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

Release 8.0
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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
- Updates to this guide for NetBackup 8.0

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.
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 the following document:

Support for NetBackup in virtual environments

Notes on the NetBackup plug-in for vSphere Web Client

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

- 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:

  ![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 “Notes on the NetBackup recovery wizards” on page 47.

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>
<thead>
<tr>
<th>Feature</th>
<th>How to access the NetBackup plug-in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor the status of virtual machine backups</td>
<td>In the vSphere Web Client object navigator, click the <strong>Home &gt; Hosts and Clusters &gt; Monitor &gt; Veritas NetBackup</strong> tab. In the object navigator, select the vSphere object to monitor, such as vCenter, ESXi server, VM, or other object. See “Veritas NetBackup tab in vSphere Web Client” on page 35.</td>
</tr>
<tr>
<td>Restore a virtual machine</td>
<td>In the vSphere Web Client object navigator, click <strong>Veritas NetBackup</strong>, then click <strong>Recovery Wizard</strong>. You can access the Recovery Wizard in several other ways: See “How to access the NetBackup Recovery Wizards” on page 48. <strong>Note:</strong> The recovery wizards are optional. They are not required for monitoring virtual machine backups.</td>
</tr>
</tbody>
</table>
Table 1-1   Accessing basic functions of the NetBackup plug-in for vSphere Web Client (continued)

<table>
<thead>
<tr>
<th>Feature</th>
<th>How to access the NetBackup plug-in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restore a virtual machine instantly</td>
<td>In the vSphere Web Client object navigator, click <strong>Veritas NetBackup</strong>, then click <strong>Instant Recovery Wizard</strong>.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> With this wizard, you can instantly recover the virtual machines and power them on.</td>
</tr>
</tbody>
</table>

**Updates to this guide for NetBackup 8.0**

This revision contains the following changes:

- An option to retain the virtual machine’s tag associations has been added to the NetBackup Recovery Wizards. An option to retain the virtual machine’s original hardware version has also been added to the NetBackup Instant Recovery Wizard.
  
  See “Virtual Machine Options screen” on page 60.
  See “Setting virtual machine options” on page 71.

- Directions for enabling web services and for configuring web ports on the NetBackup master server have been removed. Web services are automatically enabled when the NetBackup master server (at 8.0 or later) is installed.
  
  See the following tech note for the web server tasks you must perform before installing the master server.

**Note:** If the NetBackup master server is earlier than 8.0, refer to the previous version of this plug-in guide for instructions on enabling web services.
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

For a list of supported NetBackup versions, VMware versions, and other support requirements for the plug-in, see the following document:

- Support for NetBackup in virtual environments:
  http://www.veritas.com/docs/000006177

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

Table 2-1 lists NetBackup configuration requirements for the plug-in.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description and notes</th>
</tr>
</thead>
</table>
| Configure NetBackup to back up the virtual machines. | For example, the NetBackup administrator must configure the following:  
  - The VMware backup host (proxy, or access host).  
  - The NetBackup credentials for the vCenter server.  
  **Note:** 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.  
  - Policies of type VMware, with the Post events to vCenter option set to All Events.  
  The *NetBackup for VMware Administrator’s Guide* explains how to set up VMware policies. |

Table 2-2 lists the steps for installing the NetBackup plug-in. See the reference topic in the table for details on each step.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Reference topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Install the plug-in for vSphere Web Client.</td>
<td>See “Installing the NetBackup plug-in for vSphere Web Client” on page 13.</td>
</tr>
<tr>
<td>2</td>
<td>Set vCenter privileges for backup monitoring.</td>
<td>See “Setting vCenter privileges for backup monitoring” on page 34.</td>
</tr>
</tbody>
</table>
The steps for setting up the NetBackup plug-in's Recovery Wizard are described in another topic:


**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 list of the installation requirements:

- The plug-in installation media (`NetBackup_8.0_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

![Diagram showing installation process](image)

1. **Download** NetBackup 8.0_Plugins.zip to a Windows host.

2. **Copy** netbackup-vwc-plugin.zip to package host.

3. On Windows host, double-click PluginUtil.jar file to start plug-in registration.

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

**Table 2-3** describes the installation requirements in more detail.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Notes</th>
</tr>
</thead>
</table>
| NetBackup plug-in media | You can download the plug-in installation media from the following location:  
                          | https://my.veritas.com/  
                          | See the following procedure for instructions:  
<pre><code>                      | To install the NetBackup plug-in for vSphere Web Client |
</code></pre>
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows host</td>
<td>Download the plug-in media to a Windows host.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The Windows host must have network connectivity to the vCenter server and to the vSphere Web Client server.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The Java Runtime Environment (JRE) version 1.7 update 55 or later must be installed on the Windows host.</td>
</tr>
<tr>
<td>Plug-in package host web server</td>
<td>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.</td>
</tr>
<tr>
<td>and its URL</td>
<td><strong>Note:</strong> The URL of the plug-in package host is required during plug-in installation.</td>
</tr>
<tr>
<td>vSphere Web Client server(s)</td>
<td>When the plug-in is installed, it runs on the vSphere Web Client server.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> 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.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The vSphere Web Client server can manage multiple vCenter servers, and multiple vSphere Web Client servers can manage the same vCenter server.</td>
</tr>
<tr>
<td>vCenter server(s) and their</td>
<td>The plug-in monitors backups of virtual machines that VMware vCenter servers manage. The following are required to complete the plug-in installation:</td>
</tr>
<tr>
<td>credentials</td>
<td>- Host name or IP address of each vCenter server.</td>
</tr>
<tr>
<td></td>
<td>- User name and password of each vCenter server.</td>
</tr>
<tr>
<td></td>
<td>- Port number for each vCenter server (default is 443).</td>
</tr>
</tbody>
</table>

**Note:** Installing the NetBackup plug-in for vSphere Web Client does not uninstall the original NetBackup 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.veritas.com/docs/DOC5332
To install the NetBackup plug-in for vSphere Web Client

1. If you are a new Licensing Portal user, contact your company's administrator or Veritas Customer Care for assistance with obtaining a MyVeritas account.
   
   https://my.veritas.com/

   You can email us at:
   
   CustomerCare@veritas.com

2. Log on to the MyVeritas website with your MyVeritas account.

3. Under Licensing, use your entitlement ID to locate the NetBackup plug-in and download the NetBackup_8.0_Plugins.zip file to your Windows host.

   See the following MyVeritas guide for assistance with the Veritas Licensing Portal:
   

4. Unzip the file.

5. In the unzipped 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.
6 On the Windows host, in the downloaded plug-in folders, locate the \vwcplugin_registration\jars folder:

![Image showing the folders]

7 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.
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**:
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 5.
9 Log on to a vSphere Web Client server that manages the vCenter server where you registered the plug-in.

When you log on, 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 logon 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:

![NetBackup Plug-in for VMware vSphere Web Client 8.0 Setup](image)

'NetBackup Plug-in for VMware vSphere Web Client' has been registered successfully.

10 To register the plug-in with another vCenter, repeat steps 8 and 9.

**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:


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):


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 9 and 10:

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 in the downloaded executables.

To un-register the NetBackup VMware plug-in from vSphere Web Client

1. On the Windows host, locate the
   `NBvwcPlugin\NetBackup_vwcPlugin_Win\vwcplugin_registration\jars` folder.
2. In the `\jars` folder, double click the `PluginUtil.jar` file.
3. Enter VMware vCenter Server details and click `Validate`.
4. Click `Unregister` to un-register the plug-in from the vSphere Web Client.
5. Click `Unregister` and confirm the action using the pop-up message.

Upgrading the NetBackup plug-in for vSphere Web Client

Upgrade the NetBackup plug-in for vSphere Web Client using a utility that is provided in the downloaded executables.

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

1. On the Windows host, locate the
   `NBvwcPlugin\NetBackup_vwcPlugin_Win\vwcplugin_registration\jars` folder.
2. In the `\jars` folder, double click the `PluginUtil.jar` file.
3. Enter VMware vCenter Server details and click `Validate`.
4. Click `Upgrade` to continue with the upgrading to the preferred version of the plug-in.
5. 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 on 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:* The NetBackup Recovery and Instant Recovery Wizards are optional features of the NetBackup plug-in for vSphere Web Client. The wizards provide a means of recovering virtual machines. They are not required for monitoring virtual machine backups.

To use the NetBackup Recovery and Instant Recovery Wizards to restore virtual machines, configure the following:
Table 2-4 Configuring the NetBackup Recovery Wizard

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Reference topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Authorize the plug-in to restore virtual machines.</td>
<td>See “Authorizing the NetBackup plug-in to restore virtual machines” on page 28.</td>
</tr>
<tr>
<td>3</td>
<td>Set the required vCenter privileges.</td>
<td>See “Setting vCenter privileges for recovering virtual machines” on page 31.</td>
</tr>
</tbody>
</table>

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

   *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 28.
To create an authentication token (certificate) on the NetBackup appliance as master server

1. To generate the certificate, see the "Manage > Certificates" topic in the NetBackup Appliance Administrator’s Guide, available from this location: http://www.veritas.com/docs/000002217

2. Provide the compressed certificate file to the vCenter administrator.

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

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

See "Authorizing the NetBackup plug-in to restore virtual machines" on page 28.

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 “Authorizing the NetBackup plug-in to restore virtual machines” on page 28.

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

1. 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:
   
<table>
<thead>
<tr>
<th>Client</th>
<th>Expiry Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>vCenter-server-1</td>
<td>Thu Feb 06 16:16:51 GMT+05:30 2014</td>
</tr>
<tr>
<td>vCenter-server-2</td>
<td>Fri Feb 07 11:22:53 GMT+05:30 2014</td>
</tr>
</tbody>
</table>
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.
   

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 **Veritas NetBackup**.
4 Click Register Master Servers.

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

Permissions on the NetBackup plug-in authentication token file may need to be changed

To allow the NetBackup plug-in to restore VMs, the NetBackup administrator must generate an authentication token on the NetBackup master server. NetBackup creates the token in a compressed file; the file must be sent to the administrator of the vCenter server where the plug-in is installed.

When the virtualization administrator uses the compressed file to authorize the plug-in to restore VMs, the token file is opened and left uncompressed. In either of the following cases, the uncompressed file may not have the same permissions that it had when the NetBackup administrator created the token:

- On the Linux vCenter Server Appliance, the umask is set to 0.
- VMware vSphere on Windows is installed in a location other than C:\Program Files.

In either case, you may need to adjust the token file's permissions to conform to your NetBackup security settings.
The uncompressed token file is in the following location on the vSphere Web Client server:

**On a Linux vCenter Server Appliance:** /storage/vsphere-client/netbackup

**On a Windows vCenter server:** C:\ProgramData\VMware\vSphere Web Client\netbackup

### 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**

<table>
<thead>
<tr>
<th>Usage</th>
<th>Privileges</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ All Privileges</td>
<td></td>
</tr>
<tr>
<td>✓ Alarms</td>
<td></td>
</tr>
<tr>
<td>✓ Datacenter</td>
<td></td>
</tr>
<tr>
<td>✓ Database</td>
<td></td>
</tr>
<tr>
<td>✓ Datastore cluster</td>
<td></td>
</tr>
<tr>
<td>✓ Distributed switch</td>
<td></td>
</tr>
<tr>
<td>✓ ESXi Agent Manager</td>
<td></td>
</tr>
<tr>
<td>✓ Extension</td>
<td></td>
</tr>
<tr>
<td>✓ Folder</td>
<td></td>
</tr>
<tr>
<td>✓ Global</td>
<td></td>
</tr>
<tr>
<td>✓ Host</td>
<td></td>
</tr>
<tr>
<td>✓ Host profile</td>
<td></td>
</tr>
<tr>
<td>✓ NetBackup Recovery</td>
<td></td>
</tr>
<tr>
<td>✓ Add or Remove NetBackup Servers</td>
<td></td>
</tr>
<tr>
<td>✓ Virtual Machine Recovery</td>
<td></td>
</tr>
<tr>
<td>✓ Network</td>
<td></td>
</tr>
</tbody>
</table>

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
- Veritas NetBackup tab in vSphere Web Client
- Summary display
- Virtual Machines display
- Events display
- Using the Veritas 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.

---

**Veritas NetBackup tab in vSphere Web Client**

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

In the vSphere Web Client, click **Hosts and Clusters > Monitor**. Then select a vSphere object and click **Veritas NetBackup**.
Note: Select an object, such as a vCenter, folder, datacenter, or ESXi host. The information that appears in the Veritas NetBackup tab applies to the VMs within the object that you select.

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

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

<table>
<thead>
<tr>
<th>Display</th>
<th>Information shown</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary</strong></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>See “Summary display” on page 37.</td>
</tr>
</tbody>
</table>
Table 3-1  Summary, Virtual Machines, and Events displays (NetBackup plug-in for vSphere Web Client) (continued)

<table>
<thead>
<tr>
<th>Display</th>
<th>Information shown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Machines</td>
<td>Tabular view of backup information for a group of VMs.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This display is available when you click on a vSphere object that is</td>
</tr>
<tr>
<td></td>
<td>higher than the level of a VM.</td>
</tr>
<tr>
<td></td>
<td>You can filter the information with a range of criteria. Includes an option for</td>
</tr>
<tr>
<td></td>
<td>customized sorting in multiple columns.</td>
</tr>
<tr>
<td></td>
<td>See “Virtual Machines display” on page 39.</td>
</tr>
<tr>
<td>Backup Events</td>
<td>More detailed tabular view of backup information based on events. Can show backup</td>
</tr>
<tr>
<td></td>
<td>events for a VM or its parent object.</td>
</tr>
<tr>
<td></td>
<td>You can filter the information with a range of criteria. Includes an option for</td>
</tr>
<tr>
<td></td>
<td>customized sorting in multiple columns.</td>
</tr>
<tr>
<td></td>
<td>See “Events display” on page 40.</td>
</tr>
</tbody>
</table>

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.
The Summary display presents the following backup information.

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

<table>
<thead>
<tr>
<th>Panel</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virtual Machines</strong></td>
<td>Shows the current backup status for a particular VM or for all the VMs that belong to the selected vSphere object.</td>
</tr>
<tr>
<td></td>
<td>If the vSphere object is higher than the level of a VM, the backup status appears in a color-coded pie chart.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If the panel applies to more than one VM: click on the linked values (such as for <strong>Backup Successful</strong> or <strong>Total</strong>) to see the details in the Virtual Machines display.</td>
</tr>
<tr>
<td><strong>Virtual Machines By Backup Age</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>
Table 3-2  NetBackup Summary display for vSphere Web Client (continued)

<table>
<thead>
<tr>
<th>Panel</th>
<th>Description</th>
</tr>
</thead>
</table>
| Backup Events | Lists the total number of backup events and a breakdown of the events by Backup Successful, Backup Failed, and Snapshot Delete Failed.  
**Note:** Click on the linked values for Backup Successful, Backup Failed, Snapshot Delete Failed, or Total to see the details in the Events display.  
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.  
You can configure the chart as follows:  
- Select the types of events that appear in the chart by clicking on the color-coded check boxes.  
- Select a different time period from View events from the last. |

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.

![Virtual Machines display](image)

**Figure 3-2**  Virtual Machines display

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

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name 1 ▼</td>
<td>Click in a column header to list the column entries in ascending or descending order. You can also adjust the width of each column.</td>
</tr>
<tr>
<td></td>
<td>Click and hold a column header to drag the column to the left or right in the display.</td>
</tr>
<tr>
<td>Backup Status</td>
<td>Right-click on a row to exclude or include a VM in the display, or to recover a VM.</td>
</tr>
<tr>
<td>Backup Failed</td>
<td><strong>Exclude</strong>: Marks a selected VM so that its backup status and other information are not displayed.</td>
</tr>
<tr>
<td>Backup Success</td>
<td><strong>Include</strong>: Reverses the <strong>Exclude</strong> option: Adds a VM's backup status and other information to the display.</td>
</tr>
<tr>
<td>No Backup</td>
<td><strong>Recover</strong>: Brings up the <strong>Recovery Wizard</strong>, to recover the VM.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>To save the information to an HTML or comma-separated text (CSV) file, click <strong>Export</strong>.</td>
</tr>
<tr>
<td></td>
<td>To save to the Clipboard, click <strong>Copy</strong>.</td>
</tr>
</tbody>
</table>

### 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.
Table 3-4  Events display

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Machine</td>
<td>Click in a column header to list the column entries in ascending or descending order. You can also adjust the width of each column.</td>
</tr>
<tr>
<td>Policy</td>
<td>Click and hold a column header to drag the column to the left or right in the display.</td>
</tr>
<tr>
<td>Backup Successful</td>
<td>For the selected vSphere object, shows only the VMs that were successfully backed up.</td>
</tr>
<tr>
<td>Backup Failed</td>
<td>For the selected vSphere object, shows only the VMs that were not successfully backed up.</td>
</tr>
<tr>
<td>Snapshot Delete Failed</td>
<td>For the selected vSphere object, shows only the VMs for which NetBackup failed to delete the snapshot after the backup completed.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> 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.</td>
</tr>
<tr>
<td>Recover</td>
<td>To recover a VM, right-click on its row and click Recover. The <strong>Recovery Wizard</strong> appears.</td>
</tr>
</tbody>
</table>
### Using the Veritas NetBackup tab for backup reporting

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

The information that appears in the **Veritas 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 **Veritas NetBackup**.
3. Use the **Summary** or **Events** displays to see the backup status.

---

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

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export Selected Items Only</td>
<td>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.</td>
</tr>
<tr>
<td>Export All</td>
<td>To save the information to an HTML or comma-separated text (CSV) file, click <strong>Export</strong>.</td>
</tr>
<tr>
<td>Copy to Clipboard Selected Items Only</td>
<td></td>
</tr>
<tr>
<td>Copy All</td>
<td>To save to the Clipboard, click <strong>Copy</strong>.</td>
</tr>
</tbody>
</table>
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 Veritas NetBackup.
   The Summary display shows the backup success rate for the VMs overall.
   See “Summary display” on page 37.

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 39.
   See “Events display” on page 40.

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 Veritas 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 Veritas 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

<table>
<thead>
<tr>
<th>Status</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup failures</td>
<td>■ Look at the number of consecutive failures on the Virtual Machines display.</td>
</tr>
<tr>
<td></td>
<td>■ 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.</td>
</tr>
<tr>
<td>No backup information</td>
<td>■ The VM may not be included in a NetBackup policy, or the Post events to vCenter policy option may not be correctly configured. Contact the NetBackup administrator.</td>
</tr>
<tr>
<td></td>
<td>■ 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 Virtual Machines display and click Exclude. The Exclude option removes the VM's status from the display.</td>
</tr>
<tr>
<td></td>
<td>■ The ESXi server may have been removed from the vCenter server. See “Notes on the NetBackup plug-in for vSphere Web Client” on page 8.</td>
</tr>
<tr>
<td>Snapshot delete failed</td>
<td>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.</td>
</tr>
</tbody>
</table>
Restoring virtual machines

This chapter includes the following topics:

- Configuring settings for the virtual machine recovery
- Notes on the NetBackup recovery wizards
- 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

Configuring settings for the virtual machine recovery

Use the Settings option to configure the settings 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 Veritas NetBackup.

2. Click Settings.

3. In the Settings dialog, enter the settings as described in Table 4-1.
4 For each **Preferred Instant Recovery Destination** setting, click **Change** or **Select**.

5 Click **Save** to save the 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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Retention Period for Backup Events</td>
<td>Set the retention period of the vCenter event viz. recovered virtual machines.</td>
</tr>
<tr>
<td>Maximum number of instant recovery of VM(s) active at one time per master server</td>
<td>Enter the maximum number of IR jobs that can be run simultaneously for a single NetBackup master server.</td>
</tr>
<tr>
<td>Preferred Instant Recovery Destination</td>
<td>Select the destination settings for instant recovery.</td>
</tr>
<tr>
<td>vCenter Server</td>
<td>The destination vCenter server.</td>
</tr>
<tr>
<td>Data center/ESX Server</td>
<td>The data center or the ESX server that is registered with the vCenter server. Click <strong>Select</strong> (or <strong>Change</strong>) for a pop-up in which to locate the data center or server.</td>
</tr>
<tr>
<td>Resource Pool or vApp</td>
<td>The virtual machine pool or the vApp to be used for the recovery.</td>
</tr>
<tr>
<td>Temporary Datastore or Datastore Cluster</td>
<td>The temporary datastore to be used during the recovery process.</td>
</tr>
<tr>
<td>Clear Preferred Destination Settings</td>
<td>Click to remove the current settings.</td>
</tr>
</tbody>
</table>

**Notes on the NetBackup recovery wizards**

Use the Veritas NetBackup **Recovery Wizard** to restore a virtual machine from its NetBackup image. You can restore the virtual machine to its original location or to a different location.

Use the Veritas NetBackup **Instant Recovery Wizard** to instantly restore virtual machine backup images. 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.

Note the following about the NetBackup plug-in's recovery wizards:
- For the prerequisites for using the recovery wizards:

- The recovery wizards are an optional feature of the plug-in. They are 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 plug-in’s Instant Recovery Wizard to boot the virtual machine instantly and access the files.
  See also: "About restore of individual files" and "Restoring individual files" in the NetBackup for VMware Administrator’s Guide.

- The recovery wizards do 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.

- You can also perform VM recovery and instant recovery using the nbrestorevm command. For more information, refer to the NetBackup for VMware Administrator’s Guide and the NetBackup Commands Reference Guide.

---

**How to access the NetBackup Recovery Wizards**

In vSphere Web Client, you can launch the NetBackup Recovery Wizards as shown in Table 4-2.
## Table 4-2

**How to start the NetBackup Recovery Wizards in vSphere Web Client**

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In the vSphere Web Client object navigator, click Veritas NetBackup, then click Recovery Wizard or Instant Recovery Wizard.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>In Hosts and Clusters, click the Monitor tab.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>In the Veritas NetBackup tab, click Virtual Machines or Events, right-click on a successful backup for the virtual machine, and click Recover.</strong></td>
<td></td>
</tr>
</tbody>
</table>
Table 4-2  How to start the NetBackup Recovery Wizards in vSphere Web Client (continued)

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In the Virtual Machines pane (or in the left pane), right-click on the VM to restore and click Veritas NetBackup &gt; Recovery Wizard.</td>
</tr>
</tbody>
</table>

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 4-3 Fields in the Virtual Machine Selection screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select the vCenter Server</td>
<td>Use the drop-down list to select the vCenter server where the VM resided when it was backed up.</td>
</tr>
<tr>
<td>Select NetBackup Master Server</td>
<td>Use the drop-down list to select the master server that made the backup.</td>
</tr>
<tr>
<td></td>
<td>If the master server is not in the drop-down, you must add the server to the master server list.</td>
</tr>
<tr>
<td></td>
<td>See “Authorizing the NetBackup plug-in to restore virtual machines” on page 28.</td>
</tr>
<tr>
<td>Enter Display Name or UUID or DNS Name or Host Name</td>
<td>Enter the name (or portion of the name) of the virtual machine that you want to restore, and click Search.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This field is case-sensitive.</td>
</tr>
</tbody>
</table>
Table 4-3  Fields in the Virtual Machine Selection screen *(continued)*

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Search Results</strong></td>
<td>The results of the search appear in this list. Click the virtual machine to restore and then click <strong>Next</strong>. The NetBackup master server identifies each VM in the backup policy as a &quot;client.&quot; In the search results, the <strong>NetBackup Client Name</strong> column displays that name.</td>
</tr>
</tbody>
</table>

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

![Image Selection screen](image)
## Table 4-4  Fields in the Image Selection screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Select Backup Image to view details</strong></td>
<td>Use the drop-down to select the backup, as follows:</td>
</tr>
<tr>
<td></td>
<td>■ <strong>Latest Backup</strong></td>
</tr>
<tr>
<td></td>
<td>Selects the latest available backup image.</td>
</tr>
<tr>
<td></td>
<td>■ <strong>Manually Specify</strong></td>
</tr>
<tr>
<td></td>
<td>Click this option to select a different backup image. The <strong>Browse Backups</strong> option appears. Click that option and enter a date range within which to search for images. For more information, see Table 4-5.</td>
</tr>
<tr>
<td><strong>Details for Backup Image</strong></td>
<td>Lists the information about the VM backup image.</td>
</tr>
<tr>
<td><strong>Virtual Machine Attributes</strong></td>
<td>Lists the attributes of the virtual machine at the time it was backed up.</td>
</tr>
<tr>
<td><strong>VMDKs</strong></td>
<td>Lists the vmdk file(s) of the selected VM.</td>
</tr>
<tr>
<td><strong>Next</strong></td>
<td>Click <strong>Next</strong> for the next recovery screen.</td>
</tr>
</tbody>
</table>
Figure 4-3  Manual Backup Selection screen in the NetBackup Recovery Wizard for vSphere Web Client

Images

<table>
<thead>
<tr>
<th>Backup Time</th>
<th>Schedule Type</th>
<th>Size</th>
<th>Policy</th>
<th>Hardware Snapshot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fri, 01 Jul 2016, 12:00:43 PM</td>
<td>Full</td>
<td>40991 kbytes</td>
<td>Test</td>
<td>No</td>
</tr>
<tr>
<td>Fri, 01 Jul 2016, 11:57:44 AM</td>
<td>Differential incremental</td>
<td>32 kbytes</td>
<td>Test</td>
<td>No</td>
</tr>
<tr>
<td>Fri, 01 Jul 2016, 11:56:06 AM</td>
<td>Full</td>
<td>40991 kbytes</td>
<td>Test</td>
<td>No</td>
</tr>
<tr>
<td>Fri, 01 Jul 2016, 11:45:56 AM</td>
<td>Full</td>
<td>40991 kbytes</td>
<td>Test</td>
<td>No</td>
</tr>
<tr>
<td>Fri, 01 Jul 2016, 11:42:48 AM</td>
<td>Differential incremental</td>
<td>32 kbytes</td>
<td>Test</td>
<td>No</td>
</tr>
<tr>
<td>Wed, 06 Jul 2016, 02:15:53 PM</td>
<td>Full</td>
<td>40991 kbytes</td>
<td>Test</td>
<td>No</td>
</tr>
</tbody>
</table>

Virtual Machine Attributes

<table>
<thead>
<tr>
<th>Display Name</th>
<th>BIOS UUID</th>
<th>Cluster</th>
<th>Instance UUID</th>
<th>Folder</th>
<th>Host Name</th>
<th>DNS Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM_Tes12</td>
<td>427d4e17-f1c2-233d-0132-cb48cc572b9b</td>
<td>Cluster_ESX_7</td>
<td>503e93d-771d-de16-6726-a139b8933ce7</td>
<td>/Virtualization_DC7/vm1</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
### Table 4-5 Fields in the Manual Backup Selection screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Search backup images between start and end time</strong></td>
<td>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 <strong>Hour</strong>, <strong>Minutes</strong>, <strong>Seconds</strong> fields to set more precise times. Then click <strong>Search Images</strong>. Click on an image. Further information about the image appears under <strong>Virtual Machine Attributes</strong> and <strong>VMDKs</strong>.</td>
</tr>
<tr>
<td><strong>Images</strong></td>
<td>Lists the images that fall within the search dates.</td>
</tr>
<tr>
<td><strong>Virtual Machine Attributes</strong></td>
<td>For the selected image, lists the attributes of the virtual machine at the time it was backed up.</td>
</tr>
<tr>
<td><strong>Selected Backup</strong></td>
<td>Click to select the image.</td>
</tr>
</tbody>
</table>

### 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

![Destination Selection screen in the NetBackup Recovery Wizard for vSphere Web Client](image)

### Table 4-6 Fields in the Destination Selection screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>vCenter Server</strong></td>
<td>The vCenter server for the restored virtual machine. Use the drop-down to select the vCenter server.</td>
</tr>
<tr>
<td><strong>ESX</strong></td>
<td>The ESXi server for the restored virtual machine. Click <strong>Change</strong> to browse for an ESX server.</td>
</tr>
<tr>
<td><strong>DataCenter</strong></td>
<td>The datacenter for the restored virtual machine.</td>
</tr>
<tr>
<td><strong>Folder</strong></td>
<td>The folder for the restored virtual machine. Click <strong>Change</strong> to browse for a folder.</td>
</tr>
<tr>
<td><strong>Resource Pool/vApp</strong></td>
<td>The resource pool for the restored virtual machine. Click <strong>Change</strong> to browse for a resource pool or vApp.</td>
</tr>
</tbody>
</table>
Table 4-6  Fields in the Destination Selection screen (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Datastore/Datastore Cluster</strong></td>
<td>The datastore or datastore cluster for the restored virtual machine. Click <strong>Change</strong> to browse for a datastore or datastore cluster.</td>
</tr>
<tr>
<td><strong>Display Name</strong></td>
<td>The display name for the restored virtual machine. You can enter the name.</td>
</tr>
<tr>
<td><strong>Revert to Original location</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Next</strong></td>
<td>Click <strong>Next</strong> for the next recovery screen.</td>
</tr>
</tbody>
</table>

**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 4-7  Fields in the Transport Selection screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| **NetBackup recovery host** | The host that performs the recovery. The default is the host that performed the backup (the backup host). 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. For example, the restore may fail if you select the SAN transport mode in the following case:  
  - The host that performed the backup used a SAN connection to access the datastore.  
  - The host you select as recovery host does not have SAN access to the datastore. |
| **Transport Modes**     | 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. 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 **Move Up** or **Move Down**. |
| san                    | For unencrypted transfer over Fibre Channel (SAN) or iSCSI.                                                                                                                                                   |
| nbd                    | 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.                                                     |
| nbdssl                 | 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.                                                    |
| hotadd                 | Requires that the recovery host is in a virtual machine. For instructions on this transport mode and on installing the recovery host in a virtual machine, refer to your VMware documentation.                                    |

## 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>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Provision</td>
<td>Restores the virtual machine's virtual disks with their original provisioning.</td>
</tr>
<tr>
<td>Thick Provision Lazy Zeroed</td>
<td>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.</td>
</tr>
<tr>
<td>Thick Provision Eager Zeroed</td>
<td>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.</td>
</tr>
<tr>
<td>Thin Provision</td>
<td>Configures the restored virtual disks in the thin format. Restores the populated blocks but does not initialize vacant blocks or commit them.</td>
</tr>
</tbody>
</table>
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 4-9  Fields in the Virtual Machine Options screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| Restore BIOS UUID xxx instead of creating a new UUID | 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. Note the following:  
  - 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.  
  - 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. |
Table 4-9 Fields in the Virtual Machine Options screen *(continued)*

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Restore Instance UUID xxx instead of creating a new UUID** | Retains the Instance UUID of the original virtual machine (note that the Instance UUID is a vCenter specific unique identifier of a virtual machine). The virtual machine is restored with the same Instance UUID that it had when it was backed up.  
If the restore of the virtual machine is to a standalone ESXi host, this option is disabled.  
If a virtual machine with the same Instance UUID exists at the target restore location, a message appears that the UUID is used already. In this case, the original instance UUID is not restored and a new UUID is assigned for the virtual machine. |
| **Overwrite existing virtual machine** | 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. |
| **Remove backing information for devices like DVD/CD-ROM drives, serial or parallel ports** | If a virtual machine had an ISO file that was mounted on a CD when the virtual machine was backed up, note: The ISO file must be available on the target ESX server when you restore the virtual machine. If the ISO file is not available on the ESX server, the restore fails.  
This option restores the virtual machine without restoring an ISO file that was mounted when the virtual machine was backed up. |
| **Remove tag associations** | When this option is selected, NetBackup does not restore tag associations when it restores the virtual machine. If this option is not selected, NetBackup attempts to restore all tag associations from the backup.  
If NetBackup cannot restore one or more of the tag associations, the restore exits with a NetBackup status code 1. |
| **Power on virtual machine after recovery** | The recovered virtual machine is automatically turned on when the recovery is complete. |
| **Retain original hardware version** | 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).  
If this option is disabled, the restored virtual machine is converted to the default hardware version that the ESXi server uses. |

**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 4-10  Fields in the Network Selection screen

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

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>
<thead>
<tr>
<th>Fields in the Pre-Recovery Check screen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Field</strong></td>
</tr>
<tr>
<td><strong>Recovery Settings</strong></td>
</tr>
<tr>
<td><strong>Run Pre-Recovery Check</strong></td>
</tr>
<tr>
<td><strong>Pre-Recovery Check Results</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Finish</strong></td>
</tr>
</tbody>
</table>
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.

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

The Instant Recovery Wizard includes five steps:

- 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 that 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 the Instant Recovery Wizard displays 0 Virtual Machines Added. You must start the wizard operations by searching for and adding the virtual machines.

See "Instant recovery-ready backup images are not available for selection" on page 79.
## Table 4-12  Fields in the Virtual Machine Selection screen

<table>
<thead>
<tr>
<th>Operations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>vCenter Server</strong></td>
<td>Use the drop-down list to select the vCenter server where the VM resided when it was backed up.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The vCenter Server drop-down list displays the names of vCenter servers that are registered with the NetBackup plug-in.</td>
</tr>
<tr>
<td></td>
<td>See &quot; Authorizing the NetBackup plug-in to restore virtual machines&quot; on page 28.</td>
</tr>
<tr>
<td><strong>NetBackup Master Server</strong></td>
<td>Use the drop-down list to select the names of the master servers that are registered with the NetBackup plug-in.</td>
</tr>
<tr>
<td></td>
<td>The name of the master server may not be in the drop-down list due to following reasons:</td>
</tr>
<tr>
<td></td>
<td>■ The NetBackup master server is not registered with the NetBackup vSphere Plug-in.</td>
</tr>
<tr>
<td></td>
<td>■ The selected vCenter server is not added in the NetBackup master server.</td>
</tr>
<tr>
<td></td>
<td>■ Invalid certificate.</td>
</tr>
<tr>
<td></td>
<td>■ Unable to connect to the NetBackup master server.</td>
</tr>
<tr>
<td></td>
<td>■ A mismatch of the vCenter Server name as registered with the NetBackup master server and as registered with the vSphere Web Client. The vCenter server names should be the same (host name or FQDN or IP).</td>
</tr>
<tr>
<td></td>
<td>■ The NetBackup Web Management Console service is down in the NetBackup master server.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> 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.</td>
</tr>
<tr>
<td><strong>Type display name, UUID, DNS, host name</strong></td>
<td>For the virtual machine to restore, enter the full or partial text of the following: VM display name, instance ID, DNS name, or host name. Then click <strong>Search</strong>.</td>
</tr>
<tr>
<td></td>
<td>Enter an asterisk * to search the complete list.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This field is case-sensitive.</td>
</tr>
</tbody>
</table>
**Note:** Once the vCenter server and the NetBackup master server are selected (after you select the virtual machines), the pairing of the two servers is locked. If a server selection is changed, the earlier operations do not remain valid. You can reset the search parameters at any time.

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

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

<table>
<thead>
<tr>
<th>Table 4-13</th>
<th>Additional fields in the Virtual Machine Selection screen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operations</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>Search Results</td>
<td>Select the virtual machines for which you want to select backup images for instant recovery.</td>
</tr>
<tr>
<td>Add Virtual Machines</td>
<td>Click to add the selected virtual machines.</td>
</tr>
<tr>
<td><img src="addvm.png" alt="Add Virtual Machines" /></td>
<td>After you select and add the virtual machines, the <strong>Virtual Machines Added</strong> 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 <strong>Settings</strong> option on the <strong>Veritas NetBackup</strong> landing page. See &quot;Configuring settings for the virtual machine recovery &quot; on page 45. <strong>Note:</strong> The maximum number of instant recovery jobs includes active instant recoveries plus the number of virtual machines being added for the recovery operations.</td>
</tr>
<tr>
<td>View Details</td>
<td>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.</td>
</tr>
<tr>
<td>Reset Search parameters</td>
<td>You can reset the search parameters to cancel earlier selections.</td>
</tr>
</tbody>
</table>

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

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

The following table describes the fields on the Image Selection screen.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Name</td>
<td>Name of the virtual machine that was selected and added in the previous screen.</td>
</tr>
<tr>
<td>Date and Time of Backup</td>
<td>Date and timestamp of the IR-ready backup image.</td>
</tr>
<tr>
<td>Age</td>
<td>Age of the backup image in days or hours.</td>
</tr>
<tr>
<td>vCenter Server</td>
<td>Name of the vCenter server.</td>
</tr>
<tr>
<td>Policy Name</td>
<td>Name of the NetBackup backup policy.</td>
</tr>
</tbody>
</table>

If the IR-ready image is not available in the 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 that were backed up during the last 30 days. Click Select Image to proceed.
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.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Backup Image details**  | The name of the NetBackup master server and the storage type used.  
**Note:** The time that is required to restore the image may depend on the storage type. This dependency is especially likely for a recovery that uses an **AdvancedDisk** storage type or a deduplication storage type.  
The backup ID and the type of the backup schedule are also listed in the image details. |
| **Virtual Machine Attributes** | The attributes of the virtual machine at the time it was backed up.                                                                                                                                 |
| **Display Name**           | The display name of the specified VM.                                                                                                                                                             |
| **Host name**              | The host name of the VM.                                                                                                                                                                           |
Table 4-15  Fields in the backup image selection screen (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESX server</td>
<td>The ESX server name.</td>
</tr>
<tr>
<td>vCenter server</td>
<td>The vCenter server name.</td>
</tr>
<tr>
<td>BIOS UUID</td>
<td>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.</td>
</tr>
<tr>
<td>Instance UUID</td>
<td>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.)</td>
</tr>
<tr>
<td>Data center</td>
<td>Displays the name of the data center.</td>
</tr>
<tr>
<td>Virtual Machine Version</td>
<td>Displays the original hardware version of the VM.</td>
</tr>
<tr>
<td>VMDKs</td>
<td>Displays the vmdk files of the selected virtual machine.</td>
</tr>
</tbody>
</table>

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

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

Selecting the 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 “Configuring settings for the virtual machine recovery” on page 45.
**Table 4-16** Fields in the Destination Selection screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>vCenter Server</td>
<td>Use the drop-down to select the vCenter server. It lists only those vCenter servers that are associated with the master server that was selected in the first screen of the wizard.</td>
</tr>
<tr>
<td>Data center/ESX Server</td>
<td>The ESX server for the virtual machine to be restored.</td>
</tr>
<tr>
<td></td>
<td>Click <strong>Select</strong> or <strong>Change</strong> to browse for a data center or an ESX server.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Only ESX servers at version 5.0 or later are supported for instant recovery.</td>
</tr>
<tr>
<td>Resource Pool/vApp</td>
<td>The resource pool for the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>Click <strong>Change</strong> to browse for a resource pool or vApp. This parameter is optional.</td>
</tr>
<tr>
<td>Temporary Datastore/Datastore Cluster</td>
<td>The temporary datastore is used to store all the write requests in the recovered virtual machine.</td>
</tr>
<tr>
<td></td>
<td>Click <strong>Change</strong> to browse for a datastore or datastore cluster.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> While selecting a temporary datastore, do not select any inactive or read-only datastores as it can cause instant recovery failure.</td>
</tr>
<tr>
<td>Reset to Preferred Destination</td>
<td>Click the option to reset all the parameters for destination selection to the preferred parameters that are specified in the <strong>Settings</strong>. The following topic explains how to set preferred destination parameters:</td>
</tr>
<tr>
<td></td>
<td>See “Configuring settings for the virtual machine recovery ” on page 45.</td>
</tr>
</tbody>
</table>
Table 4-16  Fields in the Destination Selection screen (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save as Preferred Destination</td>
<td>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 Settings option.</td>
</tr>
<tr>
<td>Change NetBackup Alternate Recovery Host</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

![Virtual Machine Options](image)

**Table 4-17  Fields in the Virtual Machine Options screen**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| Display Name | 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. Look for the following symbol.  

⚠️ For more information about the hosts with name conflicts, click **View Details** in the message bar at the top of the screen. Information about all conflicts appears in the resulting pop-up box.  

**Note:** In case of duplicate display name, change the highlighted display name to proceed. |
### Table 4-17: Fields in the Virtual Machine Options screen (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| Retain networks              | Retains the existing network settings of all the selected VMs after the recovery.  
**Note:** You can select individual VMs to retain the networks after the recovery is complete and to power on the VM. |
| Power on                     | Powers on all the selected VMs after the recovery.  
**Note:** You can select individual VMs to be powered on. |
| Retain tag associations      | When this option is selected, NetBackup restores tag associations when it restores the virtual machine. If NetBackup cannot restore one or more of the tag associations, the restore exits with NetBackup status code 1.  
If this option is not selected, NetBackup does not restore any tag associations from the backup. |
| Retain hardware version      | When this option is selected, NetBackup 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).  
If this option is not selected, the restored virtual machine is converted to the default hardware version that the ESXi server uses. |
| Add common suffix to all display names | You can add a common suffix to the display names of all the selected VMs. For example, if you add **Network1** to the display name **VM_Storage_1** and click **Add**, the display name changes to **Network1_VM_Storage_1**. |

### Reviewing recovery settings

Preview the recovery details, run a pre-recovery check, and start the recovery.
**Table 4-18** Fields in the pre-recovery check screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual machines and images selected</td>
<td>Lists the virtual machine names along with the selected backup images for the instant recovery.</td>
</tr>
<tr>
<td>Recovery Destination</td>
<td>Details of the destination that is selected in the Destination Selection screen.</td>
</tr>
<tr>
<td>Run Pre-Recovery Check</td>
<td>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.</td>
</tr>
<tr>
<td>Pre-Recovery Check Results</td>
<td>Lists the results of the pre-recovery check. You can proceed with the instant recovery even if the check fails.</td>
</tr>
<tr>
<td>Finish</td>
<td>Concludes the wizard operations and starts the instant recovery of the virtual machine(s).</td>
</tr>
</tbody>
</table>

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 screen 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 is completed and the NetBackup resources are released.

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

Table 4-19 Fields in the Instant Recovery Cleanup screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivate</td>
<td>Use this option when the 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 option reactivates a restored virtual machine by remounting the NetBackup datastore. It also registers the restored virtual machines on the ESX host.</td>
</tr>
<tr>
<td>Deactivate</td>
<td>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 uses the NetBackup datastore, this option removes that datastore and releases its resources on the NetBackup media server.</td>
</tr>
</tbody>
</table>
### Table 4-19 Fields in the Instant Recovery Cleanup screen (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initiate Instant Recovery Done</strong></td>
<td>Use this option to complete the instant recovery operation after you have performed the Storage vMotion of the virtual machines to a different datastore. This option 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.</td>
</tr>
</tbody>
</table>
Troubleshooting

This chapter includes the following topics:

- 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
- Instant recovery-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 the pre-recovery check
- Reasons for failure of pre-recovery checks
- Too much 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
- Error stack displayed in the NetBackup plug-in for vSphere Web Client
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.

**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 **Veritas NetBackup**.
2. Click **Settings**.
3. In the **Settings** dialog, enter a smaller value for **Maximum Retention Period for Backup Events**.
   
   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** option of the NetBackup policy's **VMware** tab.

See "Installation overview for the NetBackup plug-in for vSphere Web Client" on page 12.

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 Veritas 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 Pre-Recovery Check screen of the NetBackup Recovery Wizards 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.

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 62.

IR operation is not complete due to NFS mount limit exceed

An instant recovery (IR) operation creates at least one NFS mount. If the number of NFS mounts exceeds the default limit, the next IR operation cannot succeed.
Make sure mount points are available for IR, or clean the mount points before the next IR operation.

**Instant recovery-ready backup images are not available for selection**

If no backup images appear on the Images Available for Instant Recovery (IR) 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).

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

- Does not support a virtual machine that had 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.

Make sure that the following are configured:

- The NetBackup vSphere plug-in is registered with the vCenter server.
- The NetBackup web services are enabled in the NetBackup master server.
Web services are automatically enabled when the NetBackup master server (8.0 or later) is installed. See the following tech note for the web server tasks that are required before installation of the master server.

- 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 the 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**

The following are the reasons for 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.

The NFS volume mount limit was exceeded 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 a 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.

Too much time taken to populate the list of NetBackup master servers

If it takes too long to display the NetBackup master server list, validate the master server using the Register Master Servers option on the plug-in's Veritas NetBackup page. If the validation reveals 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 must 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 the following directive to the webclient.properties file:

allowHttp = true

The webclient.properties file can be located in the following directories:
Correct NetBackup master server does not show up for selection for a given vCenter server on the IR wizard

The vCenter server host name (the FQDN or the short name) should be the same at the following locations:

- 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.

Error stack displayed in the NetBackup plug-in for vSphere Web Client

In the NetBackup plug-in for VMware vSphere Web Client, an error stack may be displayed in the Instant Recovery wizard. This behavior is observed especially when you upgrade the plug-in.

To troubleshoot the issue, clear the browser cache and close the browser. Open the browser and logon to VMware vSphere Web Client again.
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 during its restore.

For the activate and reactivate operations, the virtual machine already exists in vCenter. Therefore, when you select that virtual machine 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.

<table>
<thead>
<tr>
<th>Event ID</th>
<th>Description</th>
</tr>
</thead>
</table>

Appendix
IR Activate Operation Events

`com.symantec.netbackup.instantrecovery.activate.success` NetBackup instant recovery Activate operation is successful.

`com.symantec.netbackup.instantrecovery.activate.failure` NetBackup instant recovery Activate operation is failed.

IR Deactivate Operation Events

`com.symantec.netbackup.instantrecovery.deactivate.success` NetBackup instant recovery Deactivate operation is successful.

`com.symantec.netbackup.instantrecovery.deactivate.failure` NetBackup instant recovery Deactivate operation is failed.

IR Reactivate Operation Events

`com.symantec.netbackup.instantrecovery.reactivate.success` NetBackup instant recovery Reactivate operation is successful.

`com.symantec.netbackup.instantrecovery.reactivate.failure` NetBackup instant recovery Reactivate 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

<table>
<thead>
<tr>
<th>Source</th>
<th>Port number</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browser</td>
<td>9443</td>
<td>vSphere Web Client</td>
</tr>
<tr>
<td>vSphere Web Client (IR plug-in)</td>
<td>RESTful interface at port 8443 (https) or as configured on the master server</td>
<td>Master Server</td>
</tr>
<tr>
<td>vSphere Web Client (IR plug-in)</td>
<td>443</td>
<td>vCenter Server</td>
</tr>
<tr>
<td>Master Server</td>
<td>443</td>
<td>vCenter Server</td>
</tr>
<tr>
<td>Backup Host</td>
<td>443</td>
<td>vCenter Server</td>
</tr>
<tr>
<td>Backup Host</td>
<td>902 (for nbd or nbdssl)</td>
<td>ESXi</td>
</tr>
</tbody>
</table>
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 (Veritas NetBackup > Events), for more details.

- Remove from the plug-in any NetBackup master servers in an unused, unreachable, or shutdown state.

- On the Instant Recovery Wizard screens, wait for the ongoing IR operation to complete. While the cursor indicates a busy state, do not click on other options.