



Restore from backups

SnapCenter Plug-in for VMware vSphere 4.4

NetApp

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Restore from backups

Overview

You can restore VMs, VMDKs, files, and folders from primary or secondary backups. VMs are always restored to the original host and datastore; VMDKs can be restored to either the original or an alternate datastore. You cannot use the SnapCenter Plug-in for VMware vSphere to restore a datastore, only the individual VMs in the datastore. You can also restore individual files and folders in a guest file restore session, which attaches a backup copy of a virtual disk and then restores the selected files or folders.

You cannot restore backups of storage VMs that have been removed. For example, if you add a storage VM using the management LIF and then create a backup, and then you remove that storage VM and add a cluster that contains that same storage VM, the restore operation for the backup will fail.

How restore operations are performed

For VMFS environments, the SnapCenter Plug-in for VMware vSphere uses clone and mount operations with Storage VMotion to perform restore operations. For NFS environments, the plug-in uses native ONTAP Single File SnapRestore (SFSR) to provide greater efficiency for most restore operations. The following table lists how restore operations are performed.

| Restore operations | Performed using ONTAP SFSR in NFS environments | Performed using clone and mount with Storage VMotion in NFS environments | Performed using clone and mount with Storage VMotion in VMFS environments |
|--|--|--|---|
| Restoring VMs and VMDKs from primary backups | Yes | | Yes |
| Restoring VMs and VMDKs from secondary backups | Yes | | Yes |
| Restoring deleted VMs and VMDKs from primary backups | Yes | | Yes |
| Restoring deleted VMs and VMDKs from secondary backups | | Yes | Yes |
| Restoring VMs and VMDKs from VM-consistent primary backups | Yes | | Yes |
| Restoring VMs and VMDKs from VM-consistent secondary backups | | Yes | Yes |

Guest file restore operations are performed using clone and mount operations (not Storage VMotion) in both NFS and VMFS environments.



During a restore operation, you might encounter the error `Host unresolved volumes is null` or `Exception while calling pre-restore on SCV...Error mounting cloned LUN as datastore...`. This occurs when the SnapCenter VMware plug-in attempts to resignature the clone. Due to VMware restrictions, the SnapCenter VMware plug-in cannot control the automatic resignature value in advanced ESXi configurations.

For more information about the error, see [KB article:SCV clone or restores fail with error 'Host Unresolved volumes is null](#).

Search for backups


You can search for and find a specific backup of a VM or datastore using the Restore wizard. After you locate a backup, you can then restore it.

Steps

1. In the VMware vSphere web client GUI, click **Menu** in the toolbar, and then do one of the following:

| To view backups for... | Do the following... |
|------------------------|--|
| VMs | Click the Hosts and Clusters menu option, then select a VM, then click the Configure tab, and then click Backups in the SnapCenter Plug-in for VMware vSphere section. |
| Datastores | Click the Storage menu option, then select a datastore, then click the Configure tab, and then click Backups in the SnapCenter Plug-in for VMware vSphere section. |

2. In the left Navigator pane, expand the datacenter that contains the VM or datastore.
3. Optional: Right-click a VM or datastore, then select **NetApp SnapCenter** in the drop-down list, and then select **Restore** in the secondary drop-down list.
4. In the **Restore** wizard enter a search name and click **Search**.

You can filter the backup list by clicking the  filter icon and selecting a date and time range, selecting whether you want backups that contain VMware Snapshots, whether you want mounted backups, and the location. Click **OK**.

Restore VMs from backups

When you restore a VM, you overwrite the existing content with the backup copy that you select. You can restore VMs from either a primary or secondary backup to the same ESXi server.



Restore operations cannot finish successfully if there are Snapshot copies of the VM that were performed by software other than the SnapCenter Plug-in for VMware vSphere.



The following restore workflow is not supported: Add a storage VM, then perform a backup of that VM, then delete the storage VM and add a cluster that includes that same storage VM, and then attempt to restore the original backup.

Before you begin

- A backup must exist.

You must have created a backup of the VM using the SnapCenter VMware plug-in before you can restore the VM.

- The VM must not be in transit.

The VM that you want to restore must not be in a state of vMotion or Storage vMotion.

About this task

- VM is unregistered and registered again

The restore operation for VMs unregisters the original VM, restores the VM from a backup Snapshot copy, and registers the restored VM with the same name and configuration on the same ESXi server. You must manually add the VMs to resource groups after the restore.

- Restoring datastores

You cannot restore a datastore, but you can restore any VM in the datastore.

- VMware consistency snapshot failures for a VM

Even if a VMware consistency snapshot for a VM fails, the VM is nevertheless backed up. You can view the entities contained in the backup copy in the Restore wizard and use it for restore operations.

- A restore operation might fail if the storage tier of the FabricPool where the VM is located is unavailable.

Steps

1. In the VMware vSphere web client GUI, click **Menu** in the toolbar, and then select **VMs and Templates** from the drop-down list.



If you are restoring a deleted VM, the storage VM credentials that were added to the SnapCenter VMware plug-in must be `vsadmin` or a user account that has all the same privileges as `vsadmin`. The host must be on a storage system that is running ONTAP 8.2.2 or later.

2. In the left Navigator pane, right-click a VM, then select **NetApp SnapCenter** in the drop-down list, and then select **Restore** in the secondary drop-down list to start the wizard.
3. In the **Restore** wizard, on the **Select Backup** page, select the backup Snapshot copy that you want to restore.

You can search for a specific backup name or a partial backup name, or you can filter the backup list by clicking the filter icon and selecting a date and time range, selecting whether you want backups that contain VMware Snapshots, whether you want mounted backups, and the location. Click **OK** to return to the wizard.

4. On the **Select Scope** page, select **Entire virtual machine** in the **Restore scope** field and then select the

ESXi host where the backup should be mounted.

The restore destination is the same ESXi host where the VM was originally registered.

5. On the **Select Location** page, select the destination for the restored datastore.
6. Review the Summary page and then click **Finish**.
7. Optional: Monitor the operation progress by clicking **Recent Tasks** at the bottom of the screen.

Refresh the screen to display updated information.

After you finish

Although the VMs are restored, they are not automatically added to their former resource groups. Therefore, you must manually add the restored VMs to the appropriate resource groups.

Restore deleted VMs from backups

You can restore a deleted VM from a datastore primary or secondary backup to an ESXi host that you select.

Before you begin

- The user account for the storage system, on the Storage Systems page in the VMware vSphere web client, must have the [Minimum ONTAP privileges required for ONTAP](#).
- A backup must exist.

You must have created a backup of the VM using the SnapCenter Plug-in for VMware vSphere before you can restore the VMDKs on that VM.

About this task

You cannot restore a datastore, but you can restore any VM in the datastore.

A restore operation might fail if the storage tier of the FabricPool where the VM is located is unavailable.

Steps

1. Click **Menu** and select the **Storage** menu option, then select a datastore, then select the **Configure** tab, and then click **Backups** in the **SnapCenter Plug-in for VMware vSphere** section.
2. Double-click on a backup to see a list of all VMs that are included in the backup.
3. Select the deleted VM from the backup list and click **Restore**.
4. In the **Restore** wizard, on the **Select Backup** page, select the backup copy that you want to restore from.

You can search for a specific backup name or a partial backup name, or you can filter the backup list by clicking the filter icon and selecting a date and time range, selecting whether you want backups that contain VMware Snapshots, whether you want mounted backups, and the location. Click **OK** to return to the wizard.

5. On the **Select Scope** page, select **Entire virtual machine** in the **Restore scope** field and then select the Destination ESXi host name.

The restore destination can be any ESXi host that has been added to SnapCenter. This option restores the contents of the last datastore in which the VM resided from a Snapshot copy with the specified time and date. The **Restart VM** check box is checked if you select this option.

If you are restoring a VM in an NFS datastore onto an alternate ESXi host that is in an ESXi cluster, then after the VM is restored, it is registered on the alternate host.

6. On the **Select Location** page, select the location of the datastore that you want to restore from.
7. Review the Summary page and then click **Finish**.

Restore VMDKs from backups

You can restore one or more virtual machine disks (VMDKs) on a VM to the same datastore. You can restore existing VMDKs, or deleted or detached VMDKs from either a primary or a secondary backup.

Before you begin

- A backup must exist.

You must have created a backup of the VM using the SnapCenter Plug-in for VMware vSphere.

- The VM must not be in transit.

The VM that you want to restore must not be in a state of vMotion or Storage vMotion.

About this task

- If the VMDK is deleted or detached from the VM, then the restore operation attaches the VMDK to the VM.
- A restore operation might fail if the storage tier of the FabricPool where the VM is located is unavailable.
- Attach and restore operations connect VMDKs using the default SCSI controller. VMDKs that are attached to a VM with a NVME controller are backed up, but for attach and restore operations they are connected back using a SCSI controller.

Steps

1. In the VMware vSphere web client GUI, click **Menu** in the toolbar, and then select **VMs and Templates** from the drop-down list.
2. In the left Navigator pane, right-click a VM, then select **NetApp SnapCenter** in the drop-down list, and then select **Restore** in the secondary drop-down list.
3. In the **Restore** wizard, on the Select Backup page, select the backup copy that you want to restore from.

You can search for a specific backup name or a partial backup name, or you can filter the backup list by clicking the filter icon and selecting a date and time range, selecting whether you want backups that contain VMware Snapshots, whether you want mounted backups, and primary or secondary location. Click **OK** to return to the wizard.

4. On the **Select Scope** page, select the restore destination by clicking **Particular virtual disk** in the **Restore scope** field, and choose the relevant options shown in the following table.

| To... | Specify the restore destination... |
|---|---|
| Restore to the original datastore | Use the default, parent, datastore that is displayed. |
| Restore to an alternate datastore on the same ESXi host | Click the destination datastore and select a different datastore from the list. |

You can unselect any datastores that contain VMDKs that you do not want to restore.

5. On the **Select Location** page, select the Snapshot copy that you want to restore (primary or secondary).
6. Review the Summary page and then click **Finish**.
7. Optional: Monitor the operation progress by clicking **Recent Tasks** at the bottom of the screen.
8. Refresh the screen to display updated information.

Restore the most recent backup of the MySQL database

You can use the maintenance console to restore the most recent backup of the MySQL database (also called an NSM database) for the SnapCenter Plug-in for VMware vSphere.

Steps

1. Open a maintenance console window.

[Access the maintenance console.](#)

2. From the Main Menu, enter option **1) Application Configuration**.
3. From the Application Configuration Menu, enter option **6) MySQL backup and restore**.
4. From the MySQL Backup and Restore Configuration Menu, enter option **3) Restore MySQL backup**.
5. At the prompt "Restore using the most recent backup," enter **y**, and then press **Enter**.

The backup MySQL database is restored to its original location.

Restore a specific backup of the MySQL database

You can use the maintenance console to restore a specific backup of the MySQL database (also called an NSM database) for the SnapCenter Plug-in for VMware vSphere virtual appliance.

Steps

1. Open a maintenance console window.

[Access the maintenance console.](#)

2. From the Main Menu, enter option **1) Application Configuration**.
3. From the Application Configuration Menu, enter option **6) MySQL backup and restore**.
4. From the MySQL Backup and Restore Configuration Menu, enter option **2) List MySQL backups**, and then make a note of the backup you want to restore.
5. From the MySQL Backup and Restore Configuration Menu, enter option **3) Restore MySQL backup**.
6. At the prompt "Restore using the most recent backup," enter **n**.
7. At the prompt "Backup to restore from," enter the backup name, and then press **Enter**.

The selected backup MySQL database is restored to its original location.

Attach VMDKs to a VM

You can attach one or more VMDKs from a backup to the parent VM or to an alternate VM on the same ESXi host. This makes it easier to restore one or more individual files from a drive instead of restoring the entire drive. You can detach the VMDK after you have restored or accessed the files you need.

About this task

You have the following attach options:

- You can attach virtual disks from a primary or a secondary backup.
- You can attach virtual disks to the parent VM (the same VM that the virtual disk was originally associated with) or to an alternate VM on the same ESXi host.

The following limitations apply to attaching virtual disks:

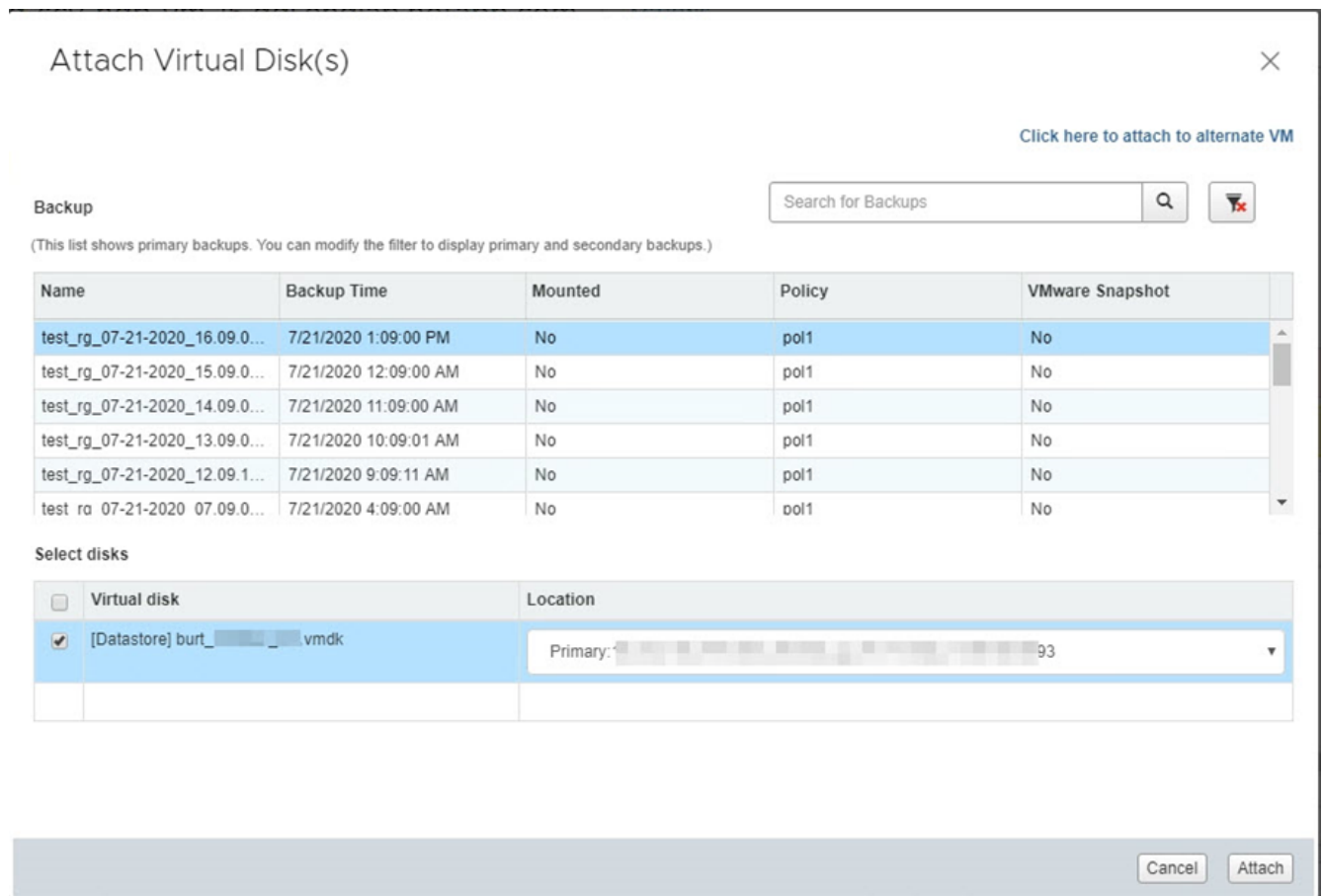
- Attach and detach operations are not supported for Virtual Machine Templates.
- When more than 15 VMDKs are attached to an iSCSI controller, the virtual machine for SnapCenter Plug-in for VMware vSphere cannot locate VMDK unit numbers higher than 15 because of VMware restrictions.

In this case, add the SCSI controllers manually and try the attach operation again.


- You cannot manually attach a virtual disk that was attached or mounted as part of a guest file restore operation.
- Attach and restore operations connect VMDKs using the default SCSI controller. VMDKs that are attached to a VM with a NVME controller are backed up, but for attach and restore operations they are connected back using a SCSI controller.

Steps

1. In the VMware vSphere web client GUI, click **Menu** in the toolbar, and then select **Hosts and clusters** from the drop-down list.
2. In the left navigation pane, right-click a VM, then select **NetApp SnapCenter** in the drop-down list, and then select **Attach virtual disk** in the secondary drop-down list.



3. On the **Attach Virtual Disk** window, in the **Backup** section, select a backup.

You can filter the backup list by clicking the  filter icon and selecting a date and time range, selecting whether you want backups that contain VMware Snapshot copies, whether you want mounted backups, and the location. Click **OK**.

4. In the **Select Disks** section, select one or more disks you want to attach and the location you want to attach from (primary or secondary).

You can change the filter to display primary and secondary locations.

5. By default, the selected virtual disks are attached to the parent VM. To attach the selected virtual disks to an alternate VM in the same ESXi host, click **Click here to attach to alternate VM** and specify the alternate VM.

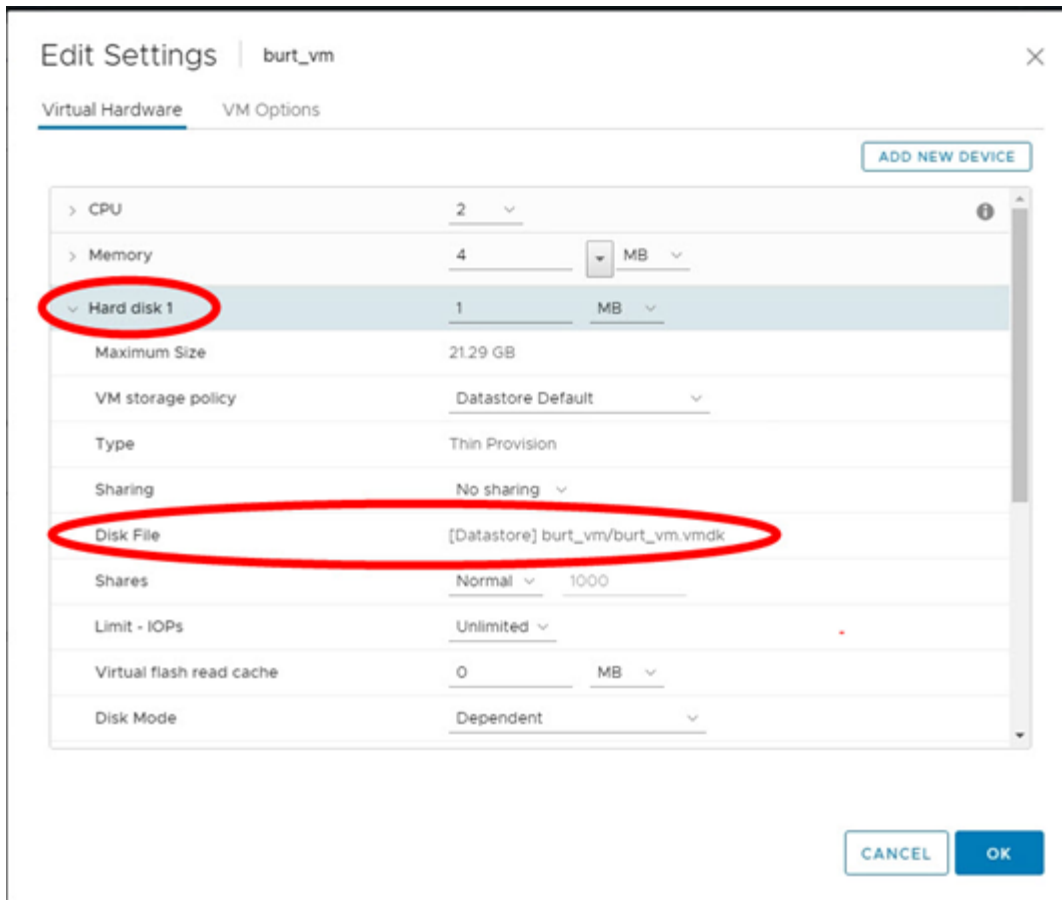
6. Click **Attach**.

7. Optional: Monitor the operation progress in the **Recent Tasks** section.

Refresh the screen to display updated information.

8. Verify that the virtual disk is attached by performing the following:

- a. Click **Menu** in the toolbar, and then select **VMs and Templates** from the drop-down list.
- b. In the left Navigator pane, right-click a VM, then select **Edit settings** in the drop-down list.
- c. In the **Edit Settings** window, expand the list for each hard disk to see the list of disk files.



The Edit Settings page lists the disks on the VM. You can expand the details for each hard disk to see the list of attached virtual disks.

Result

You can access the attached disks from the host operating system and then retrieve the needed information from the disks.

Detach a virtual disk

After you have attached a virtual disk to restore individual files, you can detach the virtual disk from the parent VM.

Steps

1. In the VMware vSphere web client GUI, click **Menu** in the toolbar, and then select **VMs and Templates** from the drop-down list.
2. Optional: In the left Navigator pane, select a VM.
3. In the left navigation pane, right-click the VM, then select **NetApp SnapCenter** in the drop-down list, and then select **Detach virtual disk** in the secondary drop-down list.
4. On the **Detach Virtual Disk** screen, select one or more disks you want to detach, then click the **Detach the selected disk(s)** button, and then click **Confirm**.



Make sure that you select the correct virtual disk. Selecting the wrong disk might affect production work.

5. Optional: Monitor the operation progress in the **Recent Tasks** section.

Refresh the screen to display updated information.

6. Verify that the virtual disk is detached by performing the following:

- a. Click **Menu** in the toolbar, and then select **VMs and Templates** from the drop-down list.
- b. In the left Navigator pane, right-click a VM, then select **Edit settings** in the drop-down list.
- c. In the **Edit Settings** window, expand the list for each hard disk to see the list of disk files.

The Edit Settings page lists the disks on the VM. You can expand the details for each hard disk to see the list of attached virtual disks.

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