Backup and recovery workflow

Snap Creator Framework

NetApp
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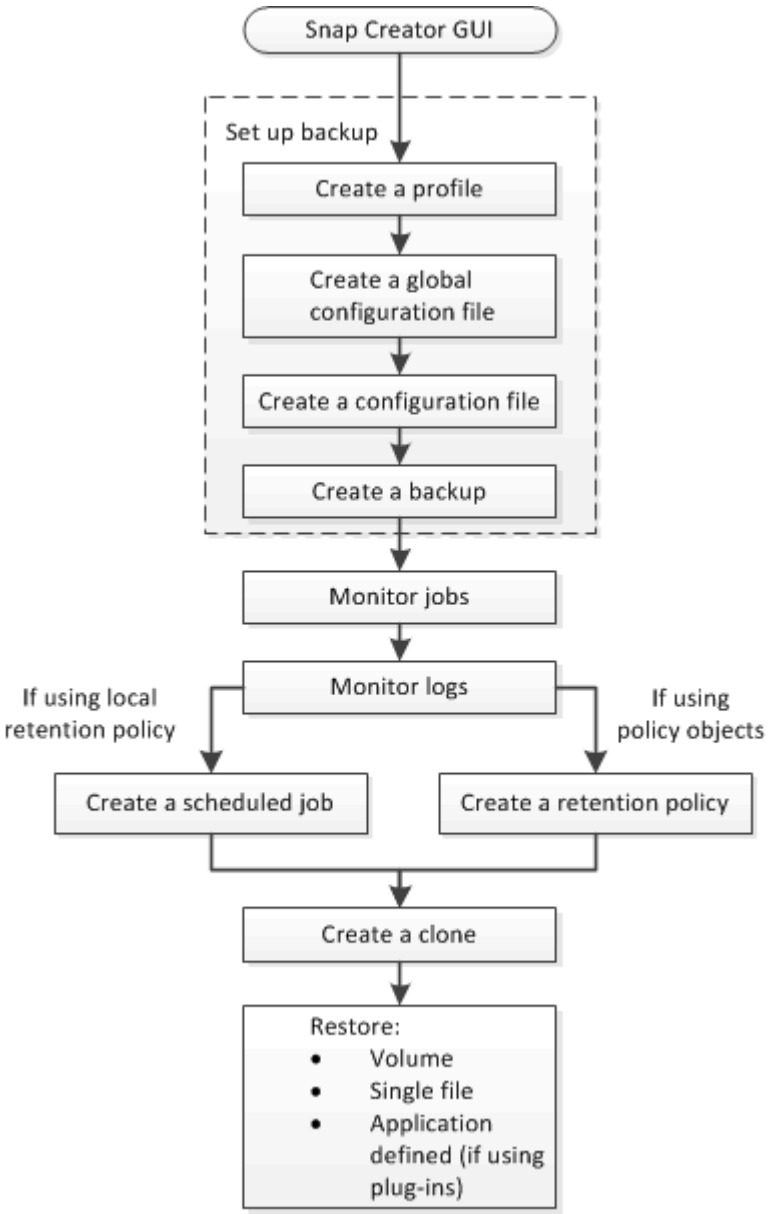
Backup and recovery workflow

You can use the workflow as a guideline for your backup and recovery process using the Snap Creator GUI.

When performing these tasks, Snap Creator must be running and the Snap Creator GUI must be open. If it is not, you can enter the URL of the Snap Creator Server in a web browser ("https://IP_address:gui_port" by default, the port is 8443), and then log in by using the Snap Creator GUI credentials.

The following illustration depicts the complete set of tasks when performing a backup and recovery of your system when using plug-ins:

The tasks outlined in the workflow can also be performed from the command-line interface (CLI). For details about the CLI, see the related references for information about the CLI command line.



Related information

Creating profiles

You can create profiles to organize configuration files by using the Snap Creator GUI.

The first time that you open the Snap Creator GUI, the New Profile dialog box is displayed automatically, prompting you to create a new profile.

1. From the Snap Creator GUI main menu, select **Management** > **Configurations**.
2. From the **Profiles and Configurations** pane, click **Add Profile**.

   The New Profile dialog box is displayed.

3. Enter the name of the new profile, and then click **OK**.

   The new profile is listed in the **Profiles and Configuration**s pane, and the Configuration wizard is displayed in the right pane.

Creating global configuration files

You can create a global configuration file to separate the storage controller, storage virtual machine (SVM), or VMware credential configuration from the backup policy.

Global configuration files enable you to control access and to handle backup and restore operations.

You can create two types of global configuration files:

- **Super Global**

  This configuration applies to all the configurations in all the profiles.

- **Profile Global**

  This configuration applies to all the configurations created within a profile.

  1. From the main menu of the Snap Creator GUI, select **Management** > **Global Configurations**.
  2. In the Global Configurations pane, click **Create Global**.

     The Configuration wizard for Global Configurations opens in the right pane.

  3. Complete the Configuration wizard to create the configuration file:
     a. On the **Configuration** page, select the global configuration type (Super Global or Profile Global).

        The name of the configuration file is set to global by default. You cannot change this name.

        If you selected Profile Global as the global configuration type, select the profile.

        By default, password encryption is enabled to prevent passwords from being displayed in clear text in the configuration file.

b. On the Plug-In Type page, select the type of plug-in.

The page that you advance to in the wizard depends on the option that you select.

Plug-in type option	Next page	Next page
Virtualization plug-in	**Virtualization plug-ins** Select the plug-in to configure.	**Authentication Information** Provide the authentication information for the selected plug-in option.
None	**Storage Connection Settings**	

For more information about plug-in credentials, see the plug-in documentation.

c. On the Storage Connection Settings page, select the transport type (HTTP or HTTPS).

The standard port for the selected transport type is displayed. If the storage system uses a non-standard port, enter the port information in the port field.

d. On the Controller/Vserver Credentials page, enter the IP address and login credentials for each storage controller or SVM that contains the volumes in this configuration file.

You must add at least one storage controller or SVM to the configuration. To use the vsim tunneling feature, select the **IP Tunneling** check box (for cluster only).

e. On the Controller Credentials page, verify that the controllers display the correct information.

If changes are required, select a controller, and then click **Edit**.

f. On the DFM/OnCommand Settings page, if you want to integrate the Snap Creator configuration with NetApp OnCommand management tools, select and provide the details.

g. Review the summary, and then click **Finish**.

Creating configuration files

You can create configuration files by using the Configuration wizard.

1. From the main menu of the Snap Creator GUI, select **Management** > **Configurations**.
2. In the Profiles and Configurations pane, right-click the profile in which you want the new configuration file to be located, and then select **New Configuration**.

The Configuration wizard opens in the right pane.

3. a. On the Configuration page, enter a name for the configuration file.

By default, password encryption is enabled to prevent passwords from being displayed in clear text in the configuration file.

b. On the Plug-In Type page, select the type of plug-in.

The page that you advance to in the Configuration wizard depends on the option that you select.

Plug-in type option	Next page	Next page
Application plug-in	**Application plug-ins** Select the plug-in to configure.	**Plug-in Parameters** Provide the configuration details associated with the selected plug-in option.
Virtualization plug-in	**Virtualization plug-ins** Select the plug-in to configure.	**Plug-in Parameters** Provide the configuration details associated with the selected plug-in option.
Community plug-in	**Community plug-ins** Select the plug-in to configure.	**Plug-in Parameters** Provide the configuration details associated with the selected plug-in option.
None (if you are not using a plug-in)	**Agent Configuration**	

For more information about plug-in parameters and configuration, see the plug-in documentation.

c. On the Agent Configuration page, enter the configuration information for Snap Creator Agent.

d. On the Storage Connection Settings page, select the transport type (HTTP or HTTPS).

The standard port for the selected transport type is displayed. If the storage system uses a non-standard port, enter the port information in the port field.

e. On the Controller/Vserver Credentials page, enter the IP address and login credentials for each storage controller, SVM that contains the volumes in this configuration file.

You must add at least one storage controller or SVM to the configuration.

f. In the Controller/Vserver Volumes pane, select each volume that you want to include, and either drag it to the right pane or click the right arrow to move the volume to the right pane, and then click **Save**.

If you are planning to replicate Snapshot copies to a SnapMirrror or SnapVault destination, the name of the SVM that you enter in this step must be exactly the same as the name of the SVM that you used when you created the SnapMirrror or SnapVault relationship. If you specified a fully qualified domain name when you created the relationship, you must specify a fully qualified domain name in this step, regardless of whether Snap Creator is able to find the SVM with the information that you provide. The case that you use for the name (upper case or lower case) is significant.

You can use the snapmirror show command to check the name of the SVM on the primary storage system:

```
snapmirror show -destination-path destination_SVM:destination_volume
```

where destination_SVM_name is the name of the SVM on the destination system, and destination_volume is the volume.

g. On the Controller Credentials page, verify that the controllers display the correct information.

   If changes are required, select a controller, and then click **Edit**.

h. On the Snapshot Details page, provide the Snapshot copy details.

Field	Description
Snapshot copy Name	Enables you to specify the Snapshot copy name Typically, the Snapshot copy has the same name as the configuration file; however, the Snapshot copy name can reflect the data that is being backed up. + NOTE: Do not use special characters when specifying the Snapshot copy name.
Snapshot copy Label	Enables you to specify the Snapshot copy label This option is valid for clustered Data ONTAP 8.2 and later. For Data ONTAP releases prior to clustered Data ONTAP 8.2, this field will not provide any functionality.
Policy Type	Enables you to select the policy type There are two options: • Policy: This option enables one of the built-in policies shown in the Snapshot copy Policies area, and specifies the retention (the number of backups to be retained) • Use Policy Object: This option should be selected if a policy object has already been created.
Snapshot copy Policies	Provides the option to select the policy that is to be enabled
Prevent Snapshot copy Deletion	Enables you to determines whether to prevent the deletion of the Snapshot copy
Policy Retention Age	Enables you to specify the policy retention age
Naming Convention	Enables you to specify the naming convention (Recent or Timestamp) of backups. “Recent” is not supported for Plug-ins like SAP HANA, Vibe, and Domino. +

i. On the Snapshot Details Continued page, configure any additional settings that are applicable to your environment.

j. On the Data Protection page, select whether integration with SnapMirror or SnapVault operation is required.

   Additional information is required if either SnapMirror or SnapVault technology is selected. For SnapMirror and SnapVault technology, you must provide the storage system name and not the IP address.

k. On the DFM/OnCommand Settings page, if you want to integrate the Snap Creator configuration with NetApp OnCommand management tools, select and provide the details.

l. Review the summary, and then click **Finish**.

Creating backups

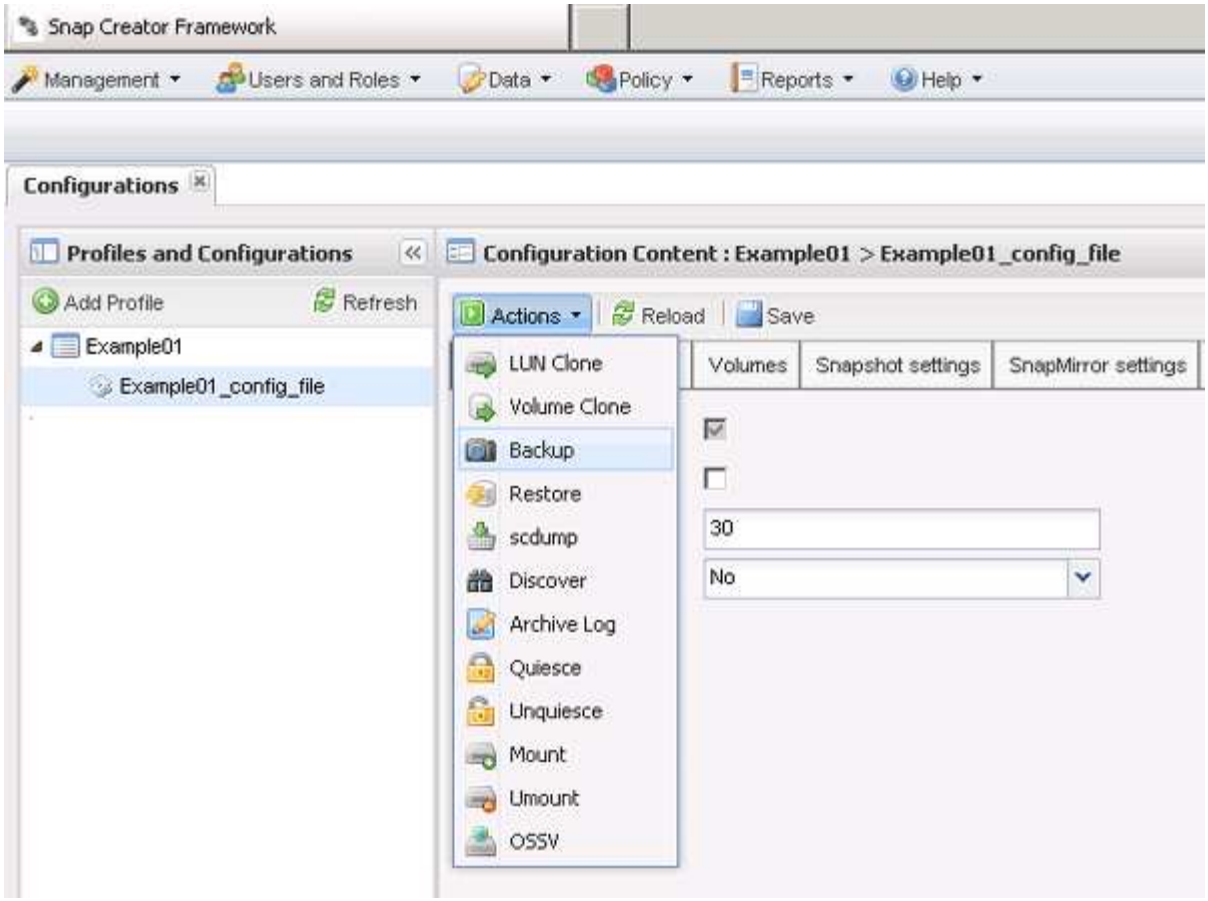
You can create backups by using the Snap Creator GUI.

One of the following conditions must be met:

- A backup policy must be defined in the configuration file; or,
- A policy object must be configured and assigned to the profile.

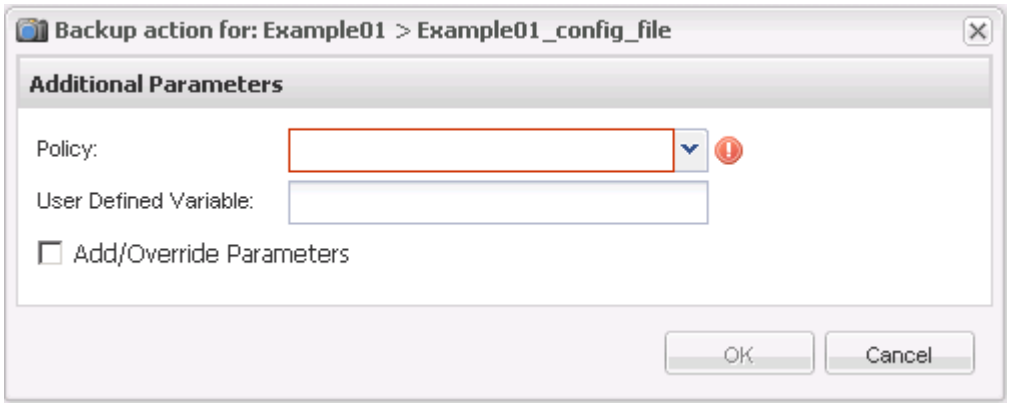
> If a policy object is defined, it will overrule any entries that might be in the configuration file.

1. From the Snap Creator GUI main menu, select **Management** > **Configurations**.
2. From the **Configurations** tab, in the **Profiles and Configuration** pane, select the configuration file.
3. Select **Actions** > **Backup**.

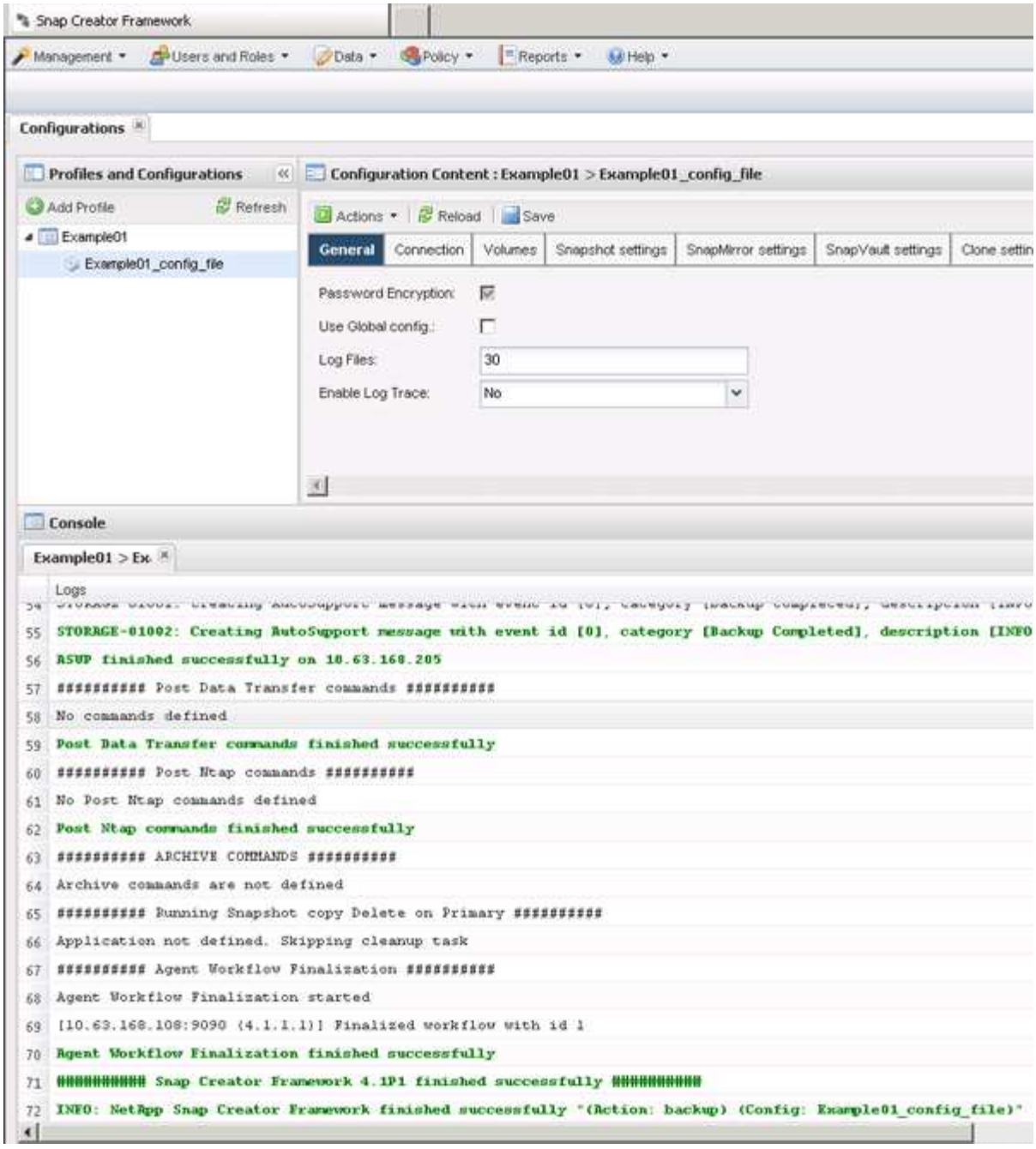


4. In the Additional Parameters dialog box, select the policy, and then click **OK** to start the backup.

If no user-created policy is assigned to the configuration, hourly, daily, weekly, and monthly are the available selections in the **Policy** drop-down list. If one or more user-created policies have been assigned to the configuration, they are displayed in the **Policy** drop-down list instead.



5. Verify that information about the backup job is displayed in the **Console** pane.



In this example, the output indicates that the Snap Creator operation finished successfully.

> The **Console** pane only displays the most pertinent information; this is the verbose mode. To see detailed information about the job that just ran, select **Reports** > **Logs** at the top of the page. From the Logs view, the profile, configuration file, log type, and specific log can be selected.

Monitoring jobs

You can monitor the status of the jobs being performed by Snap Creator by using the Snap Creator GUI.

1. From the Snap Creator GUI main menu, select **Management** > **Job Monitor**.

   A list of the running jobs is displayed.

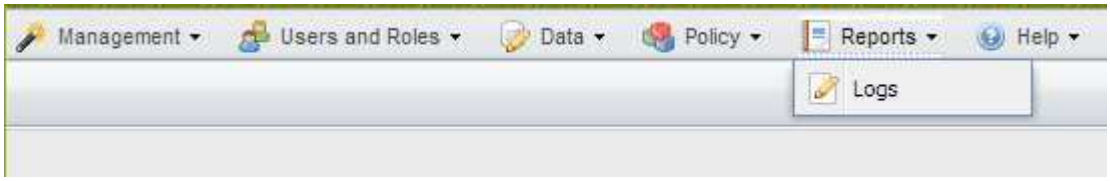
2. To stop a running job, select the job and click **Cancel**.

Monitoring logs

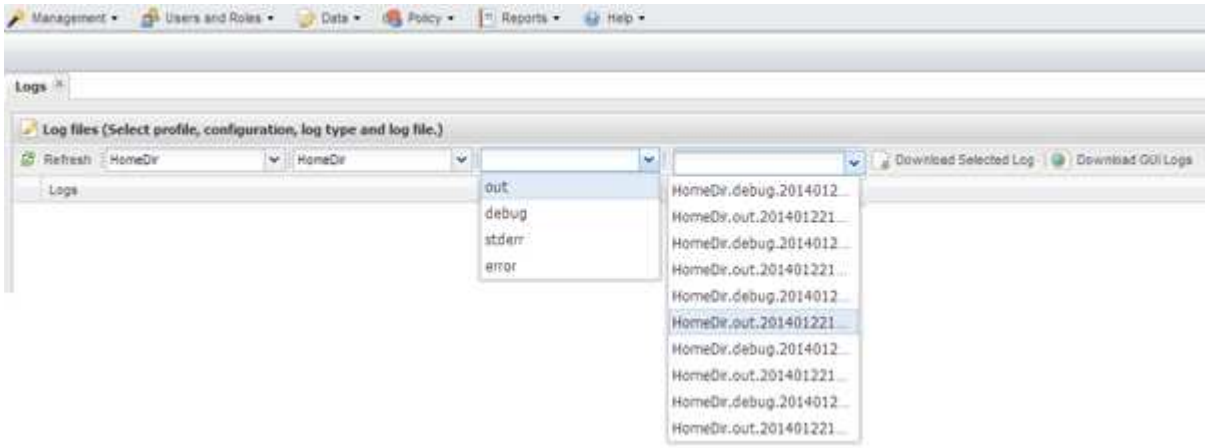
You can view the logs for every profile and configuration by using the Snap Creator GUI.

You can view the Out, Debug, Error, and Stderr logs to assist in troubleshooting operations. See the related references for more information about these troubleshooting logs.

1. From the Snap Creator GUI main menu, select **Reports** > **Logs**:



2. Select logs by profile, configuration file, log type, or specific log, as necessary:



   The selected log can also be downloaded by clicking **Download Selected Log**. The downloaded log file is stored in the directory (or folder) that is specified by the browser for downloads.

   The out, debug, stderr, and agent logs are retained as defined by the LOG_NUM value in the configuration file, but the error log is always appended.

Related information

Types of error messages and troubleshooting logs

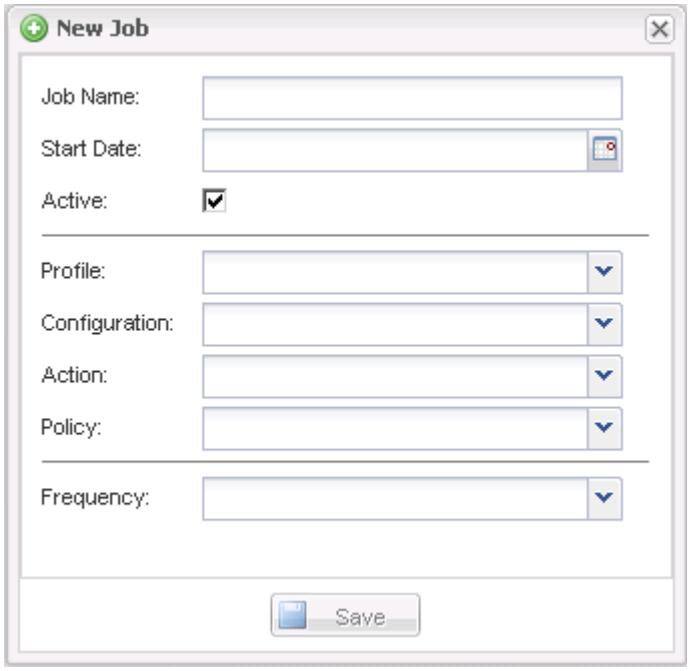
Creating scheduled jobs

If you are using a local retention policy (located in the configuration file), you can use the Snap Creator graphical user interface (GUI) scheduler to create schedules and run tasks. The scheduler—which is contained within Snap Creator Server—can schedule backups

(Snapshot copies), LUN clones, volume clones, application-defined clones, Open Systems SnapVault (OSSV) transfers, archive jobs, and custom actions.

If you plan to use policy objects instead of a local retention policy, you should skip this procedure and create a policy schedule instead.

1. From the main menu of the Snap Creator GUI, select **Management** > **Schedules** and click **Create**.
2. In the New Job window, enter the details for the job.



Field	Description
Job Name	Specify the name of the scheduled job.
Start Date	Select today's date or a future date.
Active	Set to Active to signify that the job will run as scheduled. Active is the default setting.
Profile	Select the profile to be associated with this job.
Configuration	Select the configuration to be associated with this job.

Field	Description
Action	Select one of the following options: • **Backup**: Creates a backup by using NetApp storage technology. • **CloneLun**: Creates a backup and clones one or more LUNs by using the lun clone command. • **CloneVol**: Creates a backup and clones a volume. • **Clone**: Performs a plug-in-driven clone operation. • **OSSV**: Uses Open Systems SnapVault to perform the backup. No primary backup is created. • **Arch**: Performs archive log management only. No backup is created. • **Custom**: Executes a plug-in-defined cloning action.
Policy	Select the policy to be associated with this job.
Frequency	Select the frequency for this job. Depending on your selection, you must select the appropriate time fields for running the scheduled job. +

3. Click **Save**.

Related information

Creating policy schedules

Creating retention policies

If you plan to use policy objects instead of a local retention policy (which is contained in the configuration file), you can create a retention policy.

As part of creating a retention policy, you can create a backup type and a policy schedule.

Guidelines to define Snap Creator policies

Snap Creator policies are user-defined Snapshot copy retentions that apply to the Snapshot copies on the primary storage and SnapVault and SnapMirror copies on the

secondary storage. You can use a policy to define the number of Snapshot copies that you want to retain and the Snapshot copy age.

You must define at least one policy in the **Snapshot Retention Count** field. For SnapVault, you can associate the same policy with different SnapVault retention periods. For example, to create daily Snapshot copies and retain them for seven days on the primary storage and one month on the secondary storage, you must use the following Policy options and settings:

- **Snapshot Retention Count**: daily:7
- **SnapVault Retention Count**: daily:28

You can also specify the minimum number of days after which a Snapshot copy is deleted. Based on the preceding example, you should use the following options and settings:

- **Snapshot Retention Age**: 7
- **SnapVault Retention Age**: 28

Additionally, you can specify the Snapshot copy deletion by age by setting the following parameter in the configuration file:

NTAP_SNAPSHOT_DELETE_BY_AGE_ONLY=PRIMARY|SECONDARY|BOTH

This parameter is not available through the Snap Creator GUI. See the related references for more information about configuration file parameters used to set up Snapshot copies.

Snap Creator can run only one policy at a time. The maximum age value is a global parameter that applies to all the policies. To configure an additional weekly policy, define the policy, and then call it in Snap Creator once a week by using cron or task manager with the Snap Creator variable %SNAP_TYPE set to weekly.

Related information

Parameters for setting up Snapshot copies

Creating backup types

You can optionally create a backup type using the Snap Creator GUI to help identify the purpose of a policy.

1. From the Snap Creator GUI main menu, select **Policy** > **Backup Type**.
2. From the **Backup type** tab, click **Add**.
3. Enter the new backup type name, and then click **OK**.

   The new backup type is listed under **Backup Type**.

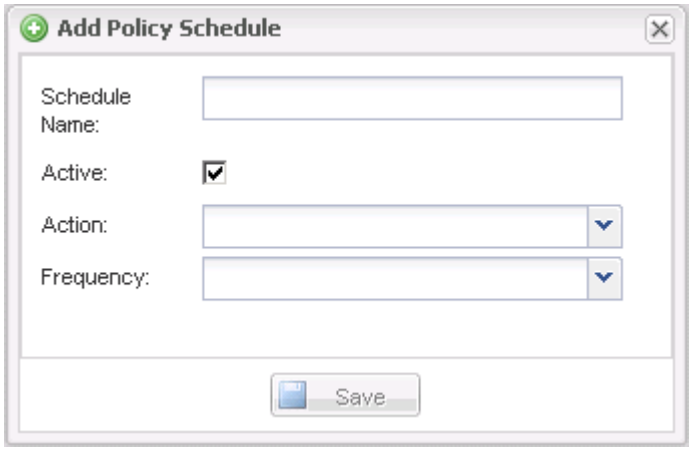
Creating policy schedules

You can optionally create policy schedules by using the Snap Creator GUI.

1. From the Snap Creator GUI main menu, select **Policy** > **Policy Schedules**.
2. From the **Policy Schedules** tab, click **Create**.

3. Enter the schedule name and select the action and frequency, and then click **Save**.

   Depending on the frequency you select, you will need to select the appropriate time fields for running the scheduled job.

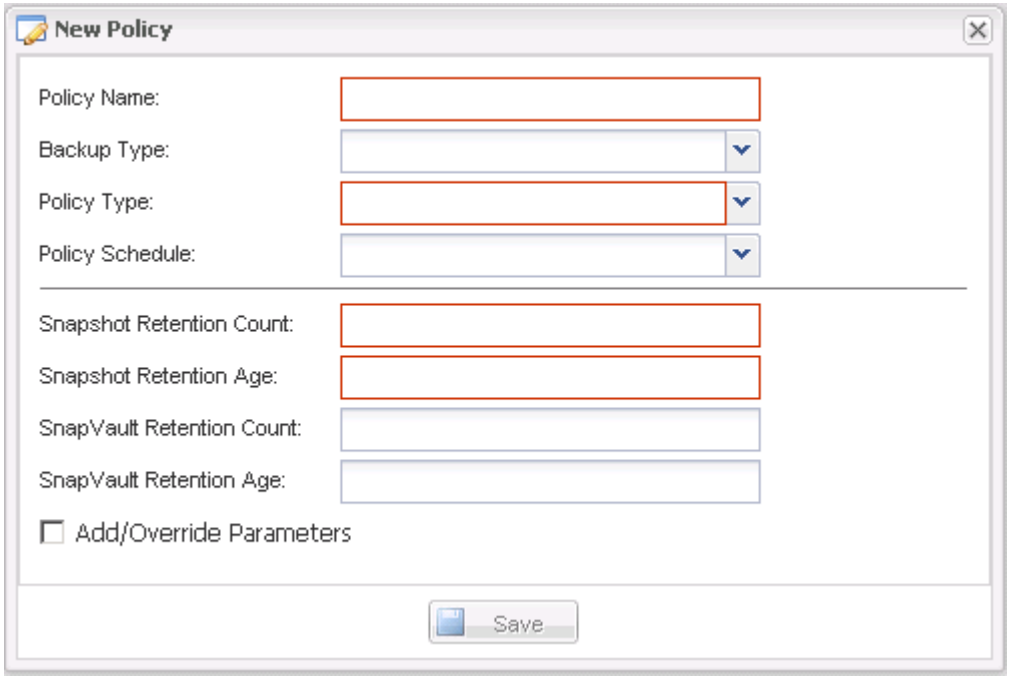


Creating policies

You can create a new retention policy by using the Snap Creator GUI to configure multiple Snapshot policies with different retention count.

You should understand the guidelines for defining Snap Creator policies.

1. From the Snap Creator GUI main menu, select **Policy** > **Policy Management**.
2. From the **Policy Manager** tab, click **Create**.
3. Enter the details, and then click **Save**.



Field	Description
Policy Name	Specify the name of the policy.
Backup Type	(Optional) Select the backup type.
Policy Type	Select the policy type: • **LOCAL** Takes a Snapshot copy on the primary storage. Select this type if there are no SnapMirror or SnapVault relationships. • SNAPVAULT Creates a Snapshot copy on the primary storage and performs a SnapVault update. SnapVault update must be enabled for all volumes in the configuration. • SNAPMIRROR Creates a Snapshot copy on the primary storage and performs a SnapMirror update. SnapMirror update must be enabled for all volumes in the configuration.
Policy Schedule	(Optional) Select the policy schedule to be used. If no policy schedule is specified, these actions do not run automatically.
Snapshot Retention Count	Enter the number of backups to be retained.
Snapshot Retention Age	Enter the minimum age that the backups must be retained before they can be deleted.
SnapVault Retention Count	If you selected SnapVault as the policy type, enter the retention count for SnapVault.
SnapVault Retention Age	If you selected SnapVault as the policy type, enter the retention age for SnapVault.
Add/Override Parameters	Certain parameters can be overridden for a policy. If desired, select this check box, and then add the parameters to be overridden.

Assigning policies

You can assign retention policies to the configuration files by using the Snap Creator GUI.

1. From the Snap Creator GUI main menu, select **Policy** > **Policy Assignments**.
2. Select a profile from the Profile pane.
3. Select a policy or policies to assign to the profile by selecting the appropriate check box on the right pane, and then click **Save**.

   If configuration files already exist in the profile, a message displays, informing you that the assigned policy will overrule the settings in the configuration file.

4. Click **Yes** to assign the policy.

Creating clones

There are two methods for cloning volumes or LUNS: from a new backup and from an existing backup.

- Creating a clone from a new backup consists of taking a Snapshot, cloning the new Snapshot copy, and then mounting the cloned copy.
- Creating a clone from an existing backup consists of cloning an existing Snapshot copy, and then mounting the cloned copy.

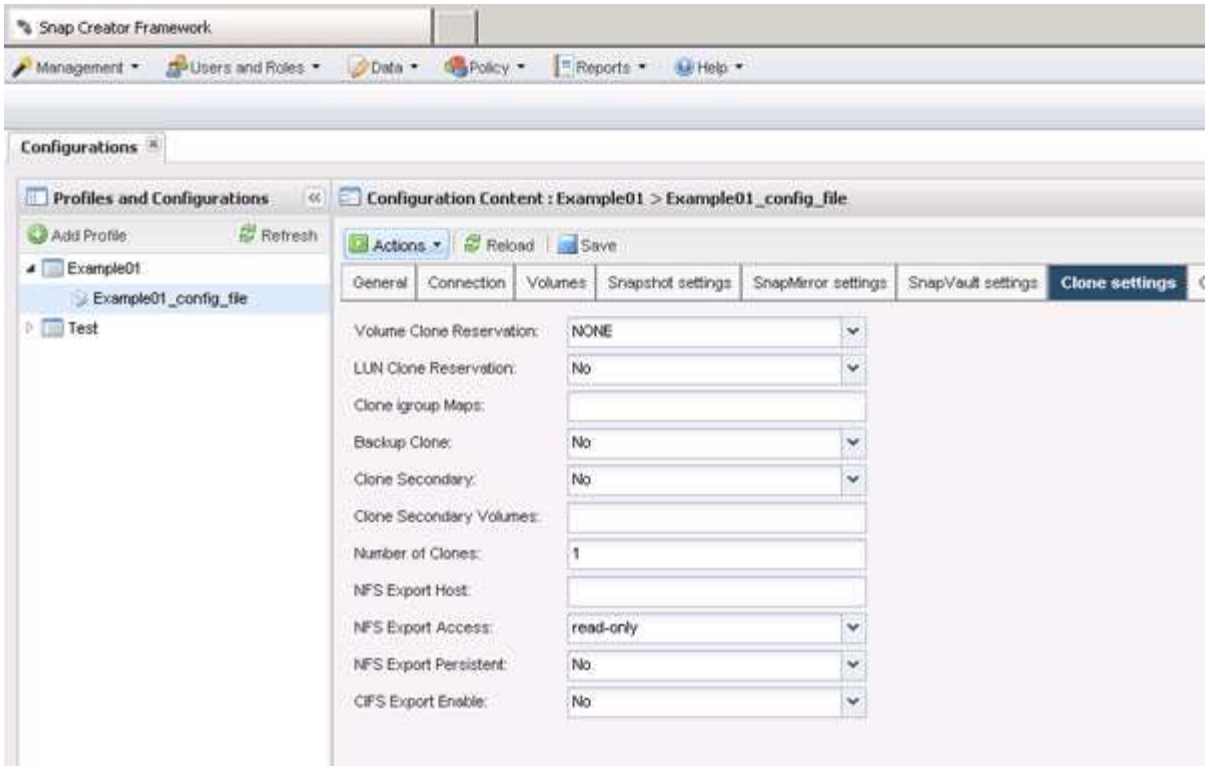
Creating clones from a new backup

You can clone volumes or LUNs from a new Snapshot copy.

- The Snap Creator Server must be communicating with the storage system.
- You must be logged into Snap Creator with the proper permission to perform the cloning operation.

This cloning operation involves cloning a new Snapshot copy.

1. From the main menu of the Snap Creator graphical user interface (GUI), select **Management** > **Configurations**.
2. In the **Profiles and Configuration** pane, select a configuration file.
3. Navigate to the **Clone settings** tab, and verify that the settings are set properly.



4. Depending on the type of clone that you require, select **Actions** and one of the following options:
   - LUN Clone
   - Volume Clone
5. In the Additional Parameters dialog box, select the appropriate policy, and then click **OK** to start the cloning process.
6. In the **Console** pane, verify that the cloning process was successful.

Creating clones from an existing backup

You can clone volumes or LUNs from an existing backup as your source.

- The Snap Creator Server must be communicating with the storage system.
- You must be logged into Snap Creator with the proper permission to perform the cloning operation.

This cloning operation consists of mounting an existing Snapshot copy, and then cloning the existing backup.

1. From the Snap Creator GUI main menu, select **Management** > **Configurations**.
2. From the **Configurations** tab, in the **Profiles and Configuration** pane, select a configuration file.
3. Select **Actions** > **Mount**.
4. In the Additional Parameters dialog box, select the controller, volume, and policy containing the backup to be mounted, then select the Snapshot copy to be mounted (cloned), and then click **OK** to start the cloning process.

Record the selected Snapshot copy name. When unmounting the backup, the same Snapshot copy name must be selected.

5. In the **Console** pane, verify that the cloning process was successful.

Performing restore operations

You can perform volume restore, single file restore, and application-defined restore operations using the Snap Creator GUI.

If you use SnapDrive for Windows, you must use SnapDrive to perform restore operations, which should be performed outside of Snap Creator.

Performing volume restore

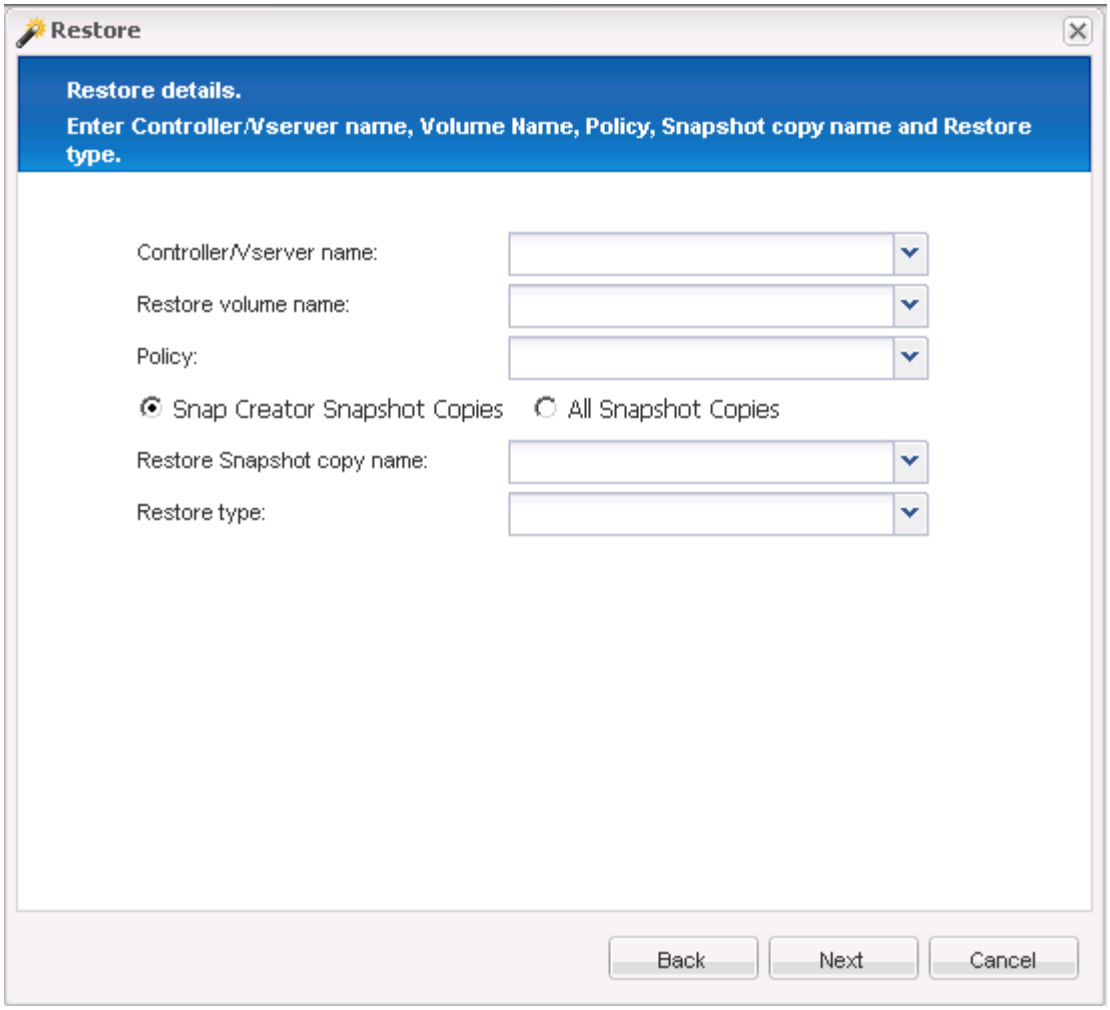
You can perform a volume restore by using the Snap Creator GUI.

1. From the Snap Creator GUI main menu, select **Management** > **Configurations**.
2. From the **Configurations** tab, in the **Profiles and Configuration** pane, select the configuration file.
3. Select **Action** > **Restore**.

   The Restore wizard is displayed in the right pane.

4. Complete the pages in the Restore wizard to perform the restore.

   a. In the **Restore details** page, select the controller/SVM name, Restore volume name, Policy, and Restore Snapshot copy name, and then select **Volume Restore** from the **Restore type** drop-down list.



b. Review the summary, and then click **Finish**.

A warning message appears asking whether there are more items to be restored.

5. Click **No**, and then click **OK** on the Restore confirmation page.
6. In the **Console** pane, verify that the restore was completed successfully by viewing the messages.

Performing single file restore operations

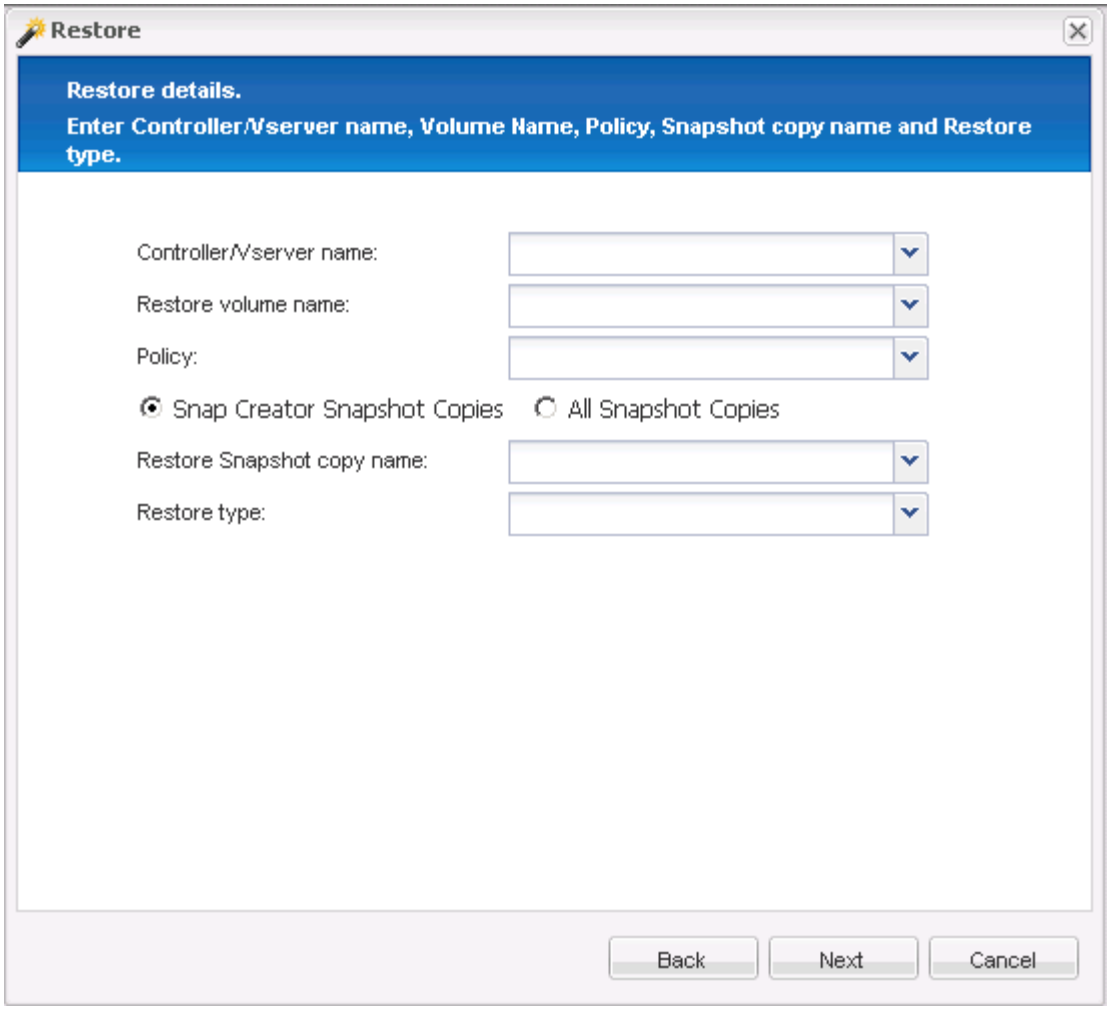
You can perform single file restore operations by using the Snap Creator GUI.

1. From the main menu of the Snap Creator GUI, select **Management** > **Configurations**.
2. From the Configurations tab in the Profiles and Configuration pane, select the configuration file.
3. Select **Action** > **Restore**.

   The Restore wizard opens in the right pane.

4. Complete the Restore wizard:

   a. In the “Restore details” section, select a controller or Vserver name, a restore volume name, a policy, and a restore Snapshot copy name, and then select **Single File Restore** from the Restore type list.



b. Select the files that are to be restored.

c. Select the location to which the files should be restored.

d. Review the summary and click **Finish**.

A warning message appears, asking whether there are more items to be restored.

5. Click **No** if there are no more items to be restored, and then click **OK** on the Restore confirmation page.
6. In the Console pane, verify that the files that you selected were successfully restored by reviewing the messages that are displayed.

Performing application-defined restore operations

If you are using VMware, KVM, and Xen plug-ins, you can perform application-defined restore operations by using the Snap Creator GUI.

In certain VMware environments, restore operations can take a long time. In such cases, you can either use the Snap Creator CLI or set up two agents: one for backup and the other for restore.

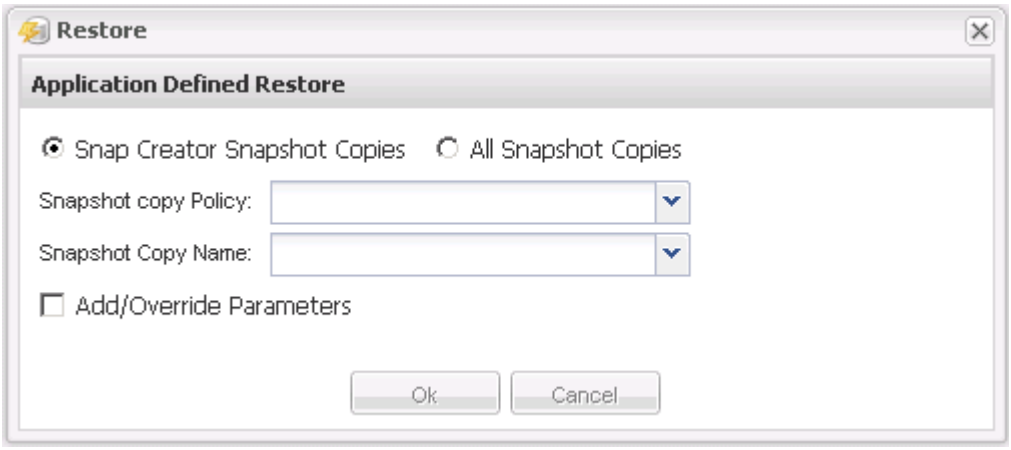
VMware restore operations using the GUI are supported only for Snap Creator Agent.

1. From the Snap Creator GUI main menu, select **Management** > **Configurations**.
2. From the **Configurations** tab, in the Profiles and Configuration pane, select the configuration file.

3. Select **Action** > **Restore**.

   The Application Defined Restore dialog box is displayed in the right pane.

4. Enter the restore details and click **OK**:



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