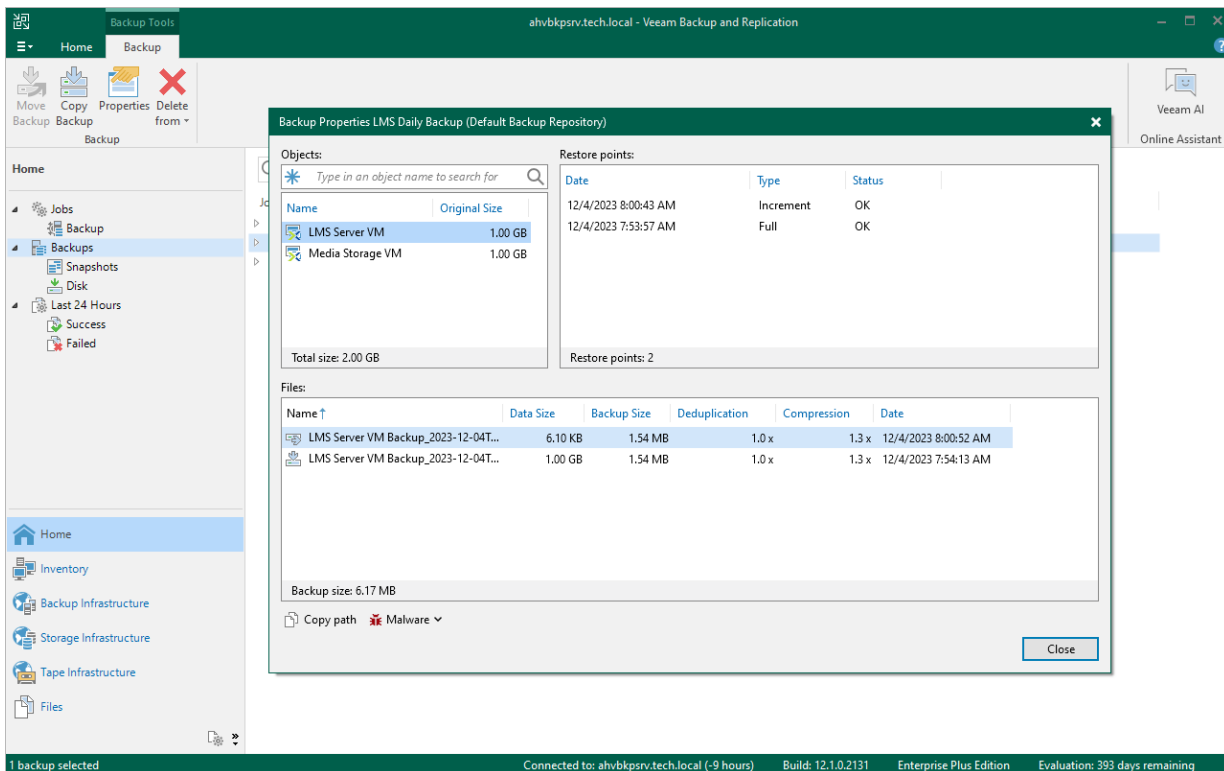
Viewing Backup Properties

After a backup job successfully creates a backup of an Nutanix AHV VM according to the specified schedule, or after you create an active full backup of a VM manually, the backup is displayed under the **Backups** node in the **Home** view of the Veeam Backup & Replication console. Each backup is represented with a set of properties, such as:

- **Objects** – the names and sizes of backed-up VMs.
- **Restore Points** – the date and time of all restore points created for a VM.
- **Files** – the size of processed VM data, the size and the storage location of backed-up VM data, the ratio of [data deduplication](#) and the ratio of [data compression](#).

To view backup properties, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, right-click the backup and select **Properties**.



Rescanning Backups

You can import backups created by another Nutanix AHV backup appliance and use them to [restore VMs and VM disks](#).

NOTE

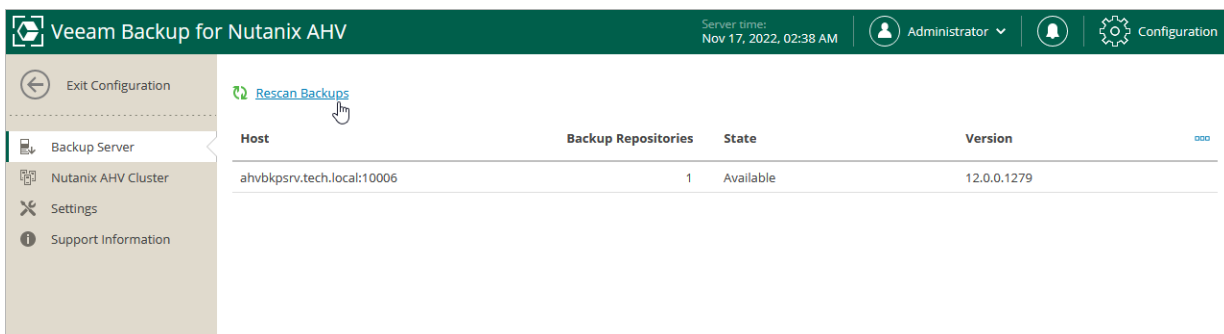
When you import backups, the jobs that produced those backups are not re-created. To re-create the jobs, restore the Nutanix AHV backup appliance configuration as described in section [Restoring Configuration Data](#).

To import Nutanix AHV VM backups, do the following:

1. Ensure that the [Nutanix AHV backup appliance has access to repositories](#) where the necessary backups are stored.
2. Switch to the **Configuration** page.
3. Navigate to **Backup Server**.
4. Click **Rescan Backups**.

The Nutanix AHV backup appliance will scan the repositories and import all Nutanix AHV VM backups created by Veeam Backup for Nutanix AHV. To track the progress of the import operation, click **Go to Sessions**.

To see the list of imported backups, switch to the **Protected VMs** page.



The screenshot shows the Veeam Backup for Nutanix AHV Configuration page. The top navigation bar includes the Veeam logo, the title "Veeam Backup for Nutanix AHV", the server time "Nov 17, 2022, 02:38 AM", the user "Administrator", and a "Configuration" button. The left sidebar contains navigation options: "Exit Configuration", "Backup Server", "Nutanix AHV Cluster", "Settings", and "Support Information". The main content area features a "Rescan Backups" button with a refresh icon. Below it is a table with the following data:

Host	Backup Repositories	State	Version
ahvbkpsrv.tech.local:10006	1	Available	12.0.0.1279

Verifying Backups

[Applies only to Veeam Backup & Replication version 12.1 and later] To perform an integrity check of Nutanix AHV VM backups, Veeam Backup & Replication offers the SureBackup technology that allows you to ensure that the created restore points are not corrupted. For backups of Windows VMs, you can also scan the restore points with antivirus software installed on the backup server, and run YARA rules to detect malware and sensitive data.

To create a SureBackup job, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Jobs** and click **SureBackup Job** on the ribbon.
3. At the **Name** step of the **New SureBackup Job** wizard, select the **Backup verification and content scan only verification** mode, and then complete the wizard as described in the Veeam Backup & Replication User Guide, section [Creating SureBackup Jobs](#).

If any of the verification checks fail for a restore point, Veeam Backup & Replication will mark both this restore point and all subsequent points in the backup chain as *Infected*. To learn how to manage infected restore points, see Veeam Backup & Replication User Guide, section [Managing Malware Status](#).

TIP

You can scan backups of Windows VMs manually on demand, without creating a SureBackup job. To learn how to do that, see the Veeam Backup & Replication User Guide, section [Scan Backup](#).

The screenshot shows the Veeam Backup & Replication console interface. The 'Home' view is active, and the 'Jobs' section is selected in the left-hand navigation pane. The 'New SureBackup Job' wizard is open, and the 'Name' step is currently displayed. The wizard is configured to create a new SureBackup job. The console displays a table of jobs, including 'LMS Daily Backup', and a summary of the current job's progress, showing it is successful with 2 objects processed.

Name	Type	Objects	Status	Last Run	Last Result	Next Run	Target	Description
LMS Daily Backup	Nutanix Backup	2	Stopped	5 minutes ago	Success	12/4/2023 10:00 PM	Default Backup Repository	Backup of the

SUMMARY		DATA	STATUS
Duration:	01:03	Processed:	N/A
Processing rate:	0 KB/s	Read:	1024 B
Bottleneck:	N/A	Transferred:	64 B (16x)
		Success:	2 ✓
		Warnings:	0
		Errors:	0

Name	Status	Action	Duration
LMS Server VM	✓ Success	✓ Media Storage VM : Finalizing backup	
Media Storage VM	✓ Success	✓ LMS Server VM : Backup finished	00:02
		✓ Media Storage VM : Backup finished	
		✓ Applying retention policy	
		✓ Retention policy has been applied successfully	
		✓ Load: Source 94% > Proxy 0% > Network 0% > Target 0%	
		✓ Primary bottleneck: Source	
		✓ Job finished at 12/4/2023 8:01:30 AM	

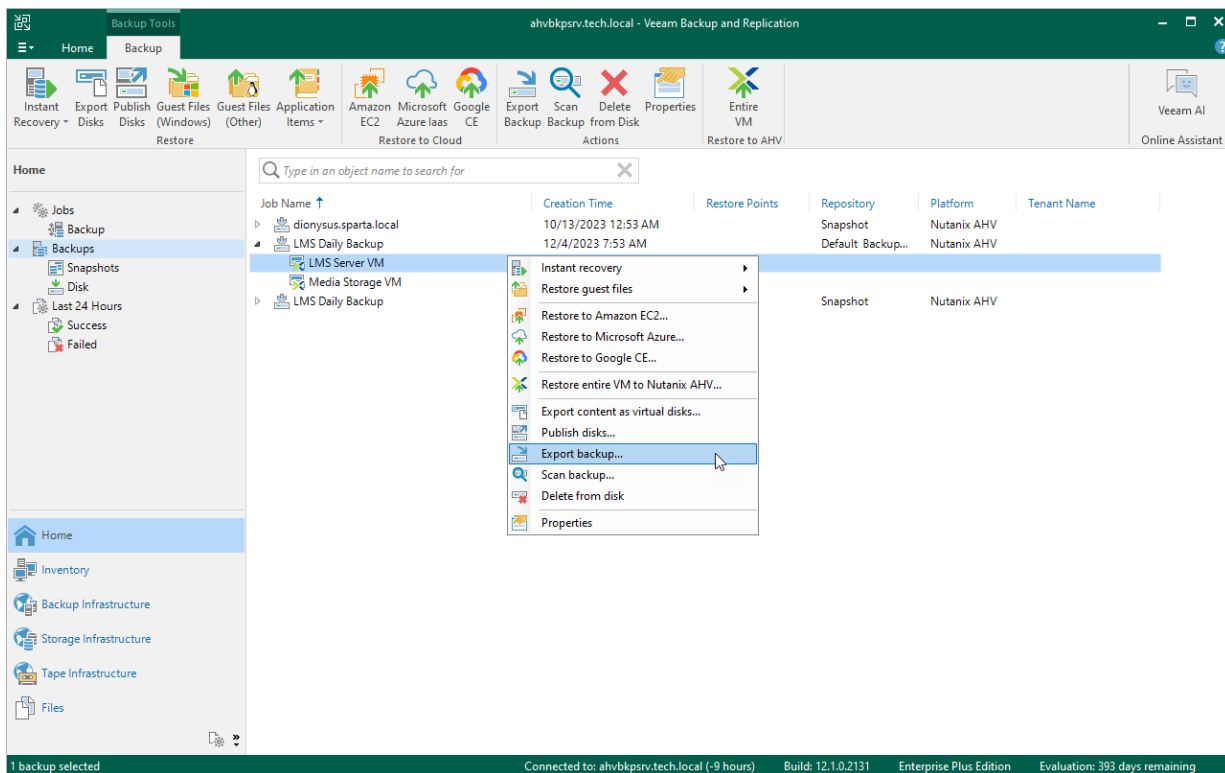
Exporting Backups

Exporting backups allows you to synthesize a complete and independent full backup file using restore points located in your backup repositories. That is, you can transform any backup chain into a standalone full backup file and save it to the same repository where the selected restore points reside.

To export a backup, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, right-click a VM for which you want to synthesize a full backup file, and select **Export Backup**.
4. Complete the **New Export** wizard as described in the Veeam Backup & Replication User Guide, section [Performing Export](#).

Once the export operation completes, the exported backup will be displayed under the **Backups > Disk (Exported)** node in the **Home** view of the Veeam Backup & Replication console.



Copying Backups

With backup copy, you can create several instances of a backup and copy them to secondary (target) backup repositories for long-term storage. Target backup repositories can be located in the same site as the source backup repository or can be deployed off-site. Since the backup copy has the same format as the original backup, you can restore VM data directly from the backup copy in case a disaster strikes. For more information on the backup copy functionality, see the [Veeam Backup & Replication User Guide, section Backup Copy](#).

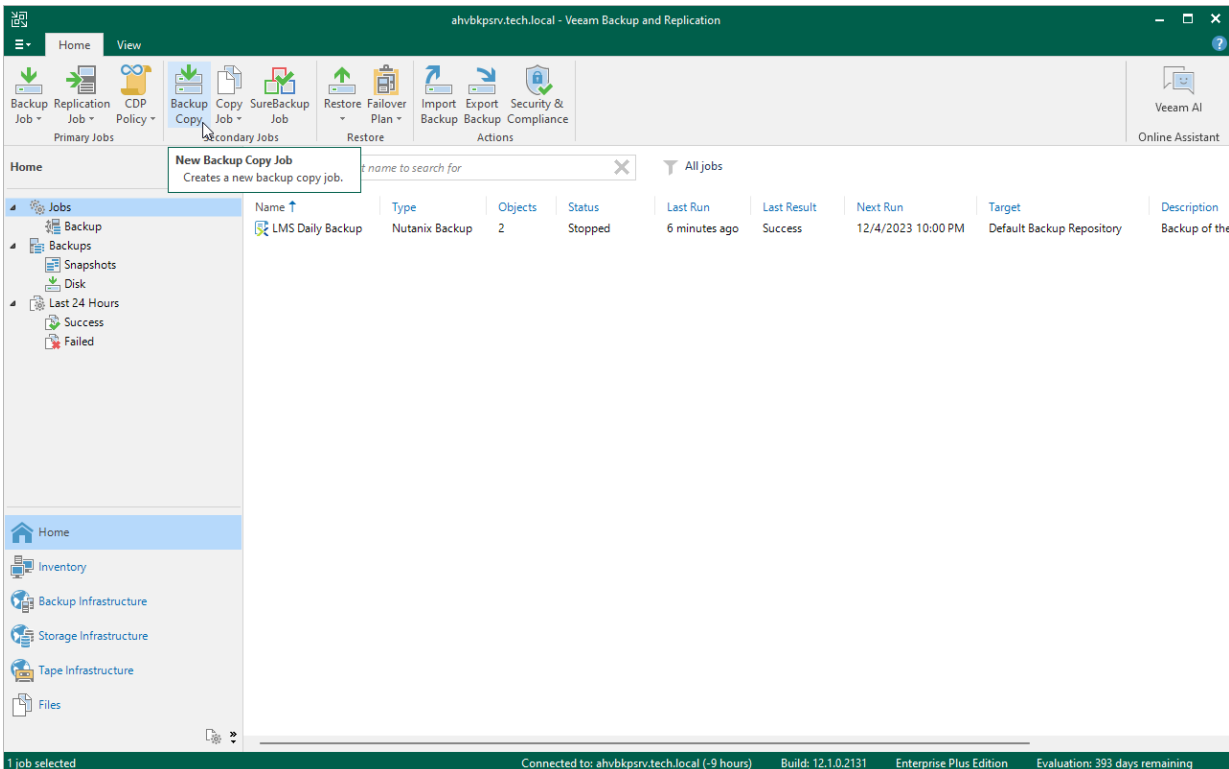
To copy backups to a secondary backup repository, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Jobs** and click **Backup Copy** on the ribbon.
3. Create a backup copy job as described in the Veeam Backup & Replication User Guide, section [Creating Backup Copy Jobs](#).

Note that you can copy backups to [Veeam Cloud Connect repositories](#) if a service provider is added to Veeam Backup & Replication. You can also restore VMs from backup copies stored in those repositories if you use Veeam Cloud Connect version 12.

TIP

Alternatively, you can create a copy of a backup without configuring a job as described in the Veeam Backup & Replication User Guide, section [Copying Backups](#).



Copying Backups to Tapes

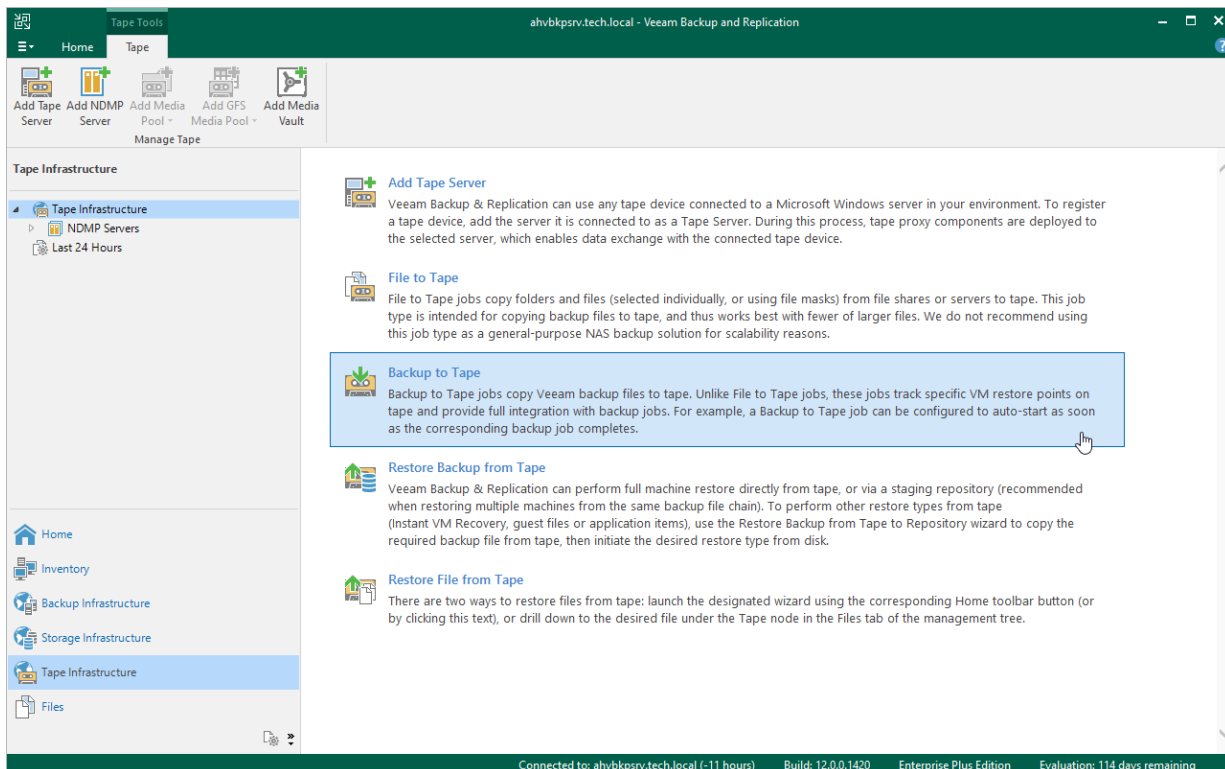
You can create archives of Nutanix AHV VM backups and copy them to tapes for long-term storage. Veeam Backup for Nutanix AHV allows you to manage tape archives the same way you manage backups in backup repositories. However, it usually takes more time to access archived data on tapes than to access backed-up data in repositories. For more information on tapes, see the Veeam Backup & Replication User Guide, section [Tape Devices Support](#).

To archive Nutanix AHV VM backups to tape, do the following:

1. Configure the tape infrastructure:
 - a. Connect tape devices as described in the Veeam Backup & Replication User Guide, section [Tape Devices Deployment](#).
 - b. Perform initial configuration of the tape infrastructure as described in the Veeam Backup & Replication User Guide, section [Getting Started with Tapes](#) (steps 1-3).
2. Create a backup to tape job as described in the Veeam Backup & Replication User Guide, section [Creating Backup to Tape Jobs](#).

NOTE

You cannot restore Nutanix AHV VMs directly from tapes. To restore a Nutanix AHV VM, you must first restore its backups to a repository as described in the Veeam Backup & Replication User Guide, section [Backup Restore from Tape to Repository](#).



Deleting Backups

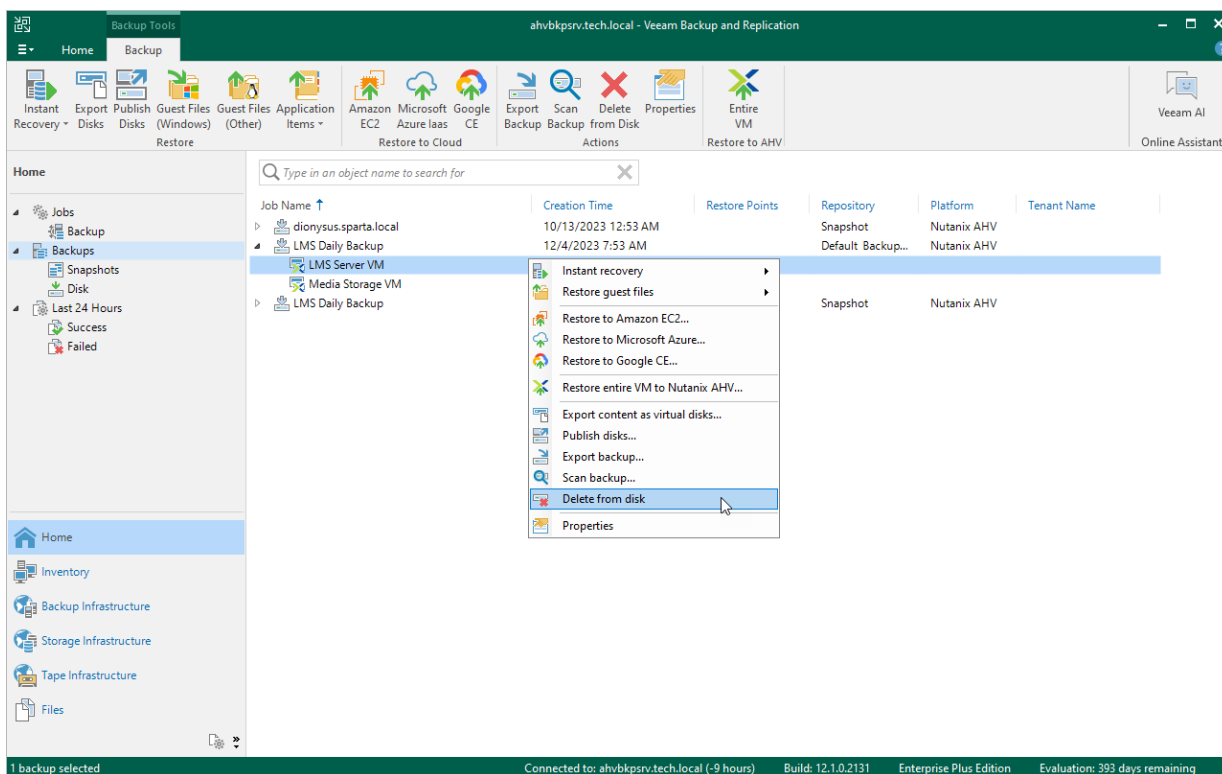
By default, Veeam Backup for Nutanix AHV maintains backups in backup repositories according to retention policy settings saved in the backup metadata. If Veeam Backup for Nutanix AHV detects that the number of restore points in the backup chain exceeds the allowed number, it automatically removes obsolete backups. If necessary, you can delete backups manually.

To delete backup files created for a Nutanix AHV VM by a backup or snapshot job, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane of the **Home** view, select **Backups**.
3. In the working area, expand the job that created the backup, right-click the VM name and select **Delete from disk**.

NOTE

[Applies only to Veeam Backup & Replication version 12.1 and later] If [4-eyes authorization](#) is enabled in Veeam Backup & Replication, deleting backup files will require additional approval from another user with the *Veeam Backup Administrator* role.



Deleting Snapshots

Veeam Backup for Nutanix AHV applies the [configured retention policy settings](#) to automatically remove snapshots created by jobs. If necessary, you can also remove snapshots manually.

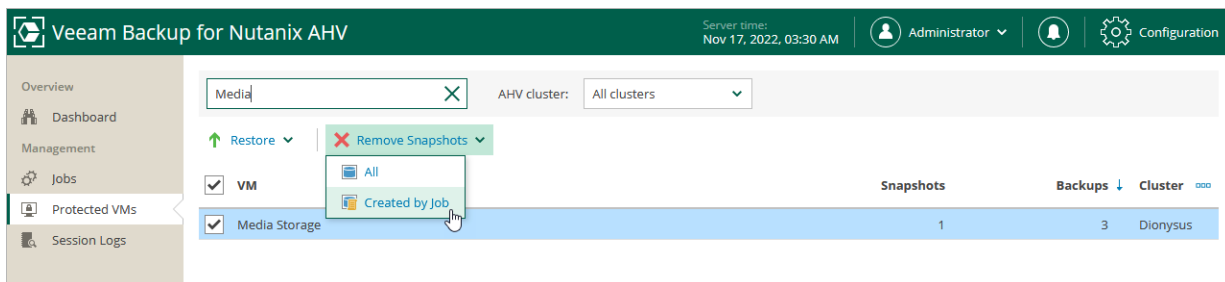
To remove snapshots, do the following:

1. Navigate to **Protected VMs**.
2. Select a VM whose snapshots you want to delete.
3. Click **Remove Snapshots**:
 - Select **All** to remove all VM snapshots including snapshots taken in the Nutanix AHV Prism console.
 - Select **Created by Job** to remove only snapshots created by Veeam Backup for Nutanix AHV jobs.

NOTE

If the VM is protected with PD snapshots, you can choose whether you want to delete or skip them. If you choose to delete the PD snapshots, Veeam Backup for Nutanix AHV will delete snapshots of the selected VM and of all other VMs included into the protection domain. If you choose to skip the PD snapshots, snapshots of the selected VM included in the protection domain will retain.

4. Click **Remove** to confirm.



Performing Restore

In various disaster recovery scenarios, Veeam Backup for Nutanix AHV allows you to perform the following operations using backed-up data:

- [Entire VM restore](#) – recover Nutanix AHV VMs to the original location or to a new location.
- [VM disk restore](#) – recover a specific VM disk and attach it to the original VM or to another VM.
- [Instant VM recovery](#) – instantly start a VM directly from a backup.
- [Disk publishing](#) – mount specific disks of a backed-up Nutanix AHV VMs to any server added to the backup infrastructure.
- [File-level restore](#) – recover individual VM guest OS files and folders.
- [Application items restore](#) – restore applications, such as Microsoft Active Directory, Microsoft Exchange, Microsoft SharePoint, and Microsoft SQL Server.
- [VM disk export](#) – restore VM disks and convert them to disks of the VMDK, VHD or VHDX format.
- [Restore to AWS](#) – restore Nutanix AHV VMs to Amazon Web Services as EC2 instances.
- [Restore to Microsoft Azure](#) – restore Nutanix AHV VMs to Microsoft Azure as Azure VMs.
- [Restore to Google Cloud](#) – restore Nutanix AHV VMs to Google Cloud as VM instances.

Performing VM Restore

In case a disaster strikes, you can restore an entire Nutanix AHV VM from a backup or snapshot. Veeam Backup for Nutanix AHV allows you to restore one or more VMs at a time, to the original location or to a new location.

Supported Workloads

To restore machines to a Nutanix AHV cluster, you can use the following backups and snapshots:

- Snapshots of Nutanix AHV PDs created by Veeam Backup for Nutanix AHV
- Snapshots of Nutanix AHV VMs created by Veeam Backup for Nutanix AHV
- Backups of Nutanix AHV VMs created by Veeam Backup for Nutanix AHV (including VMs with volume groups attached and VMs with no disks attached)
- Backups of Microsoft Hyper-V and VMware vSphere VMs created by Veeam Backup & Replication
- Backups of virtual and physical machines created by Veeam Agent for Microsoft Windows and Veeam Agent for Linux
- Backups of VMs created by vCloud Director
- Backups of Amazon EC2 instances created by Veeam Backup for AWS
- Backups of Microsoft Azure VMs created by Veeam Backup for Microsoft Azure
- Backups of Google Cloud VM instances created by Veeam Backup for Google Cloud
- Backups of RHV VMs created by Veeam Backup for Red Hat Virtualization

VM restore is supported only for snapshots stored in the Nutanix AHV cluster and for backups stored in backup repositories, object storage repositories, and on the performance, capacity and archive tier of a scale-out backup repository (except for backups stored in the archive tier that consists of the Amazon S3 Glacier Instant Retrieval extent; for those backups, you can perform [Instant Recovery](#)).

NOTE

You cannot restore VMs from backups stored in external repositories, Veeam Cloud Connect repositories and on tapes.

How VM Restore Works

During the VM restore process, the following steps are performed:

1. The Veeam Backup & Replication console sends the restore session configuration data to the Nutanix AHV backup appliance.
The Nutanix AHV backup appliance prioritizes restore tasks higher than other tasks. If multiple VMs are added to the restore session, these VMs are processed in parallel.
2. [This step applies only if you perform restore to the original location where the source VM is still present]
The Nutanix AHV backup appliance powers off the source VM and removes it from the Nutanix AHV environment.
3. The Nutanix AHV backup appliance connects to the target Nutanix AHV cluster over REST API and creates a VM in the target location.

4. The Nutanix AHV backup appliance creates empty virtual disks in the target location. The number of empty disks equals the number of disks attached to the source VM.
5. The Nutanix AHV backup appliance connects to the backup repository and restores backed-up data to the empty disks.

If multiple disks are attached to the source VM, the Nutanix AHV backup appliance restores these disks sequentially, one disk at a time.
6. The Nutanix AHV backup appliance attaches the created disks with the restored data to the target VM disk nodes using their original bus.

The maximum number of disk nodes available on Nutanix AHV VMs for each bus type is limited. Veeam Backup for Nutanix AHV can attach to a VM up to 6 SATA, 256 SCSI, 4 IDE and 7 PCI disks. If you restore a VM that has more disks of any of those bus types, Nutanix AHV will attach the disks to remaining nodes of other bus types in the default priority: SATA, SCSI, IDE, PCI. You can modify [the backup appliance configuration](#), to instruct Nutanix AHV to ignore original bus types and to use a specific order of bus types.
7. [This step applies only if the VM has volume groups attached] The Nutanix AHV backup appliance creates a new volume group with empty disks.
8. [This step applies only if the VM has volume groups attached] The Nutanix AHV backup appliance connects to the backup repository and restores backed-up data to the empty disks of the volume group.
9. [This step applies only if the VM has volume groups attached and you perform restore to the original location where the source VM is still present] The Nutanix AHV backup appliance removes the volume group that was attached to the source VM.
10. [This step applies only if the VM has volume groups attached] The Nutanix AHV backup appliance attaches the created volume group with the restored data to the target VM.

How to Perform VM Restore

To restore a protected VM, you can use either the [Veeam Backup & Replication console](#) or the [Nutanix AHV backup appliance web console](#). However, only the Veeam Backup & Replication console allows you to restore workloads of different types and to choose a location for the restored VMs.

NOTE

The [SureBackup feature](#) that allows you to verify any restore point of a backed-up VM is not supported for backups created with Veeam Backup for Nutanix AHV.

Restoring VMs Using Veeam Backup & Replication Console

From the Veeam Backup & Replication console, you can restore one or multiple VMs to any Nutanix AHV cluster added to the backup infrastructure.

To restore a protected VM, do the following:

1. [Check prerequisites and limitations.](#)
2. [Launch the Full VM Restore wizard.](#)
3. [Select VMs to restore.](#)
4. [Choose a restore mode.](#)
5. [Specify a target cluster.](#)
6. [Select a storage container where VM virtual disks will be stored.](#)
7. [Specify a new name for the restored VM.](#)
8. [Configure network settings.](#)
9. [Specify a restore reason.](#)
10. [Verify restore settings.](#)

Before You Begin

Before you perform VM restore, consider the following limitations:

- When restoring a VM from a [snapshot, backup snapshot or PD snapshot](#), Veeam Backup for Nutanix AHV stores virtual disks of the recovered VM in the original storage container.
- When restoring a VM from a [snapshot or PD snapshot](#), Veeam Backup for Nutanix AHV retains the original VM network settings. After the VM is restored, you can change these settings using the Nutanix Prism console as described in [Nutanix documentation](#).
- To restore a VM from a backup stored in the archive tier of a scale-out backup repository, you must first retrieve backup data as described in the Veeam Backup & Replication User Guide, section [Retrieving Backup Files](#).
- A VM restored from a backup created by a solution other than Veeam Backup for Nutanix AHV may become unreachable through the network. To resolve the issue, log in to the VM console using Nutanix AHV Prism Element console and install Nutanix Guest Tools as described in [Nutanix documentation](#).
- When restoring a VM that originally resided on a platform other than Nutanix AHV, Veeam Backup for Nutanix AHV attaches VM disks with the restored data to the target VM disk nodes using their original bus types. Veeam Backup for Nutanix AHV can attach to a VM up to 6 SATA, 256 SCSI, 4 IDE and 7 PCI disks. If the VM has more disks of any of those bus types, Nutanix AHV will attach the disks to remaining nodes of other bus types in the default priority: SATA, SCSI, IDE, PCI. You can [modify the backup appliance configuration](#), to instruct Nutanix AHV to ignore source VM original bus types and to use a specific order of bus types.
- When restoring a VM to a new location, Veeam Backup for Nutanix AHV does not restore the VM affinity policy configuration. Therefore, you must manually configure the affinity policy as described in [Nutanix documentation](#).

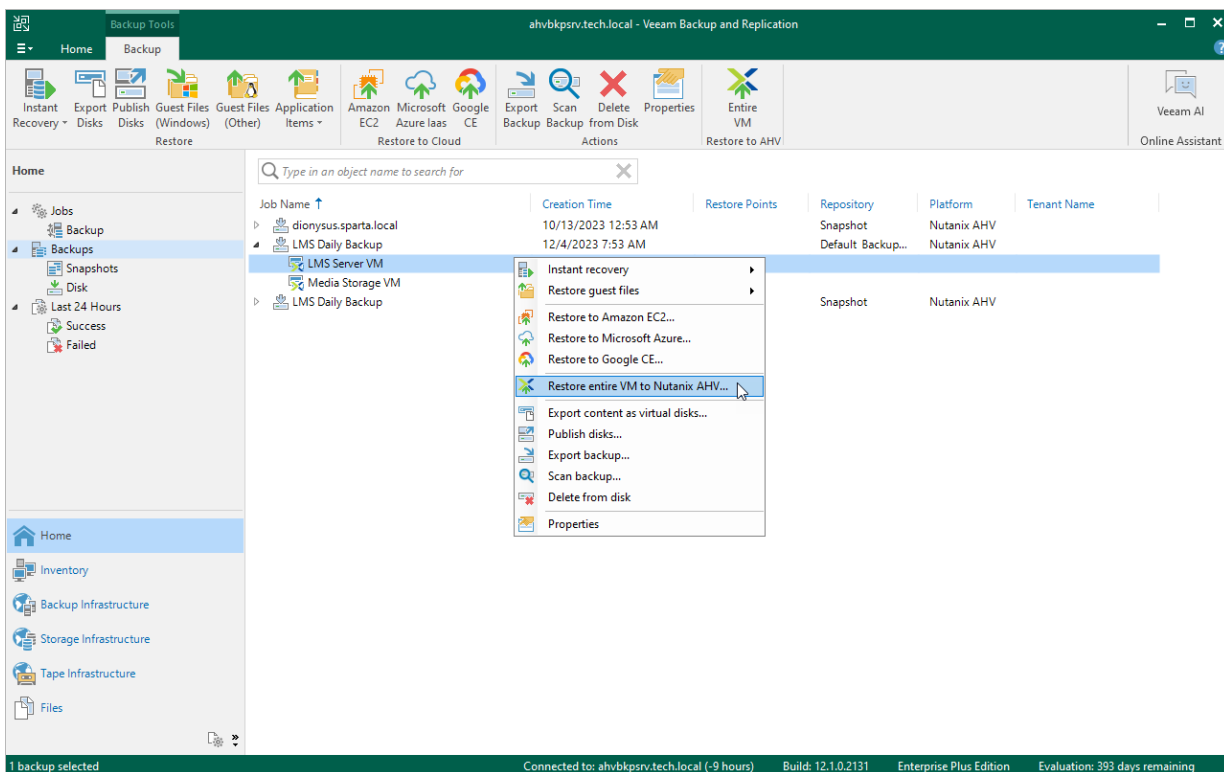
Step 1. Launch Restore Wizard

To launch the **Full VM Restore to Nutanix AHV** wizard, do the following:

1. In the Veeam Backup & Replication console, open the **Backup** view.
2. In the inventory pane, select **Backups**.
3. In the working area, expand the necessary backup or snapshot job, select the VM that you want to restore and click **Entire VM** on the ribbon, or right-click the VM and select **Restore entire VM to Nutanix AHV**.

TIP

To restore a VM from a snapshot taken in the Nutanix AHV Prism Element console, expand the Nutanix AHV cluster, select the VM that you want to restore and click **Entire VM** on the ribbon, or right-click the VM and select **Restore entire VM to Nutanix AHV**.



Step 2. Select Restore Point

At the **Virtual Machines** step of the wizard, select a restore point that will be used to restore the selected VM. By default, Veeam Backup for Nutanix AHV uses the most recent valid restore point. However, you can restore the VM data to an earlier state.

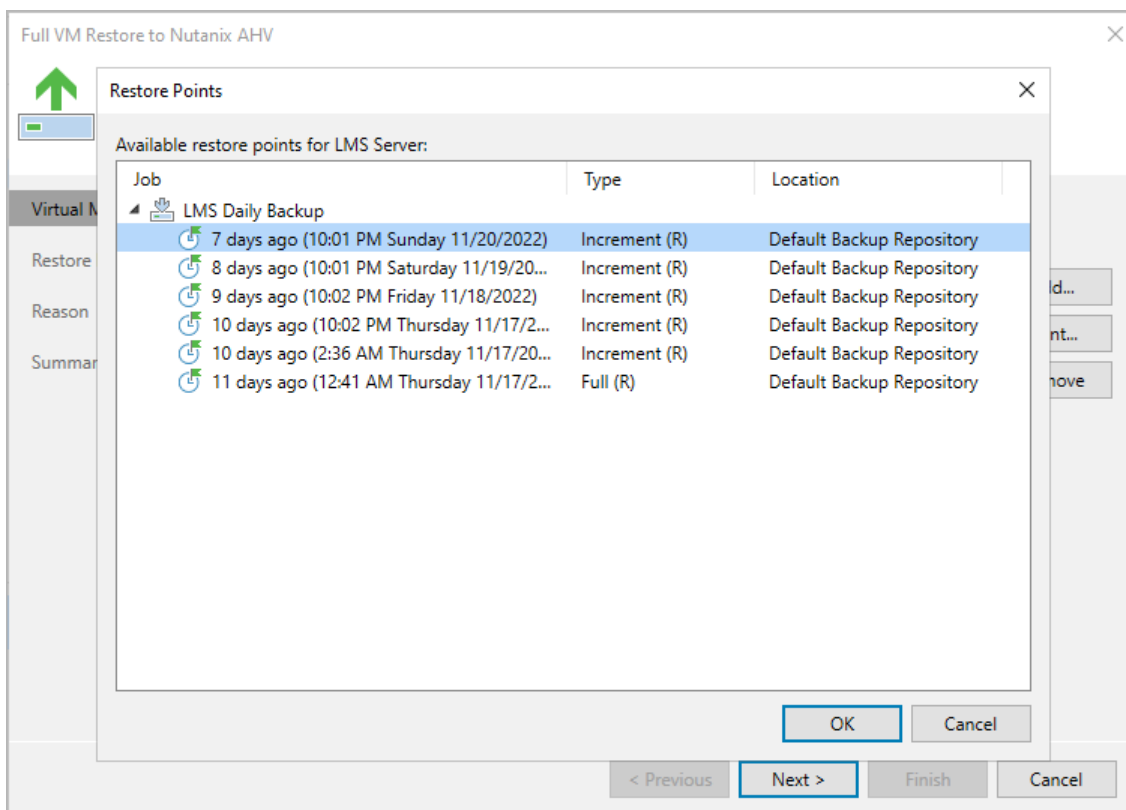
To select a restore point, do the following:

1. Select the VM.
2. Click **Point**.
3. In the **Restore Points** window, select the necessary restore point and click **OK**.

To help you choose a restore point, Veeam Backup for Nutanix AHV provides the following information on each available restore point:

- **Job** – the name of the backup job that created the restore point and the date when the restore point was created.
- **Type** – the type of the restore point.
- **Location** – the repository where the restore point is stored.

You can use the wizard to restore multiple VMs at a time. To do that, click **Add**, select more VMs to restore and select a restore point for each of them.



Step 3. Choose Restore Mode

At the **Restore Mode** step of the wizard, choose whether you want to restore the selected VM to the original or to a custom location.

Full VM Restore to Nutanix AHV

Restore Mode
Specify whether selected VMs should be restored back to the original location, or to a new location or with different settings.

Virtual Machines

Restore Mode

Cluster

Storage Container

Name

Network

Reason

Summary

Restore to the original location
Quickly initiate the restore of selected VM to its original location, with the original name and settings. This option minimizes the chance of user input error.

Restore to a new location, or with different settings
Customize the restored VM location, and change its settings. The wizard will automatically populate all controls with the original VM settings as the defaults.

< Previous **Next >** Finish Cancel

Step 4. Specify Target Cluster

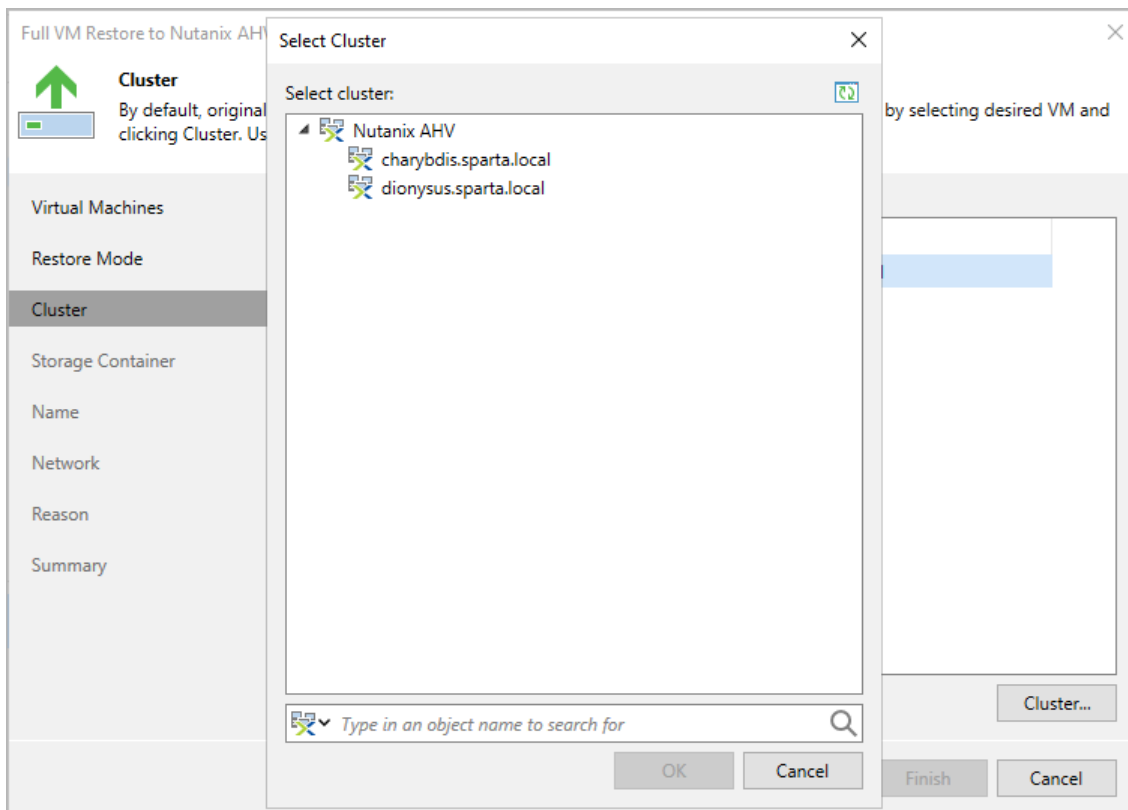
[This step applies only if you have selected the **Restore to a new location, or with different settings** option at the **Restore Mode** step of the wizard]

At the **Cluster** step of the wizard, choose the cluster to which the recovered VM will belong.

For a cluster to be displayed in the list of the available clusters, it must be added to the backup infrastructure as described in section [Adding Nutanix AHV Cluster](#).

NOTE

The **Cluster** step of the **Full VM Restore to Nutanix AHV** wizard is not available if you restore the VM from a snapshot.



Step 5. Select Storage Container

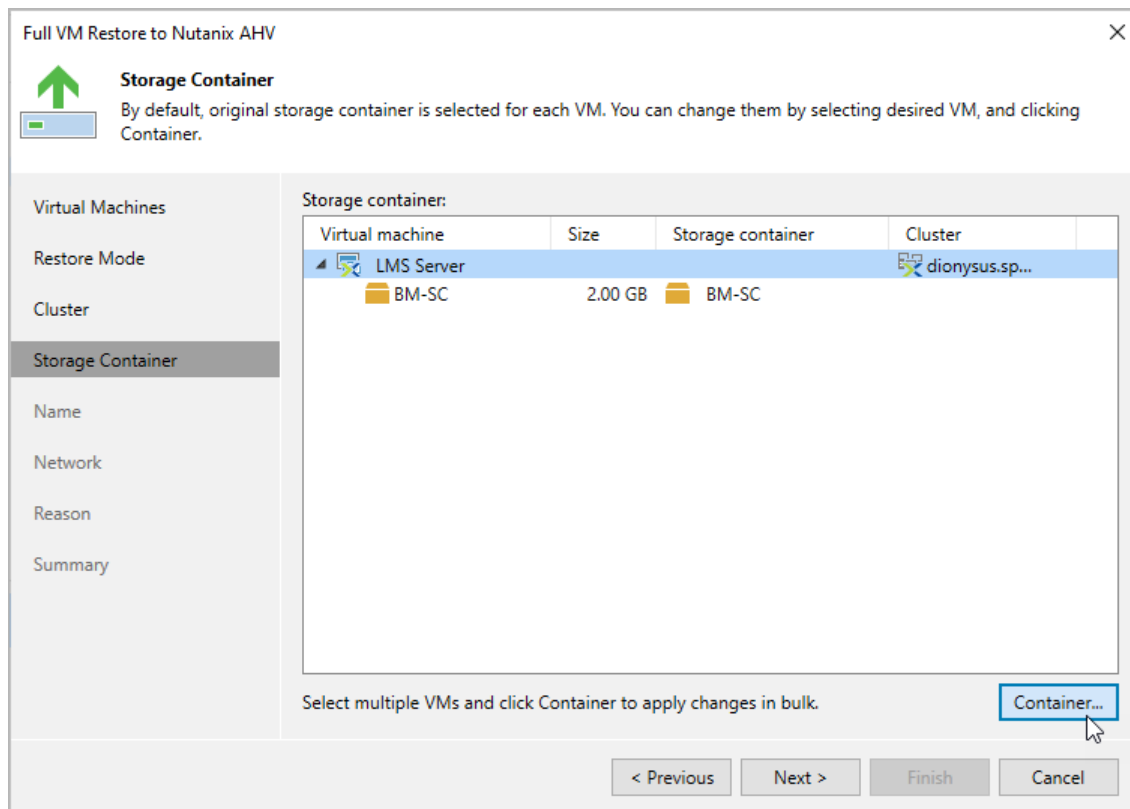
[This step applies only if you have selected the **Restore to a new location, or with different settings** option at the **Restore Mode** step of the wizard]

At the **Storage Container** step of the wizard, choose the storage container where virtual disks of the recovered VM will be stored.

For a container to be displayed in the list of the available containers, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

NOTE

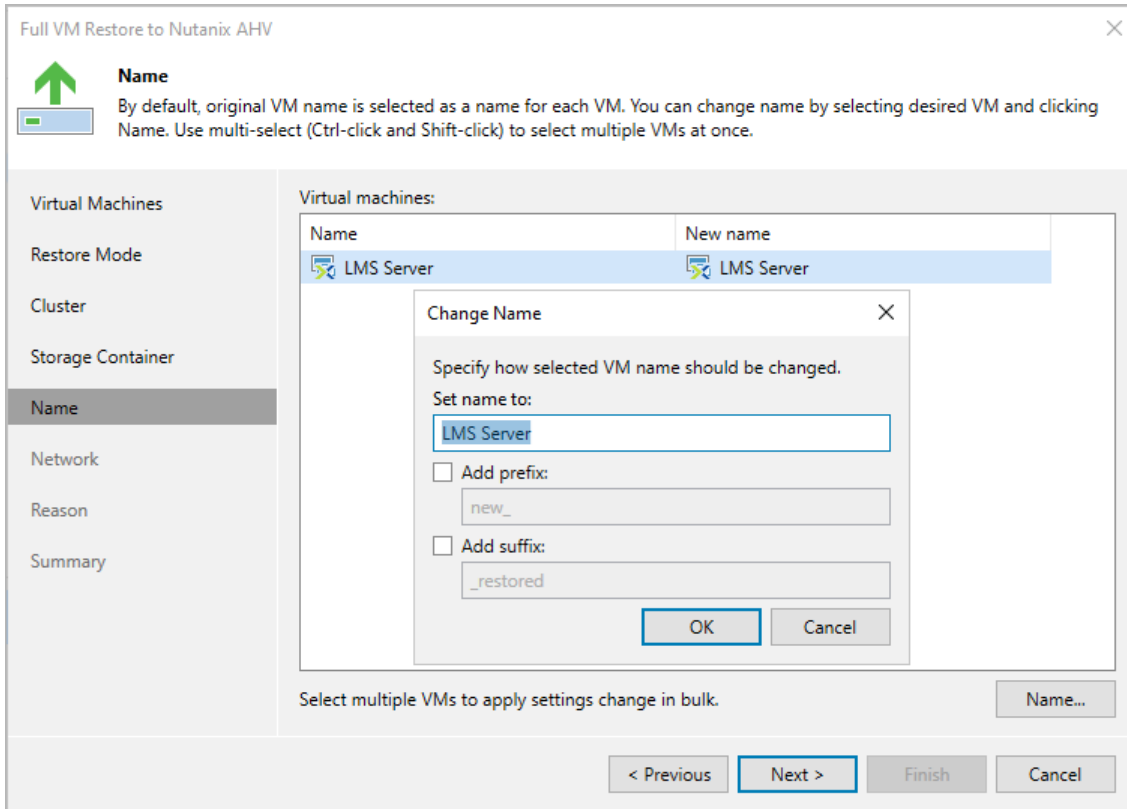
You cannot choose a storage container when restoring the VM from a snapshot.



Step 6. Specify VM Name

[This step applies only if you have selected the **Restore to a new location, or with different settings** option at the **Restore Mode** step of the wizard]

At the **Name** step of the wizard, you can specify a new name for the recovered VM.



Step 7. Configure Network Settings

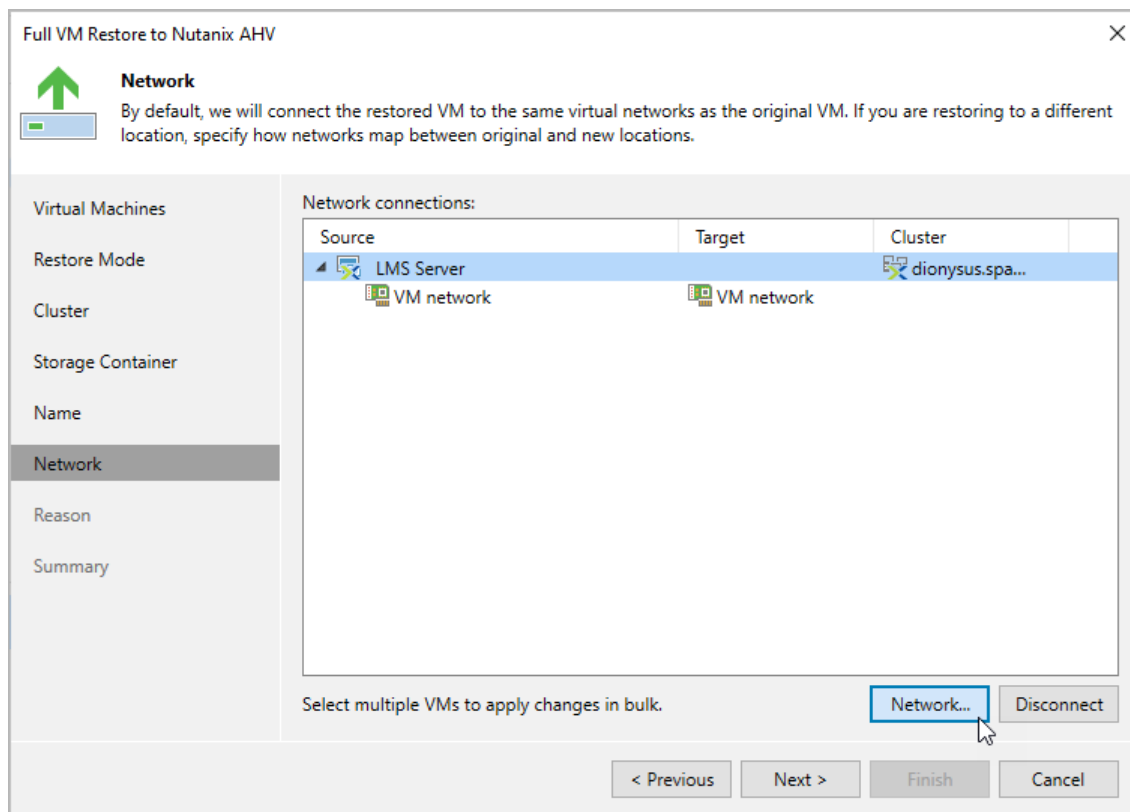
[This step applies only if you have selected the **Restore to a new location, or with different settings** option at the **Restore Mode** step of the wizard]

At the **Network** step of the wizard, choose a network to which the recovered VM will be connected. If you do not want to connect the VM to any virtual network, select the VM and click **Disconnect**.

For a network to be displayed in the list of the available networks, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).

NOTE

You cannot change network settings when restoring the VM from a snapshot. However, you can choose to disconnect the original network.



Step 8. Specify Restore Reason

At the **Reason** step of the wizard, specify a reason for restoring the VM. This information will be saved to the session history, and you will be able to reference it later.

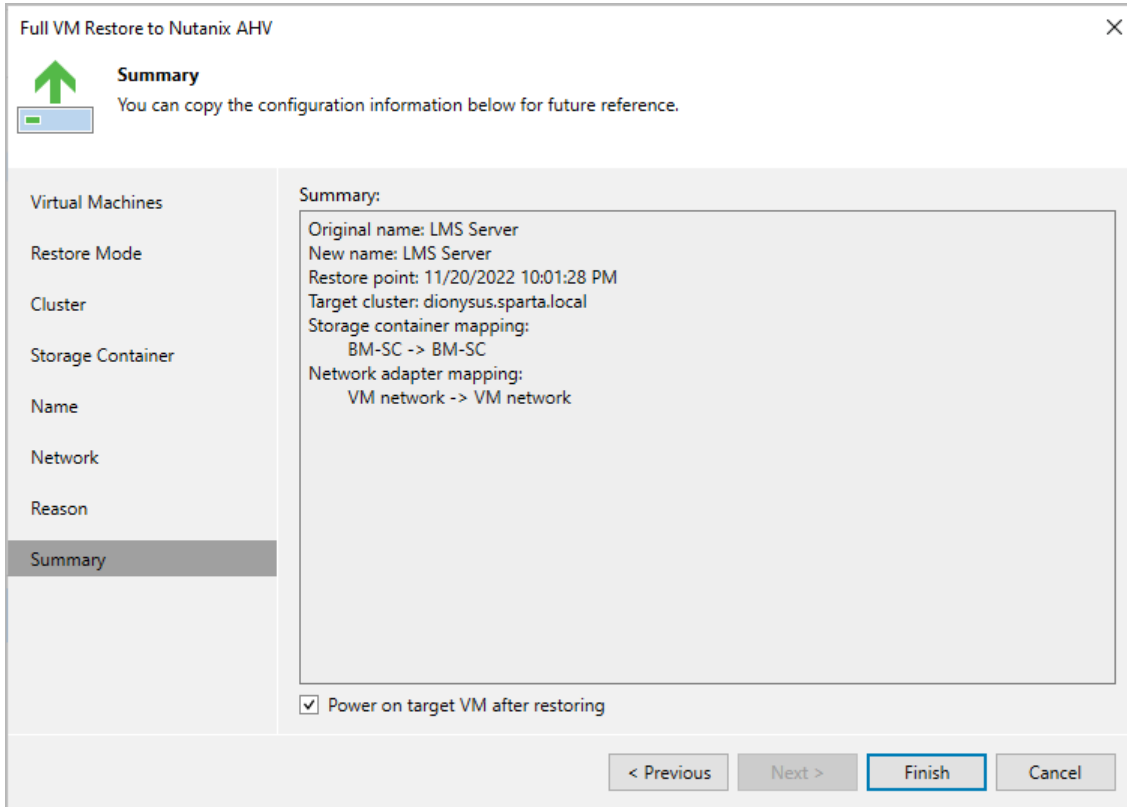
The screenshot shows a wizard window titled "Full VM Restore to Nutanix AHV" with a close button (X) in the top right corner. On the left side, there is a vertical navigation pane with the following items: "Virtual Machines", "Restore Mode", "Cluster", "Storage Container", "Name", "Network", "Reason" (which is highlighted with a dark grey background), and "Summary". Above the navigation pane, there is a green upward-pointing arrow icon and a small blue progress bar. The main area of the wizard is titled "Reason" and contains the instruction: "Type in the reason for performing this restore operation. This information will be logged in the restore sessions history for later reference." Below this instruction is a large text input field. The text "Restoring failed VM" is entered into this field. At the bottom left of the main area, there is a checkbox labeled "Do not show me this page again" which is currently unchecked. At the bottom of the wizard, there are four buttons: "< Previous", "Next >" (which is highlighted with a blue border), "Finish", and "Cancel".

Step 9. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**.

TIP

If you want to start the recovered VM as soon as the restore process completes, select the **Power on target VM after restoring** check box.



The screenshot shows the 'Full VM Restore to Nutanix AHV' wizard at the 'Summary' step. The window title is 'Full VM Restore to Nutanix AHV'. A green arrow icon points up, and the text says 'Summary' and 'You can copy the configuration information below for future reference.' On the left, a list of steps includes 'Virtual Machines', 'Restore Mode', 'Cluster', 'Storage Container', 'Name', 'Network', 'Reason', and 'Summary' (which is selected). The main area displays the following summary information:

Summary:
Original name: LMS Server
New name: LMS Server
Restore point: 11/20/2022 10:01:28 PM
Target cluster: dionysus.sparta.local
Storage container mapping:
BM-SC -> BM-SC
Network adapter mapping:
VM network -> VM network

At the bottom, there is a checked checkbox labeled 'Power on target VM after restoring'. The bottom right corner contains four buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'.

Restoring VMs Using Backup Appliance Web Console

In the Nutanix AHV backup appliance web console, you can restore a Nutanix AHV VM from backups and snapshots to the cluster where the original VM belongs.

To restore a protected VM, do the following:

1. [Check prerequisites and limitations.](#)
2. [Launch the Full VM Restore wizard.](#)
3. [Select a restore point.](#)
4. [Choose a restore mode.](#)
5. [Specify a new name for the restored VM.](#)
6. [Select a container where VM virtual disks will be stored.](#)
7. [Configure network settings.](#)
8. [Specify a restore reason.](#)
9. [Finish working with the wizard.](#)

Before You Begin

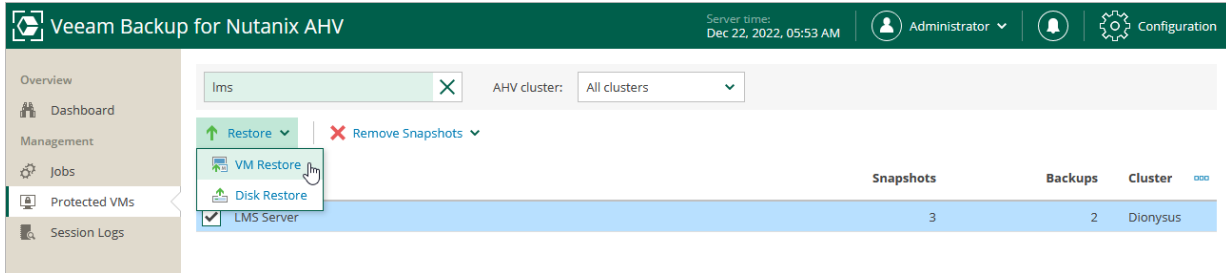
Before you perform Nutanix AHV VM restore, consider the following limitations:

- When restoring the VM from a backup, Veeam Backup for Nutanix AHV stores all virtual disks of the recovered VM in one storage container.
- When restoring a VM from a [snapshot, backup snapshot or PD snapshot](#), Veeam Backup for Nutanix AHV stores virtual disks of the recovered VM in the original storage container.
- When restoring a VM from a [snapshot or PD snapshot](#), Veeam Backup for Nutanix AHV retains the original VM network settings. After the VM is restored, you can change these settings using the Nutanix Prism console as described in [Nutanix documentation](#).
- When restoring a VM that originally resided on a platform other than Nutanix AHV, Veeam Backup for Nutanix AHV attaches VM disks with the restored data to the target VM disk nodes using their original bus. Veeam Backup for Nutanix AHV can attach to a VM up to 6 SATA, 256 SCSI, 4 IDE and 7 PCI disks. If the VM has more disks of any of those bus types, Nutanix AHV will attach the disks to remaining nodes of other bus types in the default priority: SATA, SCSI, IDE, PCI. You can [modify the backup appliance configuration](#), to instruct Nutanix AHV to ignore source VM original bus types and to use a specific order of bus types.
- When restoring a VM to a new location, Veeam Backup for Nutanix AHV does not restore the VM affinity policy configuration. Therefore, you must manually configure the affinity policy as described in [Nutanix documentation](#).

Step 1. Launch Full VM Restore Wizard

To launch the **Full VM Restore** wizard, do the following:

1. Navigate to **Protected VMs**.
2. Select the VM that you want to restore.
3. Click **Restore > VM Restore**.



Step 2. Select Restore Point

At the **Virtual Machine** step of the wizard, select a restore point that will be used to restore the selected VM. By default, Veeam Backup for Nutanix AHV uses the most recent valid restore point. However, you can restore the VM data to an earlier state.

To select a restore point, do the following:

1. Select the VM.
2. Click **Restore Point**.
3. In the **Select restore point** window, select the necessary restore point and click **Apply**.

To help you choose a restore point, Veeam Backup for Nutanix AHV provides the following information on each available restore point:

- **Job Name** – the name of the backup job that created the restore point.
- **Creating Time** – the time and date when the restore point was created.
- **Type** – the type of the restore point:
 - *Backup* – an image-level backup created by a backup job.
 - *Backup snapshot* – a snapshot created by a backup job.
 - *Snapshot* – a snapshot created by a snapshot job or manually taken in the Nutanix AHV Prism Element console.
 - *PD snapshot* – a snapshot created with a protection domain snapshot.

TIP

While creating a backup, Veeam Backup for Nutanix AHV takes a VM snapshot that is called backup snapshot. Veeam Backup for Nutanix AHV stores a recent backup snapshot for each backup job. Restore from the backup snapshot is significantly faster than restore from a backup. However, when you restore from the backup snapshot, [limitations are applied](#). For more information on snapshots, see [Snapshot Types](#),

You can use the wizard to restore multiple VMs at a time. To do that, click **Add VM**, select more VMs to restore and select a restore point for each of them.

The screenshot shows the Veeam Backup for Nutanix AHV interface during a Full VM Restore. The top navigation bar includes the Veeam logo, the product name, the server time (Dec 22, 2022, 05:55 AM), the user (Administrator), and a Configuration icon. The main window is titled "Full VM Restore" and is divided into three sections:

- Virtual Machines:** A sidebar on the left with a search bar and a list of VMs. One VM, "LMS Server", is selected. The "Selected" count is 0 of 1.
- Virtual Machines:** The main area where VMs are chosen for restoration. It shows a search bar and a list of VMs.
- Select restore point:** A modal window showing a table of backup jobs. The "LMS Daily Backup" job is selected. The table has columns for Job Name, Creation Time, and Type.

Job Name	Creation Time	Type
LMS Daily Backup	12/22/2022 1:40:30 AM	Backup snapshot
LMS Daily Backup	12/22/2022 1:40:30 AM	Backup
Workstations PD Snapshot	12/22/2022 1:18:01 AM	PD snapshot
LMS Daily Backup	12/22/2022 1:06:02 AM	Backup
N/A	12/9/2022 3:11:55 AM	PD snapshot

At the bottom of the "Select restore point" modal, there are "Apply" and "Cancel" buttons. A mouse cursor is pointing at the "Apply" button.

Step 3. Choose Restore Mode

At the **Restore Mode** step, choose whether you want to restore the VM with the original settings or to specify new settings (such as VM network and disk storage settings).

The screenshot shows the 'Full VM Restore' wizard in Veeam Backup for Nutanix AHV. The interface is divided into a top navigation bar, a left sidebar, and a main content area. The top bar includes the product name, server time (Dec 22, 2022, 05:56 AM), user (Administrator), and a configuration icon. The left sidebar lists 'Virtual Machines' and 'Restore Mode' (which is highlighted). The main content area is titled 'Restore Mode' and contains two radio button options. The first option, 'Restore to original location', is unselected. The second option, 'Restore to new location, or with different settings', is selected. Below the options are 'Previous', 'Next', and 'Cancel' buttons.

Veeam Backup for Nutanix AHV

Server time: Dec 22, 2022, 05:56 AM

Administrator

Configuration

Full VM Restore

Virtual Machines

Restore Mode

Name

Storage Container

Network Settings

Reason

Summary

Restore Mode

Specify whether you want to restore VMs to the original location or to a new one, or with different settings.

Restore to original location

Quickly restore the selected VMs to their original location, with the same name and settings as the original VMs.

Restore to new location, or with different settings

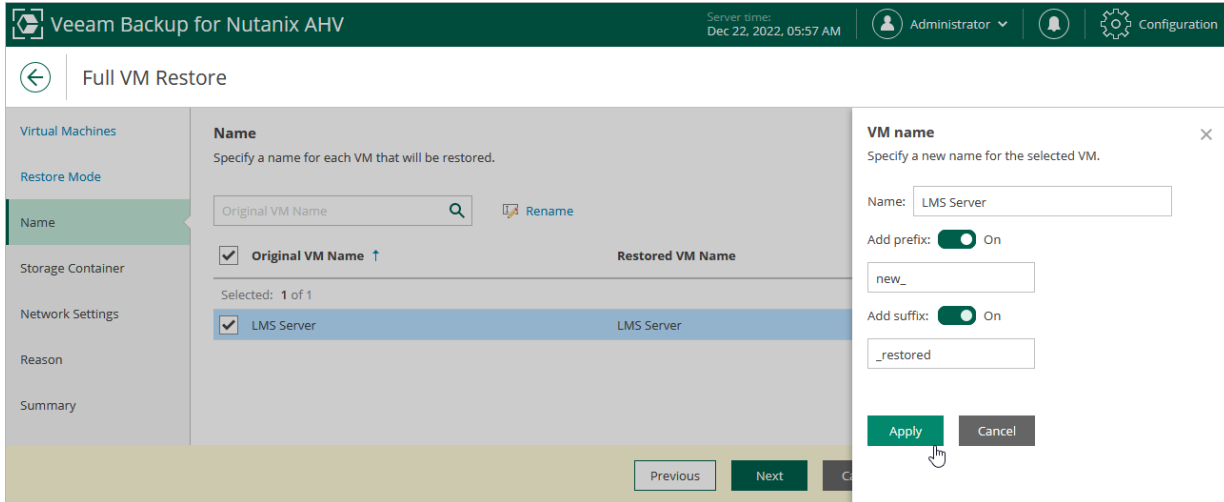
Perform additional configuration steps to restore the selected VMs to a new location or to use settings that differ from the original settings.

Previous Next Cancel

Step 4. Specify VM Name

[This step applies only if you have selected the **Restore to new location**, or with **different settings** option at the **Restore Mode** step of the wizard]

At the **Name** step of the wizard, you can specify a new name for the recovered VM.



Step 5. Select Storage Container

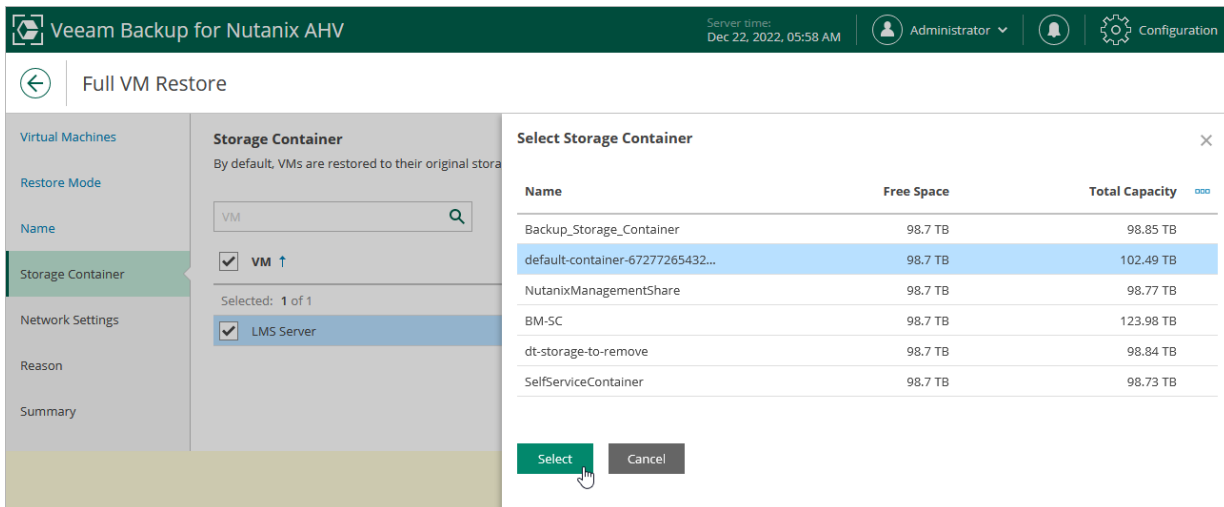
[This step applies only if you have selected the **Restore to new location**, or with **different settings** option at the **Restore Mode** step of the wizard]

At the **Storage Container** step of the wizard, choose the storage container where virtual disks of the recovered VM will be stored.

NOTE

You cannot choose a storage container when restoring the VM from a snapshot.

For a container to be displayed in the list of the available containers, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).



The screenshot shows the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the Veeam logo, the product name, the server time (Dec 22, 2022, 05:58 AM), the user (Administrator), and a Configuration icon. The main window is titled 'Full VM Restore' and has a left sidebar with navigation options: Virtual Machines, Restore Mode, Name, Storage Container (selected), Network Settings, Reason, and Summary. The 'Storage Container' section shows a search box with 'VM' and a list of containers. The 'LMS Server' container is selected. A modal window titled 'Select Storage Container' is open, displaying a table of available containers. The 'default-container-67277265432...' container is highlighted in blue. At the bottom of the modal are 'Select' and 'Cancel' buttons.

Name	Free Space	Total Capacity
Backup_Storage_Container	98.7 TB	98.85 TB
default-container-67277265432...	98.7 TB	102.49 TB
NutanixManagementShare	98.7 TB	98.77 TB
BM-SC	98.7 TB	123.98 TB
dt-storage-to-remove	98.7 TB	98.84 TB
SelfServiceContainer	98.7 TB	98.73 TB

Step 6. Configure Network Settings

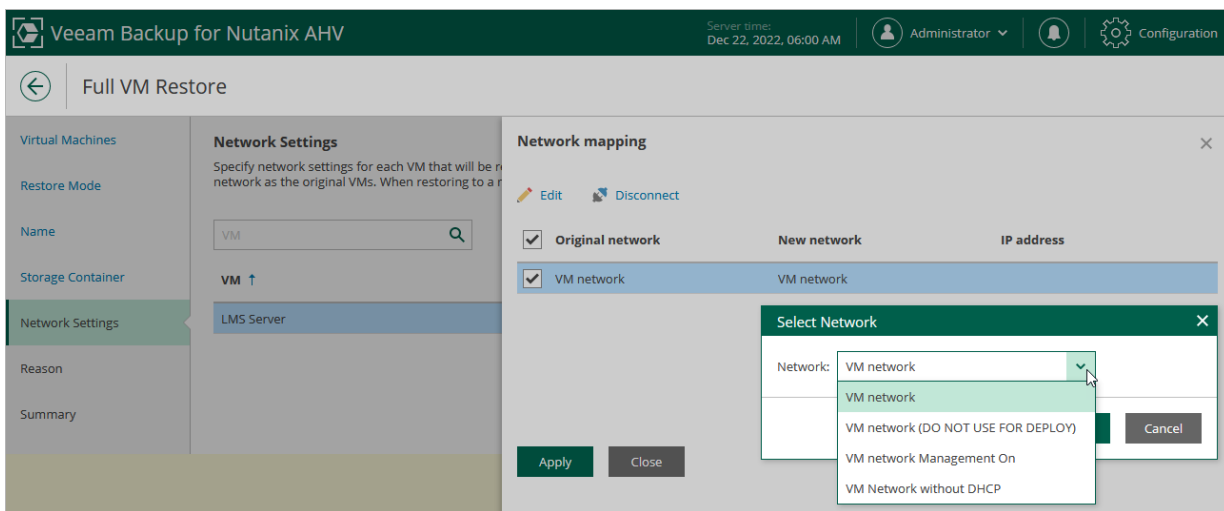
[This step applies only if you have selected the **Restore to new location**, or with **different settings** option at the **Restore Mode** step of the wizard]

At the **Network Settings** step of the wizard, choose a network to which the recovered VM will be connected. If you do not want to connect the VM to any virtual network, click **Disconnect**.

NOTE

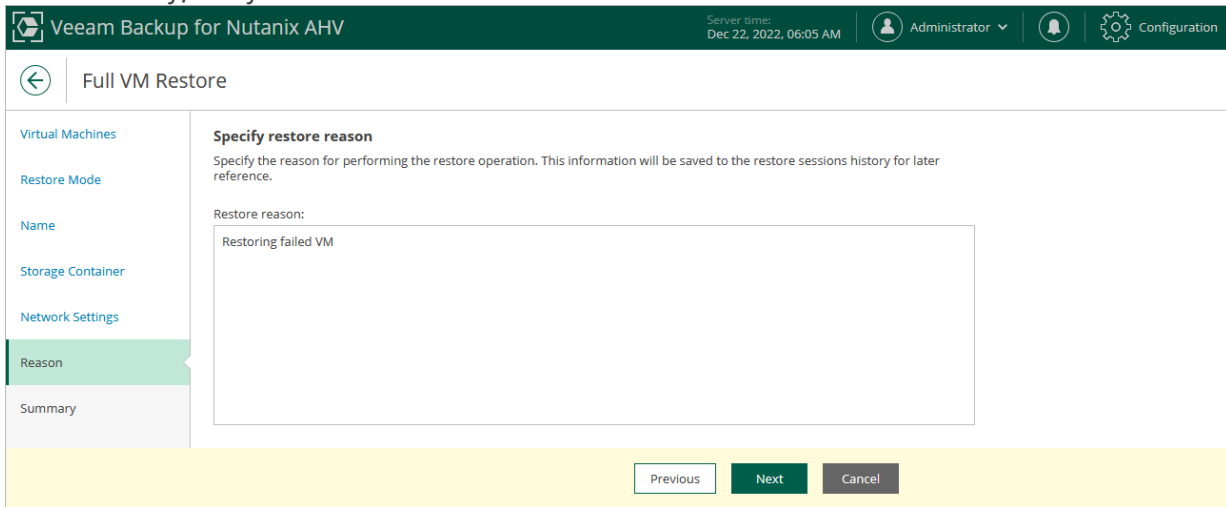
You cannot change network settings when restoring the VM from a PD snapshot or a snapshot created in the Nutanix AHV Prism console.

For a network to be displayed in the list of the available networks, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).



Step 7. Specify Reason for Restore

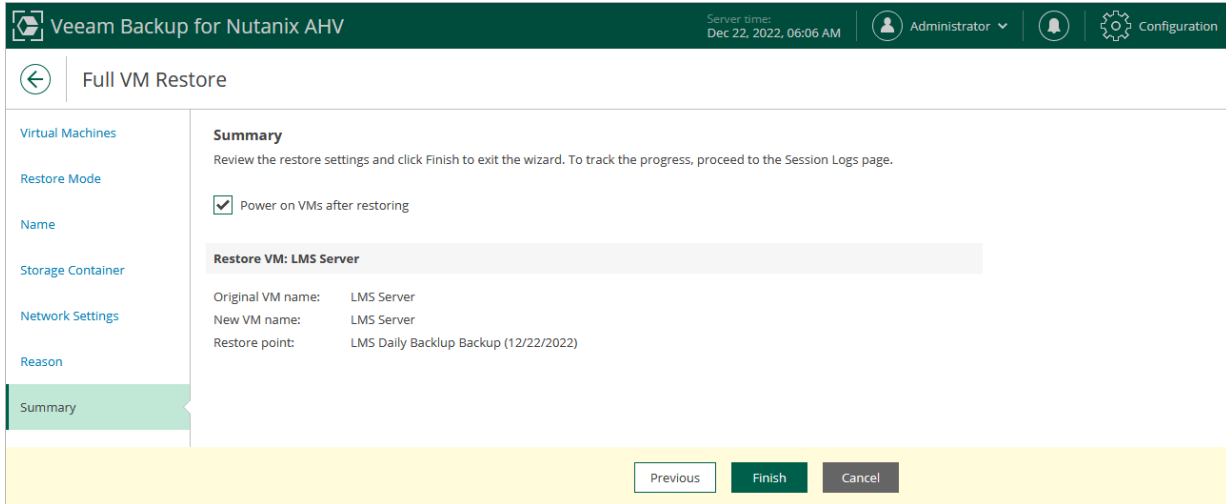
At the **Reason** step of the wizard, specify a reason for restoring the VM. This information will be saved to the session history, and you will be able to reference it later.



Step 8. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**.

If you want to start the recovered VM as soon as the restore process completes, select the **Power on target VM after restore** check box.



Performing Disk Restore

In case a disaster strikes, you can restore disks of a Nutanix AHV VM from a backup or backup snapshot. Veeam Backup for Nutanix AHV allows you to attach the restored disks to the original VM or any other VM in the virtual infrastructure.

NOTE

You cannot restore disks of volume groups attached to the VM.

How Disk Restore Works

During the VM disk restore process, the following steps are performed:

1. The Nutanix AHV backup appliance web console sends the restore session configuration data to the Nutanix AHV backup appliance.
2. The Nutanix AHV backup appliance powers off the target VM.
3. The Nutanix AHV backup appliance creates empty virtual disks in the Nutanix AHV infrastructure.
4. The Nutanix AHV backup appliance connects to the backup repository and restores backed-up data to the empty disks.
5. [This step applies only if you restore the disks to the original VM and if you choose to replace the existing disks] The Nutanix AHV backup appliance detaches the original disks from the VM and removes them from the Nutanix AHV infrastructure.
6. The Nutanix AHV backup appliance attaches the created disks with the restored data to the target VM.

How to Perform Disk Restore

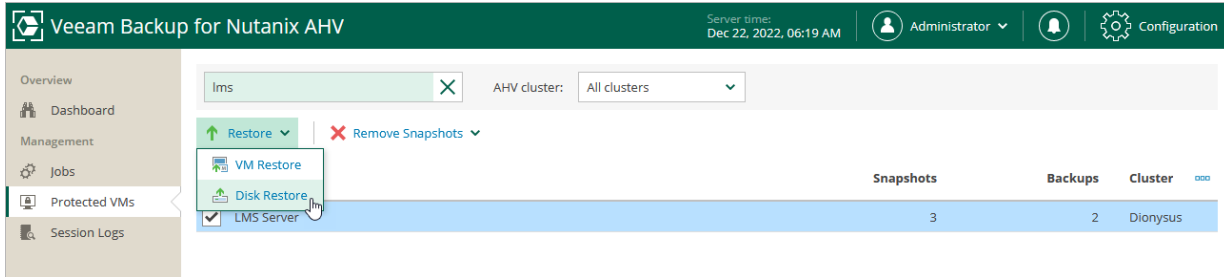
To restore disks attached to a protected VM, do the following:

1. [Launch the Virtual Disk Restore wizard.](#)
2. [Select a restore point.](#)
3. [Choose a restore mode.](#)
4. [Configure mapping settings.](#)
5. [Specify a restore reason.](#)
6. [Finish working with the wizard.](#)

Step 1. Launch Virtual Disk Restore Wizard

To launch the **Virtual Disk Restore** wizard, do the following:

1. Navigate to **Protected VMs**.
2. Select the VM whose virtual disks you want to restore.
3. Click **Restore > Disk Restore**.



Step 2. Select Restore Point

At the **Virtual Machine** step of the wizard, select a restore point that will be used to restore data. By default, Veeam Backup for Nutanix AHV uses the most recent valid restore point. However, you can restore the data to an earlier state.

NOTE

While creating a backup, Veeam Backup for Nutanix AHV takes a VM snapshot that is called backup snapshot. Veeam Backup for Nutanix AHV stores a recent backup snapshot for each backup job. Restore from a backup snapshot is significantly faster than restore from a backup.

To select a restore point, do the following:

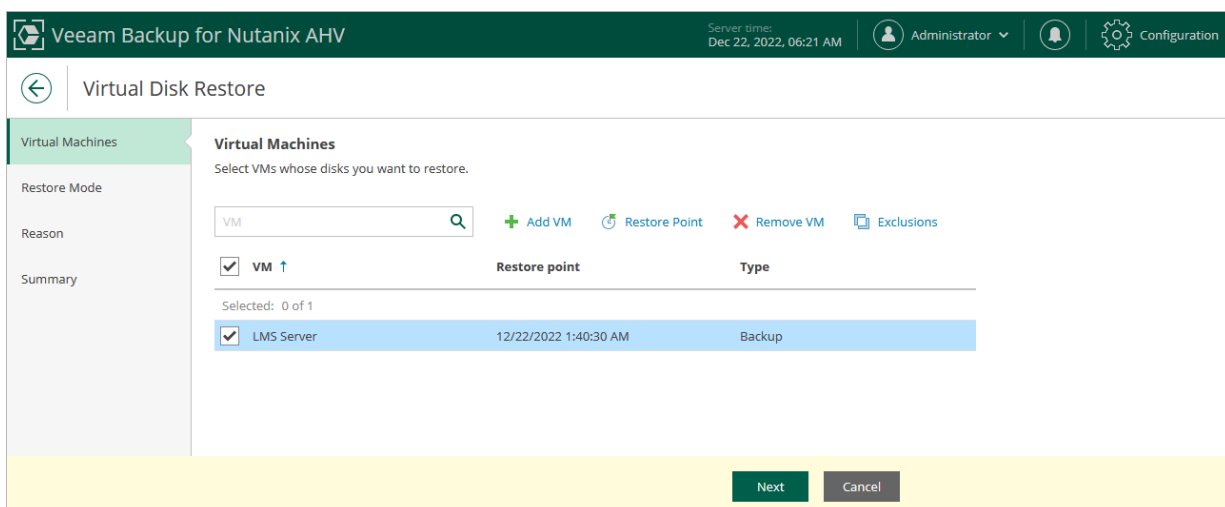
1. Select the VM.
2. Click **Restore Point**.
3. In the **Select restore point** window, select the necessary restore point and click **Apply**.

To help you choose a restore point, Veeam Backup for Nutanix AHV provides the following information on each available restore point:

- **Job Name** – the name of the backup job that created the restore point.
- **Creating Time** – the time and date when the restore point was created.
- **Type** – the type of the restore point:
 - *Backup* – an image-level backup created by a backup job.
 - *Backup snapshot* – a snapshot created by a backup job.

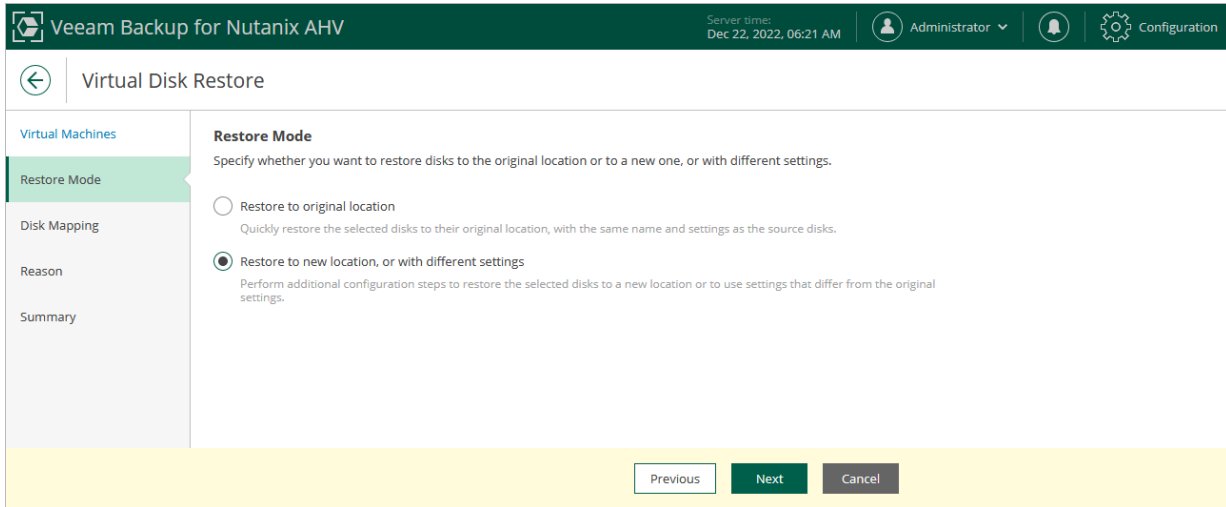
TIP

By default, Veeam Backup for Nutanix AHV restores all disks attached to the selected VMs. If you want to exclude specific disks of a VM from restore, do the following. Select a **VM**, click **Exclusions** and select the disks to exclude.



Step 3. Choose Restore Mode

At the **Restore Mode** step, choose whether you want to restore the disks with the original settings or to specify new settings (such as target VM and disk settings).



Step 4. Configure Mapping Settings

[This step applies only if you have selected the **Restore to new location, or with different settings** option at the **Restore Mode** step of the wizard]

At the **Disk Mapping** step of the wizard, do the following:

1. Click **Change Disk Mappings**.
2. Choose a target VM to which you want to attach the restored disk.

By default, Veeam Backup for Nutanix AHV attaches the restored disk to the original VM. To attach the disk to another VM, click **Browse**.

IMPORTANT

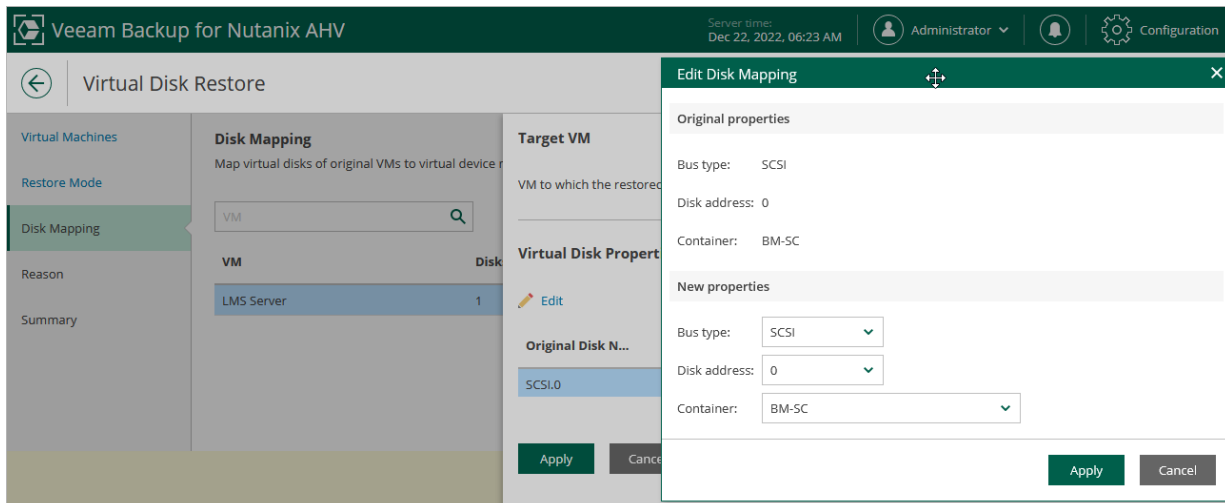
During disk restore, Veeam Backup for Nutanix AHV turns off the target VM to reconfigure its settings and attach the restored disk. It is recommended that you stop all activities on the target VM till the restore session completes.

3. Select a virtual disk to restore and click **Edit**.

By default, Veeam Backup for Nutanix AHV attaches the restored disk to the target VM as a new disk. However, if you want the restored disk to replace the existing disk, or if you want to change the disk bus type and to specify a storage container for the restored disk, configure disk settings.

NOTE

You can select a storage container only if you restore from a backup.



Step 5. Specify Reason for Restore

At the **Reason** step of the wizard, specify a reason for restoring disks. This information will be saved to the session history, and you will be able to reference it later.

The screenshot shows the 'Virtual Disk Restore' wizard in Veeam Backup for Nutanix AHV. The interface is divided into a top navigation bar, a left sidebar, a main content area, and a bottom action bar.

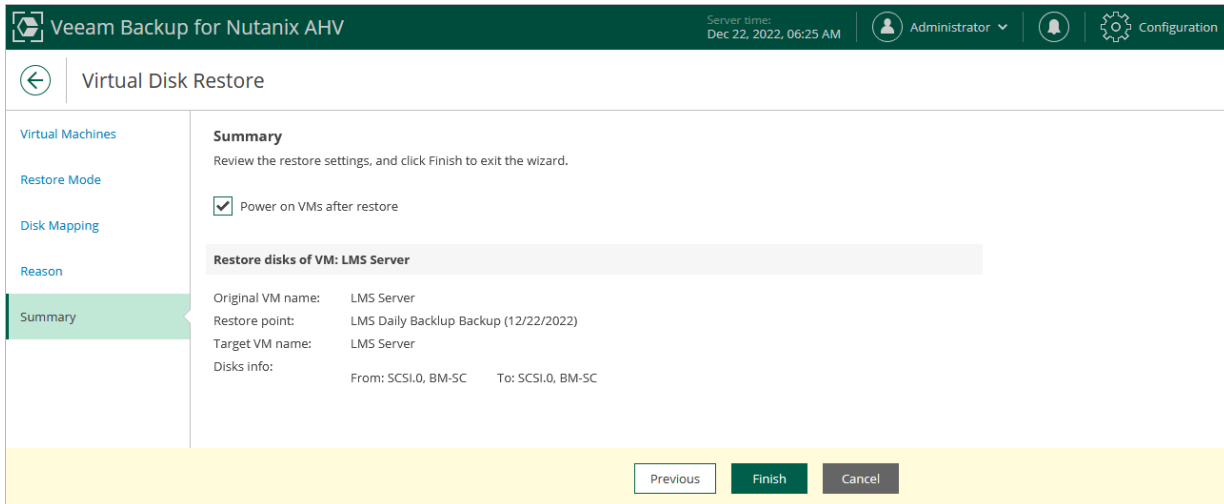
- Top Bar:** Veeam Backup for Nutanix AHV logo on the left. Server time: Dec 22, 2022, 06:24 AM. User: Administrator. Configuration icon on the right.
- Left Sidebar:** A vertical list of steps: Virtual Machines, Restore Mode, Disk Mapping, Reason (highlighted in green), and Summary.
- Main Content Area:**
 - Specify restore reason:** A heading followed by the instruction: 'Specify the reason for performing the restore operation. This information will be saved to the restore sessions history for later reference.'
 - Restore reason:** A text input field containing the text 'Corrupted disk'.
- Bottom Bar:** Three buttons: 'Previous' (disabled), 'Next' (active), and 'Cancel'.

Step 6. Finish Working with Wizard

At the **Summary** step of the wizard, review summary information and click **Finish**.

TIP

If you want to start the recovered VM as soon as the restore process completes, select the **Power on VM after restore** check box.



Instant Recovery

With Instant Recovery, you can immediately restore Nutanix AHV VMs as VMware vSphere, Microsoft Hyper-V or Nutanix AHV VMs to your production environment by running them directly from their backups. Instant Recovery helps you improve recovery time objectives and minimize disruption and downtime of production workloads.

Performing Instant Recovery of Workloads to Nutanix AHV

You can immediately restore virtual or physical machines into a Nutanix AHV cluster by running it directly from a compressed and deduplicated backup file. Before you perform Instant Recovery, check the following prerequisites:

- The Nutanix AHV cluster runs Nutanix AOS 6.0 or later.
- The Nutanix AHV cluster is [added to the backup infrastructure](#).

Supported Workloads

To recover machines to a Nutanix AHV cluster, you can use the following backups:

- Backups of Nutanix AHV VMs created by Veeam Backup for Nutanix AHV
- Backups of Microsoft Hyper-V and VMware vSphere VMs created by Veeam Backup & Replication
- Backups of virtual and physical machines created by Veeam Agent for Microsoft Windows and Veeam Agent for Linux
- Backups of VMs created by vCloud Director
- Backups of Amazon EC2 instances created by Veeam Backup for AWS
- Backups of Microsoft Azure VMs created by Veeam Backup for Microsoft Azure
- Backups of Google Cloud VMs instances created by Veeam Backup for Google Cloud
- Backups of RHV VMs created by Veeam Backup for Red Hat Virtualization

Instant Recovery is not supported:

- From backups of VMs with the ARM CPU architecture
- From file-level backups created by Kasten 10, Veeam Agent for Linux, Veeam Agent for Microsoft Windows, Veeam Agent for Unix, Veeam Agent for Mac

NOTE

Instant Recovery to a Nutanix AHV cluster is supported only for backups stored in backup repositories, object storage repositories, external repositories, [Veeam Cloud Connect repositories](#) and a scale-out backup repository (performance, capacity or archive tier). Instant Recovery from backups stored on tapes is not supported.

How Instant Recovery Works

When Instant Recovery is performed, Veeam Backup for Nutanix AHV mounts a workload image to a [mount server](#) directly from a compressed and deduplicated backup file. Since there is no need to extract the workload from the backup file and copy it to production storage, you can perform recovery from any restore point in a matter of minutes.

The workload image remains in the read-only state to avoid unexpected modifications. By default, all changes to virtual disks that take place while the recovered workload is running are logged to auxiliary redo log files residing in the Nutanix AHV cluster. These changes are either merged if you choose to migrate the workload to the production environment, or discarded if you choose to revert the recovery operation.

How to Perform Instant Recovery to AHV

To perform Instant Recovery of a protected workload, do the following:

1. [Check prerequisites and limitations.](#)
2. [Choose a restore point.](#)
3. [Choose a restore mode.](#)
4. [Select a target cluster.](#)
5. [Select a target storage container.](#)
6. [Specify a name for the restored workload.](#)
7. [Configure network settings.](#)
8. [Specify a restore reason.](#)
9. [Review the configured settings.](#)
10. [Finalize the recovery process.](#)

Before You Begin

Before you perform Instant Recovery, do the following:

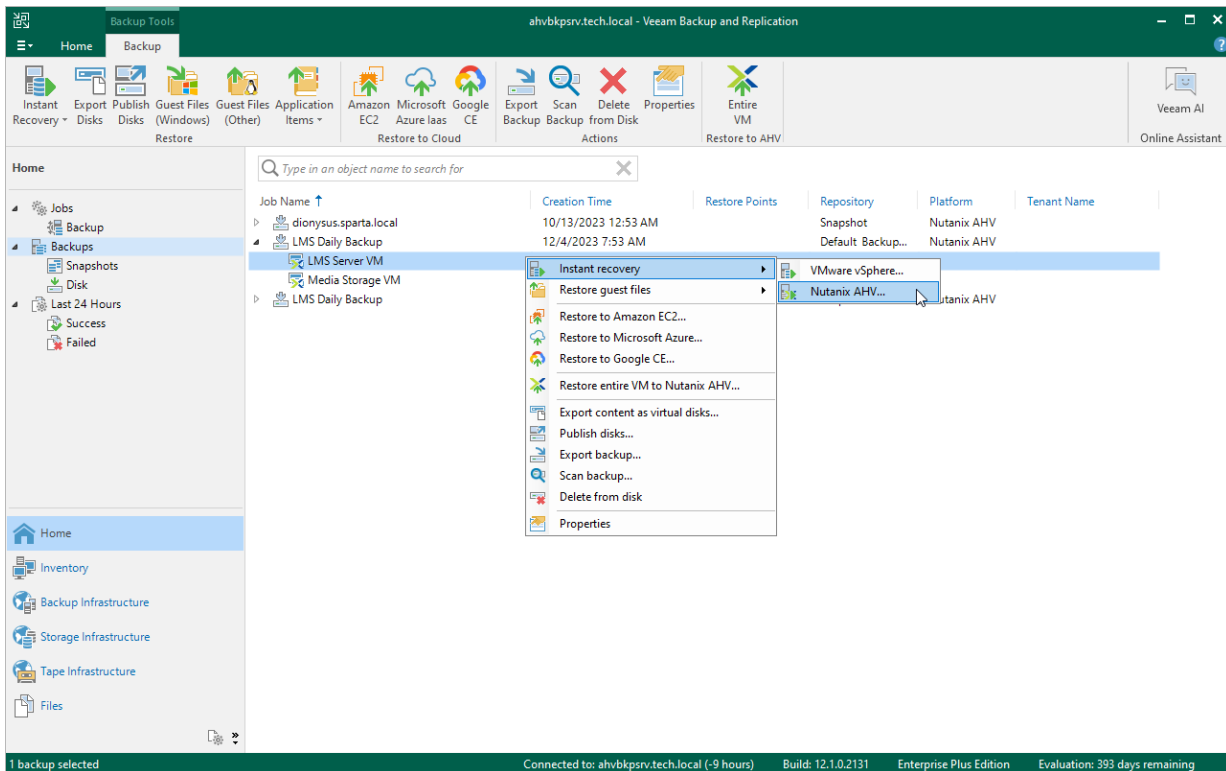
- Power off the original machine if it is still present in the target location.
- Deploy a [dedicated server](#) to mount workload images directly from backups stored in backup repositories and allocate minimum 512 MB of additional RAM for each VM disk that you want to recover. Make sure that the *Server for NFS* role and the *Client for NFS* component are not installed on the server, and that the [Veeam vPower NFS Service](#) is running.
- [Applies only to VMs being restored from backups stored in the archive tier of scale-out backup repositories] Retrieve backup data as described in the Veeam Backup & Replication User Guide, section [Retrieving Backup Files](#). However, this requirement is not applicable to backups stored in the archive tier that consists of the Amazon S3 Glacier Instant Retrieval extent.
- [Applies only to Linux VMs] Make sure that the file systems (also referred to as devices or partitions) listed in the */etc/fstab* file are mounted using UUIDs. Instant Recovery of file systems mounted using device names is not supported as the restored VMs may fail to boot.

- [Applies only to Windows VMs being restored from backups created by solutions other than Veeam Backup for Nutanix AHV] Make sure to install SCSI drivers and Nutanix Guest Tools on the VMs – before the backups are created. You will not be able to add or modify the VM drivers during the recovery operation.
- [Applies only to VMs being restored from backups created by solutions other than Veeam Backup for Nutanix AHV] Veeam Backup for Nutanix AHV attaches VM disks with the restored data to the target VM disk nodes using their original bus types. Veeam Backup for Nutanix AHV can attach to a VM up to 6 SATA, 256 SCSI, 4 IDE and 7 PCI disks. If the VM has more disks of any of those bus types, Nutanix AHV will attach the disks to remaining nodes of other bus types in the default priority: SATA, SCSI, IDE, PCI. You can [modify the backup appliance configuration](#), to instruct Nutanix AHV to ignore source VM original bus types and to use a specific order of bus types.

Step 1. Launch Instant Recovery Wizard

To launch the **Instant Recovery to Nutanix AHV** wizard, do the following:

1. In the Veeam Backup & Replication console, open the **Backup** view.
2. In the inventory pane, select **Backups**.
3. In the working area, expand the necessary backup, select the VM that you want to restore and click **Instant Recovery > Nutanix AHV** on the ribbon, or right-click the VM and select **Instant Recovery > Nutanix AHV**.



Step 2. Select Restore Point

At the **Machines** step of the wizard, select a restore point that will be used to restore the selected VM. By default, Veeam Backup for Nutanix AHV uses the most recent valid restore point. However, you can restore the VM data to an earlier state.

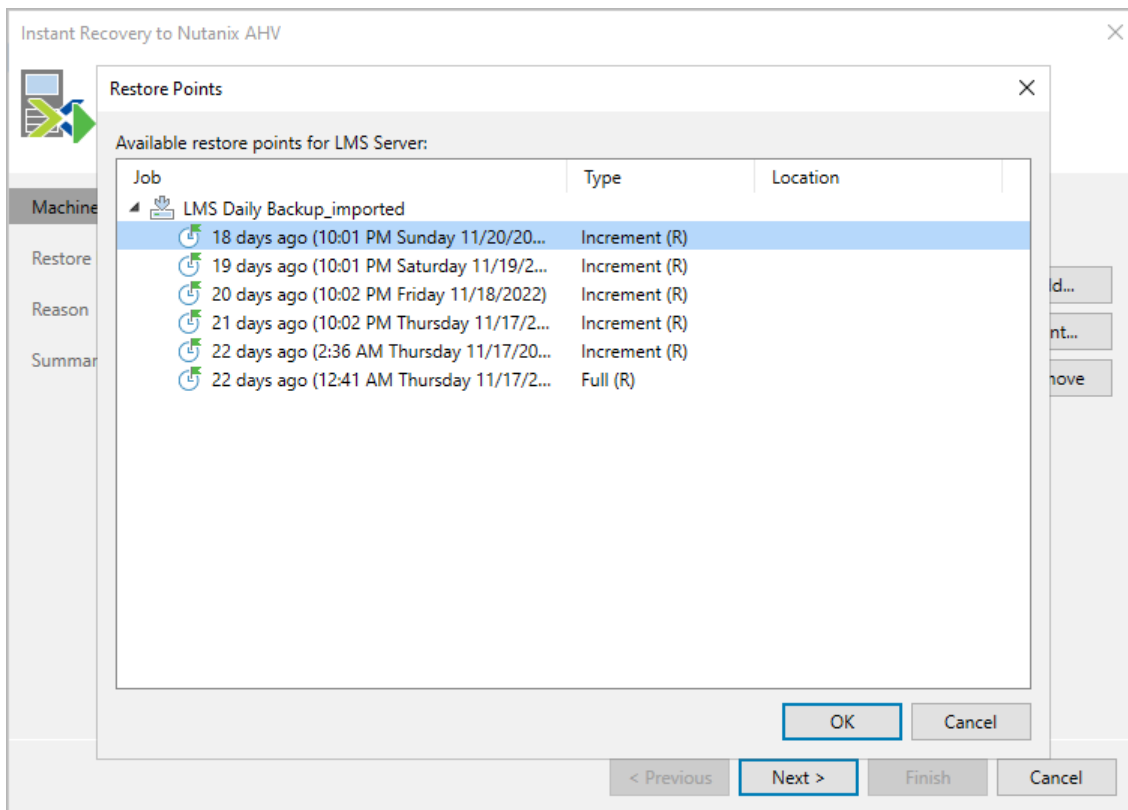
To select a restore point, do the following:

1. Select the VM.
2. Click **Point**.
3. In the **Restore Points** window, select the necessary restore point and click **OK**.

To help you choose a restore point, Veeam Backup for Nutanix AHV provides the following information on each available restore point:

- **Job** – the name of the backup job that created the restore point and the date when the restore point was created.
- **Type** – the type of the restore point.
- **Location** – the repository where the restore point is stored.

You can use the wizard to restore multiple VMs at a time. To do that, click **Add**, select more VMs to restore and select a restore point for each of them.



Step 3. Choose Restore Mode

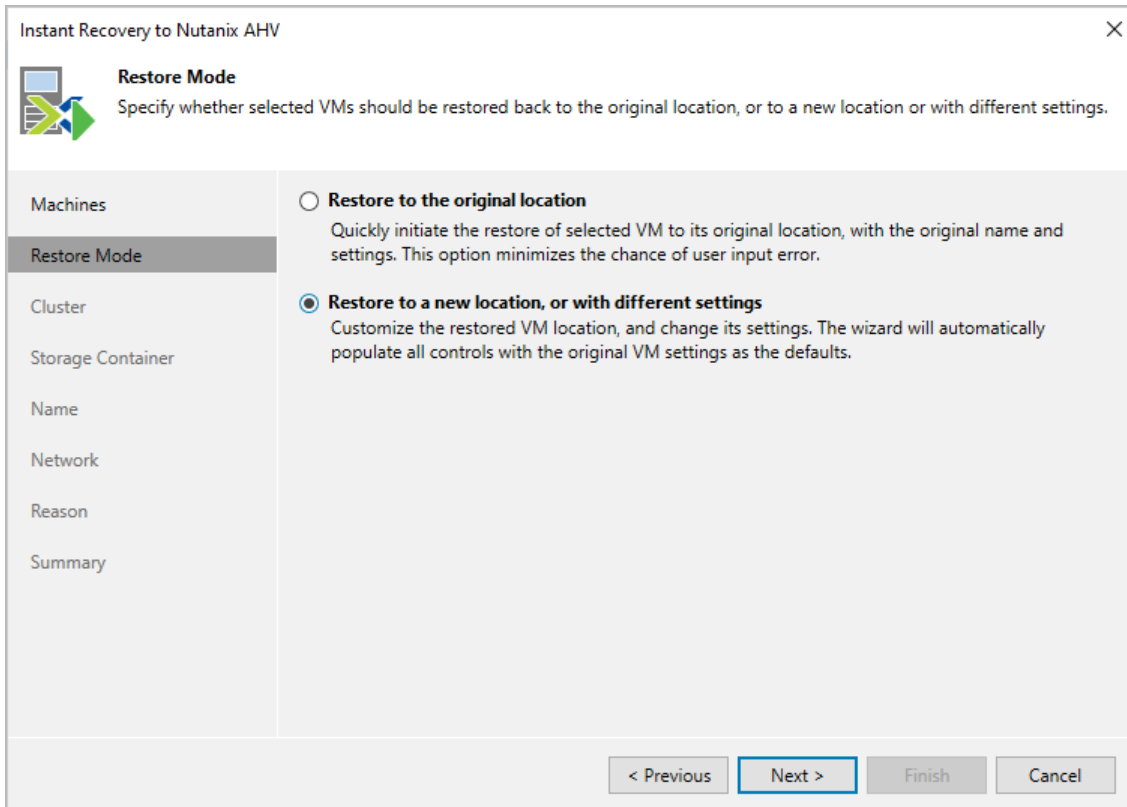
[This step applies only if you restore Nutanix AHV VMs]

At the **Restore Mode** step of the wizard, choose whether you want to restore the selected VM to the original or to a custom location.

To meet minimum requirements for VMs residing on a Nutanix AHV cluster, Veeam Backup for Nutanix AHV allocates 64 MB of RAM to the recovered VM if it originally had less amount of memory.

IMPORTANT

If you recover a VM with original settings, and the original VM still exists in the virtual infrastructure, the original VM will be removed.



The screenshot shows a wizard window titled "Instant Recovery to Nutanix AHV". The "Restore Mode" step is active, with a sub-header "Restore Mode" and a description: "Specify whether selected VMs should be restored back to the original location, or to a new location or with different settings." A left-hand navigation pane lists steps: Machines, Restore Mode (selected), Cluster, Storage Container, Name, Network, Reason, and Summary. Two radio button options are presented: "Restore to the original location" (unselected) and "Restore to a new location, or with different settings" (selected). The "Next >" button is highlighted in blue, while "< Previous", "Finish", and "Cancel" are disabled.

Machines	<input type="radio"/> Restore to the original location
Restore Mode	Quickly initiate the restore of selected VM to its original location, with the original name and settings. This option minimizes the chance of user input error.
Cluster	<input checked="" type="radio"/> Restore to a new location, or with different settings
Storage Container	Customize the restored VM location, and change its settings. The wizard will automatically populate all controls with the original VM settings as the defaults.
Name	
Network	
Reason	
Summary	

< Previous **Next >** Finish Cancel

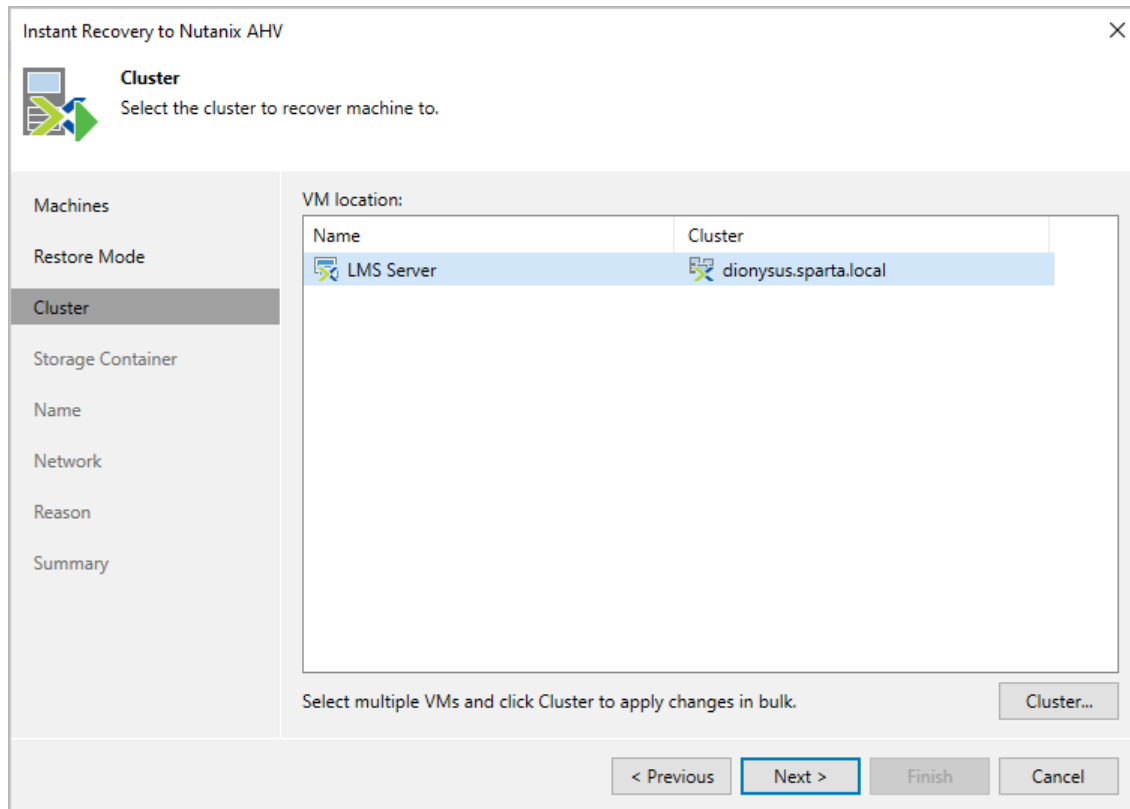
Step 4. Specify Target Cluster

At the **Cluster** step of the wizard, choose the cluster to which the recovered VM will belong.

For a cluster to be displayed in the list of the available clusters, it must be added to the backup infrastructure as described in section [Adding Nutanix AHV Cluster](#).

IMPORTANT

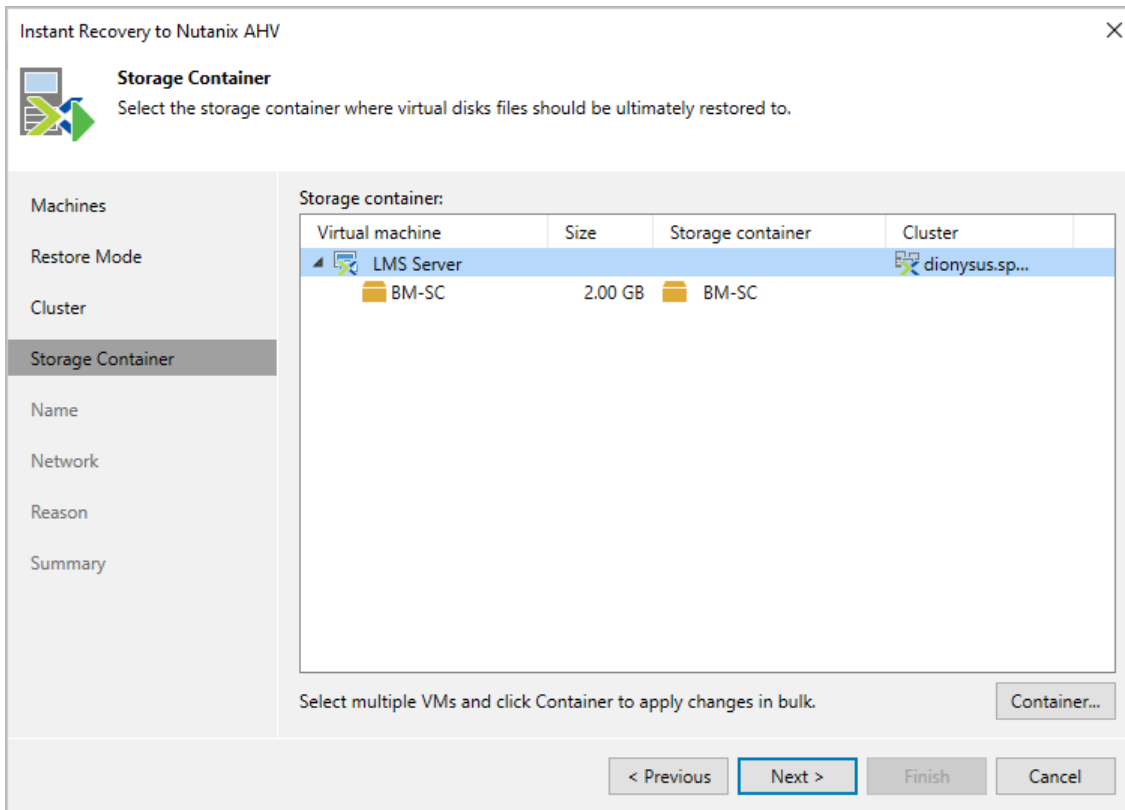
If a selected VM has an attached volume group, the disks of the volume group will not be restored.



Step 5. Select Storage Container

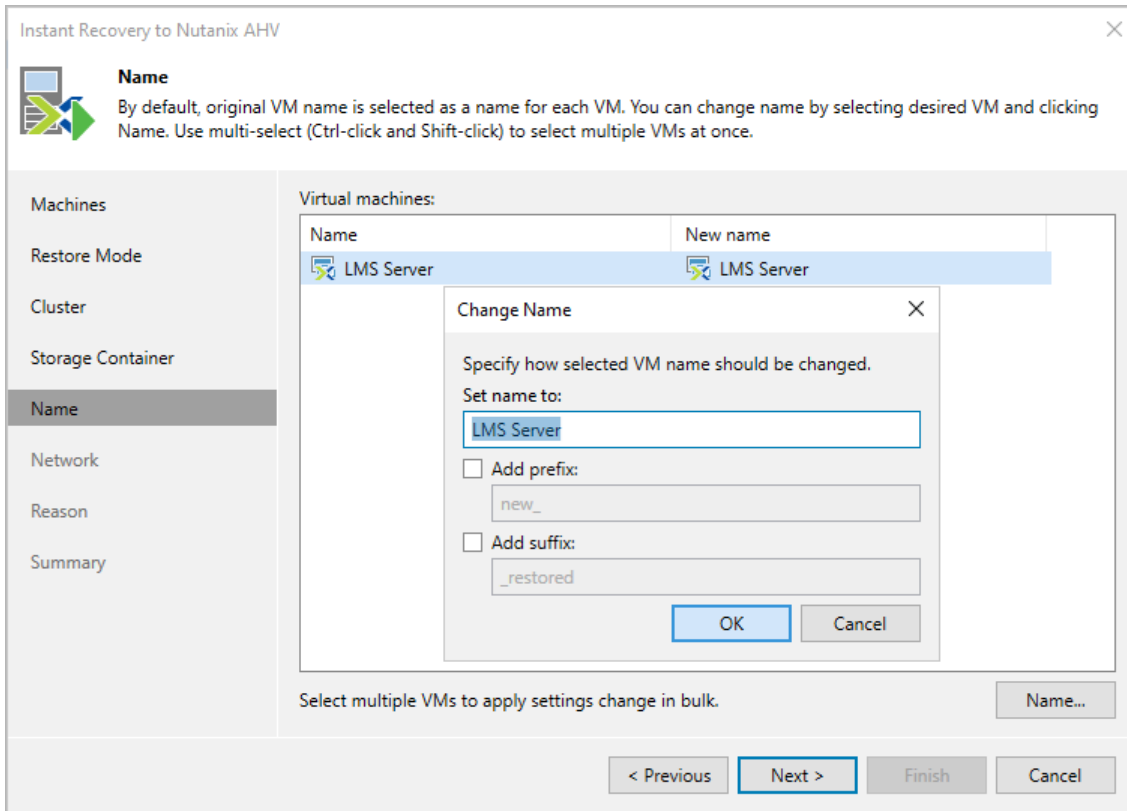
At the **Storage Container** step of the wizard, choose the storage container where virtual disks of the recovered VM will be stored.

For a container to be displayed in the list of the available containers, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).



Step 6. Specify VM Name

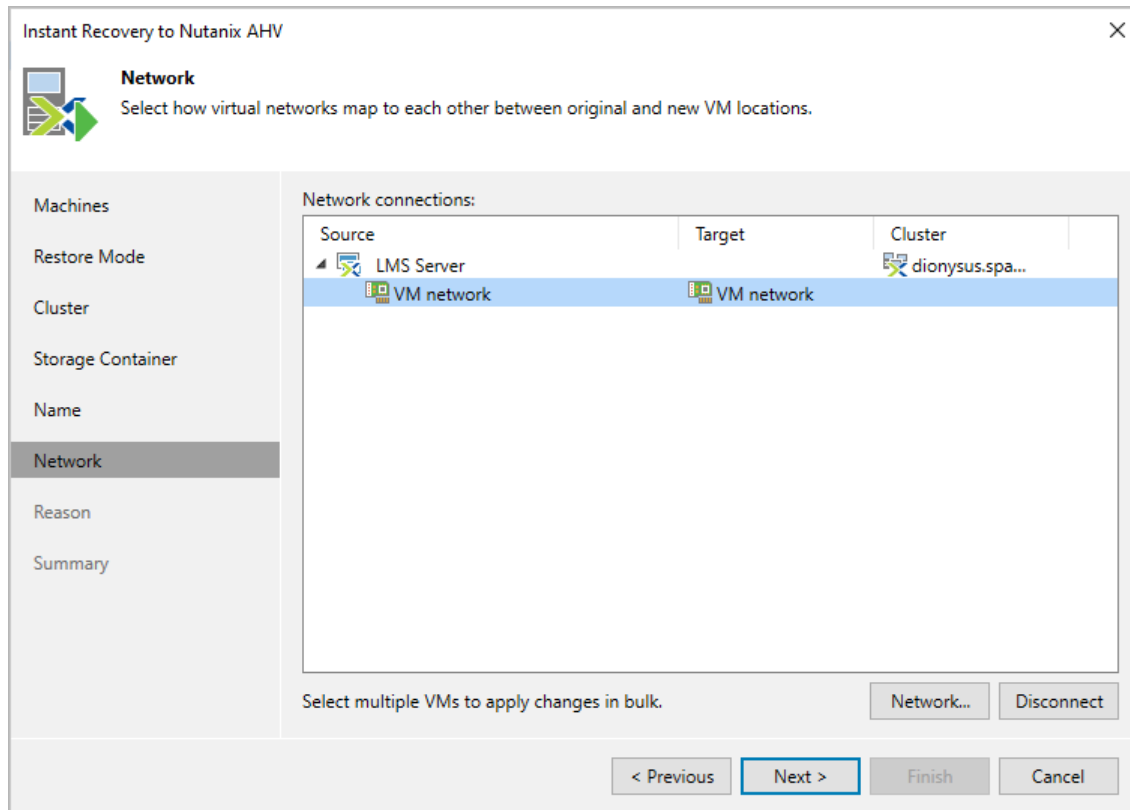
At the **Name** step of the wizard, you can specify a new name for the recovered VM.



Step 7. Configure Network Settings

At the **Network** step of the wizard, choose a network to which the recovered VM will be connected. If you do not want to connect the VM to any virtual network, select the VM and click **Disconnect**.

For a network to be displayed in the list of the available networks, it must be configured in the Nutanix AHV cluster as described in [Nutanix documentation](#).



Step 8. Specify Restore Reason

At the **Reason** step of the wizard, specify a reason for restoring the VM. This information will be saved to the session history, and you will be able to reference it later.

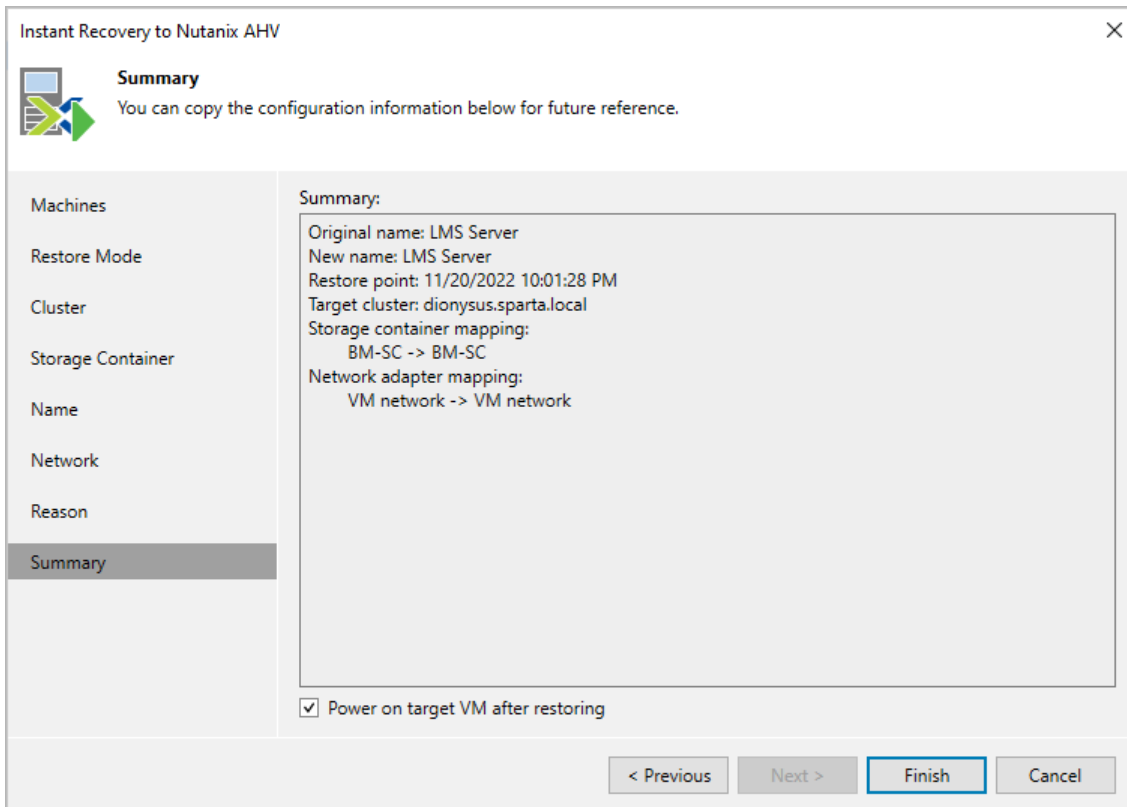
The screenshot shows a wizard window titled "Instant Recovery to Nutanix AHV" with a close button (X) in the top right corner. The window is divided into a left sidebar and a main content area. The sidebar contains a list of steps: Machines, Restore Mode, Cluster, Storage Container, Name, Network, Reason (highlighted), and Summary. The main content area has a title "Reason" and a sub-header "Type in the reason for performing this restore operation. This information will be logged in the restore sessions history for later reference." Below this is a large text input field with the label "Restore reason:" and the text "Corrupted data" entered. At the bottom of the main content area is a checkbox labeled "Do not show me this page again". The bottom of the window features four buttons: "< Previous", "Next >", "Finish", and "Cancel".

Step 9. Review Configured Settings

At the **Summary** step of the wizard, review summary information and click **Finish**.

TIP

If you want to start the recovered VM as soon as the restore process completes, select the **Power on target VM after restoring** check box.



The screenshot shows the 'Instant Recovery to Nutanix AHV' wizard at the 'Summary' step. The window title is 'Instant Recovery to Nutanix AHV'. On the left, a sidebar lists the steps: Machines, Restore Mode, Cluster, Storage Container, Name, Network, Reason, and Summary (which is highlighted). The main area contains the following text:

Summary
You can copy the configuration information below for future reference.

Summary:

- Original name: LMS Server
- New name: LMS Server
- Restore point: 11/20/2022 10:01:28 PM
- Target cluster: dionysus.sparta.local
- Storage container mapping:
BM-SC -> BM-SC
- Network adapter mapping:
VM network -> VM network

Power on target VM after restoring

At the bottom, there are four buttons: '< Previous', 'Next >', 'Finish' (highlighted with a blue border), and 'Cancel'.

Step 10. Finalize Instant Recovery

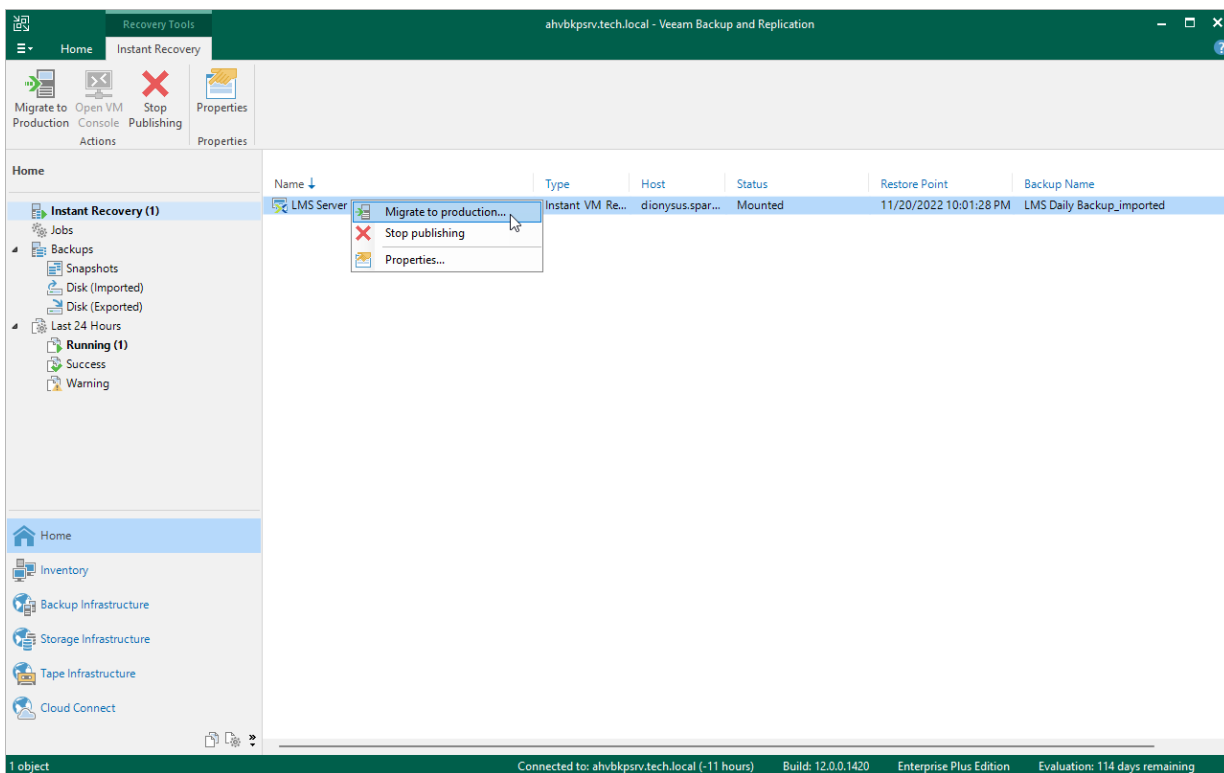
After the VM has been recovered, you can choose whether you want to migrate the VM to the production environment or cancel the recovery operation. When migrating VMs, Veeam Backup for Nutanix AHV transfers VM disk data to the production storage that you have selected as a destination for the recovered VM.

To finalize the instant recovery operation, do the following:

1. In the Veeam Backup & Replication console, open the **Backup** view.
2. In the inventory pane, select **Instant Recovery**.
3. In the working area, right-click a VM:
 - To transfer VM disk data to the production storage, select **Migrate to production**.
 - To remove the recovered VM, select **Stop publishing**.

IMPORTANT

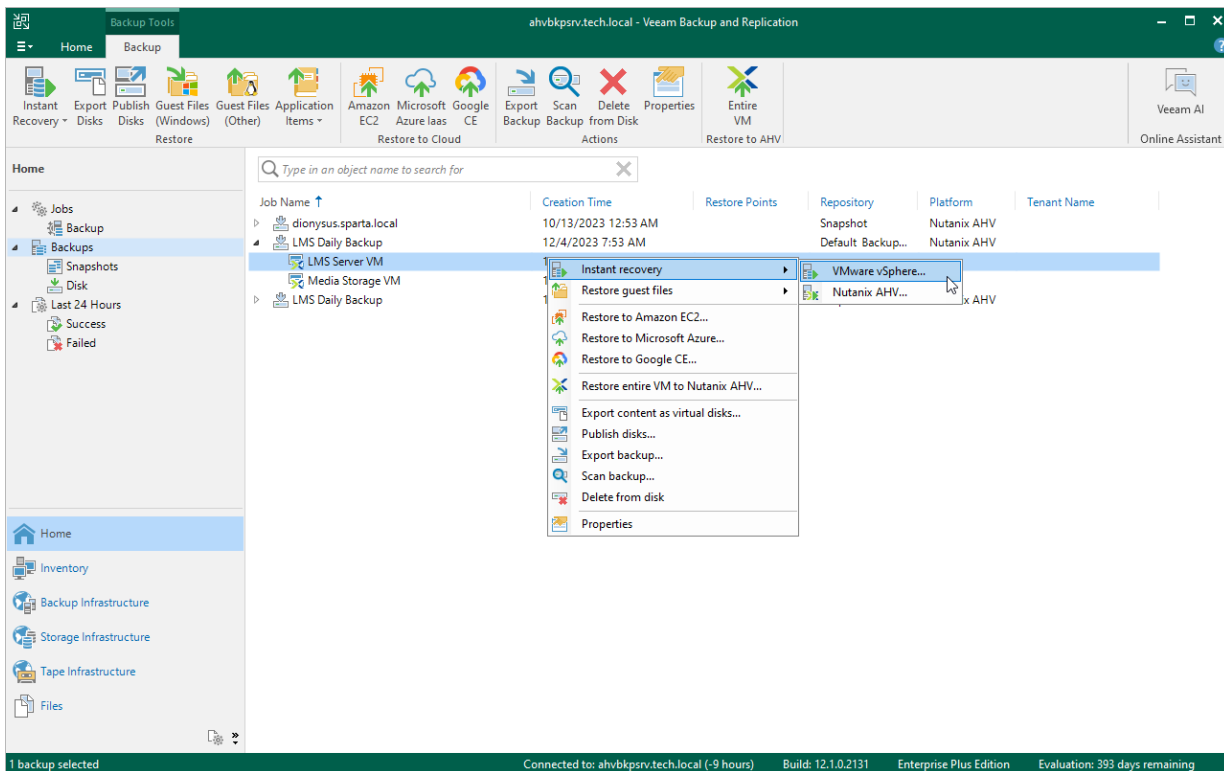
If you stop publishing a VM that was recovered to the same destination where the original VM resided, both the original and recovered VMs will be removed.



Performing Instant Recovery of Workloads to VMware vSphere

To perform Instant Recovery to VMware vSphere environment, do the following:

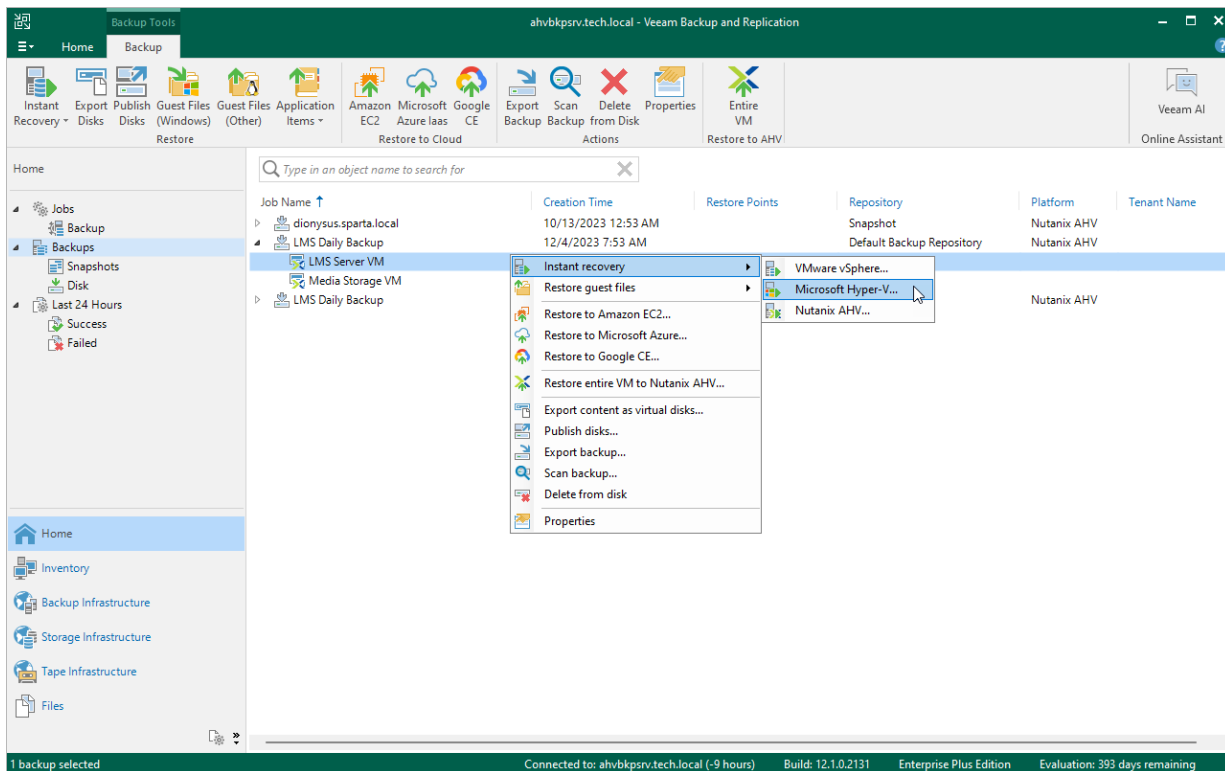
1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, right-click the VM you want to restore, and select **Instant recovery**.
4. Complete the **Instant Recovery** wizard as described in the Veeam Backup & Replication User Guide for VMware vSphere, section [Performing Instant VM Recovery of Workloads to VMware vSphere VMs](#).



Performing Instant Recovery of Workloads to Hyper-V

To perform Instant Recovery to Microsoft Hyper-V environment, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, right-click the VM you want to restore, and select **Instant recovery**.
4. Complete the **Instant Recovery** wizard as described in the Veeam Backup & Replication User Guide for Microsoft Hyper-V, section [Performing Instant VM Recovery of Workloads to Hyper-V VMs](#).

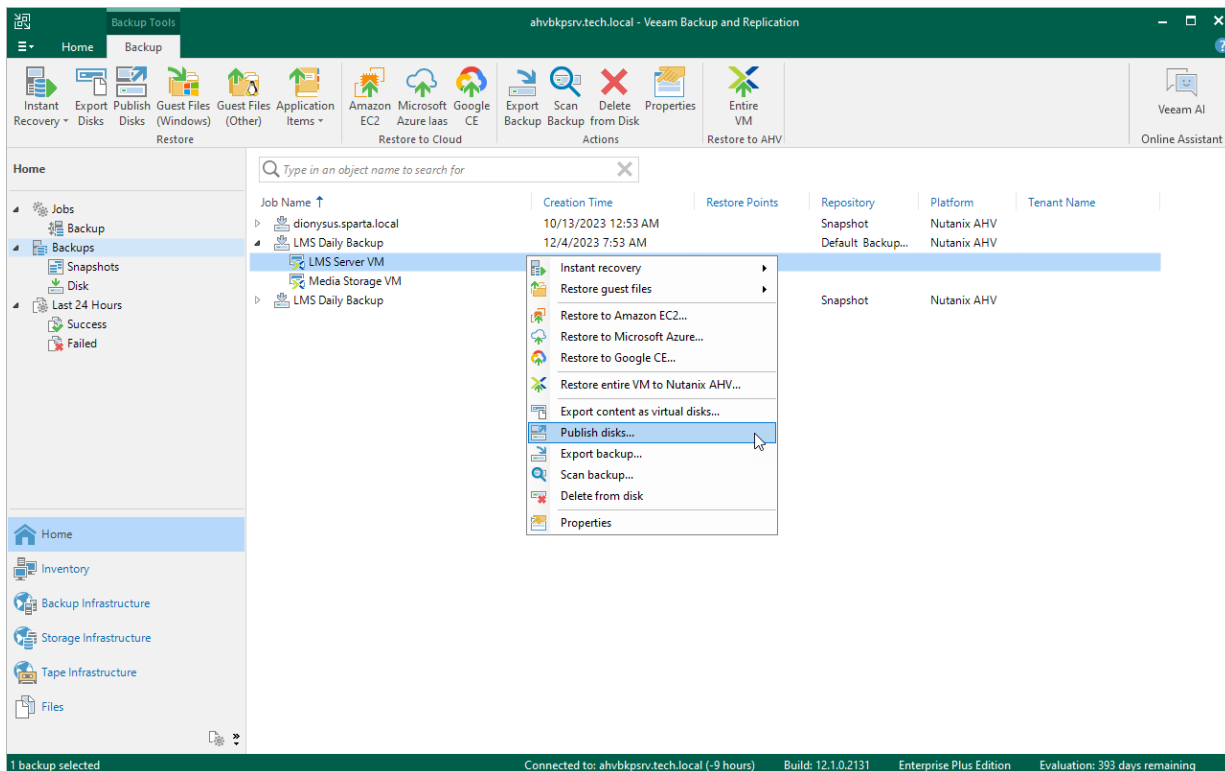


Publishing Disks

Veeam Backup & Replication allows you to mount specific disks of backed-up Nutanix AHV VMs to any server and to instantly access data in the read-only mode. This can be helpful when you want to copy files and folders as of a point-in-time state to the target server, and perform an antivirus scan of the backed-up data. For more information, see the Veeam Backup & Replication User Guide, section [Disk Publishing \(Data Integration API\)](#).

To publish disks of a Nutanix AHV VM, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, expand the necessary backup job, right-click the VM that contains disks you want to mount and select **Publish disks**.
4. Complete the **Publish Disk** wizard as described in the Veeam Backup & Replication User Guide, section [Publishing Disks](#).



Performing File-Level Restore

With guest OS file recovery (file-level restore), you can restore individual guest OS files and folders from Nutanix AHV VM snapshots and backups created with Veeam Backup for Nutanix AHV. When restoring files and folders, you do not need to extract the VM image to a staging location or start the VM prior to restore.

How File-Level Restore Works

To recover files and folders of a VM from a backup, Veeam Backup for Nutanix AHV performs the following steps:

1. [This step applies only if you perform restore of a VM with an operation system other than Microsoft Windows] Deploys a [helper appliance](#) on the Nutanix AHV cluster.
2. Mounts disks of the VM to either of the following instances:
 - To the backup server or a [mount server](#) if the VM guest OS is Microsoft Windows.
 - To the helper appliance if the VM guest OS is a Linux-based operating system.
3. Launches the Veeam Backup browser.

The Veeam Backup browser displays the file system tree of the backed-up VM. In the browser, you select the necessary files and folders to restore.
4. Restores the selected files and folders to the original location or to a new location.
5. Detaches the disks from the backup server, mount server or helper appliance.
6. [This step applies only if you perform restore of a VM with an operation system other than Microsoft Windows] Removes the helper appliance.

To recover files and folders of a VM from a backup snapshot, snapshot or PD snapshot, Veeam Backup for Nutanix AHV performs the following steps:

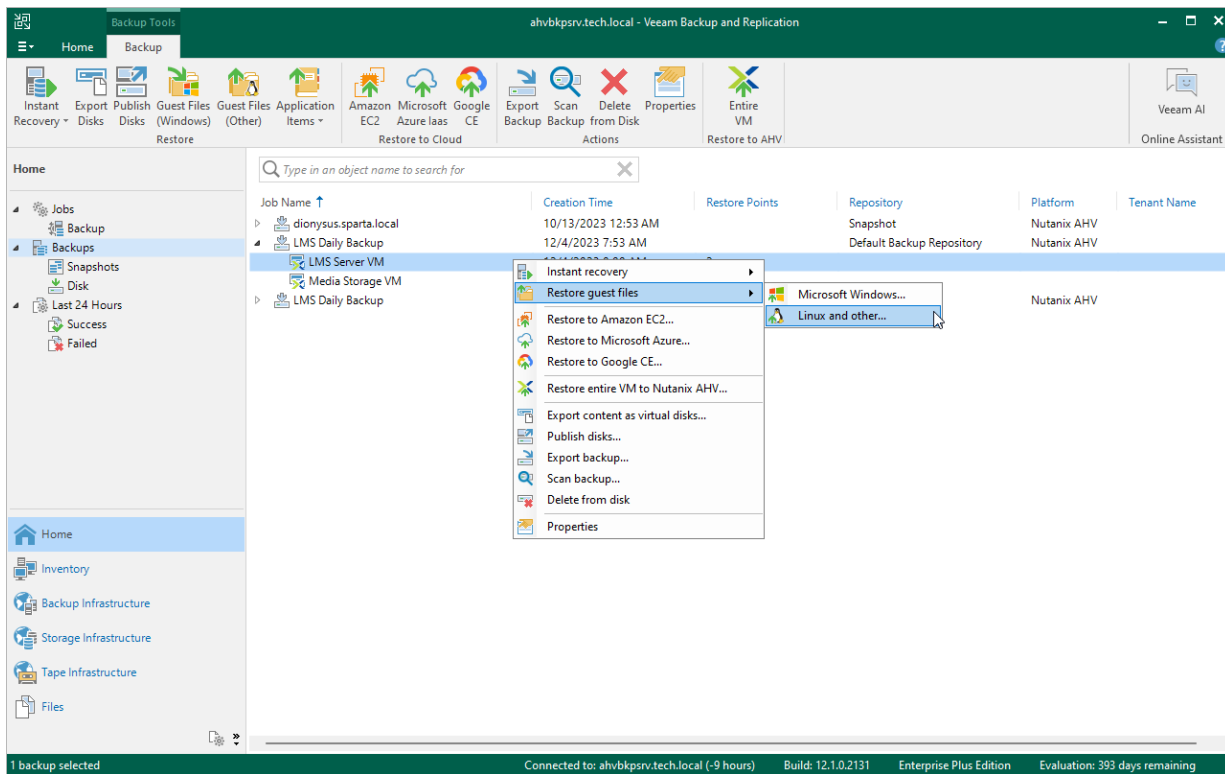
1. Deploys a [helper appliance](#) on the Nutanix AHV cluster.
2. [This step applies only if you perform restore from a snapshot or PD snapshot] Creates a temporary VM on the Nutanix AHV cluster.
3. Creates a volume group using disks of the original VM (for a backup snapshot) or of the temporary VM (for a snapshot or PD snapshot).
4. Attaches the volume group to the helper appliance.
5. [This step applies only if you perform restore from a snapshot or PD snapshot] Deletes the temporary VM.
6. Launches the Veeam Backup browser.

The Veeam Backup browser displays the file system tree of the backed-up VM. In the browser, you select the necessary files and folders to restore.
7. Restores the selected files and folders to the original location or to a new location.
8. Detaches the volume group from the helper appliance.
9. Deletes the volume group.
10. Removes the helper appliance.

How to Perform File-Level Restore

To restore VM guest OS files and folders, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, expand the necessary backup or snapshot job, right-click the VM that contains files you want to restore and do the following:
 - If you want to restore files of a Microsoft Windows machine, select **Restore guest files > Microsoft Windows** and complete the **Guest File Restore** wizard as described in the Veeam Backup & Replication User Guide, section [Restoring VM Guest OS Files \(FAT, NTFS or ReFS\)](#).
 - If you want to restore files of a Linux, Solaris, BSD, Novell Storage Services, Unix or Mac machine, select **Restore guest files > Linux and others** and complete the **Guest File Restore** wizard as described in the Veeam Backup & Replication User Guide, section [Restoring VM Guest OS Files \(Multi-OS\)](#).



TIP

Alternatively, you can use Veeam Backup Enterprise Manager to restore guest OS files and folders as described in the Veeam Backup Enterprise Manager Guide, section [Restoring VM Guest OS Files](#).

Performing Application Item Restore

With application item restore, you can use Nutanix AHV backups or snapshots to restore the following data:

- Microsoft Active Directory objects and containers
- Microsoft Exchange mailboxes, folders and messages
- Microsoft SharePoint sites and lists
- Microsoft SQL Server
- Oracle databases

NOTE

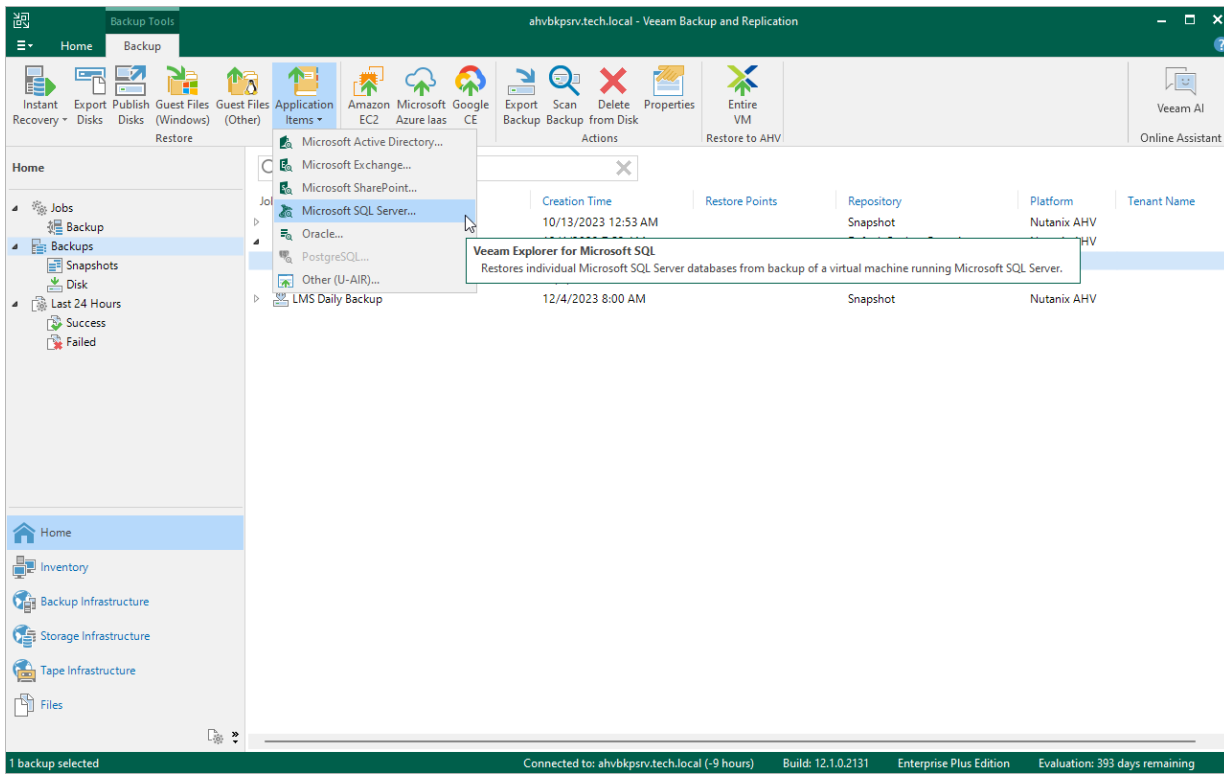
It is recommended that you use [application-consistent backups or snapshots](#) for application item restore. You can check whether a backup or snapshot is application-consistent in [sessions logs of the job](#) that has produced this backup or snapshot.

To restore application items from a Nutanix AHV VM backup or snapshot, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, expand the necessary backup or snapshot job, select the VM that contains an application you want to restore.
4. Click **Application Items** on the ribbon and then select the application.
5. In the restore wizard, select a restore point that will be used to restore the application, specify a restore reason and click **Browse**.
6. In the Veeam Explorer application, perform the steps described in the [Veeam Explorers User Guide](#).

TIP

As an alternative to application item restore, you can also [perform file-level restore](#) to recover standalone databases using Veeam Explorers.

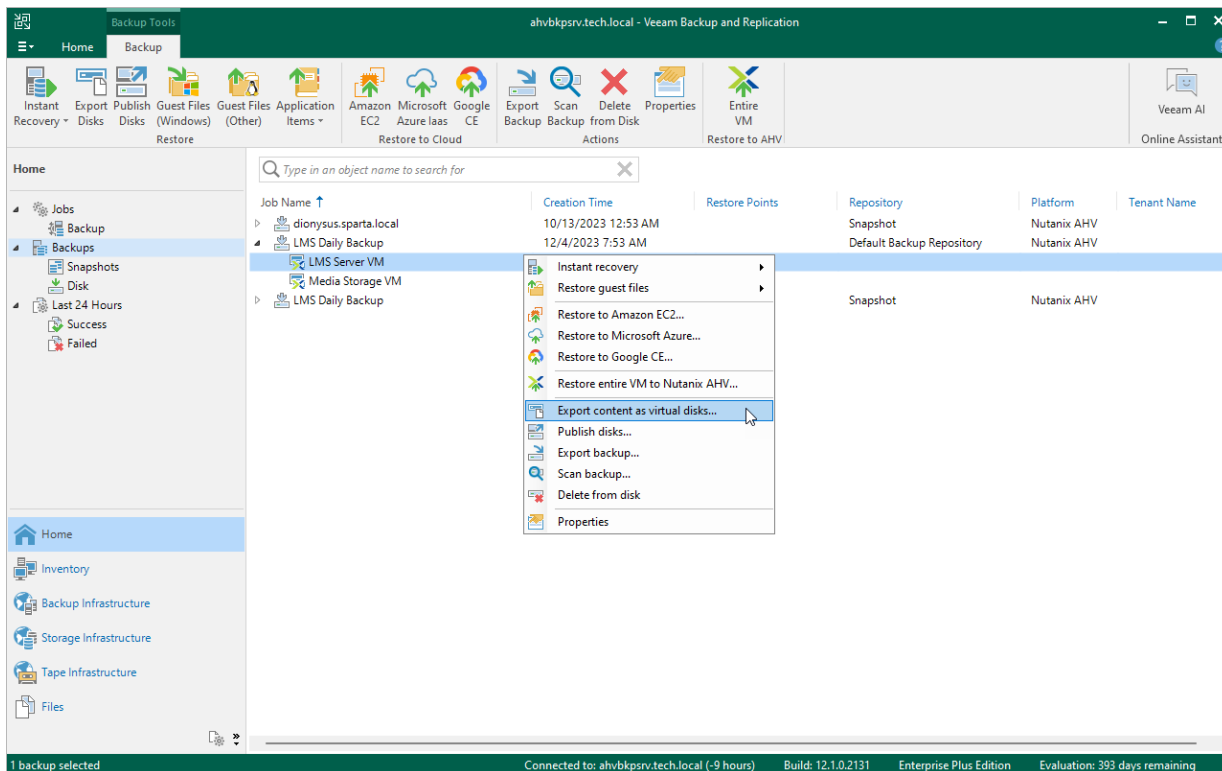


Exporting Disks

Veeam Backup for Nutanix AHV allows you to export disks, that is, restore disks from Nutanix AHV VM backups and convert them to the VMDK, VHD and VHDX formats. You can save the exported disks to any server added to the backup infrastructure or place the disks on a datastore connected to an ESXi host (for the VMDK disk format only). For more information, see the Veeam Backup & Replication User Guide, section [Disk Export](#).

To export disks of an Nutanix AHV VM, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, expand the necessary backup job, right-click the VM that contains disks you want to export and select **Export content as virtual disks**.
4. Complete the **Export Disk** wizard as described in the Veeam Backup & Replication User Guide, section [Exporting Disks](#).

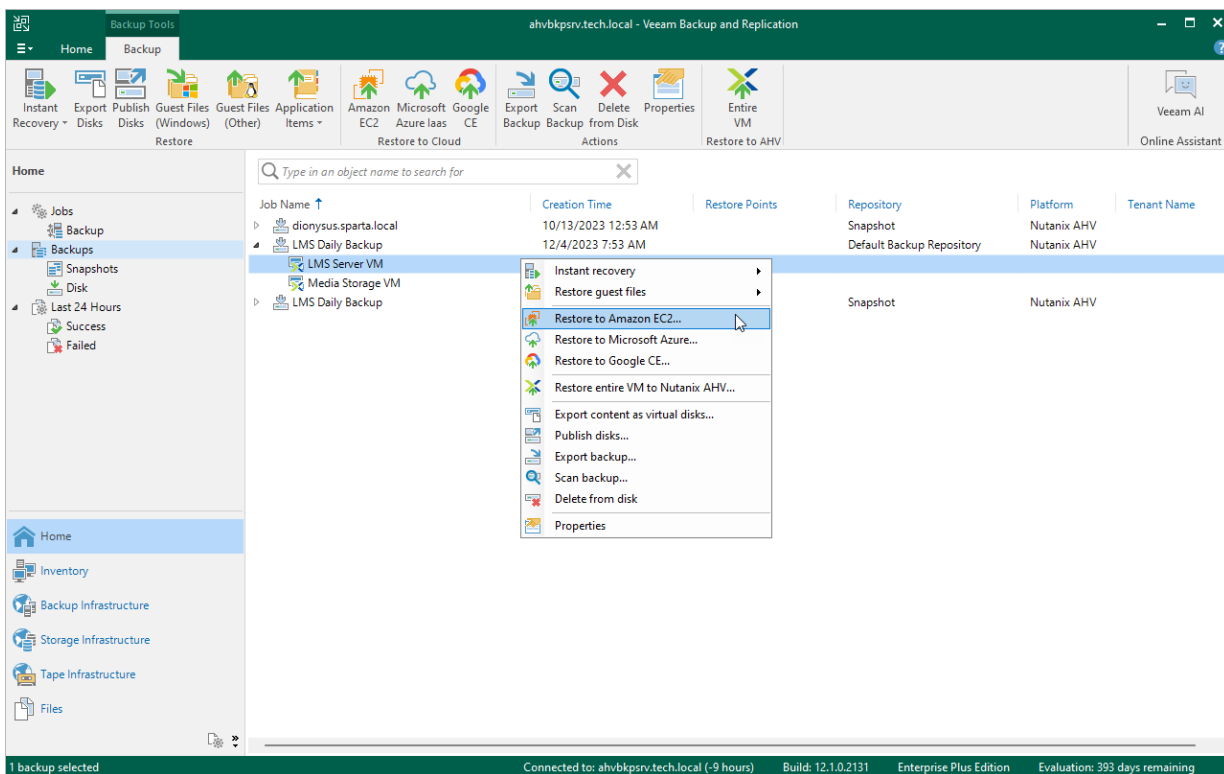


Performing VM Restore to Amazon Web Services

Veeam Backup for Nutanix AHV allows you to restore Nutanix AHV VMs to Amazon Web Services (AWS) as EC2 instances. For more information, see the Veeam Backup & Replication User Guide, section [Restore to Amazon EC2](#).

To restore a VM to Amazon EC2, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, expand the necessary backup job, right-click the VM that you want to restore and select **Restore to Amazon EC2**.
4. Complete the **Restore to Amazon EC2** wizard as described in the Veeam Backup & Replication User Guide, section [Restoring to Amazon EC2](#).

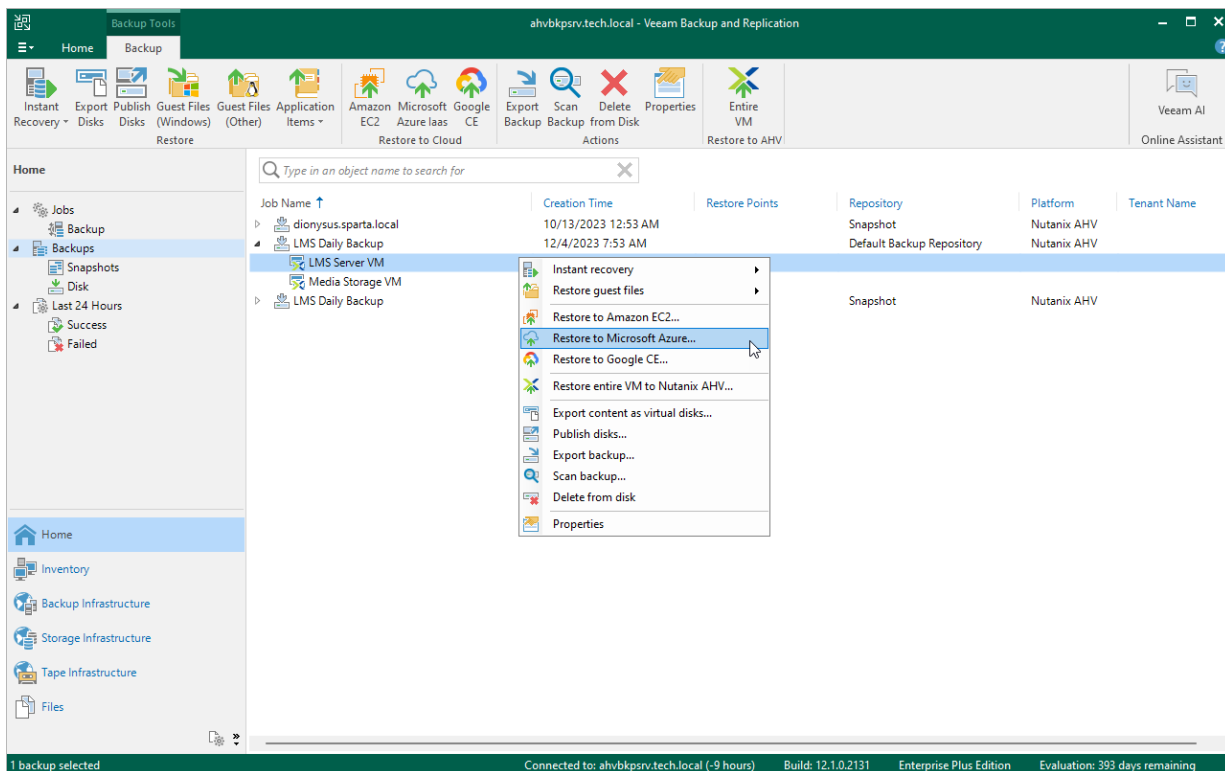


Performing VM Restore to Microsoft Azure

Veeam Backup for Nutanix AHV allows you to restore Nutanix AHV VMs to Microsoft Azure as Azure VMs. For more information, see the Veeam Backup & Replication User Guide, section [Restore to Microsoft Azure](#).

To restore a VM to Microsoft Azure, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, expand the necessary backup job, right-click the VM that you want to restore and select **Restore to Microsoft Azure**.
4. Complete the **Restore to Microsoft Azure** wizard as described in the Veeam Backup & Replication User Guide, section [Restoring to Microsoft Azure](#).

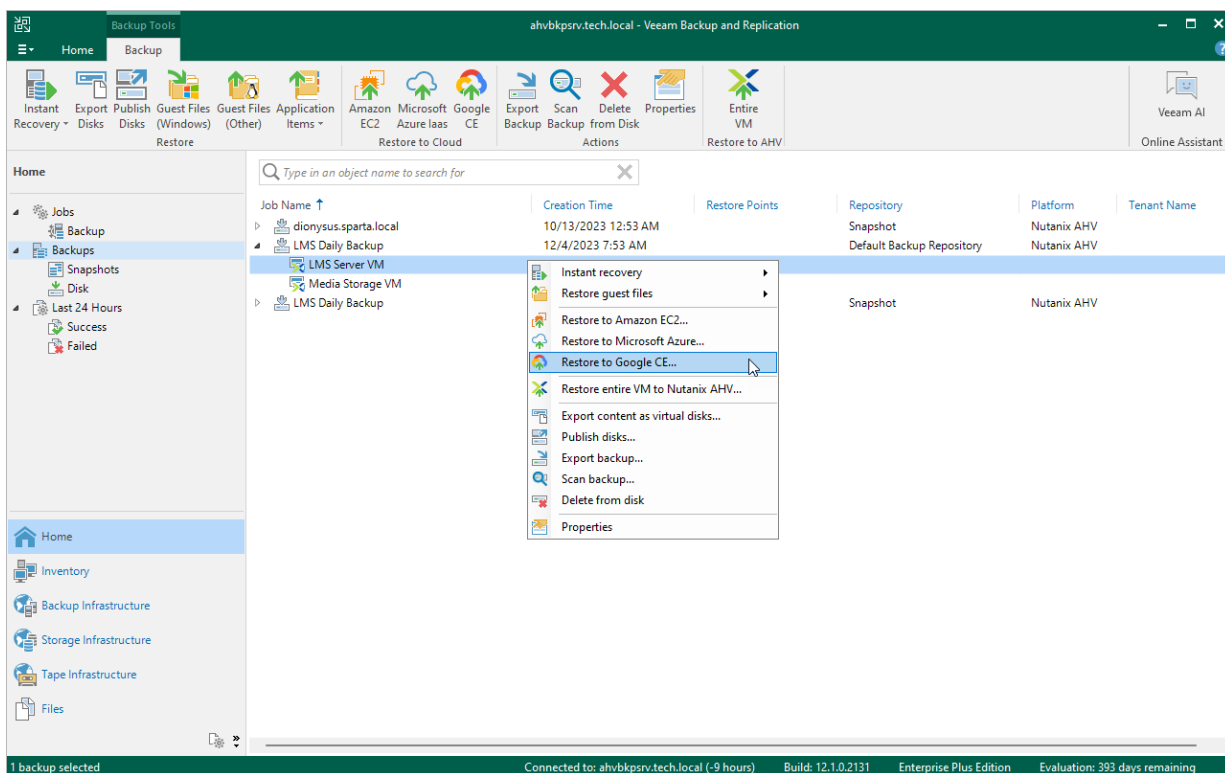


Performing VM Restore to Google Cloud

Veeam Backup for Nutanix AHV allows you to restore Nutanix AHV VMs to Google Cloud as VM instances. For more information, see the Veeam Backup & Replication User Guide, section [Restore to Google Compute Engine](#).

To restore a VM to Google Cloud, do the following:

1. In the Veeam Backup & Replication console, open the **Home** view.
2. In the inventory pane, select **Backups**.
3. In the working area, expand the necessary backup job, right-click the VM that you want to restore and select **Restore to Google CE**.
4. Complete the **Restore to Google Compute Engine** wizard as described in the Veeam Backup & Replication User Guide, section [Restoring to Google Compute Engine](#).



Viewing Session Statistics

For each performed data protection or disaster recovery operation, Veeam Backup for Nutanix AHV starts a new session and stores its records in the configuration database. You can track real-time statistics of all running and completed operations on the **Session Logs** page.

To view the full list of tasks executed during an operation, click the link in the **Status** column.

The screenshot displays the Veeam Backup for Nutanix AHV interface. The top navigation bar includes the Veeam logo, the product name, the server time (Nov 08, 2022, 04:04 AM), the user (Admin), and a Configuration icon. The left sidebar shows navigation options: Overview, Dashboard, Management, Jobs, Protected VMs, and Session Logs. The main area shows a list of jobs with columns for Type, Job, Items, Status, Start Time, and End Time. A job titled 'Backup job: Media Server Weekly Backup Job' is selected, and a modal window is open showing its session statistics and logs.

Backup job: Media Server Weekly Backup Job

Status	Start Time	End Time	Duration
Success	11/2/2022 4:34:00 AM	11/2/2022 4:35:30 AM	1 min 29 sec

Session Logs

[Copy to Clipboard](#)

Start Time	Status	Description	Execution D...
11/2/2022 4:34:00 AM	Success	Job started at 11/2/2022 4:34:00 AM	—
11/2/2022 4:34:00 AM	Success	Building list of machines to process	—
11/2/2022 4:34:33 AM	Success	VMs size: 1 GB	—
11/2/2022 4:34:39 AM	Success	All VMs have been queued for processing	—
11/2/2022 4:34:39 AM	Success	Media Server VM : Preparing to backup	24 sec

Close

Reviewing Dashboard

Veeam Backup for Nutanix AHV comes with a dashboard that provides at-a-glance real-time overview of the protected Nutanix AHV resources and allows you to estimate the overall backup performance. The dashboard includes the following widgets:

- **Sessions in Last 24 Hours** – displays the number of sessions started for system operations as well as for data protection or disaster recovery tasks during the past 24 hours that completed successfully, the number of sessions that completed with warnings, the number of sessions that completed with errors, and the number of sessions that are currently running.

To get more information on the sessions, click either **View Session Logs** or any of the widget rows. In the latter case, the **Session Logs** page will show only those sessions that have the same status as that clicked in the widget.

For more information on the **Session Logs** page, see [Viewing Session Statistics](#).

- **Successful Task Ratio** – displays the number of job runs during a specific time period (the past 24 hours by default).

To specify the time period, click the link next to the **Schedule** icon. To get more information on the created snapshots, backups or archived backups, click any of the widget rows. In the latter case, the **Session Logs** page will show only those sessions during which Veeam Backup for Nutanix AHV created the same items as that clicked in the widget.

For more information on the **Session Logs** page, see [Viewing Session Statistics](#).

- **Protected VMs** – displays the number of unprotected VM and VMs that are protected with snapshots and backups created by Veeam Backup for Nutanix AHV. To get the list of VMs, click a widget row.
- **Backup Repositories** – displays repositories to which the Nutanix AHV backup appliance has access. The widget also shows the amount of storage space that is currently free in each repository. If less than 15% of storage space is free, a repository is **low on space**. If less than 5% of storage space is free, a repository is **out of space**.
- **Top Jobs** – shows top successfully completed jobs for execution time (including retries). For each job, the widget also calculates the growth rate to detect whether it took less or more time for the job to complete in comparison with the previous job run.
- **CPU and RAM Utilization** – is designed to help you avoid possible backup bottlenecks and allocate sufficient resources to the backup appliance.

The **CPU** widget analyzes the amount of backup appliance CPU resources used for processing jobs during the past 24 hours. The **RAM** widget shows memory consumption on the backup appliance during the past 24 hours.

To monitor the availability of compute resources on the backup appliance, you can instruct Veeam Backup for Nutanix AHV to send you notifications if free memory or available CPU drops below a configured threshold. For more information, see [Configuring Notifications](#).

The screenshot displays the Veeam Backup for Nutanix AHV dashboard. The top navigation bar includes the Veeam logo, the product name, the server time (Dec 02, 2022, 02:10 AM), the user (Administrator), and a Configuration icon. The left sidebar contains navigation options: Overview, Dashboard, Management, Jobs, Protected VMs, and Session Logs.

The main dashboard area is divided into several sections:

- Sessions in Last 24 Hours:** A summary of session status with counts and arrows: Errors (0 →), Warnings (0 →), Success (2 ↓), and Running (0 →).
- Successful Task Ratio:** A summary of task completion rates for Backups (1 of 1, 100%), Snapshots (1 of 1, 100%), and PD snapshots (No PD snapshots created).
- CPU and RAM Utilization:** Two line graphs showing utilization over the last 24 hours. CPU current load is 2% and RAM current usage is 27%.
- Protected VMs:** A pie chart showing the distribution of VM protection: Protected with snapshots only (157 VMs), Protected with backup (2 VMs), and Unprotected (163 VMs).
- Top Jobs:** A table listing the top jobs by duration decrease, with filters for Backup, Snapshot, and PD snapshot. The top job is 'LMS Daily Backup' with a duration of 3 min 26 sec, start time of 12/1, 10:00 PM, and a +26% change.
- Backup Repositories (1):** A table showing the status of the Default Backup Repository, which is OK with 74.82 GB free and 129.45 GB capacity.

Updating Backup Appliance

Veeam Backup for Nutanix AHV allows you to check for available package updates, download and install them right from the Nutanix AHV backup appliance web console.

NOTE

If the Nutanix AHV backup appliance is not connected to the internet, you can instruct the Veeam Updater service to use a web proxy as described in section [Configuring Web Proxy](#).

It is recommended that you timely install available updates to avoid issues while working with the product. For example, timely installed security updates may help you prevent potential security issues and reduce the risk of compromising sensitive data.

TIP

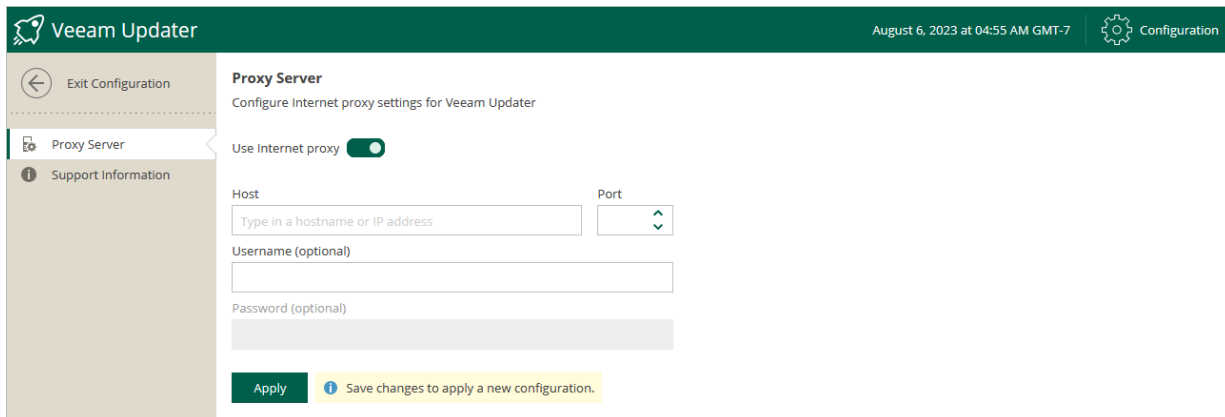
To check for major updates for Veeam Backup for Nutanix AHV, launch the Veeam Backup & Replication console. If a new version of the product is available, the Veeam Backup & Replication console will display the **Components Update** window and prompt you to upgrade the Nutanix AHV backup appliance. For more information, see the Veeam Backup & Replication User Guide, section [Server Components Upgrade](#).

Configuring Web Proxy

To check for available package updates for the Nutanix AHV backup appliance and workers, the Veeam Updater service running on the backup appliance connects to Veeam repositories over the internet. If the backup appliance is not connected to the internet, you can instruct the Veeam Updater service to use a web proxy that will provide access to the required resources.

To configure connection to the internet through a web proxy, do the following:

1. Open the **Veeam Updater** page:
 - a. Switch to the **Configuration** page.
 - b. Navigate to **Support Information**.
 - c. On the **Updates** tab, click **Check and View Updates**.
2. On the **Veeam Updater** page, do the following:
 - a. At the top right corner, click **Configuration**.
 - b. Navigate to **Proxy Server**.
 - c. Set the **Use Internet proxy** toggle to *On*.
 - d. In the **Host** field, enter the IP address or FQDN of the web proxy.
 - e. In the **Port** field, enter the port used on the web proxy for HTTP or HTTPS connections.
 - f. [Applies only if the web proxy requires authentication] In the **Username** and **Password** fields, enter credentials of the account configured on the web proxy to access the internet.
 - g. Click **Apply**.

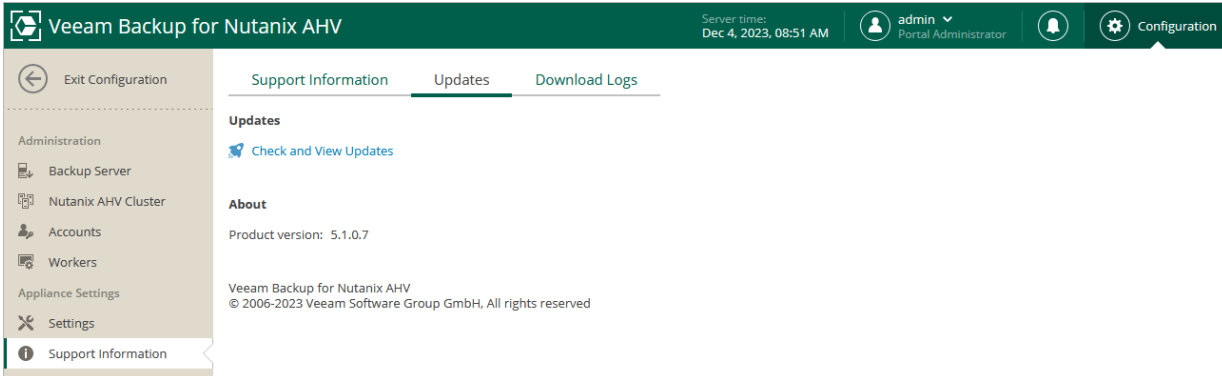


The screenshot shows the Veeam Updater Configuration page for the Proxy Server. The page title is "Proxy Server" and the subtitle is "Configure Internet proxy settings for Veeam Updater". The "Use Internet proxy" toggle is turned on. The "Host" field is a text input with the placeholder "Type in a hostname or IP address". The "Port" field is a dropdown menu. The "Username (optional)" and "Password (optional)" fields are text inputs. At the bottom, there is an "Apply" button and a message: "Save changes to apply a new configuration."

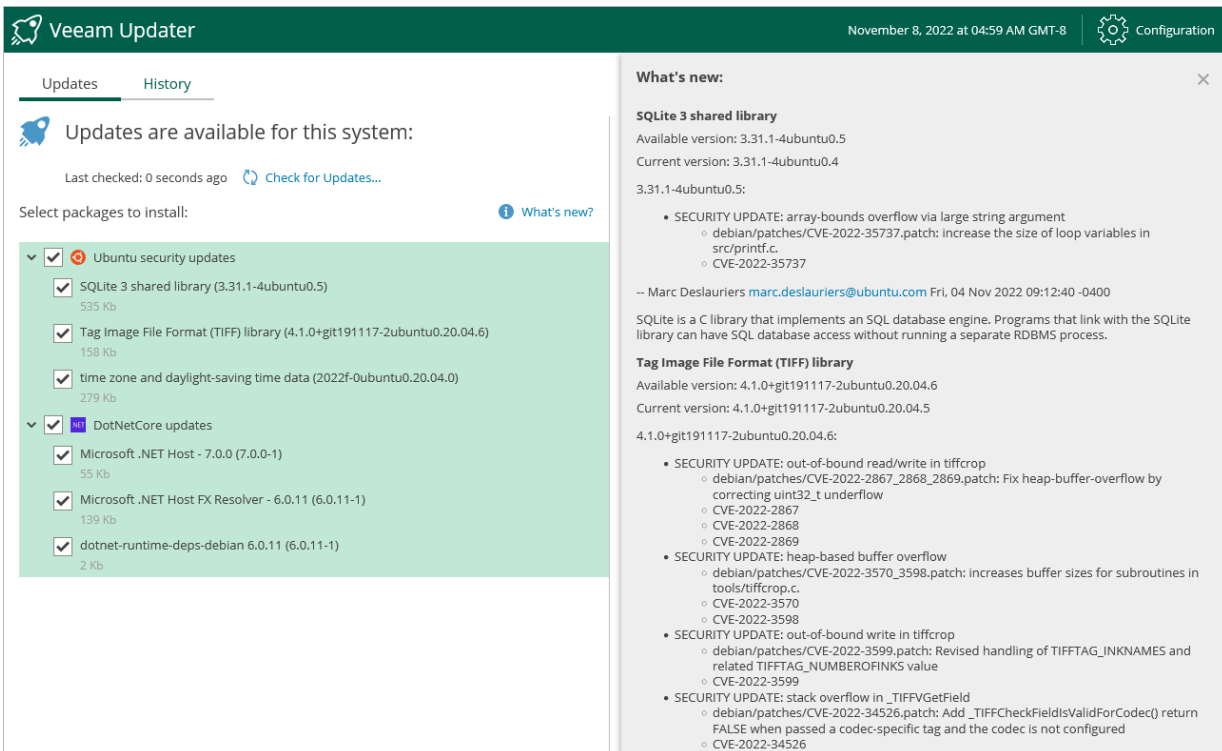
Checking for Updates

Veeam Backup for Nutanix AHV automatically notifies you about newly released product versions and package updates available for the operating system running on the backup appliance. However, you can check for available updates manually if required:

1. Switch to the **Configuration** page.
2. Navigate to **Support Information > Updates**.
3. Click **Check and View Updates**.



If new updates are available, Veeam Backup for Nutanix AHV will display them on the **Updates** tab of the **Veeam Backup Updater** page. To view detailed information on an update, select the check box next to the update and click **What's new?**



Installing Updates

To download and install new product versions and available package updates, you can use either of the following options:

- [Install updates immediately](#)
- [Schedule update installation](#)

You can also [set a reminder to send update notifications](#).

IMPORTANT

You can update Veeam Backup for Nutanix AHV using the Veeam updater service only. Updating of the backup proxy manually is not supported.

Installing Updates

IMPORTANT

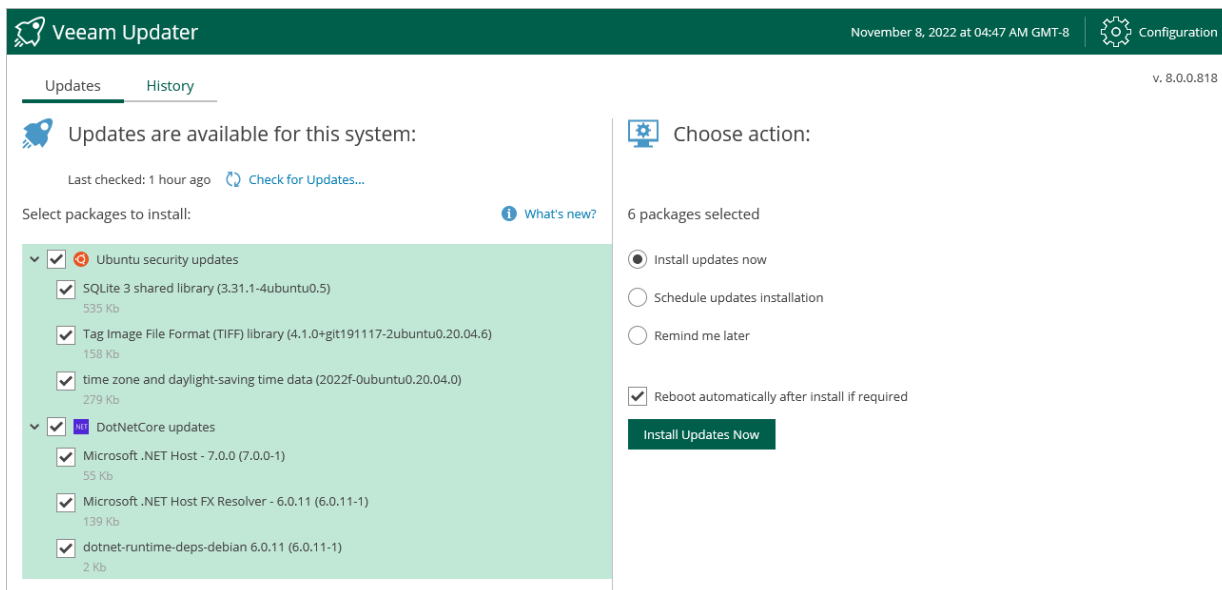
Before you install a product update, make sure all jobs are stopped and restore tasks are finished. Otherwise, the update process will interrupt the running activities, which may result in data loss.

To download and install available product and package updates:

1. Open the **Veeam Updater** page:
 - a. Switch to the **Configuration** page.
 - b. Navigate to **Support Information**.
 - c. On the **Updates** tab, click **Check and View Updates**.
2. On the **Veeam Updater** page, do the following:
 - a. In the **Updates are available for this system** section, select check boxes next to the necessary updates.
 - b. In the **Choose action** section, select the **Install updates now** option, select the **Reboot automatically after install if required** check box to allow Veeam Backup for Nutanix AHV to reboot the backup proxy if needed, and then click **Install Updates Now**.

NOTE

The updater may require you to read and accept the Veeam license agreement and the 3rd party components license agreement. If you reject the agreements, you will not be able to continue installation.



Veeam Backup for Nutanix AHV will download and install the updates; the results of the installation process will be displayed on the [History tab](#). It may take several minutes for the installation process to complete.

NOTE

When installing product updates, Veeam Backup for Nutanix AHV restarts all services running on the backup proxy, including the Web UI service. That is why Veeam Backup for Nutanix AHV will log you out when the update process completes.

Scheduling Update Installation

You can instruct Veeam Backup for Nutanix AHV to automatically download and install available product versions and package updates on a specific date at a specific time:

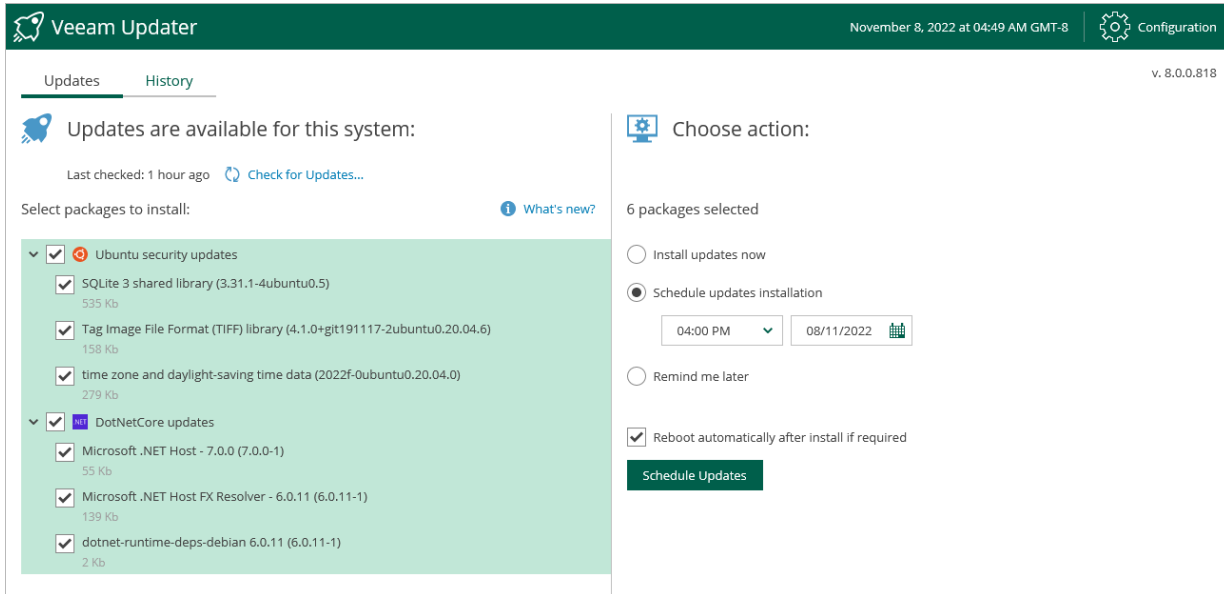
1. On the **Veeam Updater** page, in the **Updates are available for this system** section, select check boxes next to the necessary updates.
2. In the **Choose action** section, do the following:
 - a. Select the **Schedule updates installation** option and configure the necessary schedule.

IMPORTANT

When selecting a date and time for the update installation, make sure no jobs are scheduled to run on the selected time. Otherwise, the update process will interrupt the running activities, which may result in data loss.

- b. Select the **Reboot automatically after install if required** check box to allow Veeam Backup for Nutanix AHV to reboot the backup proxy if needed.

c. Click **Schedule Updates**.



The screenshot shows the Veeam Updater interface. The top bar includes the Veeam Updater logo, the date and time (November 8, 2022 at 04:49 AM GMT-8), and a Configuration icon. The main area is divided into two sections: 'Updates' and 'History'. The 'Updates' section shows a list of available updates, including Ubuntu security updates and DotNetCore updates. The 'Choose action' section on the right shows that 6 packages are selected, and the 'Schedule updates installation' option is chosen. A dropdown menu shows the time '04:00 PM' and the date '08/11/2022'. A 'Schedule Updates' button is visible at the bottom of the 'Choose action' section.

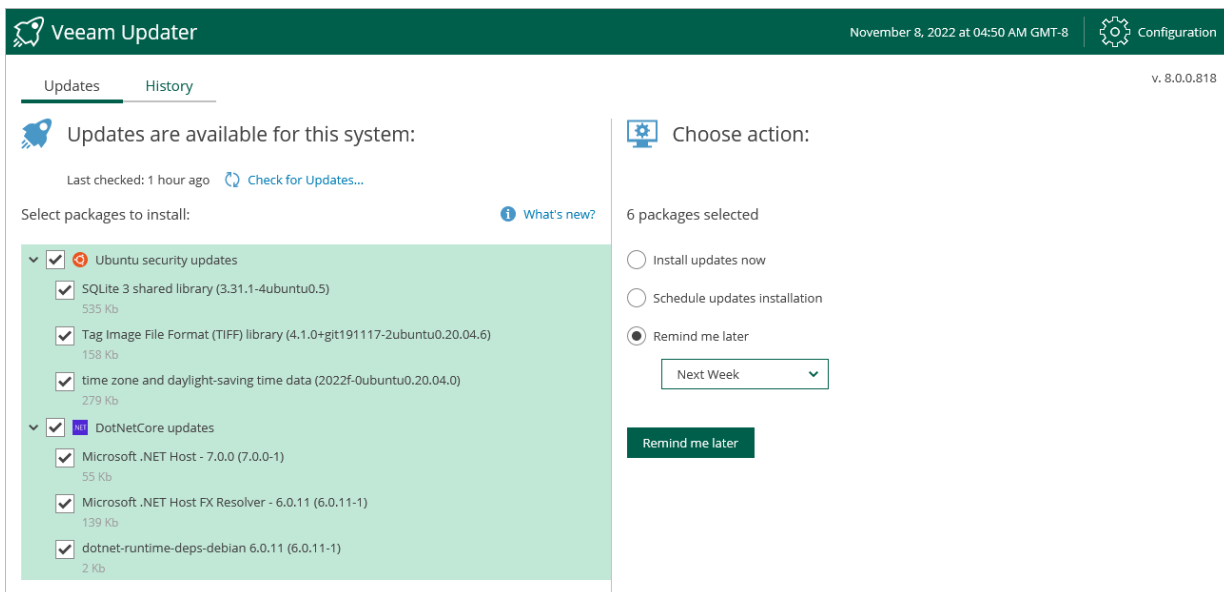
Veeam Backup for Nutanix AHV will automatically download and install the updates on the selected date at the selected time; the results of the installation process will be displayed on the [History tab](#).

Setting Update Reminder

If you have not decided when to install available product versions and package updates, you can set an update reminder – instruct Veeam Backup for Nutanix AHV to send an update notification later.

To do that, on the **Veeam Updater** page, in the **Choose action** section, do the following:

1. Select the **Remind me later** option and choose when you want to receive the reminder.
If you select the **Next Week** option, Veeam Backup for Nutanix AHV will send the reminder next Monday.
2. Click **Remind me later**.



The screenshot shows the Veeam Updater interface with the 'Remind me later' option selected in the 'Choose action' section. The 'Next Week' dropdown menu is visible, and the 'Remind me later' button is highlighted. The rest of the interface, including the list of updates and the top bar, is identical to the previous screenshot.

Viewing Update History

To see the results of the update installation performed on the backup appliance, do the following:

1. Switch to the **Configuration** page.
2. Navigate to **Support Information > Updates**.
3. Click **Check and View Updates**.
4. On the **Veeam Updater** page, switch to the **History** tab.

For each date when an update was installed, the **Veeam Updater** page will display the name of the update and its status (whether the installation process completed successfully, completed with warnings or failed to complete).

To download logs for the installed updates, select the necessary date in the **Date** section, and click **View Full Log**. Veeam Backup for Nutanix AHV will save the logs as a single file to the default download directory on the local machine.

Date ↑	Package	Status
November 8, 2022 at 03:21 AM	Preparing for the update operation	Success
November 7, 2022 at 03:06 PM	Veeam Backup for Nutanix AHV (4.0.0.1671)	Success
November 4, 2022 at 04:06 PM	Update operation has been completed	Success
November 4, 2022 at 05:02 AM		
November 1, 2022 at 11:07 AM		

Getting Technical Support

If you have any questions or issues with Veeam Backup for Nutanix AHV, you can search for a resolution on [Veeam R&D Forums](#) or submit a support case in the [Veeam Customer Support Portal](#).

When you submit a support case, it is recommended that you provide the Veeam Customer Support Team with the following information:

- [Version information for the product and its components](#)
- Error message or accurate description of the problem you are facing
- Log files

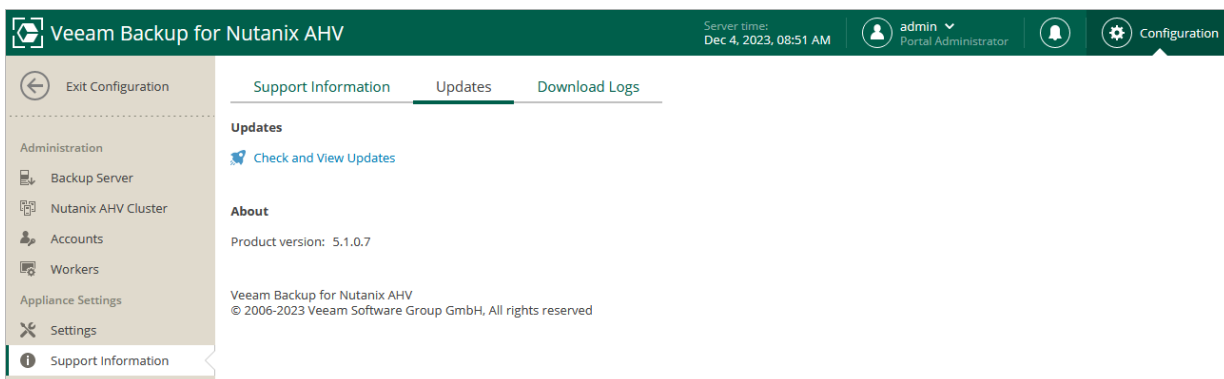
To export logs for Veeam Backup for Nutanix AHV, you must collect logs from both the [Veeam Backup & Replication console](#) and the [Nutanix AHV backup appliance web console](#).

Viewing Product Details

To view the product details:

1. Switch to the **Configuration** page.
2. Navigate to **Updates**.

The **About** section displays the currently installed version of Veeam Backup for Nutanix AHV.

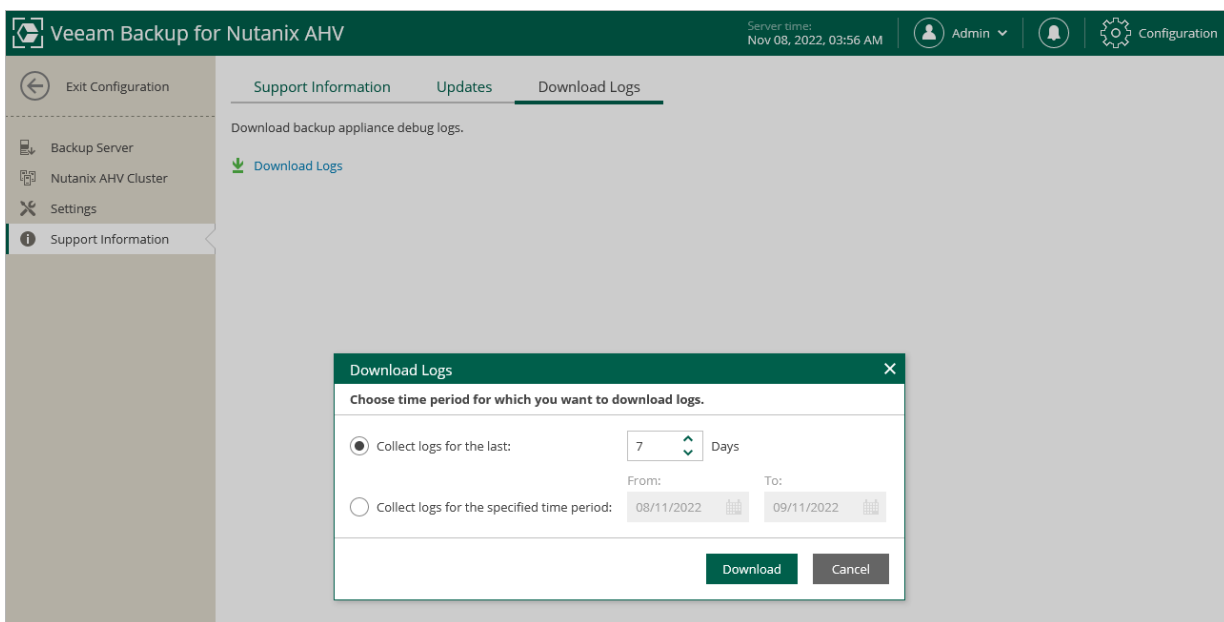


Exporting Logs Using Backup Appliance Web Console

To download the product logs, do the following:

1. Switch to the **Configuration** page.
2. Switch to the **Download Logs** tab.
3. Click **Download Logs**.
4. In the **Download Logs** window, specify a time interval for which logs must be collected:
 - Select the **Collect logs for the last** option if you want to collect data for a specific number of days in the past.
 - Select the **Collect logs for specified time period** option if you want to collect data for a specific period of time in the past.
4. Click **Download**.

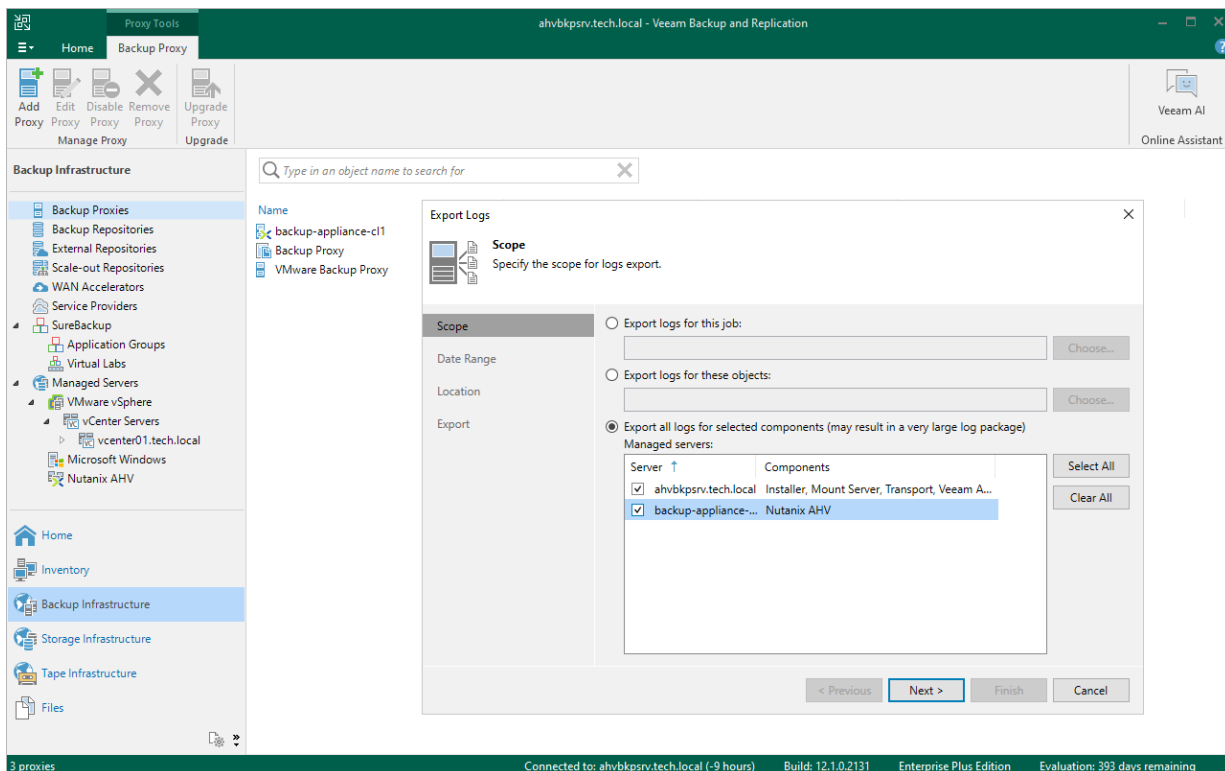
Veeam Backup for Nutanix AHV will collect logs for the specified time interval and save them to the default download folder on the local machine in a single `log.zip` archive.



Exporting Logs Using Veeam Backup & Replication Console

To collect logs for the Nutanix AHV backup appliance from the Veeam Backup & Replication console, do the following:

1. From the main menu of the Veeam Backup & Replication console, select **Help > Support Information**.
2. At the **Scope** step of the **Export Logs** wizard, select the **Export all logs for selected components** option. Then, in the **Managed servers** list, select the backup server and the VM running as the Nutanix AHV backup appliance.
3. Complete the wizard as described in the Veeam Backup & Replication User Guide, section [Exporting Logs](#).



Appendices

See in this section:

- [Appendix A. Custom Script Sample](#)
- [Appendix B. Installing Custom Certificate](#)
- [Appendix C. Configuring Bus Type Restore Priority](#)

Appendix A. Custom Script Sample

The sample custom script is written in Python 3 and contains classes and methods that are used to create a PD snapshot. The script also includes methods that you can use to implement pre-freeze and post-thaw operations:

- `doSomeChecks(pdVms)`
- `freezeVms(self, pdVmsList)`
- `unFreezeVms(self, pdVms)`

NOTE

The sample script does not check whether the provided Nutanix AHV cluster certificate is valid.

```

#!/usr/bin/python3
import requests
import urllib3
urllib3.disable_warnings(urllib3.exceptions.InsecureRequestWarning)
import json
import time
import logging
import argparse
import os
from urllib.parse import urlparse
from urllib.parse import urlunparse
from urllib.parse import urlencode
def quitScriptFailed(message):
    print(""" {"status": "Failed", "errorMessage": "%s"} """ % message)
    exit(0)
# #####
#####
#
# Initialize
#
# #####
#####
scriptDir = os.path.dirname(os.path.realpath(__file__))
#
# Process Command Line
#
parser = argparse.ArgumentParser(description='Create vms snapshot for Protec
tion Domain')
parser.add_argument('--pdName', type=str, help='Protection Domain name')
parser.add_argument('--jobName', type=str, help='Job Name for displaying in
header')
parser.add_argument('--logFolder', type=str, help='Logging path')
parser.add_argument('--logLevel', type=str, nargs='?', default='DEBUG', help
='Log level: debug, info, warning, error, critical. (default=debug)')
args = parser.parse_args()
if args.pdName is None or args.pdName == "":
    quitScriptFailed("Invalid argument: pdName")
if args.jobName is None or args.jobName == "":
    quitScriptFailed("Invalid argument: jobName")
pdName = args.pdName
jobName = args.jobName
logDir = args.logFolder
logLevel = args.logLevel
#
# Init Log
#
from datetime import datetime
logFilePath = "%s/%s" % (logDir, "custom_script.log")
os.makedirs(logDir, exist_ok=True)
LogConsoleDbg = False
logging.addLevelName(logging.FATAL, 'Fatal')
logging.addLevelName(logging.ERROR, 'Error')
logging.addLevelName(logging.WARN, 'Warn ')
logging.addLevelName(logging.INFO, 'Info ')
logging.addLevelName(logging.DEBUG, 'Debug')
logging.basicConfig(
    filename=logFilePath,
    filemode='a',
    format='%(asctime)s.%(msecs)03d] [% (levelname)s] %(message)s',
    datefmt='[%Y-%m-%d] [%H:%M:%S]',

```

```

        level=str.upper(logLevel)
    )
# LogConsoleDbg = True
if LogConsoleDbg:
    Formater = logging.getLogger().handlers[0].formatter
    consoleHandler = logging.StreamHandler()
    consoleHandler.setFormatter(Formater)
    logging.getLogger().addHandler(consoleHandler)
logging.info("-----")
logging.info("Start to script execution")
logging.info("    Protection Domain name: %s" % pdName)
logging.info("    Job name:                %s" % jobName)
logging.info("-----")
#
# Init config from env variables
#
try:
    nutanixClusterIp = os.getenv('NUTANIX_CLUSTER_ADDRESS')
    nutanixLogin = os.getenv('NUTANIX_CLUSTER_LOGIN')
    nutanixPass = os.getenv('NUTANIX_CLUSTER_PASSWORD')
except Exception as e:
    # print(e)
    Error = "Failed to get environment variables";
    logging.exception(Error)
    quitScriptFailed(Error)
# #####
# #####
#
# Result's
#
# #####
# #####
class ScriptResult:
    """
    Describes the attributes and methods required to work with the Nutanix cluster API
    """
    SUCCESS = 0
    WARNING = 1
    FAILED = 2
    def __init__(self, status = SUCCESS, errorMessage = ""):
        self.status = status
        self.errorMessage = errorMessage
        self.oob_schedule_id = ""
    def SetFailed(self, message):
        self.status = ScriptResult.FAILED
        self.errorMessage = message
    def SetWarning(self, message):
        self.status = ScriptResult.WARNING
        self.errorMessage = message
    def makeJsonString(self):
        jResult = dict()
        if self.status == ScriptResult.SUCCESS:
            jResult['status'] = "Success"
        elif self.status == ScriptResult.WARNING:
            jResult['status'] = "Warning"
        elif self.status == ScriptResult.FAILED:
            jResult['status'] = "Failed"

```

```

        jResult['errorMessage'] = self.errorMessage
        jResult['oob_schedule_id'] = self.oob_schedule_id
        return json.dumps(jResult)
def generateResult(result):
    jsonString = result.makeJsonString()
    if result.status == ScriptResult.FAILED or result.status == ScriptResult.
WARNING:
        logging.error("Custom script execution finished with error. Result: %
s" % jsonString)
    else:
        logging.info("Custom script execution finished. Result: %s" % jsonStr
ing)
    print(jsonString)
    exit(0)
def generateResultFailed(errorMessage, exception = None):
    if isinstance(exception, NutanixException):
        errorMessage += " Error: %s" % str(exception) # Add error messa
ge of Nutanix API call. E.g.: "Specified protection domain AgentTest-Protect
ionDomain does not exist"
    elif isinstance(exception, AuthenticationException):
        errorMessage += " Error: Authentication failed."
    elif isinstance(exception, requests.exceptions.ConnectionError):
        errorMessage += " Error: Connect failed."
        # if isinstance(e, NutanixExceptionNotFound):
        generateResult(ScriptResult(ScriptResult.FAILED, errorMessage))
def getFullUrl(url, params):
    paramsStr = urlencode(params)
    urlObj = urlparse(url)
    urlQuery = urlObj.query
    if paramsStr:
        if urlQuery:
            urlQuery = '%s&%s' % (urlQuery, paramsStr)
        else:
            urlQuery = paramsStr
    urlObj = urlObj._replace(query=urlQuery)
    return urlunparse(urlObj)
# #####
# #####
#
# Nutanix
#
# #####
# #####
class AuthenticationException(Exception):
    def __init__(self):
        super(AuthenticationException, self).__init__()
class NutanixException(Exception):
    def __init__(self, message=""):
        super(NutanixException, self).__init__(message)
        self.message = message
class NutanixExceptionNotFound(NutanixException):
    def __init__(self, message=""):
        super(NutanixExceptionNotFound, self).__init__(message)
class NutanixCluster:
    """
    Describes the attributes and methods required to work with the Nutanix cl
uster API
    """
    def __init__(self, nutanixClusterIp, nutanixLogin, nutanixPass):
        """Constructor"""

```

```

        self.nutanixClusterIp = nutanixClusterIp
        self.nutanixLogin = nutanixLogin
        self.nutanixPass = nutanixPass
        self.nutanixApi1 = "https://%s:9440/PrismGateway/services/rest/v1" %
self.nutanixClusterIp
        self.nutanixApi2 = "https://%s:9440/PrismGateway/services/rest/v2.0"
% self.nutanixClusterIp
        self.nutanixApi3 = "https://%s:9440/api/nutanix/v3" % self.nutanixClu
sterIp
    @staticmethod
    def getErrorMessage(jResponse):
        if "message" in jResponse:                # for Nutanix API v1 & v2
            return jResponse["message"]
        elif "message_list" in jResponse:        # for Nutanix API v3
            message = ""
            for jError in jResponse["message_list"]:
                if "message" in jError:
                    if len(message):
                        message += "; "
                    message += jError["message"]
                else:
                    raise requests.exceptions.RequestException
            return message
        else:
            raise requests.exceptions.RequestException
    @staticmethod
    def logRequest(level, httpMethod, urlFull, body=''):
        method = httpMethod.upper()
        bodyCanExist = False
        if method == 'POST' or method == 'PUT' or method == 'PATCH':
            bodyCanExist = True
        if bodyCanExist:
            logging.log(level, "HTTP Request (%s %s): %s", method, urlFull, "
" if body else "none")
            if body:
                logging.log(level, body)
        else:
            logging.log(level, "HTTP Request (%s %s)", method, urlFull)
    @staticmethod
    def logResponse(level, response):
        logging.log(level, "HTTP Response (%s %s): %s", response.status_code,
response.reason, "" if response.text else "none")
        if response.text:
            logging.log(level, response.text)
    def executeHttpRequest(self, httpMethod, url, body='', params=''):
        """
        Execute http/https requests
        :param httpMethod: (get, post ...)
        :param url:
        :param body: message body
        :param params: query string parameters in the URL
        :return:
        """
        response = None
        s = requests.Session()
        s.auth = (self.nutanixLogin, self.nutanixPass)
        s.headers.update({'Content-Type': 'application/json; charset=utf-8'})
        urlFull = getFullUrl(url, params)
        reqRespLogged = logging.root.level <= logging.DEBUG
        #

```

```

# Do request
#
self.logRequest(logging.DEBUG, httpMethod, urlFull, body)
if httpMethod == 'get':
    response = s.get(url, data=body, params=params, verify=False, timeout=10)
elif httpMethod == 'post':
    response = s.post(url, data=body, params=params, verify=False, timeout=10)
else:
    raise NotImplementedError("HTTP Method '%s' not supported")
self.logResponse(logging.DEBUG, response)
#
# Check to failed request & log
#
isSuccess = response.status_code in (200, 201, 202)
if not isSuccess and not reqRespLogged:
    self.logRequest(logging.ERROR, httpMethod, urlFull, body)
    self.logResponse(logging.ERROR, response)
#
# Process response
#
if isSuccess:
    return response.json()
else:
    isJson = response.headers['Content-Type'].lower().find("application/json") != -1
    if response.status_code == 401: # Not Found
        raise AuthenticationException()
    if isJson:
        message = self.getErrorMessage(response.json())
        logging.error("Nutanix request failed. Nutanix error: %s" % message)
    if response.status_code == 404: # Not Found
        raise NutanixExceptionNotFound(message)
    else:
        raise NutanixException(message)
    else:
        logging.error("Nutanix request failed.")
        raise requests.exceptions.RequestException
def executeHttpRequestV1(self, httpMethod, relativeUrl, body='', params=''):
    url = "%s/%s" % (self.nutanixApi1, relativeUrl)
    return self.executeHttpRequest(httpMethod, url, body, params)
def executeHttpRequestV2(self, httpMethod, relativeUrl, body='', params=''):
    url = "%s/%s" % (self.nutanixApi2, relativeUrl)
    return self.executeHttpRequest(httpMethod, url, body, params)
def executeHttpRequestV3(self, httpMethod, relativeUrl, body='', params=''):
    url = "%s/%s" % (self.nutanixApi3, relativeUrl)
    return self.executeHttpRequest(httpMethod, url, body, params)
def getPdVms(self, pdName):
    """
    Get vm_id for the Protection Domain
    :param pdName: Protection Domain name
    :return pdVms: returns a list of vms_id for the Protection Domain
    """
    pdVms = []
    try:

```



```

        logging.info("Getting vm_id list for Protection Domain='%s'", pdName)
    data = self.executeHttpRequestV2('get', "protection_domains/%s" %
pdName)
    for vms in data["vms"]:
        pdVms.append(vms["vm_id"])
    except Exception as e:
        logging.error("Getting vm_id list from Protection Domain='%s' failed. Error: %s.", pdName, str(e))
        logging.exception(str(e))
        generateResultFailed("Getting vm_id list for Protection Domain='%s' failed." % pdName, e)
    logging.info("Getting vm_id list vm_id='%s' success", pdVms)
    return pdVms
def getVmsInfoEx(self, vmsUuids, mustExist=True):
    """
    Obtaining information about vms, for example ip address
    Similarly, you can get vms data about cpu, memory, etc.
    This method is created as an example.
    :param vmsUuids: list of vm_id
    :return vmsInfo: returns a list of vm ip address
    """
    vmsInfo = []
    logging.info("Getting vms started. UUIDs: %s", vmsUuids)
    for vmUuid in vmsUuids:
        vmInfo = {"uuid": vmUuid, "vm": None}
        try:
            data = self.executeHttpRequestV3('get', "vms/%s" % vmUuid)
            vmInfo["vm"] = data
            vmsInfo.append(vmInfo)
        except Exception as e:
            if isinstance(e, NutanixExceptionNotFound):
                if not mustExist:
                    vmsInfo.append(vmInfo)
                    continue
            logging.error("Getting vms failed. VM UUID: %s", vmUuid)
            logging.exception(str(e))
            generateResultFailed("Getting vms failed.", e)
    logging.info("Getting vms success. UUIDs: %s", vmsUuids)
    return vmsInfo
def getVmsInfo(self, vmsUuids, mustExist=True):
    vmsInfo = []
    vmsInfoEx = self.getVmsInfoEx(vmsUuids, mustExist)
    for vmInfo in vmsInfoEx:
        if vmInfo["vm"]:
            # if exist on Nutanix --> add
            to list
            vmsInfo.append(vmInfo["vm"])
    return vmsInfo
def createPdSnapshot(self, pdName):
    """
    Creating vms snapshot for the Protection Domain
    :param pdName:
    :return:
    """
    schedule_id = None
    snapshotInfo = dict()
    body = json.dumps({"app_consistent": "false"})
    try:
        logging.info("Creating vms snapshot for Protection Domain='%s'",
pdName)

```

```

        data = self.executeHttpRequestV2('post', "protection_domains/%s/o
ob_schedules" % pdName, body)
        schedule_id = data["schedule_id"]
    except Exception as e:
        logging.error("Creating vms snapshot for Protection Domain='%s' f
ailed" % pdName)
        logging.exception(str(e))
        generateResultFailed("Creating vms snapshot for Protection Domain
='%s' failed." % pdName, e)
        params = {'oob_schedule_ids': schedule_id}
        state = ''
        isStateAvailable = False
        for i in range(10):
            time.sleep(5) #waiting when information about snapshot be availab
le
            try:
                logging.info("Getting snapshot status oob_schedule_ids='%s' f
or Protection Domain='%s'", schedule_id, pdName)
                data = self.executeHttpRequestV2('get', "protection_domains/%
s/dr_snapshots/" % pdName, '', params)
                try:
                    state = data["entities"][0]["state"]
                except:
                    state = None
                if state == 'AVAILABLE':
                    isStateAvailable = True
                    break
            except Exception as e:
                logging.error("Getting snapshot status oob_schedule_ids='%s'
for Protection Domain='%s' failed", schedule_id, pdName)
                logging.exception(str(e))
                logging.info("Unfreeze vms for Protection Domain='%s'", pdNam
e)

                cluster.unFreezeVms(pdVms)
                generateResultFailed("Getting snapshot status oob_schedule_id
s='%s' for Protection Domain='%s' failed." % (schedule_id, pdName), e)
                if not isStateAvailable:
                    logging.error("Unexpected snapshot status='%s' oob_schedule_ids='
%s' for Protection Domain='%s'", state, schedule_id, pdName)
                    logging.info("Unfreeze vms for Protection Domain='%s'", pdName)
                    cluster.unFreezeVms(pdVms)
                    generateResultFailed("Snapshot oob_schedule_ids='%s' status error
(status='%s') for Protection Domain='%s'." % (state, schedule_id, pdName))
                    logging.info("Creating vms snapshot for Protection Domain='%s' succes
s", pdName)
                    pdSnapshotId = data["entities"][0]["snapshot_id"]
                    pdSnapshotUuid = data["entities"][0]["snapshot_uuid"]
                    snapshotInfo['schedule_id'] = schedule_id
                    snapshotInfo['pdSnapshotId'] = pdSnapshotId
                    snapshotInfo['pdSnapshotUuid'] = pdSnapshotUuid
                    return snapshotInfo
def freezeVms(self, pdVmsList):
    """
    Freezing vms
    :param vmsInfo: vms data needed to freeze
    :return:
    """
    logging.info("Freezing vms for Protection Domain='%s'", pdName)
    # here should be added code for freezing vms"

```

```

        logging.info("Freezing vms for Protection Domain='%s' success", pdName)
    e)
    pass
    def unFreezeVms(self, pdVms):
        """
        unfreezing vms
        :param pdVms: vms data needed to unfreeze
        :return:
        """
        logging.info("Unfreezing vms for Protection Domain='%s'", pdName)
        # here should be added code for unfreezing vms"
        logging.info("Unfreezing vms for Protection Domain='%s' success", pdName)
    ame)
    pass
    def doSomeChecks(pdVms):
        # here should be added code for PD VMs check
        # for example get vms ip addresses
        logging.info("Do some checks")
        vmsInfo = []
        vmsInfoEx = cluster.getVmsInfoEx(pdVms, False)
        for vmInfo in vmsInfoEx:
            if vmInfo["vm"]: # if exist on Nutanix --> add to list
                vmsInfo.append(vmInfo["vm"])
            else:
                logging.warning("VM with UUID='%s' will not backup. VM in PD does not exist in cluster.", vmInfo["uuid"])
                logging.info("Do some checks success")
                # here should be added error message (in case of failed checks)
        # #####
        # #####
        #
        # Main
        #
        # #####
        # #####
        if __name__ == "__main__":
            cluster = NutanixCluster(nutanixClusterIp, nutanixLogin, nutanixPass)
            pdVms = cluster.getPdVms(pdName)
            if not pdVms:
                generateResultFailed("Protection Domain '%s' doesn't have vms." % pdName)
    ame)
    doSomeChecks(pdVms)
    cluster.freezeVms(pdVms)
    snapshotInfo = cluster.createPdSnapshot(pdName)
    cluster.unFreezeVms(pdVms)
    logging.info("All steps succeeded")
    result = ScriptResult()
    result.oob_schedule_id = snapshotInfo['schedule_id']
    generateResult(result)

```

Appendix B. Installing Custom Certificate

When you upgrade the Nutanix AHV backup appliance to version 4.0 or later, a Veeam certificate is automatically installed on the appliance even if a custom certificate was used before. If you want to replace the Veeam certificate with your custom certificate, the following files are required:

- `certificate.pem` – a file that contains the Nutanix AHV backup appliance certificate in the PEM format. Note that the PFX format is not supported.
- `privatekey.pem` – a file that contains a private key used to generate the certificate.
- `password` – a file that contains a password to decrypt the private key. This file is not required if the private key is not encrypted.

To install the certificate, do the following:

1. [Enable SSH access](#) on the Nutanix AHV backup appliance.
2. Connect to the Nutanix AHV backup appliance using SSH.
3. Upload certificate files to the Nutanix AHV backup appliance.
4. Open the `/opt/VeeamBackupAgent/appsettings.json` file and locate the **BackupApplianceCertificate** configuration section.
5. Update the configuration parameters as in the following example:

```
"BackupApplianceCertificate": {
  "UseCustomCert": true,
  "CustomCertPemFilePath": "<path_to_the_file>/certificate.pem",
  "CustomPrivateKeyPemFilePath": "<path_to_the_file>/privatekey.pem",
  "CustomPasswordFilePath": "<path_to_the_file>/password"
}
```

If the private key is not encrypted, leave the default "" value for the `CustomPasswordFilePath` parameter.

6. Save the `appsettings.json` file.
7. Restart the backup service using the following command:

```
sudo systemctl restart VeeamBackupAgent
```

IMPORTANT

If the Nutanix AHV backup appliance cannot find the certificate in the specified folder or any of the certificate files contain incorrect data, the backup service will fail to start, and you will not be able to perform data protection and recovery operations. To troubleshoot the problem, check logs in the `/var/log/nxbackupagent/nutanixbackupservice/nutanixbackupservice.log` file.

8. Update the Nutanix AHV backup appliance configuration using the [Edit Nutanix Proxy wizard](#).

Appendix C. Configuring Bus Type Restore Priority

When restoring a VM that originally resided on a platform other than Nutanix AHV, Veeam Backup for Nutanix AHV attaches disks with the restored data to the target Nutanix AHV VM taking into account the original disk bus types unless the following limits are exceeded: 6 SATA, 256 SCSI, 4 IDE, 7 PCI disks. Since the maximum number of disk nodes to which disks of a specific bus type can be attached varies depending on the virtualization platform, Veeam Backup for Nutanix AHV may fail to attach some of the VM disks using their original bus types. Those disks will be attached to free nodes of other bus types in the following default priority: SATA, SCSI, IDE, PCI.

You can modify the default priority to define the order in which Veeam Backup for Nutanix AHV will process disks that cannot be attached using their original bus types. You can also instruct Veeam Backup for Nutanix AHV to ignore the original bus types of VM disks. In the latter case, Veeam Backup for Nutanix AHV will attach disks according to the specified bus type priority – this may be useful if some bus type is not configured in the Nutanix AHV environment.

NOTE

Veeam Backup for Nutanix AHV takes into account the bus type restore priority only when performing the following operations:

- [Restore of an entire VM](#) that originally resided on a platform other than Nutanix AHV.
- [Instant Recovery of any VM](#) (including Nutanix AHV VMs) to Nutanix AHV.

Consider the following example. You want to restore a VMware VM that originally had 30 SATA disks and 2 IDE disks. Depending on the bus type restore priority, Veeam Backup for Nutanix AHV will attach disks to the following nodes of the target VM:

Bus Type Priority	Ignore Original Bus	Target VM Disk Nodes
SATA, SCSI, IDE, PCI (default)	False	<ul style="list-style-type: none">• 6 SATA (originally, 6 SATA)• 24 SCSI (originally, 24 SATA)• 2 IDE (originally)• 0 PCI
SATA, IDE, PCI, SCSI	False	<ul style="list-style-type: none">• 6 SATA (originally, 6 SATA)• 4 IDE (originally, 2 IDE and 2 SATA)• 7 PCI (originally, 7 SATA)• 15 SCSI (originally, 15 SATA)
SCSI, IDE, PCI, SATA	False	<ul style="list-style-type: none">• 24 SCSI (originally, 24 SATA)• 2 IDE (originally, 2 IDE)• 0 PCI• 6 SATA (originally, 6 SATA)
SCSI, IDE, PCI, SATA	True	<ul style="list-style-type: none">• 32 SCSI (originally, 30 SATA and 2 IDE)• 0 IDE• 0 PCI• 0 SATA

To modify the default bus type restore priority, do the following:

1. Close the Veeam Backup & Replication console.
2. Open a plain text editor (for example, Notepad) as Administrator.
3. In the editor, open the `appsettings.json` file located in the `{plug-in location}\Service` folder.
The default location of Nutanix AHV plug-in is `C:\Program Files\Veeam\Plugins\Nutanix AHV`. However, the location may differ depending on the [specified setup settings](#).
4. Locate the **RestoreDefaults** configuration section.

To instruct Veeam Backup for Nutanix AHV to ignore the original bus types of VM disks, set the following parameter to `true`:

```
"IgnoreOriginalBus": "true",
```

To change the bus type priority, update the following parameter value:

```
"BusesFillingOrder": "SCSI, IDE, PCI, SATA",
```

5. Save the `appsettings.json` file.
6. Restart the Veeam AHV Service.