

# Symantec NetBackup™ Plug-in for VMware vSphere Web Client Guide

Release 7.7



# NetBackup™ Plug-in for VMware vSphere Web Client Guide

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North America and Latin America [supportsolutions@symantec.com](mailto:supportsolutions@symantec.com)

# Contents

Technical Support .....	3	
Chapter 1	Introduction and notes .....	9
	About the NetBackup plug-in for VMware vSphere Web Client .....	9
	Notes on the NetBackup plug-in for vSphere Web Client .....	10
	How to access the features of the NetBackup plug-in for vSphere Web Client .....	11
Chapter 2	Installing the NetBackup plug-in for vSphere Web Client .....	13
	Requirements for the NetBackup plug-in for vSphere Web Client .....	14
	Installation overview for the NetBackup plug-in for vSphere Web Client .....	15
	Using consistent vCenter naming with the NetBackup plug-in for vSphere Web Client .....	16
	Installing the NetBackup plug-in for vSphere Web Client .....	16
	Installing the NetBackup plug-in for vSphere Web Client on an additional vSphere Web Client server .....	24
	Registering the NetBackup plug-in for vSphere Web Client with additional vCenter servers .....	25
	Un-registering the NetBackup plug-in for vSphere Web Client .....	26
	Upgrading the NetBackup plug-in for vSphere Web Client .....	26
	Disabling the NetBackup plug-in for vSphere Web Client .....	27
	Configuration overview for the NetBackup Recovery and Instant Recovery Wizards .....	27
	Enabling NetBackup Web Services on the Windows master server .....	28
	Enabling NetBackup Web Services on the UNIX or Linux master server .....	31
	Configuring ports for the NetBackup Web Services .....	32
	Creating an authentication token for the NetBackup plug-in for vSphere Web Client .....	35
	Revoking an authorization token .....	36
	Listing all current authentication tokens .....	37

	Authorizing the NetBackup plug-in to restore virtual machines .....	38
	Setting vCenter privileges for recovering virtual machines .....	40
Chapter 3	Monitoring backup status .....	43
	Setting vCenter privileges for backup monitoring .....	43
	Symantec NetBackup tab in vSphere Web Client .....	44
	Summary display .....	46
	Virtual Machines display .....	48
	Events display .....	49
	Using the Symantec NetBackup tab for backup reporting .....	51
	How to respond to backup status .....	53
Chapter 4	Restoring virtual machines .....	54
	Setting up parameters for the virtual machine recovery .....	54
	Restoring virtual machines with the NetBackup Recovery Wizard .....	57
	Restoring virtual machines with the NetBackup Instant Recovery Wizard .....	57
	How to access the NetBackup Recovery Wizards .....	58
	NetBackup Recovery Wizard screens .....	61
	Virtual Machine Selection screen .....	61
	Image Selection screen .....	62
	Destination Selection screen .....	65
	Transport Selection screen .....	67
	Disk Provision screen .....	68
	Virtual Machine Options screen .....	70
	Network Selection screen .....	71
	Pre-Recovery Check screen .....	72
	NetBackup Instant Recovery Wizard screens .....	74
	Selecting virtual machines for instant recovery .....	74
	Selecting backup images for instant recovery .....	77
	Selecting destination for instant recovery .....	79
	Setting virtual machine options .....	81
	Reviewing recovery settings .....	82
	Cleaning the recovery environment and releasing the NetBackup resources .....	83

Chapter 5	Troubleshooting .....	86
	Setting the time zone of the NetBackup master server host to UTC .....	87
	Reducing the load time for the NetBackup plug-in for vSphere Web Client .....	87
	The NetBackup plug-in for vSphere Web Client does not find any backup images in the listed events .....	88
	The NetBackup Recovery Wizard for vSphere Web Client does not find a particular backup image .....	89
	Mismatch in vCenter server name (uppercase vs. lowercase letters) causes the VMware connectivity test to fail .....	89
	IR operation is not complete due to NFS mount limit exceed .....	90
	IR-ready backup images are not available for selection .....	90
	vCenter server and NetBackup master server names are not available for search .....	91
	Preferred IR-destination options are not saved .....	91
	Virtual machine display name conflicts are not shown before pre-recovery check .....	91
	Reasons for failure of pre-recovery checks .....	92
	Timeout or long time taken to populate the list of NetBackup master servers .....	92
	NetBackup plug-in not shown in vSphere Web Client portal even after registration .....	93
	Correct NetBackup master server does not show up for selection for a given vCenter server on the IR wizard .....	93
Appendix A	Appendices for instant recovery operations .....	94
	Instant recovery events for non-available virtual machines .....	94
	Port usage for the plug-in .....	95
	Best practices for instant recovery operations .....	96

# Introduction and notes

This chapter includes the following topics:

- [About the NetBackup plug-in for VMware vSphere Web Client](#)
- [Notes on the NetBackup plug-in for vSphere Web Client](#)
- [How to access the features of the NetBackup plug-in for vSphere Web Client](#)

## About the NetBackup plug-in for VMware vSphere Web Client

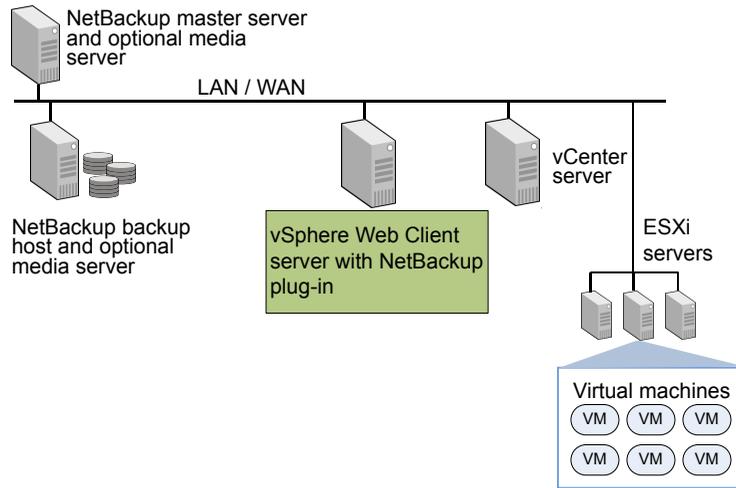
With the NetBackup plug-in, you can use vSphere Web Client to monitor the backups of virtual machines that vCenter servers manage. You can also recover a virtual machine from a backup.

You can use the plug-in to do the following:

- View the backup status of virtual machines at various vSphere levels. For example: Datacenter, resource pool, ESXi host.
- View messages that are related to backups, such as snapshot deletion failure.
- Sort and filter the backup information and export the information for analysis.
- Recover virtual machines. (The recovery feature and the instant recovery feature are optional and are not required for monitoring virtual machine backups.)
- Instantly recover and power on a virtual machine.

[Figure 1-1](#) shows a NetBackup and VMware environment with the plug-in.

**Figure 1-1** vSphere Web Client with NetBackup plug-in



## Support for ESX and ESXi

NetBackup for VMware supports both ESX and ESXi servers. In this document, any reference to ESXi also refers to ESX.

Note that VMware no longer supports ESX in the latest versions of vSphere.

For the VMware versions that the NetBackup plug-in supports:

See [“Requirements for the NetBackup plug-in for vSphere Web Client”](#) on page 14.

# Notes on the NetBackup plug-in for vSphere Web Client

Note the following about the NetBackup vSphere Web Client plug-in:

- The time zone of the host OS on which the NetBackup master server is installed must be set to UTC.  
 See [“Setting the time zone of the NetBackup master server host to UTC”](#) on page 87.
- The best screen resolution for the plug-in is 1280 x 1024 or greater.
- The plug-in does not support auto-refresh. To refresh the display, click the vSphere Web Client refresh icon:



- In vCenter, the default retention period for vCenter events is 180 days. This value is the recommended setting.
- If an ESXi server is removed from vCenter and is later re-added, the events for the VMs managed by that ESXi are lost. For VM status, the plug-in shows "No Backup Information." The status changes as new backup events occur for each VM.
- See ["Restoring virtual machines with the NetBackup Recovery Wizard"](#) on page 57.
- The NetBackup master server must be configured with backup policies of type **VMware**, with the **Post events to vCenter** option set to **All Events**. The plug-in monitors backups that a NetBackup **VMware** policy made. The plug-in does not monitor backups from other policy types.

Note the following exceptions:

- The plug-in does not monitor backups from a VMware policy that had **Use Replication Director** enabled and **Application Consistent Snapshot** disabled (under **Options**).
- The plug-in does not monitor all the copies that a storage lifecycle policy (SLP) makes; it monitors the first image only.

## How to access the features of the NetBackup plug-in for vSphere Web Client

[Table 1-1](#) describes the location of the NetBackup plug-in features in vSphere Web Client.

**Table 1-1** Accessing basic functions of the Symantec NetBackup plug-in for vSphere Web Client

Feature	How to access the NetBackup plug-in
Monitor the status of virtual machine backups	<p>In the vSphere Web Client object navigator, click <b>Home &gt; Hosts and Clusters &gt; Monitor &gt; Symantec NetBackup</b> tab.</p> <p>In the object navigator, select the vSphere object to monitor, such as vCenter, ESXi server, VM, or other object.</p> <p>See <a href="#">"Symantec NetBackup tab in vSphere Web Client"</a> on page 44.</p>

**Table 1-1**      Accessing basic functions of the Symantec NetBackup plug-in for vSphere Web Client (*continued*)

Feature	How to access the NetBackup plug-in
Restore a virtual machine	<p>In the vSphere Web Client object navigator, click <b>Symantec NetBackup</b>, then click <b>Recovery Wizard</b>.</p> <p>You can access the Recovery Wizard in several other ways: See "<a href="#">How to access the NetBackup Recovery Wizards</a>" on page 58.</p> <p><b>Note:</b> The Recovery Wizard is optional. It is not required for monitoring virtual machine backups.</p>
Restore a virtual machine instantly	<p><b>Symantec NetBackup Instant Recovery Wizard</b></p> <p>In the vSphere Web Client object navigator, click <b>Symantec NetBackup</b>, then click <b>Instant Recovery Wizard</b>.</p> <p><b>Note:</b> You can instantly recover the virtual machines using this wizards and can power-on the recovered machines instantly.</p>

# Installing the NetBackup plug-in for vSphere Web Client

This chapter includes the following topics:

- [Requirements for the NetBackup plug-in for vSphere Web Client](#)
- [Installation overview for the NetBackup plug-in for vSphere Web Client](#)
- [Using consistent vCenter naming with the NetBackup plug-in for vSphere Web Client](#)
- [Installing the NetBackup plug-in for vSphere Web Client](#)
- [Installing the NetBackup plug-in for vSphere Web Client on an additional vSphere Web Client server](#)
- [Registering the NetBackup plug-in for vSphere Web Client with additional vCenter servers](#)
- [Un-registering the NetBackup plug-in for vSphere Web Client](#)
- [Upgrading the NetBackup plug-in for vSphere Web Client](#)
- [Disabling the NetBackup plug-in for vSphere Web Client](#)
- [Configuration overview for the NetBackup Recovery and Instant Recovery Wizards](#)

# Requirements for the NetBackup plug-in for vSphere Web Client

Table 2-1 describes the requirements for the NetBackup plug-in.

**Table 2-1** Requirements for the NetBackup plug-in for vSphere Web Client

Requirement	Details
Common requirements for monitoring VM backups or recovering VMs	<p>NetBackup 7.7 and later.</p> <p>vCenter Server 5.0 and later.</p> <p>vSphere Web Client 5.5 and later</p> <p><b>Note:</b> The plug-in supports any web browser that the vSphere Web Client supports.</p> <p><b>Note:</b> The NetBackup master server's operating system must be set to the UTC time zone.</p>
NetBackup master server platforms that are supported for recovering VMs	<p>For the NetBackup Recovery Wizard, these NetBackup master server platforms are supported:</p> <ul style="list-style-type: none"> <li>■ Windows</li> <li>■ Red Hat</li> <li>■ SUSE</li> <li>■ Solaris SPARC</li> <li>■ Solaris x86</li> </ul> <p>For the OS levels and versions that are supported for master server, refer to the <i>NetBackup 7.x Operating System Compatibility List</i>:  <a href="http://www.symantec.com/docs/TECH76648">http://www.symantec.com/docs/TECH76648</a></p>
NetBackup Web Services for recovering VMs	<p>For the NetBackup Recovery Wizard, the NetBackup Web Services must be enabled on the NetBackup master server.</p> <p>See “<a href="#">Installation overview for the NetBackup plug-in for vSphere Web Client</a>” on page 15.</p>
Requirements for Instant Recovery of virtual machines	<p>For the NetBackup Recovery Wizard, the NetBackup Web Services must be enabled on the NetBackup master server.</p> <p>NetBackup master server 7.7 and later.</p> <p>vCenter Server 5.5 and later.</p> <p>ESX server 6.0 and later.</p> <p><b>Note:</b> For monitoring the instat recovery, the backup host version should be 7.7 and later.</p>

# Installation overview for the NetBackup plug-in for vSphere Web Client

[Table 2-2](#) lists NetBackup configuration requirements for the plug-in.

**Table 2-2** NetBackup configuration for the plug-in

Task	Description and notes
Configure NetBackup to back up the virtual machines.	<p>For example, the NetBackup administrator must configure the following:</p> <ul style="list-style-type: none"> <li>■ The VMware backup host (proxy, or access host).</li> <li>■ The NetBackup credentials for the vCenter server.</li> </ul> <p><b>Note:</b> The vCenter credentials can be entered as a fully qualified domain name or IP address. Specify the vCenter server in the same way when you install the plug-in.</p> <ul style="list-style-type: none"> <li>■ Policies of type <b>VMware</b>, with the <b>Post events to vCenter</b> option set to <b>All Events</b>.</li> </ul> <p>The <i>NetBackup for VMware Administrator's Guide</i> explains how to set up VMware policies.</p>
Set the time zone of the NetBackup master server host to UTC.	See <a href="#">"Setting the time zone of the NetBackup master server host to UTC"</a> on page 87.

[Table 2-3](#) lists the steps for installing the NetBackup plug-in. See the reference topic in the table for details on each step.

**Table 2-3** Installing the plug-in

Step	Description	Reference topic
1	Install the plug-in for vSphere Web Client.	See <a href="#">"Installing the NetBackup plug-in for vSphere Web Client"</a> on page 16.
2	Set vCenter privileges for backup monitoring.	See <a href="#">"Setting vCenter privileges for backup monitoring"</a> on page 43.

The steps for setting up the NetBackup plug-in's Recovery Wizard are described in another topic:

See ["Configuration overview for the NetBackup Recovery and Instant Recovery Wizards"](#) on page 27.

---

**Note:** The Recovery Wizard and the Instant Recovery Wizard are not required for monitoring virtual machine backups.

---

## Using consistent vCenter naming with the NetBackup plug-in for vSphere Web Client

The name of the vCenter server must be identical in the following locations:

- In the NetBackup credentials.
- In the NetBackup plug-in installation.
- In the vCenter server installation.

### To set consistent vCenter naming

- ◆ If the fully qualified name of the vCenter server was not used during installation of the vCenter, do the following in vSphere Client:
  - Click **View > Administration > Server Settings**.
  - Click **Advanced Settings**.
  - Set the `virtualCenter.VimApiUrl` key to the fully qualified domain name.

---

**Note:** If the vCenter server name is not entered correctly, the plug-in may not be able to access one or more of the virtual machine images. Renaming the vCenter server is currently not supported for vCenter version 6.0.

---

## Installing the NetBackup plug-in for vSphere Web Client

This topic describes how to obtain the installation media and install the NetBackup plug-in for vSphere Web Client.

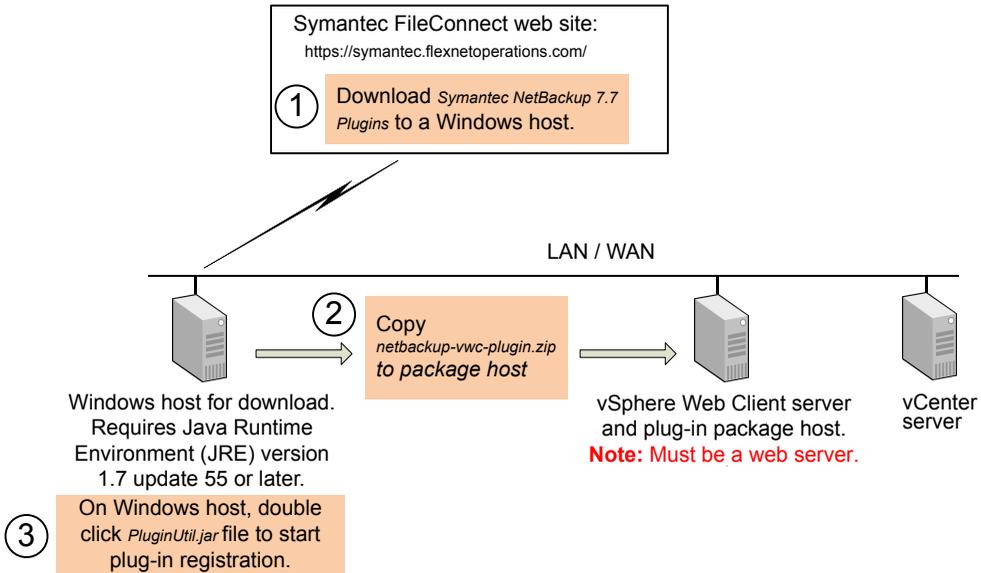
The following is a brief list of the installation requirements:

- The plug-in installation media (Symantec NetBackup 7.7 Plugins folder). A plug-in package (`netbackup-vwc-plugin.zip`) is included in the installation media.
- A Windows host on which to download the installation media.
- A plug-in package host (web server) on which to copy the plug-in package (`netbackup-vwc-plugin.zip`).

**Important!** The plug-in package host must be a web server.

Figure 2-1 shows the steps and components for installation.

**Figure 2-1** Simplified view of plug-in installation



For complete instructions, see **To install the NetBackup plug-in for vSphere Web Client** in this topic.

Table 2-4 describes the installation requirements in more detail.

**Table 2-4** NetBackup plug-in download location and installation requirements

Requirement	Notes
NetBackup plug-in media	You can download the plug-in installation media from the following location: <a href="https://symantec.flexnetoperations.com">https://symantec.flexnetoperations.com</a>
Windows host	Download the plug-in media to a Windows host. <b>Note:</b> The Windows host must have network connectivity to the vCenter server and to the vSphere Web Client server. <b>Note:</b> The Java Runtime Environment (JRE) version 1.7 update 55 or later must be installed on the Windows host.

**Table 2-4** NetBackup plug-in download location and installation requirements  
*(continued)*

Requirement	Notes
Plug-in package host web server and its URL	<p>The downloaded plug-in media contains a plug-in package folder. Use the procedure in this topic to copy the plug-in package to this package host, which must be a web server. The package host can be a separate web server or the vSphere Web Client server.</p> <p><b>Note:</b> The URL of the plug-in package host is required during plug-in installation.</p>
vSphere Web Client server(s)	<p>When the plug-in is installed, it runs on the vSphere Web Client server.</p> <p><b>Note:</b> If the plug-in package host is not the vSphere Web Client server, the vSphere Web Client server must have access to the package host.</p> <p><b>Note:</b> The vSphere Web Client server can manage multiple vCenter servers, and multiple vSphere Web Client servers can manage the same vCenter server.</p>
vCenter server(s) and their credentials	<p>The plug-in monitors backups of virtual machines that VMware vCenter servers manage.</p> <p>The vCenter server must be at vCenter version 5.5 or later.</p> <p>The following are required to complete the plug-in installation:</p> <ul style="list-style-type: none"> <li>■ Host name or IP address of each vCenter server.</li> <li>■ User name and password of each vCenter server.</li> <li>■ Port number for each vCenter server (default is 443).</li> </ul>

**Note:** Installing the NetBackup plug-in for vSphere Web Client does not uninstall the original NetBackup 7.6 or 7.6.1 plug-in for vCenter. The older plug-in continues to exist separately from the new one. You can uninstall the original plug-in as explained in the *NetBackup Plug-in for VMware vCenter Guide*:

<http://www.symantec.com/docs/DOC6288>

### To install the NetBackup plug-in for vSphere Web Client

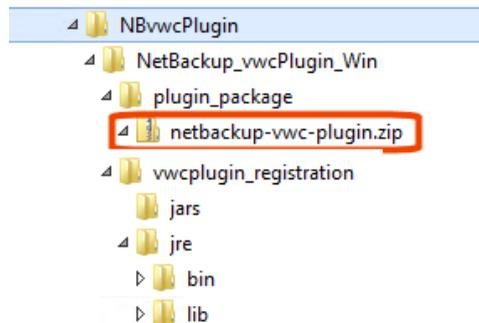
- 1 In your NetBackup product entitlement letter, locate your serial number for software downloads.
- 2 Go to the FileConnect webpage and enter your serial number:  
<https://symantec.flexnetoperations.com>
- 3 From FileConnect, download the Symantec NetBackup 7.7 Plugins folder to a Windows host.

---

**Note:** The Windows host must have network access to the vCenter server and to the vSphere Web Client server.

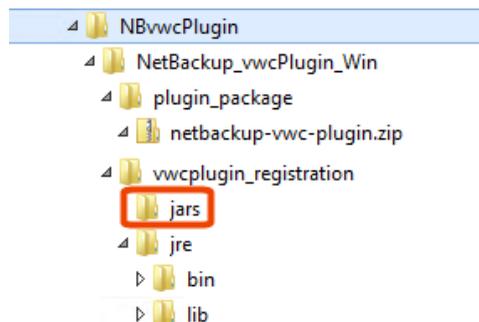
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- 4 In the downloaded plug-in folders, locate the `netbackup-vwc-plugin.zip` folder. Copy that folder to the plug-in package host web server.



The vSphere Web Client server can be the plug-in package host.

- 5 On the Windows host, in the downloaded plug-in folders, locate the `\vwcplugin_registration\jars` folder:



- 6 In the `\jars` folder, double click the `PluginUtil.jar` file.

---

**Note:** The Java Runtime Environment (JRE) must be installed on the Windows host.

---

Double-clicking this `.jar` file starts the registration process on the vCenter server.

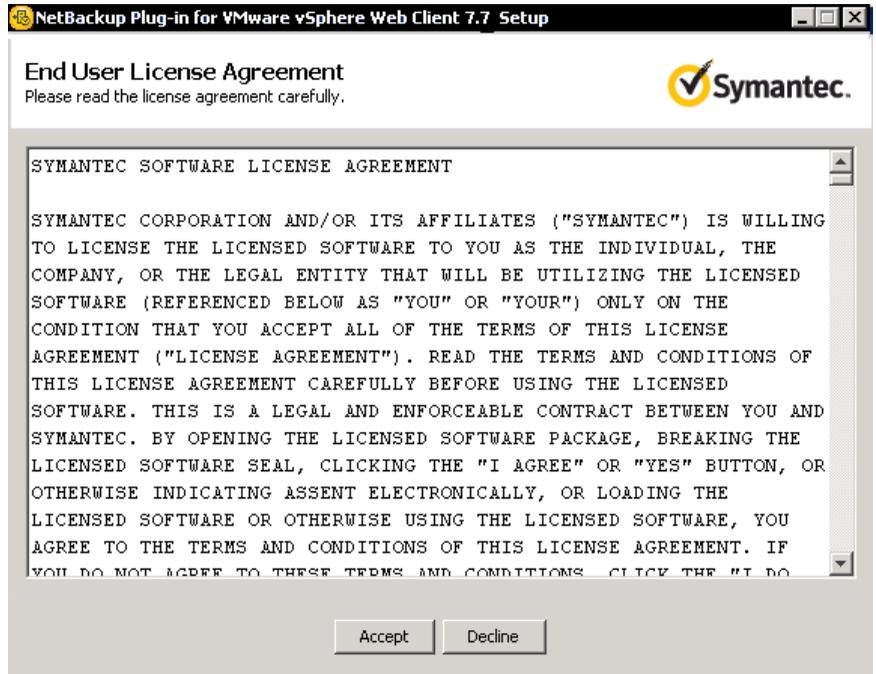
- 7 Follow the prompts to register the plug-in.

---

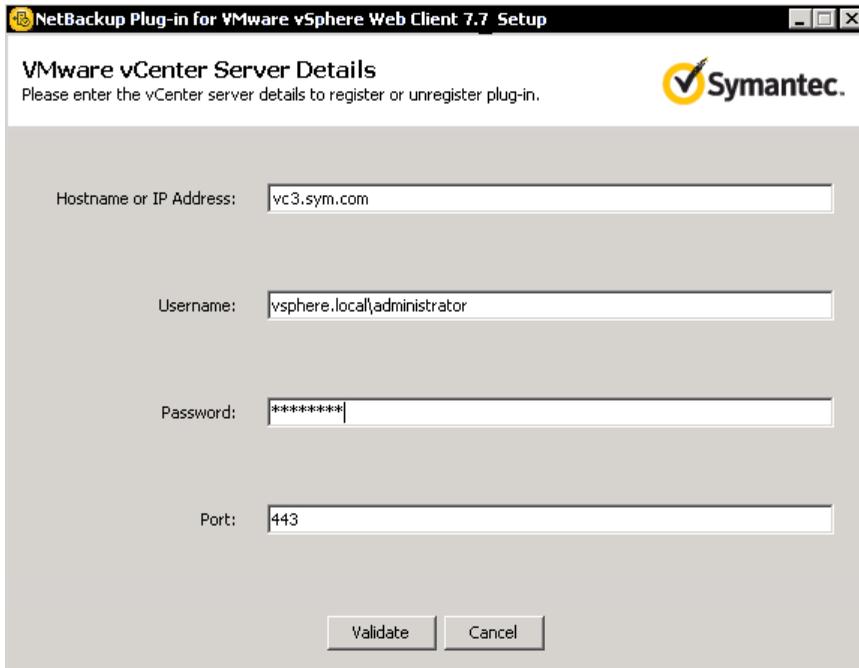
**Note:** The Windows host must have network access to the vCenter server and to the vSphere Web Client server.

---

Registration begins with the End User License Agreement (click **Accept**):



In the next screen, enter the vCenter server host name (or URL) and credentials, and click **Validate**:



**NetBackup Plug-in for VMware vSphere Web Client 7.7 Setup**

**VMware vCenter Server Details**  
Please enter the vCenter server details to register or unregister plug-in.

Hostname or IP Address:

Username:

Password:

Port:

The registration utility connects to the vCenter server and determines whether the plug-in is registered. If the plug-in is not registered, the following dialog appears:



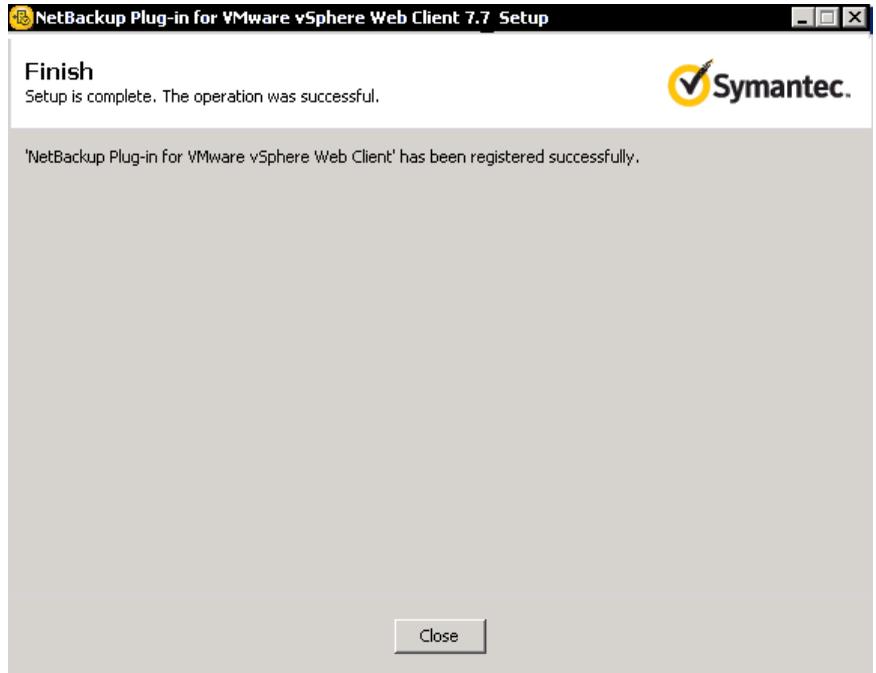
Enter the URL of the plug-in package host and click **Register**. The `netbackup-vwc-plugin.zip` folder was copied to this host at step 4.

- 8 Log in to a vSphere Web Client server that manages the vCenter server where you registered the plug-in.

When you log in, the vSphere Web Client server asks vCenter for a list of the registered plug-ins. The vSphere Web Client server also determines whether it has the plug-in binaries.

- If the vSphere Web Client server has the plug-in binaries, it automatically installs the plug-in and the login process continues.
- If the vSphere Web Client server does not have the plug-in binaries, it asks the vCenter for the location of the plug-in package. The vSphere Web Client server automatically downloads the plug-in package from the package host, unzips the package, and installs it.

Then the vSphere Web Client server displays the following:



- 9 To register the plug-in with another vCenter, repeat steps [7](#) and [8](#).

---

**Note:** The vSphere Web Client server where the plug-in is installed can manage multiple vCenter servers. The plug-in must be registered with each vCenter server that you want to monitor with the plug-in.

---

## Installing the NetBackup plug-in for vSphere Web Client on an additional vSphere Web Client server

Use the following procedure to install the NetBackup plug-in on an additional vSphere Web Client server that manages the vCenter where the plug-in was registered. Note that no new registration to the vCenter server is required.

If the plug-in is not registered, see the following topic for instructions on registering and installing the plug-in:

See ["Installing the NetBackup plug-in for vSphere Web Client"](#) on page 16.

### To install the NetBackup plug-in on an additional vSphere Web Client server

- ◆ Log in to the vSphere Web Client server on which you want to install the plug-in. When you log in, the vSphere Web Client server asks vCenter for a list of the registered plug-ins. The vSphere Web Client server also determines whether it has the plug-in binaries.
  - If the vSphere Web Client server has the plug-in binaries, it automatically installs the plug-in and the login process continues.
  - If the vSphere Web Client server does not have the plug-in binaries, it asks the vCenter for the location of the plug-in package. The vSphere Web Client server automatically downloads the plug-in package from the package host, unzips the package, and installs it.

For a description of first-time plug-in installation and requirements (including the package host):

See [“Installing the NetBackup plug-in for vSphere Web Client”](#) on page 16.

## Registering the NetBackup plug-in for vSphere Web Client with additional vCenter servers

You can register the plug-in with multiple vCenter servers. The plug-in can then monitor and restore backups of the VMs that reside on all the vCenter servers.

---

**Note:** The plug-in must be registered with each vCenter server that you want to monitor with the plug-in.

---

---

**Note:** The Windows host (where the plug-in installation media was downloaded) must have network access to each vCenter server and to the vSphere Web Client server.

---

### To register the plug-in with another vCenter server

- ◆ In the following topic, refer to the installation requirements and steps 7 and 8:  
See [“Installing the NetBackup plug-in for vSphere Web Client”](#) on page 16.

## Un-registering the NetBackup plug-in for vSphere Web Client

Unregister the NetBackup plug-in for vSphere Web Client using a utility that is provided as part of the shipped executables.

### To unregister the NetBackup VMware plug-in from vSphere Web Client

- 1 Access the executable file at **NBvwcPlugin\NetBackup\_vwcPlugin\_Win\vwcpplugin\_registration\jars** to launch the user interface for un-registering the plug-in.
- 2 Enter VMware vCenter Server details and click **Validate**.
- 3 Click **Unregister** to un-register the plug-in from the vSphere Web Client.
- 4 Click **Unregister** and confirm the action using the pop-up message.

To manually uninstall the plug-in, refer to the *NetBackup Plug-in for VMware vCenter Guide*:

<http://www.symantec.com/docs/DOC6288>

## Upgrading the NetBackup plug-in for vSphere Web Client

Upgrade the NetBackup plug-in for vSphere Web Client using a utility that is provided as part of the shipped executables.

### To upgrade the NetBackup VMware plug-in from an earlier version

- 1 On the Windows host, locate the `NBvwcPlugin\NetBackup_vwcPlugin_Win\vwcpplugin_registration\jars` folder:  
  
In the `\jars` folder, double click the `PluginUtil.jar` file.
- 2 Enter VMware vCenter Server details and click **Validate**.
- 3 Click **Upgrade** to continue with the upgrading to the preferred version of the plug-in.
- 4 Enter the path or URL where the plug-in package is hosted and click **Upgrade**.

# Disabling the NetBackup plug-in for vSphere Web Client

You can disable the NetBackup plug-in without uninstalling it.

## To disable the NetBackup plug-in for vSphere Web Client

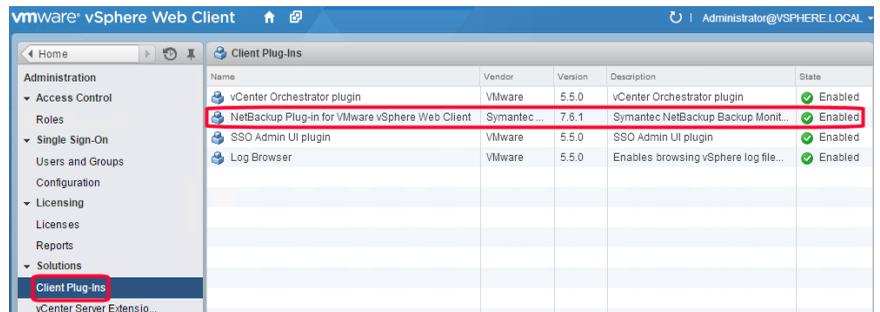
- 1 Log in to the vSphere Web Client console with the Single Sign On administrator user name.

The default user name is `vsphere.local\administrator`.

For the password, contact the vSphere administrator.

- 2 Click **Administration** and then click **Solutions > Client Plug-Ins**.

The installed plug-ins appear as shown in the following image.



- 3 Right-click on the NetBackup plug-in and disable it.

## Configuration overview for the NetBackup Recovery and Instant Recovery Wizards

---

**Note:** Using the NetBackup Recovery and Instant Recovery Wizards is optional feature of the NetBackup plug-in for vSphere Web Client. The wizards provide a navigated way for recovering virtual machines. It is not required for monitoring virtual machine backups.

---

To use the NetBackup Recovery and Instant Recovery Wizards to restore virtual machines, configure the following:

**Table 2-5**      Configuring the NetBackup Recovery Wizard

Step	Description	Reference topic
1	Enable the NetBackup Web Services on the master server.	See <a href="#">“Enabling NetBackup Web Services on the Windows master server”</a> on page 28.  See <a href="#">“Enabling NetBackup Web Services on the UNIX or Linux master server”</a> on page 31.
2	Configure ports for the NetBackup Web Services.	See <a href="#">“Configuring ports for the NetBackup Web Services”</a> on page 32.
3	Create an authentication token file.	See <a href="#">“Creating an authentication token for the NetBackup plug-in for vSphere Web Client”</a> on page 35.
4	Authorize the plug-in to restore virtual machines.	See <a href="#">“Authorizing the NetBackup plug-in to restore virtual machines”</a> on page 38.
5	Set the required vCenter privileges.	See <a href="#">“Setting vCenter privileges for recovering virtual machines”</a> on page 40.

## Enabling NetBackup Web Services on the Windows master server

By default, the NetBackup Web Services are disabled on the master server. To allow the NetBackup plug-in for vSphere Web Client to communicate with the master server, the NetBackup administrator must enable the NetBackup Web Services.

**Table 2-6**      To enable the NetBackup Web Services on the Windows master server

Step	Description	Reference topic
1	Create a group <code>nbwebgrp</code> and a user <code>nbwebsvc</code> .	See <a href="#">“To create group <code>nbwebgrp</code> and user <code>nbwebsvc</code>”</a> on page 29.
2	If the NetBackup master server is a server in an MSCS cluster, verify the domain user configuration.	See <a href="#">“To verify the domain user configuration if the NetBackup master server is in an MSCS cluster”</a> on page 29.
3	Grant the <b>Log On As Service</b> right.	See <a href="#">“To grant the <code>Log On As Service</code> right”</a> on page 29.
4	Set up the NetBackup Web Services on each master server that the plug-in must access to perform restores.	See <a href="#">“To set up NetBackup Web Services”</a> on page 30.

**To create group `nbwebgrp` and user `nbwebsvc`**

- ◆ On the master server, check whether the `nbwebgrp` group contains the `nbwebsvc` user.

If the user and group do not exist, create them.

`nbwebsvc` and `nbwebgrp` can be local user and local group or domain user and domain group. They can be an Active Directory user and group.

---

**Note:** A combination of local user and domain group or domain user and local group is not supported. Both `nbwebsvc` and `nbwebgrp` must be local, or both must be part of the same domain.

---

---

**Caution:** For security reasons, it is highly recommended to create this user with a strong password and disable remote login for this user.

---

**To verify the domain user configuration if the NetBackup master server is in an MSCS cluster**

- 1 In **Active Directory Users and Computers**, click the **Users** folder under your domain controller.
- 2 Double-click the `nbwebsvc` user.
- 3 On the **nbwebsvc Properties** dialog, click the **Member Of** tab. It should contain the following records:

Domain Users

`nbwebgrp`

By default, `nbwebgrp` is set as the primary group.

- 4 Select the `Domain Users` record and click **Set Primary Group**.  
Make sure that `Domain Users` is set as the primary group: the **Set Primary Group** button should be grayed out.
- 5 Click **OK**.

The NetBackup web management console should now start correctly when you run `setupWmc.bat` in the next procedure.

**To grant the `Log On As Service` right**

- 1 Go to **Control Panel > Administrative Tools > Local Security Policy**.
- 2 Under **Security Settings**, click **Local Policies** and then **User Rights Assignment**.

**3 Right click **Log on as a service** and select **Properties**.**

Add the `nbwebsvc` user. For a domain user, include the appropriate domain.

**4 Save your changes and close the **Log on as a service Properties** dialog.**

Now you can start the WMC service from the Windows Services tool or by means of the `setupWmc` script. In a clustered environment, you must start the WMC service on all nodes.

**To set up NetBackup Web Services**

**1 Run the `setupWmc` script on the master server:**

- If the master server is not in a clustered environment:

```
install_path\NetBackup\wmc\bin\install\setupWmc.bat
```

When you are prompted, enter the password for the local user `nbwebsvc`.

- If the master server is in a clustered environment:

```
install_path\NetBackup\wmc\bin\install\setupWmc.bat -domain  
domain_name
```

The `domain_name` is for the domain that contains group `nbwebgrp` and user `nbwebsvc`.

When you are prompted, enter the password for the user `nbwebsvc`.

**Note:** If `setupWmc.bat` fails to start the NetBackup Web Services, a message is displayed. The following log file contains further details:

```
install_path\NetBackup\wmc\webserver\logs\nbwmc_setupWmc.log
```

Enter the following for help with this command:

```
setupWmc.bat -help
```

**2 To make sure the NetBackup Web Services are enabled, go to the following location in a web browser:**

```
https://<server>:<port>/nbwebservice/application.wadl
```

Where:

- `server` is the host name or IP address of the master server, or the virtual name or IP address for clustered environments.
- `port` is the port number.

To find the port that NetBackup Web Services uses, enter the following on the NetBackup master server:

```
install_path\NetBackup\wmc\bin\install>configurePorts.bat  
-status
```

The HTTP 401 error indicates that the NetBackup Web Services are enabled.

## Enabling NetBackup Web Services on the UNIX or Linux master server

By default, the NetBackup Web Services are disabled on the master server. To allow the NetBackup plug-in for vSphere Web Client to communicate with the master server, the NetBackup administrator must enable the NetBackup Web Services.

**Table 2-7** To enable the NetBackup Web Services on the UNIX or Linux master server

Step	Description	Reference topic
1	Create a group <code>nbwebgrp</code> and a user <code>nbwebsvc</code> .	See <a href="#">“To create group <code>nbwebgrp</code> and user <code>nbwebsvc</code>”</a> on page 31.
2	Set up the NetBackup Web Services on each master server that the plug-in must access to perform restores.	See <a href="#">“To set up NetBackup Web Services”</a> on page 32.

### To create group `nbwebgrp` and user `nbwebsvc`

- ◆ On the master server, check whether the `nbwebgrp` group contains the `nbwebsvc` user.

To create the `nbwebgrp` group, enter the following:

```
/usr/opensv/netbackup/bin # groupadd nbwebgrp
```

To create the `nbwebsvc` user, enter the following:

```
/usr/opensv/netbackup/bin # useradd -g nbwebgrp -c 'NetBackup Web Services application account' -d /usr/opensv/wmc nbwebsvc
```

Enter the command with the values as shown. The `-c` option specifies the password file comment, and `-d` specifies the user's home directory as

```
/usr/opensv/wmc.
```

---

**Note:** Symantec recommends default permissions (`UMASK`) for the `nbwebsvc` user. NetBackup assigns appropriate permissions to this user when it enables NetBackup Web Services.

---

### To set up NetBackup Web Services

- 1 Run the `setupWmc` script on the master server:

```
/usr/opensv/wmc/bin/install/setupWmc
```

Enter the following for help with this command:

```
setupWmc -help
```

- 2 To make sure the NetBackup Web Services are enabled, go to the following location in a web browser:

```
https://<server>:<port>/nbwebservice/application.wadl
```

Where:

- `server` is the host name or IP address of the master server, or the virtual name or IP address for clustered environments.
- `port` is the port number.  
To find the port that NetBackup Web Services uses, enter the following on the NetBackup master server:

```
/usr/opensv/wmc/bin/install/configurePorts -status
```

The HTTP 401 error indicates that the NetBackup Web Services are enabled.

## Configuring ports for the NetBackup Web Services

The NetBackup Recovery Wizard requires the proper configuration of web ports for the NetBackup Web Services on the master server. Otherwise, you cannot authorize the NetBackup plug-in for vSphere Web Client to restore the virtual machines that were backed up by that master server.

The NetBackup installation process automatically runs the `configurePorts` script to configure NetBackup Web Services to run on any of the following sets of ports.

**Table 2-8** Port sets for NetBackup Web Services

Port set	HTTP port	HTTPS port	shutdown port
First set	8080	8443	8205
Second set	8181	8553	8305
Third set	8282	8663	8405

If the `configurePorts` script does not find one of the sets free (for example, 8080, 8443, and 8205), it logs an error to the following file:

Windows:

```
install_path\NetBackup\wmc\webserver\logs\nbwmc_configurePorts.log
```

**UNIX and Linux:**

```
/usr/openv/wmc/webserver/logs/nbwmc_configurePorts.log
```

On UNIX and Linux, the following appears on the NetBackup system console:

```
configurePorts: WmcPortsUpdater failed with exit status <status_code>
```

When this error occurs, use the following procedure on the master server to manually configure the ports. The `configurePorts` command is in the following location:

**Windows:**

```
install_path\NetBackup\wmc\bin\install\configurePorts
```

**UNIX or Linux:**

```
/usr/openv/wmc/bin/install/configurePorts
```

### To configure ports for the NetBackup Web Services

- 1 On the master server, enter the following to list the currently configured ports:

```
configurePorts -status
```

Example output:

```
Current Http Port: 8080
Current Https Port: 8443
Current Shutdown Port: 8205
```

- 2 Use the `configurePorts` command in the following format to re-configure a port:

```
configurePorts -httpPort http_port | -httpsPort https_port |
-shutdownPort shutdown_port
```

You can configure one, two, or three ports at a time. For example, to configure the HTTP port to 8181 and the HTTPS port to 8553:

```
configurePorts -httpPort 8181 -httpsPort 8553
```

Output:

```
Old Http Port: 8080
New Http Port: 8181
Old Https Port: 8443
New Https Port: 8553
```

Use this command as needed to configure a set of ports for HTTP, HTTPS, and shutdown.

See [Table 2-8](#) for a list of the port sets.

- 3 If the master server is in a clustered environment, do the following:
  - Make sure that the same set of ports are free on all the cluster nodes: Do step 1 on each node.
  - Reconfigure the ports on each node as required: Do step 2.
  - To override the ports that are used across all nodes, enter the following:

```
configurePorts -overrideCluster true
```

This command updates the following file on shared disk:

Windows:

```
install_path/NetBackup/var/global/wsl/portfile
```

UNIX or Linux:

```
/usr/opensv/netbackup/var/global/wsl/portfile
```

The NetBackup installer for `Web Services` uses this file during installation in a clustered mode.

## Creating an authentication token for the NetBackup plug-in for vSphere Web Client

To allow the plug-in to restore VMs, you must generate an authentication token on the NetBackup master server (or the NetBackup appliance as master server).

### To create an authentication token on the NetBackup master server

- 1 Enter the following on the master server:

#### Windows

```
install_path\NetBackup\wmc\bin\install\manageClientCerts.bat  
-create vSphere_Web_Client_server
```

#### UNIX, Linux

```
/usr/openv/wmc/bin/install ./manageClientCerts -create  
vSphere_Web_Client_server
```

where `vSphere_Web_Client_server` is the fully qualified domain name of the vSphere Web Client server where the plug-in is installed.

The `manageClientCerts` command returns the location of a compressed file that contains the authentication token.

---

**Note:** For Windows vCenter servers: Do not create or rename the authentication token file using any characters such as an asterisk (\*) that violate the Windows file and directory naming conventions. If the name of the token file contains any reserved Windows characters, the plug-in cannot be authorized to restore VMs from the master server's backups. For more details on Windows naming conventions, see the Microsoft article [Naming Files, Paths, and Namespaces](#).

---

- 2 Provide the compressed file to the vCenter administrator.

---

**Caution:** Be sure to share or send the compressed file in a secure manner.

---

With the master server token, the plug-in can be authorized to restore virtual machines.

See “[Authorizing the NetBackup plug-in to restore virtual machines](#)” on page 38.

**To create an authentication token on the NetBackup appliance as master server**

- 1 Use the CLISH on the appliance to enter the vCenter Client Administration view:**

```
nbapp213.Manage> vCenter
```

The following appears:

```
Entering vCenter Client Administration view...
```

```
Credential  Manage vCenter client credential
Exit        Logout and exit from the current shell.
Return      Return to the previous menu.
Shell       Shell operations.
```

- 2 Enter the following:**

```
nbapp213.vCenter> Credential Create vSphere_Web_Client_server
```

where *vSphere\_Web\_Client\_server* is the fully qualified domain name of the vSphere Web Client server where the plug-in is installed. The following is example output:

```
Successfully created client certificate for 'vCent_1' to secure
access to the NetBackup Web Service Layer on Master Server
'nb-appliance', port '8443'.
```

In this example, the compressed file is created at:

```
/usr/openv/var/global/wsl/credentials/clients/vCent_1.zip
```

- 3 Provide the compressed file to the vCenter administrator.**

---

**Caution:** Be sure to share or send the compressed file in a secure manner.

---

With the master server token, the plug-in can be authorized to restore virtual machines.

See “[Authorizing the NetBackup plug-in to restore virtual machines](#)” on page 38.

## Revoking an authorization token

You can delete or revoke a master server authentication token for the NetBackup plug-in for vSphere Web Client, as follows.

**To revoke the authentication token**

- 1 Enter the following on the master server:

**Windows**

```
install_path\NetBackup\wmc\bin\install\manageClientCerts.bat
-delete vCenter_plugin_host
```

**UNIX, Linux**

```
/usr/openv/wmc/bin/install ./manageClientCerts -delete
vCenter_plugin_host
```

where *vCenter\_plugin\_host* is the fully qualified domain name of the vCenter in which the plug-in is installed.

The `-delete` option removes the authentication token and its compressed file from the master server. The plug-in is no longer authorized to restore virtual machines from the backups that this master server made.

- 2 To re-authorize the plug-in for restores for this master server, create a new token and if necessary re-add the master server in vSphere Web Client.

See [“Creating an authentication token for the NetBackup plug-in for vSphere Web Client”](#) on page 35.

See [“Authorizing the NetBackup plug-in to restore virtual machines”](#) on page 38.

## Listing all current authentication tokens

You can list all the master server authentication tokens that are presently in use.

**To list all current authentication tokens**

- ◆ Enter the following on the master server:

**Windows**

```
install_path\NetBackup\wmc\bin\install\manageClientCerts.bat -list
```

**UNIX, Linux**

```
/usr/openv/wmc/bin/install ./manageClientCerts -list
```

**Sample output:**

Client	Expiry Date
vCenter-server-1	Thu Feb 06 16:16:51 GMT+05:30 2014
vCenter-server-2	Fri Feb 07 11:22:53 GMT+05:30 2014

The command lists the vCenter servers for which the tokens were created as well as their expiration dates. It can help diagnose communication problems between the plug-in host and the master server when a certificate has expired.

- For well-formatted output, set the command prompt or shell screen size to more than 100 units.
- Server names that are longer than 40 characters are truncated. Characters beyond the first 40 are replaced with "...".

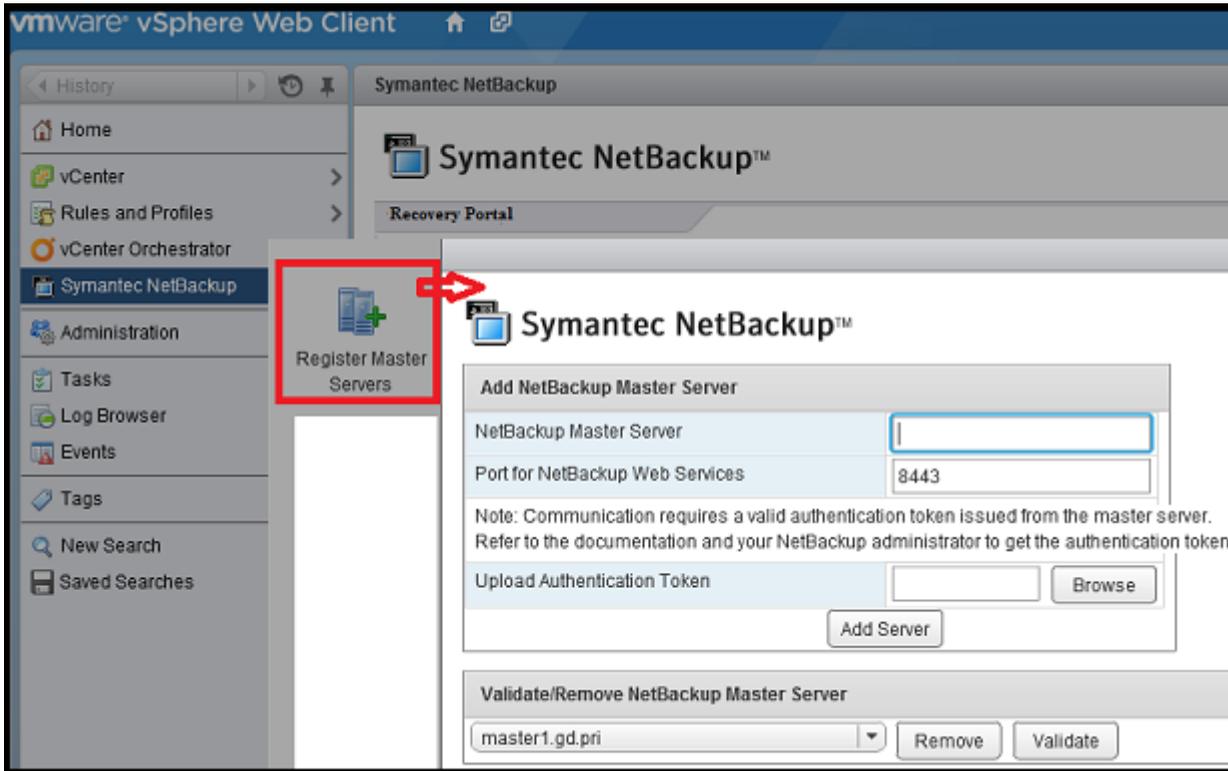
## Authorizing the NetBackup plug-in to restore virtual machines

The NetBackup master server initiates and controls the backup of virtual machines. To use the plug-in to restore virtual machines, you must obtain a master server authentication token from the NetBackup administrator. You can then authorize the plug-in to restore the virtual machines that were backed up by that master server.

### To authorize the plug-in to restore virtual machines

- 1 Ask the NetBackup administrator to provide an authentication token file.  
See ["Creating an authentication token for the NetBackup plug-in for vSphere Web Client"](#) on page 35.
- 2 Copy the authentication token file to the computer or laptop where the vSphere Web Client is launched.  
Make a note of the location.
- 3 In the top level of the vSphere Web Client object navigator, click **Symantec NetBackup**.

4 Click **Register Master Servers**.



5 Enter the following to specify a NetBackup master server and its authentication token.

**Add NetBackup Master Server**

- **NetBackup Master Server**  
Enter the fully qualified domain name of the master server.
- **Port for NetBackup Web Services**  
If the NetBackup administrator has not changed the port, accept the default (8443). Otherwise, ask the administrator for the correct port number.
- **Upload Authentication Token**  
Click **Browse** to select the authentication token file that the NetBackup administrator provided.  
Click **Add Server**. The server is added to the list of master servers that the plug-in can communicate with.

- 6 Add other master servers and their authentication tokens as needed.
- 7 You can also remove a master server from the list of servers, or validate the connection from the plug-in to a master server.

**Validate/Remove NetBackup Master Server** After the master server is added to the list, you can validate the connection. Type or select the master server and click **Validate**.  
Click **Remove** to remove the server from the list. The plug-in is no longer able to monitor or restore the backups that the master server performed.

## Setting vCenter privileges for recovering virtual machines

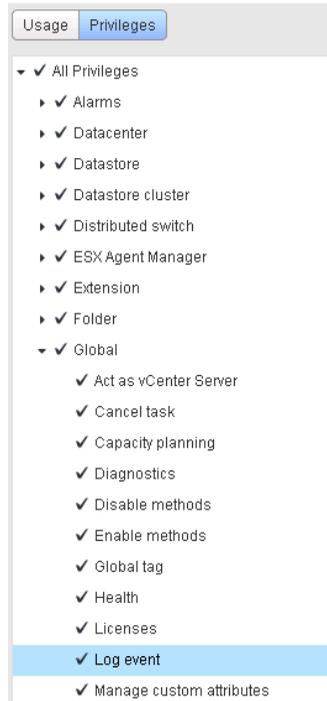
Use the following procedure to set the user privileges in vCenter for the NetBackup Recovery Wizard. Set the privileges on each vCenter where virtual machines may need to be restored.

If the user account to access the plug-in cannot be assigned administrator privileges, you must set the following permissions at the vCenter level.

### To set vCenter privileges for recovering virtual machines

- 1 In vSphere Web Client, click **Home > Roles**.
- 2 Under **Roles**, click **Administrator**.
- 3 Click **Privileges**.

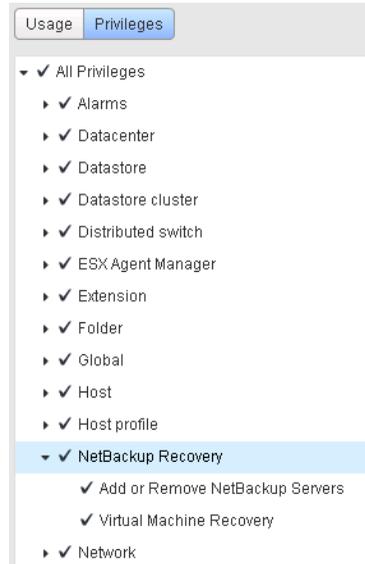
4 Drill into **Global** and make sure **Log Event** is selected.



- 5 Drill into **NetBackup Recovery** and make sure the following are selected:

**Add or Remove NetBackup Servers**

**Virtual Machine Recovery**



- 6 Set the privileges on each vCenter where virtual machines may need to be restored.

---

**Caution:** The NetBackup **Virtual Machine Recovery** privilege grants global recovery authorization. It allows users with that role to recover any virtual machine that resides on that vCenter. Use caution when granting this privilege to users.

---

# Monitoring backup status

This chapter includes the following topics:

- [Setting vCenter privileges for backup monitoring](#)
- [Symantec NetBackup tab in vSphere Web Client](#)
- [Summary display](#)
- [Virtual Machines display](#)
- [Events display](#)
- [Using the Symantec NetBackup tab for backup reporting](#)
- [How to respond to backup status](#)

## Setting vCenter privileges for backup monitoring

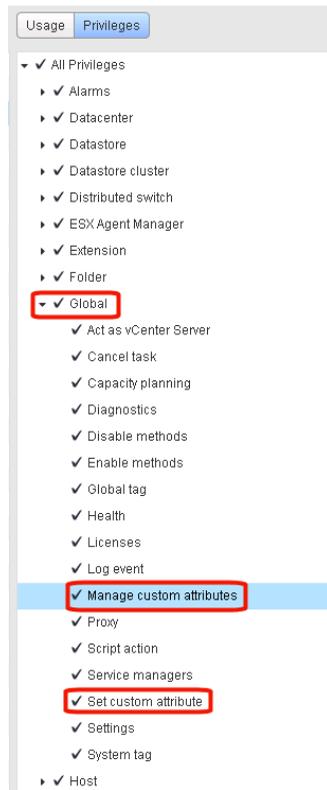
Before you can use the NetBackup plug-in for vSphere Web Client to monitor virtual machine backups, you must set vCenter privileges.

If the user account to access the plug-in cannot be assigned administrator privileges, you must set the following permissions at the vCenter level.

**To set vCenter privileges for backup monitoring**

- 1 In vSphere Web Client, click **Home > Roles**.
- 2 Under **Roles**, click **Administrator**.

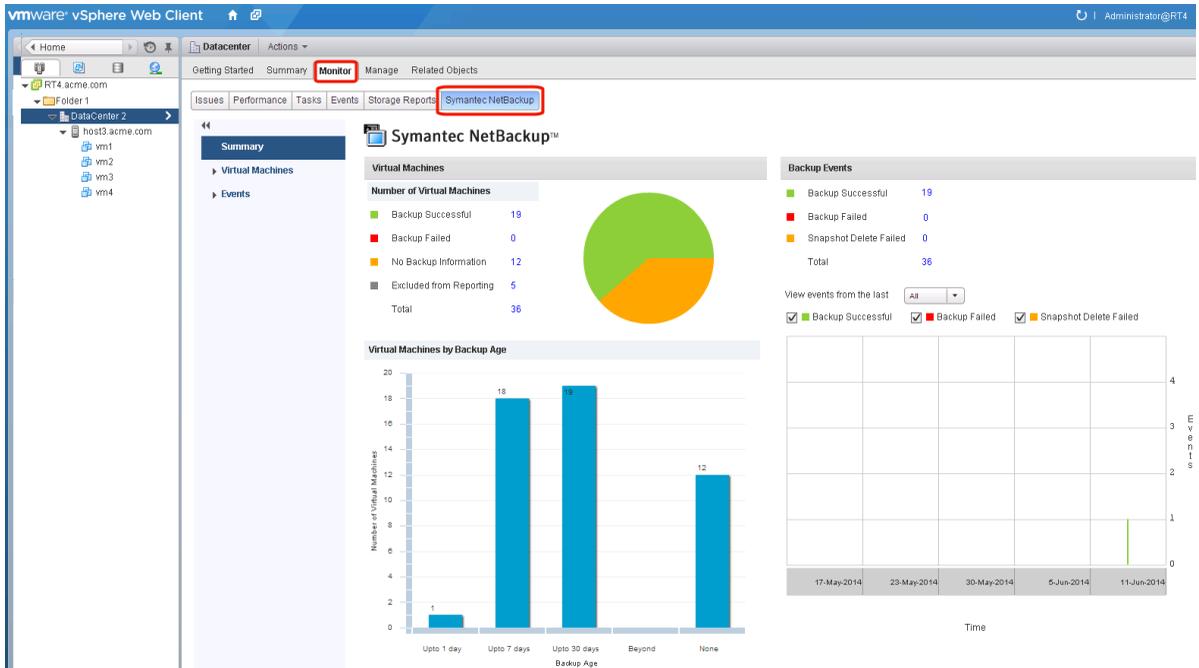
- 3 Click **Privileges**.
- 4 Drill into **Global** and make sure **Manage custom attributes** and **Set custom attribute** are selected.



## Symantec NetBackup tab in vSphere Web Client

The NetBackup plug-in for vSphere Web Client displays backup information on the **Symantec NetBackup** tab.

In the vSphere Web Client, click **Hosts and Clusters > Monitor**. Then select a vSphere object and click **Symantec NetBackup**.



**Note:** Select an object, such as a vCenter, folder, datacenter, or ESXi host. The information that appears in the **Symantec NetBackup** tab applies to the VMs within the object that you select.

Table 3-1 describes the displays that appear on the **Symantec NetBackup** tab.

**Table 3-1** Summary, Virtual Machines, and Events displays (NetBackup plug-in for vSphere Web Client)

Display	Information shown
<b>Summary</b>	<p>A summary and graphical view of backup success and backup events for a specified time period. Can show the current backup status for a selected VM.</p> <p>See “<a href="#">Summary display</a>” on page 46.</p>

**Table 3-1** Summary, Virtual Machines, and Events displays (NetBackup plug-in for vSphere Web Client) (*continued*)

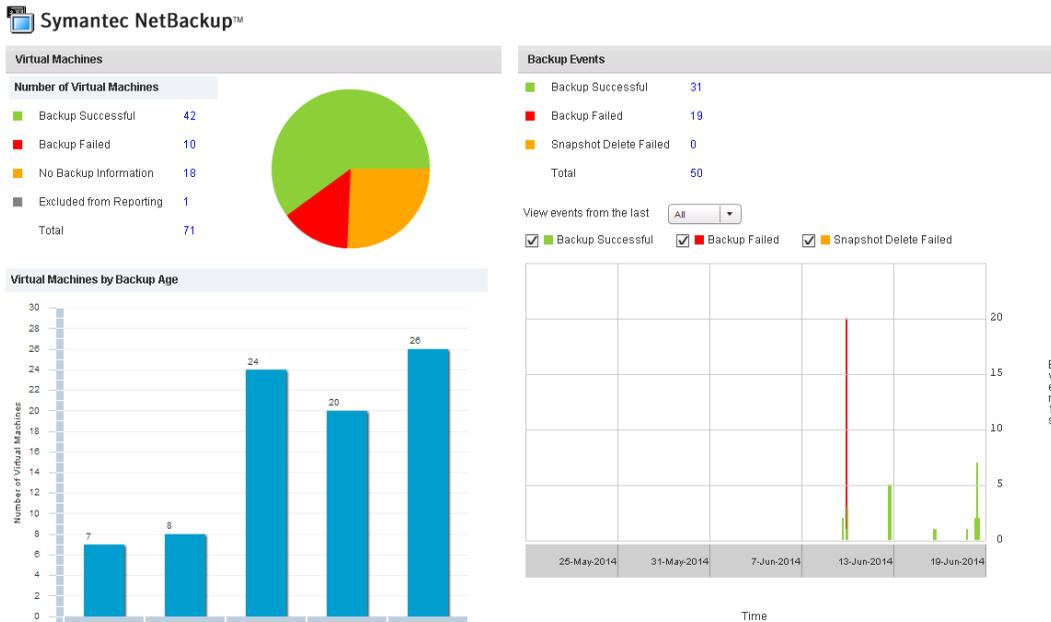
Display	Information shown
<b>Virtual Machines</b>	<p>Tabular view of backup information for a group of VMs.</p> <p><b>Note:</b> This display is available when you click on a vSphere object that is higher than the level of a VM.</p> <p>You can filter the information with a range of criteria. Includes an option for customized sorting in multiple columns.</p> <p>See <a href="#">“Virtual Machines display”</a> on page 48.</p>
<b>Backup Events</b>	<p>More detailed tabular view of backup information based on events. Can show backup events for a VM or its parent object.</p> <p>You can filter the information with a range of criteria. Includes an option for customized sorting in multiple columns.</p> <p>See <a href="#">“Events display”</a> on page 49.</p>

## Summary display

The Summary display summarizes backup status, backup events, and backup age for the VMs in the vSphere object that you select. If you select an individual VM, the Summary display shows backup status and events for that VM.

[Figure 3-1](#) shows an example of the Summary display for multiple VMs.

**Figure 3-1** Summary display with backup data for multiple VMs



The Summary display presents the following backup information.

**Table 3-2** NetBackup Summary display for vSphere Web Client

Panel	Description
<b>Virtual Machine(s)</b>	Shows the current backup status for a particular VM or for all the VMs that belong to the selected vSphere object.  If the vSphere object is higher than the level of a VM, the backup status appears in a color-coded pie chart.  <b>Note:</b> If the panel applies to more than one VM: click on the linked values (such as for <b>Backup Successful</b> or <b>Total</b> ) to see the details in the <b>Virtual Machines</b> display.
<b>Virtual Machines By Backup Age</b>	Shows the backup age of the VMs in a bar chart. This panel is available only for a vSphere object that is higher than the level of a VM.

**Table 3-2** NetBackup Summary display for vSphere Web Client (*continued*)

Panel	Description
<b>Backup Events</b>	<p>Lists the total number of backup events and a breakdown of the events by <b>Backup Successful</b>, <b>Backup Failed</b>, and <b>Snapshot Delete Failed</b>.</p> <p><b>Note:</b> Click on the linked values for <b>Backup Successful</b>, <b>Backup Failed</b>, <b>Snapshot Delete Failed</b>, or <b>Total</b> to see the details in the <b>Events</b> display.</p> <p>Includes a color-coded bar chart that represents the type and number of backup events that occurred within a specified period. Each bar represents the events that occurred on a particular day.</p> <p>You can configure the chart as follows:</p> <ul style="list-style-type: none"> <li>■ Select the types of events that appear in the chart by clicking on the color-coded check boxes.</li> <li>■ Select a different time period from <b>View events from the last</b>.</li> </ul>

## Virtual Machines display

The Virtual Machines display is available when you click on a vSphere object that is higher than the level of a VM. For each VM it lists the following: the VM name, the host or cluster, backup status, last successful backup, backup age, backup policy, master server, and the number of consecutive failures.

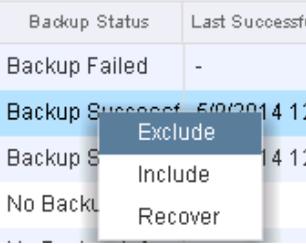
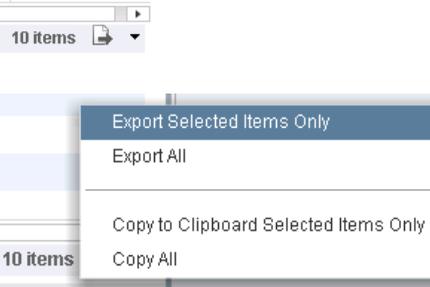
The following is an example of the Virtual Machines display.

**Figure 3-2** Virtual Machines display

Name	Host / Cluster	Backup Status	Last Successful Backup	Backup Age (days)	Policy	Master	Consecutive Failures
TestVM1	Cluster_5.1	Backup Successful	5/12/2014 6:48:11 PM	37	backup_rt	ch53.eng	
TestVM22	Cluster_5.1	Backup Successful	5/19/2014 7:37:08 PM	30	SWD	ch53.eng	
TestVM3	Cluster_5.1	Backup Successful	6/19/2014 4:34:24 PM	0	backup_rt	ch53.eng	
nvm1	Cluster_5.1	Backup Successful	5/13/2014 7:15:14 PM	36	Import	ch53.eng	
chil_testguest_1	Cluster_5.1	Backup Successful	5/13/2014 7:10:53 PM	36	Import	ch53.eng	
chil_testguest_2	Cluster_5.1	Backup Successful	5/13/2014 7:10:22 PM	36	Import	ch53.eng	
NetworkVM3	Cluster_5.1	Backup Successful	5/13/2014 7:10:25 PM	36	Import	ch53.eng	

**Table 3-3** describes the options for using the Virtual Machines display.

**Table 3-3** Display options in the NetBackup Virtual Machines display for vSphere Web Client

Option	Description
	<p>Click in a column header to list the column entries in ascending or descending order.</p> <p>You can also adjust the width of each column.</p>
	<p>Click and hold a column header to drag the column to the left or right in the display.</p>
	<p>Right-click on a row to exclude or include a VM in the display, or to recover a VM.</p> <p><b>Exclude:</b> Marks a selected VM so that its backup status and other information are not displayed.</p> <p><b>Include:</b> Reverses the <b>Exclude</b> option: Adds a VM's backup status and other information to the display.</p> <p><b>Recover:</b> Brings up the <b>Recovery Wizard</b>, to recover the VM.</p>
	<p>Click the drop-down icon in the lower right, to export or copy the rows to a file. To export or copy information on a particular VM, first click on the row of the VM.</p> <p>To save the information to an HTML or comma-separated text (CSV) file, click <b>Export</b>.</p> <p>To save to the Clipboard, click <b>Copy</b>.</p>

## Events display

The Events display shows backup information based on events, such as backup successful, backup failed, and snapshot delete failed. It can show backup events for a single VM or for all VMs in the selected object.

The following is an example of the Events display.

**Figure 3-3** Events display

Virtual Machine	Event Type	Event Time	Policy	Schedule Nam...	Schedule Type	Backup Host	Master	Job Duration	Expiration
TestVM1	Backup Successful	5/12/2014 6:0	P1	Full	Full	zo2.acme.com	zo3.acm	0 hrs 1 min 21	5/26/2014 6:00:15 PM
TestVM1	Backup Successful	5/9/2014 4:43	P1	Diff	Differential	zo2.acme.com	zo3.acm	0 hrs 1 min 18	5/23/2014 4:41:58 PM
TestVM5	Backup Successful	5/9/2014 12:2	backup_rt	Full	Full	ch21.acme.com	ch49.acr	0 hrs 0 min 44	5/23/2014 12:21:58 AM
TestVM25	Backup Failed	5/9/2014 12:2	backup_rt	Full	Full	ch21.acme.com	ch49.acr	0 hrs 5 min 40	5/23/2014 12:16:17 AM
vm9	Backup Successful	5/9/2014 12:1	backup_rt	Full	Full	ch21.acme.com	ch49.acr	0 hrs 5 min 31	5/23/2014 12:10:49 AM
vm20	Backup Successful	5/8/2014 11:0	P1	Full	Full	ch21.acme.com	ch49.acr	0 hrs 5 min 44	5/8/2015 11:00:20 PM

**Table 3-4** Events display

Option	Description
	<p>Click in a column header to list the column entries in ascending or descending order.</p> <p>You can also adjust the width of each column.</p>
	<p>Click and hold a column header to drag the column to the left or right in the display.</p>
<b>Backup Successful</b>	For the selected vSphere object, shows only the VMs that were successfully backed up.
<b>Backup Failed</b>	For the selected vSphere object, shows only the VMs that were not successfully backed up.
<b>Snapshot Delete Failed</b>	<p>For the selected vSphere object, shows only the VMs for which NetBackup failed to delete the snapshot after the backup completed.</p> <p><b>Note:</b> After it creates a snapshot, NetBackup deletes the snapshot when the backup completes. If NetBackup fails to delete snapshots, the performance of the VM may eventually decline. In that case, you may need to delete the snapshots manually.</p>
<b>Recover</b>	<p>To recover a VM, right-click on its row and click <b>Recover</b>.</p> <p>The <b>Recovery Wizard</b> appears.</p>

**Table 3-4** Events display (*continued*)

Option	Description
Export Selected Items Only	Click the drop-down icon in the lower right, to export or copy the rows to a file. To export or copy information on a particular VM, first click on the row of the VM.
Export All	
Copy to Clipboard Selected Items Only	To save the information to an HTML or comma-separated text (CSV) file, click <b>Export</b> . To save to the Clipboard, click <b>Copy</b> .
Copy All	

## Using the Symantec NetBackup tab for backup reporting

The following procedures explain how to find VM backup status in the **Hosts and Clusters > Monitor > Symantec NetBackup** tab.

The information that appears in the **Symantec NetBackup** tab applies only to the vSphere object that you select.

### To find backup status for a single VM

- 1 Select the VM in vSphere Web Client.
- 2 On the **Monitor** tab, click **Symantec NetBackup**.
- 3 Use the **Summary** or **Events** displays to see the backup status.

### To find backup status for multiple VMs

- 1 Select the appropriate object in vSphere Web Client (such as datacenter or ESXi host).

- 2 On the **Monitor** tab, click **Symantec NetBackup**.

The **Summary** display shows the backup success rate for the VMs overall.

See [“Summary display”](#) on page 46.

- 3 For the backup status of particular VMs, click **Virtual Machines** and find the VMs in the **Name** column. Or click **Events** to list all the backup attempts.

You can click on a column header to reorder the entries in that column, or to move or widen the column.

You can use **Filter** to limit the type of information that appears.

Under **Events**, click **Backup Successful**, **Backup Failed**, or **Snapshot Delete Failed** to filter the events by backup status.

See [“Virtual Machines display”](#) on page 48.

See [“Events display”](#) on page 49.

### To determine which VMs are not backed up

- 1 Select the appropriate object in vSphere Web Client (such as datacenter or ESXi host).
- 2 On the **Monitor** tab, click **Symantec NetBackup**.
- 3 Click **Events**, then click **Backup Failed**.
- 4 To save the report, click on the save-file icon in the lower right and select an output type.

### To determine the age of existing backups

- 1 Select the appropriate object in vSphere Web Client (such as datacenter or ESXi host).
- 2 On the **Monitor** tab, click **Symantec NetBackup**.
- 3 Click **Summary**.

**Virtual Machines By Backup Age** shows the age of the backups (up to one day, 7 days, 30 days, and so forth).

- 4 For information on backup age per VM, click **Virtual Machines** and look at the **Backup Age (days)** column.
- 5 To save the report, click on the save-file icon in the lower right and select an output type.

## How to respond to backup status

For the backup status that is reported in the NetBackup plug-in for vSphere Web Client, try the following suggested actions. You may need to confer with the NetBackup administrator.

**Table 3-5** Tips for responding to backup status in the NetBackup plug-in for vSphere Web Client

Status	Action
Backup failures	<ul style="list-style-type: none"><li>■ Look at the number of consecutive failures on the <b>Virtual Machines</b> display.</li><li>■ If too many failures have occurred, export the display results (use the save-file icon in the lower right). Send the file to the NetBackup administrator.</li></ul>
No backup information	<ul style="list-style-type: none"><li>■ The VM may not be included in a NetBackup policy, or the <b>Post events to vCenter</b> policy option may not be correctly configured. Contact the NetBackup administrator.</li><li>■ The VM may be intentionally excluded from scheduled backups (contact the NetBackup administrator). In that case, you can right-click on the VM's row in the <b>Virtual Machines</b> display and click <b>Exclude</b>. The <b>Exclude</b> option removes the VM's status from the display.</li><li>■ The ESXi server may have been removed from the vCenter server. See <a href="#">"Notes on the NetBackup plug-in for vSphere Web Client"</a> on page 10.</li></ul>
Snapshot delete failed	NetBackup attempts to delete old snapshots at the start of each backup. If snapshots are not deleted, you can manually delete them in vSphere Web Client.

# Restoring virtual machines

This chapter includes the following topics:

- [Setting up parameters for the virtual machine recovery](#)
- [Restoring virtual machines with the NetBackup Recovery Wizard](#)
- [Restoring virtual machines with the NetBackup Instant Recovery Wizard](#)
- [How to access the NetBackup Recovery Wizards](#)
- [NetBackup Recovery Wizard screens](#)
- [NetBackup Instant Recovery Wizard screens](#)
- [Cleaning the recovery environment and releasing the NetBackup resources](#)

## Setting up parameters for the virtual machine recovery

Use the **Settings** option to configure the parameters for virtual machine recovery.

To configure the settings for the NetBackup plug-in for vSphere Web Client

- 1 In the top level of the vSphere Web Client object navigator, click **Symantec NetBackup**.
- 2 Click **Settings**.



3 In the **Settings** dialog, enter the parameters as described in the table.

Parameter	Description
Maximum Retention Period for Backup Events	Set the retention period of the vCenter event viz. recovered virtual machines.
Maximum number of instant recovery of VM(s) active at one time per master server	Enter the maximum number of IR jobs that can be run simultaneously for a single NetBackup master server.
<b>Preferred Instant Recovery Destination</b>	Select the destination parameters for instant recovery.
vCenter Server	The destination vCenter server.
Data center or ESX Server	The data center or the ESX server that is registered with the vCenter server.
Resource Pool or vApp	The virtual machine pool or the vApp to be used for the recovery.
Temporary Datastore or Datastore Cluster	The temporary datastore to be used during the recovery process.

- 4 Click **Change** or **Select** to set the parameter.
- 5 Click **Save** to save the selected settings. The **Preferred Instant Recovery Destination** settings are populated during the IR wizard screen **Destination Selection** when you select the **Reset to Preferred Destination** option.

## Restoring virtual machines with the NetBackup Recovery Wizard

Use the **Symantec NetBackup Recovery Wizard** in vSphere Web Client to restore a virtual machine from its NetBackup image. You can restore the virtual machine to its original location or to a different location.

Note the following about the NetBackup Recovery Wizard:

- For the pre-requisites for using the Recovery Wizard:  
See "[Configuration overview for the NetBackup Recovery and Instant Recovery Wizards](#)" on page 27.
- The NetBackup Recovery Wizard is an optional feature of the plug-in. It is not required for monitoring virtual machine backups.
- The NetBackup Recovery Wizard is for recovery of an entire virtual machine, not for recovery of individual files. To recover individual files from the virtual machine backup, use the NetBackup Backup, Archive, and Restore interface or use the Instant Recovery Wizard to boot the machine instantly and access your file.  
See "About restore of individual files" and "Restoring individual files" in the *NetBackup for VMware Administrator's Guide*.
- The Recovery Wizard does not support recovery of vCloud Director backup images. To recover virtual machines into vCloud Director, use the NetBackup Backup, Archive, and Restore interface.  
See the "Use NetBackup for vCloud Director" chapter in the *NetBackup for VMware Administrator's Guide*.
- The Recovery Wizard does not use NetBackup's Instant Recovery feature.

## Restoring virtual machines with the NetBackup Instant Recovery Wizard

Use the Instant Recovery (IR) wizard screens to instantly restore virtual machine backup images using VMware vSphere Web Client user interface. With instant recovery, you can immediately restore a virtual machine into your production

environment. Instant virtual machine recovery helps improve recovery time objectives (RTO) and minimizes disruption and downtime of the production VMs.

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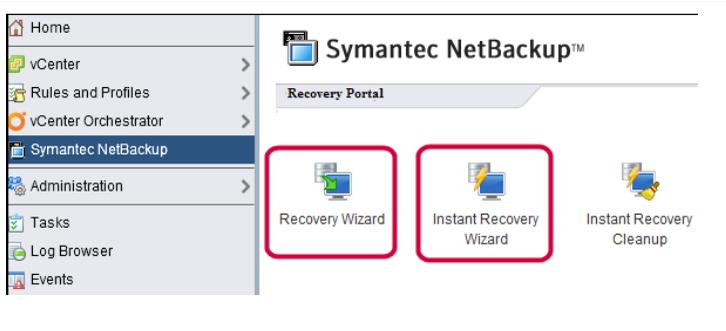
**Note:** You can also perform VM instant recovery using the command line interface with command `nbrestorevm`. For more information, refer to the *Symantec NetBackup for VMWare Administrator's Guide* and *Symantec NetBackup Commands Reference Guide*.

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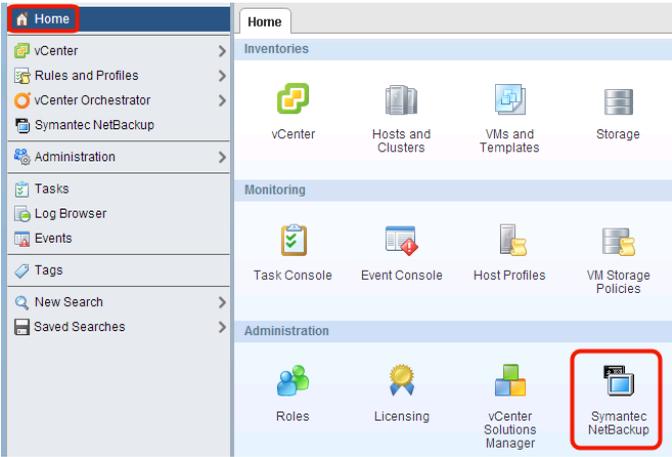
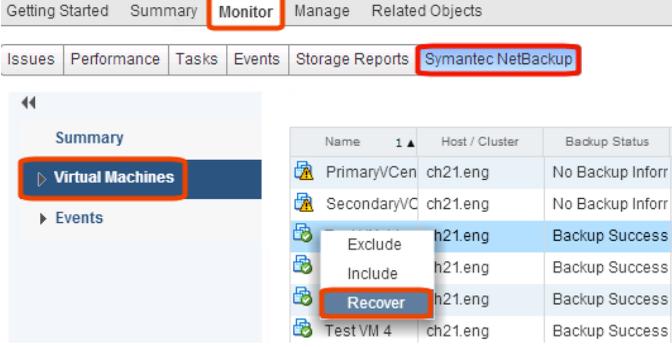
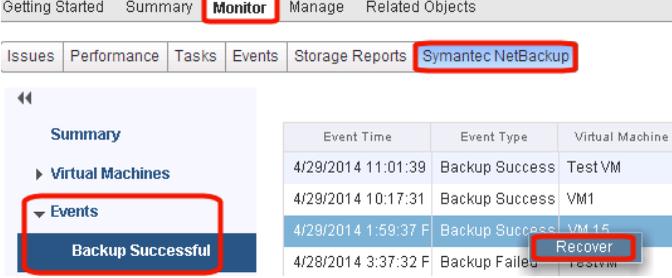
## How to access the NetBackup Recovery Wizards

In vSphere Web Client, you can launch the NetBackup Recovery Wizards as shown in [Table 4-1](#).

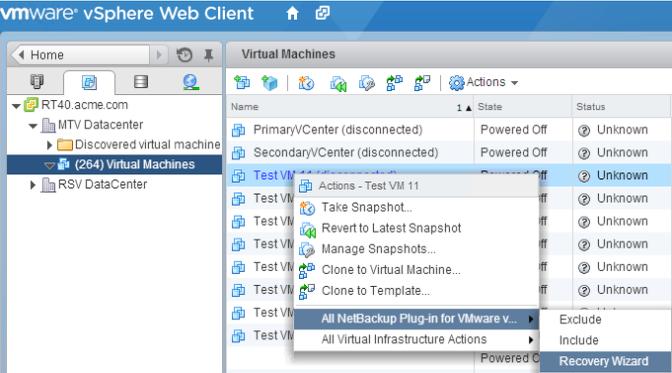
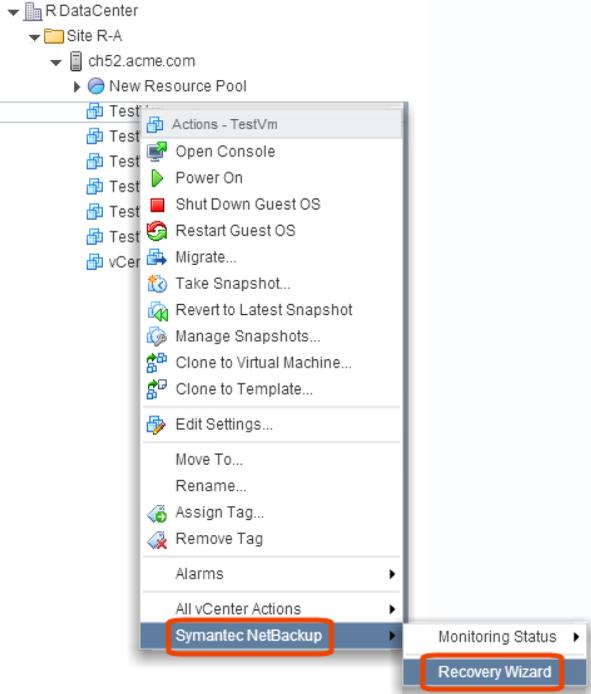
**Table 4-1** How to start the **NetBackup Recovery Wizards** in vSphere Web Client

Action	Description
	<p>In the vSphere Web Client object navigator, click <b>Symantec NetBackup</b>, then click <b>Recovery Wizard</b> or <b>Instant Recovery Wizard</b>.</p> <p><b>Note:</b> <b>Symantec NetBackup Instant Recovery Wizard</b> can only be accessed using this navigation option.</p>

**Table 4-1** How to start the NetBackup Recovery Wizards in vSphere Web Client (*continued*)

Action	Description																					
	<p>In the vSphere Web Client object navigator, click <b>Home</b>, click the <b>Symantec NetBackup</b> icon, and then click <b>Recovery Wizard</b>.</p>																					
 <table border="1" data-bbox="413 1003 799 1223"> <thead> <tr> <th>Name</th> <th>Host / Cluster</th> <th>Backup Status</th> </tr> </thead> <tbody> <tr> <td>PrimaryVCen</td> <td>ch21.eng</td> <td>No Backup Inforr</td> </tr> <tr> <td>SecondaryVC</td> <td>ch21.eng</td> <td>No Backup Inforr</td> </tr> <tr> <td>h21.eng</td> <td>h21.eng</td> <td>Backup Success</td> </tr> <tr> <td>h21.eng</td> <td>h21.eng</td> <td>Backup Success</td> </tr> <tr> <td>h21.eng</td> <td>h21.eng</td> <td>Backup Success</td> </tr> <tr> <td>Test VM 4</td> <td>ch21.eng</td> <td>Backup Success</td> </tr> </tbody> </table>	Name	Host / Cluster	Backup Status	PrimaryVCen	ch21.eng	No Backup Inforr	SecondaryVC	ch21.eng	No Backup Inforr	h21.eng	h21.eng	Backup Success	h21.eng	h21.eng	Backup Success	h21.eng	h21.eng	Backup Success	Test VM 4	ch21.eng	Backup Success	<p>In <b>Hosts and Clusters</b>, click the <b>Monitor</b> tab.</p> <p>In the <b>Symantec NetBackup</b> tab, click <b>Virtual Machines</b> or <b>Events</b>, right-click on a successful backup for the virtual machine, and click <b>Recover</b>.</p>
Name	Host / Cluster	Backup Status																				
PrimaryVCen	ch21.eng	No Backup Inforr																				
SecondaryVC	ch21.eng	No Backup Inforr																				
h21.eng	h21.eng	Backup Success																				
h21.eng	h21.eng	Backup Success																				
h21.eng	h21.eng	Backup Success																				
Test VM 4	ch21.eng	Backup Success																				
 <table border="1" data-bbox="407 1388 799 1545"> <thead> <tr> <th>Event Time</th> <th>Event Type</th> <th>Virtual Machine</th> </tr> </thead> <tbody> <tr> <td>4/29/2014 11:01:39</td> <td>Backup Success</td> <td>Test VM</td> </tr> <tr> <td>4/29/2014 10:17:31</td> <td>Backup Success</td> <td>VM1</td> </tr> <tr> <td>4/29/2014 1:59:37 F</td> <td>Backup Success</td> <td>VM 1.5</td> </tr> <tr> <td>4/28/2014 3:37:32 F</td> <td>Backup Failed</td> <td>Test VM</td> </tr> </tbody> </table>	Event Time	Event Type	Virtual Machine	4/29/2014 11:01:39	Backup Success	Test VM	4/29/2014 10:17:31	Backup Success	VM1	4/29/2014 1:59:37 F	Backup Success	VM 1.5	4/28/2014 3:37:32 F	Backup Failed	Test VM							
Event Time	Event Type	Virtual Machine																				
4/29/2014 11:01:39	Backup Success	Test VM																				
4/29/2014 10:17:31	Backup Success	VM1																				
4/29/2014 1:59:37 F	Backup Success	VM 1.5																				
4/28/2014 3:37:32 F	Backup Failed	Test VM																				

**Table 4-1** How to start the NetBackup Recovery Wizards in vSphere Web Client (*continued*)

Action	Description
	<p>In the <b>Virtual Machines</b> pane, right-click on the VM to restore.</p>
	<p>In the top level of the vSphere Web Client object navigator, right-click on the VM to restore and click <b>Symantec NetBackup &gt; Recovery Wizard</b>.</p>

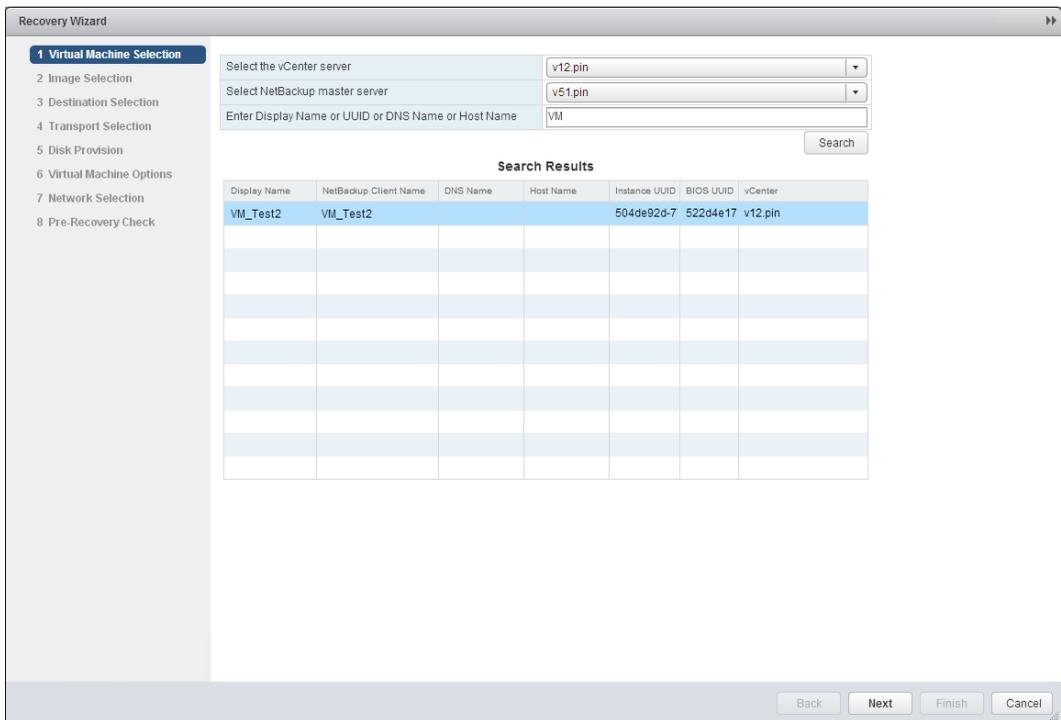
# NetBackup Recovery Wizard screens

Use the following screens to restore a virtual machine with the VMware vSphere Web Client interface.

## Virtual Machine Selection screen

Select the virtual machine to restore.

**Figure 4-1** Virtual Machine Selection screen in the NetBackup Recovery Wizard for vSphere Web Client



**Table 4-2** Fields in the Virtual Machine Selection screen

Field	Description
<b>Select the vCenter Server</b>	Use the drop-down list to select the vCenter server where the VM resided when it was backed up.

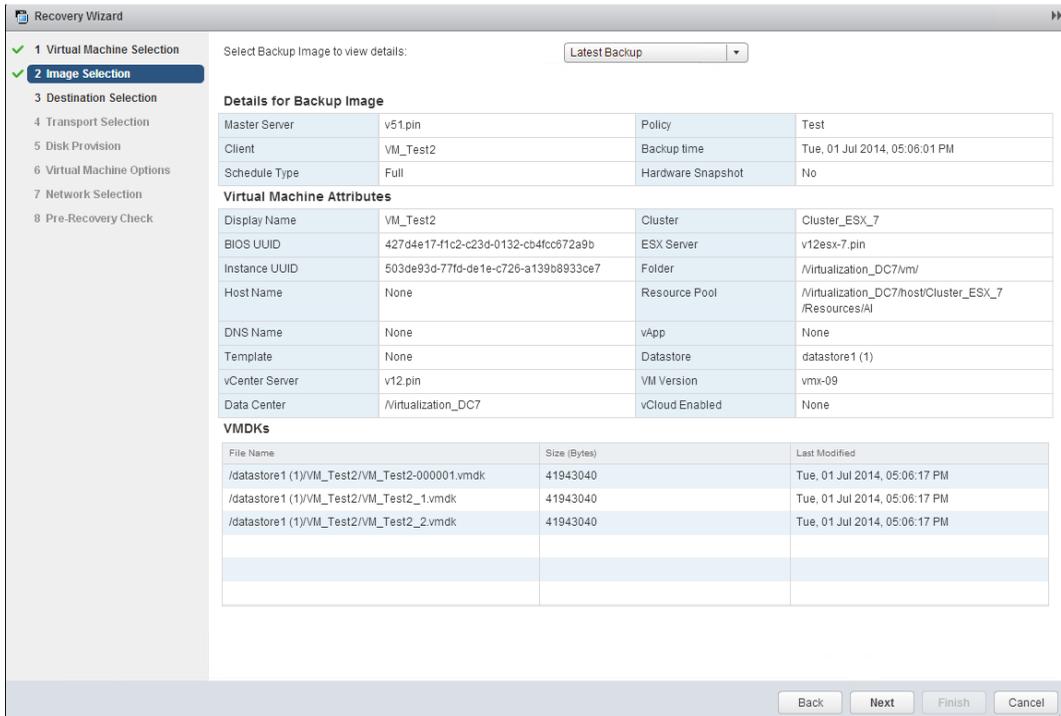
**Table 4-2** Fields in the Virtual Machine Selection screen (*continued*)

Field	Description
<b>Select NetBackup Master Server</b>	<p>Use the drop-down list to select the master server that made the backup.</p> <p>If the master server is not in the drop-down, you must add the server to the master server list.</p> <p>See “ <a href="#">Authorizing the NetBackup plug-in to restore virtual machines</a>” on page 38.</p>
<b>Enter Display Name or UUID or DNS Name or Host Name</b>	<p>Enter the name (or portion of the name) of the virtual machine that you want to restore, and click <b>Search</b>.</p> <p><b>Note:</b> This field is case-sensitive.</p>
<b>Search Results</b>	<p>The results of the search appear in this list.</p> <p>Click the virtual machine to restore and then click <b>Next</b>.</p> <p>The NetBackup master server identifies each VM in the backup policy as a "client." In the search results, the <b>NetBackup Client Name</b> column displays that name.</p>

## Image Selection screen

Select the backup image from which to restore the virtual machine.

**Figure 4-2** Image Selection screen in the NetBackup Recovery Wizard for vSphere Web Client



**Table 4-3** Fields in the Image Selection screen

Field	Description
<b>Select Backup Image to view details</b>	Use the drop-down to select the backup, as follows <ul style="list-style-type: none"> <li>■ <b>Latest Backup</b> Selects the latest available backup image.</li> <li>■ <b>Manually Specify</b> Click this option to select a different backup image. The <b>Browse Backups</b> button appears. Click that button and enter a date range within which to search for images. For more information, see <a href="#">Table 4-4</a>.</li> </ul>
<b>Details for Backup Image</b>	Lists the information about the VM backup image.
<b>Virtual Machine Attributes</b>	Lists the attributes of the virtual machine at the time it was backed up.
<b>VMDKs</b>	Lists the vmdk file(s) of the selected VM.
<b>Next</b>	Click <b>Next</b> for the next recovery screen.

**Figure 4-3** Manual Backup Selection screen in the NetBackup Recovery Wizard for vSphere Web Client

Manual Backup Selection ✕

**Search backup images between start and end time. Timezone for the input dates is Coordinated Universal time**

◀ May 2014 ▶

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

0

0

0

HourMinutesSeconds

◀ July 2014 ▶

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

0

0

0

HourMinutesSeconds

**Images**

Backup time	Schedule Type	Size	Policy	Hardware Snapshot
Fri, 04 Jul 2014, 12:00:43 PM	Full	40991 kbytes	Test	No
Fri, 04 Jul 2014, 11:57:44 AM	Differential Incremental	32 kbytes	Test	No <span style="float: right;">7</span>
Fri, 04 Jul 2014, 11:56:06 AM	Full	40991 kbytes	Test	No
Fri, 04 Jul 2014, 11:45:58 AM	Full	40991 kbytes	Test	No
Fri, 04 Jul 2014, 11:42:48 AM	Differential Incremental	32 kbytes	Test	No
Wed, 02 Jul 2014, 02:15:53 PM	Full	40991 kbytes	Test	No

**Virtual Machine Attributes**

Display Name	VM_Test2	Cluster	Cluster_ESX_7
BIOS UUID	427d4e17-f1c2-c23d-0132-cb4fcc672a9b	ESX Server	v12esx-7.pin
Instance UUID	503de93d-77fd-d61e-c726-a139b8933ce7	Folder	/Virtualization_DC7/vm/
Host Name	None	Resource Pool	/Virtualization_DC7/host/Cluster_ESX_7/Resouces/Al
DNS Name	None	vApp	None

**Table 4-4** Fields in the Manual Backup Selection screen

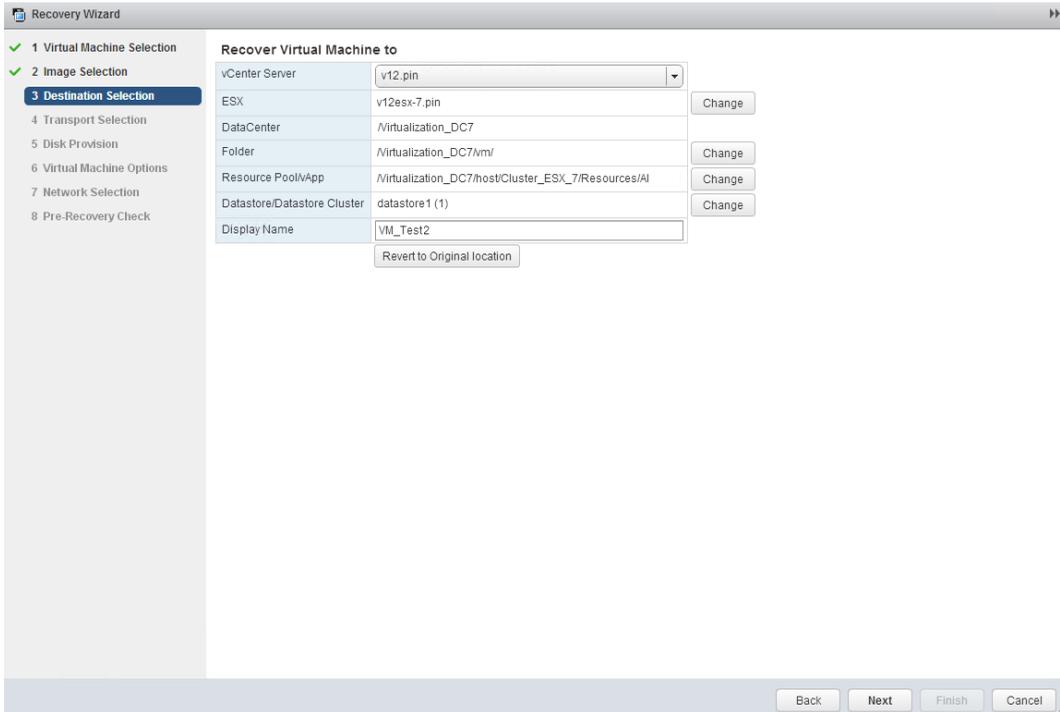
Field	Description
<b>Search backup images between start and end time</b>	To search for backup images, click in the left calendar to select the start time. Click in the right calendar to select the end time. You can use the <b>Hour, Minutes, Seconds</b> fields to set more precise times.  Then click <b>Search Images</b> . Click on an image. Further information about the image appears under <b>Virtual Machine Attributes</b> and <b>VMDKs</b> .
<b>Images</b>	Lists the images that fall within the search dates.
<b>Virtual Machine Attributes</b>	For the selected image, lists the attributes of the virtual machine at the time it was backed up.
<b>VMDKs</b>	For the selected image, lists the vmdk file(s) of the selected image.
<b>Selected Backup</b>	Click to select the image.

## Destination Selection screen

Specify the destination for the restored virtual machine.

The default values are from the original location of the virtual machine.

**Figure 4-4** Destination Selection screen in the NetBackup Recovery Wizard for vSphere Web Client



**Table 4-5** Fields in the Destination Selection screen

Field	Description
<b>vCenter Server</b>	The vCenter server for the restored virtual machine. Use the drop-down to select the vCenter server.
<b>ESX</b>	The ESXi server for the restored virtual machine. Click <b>Change</b> to browse for an ESX server.
<b>DataCenter</b>	The datacenter for the restored virtual machine.
<b>Folder</b>	The folder for the restored virtual machine. Click <b>Change</b> to browse for a folder.
<b>Resource Pool/vApp</b>	The resource pool for the restored virtual machine. Click <b>Change</b> to browse for a resource pool or vApp.

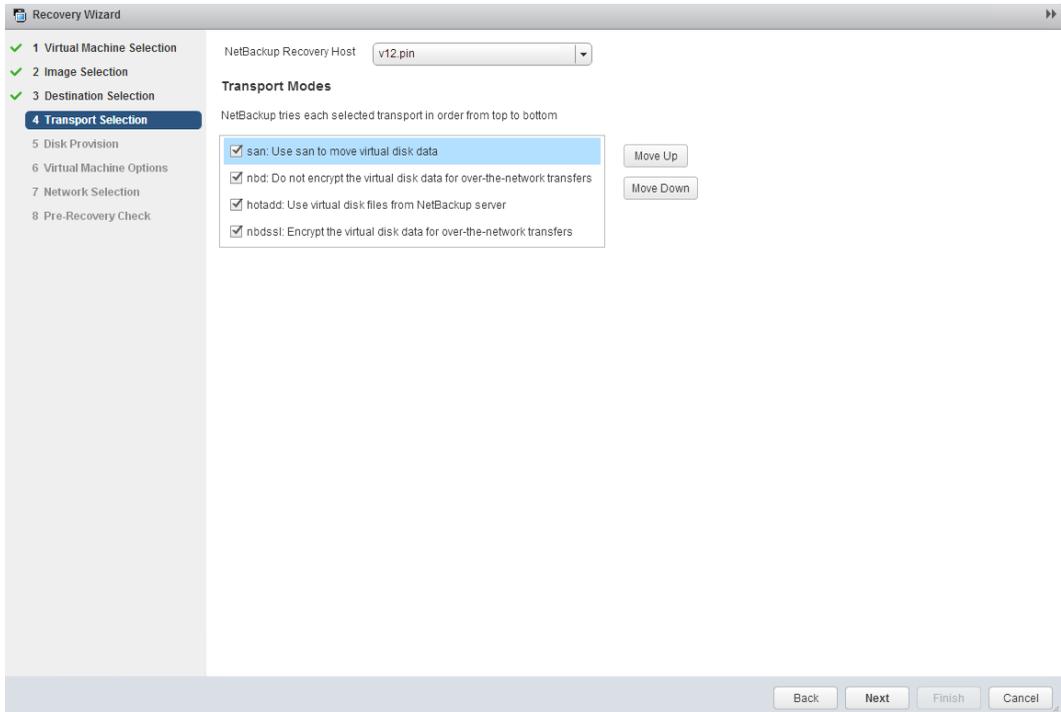
**Table 4-5** Fields in the Destination Selection screen (*continued*)

Field	Description
<b>Datastore/Datastore Cluster</b>	The datastore or datastore cluster for the restored virtual machine. Click <b>Change</b> to browse for a datastore or datastore cluster.
<b>Display Name</b>	The display name for the restored virtual machine. You can enter the name.
<b>Revert to Original location</b>	Selects the original location (vCenter and ESXi server, datacenter, folder, resource pool, vApp, datastore, or cluster) as the restore location. This setting is the default.
<b>Next</b>	Click <b>Next</b> for the next recovery screen.

## Transport Selection screen

Select the recovery host and data transport mode(s) for the virtual machine restore.

**Figure 4-5** Transport Selection screen in the NetBackup Recovery Wizard for vSphere Web Client



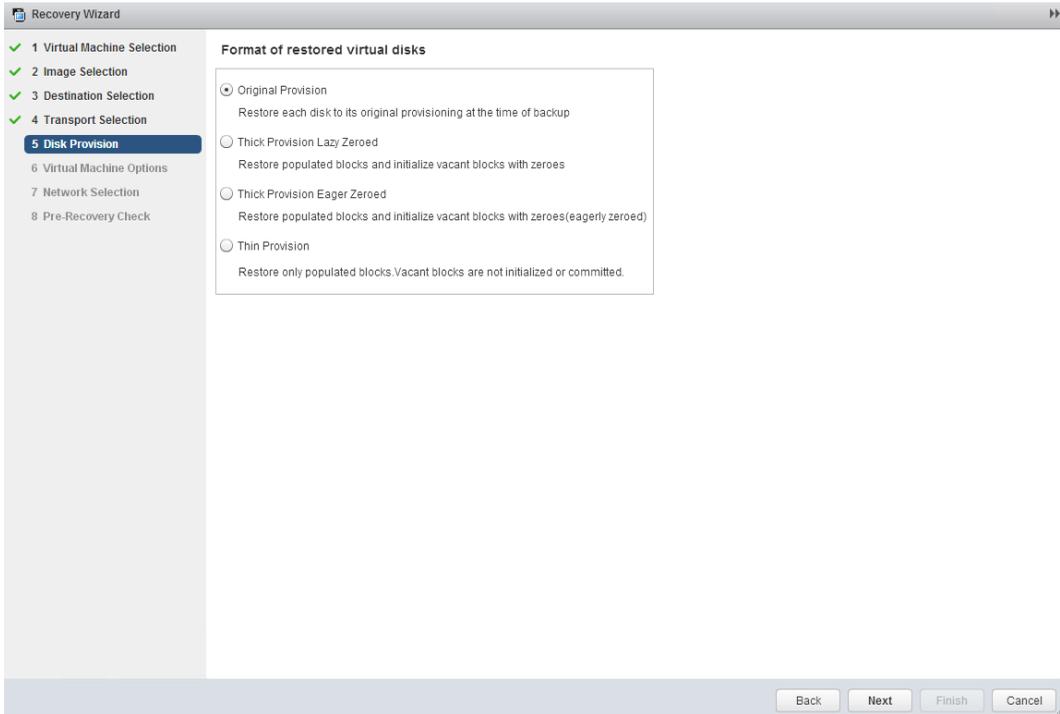
**Table 4-6** Fields in the Transport Selection screen

Field	Description
<b>NetBackup recovery host</b>	<p>The host that performs the recovery. The default is the host that performed the backup (the backup host).</p> <p>In most cases, use the host that performed the backup. Selecting a different host as the recovery host can result in a slow restore or a failed restore, depending on the transport mode.</p> <p>For example, the restore may fail if you select the SAN transport mode in the following case:</p> <ul style="list-style-type: none"> <li>■ The host that performed the backup used a SAN connection to access the datastore.</li> <li>■ The host you select as recovery host does not have SAN access to the datastore.</li> </ul>
<b>Transport Modes</b>	<p>Determines how NetBackup sends the restore data from the recovery host to the VMware datastore. The appropriate option depends in part on the type of network that connects the VMware datastore to the recovery host.</p> <p>Click the check boxes to select or unselect transport modes. For the restore, NetBackup tries the selected modes in the order listed. To change the order, click on a transport mode and click <b>Move Up</b> or <b>Move Down</b>.</p>
<b>san</b>	For unencrypted transfer over Fibre Channel (SAN) or iSCSI.
<b>nbd</b>	For unencrypted transfer over a local network with the Network Block Device (NBD) driver protocol. This mode of transfer is usually slower than Fibre Channel.
<b>nbdssl</b>	For encrypted transfer (SSL) over a local network with the Network Block Device (NBD) driver protocol. This mode of transfer is usually slower than Fibre Channel.
<b>hotadd</b>	<p>Requires that the recovery host is in a virtual machine.</p> <p>For instructions on this transport mode and on installing the recovery host in a virtual machine, refer to your VMware documentation.</p>

## Disk Provision screen

Select the provisioning (format) for the restored virtual disks.

**Figure 4-6** Disk Provision screen in the NetBackup Recovery Wizard for vSphere Web Client



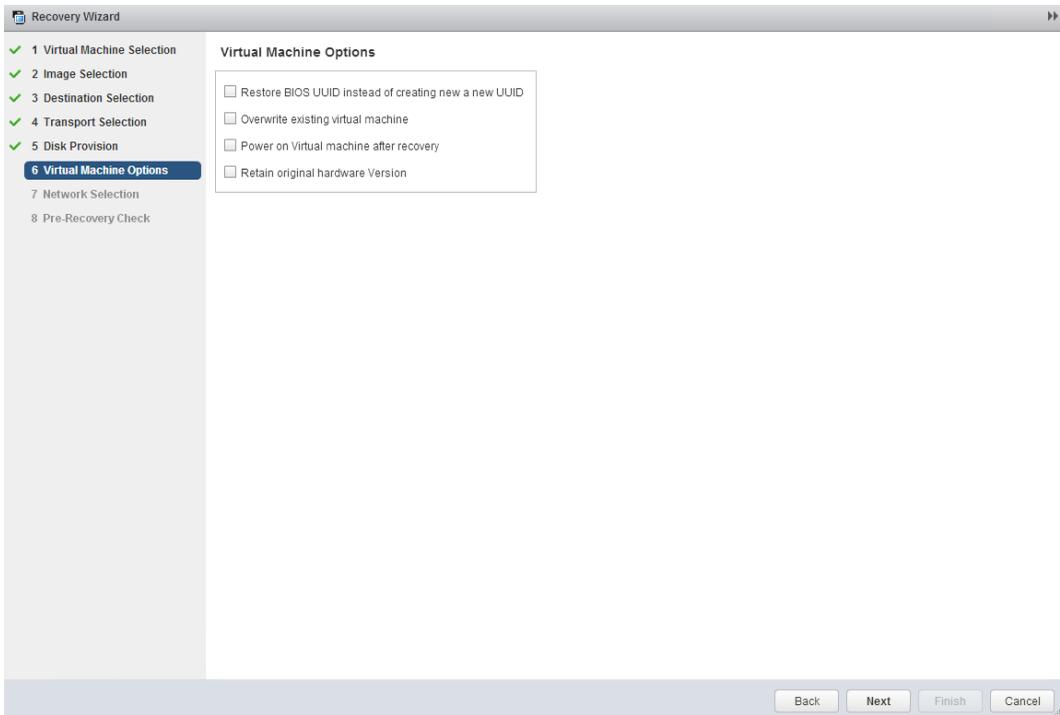
**Table 4-7** Fields in the Disk Provision screen

Field	Description
<b>Original Provision</b>	Restores the virtual machine's virtual disks with their original provisioning.
<b>Thick Provision Lazy Zeroed</b>	Configures the restored virtual disks in the thick format. The virtual disk space is allocated when the disk is created. This option restores the populated blocks, but initializes vacant blocks with zeros later, on demand.
<b>Thick Provision Eager Zeroed</b>	Configures the restored virtual disks in the thick format. Restores the populated blocks and immediately initializes vacant blocks with zeros (eagerly zeroed). Creation of the virtual disks may take more time with this option. However, if the restore occurs over a SAN, the eagerly zeroed feature may speed up the restore by reducing network communication with the vCenter server.
<b>Thin Provision</b>	Configures the restored virtual disks in the thin format. Restores the populated blocks but does not initialize vacant blocks or commit them.

## Virtual Machine Options screen

Click the check boxes to select the recovery options for the virtual machine.

**Figure 4-7** Virtual Machine Options screen in the NetBackup Recovery Wizard for vSphere Web Client



**Table 4-8** Fields in the Virtual Machine Options screen

Field	Description
<b>Restore BIOS UUID instead of creating a new UUID</b>	<p>Retains the UUID of the original virtual machine (note that the UUID is a globally unique identifier). The virtual machine is restored with the same UUID that it had before the restore.</p> <p>Note the following:</p> <ul style="list-style-type: none"> <li>■ If a virtual machine with the same display name but with a different UUID exists at the target restore location, the restore fails. You must either delete the existing virtual machine and run the restore, or keep the existing virtual machine and abandon the restore.</li> <li>■ If you do not want to keep the existing virtual machine, you can do one of the following: Remove the existing virtual machine, or log into the ESXi server and remove the directory where the virtual machine resides.</li> </ul>

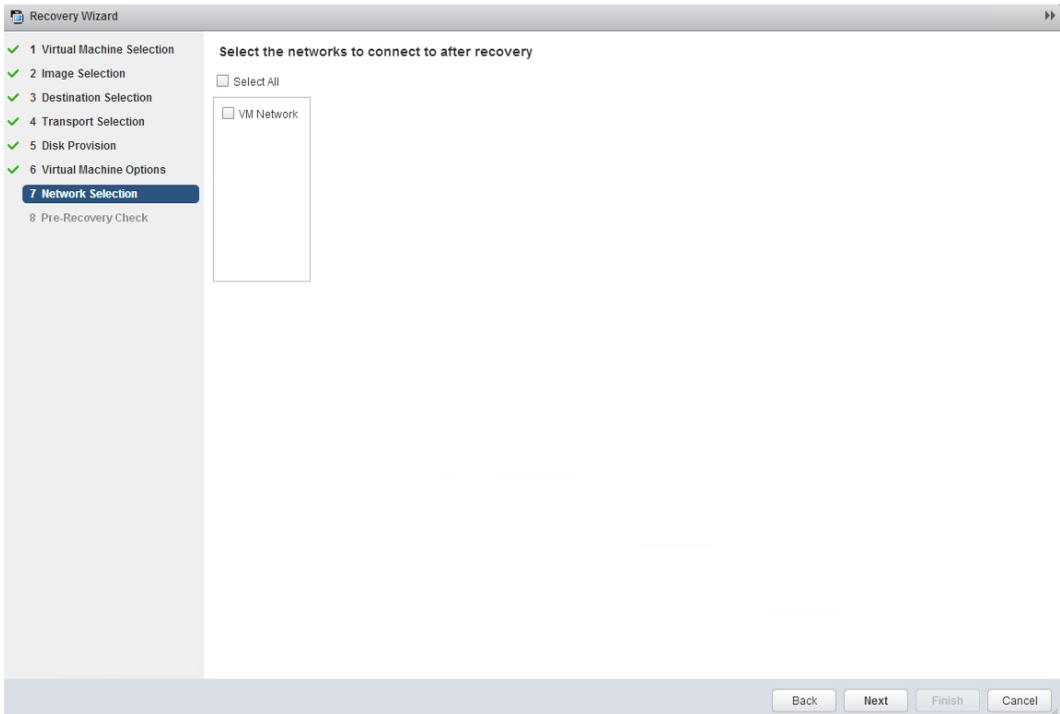
**Table 4-8** Fields in the Virtual Machine Options screen (*continued*)

Field	Description
<b>Overwrite existing virtual machine</b>	If a virtual machine with the same display name exists at the destination, that virtual machine must be deleted before the restore begins. Otherwise, the restore fails. Select this option to have the virtual machine deleted.
<b>Power on virtual machine after recovery</b>	The recovered virtual machine is automatically turned on when the recovery is complete.
<b>Retain original hardware version</b>	<p>This option restores the virtual machine with its original hardware version (such as 4). It retains the original version even if the target ESXi server by default uses a later hardware version (such as 7 or 8).</p> <p>If this option is disabled, the restored virtual machine is converted to the default hardware version that the ESXi server uses.</p>

## Network Selection screen

Click the check boxes to select the networks for the recovered virtual machine.

**Figure 4-8** Network Selection screen in the NetBackup Recovery Wizard for vSphere Web Client



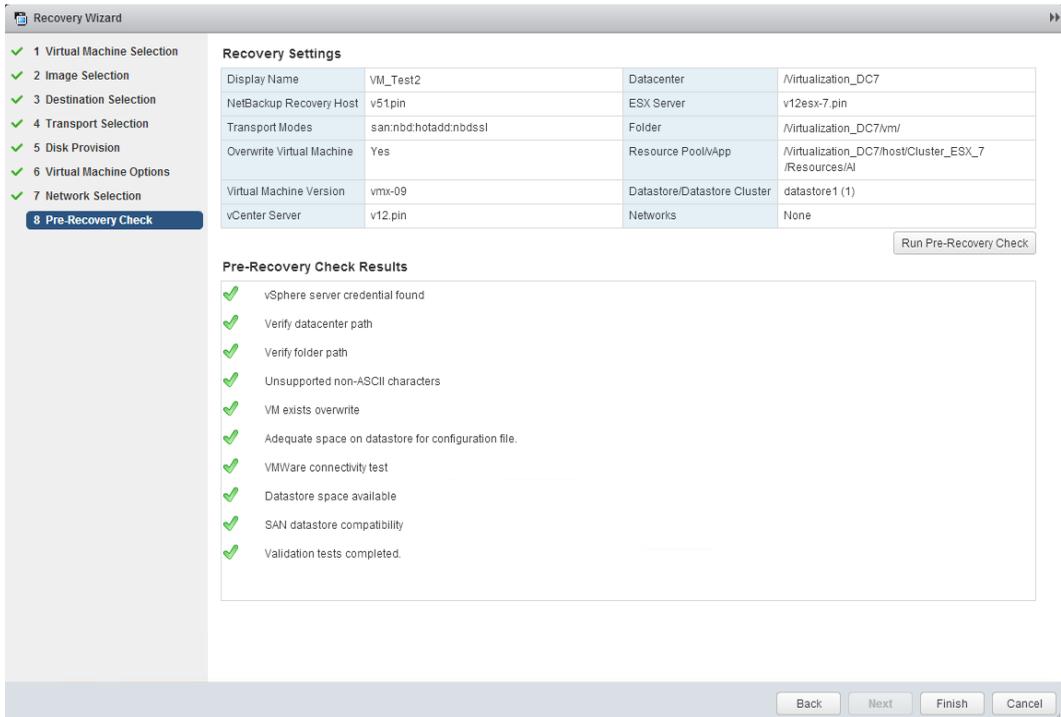
**Table 4-9** Fields in the Network Selection screen

Field	Description
<b>Select All</b>	Selects or unselects all the networks that are available. If a network is selected, the restored virtual machine is automatically connected to that network.
<b>VM Network</b>	You can select individual networks for the restored virtual machine.

## Pre-Recovery Check screen

Preview the recovery details, run a pre-recovery check, and start the recovery.

**Figure 4-9** Pre-Recovery Check screen in the NetBackup Recovery Wizard for vSphere Web Client



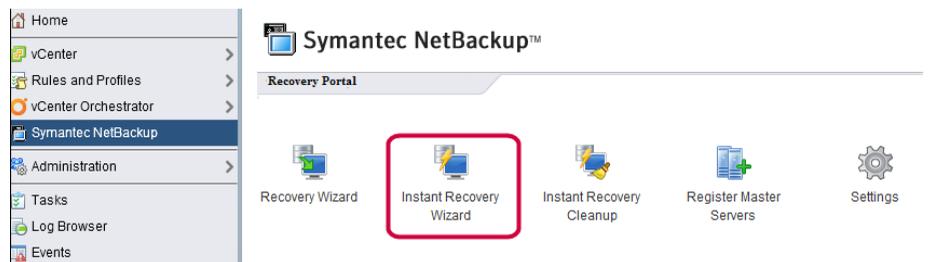
**Table 4-10** Fields in the Pre-Recovery Check screen

Field	Description
<b>Recovery Settings</b>	Lists the settings that are used for the recovery.
<b>Run Pre-Recovery Check</b>	Verifies the credentials and appropriate paths and connectivity, determines whether the datastore or datastore cluster has available space, and reviews other requirements.
<b>Pre-Recovery Check Results</b>	<p>Lists the results of the pre-recovery check.</p> <p>You can proceed with the restore even if the check fails.</p> <p>Note: A mismatch in the vCenter server name in NetBackup (uppercase vs. lowercase letters) may cause the "VMware connectivity test" to fail.</p> <p>See <a href="#">"Mismatch in vCenter server name (uppercase vs. lowercase letters) causes the VMware connectivity test to fail"</a> on page 89.</p>
<b>Finish</b>	Starts the recovery of the virtual machine.

## NetBackup Instant Recovery Wizard screens

The NetBackup Instant Recovery (IR) wizard provides an option to recover and power on the virtual machines instantly. The administrator can use the IR wizard to simultaneously restore multiple virtual machines, instantly. The advantage of IR wizard over the legacy recovery wizard is dual as multiple VMs getting recovered and powered on instantly.

To access the Symantec NetBackup Instant Recovery Wizard, in the vSphere Web Client interface, navigate to **Home > Symantec NetBackup > Instant Recovery Wizard**.



The instant recovery wizard comprises five sequential steps with unique tasks allotted to each screen.

- Selecting virtual machines
- Selecting the backup image (on VM)
- Selecting the target destination for instant recovery
- Selecting virtual machine options
- Performing a pre-recovery check and initiating the IR operation

### Selecting virtual machines for instant recovery

Perform the search operation on this screen to get a list of virtual machines which have IR-compatible backup images. The search operation includes the virtual machines on the vCenter servers that are registered with the NetBackup master servers. The first screen of Instant Recovery Wizard displays the message as **0 Virtual Machines selected**. You need to start the wizard operations by searching for and subsequently adding the virtual machines.

 **2** Virtual Machines Added  
[View Details](#)

Search and add virtual machines [Reset Search Parameters](#)

vCenter Server:  NetBackup Master Server:

The search is case sensitive.

**Table 4-11** Fields in the Virtual Machine Selection screen

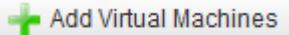
Operations	Description
<b>Select the vCenter Server</b>	<p>Use the drop-down list to select the vCenter server where the VM resided when it was backed up.</p> <p><b>Note:</b> vCenter Server drop-down list displays the names of vCenter servers that are registered with the NetBackup plug-in.</p> <p>See “ <a href="#">Authorizing the NetBackup plug-in to restore virtual machines</a>” on page 38.</p>
<b>Select the NetBackup Master Server</b>	<p>Use the drop-down list to select the names of the master servers that are registered with the NetBackup plug-in.</p> <p>The name of the master server may not be in the drop-down list due to following reasons:</p> <ul style="list-style-type: none"> <li>■ NetBackup master server is not registered with the NetBackup vSphere Plug-in.</li> <li>■ The selected vCenter server is not added in the NetBackup master server.</li> <li>■ Invalid certificate.</li> <li>■ Unable to connect to the NetBackup master server.</li> <li>■ A mismatch for the vCenter Server name as registered with the NetBackup master server and as with the vSphere Web Client. The vCenter server name should be the same (host name or FQDN or IP).</li> <li>■ NetBackup Web Management Console service is down in NetBackup master server.</li> </ul> <p><b>Note:</b> This drop-down only lists the master servers which are registered with the vCenter server selected in vCenter drop-down. If the master server is not listed after adding it again, make sure that it is not listed in the top error message. Contact the NetBackup administrator to register the vCenter to the NetBackup master server.</p>
<b>Enter Display Name or UUID or DNS Name or Host Name</b>	<p>Enter full text, or portion of either VM display name or instance ID or DNS name or host name that you want to restore. Then click <b>Search</b>. You can search the complete list by searching for *.</p> <p><b>Note:</b> This field is case-sensitive.</p>

**Note:** Once the vCenter server and the NetBackup master server are selected, after the selection of virtual machines to recover, the pairing of these two servers is locked for the rest of the wizard operations. If the selection for one of the servers is changed, the earlier operations do not remain valid. You can reset the search parameters anytime.

The results of the search appear in this list. Select the virtual machine and add them to restore and then click **Next**.

**Note:** Selecting the NetBackup master server and vCenter server is mandatory. Select multiple virtual machines using **Ctrl+Click** or select a range of virtual machines by using **Shift+Click**.

**Table 4-12** Fields in the Virtual Machine Selection screen

Operations	Description
<b>Select the virtual machines</b>	<p>Select the virtual machines for which you want to select backup images for instant recovery.</p> <p>The upper grid displays the total number of virtual machines that are selected and added.</p>
<b>Add Virtual Machines</b>	<p>Click to add the selected virtual machines.</p> <div data-bbox="424 991 727 1043" style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; display: inline-block; margin: 10px 0;">  </div> <p>After you select and add the virtual machines, the heading bar shows the total number of virtual machines that are selected and added. The maximum number of virtual machines that you can add can be set in the <b>Settings</b> option on the Symantec NetBackup landing page.</p> <p>See “ <a href="#">Authorizing the NetBackup plug-in to restore virtual machines</a>” on page 38.</p> <p><b>Note:</b> The maximum number of instant recovery jobs includes active instant recoveries plus the number of virtual machines being added for the recovery operations.</p>
<b>View Details</b>	<p>Click to see a pop-up screen with the list of selected virtual machines in a tabular form with more details. The added virtual machines can be deleted from this screen, if necessary.</p>
<b>Reset Search parameters</b>	<p>You can reset the search parameters to cancel earlier made selections.</p>

Click **Next** to select the backup images for instant recovery.

## Selecting backup images for instant recovery

On the Image Selection screen, on the upper pane, you can view the instant recovery (IR) ready backup images. The screen only lists the images which are IR-ready and with age not more than 7 days.

### Images Available for Instant Recovery (IR) During last 7 days

Display Name	Date and Time of Backup	Age	vCenter Server	Policy Name
armor4	Tuesday, April 28, 2015 9:19:21 PM <a href="#">Change</a>	1 Day(s)	grf	TEST_POL_BIOSL 
armor6	Tuesday, April 28, 2015 9:07:09 PM <a href="#">Change</a>	1 Day(s)	grf	TEST_POL_INSTA 

Following table lists the descriptions for the fields appearing on the image selection screen.

**Table 4-13** Fields in the backup image selection screen

Field	Description
<b>Display Name</b>	Name of the virtual machine that was selected and added in the last screen options.
<b>Date and Time of Backup</b>	Date and timestamp of the IR-ready backup image.
<b>Age</b>	Age of the backup image in days or hours.
<b>vCenter Server</b>	Name of the vCenter server.
<b>Policy Name</b>	Name of the NetBackup backup policy.

In case the IR-ready image is not available for the VM in last 7 days, or you want to change the displayed backup image for the VM, click on the **Change** option to search for a different backup image. You can search for the backup images that were made in the last 7 days, etc., by selecting a specific date range. For the **Select Date Range** option, click **Search Images** in the pop-up to view the results. For other options, select the image from the displayed results to view the image details. The following screen shows a list of IR ready images backed-up during the last 30 days. Click **Select Image** to proceed.

Search Images : for "testvmclient5"			
Last 7 days   Last 30 days   Last 90 days   Select Date Range			
Images Available for Instant Recovery (IR) during last 30 days			
Backup Date and Time	Age	Size	Policy
Mon, 01 Dec 2014, 08:37:56 AM	11 Day(s)	0.0000954 GB	VMware_Policy

The **Image Selection** screen at the lower pane shows the backup image details and attributes of the virtual machine that is selected in the upper plane.

**Backup Details** For Virtual Machine: armor4

Image Details			
Storage Type	BasicDisk	Master Server	rdd
Backup ID	42369efb-af03-7706-886c-8260e8f303bf_1430236161	Schedule Type	Full
Virtual Machine Attributes			
Display Name	armor4	Host Name	None
DNS Name	cdpr08v2.veritas.com	vCenter Server	grf
ESX Server	arm.symantec.com	Data Center	/testdc_test
Instance UUID	50320d1e-b250-5126-efe0-ee81ee527b08	BIOS UUID	42369efb-af03-7706-886c-8260e8f303bf
Virtual Machine Version	vmx-10	vCloud Enabled	None
Resource Pool	/testdc_test/host/arm.symantec.com/Resources	vApp	None

**Table 4-14** Fields in the backup image selection screen

Field	Description
<b>Backup Image details</b>	Displays the name of the NetBackup master server and the storage type used.  <b>Note:</b> The time required to restore the image may depend on the storage type, especially for an IR operation that uses <b>AdvancedDisk</b> or De-duplication type of storage.  The backup ID and the type of the backup schedule are also listed in the image details.
<b>Virtual Machine Attributes</b>	Lists the attributes of the virtual machine at the time it was backed up.
<b>Display Name</b>	The display name of the specified VM.
<b>Host Name</b>	Displays the host name of the VM.

**Table 4-14** Fields in the backup image selection screen (*continued*)

Field	Description
<b>ESX server</b>	Displays the ESX server name of the VM.
<b>vCenter server</b>	Displays the name of the vCenter server.
<b>BIOS UUID</b>	The ID assigned to the virtual machine when the virtual machine is created. This ID may or may not be unique, depending on whether the virtual machine has been duplicated. This option is included for compatibility with the policies that use the older VM UUID identifier.
<b>Instance UUID</b>	The globally unique ID assigned to the virtual machine when the virtual machine is created. This ID uniquely identifies the virtual machine within a vCenter server. Even if the virtual machine has been duplicated (such as within a vCloud), only the original virtual machine retains this instance ID. (The virtual machine duplicates are assigned different instance UUIDs).
<b>Data Center</b>	Displays the name of the data center.
<b>Virtual Machine Version</b>	Displays the original hardware version of the VM.

Click **Next** to proceed to the **Destination Selection** screen. Click **Back** to revisit the earlier screen in case you need to make changes in earlier made selections.

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**Note:** To proceed to the destination selection, you need to select at least one IR-ready image.

---

## Selecting destination for instant recovery

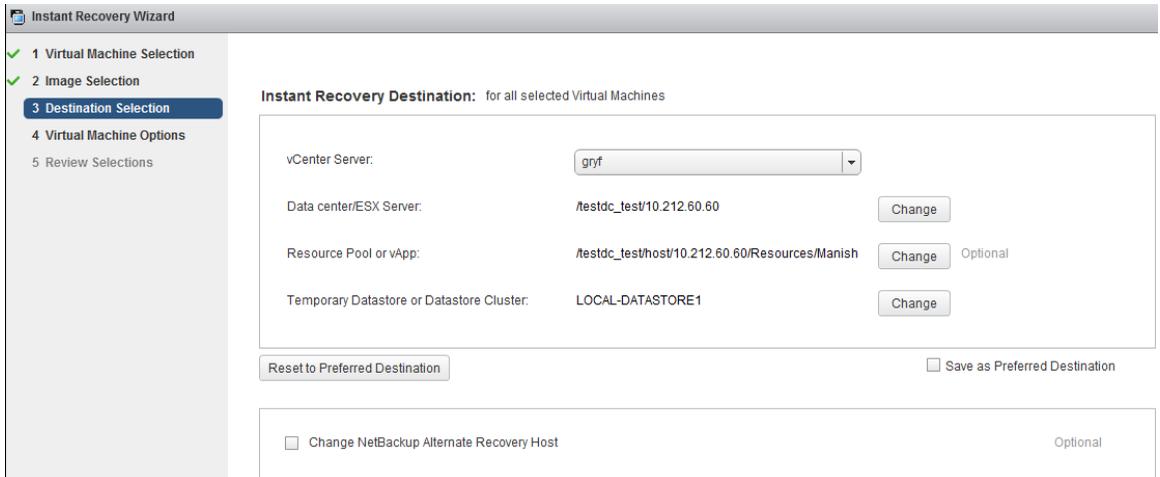
Specify the destination parameters for restoring all the selected virtual machine images.

---

**Note:** If you have specified the preferred destination settings in the **Settings** option, those settings are populated on the destination screen. The following topic explains how to set preferred destination parameters:

See [“Setting up parameters for the virtual machine recovery”](#) on page 54..

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**Table 4-15** Fields in the Destination Selection screen

Field	Description
<b>vCenter Server</b>	Use the drop-down to select the vCenter server. It lists only those vCenter servers which are associated with the master server selected earlier in the first screen.
<b>Data center/ESX Server</b>	The ESX server for the virtual machine to be restored. Click <b>Select</b> or <b>Change</b> to browse for a data center or an ESX server. <b>Note:</b> The ESX servers with version 5.0 and later only are supported for the instant recovery.
<b>Resource Pool/vApp</b>	The resource pool for the virtual machine. Click <b>Change</b> to browse for a resource pool or vApp. This parameter is optional.
<b>Temporary Datastore/Datastore Cluster</b>	The temporary datastore is used to store all the <b>WRITE</b> requests in the recovered virtual machine. Click <b>Change</b> to browse for a datastore or datastore cluster. <b>Note:</b> While selecting a temporary datastore, do not select any inactive or read-only datastores as it can cause instant recovery failure.
<b>Reset to Preferred Destination</b>	Click the option to reset all the parameters for destination selection to the preferred parameters that are specified in the <b>Settings</b> . The following topic explains how to set preferred destination parameters:  See <a href="#">“Setting up parameters for the virtual machine recovery”</a> on page 54.

**Table 4-15** Fields in the Destination Selection screen (*continued*)

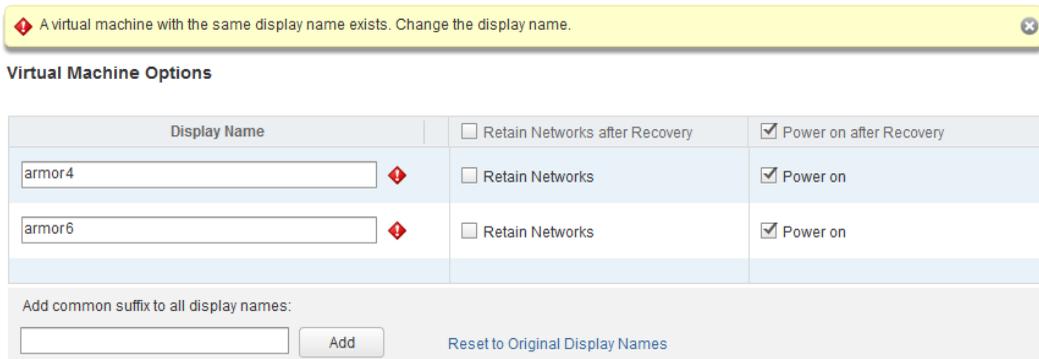
Field	Description
<b>Save as Preferred Destination</b>	Check this box to set the currently filled-in parameters as the preferred destination parameters to be used in future instant recovery operations. Selecting the check box saves the parameters in the <b>Settings</b> option.
<b>Change NetBackup Alternate Recovery Host</b>	Check the box to set the NetBackup client or media server as the alternate host for the instant recovery. In case the primary host is not available, the alternate host is used to complete the recovery operation. This setting is optional.

Click **Next** to set the virtual machine options.

## Setting virtual machine options

Use this screen to set the post-recovery options for the selected virtual machines.

**Figure 4-10** Virtual Machine Options for Instant Recovery



**Table 4-16** Fields in the Virtual Machine Options screen

Field	Description
<b>Display Name</b>	<p>A list of all the selected VMs is displayed. A conflict of display name is highlighted in case the display name that has been provided already exists on the destination. Check for the following symbol.</p>  <p><b>Note:</b> In case of duplicate display name, change the highlighted display name to proceed.</p>

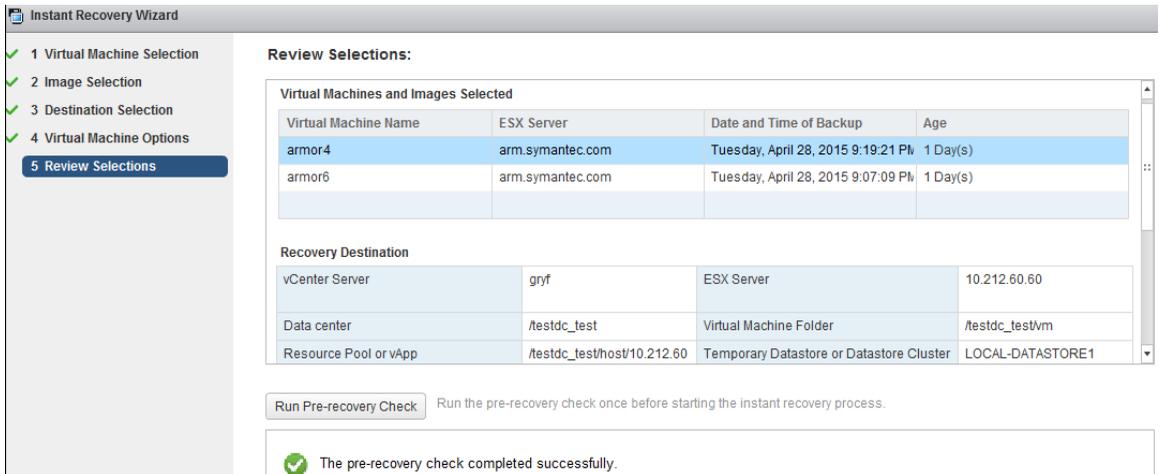
**Table 4-16** Fields in the Virtual Machine Options screen (*continued*)

Field	Description
<b>Retain networks after recovery</b>	Checks to retain the existing network settings of all the selected VMs, after the recovery.  <b>Note:</b> You can select individual VMs to retain the networks after the recovery is complete and to power on the VM.
<b>Power-on after recovery</b>	Checks the option to power on all the selected VMs, after the recovery.  <b>Note:</b> You can select individual VMs to be powered on.
<b>Add common suffix to all display names</b>	You can add a common suffix to the display names of all the selected VMs. For example, if you add <b>Network1</b> to the display name <b>VM_Storage_1</b> and click <b>Add</b> , the display name changes to <b>Network1_VM_Storage_1</b> .

## Reviewing recovery settings

Preview the recovery details, run a pre-recovery check, and start the recovery.

**Figure 4-11** Review settings and pre-recovery check screen



**Table 4-17** Fields in the pre-recovery check screen

Field	Description
<b>Virtual machines and images selected</b>	Lists the virtual machine names along with the selected backup images for the instant recovery.
<b>Recovery Destination</b>	Details of the destination that is selected in the <b>Destination Selection</b> screen.
<b>Run Pre-Recovery Check</b>	Verifies the credentials and appropriate paths and connectivity, determines whether the datastore or datastore cluster has available space, and reviews other requirements.  Pre-recovery check is mandatory for the first time to check all the requirements and is also recommended for each recovery operation.
<b>Pre-Recovery Check Results</b>	Lists the results of the pre-recovery check.  You can proceed with the instant recovery even if the check fails. Performing the pre-recovery check is not mandatory to start the recovery job.
<b>Finish</b>	Concludes the wizard operations and starts the instant recovery of the virtual machine(s).

When you click **Finish**, the instant recovery operation starts. You can view the **Instant Recovery Cleanup Page** for the recovery progress. You can initiate a new IR operation by using the IR wizard again.

The pop-up window shows the status of the instant recovery operation.

## Cleaning the recovery environment and releasing the NetBackup resources

Use this utility to complete the instant recovery process by cleaning the recovery setup and releasing the NetBackup resources. The instant recovery workflow is completed only when the recovery operation is completed and the NetBackup resources are released.

**Instant Recovery Cleanup**

**Active Instantly Recovered Virtual Machine(s) ( 2 )**

 **Initiate Instant Recovery Done**  
To permanently retain the restored virtual machine.

 **Deactivate**  
To permanently delete the restored virtual machine.

 **Reactivate**  
To reconnect to the restored virtual machine.

Last refreshed at: Thursday, April 30, 2015 10:30:32 AM |  **Refresh** to see the latest details.

Virtual Machine Name	vCenter Server	ESX Server	Master Server	Elapsed time since recovery	Storage Migration Completed
armor4VM	gryf	10.210.60.68	rdd	< 1 Hour	No
armor6VM	gryf	10.210.60.68	rdd	< 1 Hour	No

Close

Use the following utilities to complete the instant recovery functional workflow.

**Table 4-18** Fields in the Virtual Machine Options screen

Field	Description
<b>Reactivate</b>	Use this operation when connection to the virtual machine was interrupted. The interruption may occur due to a network disconnect between the NetBackup media and the ESX server. This utility reactivates a restored virtual machine by remounting the NetBackup datastore. It also registers the restored virtual machines on the ESX host.
<b>Deactivate</b>	Use this option when you are done with the restore and do not intend to retain the restored virtual machine. This action removes the virtual machine from the ESX host. If no other virtual machine is using the NetBackup datastore, this option removes that datastore and releases its resources on the NetBackup media server.

**Table 4-18** Fields in the Virtual Machine Options screen (*continued*)

Field	Description
<b>Initiate Instant Recovery Done</b>	Use this operation to complete the instant recovery operation after you have performed the Storage vMotion of the virtual machines to a different datastore. This utility completes the virtual machine instant recovery operation after the vMotion migration of the virtual machine is completed. When the datastore is removed, its resources are released on the NetBackup media server.

# Troubleshooting

This chapter includes the following topics:

- [Setting the time zone of the NetBackup master server host to UTC](#)
- [Reducing the load time for the NetBackup plug-in for vSphere Web Client](#)
- [The NetBackup plug-in for vSphere Web Client does not find any backup images in the listed events](#)
- [The NetBackup Recovery Wizard for vSphere Web Client does not find a particular backup image](#)
- [Mismatch in vCenter server name \(uppercase vs. lowercase letters\) causes the VMware connectivity test to fail](#)
- [IR operation is not complete due to NFS mount limit exceed](#)
- [IR-ready backup images are not available for selection](#)
- [vCenter server and NetBackup master server names are not available for search](#)
- [Preferred IR-destination options are not saved](#)
- [Virtual machine display name conflicts are not shown before pre-recovery check](#)
- [Reasons for failure of pre-recovery checks](#)
- [Timeout or long time taken to populate the list of NetBackup master servers](#)
- [NetBackup plug-in not shown in vSphere Web Client portal even after registration](#)
- [Correct NetBackup master server does not show up for selection for a given vCenter server on the IR wizard](#)

# Setting the time zone of the NetBackup master server host to UTC

In vCenter 5.5, the time zone is set to UTC and cannot be changed. As a result, the time zone of the host on which the NetBackup master server is installed must also be set to UTC. Otherwise, the plug-in's **Virtual Machines** screen may show an incorrect backup age in the **Backup Age** column.

## To set the master server time zone to UTC

- 1 Consult the documentation for the master server host OS.  
 On Windows, it may be **Control Panel > Date and Time > Change time zone** or similar.
- 2 Stop and restart the NetBackup processes.

---

**Note:** During recovery operations, when you select the backup image, the time stamp of the image is shown in the timezone same as NetBackup master server timezone. However, you may observe different backup time stamps on the master server and on the plug-in due to the effect of daylight saving, in case you have set the time in non-UTC.

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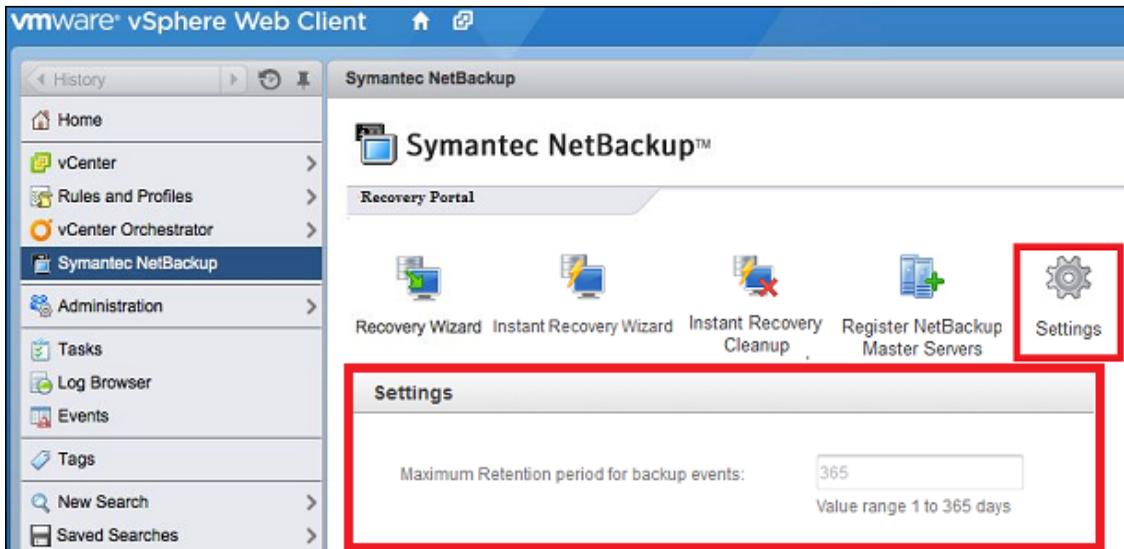
# Reducing the load time for the NetBackup plug-in for vSphere Web Client

If the NetBackup plug-in for vSphere Web Client takes a long time to load, many backups may have occurred in your environment. By default, the plug-in retrieves backup events for the last 365 days.

## The NetBackup plug-in for vSphere Web Client does not find any backup images in the listed events

To reduce the load time for the NetBackup vSphere Web Client plug-in

- 1 In the top level of the vSphere Web Client object navigator, click **Symantec NetBackup**.
- 2 Click **Settings**.



- 3 In the **Settings** dialog, enter a smaller value for **Maximum Retention period for backup events (days)**.

For example, enter 7.

This change limits the number of backup events that the plug-in retrieves. As a result, it reduces the plug-in's initial load time.

By default, the plug-in retrieves backup events for the last 365 days.

## The NetBackup plug-in for vSphere Web Client does not find any backup images in the listed events

To allow the plug-in to monitor backups, the NetBackup master server's **VMware** policies must have **Post events to vCenter** set to **All Events**.

The **Post events to vCenter** option is available from the **Advanced** button of the NetBackup policy's **VMware** tab.

See [“Installation overview for the NetBackup plug-in for vSphere Web Client”](#) on page 15.

## The NetBackup Recovery Wizard for vSphere Web Client does not find a particular backup image

The NetBackup Recovery Wizard may not find the backup image for a particular VM if the VM display name contains special characters.

To locate the backup image and start the recovery

- 1 In the top level of the vSphere Web Client object navigator, click **Symantec NetBackup > Recovery Wizard**.
- 2 In the wizard's **Virtual Machine Selection** screen, enter the VM name (full or partial), and click **Search**.  
The VM should appear in the search results.
- 3 Click **Next** and continue with the Recovery Wizard.

## Mismatch in vCenter server name (uppercase vs. lowercase letters) causes the VMware connectivity test to fail

The NetBackup Recovery Wizard and NetBackup Instant Recovery Wizard's **Pre-Recovery Check** screen runs a number of checks on the vSphere environment that you selected for the restore. The "VMware connectivity test" fails if the case of the vCenter name in NetBackup credentials differs from the case of the vCenter name in vSphere. For example: the name that was entered for NetBackup credentials is uppercase, but the name in vSphere is lowercase.

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**Note:** When the "VMware connectivity test" fails because of a vCenter name mismatch regarding its case, the failure can be ignored. Click **Finish** and the VM recovery should succeed.

---

To prevent the "VMware connectivity test" from failing, delete the NetBackup credential for the vCenter and re-enter the credential with the correct case. For instructions on how to add credentials, see "Adding NetBackup credentials for VMware" in the *NetBackup for VMware Administrator's Guide*. Alternatively, you can edit the name of the vCenter server in vSphere Web client to match with the credentials entered in the NetBackup master server.

See [“Pre-Recovery Check screen”](#) on page 72.

## IR operation is not complete due to NFS mount limit exceed

Single IR operation creates at least one NFS mount. In case the limit of the mounts exceeds the set default limit, the next IR operation cannot succeed. Make sure there are mount points available for IR, or clean the mount points before the next IR operation.

## IR-ready backup images are not available for selection

If the backup images are not shown on the **Selecting Backup Images** screen, the images may not be available on the master server for the selected period.

Note the following about instant recovery of VMware virtual machines:

- Supports the following storage unit types (disk only):  
 BasicDisk, AdvancedDisk, Media Server Deduplication Pool (MSDP), PureDisk Deduplication Pool (PDDO).

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**Note:** Snapshot-only backups are not supported.

---

- Does not support a virtual machine that had the disks that were excluded from the backup. The policy **Virtual disk selection** option must be set to include all disks.
- Does not support a virtual machine that has a disk in raw device mapping mode (RDM) or that has a disk in Persistent mode.
- Supports the following policy schedule types: Full backups, and the incremental backups that include the **Use Accelerator** option with a disk-based storage unit. Incremental backups without the **Use Accelerator** policy option are not supported.
- Does not support virtual machine templates.

Contact a NetBackup administrator to check the backup details.

## vCenter server and NetBackup master server names are not available for search

On the **Virtual Machine Selection** screen, during the vCenter and the NetBackup master server selection, the drop-down list may not display any items.

Check the following:

- The NetBackup vSphere plug-in is registered with the vCenter server.
- The web service is enabled in the NetBackup master server. For more information, refer to the following topics:  
 See [“Enabling NetBackup Web Services on the Windows master server”](#) on page 28.  
 See [“Enabling NetBackup Web Services on the UNIX or Linux master server”](#) on page 31.
- The NetBackup master server client certificate was generated and imported in the vSphere plug-in.
- The following services are up in the NetBackup master server:
  - NetBackup Service Layer
  - NetBackup Web Management Console
- The vCenter server is registered with the NetBackup master server.
- NetBackup master server version is not less than 7.7.

## Preferred IR-destination options are not saved

In some cases, the preferred destination options on the **Settings** tab are not applied when you select the options. The vCenter server may not be available, or another Administrative account changed the saved settings. Take appropriate action to resolve these issues.

## Virtual machine display name conflicts are not shown before pre-recovery check

During IR operation, the conflicts in the virtual machine display name are not shown in the wizard screen. These conflicts are later populated in the pre-recovery check failure. The conflict in the display name is shown only when it is present in the same VM folder. The conflict across the ESX server is only captured during the pre-recovery check.

## Reasons for failure of pre-recovery checks

Following are the reasons for one or multiple failures in the pre-recovery checks during the instant recovery operation:

- vSphere server credentials changed.  
In case an administrator changes the vSphere server credentials or after the vSphere server is registered with the plug-in.
- Incorrect data center path or folder path.
- Non-ASCII characters are used in the specified parameters.
- Virtual machine display name conflict.  
In case the virtual machine name already exists on the ESX server.
- Connectivity and space availability.  
The issues that are related to connectivity to various recovery artifacts and the available storage space for recovery.
- VMware connectivity-related issue.
- NFS volume mount limit exceeds on ESX host.  
In case the NFS volume mount limit (eight mounts) exceeds.
- Backup image not available.  
In case the selected backup image is not available for recovery.

The pre-recovery check is the one-time action for one IR-Wizard operation. Even after failure checks are displayed in the pre-recovery check list, you can perform IR operations.

## Timeout or long time taken to populate the list of NetBackup master servers

In case a timeout is seen or time taken for displaying the NetBackup master server list is too long, validate the master server using the **Register Master Servers** option on the **Symantec NetBackup** portal in the plug-in. If the validation throws an error, contact the NetBackup administrator and check the vSphere Web Client Virgo logs at the following location:

- **Linux:**  
`/storage/log/vmware/vsphere-client/logs/vsphere_client_virgo.log`
- **Windows:** `C:\Programdata\VMware\vsphere Web Client\serviceability\logs\vsphere_client_virgo.log`

## NetBackup plug-in not shown in vSphere Web Client portal even after registration

If the plug-in is hosted on an **HTTP** site instead of an **HTTPS** site, you need to make the vSphere Web Client trust the **HTTP** connections. If not, the connection does not download and deploy the plug-in. To build this trust, add following directive to the `webclient.properties` file:

```
allowHttp = true
```

The `webclient.properties` file can be located in the following directories:

**Windows:** `C:\ProgramData\VMware\vsphere Web Client\`

**Linux:** `/var/lib/vmware/vsphere-client`

## Correct NetBackup master server does not show up for selection for a given vCenter server on the IR wizard

The vCenter Server host name should be the same at the following occurrences:

- The name that is registered with the NetBackup master server.
- The name that is registered with the vSphere Web Client.
- The name that is registered with the plug-in during the plug-in installation; either the FQDN or the short name to be used at all occurrences.

# Appendices for instant recovery operations

This appendix includes the following topics:

- [Instant recovery events for non-available virtual machines](#)
- [Port usage for the plug-in](#)
- [Best practices for instant recovery operations](#)

## Instant recovery events for non-available virtual machines

For instant recovery operations (activate, deactivate, reactivate), NetBackup posts success or failure events to the vCenter server. These events are posted for the virtual machine that is being restored.

For the activate and reactivate operations, the virtual machine already exists in vCenter. Therefore, when you select that virtual machine in vSphere Web Client and navigate to the **Monitor > Events** tab, you see the NetBackup events for these operations.

For the deactivate operation, the virtual machine is unregistered and deleted from vCenter server. That virtual machine is no longer visible in vSphere Web Client. To see its NetBackup events, select the ESX server or top-level vCenter object in vSphere Web Client and navigate to **Monitor > Events**. Usually only the event description appears in the **Events** tab. In rare cases, the event ID may appear instead of the event description.

The following are the IR event IDs and descriptions.

Event ID	Description
IR Activate Operation Events	
<b>com.symantec.netbackup.instantrecovery.activate.success</b>	NetBackup instant recovery <b>Activate</b> operation is successful.
<b>com.symantec.netbackup.instantrecovery.activate.failure</b>	NetBackup instant recovery <b>Activate</b> operation is failed.
IR Deactivate Operation Events	
<b>com.symantec.netbackup.instantrecovery.deactivate.success</b>	NetBackup instant recovery <b>Deactivate</b> operation is successful.
<b>com.symantec.netbackup.instantrecovery.deactivate.failure</b>	NetBackup instant recovery <b>Deactivate</b> operation is failed.
IR Reactivate Operation Events	
<b>com.symantec.netbackup.instantrecovery.reactivate.success</b>	NetBackup instant recovery <b>Reactivate</b> operation is successful.
<b>com.symantec.netbackup.instantrecovery.reactivate.failure</b>	NetBackup instant recovery <b>Reactivate</b> operation is failed.

## Port usage for the plug-in

[Table A-1](#) shows the standard ports to be used in a NetBackup vSphere Web Client Plug-in environment.

**Table A-1** Ports used in NetBackup and the vSphere Web Client Plug-in environment

Source	Port number	Destination
Browser	9443	vSphere Web Client
vSphere Web Client (IR plug-in)	RESTful interface at port 8443 (https) or as configured on the master server	Master Server
vSphere Web Client (IR plug-in)	443	vCenter Server
Master Server	443	vCenter Server
Backup Host	443	vCenter Server

**Table A-1** Ports used in NetBackup and the vSphere Web Client Plug-in environment (*continued*)

Source	Port number	Destination
Backup Host	902 (for nbd or nbds sl)	ESXi

## Best practices for instant recovery operations

Following best practices are advised during the Instant Recovery Wizard operations.

- Instant recovery can be simultaneously performed for about ten virtual machines for a single NetBackup master server. However for performance reasons, it is recommended to limit the operation to 2 to 3 virtual machines if the NetBackup storage type is PureDisk. Consult your backup administrator for more details.
- If an instant recovery operation (activate/reactivate/deactivate/done) fails, check the NetBackup event logs using the vSphere Web Client interface (**Symantec NetBackup** portal > **Events**), for more details.
- Remove the NetBackup master servers in unused, unreachable, or shutdown state, from the plug-in.
- On Instant recovery wizard screens, wait for the ongoing IR operation to process. While the cursor is in busy state, restrain from clicking the other options.