

IBM System Storage N series



Snap Creator Framework 4.1 Administration Guide

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Preface

Supported features

IBM System Storage N series storage systems are driven by NetApp Data ONTAP software. Some features described in the product software documentation are neither offered nor supported by IBM. Please contact your local IBM representative or reseller for further details.

Information about supported features can also be found on the N series support website (accessed and navigated as described in [Websites](#) on page 6).

Websites

IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. The following web pages provide N series information:

- A listing of currently available N series products and features can be found at the following web page:
www.ibm.com/storage/nas/
- The IBM System Storage N series support website requires users to register in order to obtain access to N series support content on the web. To understand how the N series support web content is organized and navigated, and to access the N series support website, refer to the following publicly accessible web page:
www.ibm.com/storage/support/nseries/
This web page also provides links to AutoSupport information as well as other important N series product resources.
- IBM System Storage N series products attach to a variety of servers and operating systems. To determine the latest supported attachments, go to the IBM N series interoperability matrix at the following web page:
www.ibm.com/systems/storage/network/interophome.html
- For the latest N series hardware product documentation, including planning, installation and setup, and hardware monitoring, service and diagnostics, see the IBM N series Information Center at the following web page:
publib.boulder.ibm.com/infocenter/nasinfo/nseries/index.jsp

Getting information, help, and service

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This section contains

information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your IBM N series product, and whom to call for service, if it is necessary.

Before you call

Before you call, make sure you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure they are connected.
- Check the power switches to make sure the system is turned on.
- Use the troubleshooting information in your system documentation and use the diagnostic tools that come with your system.
- Refer to the N series support website (accessed and navigated as described in [Websites](#) on page 6) for information on known problems and limitations.

Using the documentation

The latest versions of N series software documentation, including Data ONTAP and other software products, are available on the N series support website (accessed and navigated as described in [Websites](#) on page 6).

Current N series hardware product documentation is shipped with your hardware product in printed documents or as PDF files on a documentation CD. For the latest N series hardware product documentation PDFs, go to the N series support website.

Hardware documentation, including planning, installation and setup, and hardware monitoring, service, and diagnostics, is also provided in an IBM N series Information Center at the following web page:

publib.boulder.ibm.com/infocenter/nasinfo/nseries/index.jsp

Hardware service and support

You can receive hardware service through IBM Integrated Technology Services. Visit the following web page for support telephone numbers:

www.ibm.com/planetwide/

Firmware updates

IBM N series product firmware is embedded in Data ONTAP. As with all devices, ensure that you run the latest level of firmware. Any firmware updates are posted to the N series support website (accessed and navigated as described in [Websites](#) on page 6).

Note: If you do not see new firmware updates on the N series support website, you are running the latest level of firmware.

Verify that the latest level of firmware is installed on your machine before contacting IBM for technical support.

How to send your comments

Your feedback helps us to provide the most accurate and high-quality information. If you have comments or suggestions for improving this document, please send them by email to starpubs@us.ibm.com.

Be sure to include the following:

- Exact publication title
- Publication form number (for example, GC26-1234-02)
- Page, table, or illustration numbers
- A detailed description of any information that should be changed

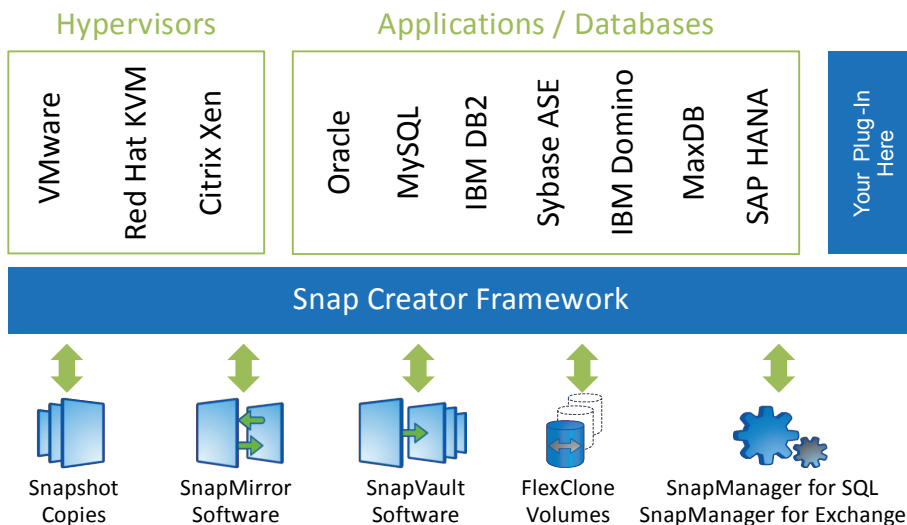
What the Snap Creator Framework does

The Snap Creator Framework (Snap Creator) enables you to use pre-packaged and custom plug-ins that standardize and simplify data protection for a wide variety of third-party applications, databases, and hypervisors in Windows and UNIX (AIX, HP-UX, Linux, and Solaris) environments.

By leveraging Snapshot, SnapVault, Open Systems SnapVault (OSSV), and SnapMirror, as well as IBM N series Management Console data protection capabilities, the Operations Manager console, and FlexClone, Snap Creator provides:

- **Application-consistent data protection.** You get a centralized solution for backing up critical information, integrating with existing application architectures to assure data consistency and reduce operating costs.
- **Extensibility.** You achieve fast integration using modular architecture and policy-based automation.
- **Cloud readiness.** Operating system-independent Snap Creator functionality supports physical and virtual platforms and interoperates with IT-as-a-service and cloud environments.
- **Cloning capability.** Space efficient data cloning is supported for development and test purposes.

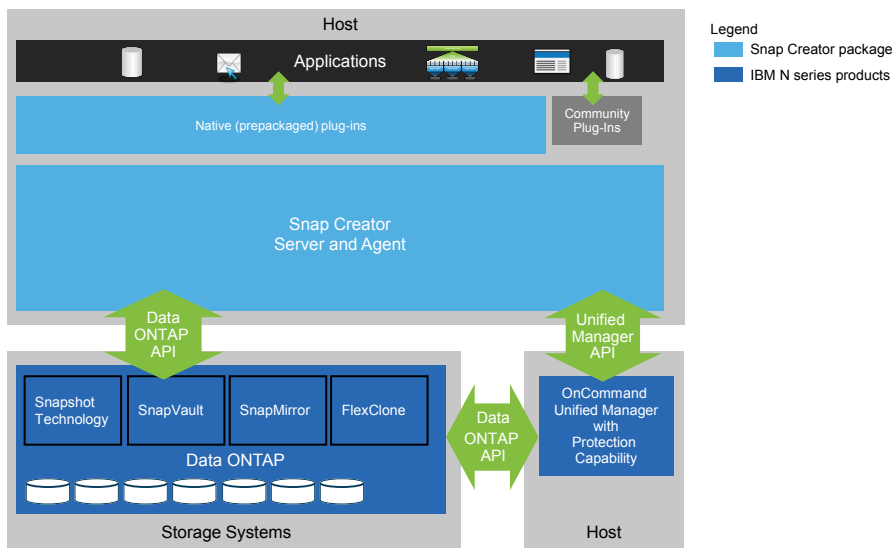
The following illustration shows the components.



Snap Creator architecture

Snap Creator has a full-featured server and agent architecture, which consists of three main components: Snap Creator Server, Snap Creator Agent, and plug-ins.

Snap Creator interacts and integrates with various technologies and products as depicted in the following high-level diagram.

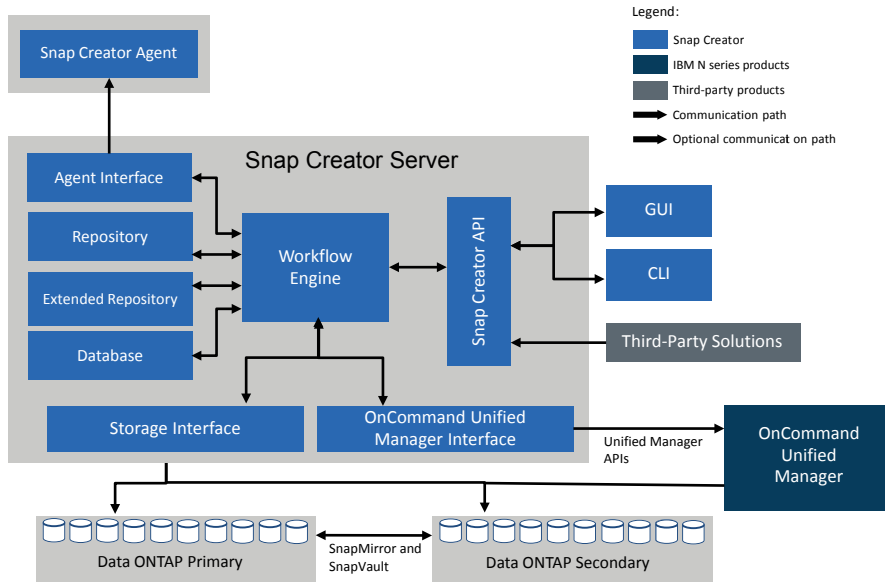


The IBM N series software products in the high-level diagram are optional; except for Snapshot technology, the other software products are not required for Snap Creator Framework to function.

What Snap Creator Server is

Snap Creator Server is the main engine for the Snap Creator Framework.

The following illustration depicts the Snap Creator architecture for the Server:



The Snap Creator Server component is comprised of the following:

- | | |
|--|---|
| Snap Creator Server | Typically installed on a central backup server or in smaller environments, Snap Creator Server, written in Java, can be installed on the same host as an application or database that you want to manage. |
| Workflow engine | The central component of Snap Creator, this XML-driven, multi-threaded workflow engine is responsible for running all of the Snap Creator tasks and commands. |
| Snap Creator APIs | Used by the Snap Creator graphic user interface (GUI) and command-line interface (CLI). |
| Snap Creator repository | Holds information about Snap Creator profiles and configuration files including global configurations and profile-level global configurations. |
| Snap Creator extended repository | An extension of the repository, provides a database location for every job run in Snap Creator, including important information about the job as well as metadata generated by plug-ins. |
| Snap Creator database | Stores information on Snap Creator schedules and jobs, as well as role-based access control (RBAC) users and roles. |
| Storage Interface | Provides Snap Creator with a common interface to IBM N series storage systems, which uses Data ONTAP APIs to handle actions such as Snapshot copies, SnapVault and/or SnapMirror updates, and more. |
| OnCommand Unified Manager Interface | For optional communications with IBM N series OnCommand Unified Manager, uses Unified Manager APIs instead of Data ONTAP APIs for actions such as Snapshot copies, SnapVault and SnapMirror updates. |

Agent Interface Communicates with Snap Creator Agents. The Snap Creator Agent is most often installed on a different physical or virtual host than the Snap Creator Server, but both can be installed on the same host.

Note: Snap Creator Server supports both Snap Creator 4.0 and 4.1 Agents.

Snap Creator Server APIs

APIs are used by the Snap Creator graphical user interface (GUI) and command-line interface (CLI) and other products or services. These APIs are based on the SOAP web service.

The APIs are grouped under web services.

Engine APIs

These APIs run Snap Creator workflows. Workflow-based APIs are task-based, which means that you must start an API and then check the status to view the messages and the exit results of the workflow.

Repository APIs

These APIs are related to the Snap Creator repository. The repository stores information about backup configurations. You can use the repository APIs to create, delete, or update backup configurations.

RBAC APIs

These APIs are used to perform user or role management. Snap Creator does not integrate with Active Directory, Lightweight Directory Access Protocol (LDAP), or other user management systems. The users and roles are created in the Snap Creator environment.

Storage interface APIs

These APIs are direct storage calls. You can use these APIs to create a Snapshot copy from your application plug-in or perform operations directly with storage without invoking a workflow. You must provide the storage credentials for authentication.

Scheduler APIs

These APIs are related to the scheduler actions. You can use the scheduler APIs to schedule a job, run a job, update a job, and so on.

For more details, see the API documentation.

Note: To access the API documentation, you should register in the Snap Creator Developer Community.

Related information

Snap Creator 4.1.0 API documentation: netapp.github.com/SC-Framework

Snap Creator Developer Community: snapcreator.netapp.com

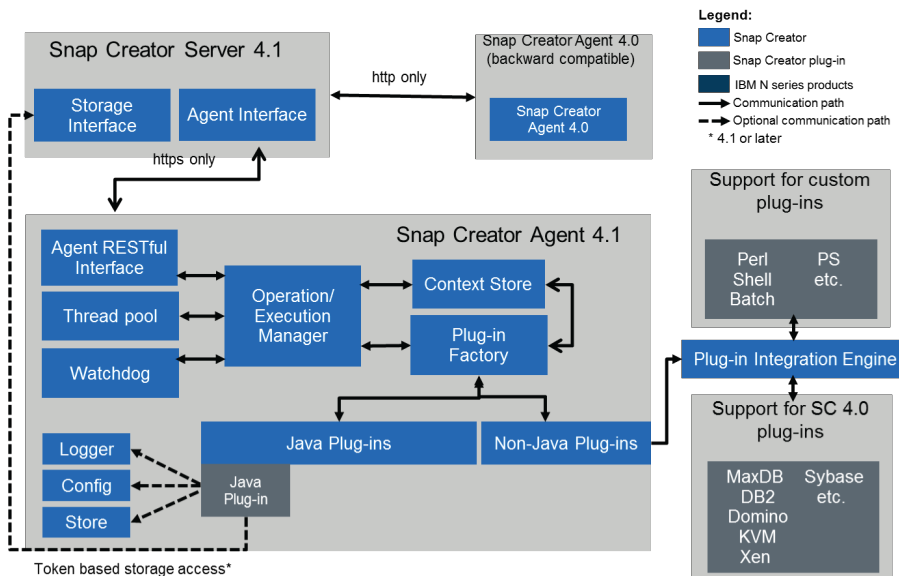
What Snap Creator Agent is

Snap Creator Agent, typically installed on the same host where an application or database is installed, handles quiesce and unquiesce commands from the Server to a given application, and is required when using plug-ins.

The Snap Creator Agent, written in Java, significantly increases the scalability of the Agent by allowing the development of an agent that is multi-threaded on all operating systems. Multiple operations can be run concurrently. Snap Creator Framework imposes no limitations on the maximum number of threads; any limit will be dependent on system constraints.

The Agent receives communication from the Snap Creator Server's Agent Interface – via HTTPS only – through the Agent RESTful interface. This means secure and encrypted communication, which is a very important feature in multi-tenant and cloud environments. Self-signed certificates allow the use of a generated certificate with the Snap Creator Agent. Furthermore, the Snap Creator Agent is protected by a configurable user and password combination, which are stored on disk.

The following illustration depicts the architecture for the Snap Creator Agent:



The Snap Creator Agent component is comprised of the following

Operation and Execution Managers	The Operation Manager takes care of the incoming, outgoing, and completed requests. The Execution Manager is responsible for executing the requests.
Thread pool	<p>Consisting of worker threads, the thread pool is used to execute multiple tasks.</p> <p>This determines the number of concurrent operations at any given time. The Execution Manager executes a plug-in and it executes it in one of the threads in the thread pool. If the thread pool has eight threads, you can run eight plug-in operations concurrently. New incoming operations are queued, until threads become free again.</p>
Watchdog	<p>Triggered by the Execution Manager for certain operations, typically quiesce, the Watchdog calls back to the Execution Manager after a specified time to stop the operation if necessary and execute a corresponding undo operation. For example, Plug-in quiesce() is called to put the application into a backup mode. The Watchdog starts listening. If the unquiesce is not executed within the specified time window, the Watchdog will unquiesce the application, putting it back into normal operation mode. This is to ensure that the database does not get stuck in backup mode.</p>
Context Store	<p>Holding all information that should live over the lifetime of the workflow, the Context store provides context objects to the plug-in as needed and, if a workflow fails or is never completed, the context object will be deleted after a period of time.</p> <p>For workflows that do not finish or fail in an undefined state, there is a maximum context time specified in <i>InstallDir/etc/agent.properties</i>: CONTEXT_LIFETIME_IN_MSEC=1800000 (the default value, 30 minutes). If this value is increased, the Snap Creator Agent will occupy more memory.</p>
Plug-in Factory	<p>Starts the plug-in and ensures that it runs in an isolated space. The Plug-in Factory also communicates with the Context store to accessed stored information. It also enables running Perl and native plug-ins from Snap Creator 4.0 using the Plug-in Integration Engine.</p> <p>If the plug-in factory starts a Java plug-in, there are a few additional elements specific to the Java plug-in that are available:</p> <ul style="list-style-type: none"> <li data-bbox="323 1258 1240 1574"> <p>• A Java plug-in receives a copy of the configuration file from the Snap Creator Server.</p> <p>If a configuration needs to be changed, perhaps due to a volume move, the Java configuration can change the information in this copy of the file. The plug-in always receives a copied version of the configuration. It therefore cannot change the configuration directly. However, it can send back configuration parameters that it wishes to change. For example, it can update the VOLUMES parameter. However, it is then up the configuration of the server, to actually update the configuration (either permanently via APP_CONF_PERSISTENCE=Y or just for the lifetime of the workflow).</p>

- The Logger is a standardized logger that can be consumed by the plug-ins providing standard logging throughout the framework.
- The plug-in can talk directly to the Context store. A Perl plug-in cannot access the Context store. Each Java plug-in that is involved in a workflow gets read-write access to the Context store, which can be used to do the following:
 - Store objects for re-use within a plug-in in between operations (for example, a plug-in puts something in the store during `quiesce()` and then reads it again in `unquiesce()`).
 - Pass data between plug-ins (for example, plug-in 1 puts something in the store during `quiesce()` and plug-in 2 reads it during `quiesce()`).
- The Java plug-ins can also communicate with the Snap Creator Server storage interface using a token-based storage proxy.

Plug-ins can execute storage operations without needing any credentials. This is handled in the background through tokens. Tokens basically make sure that only permitted operations can take place since the token itself has specific permission assigned to it. This is invisible to the plug-ins. For example, if a plug-in wants to create a syclone of a file, it can leverage the storage proxy. It can be also used to perform some common operations such as create snapshots, clones, write/read files to the volume, and so on. This allows creation of really powerful plug-ins and custom solutions.

The Snap Creator Agent can also use plug-ins written in languages other than Java.

Plug-in integration engine

The bridge between the new Java Agent and the well-known Perl and native plug-ins. It is basically a binary that contains the plug-ins that were previously supported in Snap Creator 4.0. Furthermore, this is used to execute the community plug-ins. It is also executes Perl, Bash, Batch, PowerShell, etc. based plug-ins. All operations and plug-ins that run through the wrapper are executed in a separate OS process, thus providing the biggest possible separation from the agent process.

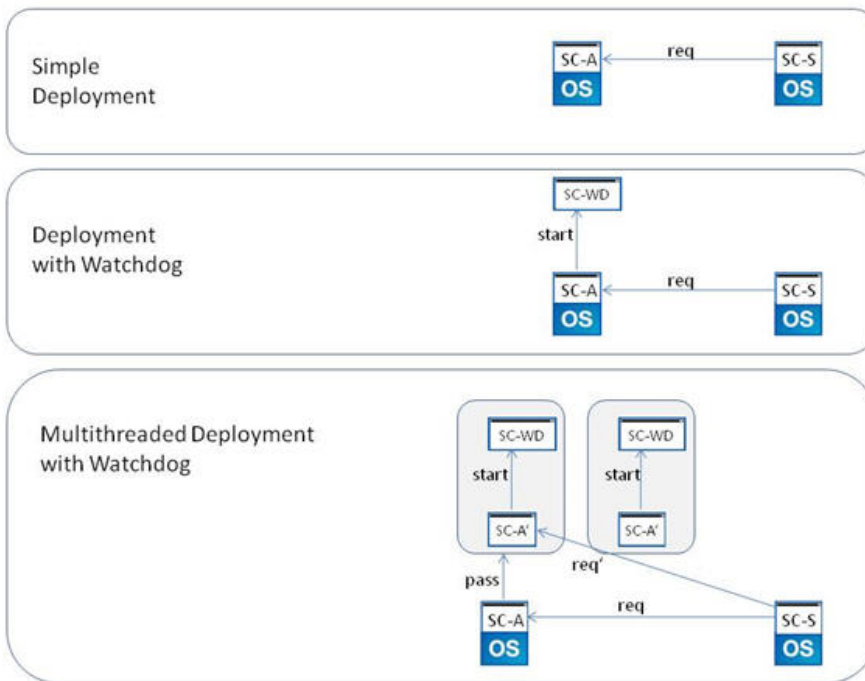
External Watchdog

A separate operating system process that makes sure that the Snap Creator Agent runs continuously. Whenever the external watchdog sees that the Snap Creator Agent crashed, it will automatically restart the Agent. This action will execute an `unquiesce` if an application was in quiesced state during the crash.

Snap Creator Agent multithreading

Snap Creator Agent handles parallel requests by distributing the requests that come from the agent.

The following illustration shows the different types of Snap Creator Agent deployment:



Simple deployment

In simple deployment, Snap Creator Server opens a connection to Snap Creator Agent. The connection between the server and agent remains active and the agent cannot accept further requests until the server stops.

Deployment using a watchdog

In this deployment, Snap Creator Agent creates a separate process (watchdog) after accepting a request from Snap Creator Server to quiesce the database. The watchdog process inherits the environment and all the settings of the parent process and unquiesces the database after a configured timeout.

The agent is blocked until the server stops or closes the connection.

Multithreaded deployment using a watchdog

In a multithreaded deployment, Snap Creator Agent creates an additional process (SC-A', as shown in the illustration) and passes the communication responsibility (req') to this process. This newly created process inherits the basic Snap Creator Agent settings and Snap Creator Server communicates with this process. If configured, this process creates a watchdog when the quiesce operation is called.

After the additional process is created, the agent can accept additional requests.

Note: The multithreaded agent is not supported on Windows and the following plug-ins:

- Domino
- MySQL
- VMware
- KVM
- Xen

Plug-ins

Plug-ins provide application integration for data consistency and normally run where the application is installed. Types of applications that are supported include database, email, hypervisor, or custom applications.

The following set of supported native (prepackaged) plug-ins are included with Snap Creator:

- Citrix Xen
- DB2
- IBM Domino (Domino)
- MaxDB
- MySQL
- Oracle
- Red Hat Kernel-based Virtual Machine (KVM)
- SAP High-Performance Analytic Appliance (HANA)
- SnapManager for Microsoft Exchange
- SnapManager for Microsoft SQL Server
- Sybase Adaptive Server Enterprise (ASE)
- VMware (vSphere for individual virtual machine backup and vCloud Director for vApp backup)

For more detailed information about the Snap Creator plug-ins, see the *Snap Creator Framework Administration Guide*.

Snap Creator also enables custom plug-ins that are written by the developer community. These custom plug-ins leverage the interface provided by Snap Creator and allow the developers to concentrate their development efforts on their target applications.

For details, visit the [Snap Creator Developer Community](#) and [Snap Creator Community forum](#) sites.

Snap Creator integration

Snap Creator integrates either fully (by design) or optionally with other software products and technologies.

- Snapshot technology, SnapVault, SnapMirror, LUN cloning, volume cloning, and igroup mapping using Data ONTAP API.
- Any application or database that runs in an open systems environment (you can create your own application backup script or plug-in).
- NetBackup, CommVault, or any backup software with CLI commands.
- Optionally uses SnapVault directly instead of the IBM N series Management Console data protection capability to transfer Snapshot copies to the secondary storage.
- Optionally integrates with Operations Manager console for monitoring (the ability to create events in Operations Manager console).
- Optionally integrates with the IBM N series Management Console data protection capability to perform secondary backup (Snap Creator backup copies can be registered in the IBM N series Management Console data protection capability).
- Optionally integrates with Open Systems SnapVault.
- Optionally integrates with SnapDrive for UNIX and SnapDrive for Windows.
Snap Creator can use the Manage ONTAP Solution to send calls directly to the storage controller to create Snapshot copies, or use SnapDrive

Note:

- Snap Creator 4.1.0 does not support SnapVault, Operations Manager console, the IBM N series Management Console data protection capability, and Open Systems SnapVault on clustered Data ONTAP 8.1, clustered Data ONTAP 8.1.1, clustered Data ONTAP 8.1.2, and clustered Data ONTAP 8.2.
- For SnapMirror and SnapVault, the storage system and the host must be resolved either through the Domain Name System (DNS) or in `/etc/hosts`. For clustered Data ONTAP, the cluster and Vserver must be resolved either through the DNS or in `/etc/hosts`.

For latest information about support and compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

Security features of Snap Creator

Snap Creator provides security features such as role-based access control (RBAC) and host security for Snap Creator Agent. The users can be assigned access to specific profiles.

RBAC in Snap Creator

RBAC involves users, roles, permissions, operations, and profiles. The users, roles, and permissions can be defined by the Snap Creator users.

- **Users**
 - Users are uniquely identified by a user name and password.
 - A user can be assigned and unassigned to one or more roles and profiles.
 - The `SNAPCREATOR_USER` in the `snapcreator.properties` file is added as a user when the Snap Creator Server is started.
 - The `SNAPCREATOR_USER` in the `snapcreator.properties` file is assigned the Default Administrator role when the user is created during startup.
- **Roles:** Roles have one or more permissions. The assigned permissions determine the actions a user can perform and also which GUI elements the user can access. There are three built-in roles:
 - Administrator: Has full access to all the APIs. This is the only role which can create, edit, and delete users.
 - Operator: This role is configured to be a super user and has access to all the APIs except RBAC.
 - Viewer: Has very limited access. This role has access to read-only API calls.

Note: These built-in roles cannot be added, removed, or modified.

- **Permissions:** Permissions are a set of operations the user is authorized to perform. Some examples of permissions are backup, clone volume, and restore.
- **Operations:** Operations are the base values that Snap Creator checks for authorization. Some examples of operations are `getTask`, `fileCloneCreate`, `createTask`, `dirCreate`, and so on.

Note: Operations cannot be added, removed, or modified.

- **Profiles**
 - Profiles are assigned to users.
 - Profiles in RBAC are created in the profile directory on the file system by using the graphical user interface (GUI) or the command-line interface (CLI).
 - Certain Snap Creator APIs check if a user is assigned to a profile and also check the permissions for operations.

For example, if a user wants a job status, RBAC verifies if the user has authorization to call `SchedulerGetJob` and then checks if the profile associated with the job is assigned to the user.

- If a user, who is assigned the Operator role, creates a profile by using the GUI or CLI, then that profile is automatically assigned to the user.

RBAC for storage controllers

If you are not using the proxy, you need a user name and password to communicate with the storage controllers. Passwords can be encrypted for security.

Note: You should not use the root user. It is recommended to create a backup user with the necessary API permissions.

Network communications are through HTTP (80) or HTTPS (443), so you must have one or both of these ports open between the host where Snap Creator runs and the storage controllers. A user must be created on the storage controllers for authentication. For HTTPS, you must ensure that the user is enabled and configured on the storage controllers.

Snap Creator Agent security

Snap Creator Server communicates with the agent only through HTTPS, this ensures a secure and encrypted communication. This feature is important in a multi-tenant environment. Self-signed certificates allows the customer to use their own generated certificate with the agent.

Snap Creator allows access to the agent by a configurable user name - password authentication. The user name and password credential are stored in the `agent.cred` file located under the root Snap Creator agent directory. After startup, the Snap Creator agent loads the `agent.cred` file. If the `agent.cred` file does not exist, Snap Creator Agent uses its internal credentials. The `agent.cred` file can be copied to a different agent and be used there.

Note: This is supported only for Snap Creator 4.1.0 and later versions.

Create a configuration file in Snap Creator

The Snap Creator configuration file is located in `/path/to/scServer_v<#>/engine/configs/<profile>/<config>.conf`. You can create multiple configurations, but Snap Creator Server runs only one configuration at a time.

You can edit the configuration file by using Visual Interactive (VI) in UNIX or any text editor in Windows. You can also use the Snap Creator GUI to edit and manage configuration files.

Creating a configuration file using the GUI

You can create a configuration file by using the GUI.

Steps

1. Launch the Snap Creator GUI from a web browser by navigating to `http://hostname or IP address:port/UI`. (for example, `http://server.example.com:8080/UI`).

Note: The first time you use the GUI, the Add Profile window is automatically displayed after the Welcome screen. Whenever you add a new profile, the Configuration wizard is automatically displayed.

2. From the **Management** drop-down menu, click **Configurations**.
3. In the **Profiles and Configurations** pane, click **Add Profile**, enter the new profile name; then click **OK**.

The profile name should relate to the application that is being backed up. When you add a profile, a directory is created under `/path/to/scServer_v<#>/engine/configs`.

The new profile is created.

4. Right-click the profile and select **New Configuration**.
5. Complete the steps in the configuration wizard.
6. Review the summary and click **Finish**.

Note:

- For SnapMirror and SnapVault, you must provide the storage system name and not the IP address.
- You can delete, rename, or download a configuration file by right-clicking and selecting **Delete**, **Rename**, or **Download**, respectively.
- The GUI creates the same configuration files that you create by using the CLI. You can update and edit the configuration files created by the GUI from the CLI or by the CLI from the GUI.

Creating a configuration file using the CLI

You can create a configuration file using the CLI.

Steps

1. Create a new profile for the configuration file.

A profile is a subdirectory that contains the configuration file. New profiles must be created under the `configs` directory: `/path/to/scServer_v<#>/engine/configs`.

Note: You must name the profile after the host or application being backed up.

2. Create a new blank configuration file by using the following command:

```
touch /tmp/<new file name>.conf
```

3. Import the blank file as a configuration file by using the following command:

```
/path/to/scServer_v<#>/snapcreator --user username --passwd password --  
action configImport --profile profile --config New_config_name --  
importFile New_file_name
```

Example

```
/path/to/scServer_v<#>/snapcreator --user <user> --passwd <password>  
--action configImport  
--profile VMware --config vmware1 --importFile /tmp/vmware.conf
```

In this example, a new configuration file is imported into the VMware profile with the configuration name VMware1 using the `/tmp/vmware` file.

4. Edit the newly imported configuration file using a text editor.


Note:

- For SnapMirror and SnapVault, you must provide the storage system name and not the IP address.

Creating a global configuration file using the GUI

You can use the global configuration file to separate storage controller/Vserver or VMware credential configuration from the backup policy. This enables you to control access and handle backup and restore operations.

Steps

1. From **Management**, click  **Global Configurations**.
2. Click **Create Global** and complete the steps in the configuration wizard.

Referencing

Referencing is the ability to define variables within the configuration file. The configuration file is dynamic, which means that you can create and set variables within the configuration itself.

For example, the use of SnapDrive instead of Data ONTAP API to create the Snapshot copies. Because the Snapshot copy names need to be unique, you must set a dynamic variable. The following is an example from a Windows SnapDrive configuration:

```
NTAP_SNAPSHOT_CREATE_CMD1="c:/Program Files/IBM/SnapDrive/sdcli.exe" snap
create -m fxl1b4 -s %SNAME-%SNAP_TYPE_%SNAP_TIME -D E:
```

or

```
NTAP_SNAPSHOT_CREATE_CMD1="c:/Program Files/IBM/SnapDrive/sdcli.exe" snap
create -m fxl1b4 -s %SNAME-%SNAP_TYPE_recent -D E:
```

The following table lists the built-in variables that can be referenced:

Variables	Description
%SNAP_TYPE	Used when you run Snap Creator and it is your retention policy (daily, weekly, monthly)
%SNAP_TIME	The timestamp (YYYYMMDDhhmmss) used in the naming of Snapshot copies to create a guaranteed unique name for every Snapshot copy. It is also used to name the backup reports and Sybase transaction logs.

Variables	Description
%ACTION	The list of actions you can perform when you run Snap Creator: (backup cloneVol cloneLun arch restore backupDel backupList cloneList pmsetup ossv)
%MSG	Used to send an error message to another program such as email or Tivoli. It can only be used with the SENDTRAP function.
%USER_DEFINED	<p>Passes a user-defined argument to the Snap Creator configuration file.</p> <p>For example, to integrate with a backup application such as NetBackup, CommVault, or Legato NetWorker, you might have to pass the desired backup product's schedule into the configuration file when you have multiple schedules and want to call NetBackup, CommVault, or Legato NetWorker with a certain schedule.</p> <p>You could also achieve this by having multiple configuration files for the different scenarios.</p>

Snap Creator parameters

The following table lists the parameters required in a basic configuration:

Parameter	Setting	Description
SNAME		Specifies the Snapshot copy naming convention. It should be unique. Snapshot copies are deleted according to the naming convention.
SNAP_TIMESTAMP_ONLY	(Y N)	Sets the Snapshot naming convention. If set to Y, Snapshot copies end with YYYYMMDDHHMMSS. Otherwise, new Snapshot copies are renamed to end with YYYYMMDDHHMMSS.

Parameter	Setting	Description
VOLUMES		Lists the primary storage controllers and volumes you want to create a Snapshot copy of. For example, controller1:vol1,vol2,vol3; controller2:vol1;controller3:vol2,vol3.
NTAP_SNAPSHOT_RETENTIONS		Determines the number of Snapshot copies to be retained for a given policy. For example, daily:7,weekly:4,monthly:1.
NTAP_USERS		Lists the storage systems and their corresponding user names and passwords. For example, controller1:joe/password1;controller2:bob/password2;controller3:ken/password3.
NTAP_PWD_PROTECTION	(Y N)	Enables password protection. You must encrypt all passwords (storage system and applications or plug-ins) and save encrypted passwords in configuration file.
TRANSPORT	HTTP HTTPS	Allows you to use either HTTP or HTTPS to connect to the storage controller. Note: HTTPS might require openssl-devel libraries.
PORT		Configures the port number the storage controllers use, normally (80/443).
LOG_NUM		Specifies the number of .debug and .out reports that Snap Creator has to retain.

Parameter	Setting	Description
CONFIG_TYPE	PLUGIN STANDARD	Specifies the configuration type. There are two types of configurations: plug-in and standard. You can use multiple plug-in configurations to build complex quiesce and unquiesce backup workflows.
CMODE_CLUSTER_USERS		(Required for clustered Data ONTAP) Lists the primary/secondary clustered Data ONTAP clusters and their corresponding user names/passwords. For example, cluster1:joe/password1;cluster2:bob/password2 #
CMODE_CLUSTER_NAME		(Required for clustered Data ONTAP) Specifies the name of the primary clustered Data ONTAP cluster.
CMODE_SNAPSHOT_FORCE_DELETE	(Y N)	Ensure deletion of Snapshot copies which should be deleted based on the Snapshot copy policy. In clustered Data ONTAP, Snapshot copies are not deleted if it has any dependencies; like clone.
LOG_TRACE_ENABLE	(Y N)	Allows logging of all the events. If disabled, the Manage ONTAP Solution result objects does not get logged.
NTAP_TIMEOUT	Seconds	Sets the timeout value for all storage controller Manage ONTAP Solution calls. Default is 60 seconds.
USE_GLOBAL_CONFIG	(Y N)	Allows you to use global configuration to store values.

Parameter	Setting	Description
FEDERATED_APPLICATIONS		Lists the configuration and profile names for the federated applications under the configuration. For example, databases@db2;databases@oracle
CMODE_SET	(Y N)	Defines if the configuration is a clustered Data ONTAP or Data ONTAP operating in 7-Mode configuration.

The following table lists the parameters required to connect to vFiler units and interfaces:

Parameter	Setting	Description
VFILERS		List the vFiler units and their hosting storage systems or volumes. For example, vFiler1@controller1:vol1,vol2,vol3;vFiler2@controller2:vol1;vFiler3@controller3:vol2,vol3. Note: HTTPS is not supported with vFiler units
MANAGEMENT_INTERFACES		Lists the primary storage controllers and their management interfaces used for communications. For example, MANAGEMENT_INTERFACES=controller1:controller1-mgmt;controller2:controller2-mgmt

Parameter	Setting	Description
SECONDARY_INTERFACES		<p>List the primary storage controllers or vFiler units and their secondary interfaces source or destination for SnapVault and SnapMirror relationships.</p> <p>For example, controller1:controller1-source/ controller2-destination</p> <p>Note: The SnapVault and SnapMirror relationships must be configured to use this secondary interface. Snap Creator does not manage SnapMirror and SnapVault relationships.</p>
USE_PROXY	(Y N)	Allows API calls to go through server proxy instead of storage controller directly. If this option is used, NTAP_USERS is not required.
ALLOW_IP_ADDR	(Y N)	Allows IP address to be used for storage system. This applies to SnapVault, SnapMirror, and the IBM N series Management Console data protection capability. Using IPs can create problems and should only be used under certain conditions.

The following table lists the parameters required to set up a Snapshot copy:

Parameter	Setting	Description
NTAP_SNAPSHOT_RETENTION_AGE		Allows you to define a retention age (in days) for Snapshot copies. If configured, Snapshot copies are deleted only if they exceed the number defined in NTAP_SNAPSHOT_RETENTIONS and if they are older than the retention age (in days).
SNAPDRIVE	(Y N)	Allows you to use SnapDrive instead of Data ONTAP API to create a Snapshot copy.
SNAPDRIVE_DISCOVERY	(Y N)	Enables the use of SnapDrive for the storage discovery. This is required in SAN or iSAN environment when using VALIDATE_VOLUMES parameter.
NTAP_SNAPSHOT_DISABLE	(Y N)	Disables the Snap Creator from creating a Snapshot copy so that Snap Creator can handle SnapVault or SnapMirror for SnapManager. For this setting to work, the SnapManager Snapshot copies need to follow this naming convention: <snapshot copy name>-<policy>_recent.
NTAP_SNAPSHOT_NODELETE	(Y N)	Overrides NTAP_SNAPSHOT_RETENTIONS and prevents Snapshot copies from being deleted. Enabling this variable can make the volume full.

Parameter	Setting	Description
NTAP_SNAPSHOT_DELETE_BY_AGE_ONLY	(PRIMARY SECONDARY BOTH N)	Allows the deletion of old Snapshot copies. Requires NTAP_SNAPSHOT_RETENTION_AGE and forces deletion based on Snapshot copy age rather than the number of Snapshot copies.
NTAP_SNAPSHOT_DEPENDENCY_IGNORE	(Y N)	Applies only to Snapshot copy deletion using the action backupDel. Manually deleting Snapshot copies with a dependency is not permitted.
NTAP_SNAPSHOT_CREATE_CMD<#>		Creates a Snapshot copy and flushes the file system buffers. <#> is a number from 01-99. Note: This is required if you enable the SNAPDRIVE option. Data ONTAP API is still used to perform everything else, but the SNAPDRIVE option creates Snapshot copies.
NTAP_CONSISTENCY_GROUP_SNAPSHOT	(Y N)	Enables use of consistency groups for creating consistent Snapshot copy across multiple volumes.
NTAP_CONSISTENCY_GROUP_TIMEOUT	(URGENT MEDIUM RELAXED)	Specifies the wait time for storage controller to consistently group Snapshot copies.
NTAP_CONSISTENCY_GROUP_WAFL_SYNC	(Y N)	Improves the performance of a consistency group Snapshot copy by forcing a CP through a wafL-sync before the cg-start.
NTAP_SNAPSHOT_RESTORE_AUTO_DETECT	(Y N)	Setting which if disabled always forces a SFSR when doing a single file restore.

Parameter	Setting	Description
NTAP_SNAPSHOT_CLEANUP	(Y N)	Remove any Snapshot copies taken in the event of backup failure.
NTAP_USE_EXTERNAL_SNAPSHOT	(Y N)	Allows to import non-Snap Creator Snapshot copy, most recent Snapshot copy is matched.
NTAP_EXTERNAL_SNAPSHOT_REGEX		A regular expression for matching imported Snapshot copies, requires the NTAP_USE_EXTERNAL_SNAPSHOT option.

The following table lists the parameters required to set up SnapVault:

Parameter	Setting	Description
NTAP_SNAPVAULT_UPDATE	(Y N)	Allows you to turn the SnapVault update function on and off.

Parameter	Setting	Description
SNAPVAULT_ VOLUMES		<p>List the source storage systems and volumes on which you want to perform a SnapVault update. For example, controller1:vol1,vol2,vol3;controller2:vol1;controller3:vol2,vol3.</p> <p>Note:</p> <ul style="list-style-type: none"> • For SnapVault and SnapMirror updates to work, the relationships must exist. Snap Creator does not create the relationships. • The host names in the SnapMirror or SnapVault relationship must be the same as specified in the VOLUMES, SNAPMIRROR_ VOLUMES, and SNAPVAULT_ VOLUMES options. Also, the host where Snap Creator runs must be able to resolve the host names. • For the vSphere or vCloud, set the value to auto:detect • Host names should be the short host name (name that appears on storage controller command prompt), not the FQDN.

Parameter	Setting	Description
SNAPVAULT_QTREE_INCLUDE		List the source storage systems and qtree paths that should be included in the SnapVault update. Without this option, all qtrees under a volume are vaulted by SnapVault if a relationship exists. Qtrees listed in the following example are vaulted by SnapVault and the rest are ignored by SnapVault: controller1:/vol/mtree/ mtree1,/vol/volume/ mtree2;controller2:/vol/volume/ mtree1.
NTAP_SNAPVAULT_RETENTIONS		Determines the number of Snapshot copies on the SnapVault secondary that you want to retain for a given policy, that is, <code>daily:21,weekly:12,monthly:3</code> .
NTAP_SNAPVAULT_RETENTION_AGE		Allows you to define a retention age (in days) for SnapVault Snapshot copies. If configured, SnapVault Snapshot copies are deleted only if they exceed the number defined in <code>NTAP_SNAPVAULT_RETENTIONS</code> and if they are older than the retention age (in days).

Parameter	Setting	Description
NTAP_SNAPVAULT_SNAPSHOT	(Y N)	Enables use of SnapVault Snapshot copies; that is, Snapshot copies that are compatible with the Storage Controller SnapVault scheduler. When using this option, Snapshot copy delete is handled by the Storage controller and not by the Snap Creator. Additionally, Snapshot copies are named as follows: sv_<POLICY>.<##>. The policy name comes from the NTAP_SNAPSHOT_RETENTIONS parameter and the retention set is also applied to the Storage Controller SnapVault schedule.
NTAP_SNAPVAULT_NODELETE	(Y N)	Overrides NTAP_SNAPVAULT_RETENTIONS and prevents Snapshot copies from being deleted. Leaving this on can cause your volume to fill up.
NTAP_SNAPVAULT_RESTORE_WAIT	(Y N)	In the case of SnapVault restore, it forces Snap Creator to wait for the operation to complete. This is recommended because after the SnapVault restore completes, Snap Creator prompts the user to delete the restore Snapshot copies that get created on primary storage and are no longer needed.
NTAP_SNAPVAULT_WAIT		This is the wait time (in minutes) for the SnapVault update process to complete before taking a Snapshot copy on the SnapVault secondary.

Parameter	Setting	Description
NTAP_SNAPVAULT_MAX_TRANS FER		This is the maximum bandwidth SnapVault is allowed to use in kbps. If it is not set, SnapVault uses the maximum available bandwidth.

The following table lists the parameters required to set SnapMirror:

Parameter	Setting	Description
NTAP_SNAPMIRROR_ UPDATE	(Y N)	Allows you to turn the SnapMirror update function on and off.
NTAP_SNAPMIRROR_ CASCADING_UPDATE	(Y N)	Allows you to turn the cascading SnapMirror update function on and off. This is a SnapMirror update using a SnapVault destination volume. Note: This is not supported for clustered Data ONTAP.
SNAPMIRROR_ VOLUMES		This is the list of source storage systems and volumes on which you want to perform a SnapMirror update, that is, controller1:vol1,vol2,vol3;controller2:vol1;controller3:vol2,vol3. Note: For the VMware plugins (vSphere and vCloud), set the value to auto:detect.
SNAPMIRROR_ CASCADING_VOLUMES		List of SnapVault destination storage systems and volumes where, after a SnapVault update, you want to perform a SnapMirror update, that is, sec-controller1:vol1-sec,vol2-sec. Note: This is not supported for clustered Data ONTAP.

Parameter	Setting	Description
NTAP_SNAPMIRROR_WAIT		<p>This is the wait time (in minutes) for the SnapMirror update process to complete before creating a clone on the SnapMirror destination. If NTAP_CLONE_SECONDARY=Y, Snap Creator waits until the SnapMirror update is complete before proceeding.</p> <p>Note: This can only be used with NTAP_CLONE_SECONDARY and action cloneVol (only volume clones are currently supported).</p>
NTAP_SNAPMIRROR_USE_SNAPSHOT	(Y N)	<p>If enabled, the SnapMirror update uses the newly created Snapshot copy, thus creating a Snapshot copy on the SnapMirror destination.</p> <p>Note: This is required for NTAP_CLONE_SECONDARY because a Snapshot copy is needed in order to create a clone on the SnapMirror destination.</p>
NTAP_SNAPMIRROR_MAX_TRANSFER		<p>This is the maximum bandwidth SnapMirror is allowed to use in kbps. If it is not set, SnapMirror uses the maximum available bandwidth.</p>

The following table lists the parameters required to set up cloning:

Parameter	Setting	Description
NTAP_VOL_CLONE_RESERVE	none file volume	This is the space guarantee for a cloned volume.

Parameter	Setting	Description
NTAP_LUN_CLONE_RESERVATION	true false	If set to <code>true</code> , space is reserved for the cloned LUNs if the <code>cloneLun</code> action is selected. Otherwise, space is not reserved.
NTAP_CLONE_IGROUP_MAP		<p>Specifies the storage system, source volume, and an IGROUP. The IGROUP is then mapped to cloned LUNs that reside in the source volume or cloned LUNs that reside in the volume clone, that is, <code>controller1:src_volume1/igroup1;controller2:src_volume2/igroup2</code>.</p> <p>Note:</p> <ul style="list-style-type: none"> • LUN clones assume the same name as their parent volume or LUN and end with <code>_CLONE</code>, that is, if the volume is called <code>myvol</code>, the clone would be <code>myvol_CLONE</code>. • Volume clones start with <code>"cl_"</code> and end with <code>"-YYYYMMDDHHMMSS"</code>.
NTAP_CLONE_FOR_BACKUP	(Y N)	<p>If enabled, clones (volume and LUN) are created and then deleted after the other operations are complete. Otherwise, clones are deleted before the operations complete.</p> <p>Note: If you are backing up clones to tape, this should be set to <code>Y</code>. If you are doing database refreshes, then you should set it to <code>N</code>.</p>

Parameter	Setting	Description
NTAP_CLONE_SECONDARY	(Y N)	<p>If enabled, clones are created on the SnapMirror destination after the SnapMirror update is complete.</p> <p>Note: This setting should be used with NTAP_SNAPMIRROR_USE_SNAPSHOT, NTAP_SNAPMIRROR_WAIT, NTAP_CLONE_SECONDARY_VOLUMES, and action cloneVol.</p>
NTAP_CLONE_SECONDARY_VOLUMES		<p>This is a mapping of primary or secondary storage systems and the secondary volumes. This is required so that Snap Creator can find the secondary volumes, that is, controller1:controller1-sec/vol1,vol2,vol3;controller2:controller2-sec/vol1;controller3:controller3-sec/vol2,vol3.</p>
NTAP_NUM_VOL_CLONES		<p>This is the number of volume clones you want to retain. This works similar to the Snapshot copy retention policy.</p> <p>Note: This only works for volume clones that require a FlexClone license on the storage controller.</p>
NTAP_NFS_EXPORT_HOST	Host IP	<p>The host name or IP address where the clone should be exported. This is the host where you mount the clone volume by using NFS.</p>

Parameter	Setting	Description
NTAP_NFS_EXPORT_ACCESS	root read-write read-only	The host specified in NTAP_NFS_EXPORT_HOST receives access or permission to the clone volume. <ul style="list-style-type: none"> • root - Root access is granted. • read-only - Read-only access is granted. • read-write - Read/Write access is granted.
NTAP_NFS_EXPORT_PERSISTENT	true false	Determines if NFS export is persistent. If true is selected, the clone volume is exported and the /etc/exports file on the Storage Controller is updated.
NTAP_CIFS_EXPORT_ENABLE	(Y N)	Setting to share a cloned volume using CIFS.

The following table lists the parameters required to set up the IBM N series Management Console data protection capability:

Parameter	Setting	Description
NTAP_PM_UPDATE	(Y N)	Allows you to turn the IBM N series Management Console data protection capability update that registers Snap Creator Snapshot copies in the IBM N series Management Console data protection capability on and off. <p>Note: If NTAP_PM_UPDATE is enabled, you must configure NTAP_DFM_DATA_SET.</p>

Parameter	Setting	Description
NTAP_DFM_DATA_SET		List the storage systems and the IBM N series Management Console data protection capability data sets to volume correlations, that is, controller1:dataset1/vol1,vol2;controller1:dataset2/vol3.
NTAP_PM_RUN_BACKUP	(Y N)	Starts the IBM N series Management Console data protection capability backup, checks the progress and status, and waits for it to complete.
NTAP_DFM_SNAPSHOT_FORMAT		<p>Optional setting for the format of the secondary Snapshot copies when using the IBM N series Management Console data protection capability. This option requires OnCommand 5.0 or later. Required variable: %T - timestamp</p> <p>Optional variables are:</p> <ul style="list-style-type: none"> • %R - retention type • %L - dataset label • %H - storage controller • %N - volume name • %A - application specific data <p>If this option is not set, then the default the IBM N series Management Console data protection capability naming convention is used. The naming convention can only be set at the time of dataset creation.</p>

The following table lists the parameters required to set up Open Systems SnapVault:

Parameter	Setting	Description
NTAP_OSSV_ENABLE	(Y N)	<p>Enables the Open Systems SnapVault integration. This option must be used in combination with the NTAP_OSSV_HOMEDIR parameter. Open Systems SnapVault is also required on the host running Snap Creator.</p> <p>Note: When Open Systems SnapVault option is enabled, the path is specified as volumes. When specifying paths in windows for Open Systems SnapVault the colon (:) should not be used. For example, if the path is E:\DB, then it should be used as E\DB.</p>
NTAP_OSSV_HOMEDIR	/usr/snapvault	The path to the Open Systems SnapVault home directory (/usr/snapvault).
NTAP_OSSV_FS_SNAPSHOT	(Y N)	<p>This setting also requires the NTAP_OSSV_FS_SNAPSHOT_CREATE_CMD<##></p> <p>Allows you to create a file system Snapshot copy using the Open System or file system command. The file system Snapshot copy is then transferred to the storage system using SnapVault.</p>
NTAP_OSSV_FS_SNAPSHOT_CREATE_CMD<##>		These are scripts or commands to be executed during or before the Open Systems SnapVault backup process, where ## is a number from 01- 99. This can be used to perform backup file system Snapshot copies by using Open Systems SnapVault.

The following table describes the Operations Manager console settings:

Parameter	Setting	Description
OM_HOST		The name or IP address of the Operations Manager console host.
OM_USER		The user name of an Operations Manager console user who has permission to create events.
OM_PWD		The password for the Operations Manager console user.
OM_PORT		The port to use for communications with Operations Manager console; 8088 is the default HTTP port and 8488 is the default HTTPS port that the Operations Manager console uses.
OM_EVENT_GENERATE	(Y N)	Enables or disables event creation in Operations Manager console.

The following table describes the different APP commands:

Command	Setting	Description
APP_CLONE_FOLLOW_UP_CMD<##>		These are scripts or commands to be executed after the database is cloned, where ## is a number between 01- 99. This can be used to perform application-specific follow-up activities on SAP systems, such as, installing a SAP license, adjusting database tables, deleting or updating content, and starting up the application.

Command	Setting	Description
APP_QUIESCE_CMD<##>		These are scripts or commands that put your application into backup mode, where ## is a number between 01-99. Note: This is ignored if you use APP_NAME because it is handled internally in Snap Creator.
APP_UNQUIESCE_CMD<##>		These are scripts or commands that take your application out of backup mode, where ## is a number from 01-99. Note: This is ignored if you use APP_NAME because it is handled internally in Snap Creator.
ARCHIVE_CMD<##>		Handles database archiving. It can also be used as a wrapper to run other scripts. The archive command, where ## is a number from 01-99.

The following table describes the different PRE commands:

Command	Setting	Description
PRE_APP_QUIESCE_CMD<##>		This is the pre application backup start command, where ## is a number from 01-99.
PRE_NTAP_CMD<##>		This is the pre Snapshot command, where ## is a number from 01-99; it runs before all operations.
PRE_APP_UNQUIESCE_CMD<##>		This is the pre application backup stop command, where ## is a number from 01-99.

Command	Setting	Description
PRE_NTAP_CLONE_DELETE_CMD<##>		<p>This is the pre clone delete command, where ## is a number from 01-99.</p> <p>Note: The purpose of <code>clone delete</code> command is to call a mount script or commands so that cloned LUNs can be mounted for the purpose of backing up (probably to tape).</p>
PRE_EXIT_CMD<##>		<p>This is an optional command that is run after a fatal error occurs but before Snap Creator exits. This is useful to revert to the state it was before Snap Creator ran.</p> <p>Note:</p> <ul style="list-style-type: none"> • This command returns an application into normal operation mode before Snap Creator exits due to an error. • This is ignored if you use <code>APP_NAME</code> because it is handled internally in Snap Creator.
PRE_RESTORE_CMD<##>		<p>This is an optional command that can be run before you enter an interactive restore. This allows you to interact with the application being restored. For example, you might want to shut down the application before performing a restore.</p> <p>Note: This is not supported with the MySQL plug-in.</p>

Command	Setting	Description
PRE_CLONE_CREATE _CMD<##>		This is an optional command that can be run before Data ONTAP API cloning operations occur, where ## is a number from 01-99.

Note: For Windows, use `cmd.exe /c` before any PRE command.

The following table describes the different POST commands:

Command	Setting	Description
POST_APP_QUIESCECMD<##>		This is a post application backup start command, where ## is a number from 01-99.
POST_NTAP_CMD<##>		This is a post command, where ## is a number from 01-99. This runs after all operations are complete.
POST_APP_UNQUIESCE_CMD<##>		This is a post application backup stop command, where ## is a number from 01-99.
POST_NTAP_DATA_TRANSFER_CMD<##>		This is a post data transfer command that runs after SnapVault or SnapMirror transfer, where ## is a number from 01-99.
POST_RESTORE_CMD<##>		This is an optional command that can be run after you complete an interactive restore. It allows you to interact with the application being restored. After your restore is complete, you might want to start the application. Note: This is not supported with the MySQL plug-in.

Command	Setting	Description
POST_CLONE_CREATE_CMD<##>		This is an optional command that can be run after Data ONTAP API cloning operations occur, where ## is a number from 01-99. The commands are used to perform operations such as mounting cloned file systems.

Note: For Windows, use `cmd.exe /c` before any POST command.

The following table describes the mount and unmount commands:

Command	Setting	Description
MOUNT_CMD<##>		Mount commands are used to mount file system for cloning or mount actions, where ## is a number starting from 01-99.
UMOUNT_CMD<##>		Unmount commands are used to mount file system for cloning or mount actions, where ## is a number starting from 01-99.

Note: You should use MOUNT_CMDS and UMOUNT_CMDS for mount and unmount commands instead of Snap Creator PRE or POST commands for cloning.

The following table lists the parameters required to set up event management:

Parameter	Setting	Description
NTAP_ASUP_ERROR_ENABLE	(Y N)	Enables Snap Creator error messages to also log an auto support message on the storage controller. Snap Creator always creates an info auto support message when the backup has started and is complete.

Parameter	Setting	Description
SENDTRAP		<p>This command interfaces with your monitoring software or email allowing you to pass alerts generated from Snap Creator into your own monitoring infrastructure. The <code>%MSG</code> variable is the message sent from Snap Creator. The following is an example of how to send an email on a UNIX system:</p> <pre>SENDTRAP=/usr/bin/mailx -s %MSG myaddress@mydomain.com </dev/null. For Windows, use cmd.exe /c before any command. For example, SENDTRAP= cmd.exe /c echo %how.</pre>
SUCCESS_TRAP		<p>This command interfaces with your monitoring software or email allowing you to pass the success message generated from Snap Creator into your own monitoring infrastructure. The <code>%SUCCESS_MSG</code> variable is the success message for Snap Creator. The following is an example of how to send an email on a UNIX system:</p> <pre>SUCCESS_TRAP=/usr/bin/ mailx -s %SUCCESS_MSG myaddress@mydomain.com </dev/null. For Windows, use cmd.exe /c before any command. For example, SUCCESS_TRAP= cmd.exe /c echo %Hello.</pre>

Parameter	Setting	Description
SUCCESS_MSG		After a successful Snap Creator backup, this setting logs the message defined and also sends it to SUCCESS_TRAP, if defined, or to SENDTRAP, if SENDTRAP is defined.

The following table lists the parameters required for client/server configuration:

Parameter	Setting	Description
SC_AGENT	<host name or IP>:<port>	<p>Snap Creator has the capability to perform tasks on remote hosts. A task is either a defined plug-in (parameter APP_NAME) or a command specified with the parameters _CMD (for example, NTAP_SNAPSHOT_CREATE_CMD01).</p> <p>To specify a remote host, enter its name or IP address followed by a colon and the port the Snap Creator Agent is listening on. On the remote host, start the Snap Creator Agent by running the command:</p> <pre><path to scAgent_v<#>>/bin/snapcreator --start-agent <port></pre>

Parameter	Setting	Description
SC_CLONE_TARGET	<host name or IP of the clone target>:<port>	<p>Snap Creator has the capability to perform clone operations. Using the action <code>cloneVol</code> in combination with <code>{PRE POST}_CLONE_CREATE_CMDxx</code>, you can handle the storage objects on the remote side (for example, mounting/unmounting file systems).</p> <p>To specify a clone target, enter its name or IP address followed by a colon and the port the Snap Creator Agent is listening on.</p>
SC_AGENT_TIMEOUT	<p>Time (in seconds) Default: 300 seconds</p>	<p>Specifies the timeout in seconds. The implemented client/server architecture uses a timeout mechanism. This means that if the client does not respond in the specified interval, the server fails with a timeout message. However, the task on the client is not aborted and requires further investigation. On a server with high load or known long-running tasks such as own scripts or complex SnapDrive operations, it might be necessary to extend the timeout and adapt this value to your own requirements.</p> <p>Set this parameter to the maximum an operation can take (for example, if quiesce takes 1800 minutes, this needs to be set to 1800).</p> <p>Note: Some plug-ins have specific <code>SC_AGENT_TIMEOUT</code> value requirement.</p>

Parameter	Setting	Description
SC_AGENT_WATCHDOG_ENABLE	(Y N) For all plug-ins, the default setting is Y. However, for the VIBE plug-in, the default setting is N, and it should always be N	Enables or disables the Agent Watchdog process. If enabled (Y), when the Agent receives a quiesce request, the watchdog process starts. The watchdog process uses the SC_AGENT_UNQUIESCE_TIMEOUT as timeout to unquiesce the application. If disabled (N), the watchdog process will unquiesce the application, but it uses the OPERATION_TIMEOUT_IN_MSEC from scAgent/etc/agent.properties (default: 1 hour).
SC_AGENT_UNQUIESCE_TIMEOUT	Time (in seconds)	Only used when SC_AGENT_WATCHDOG_ENABLE=Y. This optional setting specifies the timeout in seconds. If the communication with the agent is not possible and an application is in the quiesce state, the agent automatically returns the application into its normal mode of operation without communication from the server. If this setting is not set, then the unquiesce timeout is set to whatever the SC_AGENT_TIMEOUT is plus 5 seconds.

Parameter	Setting	Description
SC_TMP_DIR	(Y N)	Allows you to use a user-defined, alternate temporary directory to store the Snap Creator related files. The user creates the directory and manages the user access. The plug-ins use temporary files to interact with the database. The temporary files are created in the host's default <code>temp</code> directory, which has write access to all the users. If the directory is full, Snap Creator displays an error while creating the temp files.
SC_AGENT_LOG_ENABLE	(Y N)	Setting which enables logging on agent. The Snap Creator Server sends operations to the agent. If something happens before agent sends callback to server, the messages could be lost. This allows agent messages to be logged on agent so they are never lost.

Configuring Snap Creator Agent

Installing new plug-ins

Snap Creator Agent consists of several supported plug-ins. However, you can create your own plug-ins or use the plug-ins from the Snap Creator Developer Community. A new plugin can be written in Java, Perl, or several other scripting languages such as Microsoft PowerShell, Bash, Windows command line, and so on.

Plug-ins are loaded after the Snap Creator Agent is started. After you install a plug-in, you must restart the Snap Creator Agent.

Installing a native plug-in

Native plug-ins must be installed in the `/plugins` directory. Each plug-in must have its own subdirectory. All new native plug-ins must be in the `scAgent<version>/plugins/native` directory.

Step

1. Install the plugin under `scAgent<version>/plugins/native` directory.

Example

A plug-in named `myplugin.ps1` must be copied to the `scAgent<version>/plugins/native/myplugin.ps1` directory.

Installing a Java plug-in

Java plug-ins must be installed in the `/plugin` directory. Each plug-in must have its own subdirectory.

Step

1. Install the plugin under `scAgent<version>/plugins/java/` directory.

Example

The files for a plug-in named `MyNewDatabasePlugin` must be installed in the `scAgent<version>/plugins/java/MyNewDatabasePlugin/` directory.

Installing a Perl plug-in

Perl plug-ins must be installed in the `/plugins` directory. All new plug-ins must have their own subdirectory. All new Perl plug-ins must be in the `scAgent<version>/plugins/perl` directory.

Step

1. Install the plugin under `scAgent<version>/plugins/perl` directory.

Example

A plug-in named `MyDatabase`, which consists of a file called `MyDatabase.pm` must be copied to the `scAgent<version>/plugins/perl/MyDatabase/MyDatabase.pm` directory.

Uninstalling plug-ins

You can uninstall a plug-in by deleting its corresponding directory for Java and Perl plug-ins, or by just deleting its file for a native plug-in. However, for Java and Perl plug-ins, ensure that you do not leave behind an empty folder.

Before you begin

You must have stopped the Snap Creator Agent.

Steps

1. Delete the plug-in subdirectory.

Example

To remove a Java plug-in `MyDatabasePlugin`, delete the `scAgent<version>/plugins/java/MyDatabasePlugin` directory.

2. Start the Snap Creator Agent.

Secure communication between the Snap Creator Server and Agent

The Snap Creator 4.1.0 Server communicates with the Snap Creator 4.1.0 Agent through HTTPS. Communication between the Snap Creator 4.1.0 Server and the Snap Creator 4.0.0 Agent is through HTTP.

Note: Snap Creator 4.1.0 Server can communicate with the Snap Creator 4.0.0 and 4.1.0 Agent. Both interact very similarly with the Snap Creator 4.1.0 Server. However, the Snap Creator 4.1.0

Agent provides enhanced security standards. You cannot run two agents on one host, even if their versions differ.

The Snap Creator Agent contains a predefined, self-signed certificate, which is contained in a pre-configured keystore. The keystore that contains the pre-packaged certificate is located in `etc/serviceKeystore.jks`.

The agent configuration file `etc/agent.conf` contains the following entries which allow pointing the Snap Creator Agent to a different keystore:

- `KEYSTORE_FILE = etc/serviceKeystore.jks`; this setting points to the keystore file (Java keystore)
- `KEYSTORE_PASS = secret`; this parameter defines the password in the keystore

Note: If you change any one of the parameters in the agent configuration, then you must restart the agent.

Customizing the default keystore

You can customize the default keystore or certificate by using the `keytool` binary available on Windows and UNIX.

Before you begin

- You must have stopped the Snap Creator Agent.

About this task

Note: Snap Creator does not support truststores.

Steps

1. Generate a new keystore with one certificate by running the following command:

```
keytool -genkeypair -alias alias_name -keystore keystore_file -keypass private_key_password -storepass keystore_password
```

Example

```
keytool -genkeypair -alias servicekey -keystore serviceKeystore.jks -keypass kypswd123 -storepass kystrpswd123
```

2. Copy the keystore file to the `scAgent4.1.0/etc/` directory and update the `KEYSTORE_FILE=keystore_file` and `KEYSTORE_PASS=keystore password` in the Snap Creator Agent configuration file (`scAgent4.1.0/etc/allowed_commands.config`).
3. Start the Snap Creator Agent.

Securing Snap Creator Agent using username and password

Besides using HTTPS for communication, the agent can be secured by a username and password combination.

Before you begin

- You must have stopped the Snap Creator Agent.

About this task

By default, there is already a username and password set, which is known to the Snap Creator Server. Manually set credential information is stored in the `scAgent<version>/etc/agent.cred` file.

When setting a new username and password in the Snap Creator Agent, this username and passwords must also be configured on the Snap Creator 4.1.0 Server setting for this specific agent.

Steps

1. Set the user name and password by entering the following command:


```
scAgent<version>/bin/scAgent -setCredential <username> <password>
```
2. Start the Snap Creator Agent.
3. Update the configuration of this agent on the server.
4. Test the agent connection.

Running commands against Snap Creator Agent

Snap Creator Agent allows you to run PRE and POST commands. For example, MOUNT, UMOUNT, and PRE and POST_CMDS in the configuration file.

To execute multiple commands you have the following options:

- Use the `*_CMD<#>` pattern to execute multiple commands sequentially.
For example,


```
PRE_APP QUIESCE_CMD01=echo "This will be run first"
PRE_APP QUIESCE_CMD02=echo "This will be run next"
```
- Wrap the commands in a script and execute the script.


```
PRE_APP QUIESCE_CMD01=./my_script.sh
```

All commands are executed with `/path/to/scAgent<version>/` as the current working directory.

Following are the examples for valid commands on Windows:

- `cmd /c ""/path/to/my_batch_script.bat" parameter1 paramter2"`
- `"/path/to/my_batch_script.bat" parameter1 paramter2`

- `echo "Hello World"`
- `cmd /c echo "Hello World"`

For Windows, you must wrap a command executable within quotation marks if the path contains spaces. Also, when using `cmd /c "<command>"`, the whole command must be wrapped within quotation marks.

Following are the examples for valid commands on UNIX:

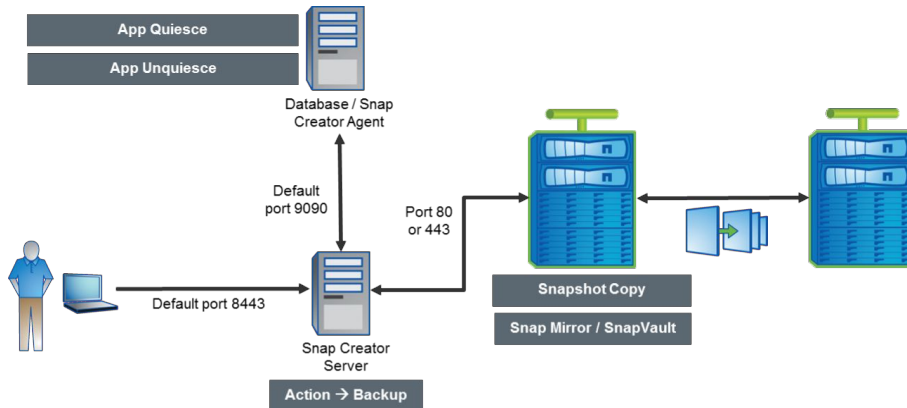
- `./my_script.sh parameter1 parameter2`
- `../relative/path/to/my_script.sh parameter1`
- `/full/path/to/my_script.sh parameter1 parameter2`

Snap Creator backup process

The Snap Creator backup process is the same for all the applications and involves running optional scripts, commands, or using the plug-in interfaces.

The scripts or commands are triggered by using the PRE and POST command parameters in the configuration file. All the PRE and POST commands can be run remotely by using Snap Creator Agent. For the application quiesce and unquiesce operations, you must use the Snap Creator application plug-ins or run commands and scripts.

Typically, the backup process, depicted in the following flow diagram, involves the following main steps:



1. Achieving application consistency
2. Optional: Achieving file system consistency
3. Creating a Snapshot copy
4. Returning the application to normal mode
5. Optional: Cloning the LUN or volume
6. Optional: Performing various SnapMirror or SnapVault functions
7. Deleting old Snapshot copies, thus managing retention policies on both primary and secondary storage devices in the case of SnapVault or SnapMirror.

List of commands

There are several commands such as application quiesce, unquiesce which are used as part of the Snap Creator backup process.

Application quiesce and unquiesce commands

The quiesce and unquiesce commands are used to achieve application consistency when not using Snap Creator application plug-ins. Snapshot copies of volumes without application consistency are only crash consistent.

Archive commands

Archive commands are user-defined commands or scripts that are run before the POST commands (last command that runs). The purpose of the archive commands is to provide the ability to interface with archiving tools after a backup is performed.

PRE commands

PRE commands are user-defined commands or scripts that are run before the following operations:

- The application quiesce commands or application integration plug-ins
- The Data ONTAP API or SnapDrive calls
- The application unquiesce command or application integration plug-ins
- The volume or LUN clone delete commands are run

The following are the different types of PRE commands:

- PRE app quiesce
- PRE app unquiesce
- PRE clone create
- PRE clone delete
- PRE exit
- PRE restore (in the case of interactive restore)

A PRE command can be used for a file system synchronization or consistency check before calls using Data ONTAP API or SnapDrive are made. For example, run the file system command or script as a PRE command.

Note: PRE commands or scripts that do not exit with status 0 are handled as an error within Snap Creator.

POST commands

POST commands are user-defined commands or scripts that are run after the application quiesce command, the Data ONTAP API calls, and the application unquiesce command.

The following are the different types of POST commands:

- POST application quiesce
- POST application unquiesce
- POST data transfer
- POST clone create
- POST restore (in the case of interactive restore)

A POST command can be used after the application `unquiesce` command is run to make sure that the database is running in normal mode. For example, run the database check command or script as a POST application `unquiesce` command.

Note: POST commands or scripts that do not exit with status of 0 are handled as an error within Snap Creator.

Running Snap Creator using the GUI

You can use the Snap Creator GUI to create a backup, volume clone, LUN clone, and so on.

You can perform the following actions by clicking **Actions** in the Configuration Content pane:

- LUN clone creation
- Backup operation on the primary storage system and then clone the backup
- Backup operation based on the configuration located under the profile
- Restore operation for a given policy
- Dump log files, configuration files, and support information for a given profile
- Discovery for a given application
- Archive log management
- Quiesce operation for an application
- Unquiesce operation for an application
- Mount operation of an existing backup
- Unmount operation of an existing backup
- Backup operation using Open Systems SnapVault

Note:

- When you update a configuration file, validations are not performed and you can update any configuration parameter.
You must ensure that the changes that are made to the configuration file are valid.
- You cannot edit the PRE and POST commands by using the GUI.
However, you can update the PRE and POST commands by editing the configuration.

Creating and managing roles using GUI

You can create multiple roles and assign permissions to the roles by using the Snap Creator graphical user interface.

Steps

1. From **Users and Roles** click **Role management**.
2. In the **Roles** tab, click **Add**.
3. In the **Add role** window, enter the details and click **Save**.
4. To assign permissions to the role, select the role and click **Assign Permissions**, and then in the **Assign Permissions to the role** window, select the permissions, drag them from the left pane to the right pane and click **Save**.

Creating and managing users using GUI

You can create users and perform several actions, such as assigning profiles and roles to the users by using the Snap Creator graphical user interface (GUI).

Steps

1. From **Users and Roles**, click **User management**.
2. In the **Users** tab, click **Add**.
3. In the **New User** window, enter the user details and click **Save**.
4. To assign a profile to the user, select the user, click **Assign Profiles**, and in the **Assign profiles to the user** window, select the profiles, drag them from the left pane to the right pane, and click **Save**.
5. To assign roles to the user, select the user, click **Assign Roles**, and in the **Assign Roles to the user** window, select the role, drag it from the left pane to the right pane, and click **Save**.

Creating a backup type

You can create a backup type by using the Snap Creator graphical user interface (GUI).

Steps

1. From the **Policy** drop-down menu, click **Backup Type**.
2. In the **Backup type** window, click **Add**.
3. In the **Add** window, enter the new backup type and click **OK**.

Creating a schedule using the GUI

You can create a schedule and run the tasks by using the Snap Creator graphical user interface. The scheduler can schedule backups (Snapshot copies), LUN clones, volume clones, application-defined clones, Open Systems SnapVault (OSSV) transfers, archive jobs, and custom actions.

Steps

1. Select **Management > Schedules**.
2. In the **Jobs** window, click **Create**.
3. In the **New Job** window, enter the details for the job.

For the **Start Date**, select today's date.

The image shows a 'New Job' dialog box with the following fields and controls:

- Job Name:** A text input field.
- Start Date:** A date picker field with a calendar icon.
- Active:** A checked checkbox.
- Profile:** A dropdown menu.
- Configuration:** A dropdown menu.
- Action:** A dropdown menu.
- Policy:** A dropdown menu.
- Frequency:** A dropdown menu.
- Save:** A button with a floppy disk icon.

Click **Save**.

4. To run the job, click **Run** and to edit the job, click **Edit**.
5. To check the status of the last scheduled operation, review the Last Run Result field.
A green dot in the field indicates success, and a red dot indicates failure.

Result

The new schedule is listed and you can view the details in the Job window.

Note: If you create an hourly schedule with n minutes, the first job runs after n minutes and thereafter after every 1 hour.

For example: If you create a schedule on 12:56 PM with Hourly and 25 minutes, the job first runs at 1:21 PM, then runs at 2:21 PM, and so on.

Note: If you delete a profile or configuration file while a schedule is running, then the job fails.

For information about creating a schedule using cron, see the cron trigger tutorial.

Related information

Cron trigger tutorial: www.quartz-scheduler.org/documentation/quartz-1.x/tutorials/crontrigger

Creating and managing policies

You can create a new policy using the Snap Creator GUI and apply the policy to the configuration files.

Steps

1. From the **Policy** drop-down menu, select **Policy Management**.
2. In the **Policy Manager** window, click **Create**.
3. In the **New policy** window, enter the details and click **Save**.
4. Apply the newly created policy to the selected configuration files individually or all the configuration files listed under the profile.
 - To apply the policy to individual configuration files, select the configuration file and in the Snapshot settings tab, select **Use Policy Object** and click **Save**.
 - To apply the policy to all the configuration files listed under a profile, right click the profile name and click **Apply policy**.

Note: In the Policy Manager, if you try to delete a policy which is assigned to a configuration file, then the GUI displays the following error message:

```
Policy cannot be deleted since the policy name is applied to
configuration.
```

```
Use Detach policy and then delete the policy.
```

Creating a policy schedule

You can create a policy schedule by using the Snap Creator graphical user interface (GUI).

Steps

1. From the **Policy** drop-down menu, click **Policy Schedules**.
2. In the **Policy Schedules** window, Click **Create**.
3. In the **Add Policy Schedule** window, enter the details and click **Save**.

Monitoring jobs using the GUI

You can monitor the status of the jobs by using the GUI.

Step

1. Select **Management > Job Monitor**.

You can see list of jobs and details, such as Job ID, Job status, Start time, End time, and so on.

Performing restore using Snap Creator

You can perform volume restore, single file restore, VMware restore, and Domino restore using Snap Creator.

Note: If you use SnapDrive for Windows, you must use SnapDrive for restore. SnapDrive stores metadata inside Snapshot copies, which is needed when it performs a restore.

Performing volume restore

You can perform a volume restore by using the Snap Creator graphical user interface (GUI).

Steps

1. Select the configuration file and in the **Profiles and Configurations** pane, click **Action > Restore**.
2. Enter the restore details and in the **Restore type** drop-down list, select **Volume Restore**.
3. Click **Next** to configure the details of the restore.
4. Select the controller/vserver name, restore volume name, policy, restore Snapshot copy name, and restore type, and then click **Next**.
5. Click **Finish**.
6. Verify that the restore completed successfully by viewing the messages in the Console.

Performing Single file restore using the GUI

You can perform a single file restore by using the Snap Creator graphical user interface (GUI).

Steps

1. Select the configuration file and in the **Profiles and Configurations** pane, click **Action** and select **Restore**.
2. Enter the restore details and in the **Restore type** drop-down list, select **Single File Restore**.
3. Click **Next** to configure the details of the restore.
4. Select the controller/vServer name, restore volume name, policy, restore Snapshot copy name, and restore type, and then click **Next**.
5. Select the files to be restored and click **Next**.
6. Select the location to which the files should be restored and click **Next**.
7. Click **Finish** to perform the restore.
8. Verify that the files were successfully restored by viewing the Console.

Performing application-defined restores using the GUI

You can perform application-defined restore operations for the VMware, KVM, and Xen plug-ins by using the Snap Creator CLI or GUI.

About this task

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.

Note: VMware restore by using the GUI is supported only for Snap Creator Agent.

Steps

1. Select the configuration file and in the **Profiles and Configurations** pane, click **Action** and select **Restore**.
2. Enter the restore details and complete the wizard.

Snap Creator Server usage through the CLI

You can perform actions such as creating a Snapshot copy, volume clone, and LUN clone by running Snap Creator Server and the associated parameters by using the command-line interface (CLI).

You should schedule Snap Creator Server from either UNIX cron, Windows task manager, or the Snap Creator built-in GUI scheduler. When scheduling from the Windows task manager, you should create a .bat file.

You can run Snap Creator Server by using the following command:

```
./snapcreator --server IP --port Port --user User --passwd Password --
profile Profile --config Config --action Action --policy Policy Optional
Arguments
```

The following table lists the connection information:

Parameter	Description
--server <IP hostname>	The IP address or hostname of the Snap Creator Server.
--port <number>	The port number of the Snap Creator Server.
--user <user>	The user name used for Snap Creator Server authentication.
--passwd <password>	The password used for Snap Creator Server authentication.

The following table lists the configuration information:

Parameter	Description
--profile <Profile>	The profile you want to run. Profiles are directories located in <code>configs</code> directory. If the configuration file is not specified, then the default configuration file is used.
list	Displays all the profiles and configurations. For example: <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile list</pre>

The following table lists the workflow actions:

Parameter	Description
backup	<p>Performs a backup operation based on the configuration located under the profile.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config -- action backup --policy Policy -- verbose </pre>
ossv	<p>Performs a back operation using Open Systems SnapVault. This requires the Snap Creator Agent. The server communicates with the agent and performs a SnapVault update. No primary backup will be made.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config -- action ossv --policy Policy -- verbose </pre>
cloneLun	<p>Performs a backup operation on the primary and then clones the backup using a LUN clone. The volume mapping of igroups are also handled. This requires a SAN or iSAN environment.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config -- action cloneLun --policy Policy -- verbose </pre>

Parameter	Description
cloneVol	<p>Performs a backup operation on the primary and then clones the backup using a volume clone. The volume mapping of igroups, NFS, or CIFS are also handled. This requires a SAN or iSAN or NAS environment.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action cloneVol --policy Policy --verbose</pre>
cloneDel	<p>Performs a clone deletion operation based on the policy. Only one copy of the LUN clone is retained. Volume clones have policy-associated usage.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action cloneDel --policy Policy --verbose</pre>
clone	<p>Performs an application-defined clone operation. Certain plug-ins might have the capability to perform their own cloning operation. For such plug-ins, the cloning operation is handled by the plug-in.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action clone --policy Policy --verbose</pre>

Parameter	Description
restore	<p>Performs an interactive restore operation for a given policy. You can choose to perform a file or a volume restore operation. You can also perform a non-interactive restore operation.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action restore --policy Policy --verbose</pre>
backupDel	<p>Performs a manual deletion of an existing backup. This operation is menu driven. You can also perform a non-interactive backup deletion.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action backupDel --policy Policy --verbose</pre>
backupList	<p>Lists the Snap Creator backups on the primary and secondary storage system.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action backupList --policy Policy --verbose</pre>
volumeList	<p>Lists the Snap Creator volumes for the specified configuration on the primary storage system.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action volumeList --verbose</pre>

Parameter	Description
cloneList	<p>Lists the Snap Creator volume clones for the given configuration.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config -- action cloneList --verbose </pre>
dpstatus	<p>Shows the data protection status of the SnapVault and SnapMirror relationship for a controller. If SnapVault or SnapMirror is not configured, the results are not displayed.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config -- action dpstatus --verbose </pre>
pmsetup	<p>Configures the IBM N series Management Console data protection capability dataset for a given configuration.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config -- action pmsetup --verbose </pre>
arch	<p>Performs archive log management according to the settings in the configuration file. This requires the Snap Creator Agent.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config -- action arch --verbose </pre>

Parameter	Description
quiesce	<p>Performs the quiesce operation for a given application. This requires the Snap Creator Agent.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action quiesce --verbose</pre>
unquiesce	<p>Performs the unquiesce operation for a given application. This requires the Snap Creator Agent.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action unquiesce --verbose</pre>
discover	<p>Performs discovery for a given application. This requires the Snap Creator Agent.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action discover --verbose</pre>
mount	<p>Performs the mount operation of an existing backup. Creates a volume clone based on the backup and allows the mounting of the clone through Snap Creator Agent and MOUNT_CMD.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action mount --backupName myapp --verbose</pre>

Parameter	Description
umount	<p>Performs the unmount operation of an existing backup. Deletes a volume clone based on the backup and allows the unmounting of the clone through Snap Creator Agent and UMount_CMDs.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action umount --backupName myapp --verbose</pre>
scdump	<p>Dumps logs, configuration files, and support information for a given profile in a ZIP file called <code>scdump</code> located under the Snap Creator root directory.</p> <p>For example,</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password -- profile Profile --config Config --action scdump --verbose</pre>
custom	<p>Application-driven action which performs custom functionality of the defined application. This requires a Snap Creator Agent.</p>
dispatch	<p>Executes any Snap Creator workflow. This allows for invoking custom workflows or any workflow that exists in Snap Creator under the <code>scServer/etc/workflow</code> directory.</p>

The following table lists the workflow arguments:

Parameter	Description
--config	<p>You can choose to run an optional non-default configuration. Custom configuration files are located in the <code>engine/configs/<Profile></code> directory.</p>
--policy <Policy Name>	<p>The backup retention policy defined in the configuration: hourly, daily, weekly, or monthly.</p>

Parameter	Description
--userDefined <Value>	Sets a user defined value which can be accessed in the configuration file.
--backupName <name>	The name of the backup which should be used. Applies to the actions cloneVol, mount, umount, restore, and backupDel.
--cloneName <clone>	The name of the clone which should be used. Applies to the actions cloneDel and umount.
--cntName <controller>	The name of the primary storage controller which should be used. Applies to the actions restore, backupDel, and cloneDel.
--volName <volume>	The name of the primary volume which should be used. Applies to the actions restore and backupDel.
--fileNames <files>	List of the full path to the files or LUNs which should be restored. Applies to the action restore when using non-interactive mode.
--nonInteractive	Runs the operation in non-interactive mode. Applies to the actions restore and backupDel.
--workflow <name>	The name of a workflow. Workflows are located in the <code>scServer/etc/workflow</code> directory.
--params <params>	Defines custom parameters in the form of key=value pairs.

The following table lists the repository actions:

Parameter	Description
profileCreate	Creates a new profile in the repository. For example: <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --action profileCreate --verbose</pre>

Parameter	Description
profileDelete	<p>Deletes an existing profile from the repository.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --action profileDelete --verbose</pre> <p>Note: The configuration files in the profile will also get deleted.</p>
configImport	<p>Imports a configuration file into repository.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action configImport --importFile /path/to/file --verbose</pre>
configExport	<p>Exports a configuration from the repository.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --config Config --action configExport --exportFile /path/to/file --verbose</pre>
globalImport	<p>Imports a global configuration file into the repository.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action globalImport --importFile /path/to/file --verbose</pre>
globalExport	<p>Exports a global configuration from the repository.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action globalExport --ExportFile /path/to/file --verbose</pre>

Parameter	Description
globalDelete	<p>Deletes a global configuration from the repository.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --action globalDelete --verbose </pre>
profileGlobalImport	<p>Imports a global configuration file for a profile into the repository.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --action profileGlobalImport --importFile / path/to/file --verbose </pre>
profileGlobalExport	<p>Exports a global configuration file for a profile from the repository.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --action profileGlobalExport --exportFile / path/to/file --verbose </pre>
profileGlobalDelete	<p>Deletes a global configuration for a profile from the repository.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --action profileGlobalDelete --verbose </pre>

The following table lists the repository arguments:

Parameter	Description
--importFile <file>	Path to the configuration file. Applies to the action importConfig.

Parameter	Description
<code>--exportFile <file></code>	The full path to the configuration file which should be exported. Applies to the action <code>exportConfig</code> .

The following table lists the scheduler actions:

Parameter	Description
<code>jobStatus</code>	Lists all jobs and their status. For example: <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action jobStatus --verbose</pre>
<code>schedRun</code>	Runs an existing schedule in the scheduler. For example: <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action schedRun --schedId ID --verbose</pre>
<code>schedCreate</code>	Creates a new schedule in the scheduler. For example: <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd --profile Profile --config Config --action schedCreate --policy Policy --schedName HourlyBackup --schedFreqId 2 --schedActionId 1 --schedMin 33 --schedActive true --schedStartDate 2012-08-07 --verbose</pre>
<code>schedDelete</code>	Deletes a schedule in the scheduler. For example: <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action schedDelete --schedId ID --verbose</pre>

Parameter	Description
schedUpdate	<p>Updates an existing schedule in the scheduler. For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd --profile Profile --config Config --action schedUpdate --policy Policy --schedName HourlyBackup --schedFreqId 2 --schedActionId 1 --schedMin 33 --schedActive true --schedStartDate 2012-08-07 --verbose</pre>
schedList	<p>Lists all schedules in the scheduler. For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action schedList --verbose</pre>
schedActionList	<p>Lists the supported scheduler actions. You must run this before creating a task. For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action schedActionList --verbose</pre>
schedFreqList	<p>Lists the supported scheduler frequencies. You must run this before creating a task. For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action schedFreqList --verbose</pre>
schedDetails	<p>Shows additional details for a schedule in the scheduler. For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action schedDetails --schedId 1 --verbose</pre>

The following table lists the scheduler arguments:

Parameter	Description
--schedName <name>	The name of the schedule.
--schedFreqId <id>	The frequency the schedule should use.
--schedActionId <id>	The action the schedule should use.
--schedActive <bool>	Enables or disables the schedule (true/false).
--schedDayofWeek <day>	The day of the week the schedule should run.
--schedHour <hour>	The hour the schedule should run.
--schedMin <min>	The minute the schedule should run.
--schedCron <cron>	Uses the cron format for the schedule.
--schedStartDate <date>	The date and time when the schedule should start or be made active.
--schedId <id>	The schedule ID.

The following table lists the RBAC actions:

Parameter	Description
userAdd	Creates a new user. For example: <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action userAdd --username john --userPw test123 --verbose</pre>
userDelete	Deletes a user. For example: <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action userDelete --username john --verbose</pre>
userList	Lists all the users. For example: <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action userList --verbose</pre>

Parameter	Description
userListAssigned	<p>Lists all the assigned users for a role.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action userListAssigned --roleName admin --verbose</pre>
userListForProfile	<p>Lists all the users who are assigned a profile.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --action userListForProfile --verbose</pre>
roleAdd	<p>Creates a new role.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action roleAdd --roleName admin --roleDesc description --verbose</pre>
roleDelete	<p>Deletes a role.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action roleDelete --roleName admin --verbose</pre>
roleAssign	<p>Assigns a role to a user.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action roleAssign --userName john --roleName admin --verbose</pre>
roleUnassign	<p>Unassigns a role from a user.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action roleUnassign --userName john --roleName admin --verbose</pre>

Parameter	Description
roleListAssigned	<p>Lists all the assigned roles for a user.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action roleListAssigned --userName john --verbose</pre>
permAdd	<p>Creates a new permission.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action permAdd --permName backup --permDesc Description --verbose</pre>
permDelete	<p>Deletes a permission.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action permDelete --permName backup --verbose</pre>
permAssign	<p>Assigns a permission to a user.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action permAssign --permName backup --roleName admin --verbose</pre>
permUnassign	<p>Unassigns a permission from a user.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action permUnassign --permName backup --roleName admin --verbose</pre>
permList	<p>Lists all the permissions.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action permList --verbose</pre>

Parameter	Description
permListAssigned	<p>Lists all the assigned permissions for a role.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action permListAssigned --roleName backup --verbose</pre>
opAssign	<p>Assigns an operation to a permission.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action opAssign --opName backupCreate --permName backup --verbose</pre>
opUnassign	<p>Unassigns an operation from a permission.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action opUnassign --opName backupCreate --permName backup --verbose</pre>
opList	<p>Lists all operations.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action opList --verbose</pre>
opListAssigned	<p>Lists all the assigned operations for a permission.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action opListAssigned --permName backup --verbose</pre>

Parameter	Description
profileAssign	<p>Assigns a profile to a user.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --action profileAssign --userName john --verbose</pre>
profileUnassign	<p>Unassigns a profile from a user.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --profile Profile --action profileUnassign --userName john --verbose</pre>
profileListForUser	<p>Lists all the profiles assigned to a user in RBAC.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Password --action profileListForUser --userName john --verbose</pre>

The following table lists the RBAC arguments:

Parameter	Description
--userName <name>	The name of the user.
--userPwd <pwd>	The password of the user.
--roleName <name>	The name of the role.
--roleDesc <name>	The description of the role.
--permName <name>	The name of the permission.
--permDesc <name>	The descriptions of the permission.
--opName <name>	The name of the operation.

The following table lists the Policy actions:

Parameter	Description
backupTypeAdd	<p>Creates a new backup type.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action backupTypeAdd -- backupTypeName myBackup --verbose</pre>
backupTypeUpdate	<p>Updates an existing backup type.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action backupTypeUpdate -- backupTypeId 1 --backupTypeName myBackup --verbose</pre>
backupTypeDelete	<p>Deletes a backupType.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action backupTypeDelete -- backupTypeId 1 --verbose</pre>
backupTypeList	<p>Lists all backupTypes.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action backupTypeList --verbose</pre>
policySchedAdd	<p>Creates a new policy schedule.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action policySchedAdd --schedName CronBackup --schedFreqId 5 schedActionId 1 schedCron 0 0/5 14,18 * * ? --schedActive true -- verbose</pre>

Parameter	Description
policySchedUpdate	<p>Updates an existing policy schedule.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action policySchedUpdate --schedName CronBackup --schedFreqid 5 schedActionId 1 schedCron 0 0/5 14,18 * * ? --schedActive true -- verbose</pre>
policySchedDelete	<p>Deletes a policy schedule.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action policySchedDelete --schedId 1 --verbose</pre>
policySchedList	<p>Lists all policy schedules.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action policySchedList --verbose</pre>
policySchedDetails	<p>Shows additional details for a policy schedule.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action policySchedDetails --schedId 1 --verbose</pre>
policyAdd	<p>Adds a new policy.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd -- action policyAdd --schedId 1 -- backupTypeId 1 --policyType local policyName testpolicy --primaryCount 7 --primaryAge 0 --verbose</pre>

Parameter	Description
policyUpdate	<p>Updates an existing policy.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd --action policyUpdate --schedId 1 --backupTypeId 1 --policyType local policyName testpolicy --primaryCount 7 --primaryAge 0 --verbose</pre>
policyDelete	<p>Deletes a policy.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd --action policyDelete --policyId 1 --verbose</pre>
policyList	<p>Lists all policies.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd --action policyList --verbose</pre>
policyDetails	<p>Shows additional details for a policy.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd --action policyDetails --policyId 1 --verbose</pre>
policyAssignProfile	<p>Assigns a policy to a profile.</p> <p>For example:</p> <pre>snapcreator.exe --server IP --port Port --user User --passwd Passwd --profile Profile --action policyAssignProfile --policyId 1 --verbose</pre>

Parameter	Description
policyUnassignProfile	<p>Unassigns a policy from a profile.</p> <p>For example:</p> <pre> snapcreator.exe --server IP --port Port --user User --passwd Passwd -- profile Profile --action policyUnassignProfile --verbose </pre>

The following table lists the Policy arguments:

Parameter	Description
--policyId <id>	The policy id
--policyName <id>	The policy name
--policyType <type>	The policy type: local, snapmirror, or snapvault
--backupTypeName <name>	The name of the backupType
--backupTypeId <id>	The id of the backupType
--schedId <id>	The schedule id
--schedName <name>	The name of the schedule
--schedFreqId <id>	The frequency the schedule should use
--schedActionId <id>	The action the schedule should use
--schedActive <bool>	Enables or disables the schedule true false
--schedDayofWeek <day>	The day of the week the schedule should run
--schedHour <hour>	The hour the schedule should run
--schedMin <min>	The minute the schedule should run
--schedCron <cron>	Uses Cron format for schedule
--primaryCount <num>	Number of snapshots to retain on primary storage
--primaryAge <num>	Number of days to retain snapshots on primary storage
--secondaryCount <num>	Number of snapshots to retain on secondary storage
--secondaryAge <num>	Number of days to retain snapshots on secondary storage

The following table lists the Agent actions:

Parameter	Description
agentStatus	Lists all the agents and their statuses. For example: <code>snapcreator.exe --server IP --port Port --user User --passwd Password --action agentStaus --verbose</code>
pingAgent	Performs a ping action on a Snap Creator Agent. For example: <code>snapcreator.exe --server IP --port Port --user User --passwd Password --action pingAgent --agentName hostname --agentPort port --verbose</code>

The following table lists the Agent arguments:

Parameter	Description
--agentName <hostname>	The host name or IP of the Snap Creator Agent
--agentPort <port>	The port the Snap Creator Agent is running on

The following table lists the server actions:

Parameter	Description
pingServer	Performs a ping action on the Snap Creator Server. For example: <code>snapcreator.exe --server IP --port Port --user User --passwd Password --action pingServer --verbose</code>

The following table lists the optional arguments:

Parameter	Description
--verbose	Prints information to the screen
--debug	Prints debug information to the screen and log
--version	Prints the Snap Creator version
--credentials	Stores Snap Creator Server credentials

Parameter	Description
--pwdCrypt	Encrypts a password for storing in a configuration file
--pwdConvert <path>	Converts all passwords for all configuration files found in the specified path to the 4.1.0 format
--timeout <seconds>	Sets the timeout for Snap Creator Server communications, the default is 60 seconds
--help <action>	Help for a specific Snap Creator action

Creating and managing roles using CLI

You can create multiple roles and assign permissions to those roles by using the Snap Creator command-line interface.

Steps

1. Create a role by entering the following command:

```
snapcreator.exe --server IP --port Port --user User --passwd Password --
action roleAdd --roleName Role_name --roleDesc Role_description --
verbose
```

2. Assign permissions to the role by entering the following command:

```
snapcreator.exe --server IP --port Port --user User --passwd Password --
action PermAssign --permName Permission_name -- roleName Role_name --
verbose
```

Creating and managing users using CLI

You can create users and perform several actions, such as assigning profiles and roles to the users by using the Snap Creator command-line interface (CLI).

Steps

1. Create a user by entering the following command:

```
snapcreator.exe --server IP --port Port --user User --passwd Password --
action userAdd --userName User_name --userPwD Password --verbose
```

2. Assign a profile to the user by entering the following command:

```
snapcreator.exe --server IP --port Port --user User --passwd Password --
profile Profile --action ProfileAssign --userName User_name --verbose
```

3. Assign a role to the user by entering the following command:


```
snapcreator.exe --server IP --port Port --user User --passwd Password --
action roleAssign --userName User_name --roleName Role_name --verbose
```

Creating a schedule using the CLI

You can create a schedule and run the tasks by using the Snap Creator command-line interface.

Steps

1. Create a schedule by entering the following command:

```
snapcreator.exe --server IP --port Port --user User --passwd Password --
profile Profile --config Config --action schedCreate --policy Policy --
schedName Schedule_name> --schedFreqId ID --schedActionId ID --schedMin
minute --schedActive true or false> --schedStartDate Start_date> --
verbose
```

2. Run a task by entering the following command:

```
snapcreator.exe --server IP --port Port --user User --passwd Password --
action schedRun --schedId ID --verbose
```

Monitoring jobs using the CLI

You can monitor the status of the jobs by using the CLI.

Step

1. View the list of jobs and their statuses by entering the following command:

```
snapcreator.exe --server IP -port Port -user User -passwd Password -
action jobStatus -verbose
```

Example

```
/usr/local/scServer4.1.0c/snapcreator -user SCadmin -passwd aBc123 -server localhost -port 8080
-action jobStatus
```

Performing restore using Snap Creator

You can perform volume restore, single file restore, VMware restore, and Domino restore using Snap Creator.

Note: If you use SnapDrive for Windows, you must use SnapDrive for restore. SnapDrive stores metadata inside Snapshot copies, which is needed when it performs a restore.

Performing Volume restore using the CLI

You can perform a volume restore by using the Snap Creator command-line interface.

Step

1. Enter the following command:

```
./snapcreator --server IP --port Port --user User --passwd Password --
profile Profile --config config --action restore --policy <Policy> --
verbose
```

Note: To perform a volume restore non-interactively, use the following command:

```
./snapcreator --server IP --port Port --user User --passwd Password --
profile <Profile> --config <config> --action restore --policy Policy
--verbose --nonInteractive --cntName Controller volName Volume
backupName name
```

Example

The following is an example:

```
./snapcreator --server localhost --port 8080 --user SCadmin
--passwd aBc123 --profile FirstProfile --config FirstConfig
--action restore --policy daily
--verbose [root@mongoload-vml scServer4.0.0c]# ./snapcreator --server
localhost
--port 8080 --user SCadmin --passwd aBc123
--profile FirstProfile --config FirstConfig --action restore --policy
daily --verbose
### You have chosen to do a restore for the Profile: FirstProfile
Config: FirstConfig Policy: daily ###
Are you sure you want to continue (y|n)? y
[Tue Feb 5 09:23:40 2013] INFO: STORAGE-02150: Listing volumes.
[Tue Feb 5 09:23:40 2013] INFO: STORAGE-02151: Listing volumes
finished successfully.

### Volume Menu for 10.61.172.95 ###
01. MongoDB_LUN_Data1
Select a volume for Snapshot copy restore (enter a number, "n" for
next controller,
"c" to continue, or "q" to quit): 01
[Tue Feb 5 09:23:48 2013] INFO: STORAGE-02090: Listing Snapshot
copies on volume
[MongoDB_LUN_Data1].
[Tue Feb 5 09:23:48 2013] INFO: STORAGE-02091: Listing Snapshot
copies on volume
[MongoDB_LUN_Data1] finished successfully.

### Snapshot copy Menu for 10.61.172.95:MongoDB_LUN_Data1 ###
01. FirstApp-daily_20130205081050 (Feb 05 2013 08:10:50) (false)
02. FirstApp-daily_20130205082701 (Feb 05 2013 08:27:01) (false)
03. FirstApp-daily_20130205091457 (Feb 05 2013 09:14:57) (false)
```

```

Select a Snapshot copy for restore (enter a number or "q" to quit): 01

### Restore Menu for 10.61.172.95:MongoDB_LUN_Data1 Snapshot copy 01
###
01. Volume Restore
02. Single File Restore
Select a restore type (enter a number, or "q" to quit): 01
WARN: You have selected to do a volume restore,
All data in 10.61.172.95:MongoDB_LUN_Data1 will be reverted to
Snapshot copy
FirstApp-daily_20130205081050
WARN: All data in 10.61.172.95:MongoDB_LUN_Data1 from Feb 05 2013
08:10:50 to Tue Feb 5 09:24:05 2013 will be lost!!!
Are you sure you want to continue with the restore (y|n)?y

##### Agent validation #####
[Tue Feb 5 09:24:08 2013] INFO: Application not defined. Skipping
Agent validation task

##### Plugin validation #####
[Tue Feb 5 09:24:08 2013] INFO: Application not defined. Skipping
Plugin validation task

##### Application not defined. Skipping pre restore task
#####

##### File system plug-in not defined. Skipping file system pre
restore #####

##### Volume restore on Primary 10.61.172.95:MongoDB_LUN_Data1
#####
[Tue Feb 5 09:24:13 2013] INFO: STORAGE-02160: Restoring Snapshot
copy
[FirstApp-daily_20130205081050] of volume [MongoDB_LUN_Data1].
[Tue Feb 5 09:24:13 2013] INFO: STORAGE-02161: Restoring Snapshot
copy
[FirstApp-daily_20130205081050] of volume [MongoDB_LUN_Data1]
finished successfully.

##### Volume restore on Primary 10.61.172.95:MongoDB_LUN_Data1
finished successfully #####

##### File system plug-in not defined. Skipping file system post
restore #####
[Tue Feb 5 09:24:09 2013] INFO: Application is not defined, skipping.

##### Snap Creator Community Release 4.1.0 finished successfully
#####
[Tue Feb 5 09:24:09 2013] INFO: INFO: Snap Creator Framework finished
successfully
(Action: volRestore)

### Volume Menu for 10.61.172.95 ###
01. MongoDB_LUN_Data1
Select a volume for Snapshot copy restore (enter a number, "n" for

```

```
next controller,
"c" to continue, or "q" to quit):
```

The following is an example of a non-interactive (automatic) volume restore:

```
./snapcreator --server localhost --port 8080 --user SCadmin --passwd
aBc123
--profile FirstProfile --config FirstConfig --action restore --policy
daily --nonInteractive --cntName 10.61.172.95 --volName
MongoDB_LUN_Data1 --backupName FirstApp-daily_20130205081050 --verbose

##### Agent validation #####
[Tue Feb 5 09:50:43 2013] INFO: Application not defined. Skipping
Agent validation task

##### Plugin validation #####
[Tue Feb 5 09:50:43 2013] INFO: Application not defined. Skipping
Plugin validation task

##### Application not defined. Skipping pre restore task
#####

##### File system plug-in not defined. Skipping file system pre
restore #####

##### Volume restore on Primary 10.61.172.95:MongoDB_LUN_Data1
#####
[Tue Feb 5 09:50:48 2013] INFO: STORAGE-02160: Restoring Snapshot
copy
[FirstApp-daily_20130205081050] of volume [MongoDB_LUN_Data1].
[Tue Feb 5 09:50:48 2013] INFO: STORAGE-02161: Restoring Snapshot
copy
[FirstApp-daily_20130205081050] of volume [MongoDB_LUN_Data1]
finished successfully.

##### Volume restore on Primary 10.61.172.95:MongoDB_LUN_Data1
finished successfully #####

##### File system plug-in not defined. Skipping file system post
restore #####
[Tue Feb 5 09:50:45 2013] INFO: Application is not defined, skipping.

##### Snap Creator Community Release 4.1.0 finished successfully
#####
[Tue Feb 5 09:50:45 2013] INFO: INFO: Snap Creator Framework finished
successfully (Action: volRestore)
### You have chosen to do a restore for the Profile: FirstProfile
Config:
FirstConfig Policy: daily ###
Are you sure you want to continue (y|n)? y
[Tue Feb 5 09:50:53 2013] INFO: STORAGE-02150: Listing volumes.
[Tue Feb 5 09:50:53 2013] INFO: STORAGE-02151: Listing volumes
finished successfully.

### Volume Menu for 10.61.172.95 ###
01. MongoDB_LUN_Data1
```

```
Select a volume for Snapshot copy restore (enter a number, "n" for
next controller,
"c" to continue, or "q" to quit): q
[root@mongoload-vm1 scServer4.0.0c]#
```

Performing Single file restore using the CLI

You can perform a single file restore by using the Snap Creator command-line interface (CLI).

Step

1. Enter the following command:

```
./snapcreator --server IP --port Port --user User --passwd Password --
profile Profile --config config --action restore --policy Policy --
verbose
```

Note: To perform a single file restore non-interactively, use the following command:

```
./snapcreator --server IP --port Port --user User --passwd Password--
profile Profile --config config --action restore --policy Policy --
verbose --non_interactive --cntName controller volName volume
backupName name --files files
```

Performing application defined restore using the CLI

You can perform application-defined restore operations for the VMware, KVM, and Xen plug-ins by using the Snap Creator command-line interface.

Step

1. Enter the following command:

```
./snapcreator --server IP --port Port --user User --passwd Password --
profile Profile --config config --action restore --policy Policy --
verbose
```

Information required to configure Snap Creator

Snap Creator 4.1 supports the following plug-ins: Oracle, DB2, MySQL, Sybase ASE, Domino, SnapManager for Microsoft SQL Server, SnapManager for Microsoft Exchange, MaxDB, VMware (vSphere and vCloud Director), Red Hat KVM, Citrix Xen, and SAP HANA. Community plug-ins are not included in the package and must be downloaded separately.

The following table lists the plug-in parameters, settings, and description:

Parameters	Setting	Description
APP_NAME	oracle db2 mysql domino vibe smsql sme sybase maxdb kvm xen hana<plug-in>	<p>Determines which application is being backed up. Snap Creator has built-in support for the listed applications. You can either use APP_NAME or configure APP_QUIESCE_CMDXX, APP_UNQUIESCE_CMDXX, and PRE_EXIT_CMDXX. If the application is not directly supported in Snap Creator, you can use a plug-in or run your own application quiesce or unquiesce commands or scripts.</p> <p><PLUG-IN>: Copy the plug-in to the /path/to/scServer scAgent/plug-ins directory and specify the plug-in in the APP_NAME parameter.</p> <p>Commands or Scripts:</p> <pre>APP_QUIESCE_CMD01=/ path/to/quiesceCMD APP_UNQUIESCE_CMD01=/ path/to/unquiesceCMD PRE_EXIT_CMD01=/ path/to/unquiesceCMD</pre>

Parameters	Setting	Description
APP_IGNORE_ERROR	(Y N)	Determines whether Snap Creator should ignore errors from application plug-ins. This is useful when you want to back up multiple databases and do not want to stop the backup if the quiesce or unquiesce of one database fails.
APP_DEFINED_BACKUP	(Y N)	The application plug-in is expected to perform the entire backup operation including quiesce, creating a Snapshot copy, and unquiesce. The built-in plug-ins do not support this kind of backup.
APP_DEFINED_RESTORE	(Y N)	Enables application-based restore operations. In the event of a restore operation, Snap Creator sends a request to the application plug-in and the plug-in handles the request.
APP_DEFINED_MOUNT	(Y N)	The built-in mount abilities of Snap Creator are ignored. Instead, the plug-in is responsible for all mount activities including volume or LUN clone creation. The built-in plug-ins do not support this type of mount.
APP_DEFINED_UMOUNT	(Y N)	The built-in unmount abilities of Snap Creator are ignored. Instead, the plug-in is responsible for handling all unmount activities including volume or LUN clone deletion. The built-in plug-ins do not support this type of unmount.

Parameters	Setting	Description
APP_AUTO_DISCOVERY	(Y N)	Enables application auto discovery. Snap Creator sends a discover request to the application plug-in and the plug-in is then responsible for the discovery of the storage configuration. This can be done dynamically or persistent with the APP_CONF_PERSISTENCE parameter, if the information is to be saved to the configuration file. This parameter is similar to VALIDATE_VOLUMES, but allows it through plug-in framework to add the discover functionality to any application plug-in.
APP_CONF_PERSISTENCE	(Y N)	Enables auto discovery to be persistent, which means changes are dynamically updated in configuration file.
VALIDATE_VOLUMES	DATA	Snap Creator validates that all the volumes in which the database resides are part of the backup operation. Currently, there are limitations: <ul style="list-style-type: none"> • Only Network File System (NFS) is supported. • Only the data files for the supported databases are checked. <p>Note: This parameter is not supported for clustered Data ONTAP.</p>
FS_NAME	<plug-in>	Determines which plug-in is being used for file system operations.

Parameters	Setting	Description
META_DATA_VOLUME		Enables a Snapshot copy of the specified volume to be created after the unquiesce operation. This can be valuable for certain plug-ins where the Snapshot copy of data must be created at different times. The metadata volume must not be only volume specified: controller1:volume1
APP_DEFINED_CLONE	(Y N)	The built-in cloning abilities of Snap Creator will be ignored. Instead the plug-in is responsible for handling all clone activities including volume or LUN clone creation and deletion. The built-in plug-ins do not support this type of clone.
JAVA_HOME	Text	Setting which points to the Java Virtual Machine (JVM) that should be used for executing .class and .jar files. If set, \$JAVA_HOME/bin/java is used. otherwise just Java to run the .class/.jar file#
JVM_ARGS	Text	Setting to control the JVM settings when native Java .class or .jar files are executed. The default setting is -Xms32M -Xmx128M.
JAVA_CLASSPATH	Text	Setting which defines the Java classpath. By default, plug-ins/native is configured and can be completed with this environment variable, which will be appended to the default.

Parameters	Setting	Description
PERL_HOME	Text	Setting which points to the Perl interpreter that should be used for executing .pl files. If set, \$PERL_HOME/bin/perl is used, otherwise just PERL to run the .pl file.
PERL_OPTS	Text	Setting to control the PERL interpreter settings when native Perl files are executed. Options for additional settings include directories (-I) that can be passed to the Perl interpreter.
PYTHON_HOME	Text	Setting which points to the Python interpreter that should be used for executing .py files. If set, \$PYTHON_HOME/python is used, otherwise python to run the .py file.
PYTHON_OPTS	Text	Setting to control the Python interpreter settings when native Python files are executed.

Oracle plug-in

The Oracle plug-in uses SQL*Plus to communicate with the database.

To use C Shell (CSH) with the Oracle plug-in on UNIX or Linux platforms, the following conditions should be met:

- Snap Creator Agent must be started as the Oracle user, instead of the root user.
- The Oracle user must have the proper environmental variables (ORACLE_HOME and ORACLE_SID) set in order for the plug-in driven SQL*Plus commands to work.

This can be done with a shell startup file, such as `~/ .cshrc`.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The following table lists the Oracle plug-in parameters, settings, and description:

Parameter	Setting	Description
APP_NAME	oracle	Application name

Parameter	Setting	Description
ORACLE_DATABASES	Example: db1:user1;db 2:user2	List of Oracle databases and the user names
SQLPLUS_CMD		Path to the sqlplus command
CNTL_FILE_BACKUP_DIR		Path to the directory where the user should store the backup control files (the Oracle user must have permissions)
ORA_TEMP		Path to the directory to store the temporary file (for example, /tmp) The Oracle user must have permissions to this directory.
ARCHIVE_LOG_ONLY	(Y N policy:<Y N>)	Informs the Oracle plug-in to only perform a switch log operation. This setting is useful if you are handling archive logs backups separately from data backups.
ORACLE_HOME		Path to the Oracle home directory
ORACLE_HOME_<SID>		Path to the Oracle home directory for a given system identifier (SID) When backing up multiple databases, it might be important to specify more than one Oracle home directory.
ORACLE_EXPORT_PARAMETERS	(Y N)	The ORACLE_HOME and ORACLE_SID environment parameters are exported by using the export command. This is applicable only in UNIX or a Linux-based environment.
ORACLE_BACKUPMODE		Option to configure offline or online backups by using the Snap Creator policy. The default option is online. ORACLE_BACKUPMODE=hourly:online,daily:offline

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

MySQL plug-in

The MySQL plug-in uses Net-MySQL to communicate with the database.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The MySQL plug-in does not support backup and restore operations for multiple databases.

The following table lists the MySQL plug-in parameters, settings, and description:

Parameter	Setting	Description
APP_NAME	mysql	Application name
MYSQL_DATABASES	Example: db1:user1/ pwd1;db2:user2/pwd2	List of MySQL databases, the user name, and password
HOST	Example: localhost	Name of the host where the databases are located
PORTS	Example: db1:3307;db2:3308)	List of databases and the ports they are listening on
MASTER_SLAVE	(Y N)	Specifies if the databases are a part of the Master-Slave environment

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

DB2 plug-in

The DB2 plug-in uses the db2 command to communicate with the database.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The following table lists the DB2 plug-in parameters:

Parameter	Setting	Description
APP_NAME	db2	Application name
DB2_DATABASES	Example: db1:user1;db2:user2	List of DB2 databases and the user name

Parameter	Setting	Description
DB2_CMD	Example: /ibm/ sqllib/bin/db2	Path used by the db2 command to interact with the database Note: If the path is not specified, then sqllib/db2 is used.

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

Sybase ASE plug-in

The Sybase ASE plug-in uses the `isql` command to interact with the Sybase database.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The following table lists the Sybase plug-in parameters, settings, and descriptions:

Parameter	Setting	Description
SYBASE_USER		The operating system user who can run the <code>isql</code> command. Required for UNIX. SYBASE_USER is required if the user running the Snap Creator agent start and stop commands (usually the root user runs the Snap Creator Agent start and stop commands) and the user running the <code>isql</code> command are different.
SYBASE_SERVER		The Sybase data server name (-S option on <code>isql</code> command). Example: SYBASE_SERVER=p_test

Parameter	Setting	Description
SYBASE_DATABASES	Example: DBAtest2:sa/ 53616c7404351e	<p>List of databases within the instance to back up. Format is DB1:USER:PASSWD;DB2:USER:PASSWD. The master database is added.</p> <p>If a database named +ALL is used, then database autodiscovery is used and the sybsyntax, sybssystemdb, sybssystemprocs, and tempdb databases are excluded.</p> <p>Example: SYBASE_DATABASES= +ALL:sa/53616c71a6351e</p> <p>Encrypted passwords are supported if NTAP_PWD_PROTECTION is set.</p>
SYBASE_DATABASES_EXCLUDE	(Y N)	<p>Allows databases to be excluded if the +ALL construct is used. Use a semicolon (;) to allow multiple databases.</p> <p>Example: pubs2;test_db1</p>
SYBASE_TRAN_DUMP	<p>Format: DB1:PATH;DB2:PATH, where path is a directory</p> <p>Example: pubs2: / sybasedumps/pubs2</p>	<p>Allows to perform Sybase transaction dump after creating Snapshot copy.</p> <p>Each database requiring a transaction dump needs to be specified.</p>
SYBASE_TRAN_DUMP_FORMAT	<p>Format: %S_%D_%T.cmn</p> <p>Example: %S_%D_%T.log</p>	<p>Allows you to specify the dump naming convention.</p> <p>The following "keys" can be specified:</p> <ul style="list-style-type: none"> • %S = Instance name from SYBASE_SERVER • %D = database from SYBASE_DATABASES • %T = unique timestamp

Parameter	Setting	Description
SYBASE_TRAN_DUMP_COMPRESS	(Y N)	Allows native Sybase transaction dump compression to be enabled
SYBASE_ISQL_CMD	Example: /opt/sybase/OCS-15_0/bin/isql	Defines the path to the isql command
SYBASE	Example: /sybase	Location of the Sybase installation
SYBASE_LOGDIR	Example: /usr/local/ntap/scServer/logs	Defines the directory where Snap Creator logs are placed
SYBASE_MANIFEST	Example: DBAtest2:/t_inf_nz1_devs/	Specifies the databases for which the manifest file should be created along with the location where the manifest file should be placed.
SYBASE_MANIFEST_FORMAT	Format: %S_%D_%T.manifest Example: %S_%D_%T.manifest	Allows you to specify the manifest file naming convention. The following "keys" can be specified: <ul style="list-style-type: none"> • %S = Instance name from SYBASE_SERVER, • %D = database from SYBASE_DATABASES, • %T = unique timestamp which is the same as used for Snapshot copy naming
SYBASE_MANIFEST_DELETE	(Y N)	Allows the manifest to be deleted after the Snapshot copy has been made. The manifest file should be captured in the Snapshot copy so that it is always available with the backup.

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

MaxDB plug-in

The MaxDB plug-in automates the backup and restore of MaxDB databases.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The MaxDB plug-in provides the following features:

- A centralized framework to back up, restore, and clone MaxDB databases
- The MaxDB plug-in integrates with the database and handles application consistency
- Utilizes Snapshot technology to create point-in-time copies of the database
- Utilizes SnapRestore to restore a previous Snapshot copy, and therefore an application-consistent database, in seconds, regardless of the capacity or number of files
- Utilizes FlexClone technology to create fast, space-efficient clones of databases based on Snapshot copy backups

The following table lists the MaxDB plug-in parameters, settings, and description:

Parameter	Setting	Description
APP_NAME	maxdb	Application name
XUSER_ENABLE	(Y N)	Enables or disables the use of an xuser for MaxDB so a password is not required for the database user
HANDLE_LOGWRITER	(Y N)	Executes suspend logwriter (N) or resume logwriter (Y)
DBMCLICMD		Path to the MaxDB <code>dbmcli</code> command If not set, <code>dbmcli</code> on the search path is used.
SQLCLICMD		Path to the MaxDB <code>sqlcli</code> command If not set, <code>sqlcli</code> on the search path is used.
MAXDB_UPDATE_HIST_LOG	(Y N)	Instructs the MaxDB backup program whether or not to update the MaxDB history log

Parameter	Setting	Description
MAXDB_DATABASES	Example: db1:user1/ password,db2:user2/ password	List of databases to be backed up with the user name and password separated by a comma
MAXDB_CHECK_SNAPSHOT_DIR	Example: SID:directory[,director y...] [SID2:directory[,direct ory...]	Checks if a Snap Creator Snapshot copy operation was successful and the Snapshot copy has been created. This applies to NFS only. The directory must point to the location which contains the .snapshot directory. Multiple directories can be included in a comma-separated list. Multiple databases can be specified as a semicolon-separated list. In MaxDB 7.8 and later versions, the database backup request will be marked as Failed in the backup history.

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

IBM Domino plug-in

The IBM Domino application consistency feature provides application consistency by interfacing with the Domino APIs through the IBM Domino plug-in. This plug-in is supported on Windows, Linux, AIX, and Solaris.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The following lists the IBM Domino prerequisites:

- IBM Domino 8.0.1 or later must be installed.
- For Linux or Solaris, links to libxmlproc.so, libndgts.so, and libnotes.so must be created in /usr/lib.
- For Linux, the Snap Creator Agent cannot be run as root.
- For Windows, a system PATH variable must be added for the Domino path containing the .dll files (same path as Notes_ExecDirectory).

The IBM Domino plug-in collects a list of all the databases, templates, and mailboxes in the Domino environment. Each file is then placed into backup mode. When the databases are in backup mode, all the changes to the databases are stored in a temporary path known as `changeinfo`. This backup process does not impact the end user. If archive-style Domino transaction logging is used, the Domino plug-in for Snap Creator also archives transaction logs when the backup process ends.

The change information must be stored on a volume that is not a part of the Snapshot copy. The change information is also written back to a database after the restore operation is completed. `DOMINO_RESTORE_DATA_PATH` must be set to the path where the Domino data is being restored. This path might change depending on the type of restore operation that is being performed. A volume restore operation must be set to the same path as the Domino data, whereas a single database restore operation is set to an alternate path on the same volume as the Domino data. If `DOMINO_RESTORE_DATA_PATH` is not set properly, the change information is not applied to the database.

A new log folder is created under `DOMINO_CHANGE_INFO_PATH`. All the archived logs are stored in this folder. To automatically delete the archived logs, you must enable the archive log options.

Example

```
ARCHIVE_LOG_ENABLE=Y
ARCHIVE_LOG_DIR=/home/domino/changeinfo/logs
ARCHIVE_LOG_RETENTION=30
ARCHIVE_LOG_EXT=TXN
```

If any database is corrupt and `APP_IGNORE_ERROR` is enabled, then the Domino plug-in continues with the backup operation of the remaining databases. This is useful when you want to back up multiple databases and do not want to stop the backup operation if the quiesce or unquiesce of one of the databases fails.

Note: You should set the `SC_AGENT_TIMEOUT` value to 3600 or higher.

The following table lists the Domino plug-in parameters, settings, and description:

Parameter	Setting	Description
<code>DOMINO_DATA_PATH</code>	Example: <code>/notes/notesdata</code>	Path to the Domino data directory.
<code>DOMINO_INI_PATH</code>	Example: <code>/notes/notesdata/notes.ini</code>	Path to the <code>notes.ini</code> file (include <code>notes.ini</code> in the path)

Parameter	Setting	Description
DOMINO_CHANGE_INFO_PATH	Example: /changeinfo	<p>Path where the change information files should be saved</p> <p>The volume used should not be the same as that used for the Domino data and log paths. Change information should not be captured in the same Snapshot copy.</p> <p>Note: To delete the old change information files, you must enable the archive log option.</p>
DOMINO_DATABASE_TYPE	(0 1 2 3)	<p>The following values are valid:</p> <ul style="list-style-type: none"> • 0 = Backup everything (1+2+3 below) • 1 = Backup only for *.BOX files • 2 = Backup only for *.NSF, *.NSG, and NSH files • 3 = Backup only for *.NTF files <p>This parameter only affects which types of files are put into backup mode and does not alter Snapshot copy capability.</p>
LOTUS	Example: /opt/ibm/lotus	Path where Domino is installed
Notes_ExecDirectory	Example: /opt/ibm/lotus/notes/latest/linux/	<p>Path that contains the Domino shared object (.so or .dll) files</p> <p>This is the directory where the Domino libraries (.so or .dll) files are located.</p>

Parameter	Setting	Description
DOMINO_RESTORE_DATA_PATH	Example: /notes/notesdata	Path to the restored data directory. You must use the same volume as the Domino data path. You must use the same path as DOMINO_DATA_PATH if restoring to the same location. If performing a single file restore, provide the path where you are restoring your databases.
VALIDATE_DOMINO_DATA_PATH	(Y N)	<p>Validates the Domino data directory:</p> <ul style="list-style-type: none"> • Y - backs up only the files that are located in the Domino data directory. • N - backs up all the files that are managed by the Domino server, regardless of the path. <p>Note: When set to N, then there might be problems while restoring the files that are located outside the Domino data directory.</p> <p>If the volume names are of the same standard length as the file names (for example, E:\Domino\Mail F:\Domino\Apps), then the restore operation works as expected. However, if the file names are of a different length, the file names get truncated and the change information is not applied correctly.</p>

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

SnapManager for Microsoft Exchange plug-in

The SnapManager for Microsoft Exchange plug-in requires Snap Creator Agent to be installed. You should set the SC_AGENT_TIMEOUT value to 900 or higher.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The following table lists the SnapManager for Microsoft Exchange plug-in parameters, settings, and description:

Parameter	Setting	Description
SME_PS_CONF	Example: "C:\Program Files\IBM\SnapManager for Exchange \smeShell.ps1"	Path to the PowerShell configuration file for SnapManager for Microsoft Exchange
SME_BACKUP_OPTIONS	Example: Server 'EX2K10-DAG01' -GenericNaming - ManagementGroup 'Standard' - NoTruncateLogs \$False - RetainBackups 8 - StorageGroup 'dag01_db01' - BackupCopyRemoteCCRNode \$False	SnapManager for Microsoft Exchange backup options Snap Creator uses a PowerShell cmdlet for new backup.
SME_SERVER_NAME		SnapManager for Microsoft Exchange server name.
SME_32bit	(Y N)	Enables or disables the use of the 32-bit version of PowerShell

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

SnapManager for Microsoft SQL Server plug-in

The SnapManager for Microsoft SQL Server plug-in requires Snap Creator Agent to be installed. You should set the SC_AGENT_TIMEOUT value to 900 or higher.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The following table lists the SnapManager for Microsoft SQL Server plug-in parameters, settings, and description:

Parameter	Setting	Description
SMSQL_PS_CONF	Example: "C:\Program Files\IBM\SnapManager for SQL Server\smsqlShell.ps1"	Path to the PowerShell configuration file for the SnapManager for Microsoft SQL Server
SMSQL_BACKUP_OPTIONS	Example: -svr 'SQL' -d 'SQL\SHAREPOINT', '1', 'WSS_Content' - RetainBackups 7 -lb - bksif - RetainSnapofSnapInfo 8 -trlog -gen -mgmt standard	SnapManager for Microsoft SQL Server backup options Snap Creator uses a PowerShell cmdlet for new backup.
SMSQL_SERVER_NAME		SnapManager for Microsoft SQL Server name
SMSQL_32bit	(Y N)	Enables (Y) the use of the 32-bit version of PowerShell

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

VMware (VIBE) plug-in

Snap Creator supports the backup of VMware virtual machines and vApps through the VMware plug-in. The VMware plug-in is an integrated plug-in for both virtual machines with vSphere and vApps with vCloud Director.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

Consider the following when you use the VMware plug-in:

- The VMware plug-in is supported only on Windows and Linux.
 - If you are using a non-Windows or non-Linux Snap Creator Server, you need a Snap Creator Windows or Linux agent to run the VMware plug-in.
- server as a proxy is not supported.
- The actions mount, unmount, backup operation using Open Systems SnapVault, and archive log management are not supported.
- VMware HA with VMware plug-in is not tested and not supported.
- VMware vCenter Linked Mode with VMware plug-in is not tested and not supported.
- The VMware plug-in does not support raw device mapping (RDM).
- The volumes are discovered using autodetect.

You cannot see a discovered destination volume if it is not in a SnapMirror relationship. Use `dpstatus` to check the SnapMirror relationship. If a SnapMirror relationship does not exist, you must first create the SnapMirror relationship.

- Before you perform restore operations, delete all of the VMware snapshot copies.
- After the restore operations are complete, you must run a Snap Creator backup of the restored virtual machines and vApps to ensure that the new environment is cleaned up and all VMware Snapshot copies are removed.

If the plug-in is not able to clean up VMware Snapshot copies and displays an error, you must remove the VMware Snapshot copies manually. The VMware plug-in does not guarantee 100% VMware Snapshot copy removal and it is a known VMware issue.
- The VMware plug-in supports only 32-bit Snap Creator with 32-bit Linux system and 64-bit Snap Creator with 64-bit Linux system.
- The deleted virtual machines cannot be restored.
- The volume restore operation is not supported, only application-defined restore operations are supported.
- The `SC_AGENT_TIMEOUT` value should set to 1800 or higher.
- The default value of `VIBE_VMWARE_SNAPSHOT` (VMware Snapshot option) is N.
- If the value of `APP_DEFINED_RESTORE` is Y, then the SnapVault restore operation using the GUI is not supported.
- While creating a SnapMirror and SnapVault configuration by using the GUI, make sure to manually enter the SnapMirror and SnapVault parameters because the SnapMirror and SnapVault relationship is not detected automatically.

The following table lists the VMware plug-in parameters and the description:

Parameter	Setting	Description
VIBE_DYNAMIC_VOLUMES_UPDATE	(Y N) Default: not set	If set to N, does not perform dynamic volume update, which means you have to set VOLUMES, SNAPVAULT_VOLUMES, SNAPMIRROR_VOLUMES, and NTAP_DFM_DATA_SET manually.
VIBE_NOPING	Default: N	Setting to not ICMP ping VMware or storage controllers
VIBE_VCLOUD_IPADDR		IP addresses or host name of the vCloud Director to log in to (vCloud only).
VIBE_VCLOUD_USER	Example: administrator@system	User name to log in to the vCloud Director (vCloud only). You must set @<org> or @system (top-level vCloud database). Note: The vCloud Director system administrator user name must be used to perform the backup or restore operation. These operations fail if the user is an organization administrator or any other user.
VIBE_VCLOUD_PASSWORD		Password associated with the specified V_CLOUD_USER (vCloud only)
VIBE_VCENTER_USER		User name to log in to vCenter.
VIBE_VCENTER_PASSWORD		Password associated with the specified VCENTER_USER
VIBE_VCLOUD_NAMES	Example: ORG:VDC1 , VDC2:VAPP1 , VAPP2 ; ORG2:VDC3 ; ; ORG3 : : VAPP6	List of organization, Virtual Data Center, and vApp object names to back up (vCloud only)
VIBE_VSPHERE_NAMES	Example: VCENTER1:DS1:VM1;VCENTER2;DS2,DS3;;VCENTER3::VM4	List of datastores and virtual machines to back up per vCenter (vSphere only)

Parameter	Setting	Description
VIBE_TRIM_VSPHERE_NAMES	Example: VCENTER1:VM99;VCENTER2: VM5,VM12	List of virtual machines to remove from backup per vCenter (vSphere only)
VIBE_RESTORE_INTE RVAL	Default: 30 seconds	Time between each restore check
VIBE_RESTORE_TIME	Default: 3600 seconds	Total time to wait for a complete restore
VIBE_VMWARE_SNAP SHOT	Default: N	Takes a VMware Snapshot copy during backup

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

vCloud vApp backup and restore by using the VMware plug-in

Snap Creator supports the backup of vCloud vApp through the VMware plug-in. vApp and virtual machine backups are made by the VMware plug-in through the vCloud Director API and vSphere API, which are invoked on the VMware vCloud Director and VMware vCenter server, respectively.

For vApp backup and restore, you must provide the following details in the configuration file:

- vCloud IP and credentials
- vCloud organizations, virtual data centers (vDCs), and vApp names

Note: If more than one vCenter is attached to vCloud, then the password for the all vCenters should be same.

You must consider the following when performing the vCloud backup and restore processes:

- The backup and restore processes for both VMware and vCloud are very similar except the discovery process, where vCloud backups require additional discovery of the vCloud Director metadata using REST APIs.
- You should provide details of the vCloud with the organizations, vDCs, and vApps to be backed up.
- If a vDC is listed, all the vApps in the vDC are backed up.
- The vCloud module discovers virtual machines associated with any vApp that needs to be backed up and puts them on a backup list.
- If a vApp selected for backup is contained within an organization or a vDC that is also selected for backup, the vApp is backed up only once.

Note: For Virtual Machine File System (VMFS) restore operations by using the VMware plug-in, there must be enough space in the volume to create a LUN clone that is equal to the size of the LUN.

Virtual machine backup and restore by using the VMware plug-in

Snap Creator supports the backup of VMware virtual machines through the VMware plug-in. Virtual machine backups are taken through the vSphere API on the VMware vCenter server.

For virtual machine backup, you must provide the following details in the configuration file:

- vCenter IP or host name and credentials
- vSphere virtual machines and datastore names

Note: Snap Creator discovers vCenter only if vCenter is configured on the default port (443).

For the restore operation, you should provide the backup parameters and the Snapshot copy name.

Consider the following when performing the VMware backup and restore processes:

- If a virtual machine is listed and is not available, the plug-in displays an error message. It will not be able to restore a lost virtual machine even if it is backed up.
- If a datastore is listed, all the virtual machines in the datastore are backed up.
- Only the listed virtual machines or virtual machines located in the datastores specified are backed up.
- If a virtual machine selected for backup is contained within a datastore that is also selected for backup, it will be backed up only once.
- The VMware plug-in supports both Network File System (NFS) and VMware Virtual Machine File System (VMFS) datastores.
 - Virtual machine restores on an NFS datastore use Single File SnapRestore (SFSR) on the storage system, which avoids host copies.
 - To restore a virtual machine on a VMFS datastore, perform the following steps:
 1. Use FlexClone or LUN clone of the LUN contained in a specific restore Snapshot copy.
 2. Map it to the cluster.
 3. Use vCenter API calls to copy contents from the Snapshot copy of the VMFS datastore to the original VMFS datastore.

Red Hat KVM plug-in

Kernel-based Virtual Machine (KVM) is a virtualization solution for the Linux kernel. Snap Creator uses the KVM plug-in to backup and restore the guest virtual machines. The plug-in internally uses `virsh` commands.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The KVM plug-in supports guest operating systems such as Linux, Windows, and Solaris.

You must consider the following when you use the KVM plug-in:

- server as a proxy is not supported.
- The actions mount, unmount, backup operation using Open Systems SnapVault, and archive log management are not supported.
- In a Storage Area Network (SAN) environment, the Linux Host Utilities (LHU) kit is required to collect information about LUNs and volumes from the storage controller.
The LHU kit should be installed on a KVM hypervisor, which is the same location as the Snap Creator Agent.

Note: If the LHU kit is not installed and the configuration is a mix of network attached storage and storage area network environments, then the backup and restore operations work only on a Network File System (NFS).

- The KVM plug-in supports only the Linux version of the Snap Creator 4.0 and 4.1 Agent.
- Volume restore is not supported; only application-defined restores are supported.
- The deleted virtual machines (VMs) cannot be restored.
- The storage controller IPs and host should be either in `/etc/hosts` on the KVM host or in a Domain Name System (DNS).
- Only one KVM host per configuration is supported.
- If a virtual machine is created by using an ISO repository, then to perform any action, you should disconnect this repository from the virtual machine through the Virt Manager console in CD-ROM options.
- The `SC_AGENT_TIMEOUT` value should be more than the default value. Set the value to 600 or higher.
- The volumes are automatically discovered by using auto-detect.
You cannot see the discovered destination volumes if it is not in a SnapMirror relationship. You should use `dpstatus` to check the status of the SnapMirror relationship. If a SnapMirror relationship does not exist, you must first create the SnapMirror relationship.
- If the value of `APP_DEFINED_RESTORE` is Y, then the SnapVault restore operation by using the GUI is not supported.
- When creating a SnapMirror and SnapVault configuration by using the GUI, the volume details must be entered manually because the SnapMirror and SnapVault relationship is not detected automatically.
- Data disks mapped to the VMs will not be backed up.
- VM suspend/resume operation are performed serially. For multiple VMs, the duration of VM in suspend state during backup operation depends on number of VMs.

Supported KVM configurations

- SAN: Supports guest virtual machines installed on a raw multipath device (LUN with multiple paths).
- NAS: Supports guest virtual machines installed on NFS volumes.

Note: Configurations with multiple virtual machines installed on a single multipath device are not supported.

Guest virtual machines installed on LVM or on an image file in the SAN environment are not supported.

The following table lists the KVM plug-in parameters and descriptions:

Parameter	Setting	Description
KVM_RESTORE_VM_LIST	Example: VM1, VM2	List of VMs to be restored. This parameter is required only during restore.
KVM_VM_MAPPING	Example: VM1: storage_controller1: /vol/vol1/lun1; VM2: storage_controller2: /vol/vol2/lun2;	(Required) Mapping between the VM and its associated storage controller, LUN or file path. This parameter is updated dynamically during the discovery process.
KVM_VM_CONFIG_DIRECTORY	Default: /etc/libvirt/qemu	(Optional) Path to the directory where all the XML configuration files of the VM are stored.
KVM_CMD_RETRY_COUNT	Default: 3	(Optional) Number of times you rerun the command when running it fails in the KVM plug-in.

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

Citrix Xen plug-in

Snap Creator supports the backup and restore of Citrix Xen virtual machines by using the Xen plug-in.

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

The Xen plug-in supports Windows and XenServer.

Consider the following when you use the Xen plug-in:

- server as a proxy is not supported.
- The actions mount, unmount, backup operation using Open Systems SnapVault, and archive log management are not supported.
- Volume restore is not supported, only application-defined restore operations are supported.
- Deleted virtual machines (VMs) can be restored.

- The Snap Creator Agent must be installed on the host where XenCenter is installed, and the Snap Creator Server must not be installed on XenServer.
- The SC_AGENT_TIMEOUT value should be greater than the default value. Set the value to 600 or higher.
- If the value of APP_DEFINED_RESTORE is Y, then the SnapVault restore operation by using the GUI is not supported.
- If the pool master goes down in a server pool, then the Snap Creator configuration file should be modified manually with the new master server for further activity.
- XenServer tools need to be installed on all the VMs.
- For Fibre Channel in a Storage Area Network (SAN) environment, the `plink.exe` tool must be installed on a host where the Snap Creator agent is installed, and the `plink.exe` path must be added to the system environment variable.
For detailed information on how to add the `plink.exe` path to the system environment variable, refer to the procedure provided in the topic *Settings specific to Windows*.
- VM pause/unpause operation are performed serially. For multiple VMs, the duration of VM in pause state during backup operation depends on number of VMs.
- Auto discovery of volumes is supported.

Supported Citrix XenServer configurations

The following Citrix XenServer configurations are supported:

- SAN:
 - Supports guest virtual machines with one virtual disk image (VDI) per storage repository.
 - Supports data disks with one VDI per storage repository
- NAS:
 - Supports guest VMs installed on NFS mounts.
 - Supports data disks on NFS mounts.

Parameters

The following table lists the Xen plug-in parameters and description:

Parameter	Description
XEN_VMS	List of virtual machines of a particular host separated by a slash (/). Example: <host IP>:VM1/VM2/VM3
XEN_HOST_USERS	List of Xen hosts and the corresponding user name and password. Example: <host IP>:<username>/<password>

Parameter	Description
XEN_BIN_PATH	Path of the Xen server executable (xe). The Xen console is required for importing and exporting the virtual machine metadata. Example: c:\Program Files\Citrix\xenCenter\xe.exe
XEN_METADATA_PATH	Path on the server where you can download the virtual machine metadata. Example: c:\scmetadata
XEN_RESTORE_VMS	Contains the VMs that need to be restored. This parameter is required only during restore. Example: xenserver1:vm1,vm2;xenserver2:vm1,vm2

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

SAP HANA plug-in

The SAP HANA plug-in is used to backup and restore data for HANA databases.

Support for the SAP HANA plug-in is as follows:

- Operation System: SUSE Linux Enterprise Server (SLES), 32 bit and 64 bit
- Protocol: NFS
- Data ONTAP: operating in 7-mode only

Note: For latest information about support or compatibility matrices, see the N series Interoperability Matrices website (accessed and navigated as described in [Websites](#) on page 6).

This plug-in implements simple quiesce and unquiesce operations; however, it does not currently implement discovery.

The SAP HANA plug-in uses `hdbsql` command/binary to execute remote `sql` commands on HANA nodes. This plug-in can be installed (as part of Snap Creator Agent) remotely where HANA nodes are accessible over the network, preferably on a management host.

Consider the following when you use the SAP HANA plug-in:

- The plug-in requires SAP `hdbsql` client to be installed on the management host to successfully perform its operations.
- HANA or HANA studio is currently not aware of backups created by Snap Creator.

- A separate database user must be created to perform the HANA snapshots. The SYSTEM user should not be used for those purposes. This database user must have at least the system privileges BACKUP OPERATOR.

The following table lists the SAP HANA plug-in parameters, settings, and description:

Parameter	Setting	Description
HANA_SID	Example: ABC	HANA database SID
HANA_NODES	Example: node1 , node2 , node3	Comma-separated list of HANA nodes on which hdbsql statements can be executed
HANA_USER_NAME	Example: backupUser	HANA database username The minimum privilege required for this user is BACKUP OPERATOR privilege.
HANA_PASSWORD	Example: hfasfh87r83r	HANA database password
HANA_INSTANCE	Example: 42	HANA Node Instance number
HANA_HDBSQL_CMD	Example: /usr/sap/ hdbclient/hdbsql	Path to the HANA hdbsql command If not set, hdbsql on the search path is used. Default: hdbsql
HANA_OSDB_USER	Example: user1	Operating System user for executing hdbsql (usually <sid>adm), needs to have hdbsql binary in search path and needs the permission to execute it

Related information

IBM N series Interoperability Matrix: www.ibm.com/systems/storage/network/interophome.html

Archive log plug-in

The Archive log plug-in is supported on all databases. This plug-in does not communicate with the database. It deletes the archive logs that are older than the configured threshold value (in days).

The following table lists the Archive log parameters, settings, and description:

Parameter	Setting	Description
ARCHIVE_LOG_ENABLE	(Y N policy:age)	Enables archive log management (deletion of the old archive logs).
ARCHIVE_LOG_RETENTION		Specifies the number of days the archive logs are retained for. Epoch time is used.
ARCHIVE_LOG_DIR		Path to the directory that contains the archive logs. Optionally, for multiple archive log directories, ARCHIVE_LOG_DIR<##> can be used.
ARCHIVE_LOG_EXT		File extension of the archive logs, that is, if the archive logs are 10192091019.log, you should set this to log; the search pattern used is: <something>.<extension>
ARCHIVE_LOG_RECURSIVE_SEARCH	(Y N)	Enables the management of archive logs within subdirectories. If the archive logs are located under subdirectories, this option should be used.

Using the plug-in framework to create custom plug-ins

The plug-in framework enables you to create your own plug-ins for Snap Creator or reuse the existing plug-ins. The plug-in provides Snap Creator with the steps for handling backup and recovery of a given application.

The plug-in framework defines the following methods:

- `quiesce` - Method for handling quiesce for a given application plug-in
- `unquiesce` - Method for handling unquiesce for a given application plug-in
- `discover` - Method for handling discovery of storage objects for a given application plug-in
- `scdump` - Method for handling collection of support information, database, operating system, and SnapDrive
- `restore` - Method for handling restore for a given application plug-in
- `restore_pre` - Method for handling prerestore operations for a given application plug-in (can use built-in restore CLI of Snap Creator)
- `restore_post` - Method for handling post-restore operations for a given application plug-in (can use built-in restore CLI of Snap Creator)
- `clone_pre` - Method for handling preclone operations for a given application plug-in
- `clone_post` - Method for handling post-clone operations for a given application plug-in
- `describe` - Method for describing what a plug-in implements. This is optional for Perl plug-ins but required for native plug-ins under `plug-ins/native`.
- `clone_all` - Method for handling cloning for a given application plug-in (cannot use built-in cloning interface)
- `clone_cleanup` - Method for handling cleanup if a clone operation fails
- `restore_cleanup` - Method for handling cleanup if a restore operation fails

Note:

- The plug-in framework supports Perl, PowerShell, Java, UNIX Shell, and Python for programming.
- The plug-in framework enables you to implement objects and functions that exist within the Snap Creator.

For example, error handling is available, which means the plug-in can use the standard implementation Snap Creator uses. This reduces the work required to create a plug-in.

- Perl plug-ins are installed under `/plug-ins/<PLUG-IN-name>/<PLUG-IN>.pm`.
- Native plug-ins are installed under `/plug-ins/native/plugin.sh,plugin.java.plugin.bat`, and so on.
- The plug-in must be installed where it is supposed to run. This can be Snap Creator Server or Snap Creator Agent depending on the set up of Snap Creator.

Troubleshooting Snap Creator issues

You can troubleshoot Snap Creator issues by using the information in the Snap Creator logs and error messages.

Logs

You can use Snap Creator logs for troubleshooting. The logs contain information about everything Snap Creator does.

Messages can be INFO, CMD, OUTPUT, DEBUG, WARN, or ERROR.

- INFO: Standard, normally occurring operations.
- CMD: External command or script that Snap Creator runs (according to configuration) and the return code from the command or script is logged. Typically, these are PRE, POST, or APP quiesce or unquiesce commands.
- OUTPUT: Data ONTAP API call.
- DEBUG: Debug information.
- WARN: These messages are to draw your attention, but it is considered to be a normal activity usually and does not require any action (for example, when you delete Snapshot copies).
- ERROR: Anything with ERROR is a problem and most likely requires manual action to fix the error. Snap Creator exits on any ERROR message. It is important to fix any problem that occurred before it runs again. Snap Creator does not automatically fix problems, but you can specify what is to be done before exiting by using PRE_EXIT_CMD defined in the configuration file.

The logs contain the output from any external commands or scripts run by Snap Creator, for example, SnapDrive. If you call other scripts through Snap Creator, it is important that you properly set up exit codes and output for those scripts. You should never exit with status 0 if a problem occurs.

The out, debug, stderr, and agent logs are retained as defined by the LOG_NUM value in the configuration file while the error log is always appended. All logs are written to the `/path/to/scServer_v<#>/engine/logs/<profile>` directory.

There are four logs for every profile and configuration:

- Out
- Debug
- Error
- Stderr

Out log

The out log contains only verbose logging information.

Debug log

The debug log contains verbose and debug logging information.

Trace messages are an extra level of debug logs, which can be used by the plug-in to show trace messages. `LOG_TRACE_ENABLE - (Y|N)` Setting enables or disables trace messages.

Error log

The error log contains a history of all the ERROR events for a given configuration. The error log helps in viewing information about errors that occurred in the past. You can also monitor this log file and use it to integrate Snap Creator with your monitoring application.

Stderr log

This is usually empty but contains stderr if there are any issues. This usually shows bugs in the code.

Snap Creator Agent

The Snap Creator Agent optionally creates logs. This is enabled by default with the following option:

```
SC_AGENT_LOG_ENABLE=Y
```

The three logs for every profile and configuration created on an agent are as follows:

- Out
- Debug
- Stderr

Additionally, the agent console debug can be enabled by specifying the additional `-- debug` option:

```
./snapcreator --start-agent --verbose --debug
```

SCDUMP

Snap Creator collects all support information using `scdump` and places it into a `.zip` file located under the root Snap Creator directory. This information is useful for troubleshooting. The `.zip` file consists of the following items:

- Snap Creator version (build information, date, and so on)
- Host operating system and architecture
- Database and version
- SnapDrive version
- Other environment variables

The syntax for `scdump` is as follows:

```
./snapcreator --server IP --port Port --user User --passwd Password --  
profile profile --config Config --action scdump --verbose
```

Troubleshooting Snap Creator GUI errors

The Snap Creator GUI might show an error while starting the GUI, when using HTTPS on Linux.

Error starting the GUI

```
HTTP ERROR 503
```

```
Problem accessing /. Reason: SERVICE_UNAVAILABLE
```

You might receive this error message when there is insufficient space for the `temp` file.

Verify if you have sufficient space in the `temp` folder in the respective operating system folders.

Example: For Linux, check `/tmp`.

HTTPS errors when using Snap Creator on Linux

HTTPS might not work on Linux out-of-the-box. This appears mainly to be an issue with SUSE, but it can apply to any UNIX. Snap Creator does not include the required SSL libraries.

Install `openssl` and ensure that symlinks are created correctly.

The requirements for HTTPS for Linux/UNIX are as follows:

- `openssl` package
- SSL symlinks

Ensure that the following symlinks are located under `/usr/lib` or `/usr/lib64` (depending on if the operating system is 64-bit or not):

- `libssl.so.6`
- `libcrypto.so.6`

If the symlinks do not exist, change the directory to `/usr/lib` or `/usr/lib64` and run following commands:

- ```
ln -sf libssl.so.0.9.8 libssl.so.6
```
- ```
ln -sf libcrypto.so.0.9.8 libcrypto.so.6
```

Troubleshooting network issues

When authorization failures occur with Snap Creator, verify the configuration, firewall permissions, and network address translation (NAT).

IP/Host name

Unless you use `host equiv`, the storage system name from the `hostname` command on the controller should be the same as that entered in the Snap Creator configuration file.

Do not use a fully qualified domain name (FQDN) when the host name of a storage system is abbreviated.

Ensure that the IP resolution matches the name you specified. If there is a mismatch, correct it by using `host equiv` on the storage system.

To enable `host equiv`, perform the following steps:

1. Enter the following command:


```
options https.admin.hostsequiv.enable on
```
2. Edit the `/etc/hostsequiv` file and add the following: *<IP/Name of host in Snap Creator config> <Snap Creator user>*

The IBM N series Management Console data protection capability

The storage controller name defined in the Snap Creator configuration parameter `VOLUMES` must match the storage controller name in the IBM N series Management Console data protection capability. If they do not match, you can use the operating system host file to force things to match.

Firewall

If there is a firewall between the host running Snap Creator and your storage system, ensure that you have access control lists (ACLs) (bi-directional) open for 80, 443, or both.

- 80: Used to communicate with the storage system if HTTP is selected.
- 443: Used to communicate with the storage system if HTTPS is selected.

If the agent is running, the port on which the agent is running must be open. Ensure that the return traffic from the storage system is allowed to go to the system running Snap Creator on at least the non-privileged ports.

NAT

If you use NAT, ensure that the source/destination IP addresses are not changed in the TCP packet. The host and storage systems need to know who they are talking to. Presenting a firewall IP instead of the actual host or controller IP might cause problems.

HTTPS

To use HTTPS (443) for Linux, Solaris, or AIX, install the openssl-devel RPM. This RPM contains the openssl libraries, which are required to use SSL.

Troubleshooting the tmp directory permission issues

If the `tmp` directory does not have executable permissions, then the Snap Creator binaries might not run.

You must provide the execute permission for the `tmp` directory. If you want to tell Snap Creator to use a specific temporary directory, you can do so by setting `TMPDIR`. Example: `export TMPDIR=/temp2`.

Troubleshooting the Snap Creator start issue

The Snap Creator Server or the Windows service might not start.

You face this issue if Java is not installed or the wrong bit level or version of Java is installed. You must install Java Runtime Environment (JRE) 1.6 or later. You must ensure that the bit levels (32-bit or 64-bit) of Java and Snap Creator are the same.

Error messages

You must be aware of the error messages associated with different Snap Creator operations.

Each error message includes an area code and a unique five-digit identifier, for example, `ERROR: [<area code>-<unique area error identifier>] <error message>`. The area code identifies where the error occurs. The different area codes are as follows:

- `scf` - Snap Creator Framework
- `REPO` - Repository
- `STORAGE` - Storage
- `agt` - Snap Creator Agent
- `gui` - Snap Creator GUI
- `ora` - Oracle plug-in
- `db2 and SQL` - DB2 plug-in
- `mys` - MySQL plug-in
- `psg` - PostgreSQL plug-in
- `syb` - Sybase ASE plug-in
- `ltd` - IBM Domino plug-in
- `sms` - SnapManager for Microsoft SQL Server plug-in
- `sme` - SnapManager for Microsoft Exchange plug-in

- max - MaxDB plug-in
- vmw - VMware plug-in
- kvm - Red Hat KVM plug-in
- xen - Citrix Xen plug-in
- hdb - SAP HANA plug-in

Snap Creator Framework error messages

The following table lists the Snap Creator Framework error messages.

Error code	Error message	Description/resolution
scf-00001	Could not get the serial number %s	Make sure that the serial number is set or blank. The serial number when set can only be numeric. This means that the Snap Creator setup was not run. Run the <code>snapcreator -- profile setup</code> command.
scf-00002	Backup handling of plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	Application backup failed due to an application error. Check the logs and application settings.
scf-00003	Backup cleanup handling of plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	Application backup cleanup failed due to an application error. Check the logs and application settings.
scf-00004	Clone handling of plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	Application clone failed due to an application error. Check the logs and application settings.
scf-00005	Clone cleanup handling of plugin [%s] failed with error [%s] and exit code [%s], Exiting!	Application clone cleanup failed due to an application error. Check the logs and application settings.
scf-00006	Pre-clone handling of [%s] failed with error [%s] and exit code [%s], Exiting!	Application pre-clone operation failed due to an application error. Check the logs and application settings.

Error code	Error message	Description/resolution
scf-00007	Post-clone handling of plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	Application post-clone operation failed due to an application error. Check the logs and application settings.
scf-00008	Cloned LUN igroup map of [%s] to igroup [%s] on [%s] failed, Exiting!	The igroup mapping for LUN clone failed. Check the error. There might be a Manage ONTAP Solution error which might reveal the cause of the problem.
scf-00009	IBM N series Management Console backup list end for dataset [%s] failed with exit code [%s], Exiting!	Snap Creator started the backup delete operation in IBM N series Management Console, but failed to list Snapshot copies. Make sure that Snap Creator is registering backup and check the configuration parameters NTAP_PM_UPDATE and NTAP_DFM_DATA_SET.
scf-00010	IBM N series Management Console backup list is undefined, no backups for dataset [%s] exist, Exiting!	Snap Creator started the backup delete operation in IBM N series Management Console, but the Snapshot copies exist. Make sure that Snap Creator is registering backup and check the configuration parameters NTAP_PM_UPDATE and NTAP_DFM_DATA_SET.
scf-00011	IBM N series Management Console backup version ID [%s] Timestamp [%s] Delete for dataset [%s] failed with exit code [%s], Exiting!	Make sure that Snap Creator is registering backup and check the configuration parameters NTAP_PM_UPDATE and NTAP_DFM_DATA_SET.

Error code	Error message	Description/resolution
scf-00012	Retrieving IBM N series Management Console dataset status for dataset [%s] failed with exit code [%s], Exiting!	Make sure that the dataset exists and status is conformant. Also make sure the dataset must be created by Snap Creator. Datasets which are not created by Snap Creator are not application datasets and it does not work.
scf-00013	Failed to register the Snapshot copies with dataset [%s] exit code [%s]	Check the configuration parameters NTAP_PM_UPDATE and NTAP_DFM_DATA_SET.
scf-00014	IBM N series Management Console backup start for [%s] ([%s]) failed, Exiting!	Check the configuration parameters NTAP_PM_UPDATE and NTAP_DFM_DATA_SET.
scf-00015	IBM N series Management Console backup for job-id [%s] completed with errors - [%s][[%s]][[%s]][[%s]	Snap Creator started the IBM N series Management Console backup and getting the progress of the same failed. Check the configuration parameters NTAP_PM_UPDATE and NTAP_DFM_DATA_SET.
scf-00016	SnapMirror status for [%s] failed, Exiting!	Snap Creator was unable to find any SnapMirror relationships for the given controller. Log in to the storage controller and run a <code>snapmirror status</code> command and make sure that the relationship exists.

Error code	Error message	Description/resolution
scf-00017	SnapMirror relationship for [%s]:[%s] does not exist, Exiting!	Snap Creator was unable to find SnapMirror relationships for the given controller:volumes. Log in to the storage controller and run a <code>snapmirror status</code> command and ensure that the relationships for the given controller name exists. If a different name is used, then you must configure the <code>SECONDARY_INTERFACES</code> parameter to tell Snap Creator what maps to the storage controller.
scf-00018	SnapVault Status list for [%s] failed, Exiting!	Snap Creator was unable to find any SnapVault relationships for the given controller. Log in to the storage controller and run <code>snapvault status</code> command and make sure that the relationship exists.
scf-00019	SnapVault relationship for [%s]:[%s] does not exist, Exiting!	Snap Creator was unable to find the SnapVault relationship. Log in to the storage controller and run <code>snapvault status</code> command and ensure that the SnapVault relationship for the given controller name exists. If a different name is used, then you must configure the <code>SECONDARY_INTERFACES</code> parameter to tell Snap Creator what maps to the storage controller.

Error code	Error message	Description/resolution
scf-00020	Running SnapVault update on destination [%s] using source [%s] failed!	Snap Creator was unable to start SnapVault update. Log in to the storage controller and run <code>snapvault status</code> command and ensure that the SnapVault relationship for the given controller name exists. If a different name is used, then you must configure the <code>SECONDARY_INTERFACES</code> parameter to tell Snap Creator what maps to the storage controller.
scf-00021	SnapMirror transfer error detected - [%s], Exiting!	Check the error and storage controller settings for SnapMirror.
scf-00022	SnapMirror update on source [%s] failed to complete in [%s] minutes, Exiting!	The SnapMirror update took longer than the configured wait time. You can adjust the wait time by increasing the value for <code>NTAP_SNAPMIRROR_WAIT</code> in the configuration file.
scf-00023	SnapVault update on source [%s] failed to complete in [%s] minutes, Exiting!	The SnapVault update took longer than the configured wait time. You can adjust the wait time by increasing the value for <code>NTAP_SNAPVAULT_WAIT</code> in the configuration file.
scf-00024	SnapVault transfer Error detected - [%s], Exiting!	Check the error and storage controller settings for SnapVault.
scf-00025	Post restore handling of plug-in [%s] failed with error [%s] and exit code [%s]	Application post restore operation failed due to an application error. Check the logs and application settings.
scf-00026	Restore cleanup handling of plug-in [%s] failed with error [%s] and exit code [%s]	Application restore cleanup operation failed due to an application error. Check the logs and application settings.

Error code	Error message	Description/resolution
scf-00027	Pre restore handling of plug-in [%s] failed with error [%s] and exit code [%s]	Application pre restore operation failed due to an application error. Check the logs and application settings.
scf-00028	Auto Discovery for plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	Application discovery failed due to an application error. Check the logs and application settings. In addition, automatic discovery can be disabled by setting <code>APP_AUTO_DISCOVERY=N</code> and commenting out <code>VALIDATE_VOLUMES</code> .
scf-00029	Auto Discovery for plug-in [%s] failed because environment is empty, Exiting!	The application plug-in is not supported to use automatic discovery. Disable automatic discovery by setting <code>APP_AUTO_DISCOVERY=N</code> .
scf-00030	File system quiesce for plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	File system quiesce failed due to file system error. Check the logs and file system settings. To ignore errors and proceed with the backup, you can set <code>APP_IGNORE_ERROR=Y</code> .
scf-00031	File system quiesce for plug-in [%s] encountered errors, exit code [%s], proceeding with backup!	File system quiesce failed due to file system error. However, <code>APP_IGNORE_ERROR=Y</code> ; Snap Creator will proceed with the backup. Check logs and file system settings.
scf-00032	Application unquiesce failed due to application error. To ignore application errors and to proceed with backup, you can set <code>APP_IGNORE_ERROR = Y</code>	Check logs and application settings.

Error code	Error message	Description/resolution
scf-00033	Application unquiesce for plug-in [%s] failed with exit code [%s], proceeding with backup!	Application unquiesce failed due to application error. However, APP_IGNORE_ERROR=Y; Snap Creator will proceed with the backup. Check logs and application settings.
scf-00034	LUN clone create of [%s] from [%s] on [%s]:[%s] failed, Exiting!	The LUN clone creation failed. Check the error, you might have a Manage ONTAP Solution error which might reveal the cause of the problem.
scf-00035	Inventory of LUNs on [%s] failed, Exiting!	The LUN list create failed. Check error, you might have a Manage ONTAP Solution error which might reveal the cause of the problem.
scf-00036	Application quiesce for plug-in [%s] failed, no exit code returned from plug-in, Exiting!	Application quiesce finished with no exit code. Check the logs and application settings.
scf-00037	Application quiesce for plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	Application quiesce failed due to application error. Check logs and application settings. To ignore application errors and proceed with backup, you can set APP_IGNORE_ERROR=Y.
scf-00038	Application quiesce for plug-in [%s] failed with exit code [%s], continuing with backup.	Application quiesce failed due to application error. However, APP_IGNORE_ERROR=Y; Snap Creator will proceed with the backup. Check logs and application settings.
scf-00039	The controller [%s] specified did not match any controllers specified in the configuration. Check NTAP_USERS parameter in the configuration file.	Check NTAP_USERS and make sure that the storage controller is defined in the configuration file.

Error code	Error message	Description/resolution
scf-00040	The volume [%s] specified did not match any storage system or volume specified in the configuration. Check VOLUMES parameter in the configuration file.	Check the VOLUMES setting in the configuration file and ensure that the correct controller: volumes are configured.
scf-00041	Clustered Data ONTAP detected but CMODE_CLUSTER_NAME is not configured correctly. Check the configuration parameter, Exiting!	The parameter CMODE_CLUSTER_NAME is required and used for AutoSupport and SnapMirror. Define this correctly in the configuration file.
scf-00042	Clustered Data ONTAP detected, but CMODE_CLUSTER_USERS is not configured correctly. Check the configuration parameter, Exiting!	The parameters CMODE_CLUSTER_NAME and CMODE_CLUSTER_USERS are required and used for AutoSupport and SnapMirror. Define these correctly in configuration file.
scf-00043	SnapVault is not supported in Clustered Data ONTAP, set NTAP_SNAPVAULT_UPDATE to N in configuration.	Check configuration and change parameter. Clustered Data ONTAP does not support SnapVault.
scf-00044	The META_DATA_VOLUME parameter is defined, but storage system:volume specified does not match what is configured in VOLUMES parameter. Check the configuration.	This happens if the META_DATA_VOLUME is not specified in VOLUMES. Add to metadata volume to VOLUMES.
scf-00045	The META_DATA_VOLUME parameter is defined but it cannot be the only volume specified in VOLUMES parameter. The metadata volume must be a separate volume.	This happens if the volume specified in META_DATA_VOLUME is the only volume present in VOLUMES. There should be other volumes also. Do not use META_DATA_VOLUME for normal Snapshot operation.

Error code	Error message	Description/resolution
scf-00046	IBM N series Management Console supports only timestamp Snapshot copies. Set SNAP_TIMESTAMP_ONLY=Y	Update the configuration file and set the SNAP_TIMESTAMP_ONLY option to Y.
scf-00047	Incompatible settings have been selected. The NTAP_SNAPVAULT_UPDATE and NTAP_SNAPVAULT_SNAPSHOT options both cannot be enabled	Edit the configuration file and disable one of the two options.
scf-00048	Mount handling of plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	Application mount failed due to an application error. Check the logs and application settings.
scf-00049	Umount handling of plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	Application umount failed due to an application error. Check the logs and application settings.
scf-00050	Custom action is supported only for application plug-ins	The APP_NAME parameter was not set in the configuration file. This determines which plug-in to use. The custom action is only supported with an application plug-in.
scf-00051	IBM N series Management Console dataset creation failed for [%s] with exit code [%s], Exiting!	Check the debug error message. There could be a problem communicating with the OnCommand Unified Manager server.
scf-00052	Restore handling of plug-in [%s] failed with error [%s] exit code [%s], Exiting!	Restore failed due to an application error. Check the logs and application settings.
scf-00053	File system unquiesce for plug-in [%s] failed with error [%s] and exit code [%s], Exiting!	File system unquiesce failed due to file system error. However, APP_IGNORE_ERROR=Y; Snap Creator will proceed with the backup. Check logs and file system settings.

Error code	Error message	Description/resolution
scf-00054	File system unquiesce for plug-in [%s] encountered errors, exit code [%s], proceeding with backup!	File system unquiesce failed due to file system error. However, APP_IGNORE_ERROR=Y; Snap Creator will proceed with the backup. Check logs and file system settings.
scf-00055	IBM N series Management Console driven backup [%s] of dataset [%s] with policy [%s] on storage controller [%s]	
scf-00056	Creating IBM N series Management Console driven backup [%s] of dataset [%s] with policy [%s] on storage controller [%s] finished successfully	
scf-00057	Creating IBM N series Management Console driven backup [%s] of dataset [%s] with policy [%s] on storage controller [%s] failed with error [%s]	Check the configuration parameters NTAP_PM_UPDATE and NTAP_DFM_DATA_SET.
scf-00058	Update configuration with application discovered value failed for [%s], Exiting!	Could not update the file. This is usually permissions problem or failed to parse the values returned from application. Check the permissions of the user running Snap Creator and ensure that the permissions are correct.
scf-00059	[%s] dump for plug-in [%s] failed with exit code [%s], Exiting!	The scdump action failed due to an application error. Check the logs and application settings.
scf-00060	Invalid DTO: [%s]	A required field in the DTO is not set or is invalid. This caused a validation error when processing the DTO. Correct the issue and resend the DTO.

Error code	Error message	Description/resolution
scf-00061	Archive log deletion failed with error [%s], Exiting!	Snap Creator could not delete the archive logs for a given application. Check the permissions for the Snap Creator user, this could be the Snap Creator Server or Snap Creator Agent depending on the configuration.
scf-00062	Authentication Failed!	Authentication failed, user does not have permission to perform the operation.
scf-00063	Discovery for [%s] failed with return code [%s] and message [%s]	Application discovery using VALIDATE_VOLUMES=DATA failed due to an application error. Check the logs and application settings.
scf-00064	Discovery discovered no storage objects	Application discovery using VALIDATE_VOLUMES=DATA failed. Snap Creator was unable to discover any data volumes residing on the storage system. To disable automatic discovery, comment out VALIDATE_VOLUMES.
scf-00065	Volume [%s] on [%s] is not included in the configuration file	Application discovery detected that some volumes are missing. Check for the missing volumes and add them to VOLUMES parameter so they can be included in the backup.
scf-00066	Agent validation failed for [%s] with error [%s]	Configured agent is not reachable. This might be because agent is down or local firewall issue. Check the configuration parameter SC_AGENT.

Error code	Error message	Description/resolution
scf-00067	Failed to list external Snapshot copy for [%s] with name pattern [%s]	Snap Creator could not find external Snapshot copy based on regex pattern <code>NTAP_EXTERNAL_SNAPSHOT_REGEX</code> . Log on to the controller and match the <code>snapshot list</code> output with regex pattern.
scf-00068	File system pre_restore for plug-in [%s] failed with exit code [%s], Exiting!	File system pre-restore failed due to file system error. Check the logs and file system settings.
scf-00069	File system pre_restore for plug-in [%s] encountered errors exit code [%s], proceeding with backup!	File system pre-restore failed due to file system error. However, <code>APP_IGNORE_ERROR=y</code> ; Snap Creator will proceed with other operations. Check logs and file system settings.
scf-00070	File system post_restore for plug-in [%s] failed with exit code [%s], Exiting!	File system post restore failed due to file system error. Check the logs and file system settings.
scf-00071	File system post_restore for plug-in [%s] encountered errors, exit code [%s], proceeding with backup!	File system post restore failed due to file system error. However, <code>APP_IGNORE_ERROR=y</code> ; Snap Creator will proceed with other operations. Check the logs and file system settings.
scf-00072	Policy [%s] is not a defined Snapshot copy retention policy in the configuration, Exiting!	The policy you are using is not valid. Check the configuration file and configure <code>NTAP_SNAPSHOT_RETENTIONS</code> properly.

Snap Creator Agent error messages

The following table lists the Snap Creator Agent error messages.

Error code	Description/Resolution
agt-00001	The Snap Creator Agent or some other process is running on the port specified. Try a different port.
agt-00003	The parameters given were not correct to start the Snap Creator Agent. Check the required parameters.
agt-00004	The SC_AGENT configuration parameter must be defined when using a remote agent.
agt-00005	You are not allowed to perform back to back quiesce operations and one operation is already running. Wait or run unquiesce.
agt-00006	The watchdog process is unable to spawn. The system most likely has reached the maximum number of processes. Disable the watchdog in the configuration or check the operating system settings.
agt-00008	The quiesce and unquiesce operation did not complete and backup is only crash consistent. Check the logs. This can happen if the quiesce operation takes too long and you are using a watchdog. The watchdog process performs a forced unquiesce after x seconds as defined in the configuration.
agt-00009	Pre and Post commands must be allowed in the agent.conf on the agent side. Update the agent.conf and allow necessary commands.
agt-00010	The agent could not read its configuration file. Check the permissions on the agent.conf file.
agt-00011	A command was sent to the agent but is not allowed. Update the agent.conf to allow the command.
agt-00012	This error occurs while loading a plug-in. Check the plug-in and APP_NAME setting.

Error code	Description/Resolution
agt-00013	This error occurs while running the setENV method inside plug-in. Check the plug-in and ensure the syntax is correct.

Repository error messages

The following table lists the Repository error messages.

Error code	Error message	Description/resolution
REPO-01001	Global configuration does not exist	Check if the <code>global.conf</code> file exists in the <code>configs</code> folder.
REPO-01002	Global configuration already exists	The <code>global.conf</code> file already exists in the <code>configs</code> folder. Either delete the global configuration file first or update the existing file.
REPO-01103	Creating global configuration failed with error [%s]	Failed to create the <code>global.conf</code> file in the <code>configs</code> folder. Check the permissions of the user running Snap Creator against directory.
REPO-01203	Updating global configuration failed with error [%s]	Failed to update the <code>global.conf</code> file in the <code>configs</code> folder. Check the permissions of user running Snap Creator against directory.
REPO-01303	Removing global configuration failed with error [%s]	Failed to remove <code>global.conf</code> file in the <code>configs</code> folder. Check if the file is present in <code>configs</code> folder or check permissions of user running Snap Creator against directory
REPO-01403	Exporting global configuration failed with error [%s]	Failed to read <code>global.conf</code> file in the <code>configs</code> folder. Check if your global configuration file is deleted.

Error code	Error message	Description/resolution
REPO-01503	Importing global configuration [%s] failed with error [%s]	Failed to update the <code>global.conf</code> file in the <code>configs</code> folder. Check permissions of user running Snap Creator against directory.
REPO-01603	Retrieving global configuration failed with error [%s]	Failed to read <code>global.conf</code> file in the <code>configs</code> folder. Check if your global configuration file is deleted.
REPO-02002	Profile [%s] already exists, use a different name.	Profile with same name already exists. If the profile is not visible, then the user does not have permission on this profile.
REPO-02003	Profile [%s] does not exist	Check if your profile is renamed or deleted. Also, the user might not have permission on this profile.
REPO-02103	Creating global profile configuration [%s] failed with error [%s]	Failed to create <code>global.conf</code> file in the profile. Check permissions of user running Snap Creator against directory.
REPO-02106	Creating profile configuration [%s] failed with error [%s]	Failed to create profile in the <code>configs</code> folder. Check permissions of user running Snap Creator against directory.
REPO-02203	Updating profile configuration [%s] failed with error [%s]	Failed to update the profile in the <code>configs</code> folder. Check permissions of user running Snap Creator against directory.
REPO-02213	Renaming profile [%s] to [%s] failed with error [%s]	Failed to rename profile in the <code>configs</code> folder. Check permissions of user running Snap Creator against directory or check if your profile is already renamed or deleted.
REPO-02303	Removing profile configuration [%s] failed	

Error code	Error message	Description/resolution
REPO-02403	Exporting profile configuration [%s] failed with error [%s]	
REPO-02503	Importing profile configuration [%s] failed with error [%s]	
REPO-02603	Retrieving global profile failed with error [%s]	
REPO-02606	Retrieving profile [%s] failed with error [%s]	
REPO-02703	Listing profiles failed with error [%s]	Listing profiles failed. Check the <code>configs</code> folder path.
REPO-03002	Configuration [%s] already exists for profile [%s]	Configuration file with same name already exists for the given profile. Choose a different name.
REPO-03103	Creating configuration [%s] for profile [%s] failed with error [%s]	
REPO-03203	Updating configuration [%s] for profile [%s] failed with error [%s]	
REPO-03212	Renaming configuration [%s] for profile [%s] to [%s] failed	Failed to rename the configuration from profile. Check if your configuration is renamed or deleted and also check permissions of user running Snap Creator against directory.
REPO-03303	Removing configuration [%s] from profile [%s] failed	Failed to delete configuration from profile in the <code>configs</code> folder. Check permissions of user running Snap Creator against directory.
REPO-03403	Exporting configuration [%s] for profile [%s] failed with error [%s]	
REPO-03503	Importing configuration [%s] to profile [%s] failed with error [%s]	
REPO-03603	Retrieving configuration [%s] from profile [%s] failed with error [%s]	

Error code	Error message	Description/resolution
REPO-03703	Listing configurations from profile [%s] failed with error [%s]	
REPO-04003	Reading catalog for profile [%s], configuration [%s] and timestamp [%s] failed with error [%s]	
REPO-04103	Writing catalog for profile [%s], configuration [%s] and timestamp [%s] failed with error [%s]	
REPO-04203	Purging catalog for profile [%s], configuration [%s] and timestamp [%s] failed with error [%s]	
REPO-04303	Inventing catalog for profile [%s] and configuration [%s] failed with error [%s]	
REPO-04304	Configuration [%s] does not exist	
REPO-04309	Adding policy object failed [%s]	Database error; check stack trace for more information.
REPO-04313	Removing policy object failed for policy Id: %s	Database error; check stack trace for more information.
REPO-04315	Updating policy object failed : %s	Database error; check stack trace for more information.
REPO-04316	Failed to list policies	Database error; check stack trace for more information.
REPO-04321	Adding backup type object failed [%s]	Database error; check stack trace for more information.
REPO-04323	Backup type entry does not exist for backup type id: %s	Pass a valid backup type.
REPO-04325	Removing backup type object failed for backup type Id: %s	Database error; check stack trace for more information.
REPO-04327	Updating backup type object failed : %s	Database error; check stack trace for more information.
REPO-04328	Failed to list backup types	Database error; check stack trace for more information.

Error code	Error message	Description/resolution
REPO-04333	Adding scheduler job object failed [%s]	Database error; check stack trace for more information.
REPO-04335	Scheduler job entry does not exist for job id: %s	Pass a valid scheduler job.
REPO-04337	Removing scheduler job object failed for job Id: %s	Database error; check stack trace for more information.
REPO-04339	Updating scheduler job object failed : %s	Database error; check stack trace for more information.
REPO-04340	Failed to list scheduler jobs	Database error; check stack trace for more information.
REPO-04341	Adding policy object failed, policy [%s] with same name already exists	Policy with same name already exists; try with different name.
REPO-04342	Adding backup type object failed, backup type [%s] with same name already exists	Backup type with same name already exists; try with different name.
REPO-04343	Adding scheduler object failed, scheduler [%s] with same task name already exists	
REPO-04344	Failed to update profile [%s]. Profile is empty.	
REPO-04345	Policy Type cannot be null while adding new policy	
REPO-04346	Storage object cannot be null	
REPO-04347	Adding storage object failed, storage [%s] with same name/IP already exists	
REPO-04348	Failed to fetch the storage details. Database Error!	
REPO-04349	Invalid host name. Storage with the host name/IP [%s] does not exist	
REPO-04350	Hostname cannot be null	Invalid host name
REPO-04351	Deleting storage [%s] failed with error [%s]	Failed to delete the storage. Database Error!

Error code	Error message	Description/resolution
REPO-04355	Updating storage [%s] failed with error [%s]	Failed to update the storage. Database Error!
REPO-04356	Cluster object cannot be null	
REPO-04358	Adding storage [%s] failed with error [%s]	
REPO-04359	Updating cluster [%s] failed with error [%s]	
REPO-04360	Adding cluster object failed, cluster [%s] with same name/IP already exists	Cluster with same host name already exists

Storage error messages

The following table lists the Storage error messages.

Error code	Error message	Description/resolution
STORAGE-00001	Date format [%s] is not valid: [%s]	Volume clone is not created by Snap Creator or time stamp appended in clone name is not valid.
STORAGE-00002	Unable to retrieve executor	Failed to create executor for storage. Check the logs for Manage ONTAP Solution errors which might reveal the cause of the problem.
STORAGE-00003	Cannot connect to the host	Host is not reachable. Ensure that the local firewall settings are correct and host is able to ping from the system where Snap Creator Server is installed.
STORAGE-01003	Creating AutoSupport message with event id [%s], category [%s], description [%s], level [%s], hostname [%s] failed with error [%s].	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-01004	For file restore, the source and destination volumes need to be the same volume.	Provide same source and destination volumes.
STORAGE-02003	Creating consistency group Snapshot copy [%s] on volumes [%s] failed with error [%s];	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02006	Committing consistency group Snapshot copy on [%s] with CG Id [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02009	Creating Snapshot copy [%s] on volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02015	Removing Snapshot copy [%s] on volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02021	Restoring Snapshot copy [%s] of volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02025	Restoring file [%s] from Snapshot copy [%s] to [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02028	Creating primary SnapVault Snapshot copy schedule [%s] on volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-02034	Removing primary SnapVault Snapshot copy schedules from volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02038	Creating clone [%s] of volume [%s] based on Snapshot copy [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02041	Cloning file [%s] on volume [%s] to [%s] based on Snapshot copy [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02043	Listing files on path [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02046	Cloning LUN [%s] to [%s] based on Snapshot copy [%s] with space reservation [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02049	Deleting LUN [%s] from volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02052	Listing LUNs failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-02062	Adding NFS export [%s] for host name [%s] with access [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02072	Retrieving SnapMirror status on controller [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02075	Retrieving SnapMirror relationships on controller [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02082	Updating SnapMirror relationship [%s] based on Snapshot copy [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02092	Listing Snapshot copies on volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02102	Renaming Snapshot copy [%s] on volume [%s] to [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02112	Retrieving SnapVault status on controller [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-02115	Retrieving SnapVault relationships on controller [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02122	Updating SnapVault relationship [%s] based on Snapshot copy [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02132	Listing cloned volumes based on volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02142	Deleting volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02152	Listing volumes failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02155	Listing volume [%s] failed with error message [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-02162	Restoring Snapshot copy [%s] of volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-03001	Retrieving Vservers from Clustered ONTAP node [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-05003	Creating IBM N series Management Console dataset [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-05006	Creating IBM N series Management Console driven backup of dataset [%s] on storage controller [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-05009	Retrieving IBM N series Management Console dataset status for dataset [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-05012	Validating IBM N series Management Console dataset [%s] failed with error [%s].	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-05018	Creating OM Event [%s] on [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03002	Mapping igroup [%s] on LUN [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-03005	Making LUN [%s] on volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03008	Creating primary SnapVault Snapshot copy [%s] on volume [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03011	Listing IBM N series Management Console backup copies for dataset [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03014	Deleting IBM N series Management Console backup version ID [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03019	IBM N series Management Console backup start for [%s] ([%s]) failed, Exiting!	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03022	IBM N series Management Console backup progress start for job-id [%s] failed, Exiting!	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03025	Deletion of file on path [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-03030	Discovery of Clustered Data ONTAP nodes on [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03033	Getting system version details of [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03036	Creation of directory on path [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03039	Deletion of directory on path [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03043	Creation of file on path [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03046	IBM N series Management Console dataset modify failed for dataset [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03049	File contents for file [%s] could not be read	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-03052	Options get for option [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03055	Performance counters get for object [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03058	Performance instances get for object [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03061	IBM N series Management Console dataset info for [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03064	System cli command [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03067	Deleting IBM N series Management Console dataset [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03070	Restoring SnapVault relationship [%s] based on Snapshot copy [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-03073	CIFS export for [%s]:[%s] failed!	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03076	Getting the root volume on controller [%s] failed with error [%s]	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03079	Junction path get for volume [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03082	System name get failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03085	NFS service get on controller [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03088	NFS permission check for host [%s] path name [%s] permission [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.
STORAGE-03091	Network interface get on controller [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Error code	Error message	Description/resolution
STORAGE-03094	Qtree list on volume [%s] failed	Check the logs for errors. You most likely have a Manage ONTAP Solution error which might reveal the cause of the problem.

Snap Creator GUI error messages

The following table lists the Snap Creator GUI error messages.

Error code	Description/resolution
gui-00001	Ensure that the encrypted password in the configuration file is correct.
gui-00002	Ensure that you are using the correct Snap Creator executable. Verify that <code>/etc/snapcreatorgui.conf</code> is correct.
gui-00003	Ensure that the logs and corresponding profile folder exist.
gui-00004	Check if Snap Creator <code>home/logs/profilename</code> exists.
gui-00005	Check if the corresponding profile and configuration exists in the <code>configs</code> directory.
gui-00006	Try running <code>snapcreator profile setup</code> , if the <code>snapcreatorgui.conf</code> is lost.
gui-00007	Check if your configuration is renamed or deleted.
gui-00008	Check your user name and password and verify if you have run <code>snapcreator profile setup</code> command.
gui-00009	Check if permissions on file or folder exist.
gui-00010	Check if permissions on file or folder exist.
gui-00011	Choose a different profile or delete the existing one.
gui-00012	Verify if <code>configs</code> directory exists and if have run <code>snapcreator profile setup</code> command.

Error code	Description/resolution
gui-00013	Check the logs for more information.
gui-00014	Close the configuration and open it again.
gui-00015	Check the permissions on file and if they exist.
gui-00017	Check if your vCenter is correct and has a valid datacenter.
gui-00019	Try again, because the datastore might have been deleted during retrieval.
gui-00020	Try again, because the datastore might have been deleted during retrieval.
gui-00021	Try again, verify if your vCenter is correct.
gui-00022	Add datastores to your vCenter.
gui-00023	Try again, verify your vCenter.
gui-00024	The version of vCloud Director you are using is not supported.
gui-00025	Enter correct credentials and try again.
gui-00026	Organizations not found for vCD. Create organizations and retry.
gui-00027	Check your vCenter credentials.
gui-00028	Check the controller details/NTAP_USERS.
gui-00029	Verify the vCloud Director URL.
gui-00030	Check if vDCs exist for the organizations.
gui-00031	Check if vApps exist for the vDCs.

Citrix Xen plug-in error messages

The following table lists the Citrix Xen plug-in error messages.

Error code	Error message	Description/resolution
xen-00001	Failed to create RPC session on host: \$xen_host. Exiting!	This error is seen when the plug-in fails to connect to the Xen host by using a remote procedure call. See the debug logs for more details.

Error code	Error message	Description/resolution
xen-00002	Failed to get host information:	This error is seen when the plug-in fails to get the host list information. See the debug logs for more details.
xen-00003	Failed to get host instance with address	This error is seen when the plug-in fails to get the host instance by using the address. See the debug logs for more details.
xen-00004	Failed to get host record information	This error is seen when the plug-in fails to get the host record object. See the debug logs for more details.
xen-00005	Failed to get virtual machine reference by name. Virtual machine (vm_name) does not exist.	This error is seen when the plug-in failed to get the virtual machine instance from vmname or the virtual machine does not exist with the given name. See the debug logs for more details.
xen-00006	Multiple virtual machines with same name (\$vm_name) exist. Virtual machine name should be unique.	This error is seen when there are duplicate virtual machine names. See the debug logs for more details.
xen-00007	Failed to get the virtual machine record information of virtual machine (\$vm_name)	This error is seen when the plug-in failed to get the virtual machine record object. See the debug logs for more details.
xen-00008	virtual machine validation failed on host	This error is seen when there is more than one virtual machine with the same name or the virtual machine with given name does not exist. See the debug logs for more details.
xen-00009	Failed to get virtual machine reference by uuid of virtual machine (\$vm_record->{name_label}) with uuid (\$vm_record->{uuid})	This error is seen when the plug-in fails to get the virtual machine instance by using uuid. See the debug logs for more details.
xen-000010	XEN virtual machine consistent Snapshot copy creation failed for	This error is seen when the plug-in fails to create a virtual machine consistent Snapshot copy. See the debug logs for more details.
xen-000011	Failed to create metadata of virtual machine (\$vm_name) Exiting!	This error is seen when the plug-in fails to execute the <code>vm-export</code> command. One problem might be that the metadata path does not exist. See the debug logs for more details.

Error code	Error message	Description/resolution
xen-000012	Failed to open metadata file handle with path:	This error is seen when the plug-in fails to open the file handle for the metadata file. One problem might be that the metadata path does not exist. See the debug logs for more details.
xen-000013	Failed to get XEN Server IQN information exiting!	This error is seen when the plug-in fails to get the host IQN information. See the debug logs for more details.
xen-000014	Failed to get the VBD information of virtual machine (\$vm_name)	This error is seen when the plug-in fails to get the VBD information of the virtual machine. See the debug logs for more details.
xen-000015	Failed to get the VDI information of VBD (\$vbd_uuid) from virtual machine (\$vm_name)	This error is seen when the plug-in fails to get the VDI information of the virtual machine. See the debug logs for more details.
xen-000016	Failed to get the VDI uuid/ location of VBD (\$vbd_uuid) from virtual machine (\$vm_name)	This error is seen when the plug-in fails to get the uuid of VDI. The disk might be deleted or pointing to a null reference. See the debug logs for more details.
xen-000017	Failed to get the Storage Repository instance	This error is seen when the plug-in fails to get the Storage Repository instance. See the debug logs for more details.
xen-000018	Failed to get the Storage Repository Type	This error is seen when the plug-in fails to get the Storage Repository type (NFS/iSCSI/FC). See the debug logs for more details.
xen-000019	Failed to get SR PBD information	This error is seen when the plug-in fails to get the Storage Repository PBD information. See the debug logs for more details.
xen-000020	Failed to get SR device configuration	This error is seen when the plug-in fails to get the Storage Repository device configuration information. See the debug logs for more details.
xen-000021	Failed to find the path to the LUN mapped to igroup	This error is seen when the plug-in fails to get igroup information of the attached LUN. See the debug logs for more details.
xen-000022		This error is seen when the plug-in fails to get the LUN path of the attached LUN. See the debug logs for more details.

Error code	Error message	Description/resolution
xen-000023	Failed to get SR information of virtual machine(\$vm_name)	This error is seen when the plug-in fails to get the Storage Repository information of the disks attached to the virtual machine. The disk might be deleted or pointing to a null reference. See the debug logs for more details.
xen-000024	Failed to get the PBD record of VDI	This error is seen when the plug-in fails to get the PBD record of the VDI. See the debug logs for more details.
xen-000025	Backup failed for virtual machine (\$vm_name). Nothing to backup, at least one NFS disk should be attached to virtual machine	This error is seen when the plug-in fails to get the Storage Repository object of the VDI. The disk might be deleted or pointing to a null reference. See the debug logs for more details.
xen-000026	Failed to get the SM configuration information of VDI (\$vm_VDI_location)	This error is seen when the plug-in fails to get the SM configuration information of the VDI disk. The disk might be deleted or pointing to a null reference. See the debug logs for more details.
xen-000027	Getting Snapshot copy list info failed for virtual machine (\$vm_name)	This error is seen when the plug-in fails to get the virtual machine Snapshot copy list. See the debug logs for more details.
xen-000028	Failed to get VDI information of the Snapshot copy	This error is seen when the plug-in fails to get the VDI disk information of the Snapshot copy. See the debug logs for more details.
xen-000029	Snapshot copy name is not defined (use --snap_name <snapshot name>)!	This error is seen when the restore is started without giving the Snapshot copy name. See the debug logs for more details.
xen-000030	Metadata file \$vm_metadatapath does not exist for virtual machine (\$vm_name)	This error is seen when the plug-in fails to open the metadata file. See the debug logs for more details.
xen-000031	Not a valid Snapshot copy. Not able to find \$vdi_path.vhd in the Snapshot copy	This error is seen when the plug-in fails to copy the VDI file from the Snapshot copy. This might be because snapshot was created before creating the VDI. See the debug logs for more details.
xen-000032	Metadata file and Snapshot copy information is not matching	The Snapshot copy name might have been changed manually. See the debug logs for more details.

Error code	Error message	Description/resolution
xen-000033	Failed to power off the virtual machine	This error is seen when the plug-in fails to switch the virtual machine off during the restore operation. See the debug logs for more details.
xen-000034	Failed to delete the virtual machine (\$vm_name)	This error is seen when the plug-in fails to delete the virtual machine during the restore operation. See the debug logs for more details.
xen-000035	Failed to copy VDI file	This error is seen when the plug-in fails to copy the VDI files from Snapshot copy during the restore operation. See the debug logs for more details.
xen-000036	virtual machine metadata import failed	This error is seen when the plug-in fails to import the virtual machine metadata file during a restore operation. See the debug logs for more details.
xen-000037	Failed to get the virtual machine instance after restore	This error is seen when the plug-in fails to get the virtual machine instance after the restore operation. See the debug logs for more details.
xen-000038	Failed to restore consistency Snapshot \$snapshot_name for \$vm_name	This error is seen when the plug-in fails to restore the consistency Snapshot copy. See the debug logs for more details.
xen-000039	Failed to power on the virtual machine (\$vm_name)	This error is seen when the plug-in fails to power on the virtual machine after the restore operation. You must manually power on. See the debug logs for more details.
xen-000040	Failed to get the VBD record	
xen-000041	Failed to get pool information for host:	
xen-000042	Failed to get default SR information for host:	
xen-000043	Failed to set default SR for host:	
xen-000044	Failed to find volume for remote path \$vol_path, remote host \$server_name	

Error code	Error message	Description/resolution
xen-000045	Failed to generate mapping between junction path and volume for the Vserver (\$controller)	
xen-000046	Failed to generate mapping between export path and volume for the storage controller(\$controller)	
xen-000047	Failed to find information of volumes for storage controller(\$controller). Reason: \$reason	
xen-000048	Failed to find NFS export policies for storage controller(\$controller). Reason: \$reason	
xen-000049	Failed to get the VBD UUID of virtual machine (\$vm_name)	
xen-000049	Failed to get the type of VBD (\$vbd_uuid) of virtual machine (\$vm_name)	

DB2 plug-in error messages

The following table lists the DB2 plug-in error messages.

Error code	Error message	Description/resolution
db2-00001	Quiescing database \$db failed with message\n[\$msg]	Quiesce failed for the named database. Check the error message and try running the command manually.
db2-00002	Quiescing databases failed	Quiesce of databases failed. Check the log.
db2-00003	Unquiescing database \$db failed with message\n[\$msg]	Unquiesce failed for the named database. Check the error message and try running the command manually.
db2-00004	Unquiescing databases failed	Unquiesce of databases failed. Check the log.

Error code	Error message	Description/resolution
db2-00005	Retrieving database path used for database \$db failed	Discovery of database failed; could not find path. Check the path settings.
db2-00006	Retrieving database path used for database \$db failed	
db2-00007	Retrieving table spaces for database \$db failed	Discovery could not retrieve table spaces. Check the database error and try running manually.
db2-00008	Retrieving table space containers for database \$db failed	Discovery could not retrieve table space containers. Check the database error and try running manually.
db2-00009	Retrieving database configuration for database \$db failed	Discovery could not retrieve database configuration. Check the database error and try running manually.
db2-00010	Discovering databases failed	Discovery failed. Check the log.
db2-00011	Collection of operating system information failed - \$@	SCDUMP failed; could not collect OS information. Check the and make sure it is in PATH.
db2-00012	Collection of operating system information failed - \$@	
db2-00013	Collection of SnapDrive information failed - \$@	SCDUMP failed; could not collect the SnapDrive information. Check the command and make sure that it is in PATH.
db2-00014	Collecting DB2 information for database \$db failed with message\n[\$msg]	SCDUMP failed, could not collect the database information. Check the database error and try running manually.
SQL1550N	The database is already in a I/O suspend state.	Check that the database is in a consistent state.
SQL1551N	The database is already in a I/O suspend state.	Check that the database is in a consistent state.

IBM Domino plug-in error messages

The following table lists the IBM Domino plug-in error messages.

Error code	Error message	Description/resolution
ltd-00001	Domino plug-in cannot work with SNAP_TIMESTAMP_ONLY = N. SNAP_TIMESTAMP_ONLY should be set to Y.	For Domino plug-in to work SNAP_TIMESTAMP_ONLY should always be set to Y in the configuration file. This error is displayed if SNAP_TIMESTAMP_ONLY is set to N.
ltd-00002	Quiescing databases finished with errors	Domino plug-in was unable to quiesce all the databases successfully. Check the logs to find the exact reason for the error or run Snap Creator in debug mode to find the error.
ltd-00003	Unquiescing databases finished with errors	Domino plug-in was unable to unquiesce all the databases successfully. Check the logs to find the exact reason for the error or run Snap Creator in debug mode to find the error.
ltd-00004	Discovering databases failed	Application discovery failed due to an application error. Check the configuration and application settings. You can disable automatic discovery by setting APP_AUTO_DISCOVERY=N and commenting out VALIDATE_VOLUMES.
ltd-00005	Collection of operating system information failed - \$@	The scdump action failed due to an error while collecting the operating system information. Check the logs and try running the command manually by hand.
ltd-00006	Collection of SnapDrive information failed - \$@	The scdump action failed due to an error while collecting SnapDrive information. Check the logs and try running the command manually by hand.
ltd-00008	Restoring databases finished with errors	Domino plug-in was unable to restore all the databases successfully. Check the logs to find the exact reason for the error or run Snap Creator in debug mode to find the error.

Error code	Error message	Description/resolution
ltd-00009	Domino plug-in cannot be run as root	Reasons could be: <ul style="list-style-type: none"> • Domino plug-in is not supported on this platform. • Prerequisites for the Domino plug-in to run are not satisfied. Check documentation (Domino plug-in setup).
ltd-00010	Errors encountered while opening DBs:	

MySQL plug-in error messages

The following table lists the MySQL plug-in error messages.

Error code	Error message	Description/resolution
mys-00001	Database connection does not exist	A connection to database cannot be established. Try telnet to port 3306, this could be a local firewall or network issue.
mys-00002	Database connection problem for \$db detected	A connection to database cannot be established. Try telnet to port 3306, this could be a local firewall or network issue.
mys-00003	Quiescing databases finished with errors	Quiesce failed; check the log.
mys-00004	Database connection does not exist	A connection to database cannot be established. Try telnet to port 3306, this could be local firewall or network issue.
mys-00005	Database connection problem for \$db detected	
mys-00006	Unquiescing databases finished with errors	Unquiesce failed; check the log.
mys-00007	SQL command '\$query' did not return any lines	The sql query did not return output, check for additional errors.
mys-00008	Discovering databases finished with errors	Discovery failed; check the log.
mys-00009	Collection of operating system information failed - \$@	SCDUMP failed, could not collect operating system information. Check the error and ensure that the operating system command is specified in the path.

Error code	Error message	Description/resolution
mys-00010	Collection of operating system information failed - \$@	SCDUMP failed, could not collect SnapDrive information. Check the error and ensure that the SnapDrive command is specified in the path.
mys-00011	Collection of SnapDrive information failed - \$@	

Oracle plug-in error messages

The following table lists the Oracle plug-in error messages.

Error code	Error message	Description/resolution
ora-00001	Verifying correct version of database \$db failed	Verification failed, check the ORA error and re-run sqlplus manually.
ora-00002	Database \$db is running Oracle \$verNum, only 10g or later are supported!	Oracle 8 and 9 are not supported by Snap Creator.
ora-00003	Verifying RAC status for database \$db failed	RAC check failed, check the ORA error and re-run sqlplus manually.
ora-00004	Verifying archive log mode of database \$db failed	Archive log mode check failed, check the ORA error and re-run sqlplus manually.
ora-00005	Database \$db is not configured in Archive Log Mode	Archive log mode must be set. Configure the db in archive log mode and restart backup.
ora-00006	Creating a backup control file for \$db to \$cntlFile failed	Check permissions of the directory where backup control file is being created.
ora-00007	Archive Log only backup for database \$db failed	The archive log only mode was selected and failed. The oracle plug-in will do an archive log current. Check the ORA error and try running manually.
ora-00008	Starting hot backup mode for database \$db failed	The hot backup mode begin sqlplus command failed. Check the ORA error and re-run sqlplus manually.
ora-00009	Quiescing databases finished with errors	Quiesce completed but with errors; check the logs.
ora-00010	Ending hot backup mode for database \$db failed	The hot backup mode end sqlplus command failed. Check the ORA error and re-run sqlplus manually.

Error code	Error message	Description/resolution
ora-00011	Creating a backup control file for \$db to \$cntlFile failed	
ora-00012	Unquiescing databases finished with errors	Unquiesce completed but with errors; check the logs.
ora-00013	Retrieving database objects of database \$db failed	Discovery is enabled but cannot locate data files and archive logs. Check the ORA error and re-run sqlplus manually.
ora-00014	Discovering databases failed	Database discovery failed, check the log.
ora-00015	Collection of operating system information failed - \$@	SCDUMP failed and unable to collect operating system information. Check the command that was run and try running manually.
ora-00017	Collection of operating system information failed - \$@	SCDUMP failed and unable to collect SnapDrive information. Check the path to SnapDrive command and permissions.
ora-00018	Collecting Oracle information for database \$db failed	SCDUMP failed and unable to collect Oracle information. Check the ORA error and re-run sqlplus manually.
ora-00019	No SQLPLUS_CMD defined	The SQLPLUS_CMD is a required oracle plug-in config parameter.
ora-00020	Oracle SQL*Plus command [\$sqlplus] failed with return code [%s]	The sqlplus command failed check error.
ora-00021	Offline backup for \$db is not supported with the ARCHIVE_LOG_ONLY option.	Set ARCHIVE_LOG_ONLY=N in the configuration file.

Red Hat KVM plug-in error messages

The following table lists the Red Hat KVMJ plug-in error messages.

Error code	Error message	Description/resolution
kvm-00001	Collecting virtual machine information failed	This error is seen when the plug-in fails to collect virtual machine information. See the debug logs for more details.

Error code	Error message	Description/resolution
kvm-00002	Exiting as no VMs detected	This error is seen when the <code>KVM_VM_MAPPING_LIST</code> parameter in the configuration file is not properly defined or no virtual machines are present in the KVM Hypervisor. To overcome this issue, you must set <code>APP_AUTO_DISCOVERY</code> to 1.
kvm-00003	Quiescing operation failed in <code>\$config_h{'APP_NAME'}</code> plug-in	This error is seen when the quiescing function of the KVM plug-in fails. See the debug logs for more details.
kvm-00004	Unquiescing operation failed in <code>\$config_h{'APP_NAME'}</code> plug-in	This error is seen when the unquiescing function of the KVM plug-in fails. See the debug logs for more details.
kvm-00005	Collection of operating system information failed - <code>\$@</code>	This error is seen when the plug-in fails to collect the hypervisor (OS) information.
kvm-00006	Failed to get the operating system version	This error is seen when the plug-in fails to get the hypervisor (OS) version.
kvm-00007	Failed to get packages version	This error is seen when the plug-in fails to get the <code>libvirt</code> package version of the hypervisor (OS).
kvm-00008	Failing as the mandatory parameter <code>KVM_RESTORE_VM_LIST</code> is not defined in configuration file	This error is seen when the mandatory parameter <code>KVM_RESTORE_VM_LIST</code> is not defined in the configuration file during a restore operation.
kvm-00009	Pre-restore operation failed in <code>\$config_h{'APP_NAME'}</code> plug-in	This error is seen when the prerestore function of the KVM plug-in fails. See the debug logs for more details.
kvm-00010	Post-restore operation failed in <code>\$config_h{'APP_NAME'}</code> plug-in	This error is seen when the post-restore function of the KVM plug-in fails. See the debug logs for more details.
kvm-00011	Cleanup-restore operation failed in <code>\$config_h{'APP_NAME'}</code> plug-in	This error is seen when the cleanup-restore function of the KVM plug-in fails. See the debug logs for more details.
kvm-00012	Failed to change the state of virtual machines	This error is seen when the KVM plug-in fails to change the state of the virtual machines. See the debug logs for more details.

Error code	Error message	Description/resolution
kvm-00013	Failed to get the state of virtual machine(\$vm_name) and could not perform the action(\$action). Snapshot copy of this virtual machine(\$vm_name) could be in inconsistent state.	This error is seen when the KVM plug-in fails to get the state of the virtual machine (vm_name) and could not perform the suspend action. You should not use the Snapshot copy taken during this run for restoring the virtual machine, because it might lead to an inconsistent state. See the debug logs for more details.
kvm-00014	Failed to change the state of virtual machine(\$vm_name) to action(\$action).Snapshot copy of this virtual machine(\$vm_name) could be in inconsistent state.	This error is seen when the KVM plug-in fails to change the state of the virtual machine (vm_name) to the suspend action. You should not use the Snapshot copy taken during this run for restoring the virtual machine, because it might lead to an inconsistent state. See the debug logs for more details.
kvm-00015	Could not find directory(\$vm_config_dir) containing virtual machine configuration XML files.\n KVM_VM_CONFIG_DIR parameter should be defined in the configuration file	This error is seen when the KVM plug-in fails to find the directory containing the virtual machine configuration XML files. See the debug logs for more details.
kvm-00016	Failed to list the contents of the directory(\$vm_config_dir)	This error is seen when the KVM plug-in fails to find the directory contents. See the debug logs for more details.
kvm-00017	No virtual machine configuration XML files are present in the directory(\$vm_config_dir) \n.KVM_VM_CONFIG_DIR parameter should be defined with proper directory path in configuration file	This error is seen when the directory does not contain any virtual machine configuration XML files. See the debug logs for more details.
kvm-00018	Failed to get the LHU kit version. Ensure that the kit is installed properly, else the virtual machines belonging to SAN environment will be skipped.	This error is seen when the KVM plug-in fails to find the LHU kit version. See the debug logs for more details.

Error code	Error message	Description/resolution
kvm-00019	Failed to collect storage controller information using <code>sanlun</code> command	This error is seen when the KVM plug-in fails to run the <code>sanlun</code> command. See the debug logs for more details.
kvm-00020	Failed to get the mapping information between multipath devices and storage controller volumes	This error is seen when the KVM plug-in fails to get the mapping information between multipath devices and storage controller volumes. See the debug logs for more details.
kvm-00021	Failed to get information about NFS volumes, hence all the virtual machines belonging to NAS environment will be skipped.	This error is seen when the KVM plug-in fails to get information about NFS volumes. See the debug logs for more details.
kvm-00022	Failed to get hostname of the storage controller(<code>\$filer</code>)	This error is seen when the KVM plug-in fails to get the host name of the storage controller. See the debug logs for more details.
kvm-00023	DNS lookup failed for machine(<code>\$host</code>)\n. Add entry of the machine(<code>\$host</code>) in DNS or add IP address and hostname in <code>/etc/hosts</code> file	This error is seen when the KVM plug-in fails to get the DNS information of the machine. Either update the DNS or add the IP address and host name in the <code>/etc/hosts</code> file of KVM hypervisor.
kvm-00024	Failed to get the hostname of machine (<code>\$host</code>)	This error is seen when the KVM plug-in fails to get the host name of the machine. See the debug logs for more details.
kvm-00025	No Snap Creator supported virtual machines detected	This error is seen when there are no virtual machines, which belong to the supported Snap Creator KVM configuration. See the debug logs for more details.
kvm-00026	Failed to get the volume list of the storage controllers	This error is seen when the KVM plug-in fails to get the volume list of the storage controllers. See the debug logs for more details.
kvm-00027	Failed to get the state of virtual machine(<code>\$vm_name</code>) and could not perform the action(<code>\$action</code>). Manually perform the action(<code>\$action</code>) on virtual machine(<code>\$vm_name</code>)	This error is seen when the KVM plug-in fails to get the state of the virtual machine and could not perform the resume, destroy, or start action. You have to perform the action manually. See the debug logs for more details.

Error code	Error message	Description/resolution
kvm-00028	Failed to change the state of virtual machine(\$vm_name) to action(\$action). Manually perform the action(\$action) on virtual machine(\$vm_name)	This error is seen when the KVM plug-in fails to change state of the virtual machine to the resume, destroy, or start action. You have to perform the action manually. See the debug logs for more details.
kvm-00029	Failing as the mandatory parameter KVM_RESTORE_VM_LIST is not defined in the configuration file	This error is seen when the mandatory parameter KVM_RESTORE_VM_LIST is not defined in the configuration file during the restore operation.
kvm-00030	Failed to get Manage ONTAP Solution instances of storage controllers	This error is seen when KVM plug-in fails to get Manage ONTAP Solution instances of storage controllers. See the debug logs for more details.
kvm-00031	Backup/Snapshot copy name is missing which is required for restore the operation. Check CLI options	This error is seen when the restore operation is performed through the CLI and the snap_name argument is missing.
kvm-00032	Failed to find virtual machine(\$vm_name) information. Check whether virtual machine name is properly defined in KVM_RESTORE_VM_LIST in configuration file	This error is seen when the KVM plug-in fails to get the virtual machine information listed in the KVM_RESTORE_VM_LIST parameter. See the debug logs for more details.
kvm-00033	Failed to find virtual machine(\$vm_name) mapping information. Check whether any error is encountered during discovery process	This error is seen when the KVM plug-in failed to find storage controller information of the virtual machine. See the debug logs for more details
kvm-00034	Failed to get the login credentials of the storage controller(\$filer) in NTAP_USERS parameter, provide this information in the configuration file.	This error is seen when the KVM plug-in failed to find the login credentials of the storage controller in the configuration file. Add the login credentials in the NTAP_USERS parameter in the configuration file.
kvm-00035	Restore of virtual machine(\$vm_name) failed	This error is seen when the KVM plug-in failed to restore the virtual machine. See the debug logs for more details.

Error code	Error message	Description/resolution
kvm-00036	Snapshot File Restore of \$snap_name on \$filer: \$file_path failed. Details: \$reason	This error is seen when the KVM plug-in fails to perform the file restore operation. See the debug logs and also the storage controller syslog messages for more details.
kvm-00037		This error is seen when the KVM plug-in fails to get Manage ONTAP Solution instances of the storage controller. See the debug logs for more details.
kvm-00038	Failed to get the SnapDrive information - \$@	This error is seen when the KVM plug-in fails to get SnapDrive information. See the debug logs for more details.
kvm-00039	KVM_VM_MAPPING is a required parameter and was not defined. Set this parameter to 'auto:detect:detect' in the configuration file	This error is seen when the required parameter KVM_VM_MAPPING is not defined in the configuration file. Set this parameter to 'auto:detect:detect' and rerun the test.
kvm-00040	Failed to find the file (\$path) in Snapshot copy(\$snap_name). Reason: \$reason	This error is seen during the restore operation when an improper Snapshot copy name is provided or the restore file does not exist in the provided Snapshot copy.
kvm-00041	Failed to find the information of the file (\$path) in Snapshot copy(\$snap_name)	This error is seen during the restore operation when an improper Snapshot copy name is provided or the restore file does not exist in the provided Snapshot copy.
kvm-00042	Restore of virtual machine (\$vm_name) failed due to failure of file validation	This error is seen when the Snapshot copy validation fails during a restore operation. See the debug logs for more details.
kvm-00043		This error indicates that the KVM plug-in will only run on a Linux operating system. Ensure that scServer or scAgent is running on Linux.
kvm-00044	VM configuration XML file (\$conf_xml_file) is not in proper format. Hence, virtual machine (\$vm_name) will be skipped	This error is seen when the virtual machine configuration XML file (file_path) is not in the proper format. Ensure that the correct format is used. See the debug logs for more details.

Error code	Error message	Description/resolution
kvm-00045	Failed to get host name of the storage controller (\$filer). Update NTAP_USERS parameter with host name of the storage controller in the configuration file.	This error is seen when the KVM plug-in was not able to find the host name of the storage controller. Update the NTAP_USERS parameter with the host name of the storage controller in the configuration file.
kvm-00046	Failed to find storage controller or LUN details for device(\$device)	This error is seen when the KVM plug-in was not able to find the storage controller or LUN details for the block device. See the debug logs for more details.
kvm-00047	virtual machines (\$vm_name and \$temp_vm) share the same device. Hence, skipping restore operation for virtual machine(\$vm_name)	This error is seen when more than one virtual machines share the same device. This is not a supported configuration.
kvm-00048	Failed to find system version storage controller (\$filer). Reason: \$reason	This error is seen when ONTAP ZAPI call fails to find out the system version of storage controller.
kvm-00049	Failed to find source file path information of virtual machine \$vm_name	This error is seen when discovery operation fails to find out the source file path information of a VM. Refer the debug logs for more details.
kvm-00050	Source file path information (\$file_path) found out for virtual machine \$virtual machine_name is not proper	This error is seen when source file path information found out during discovery is not in proper format. Refer the debug logs for more details.
kvm-00051	Failed to generate mapping between junction path and volume for the Vserver (\$filer)	This error is seen when discovery operation fails to find out the mapping between junction path and volume of a SVM. Refer the debug logs for more details.
kvm-00052	Failed to generate mapping between export path and volume for the storage controller (\$filer)	This error is seen when discovery operation fails to find out the mapping between export path and volume of a storage controller. Refer the debug logs for more details.
kvm-00053	Failed to find information of volumes for storage controller (\$filer). Reason: \$reason	This error is seen when ONTAP ZAPI call fails to find out the information of volumes for a storage controller.

SAP HANA plug-in error messages

The following table lists the SAP HANA plug-in error messages.

Error code	Error message	Description/Resolution
hdb-00001	Unable to find an accessible HANA node for executing <code>hdbsql</code> commands using the provided configuration parameters. Verify and update HANA settings in the configuration and try again.	Verify that HANA nodes are running and reachable, and the instance number provided is correct.
hdb-00002	Creating database snapshot for [\$sid] failed.	Check if a HANA database snapshot is already created on the database. If already created, delete the HANA database snapshot or run unquiesce operation. If not already created, check the logs for other error messages and details.
hdb-00003	Deleting database snapshot for [\$sid] failed.	Check if a HANA database snapshot is already deleted. If yes, this error can be ignored. If no, check SAP HANA plug-in parameters and make sure that nodes are reachable and instance number provided is correct.
hdb-00004	Connection to [\$hana_node] node with instance [\$instance] failed as the connection was refused.	The HANA node with instance displayed in the message are not reachable. This can be just a warning as the plug-in will attempt to run <code>hdbsql</code> commands on other nodes. Check the logs to see if the operation was successful.
hdb-00005	Database [\$sid] already has a snapshot!	HANA database snapshot already exists on the database. Delete the HANA database snapshot or run unquiesce operation to resolve this issue.
hdb-00006	Unable to resolve hostname [\$hana_node].	The HANA node hostname cannot be resolved. Check your DNS server or etc hosts entries.

Error code	Error message	Description/Resolution
hdb-00007	Invalid username or password. Verify the credentials and try again.	The username and password provided for HANA database is incorrect. Correct the entries in the configuration file and try again.
hdb-00008	Running command [<code>\$hdbsql_cmd</code>] on [<code>\$hana_node</code>] failed.	Plug-in failed to execute <code>hdbsql</code> command on all HANA nodes provided in the configuration. Verify the HANA nodes and instance parameters and make sure at least one HANA node is up and reachable.
hdb-00009	Unable to find HANA [<code>\$info</code>].	The SAP HANA plug-in SCDUMP operation was unable to retrieve a particular information from the HANA databases. Verify the HANA nodes and instance parameters and make sure at least one HANA node is up and reachable.
hdb-00010	Collection of OS information failed.	The collection of OS information failed in the Windows environment; the SAP HANA plug-in is not supported on Windows. Use an SLES operating system instead.
hdb-00011	Collection of OS information failed.	Snap Creator was unable to collect OS information for the SCDUMP operation. Check your agent configuration file and correct the settings.
hdb-00012	Collection of SnapDrive information failed.	The SAP HANA plug-in is only supported in an NFS environment. Your configuration for HANA database has SnapDrive enabled; set <code>SNAPDRIVE=N</code> in the configuration file.
hdb-00013	The HANA_NODES parameter is not set. Check HANA settings in the configuration file.	HANA nodes (HANA_NODES) parameter is required for the SAP HANA plug-in. Set the parameter and try again.
hdb-00014	The HANA_INSTANCE parameter is not set. Check HANA settings in the configuration file.	HANA instance (HANA_INSTANCE) parameter is required for the SAP HANA plug-in. Set the parameter and try again.

Error code	Error message	Description/Resolution
hdb-00015	The HANA_USER_NAME parameter is not set. Check HANA settings in the configuration file.	HANA username(HANA_USER_NAME) parameter is required for the SAP HANA plug-in. Set the parameter and try again.
hdb-00016	The HANA_PASSWORD parameter is not set. Check HANA settings in the configuration file.	HANA password(HANA_PASSWORD) parameter is required for the SAP HANA plug-in. Set the parameter and try again.
hdb-000017	Path to hdbsql, value of parameter HANA_HDBSQL_CMD is invalid!	<p>One of the following has occurred:</p> <ul style="list-style-type: none"> You have not provided the hdbsql path; or, the hdbsql path provided is incorrect. <p>Make sure you have HANA hdbsql client installed on the management host where Snap Creator agent is installed, and provide the correct path of the hdbsql binary in HANA parameters; then, try again.</p>

SnapManager for Microsoft Exchange plug-in error messages

The following table lists the SnapManager for Microsoft Exchange plug-in error messages.

Error code	Error message	Description/resolution
sme-00001	SnapManager for Microsoft Exchange is supported only on Windows operating systems	SnapManager for Microsoft Exchange is only supported on Windows.
sme-00002	Quiescing databases failed	Quiesce failed. Check other error messages and the log.
sme-00003	Collection of operating system information failed - \$@	SCDUMP failed; could not collect the operating system information. Make sure that the operating system command is in path and check the log.
sme-00004	Collection of SnapDrive information failed - \$@	SCDUMP failed; could not collect SnapDrive information. Make sure that the SnapDrive command is in path and check the log.
sme-00005	Command [\$cmd] failed with return code \$result->{exit_code} and message \$result->{stderr}	The PowerShell command failed. Check the error message and try running manually.

SnapManager for Microsoft SQL Server plug-in error messages

The following table lists the SnapManager for Microsoft SQL Server plug-in error messages.

Error code	Error message	Description/resolution
sms-00001	SnapManager for Microsoft SQL Server is supported only on Windows operating systems	SnapManager for Microsoft SQL Server is only supported on Windows.
sms-00002	SnapManager for Microsoft SQL Server backup failed	Quiesce failed. Check other error messages and the log.
sms-00003	Collection of operating system information failed - \$@	SCDUMP failed; could not collect the operating system information. Make sure that the operating system command is in path and check the log.
sms-00004	Collection of SnapDrive information failed - \$@	SCDUMP failed; could not collect SnapDrive information. Make sure that the SnapDrive command is in path and check the log.
sms-00005	Command [\$cmd] failed with return code \$result->{exit_code} and message \$result->{stderr}	The PowerShell command failed. Check the error message and try running manually.

Sybase ASE plug-in error messages

The following table lists the Sybase ASE plug-in error messages.

Error code	Error message	Description/Resolution
syb-00001	SYBASE:QUIESCE: Quiescing database \$db failed, it is already quiesced!	Wait for unquiesce to complete or run a unquiesce manually.
syb-00002	SYBASE:QUIESCE: Could not get the database \$db status, ensure that the database is running!	Could not verify the database. Make sure that the database is running and try running the command manually.
syb-00004	SYBASE:QUIESCE: Quiescing databases failed	Quiesce failed. Check the log.
syb-00005	SYBASE:UNQUIESCE: Unquiescing databases failed	Unquiesce failed. Check the log.

Error code	Error message	Description/Resolution
syb-00006	SYBASE:DISCOVER: Error in running isql. Exiting	Error running <code>isql</code> command. Check additional error information and try running command manually.
syb-00007	SYBASE:DISCOVER: Error in running isql. Exiting	Error running <code>isql</code> command. Check additional error information and try running command manually.
syb-00008	SYBASE:DISCOVER: Failed to resolve file systems	Discovery failed while running <code>isql</code> command. Check additional error information and try running the command manually or send the necessary information back to the framework. Check for additional errors and information in the log.
syb-00009	Collection of operating system information failed - \$@	SCDUMP failed; could not collect operating system information. Make sure that the operating system command is in path and check the log.
syb-00010	Collection of SnapDrive information failed - \$@	SCDUMP failed; could not collect SnapDrive information. Make sure that the SnapDrive command is in path and check the log.
syb-00012	SYBASE:RUN_CMD: Command [\$masked] failed with return code \$result->{exit_code} and message \$result->{stderr}	A Sybase command failed. Check the error and try running manually.
syb-00013	SYBASE:RUN_CMD: \$result->{stdout}\n\$result->{stderr}	Generic error message. Check the error and log.
syb-00013	SYBASE:EXPAND_DB: Error in running isql. Exiting	Generic error message. Check the error and log.

VMware plug-in error messages

The following table lists the VMware plug-in error messages.

Error code	Error message	Description/resolution
vmw-00001	Could not remove [%s] the leftover Snapshot copies for VM [%s]!	A SOAP error (web access) occurred while trying to call RemoveSnapshot() in VMware for a Snapshot copy taken as part of the backup or restore operation. Use Snapshot Manager in the vSphere Infrastructure client to remove any unwanted Snapshot copies.
vmw-00002	Could not create Snapshot copy for VM [%s]!	Calling the CreateSnapshot() function in VMware did not work as expected -- either the virtual machine cannot make a Snapshot copy or a vSphere error occurred. Use the vSphere Infrastructure client to evaluate the Snapshot copy error condition.
vmw-00003	No IP address found for NFS datastore [%s]!	The IP address associated to the NFS datastore could not be translated. This means that based on the storage controllers specified, there is no IP address on any storage controller associated to an NFS export. Verify all the appropriate storage controllers are listed in the NTAP_USERS field of the Snap Creator configuration file.
vmw-00004	\$remoteHost not found in storage controller/Vserver list!	The hostname and IP address associated to the NFS datastore could not be translated. This means that based on the storage controllers specified, there is no IP address on any storage controller associated to an NFS export. Verify if all the appropriate storage controllers are listed in the NTAP_USERS field of the Snap Creator configuration file.
vmw-00005	No disk name found for datastore [%s]!	The VIBE module could not find a disk extent associated to the VMFS datastore, which means that a matching datastore to disk translation did not appear based on the VMware query of the VMFS disk extent list. Verify if the VMFS datastore listed in the backup has disk extents associated to it.

Error code	Error message	Description/resolution
vmw-00006	Could not find identifying LUN on any storage controller/Vserver for VMFS datastore!	Based on a translation of LUN to VMware UUID, a matching LUN was not found. This means that the LUNs on the storage controllers associated to the NTAP_USERS field do not map to this VMFS datastore. Verify if all the appropriate storage controllers are listed in the NTAP_USERS field of the Snap Creator configuration file.
vmw-00007	Data ONTAP API call lun-list-info failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00008	Data ONTAP API call lun-get-serial-number failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00009	Query of datacenter failed:	A SOAP error (web access) occurred while trying to query the list of data center objects in VMware. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00010	Query of datacenter failed!	A general vSphere API error occurred while trying to query the list of data center objects in VMware. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00011	Could not find entity views for datacenter!	A general vSphere API error occurred while trying to query the managed object reference to a given data center object in VMware. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00012	Datastore [%s] not found in any datacenter!	The datastore specified for backup is not associated to the data center in the vCenter server. The VIBE module currently supports one data center per vCenter server. In addition, verify if the datastore name is properly listed in the Snap Creator configuration file.

Error code	Error message	Description/resolution
vmw-00013	\$saName not found in storage controller/Vserver list (private subnets for NFS datastores?)!	The set of Snapshot copy locations queried through the process of collecting VMFS and NFS datastore information found a datastore that does not have an associated Snapshot copy location. Verify that all the storage controllers are listed in the NTAP_USERS field in the Snap Creator configuration file.
vmw-00014	VIBE_TRIM_VSPHERE_NAMES format is wrong (no extra colons, semi-colons or commas allowed per entry)!	The format of the VIBE_TRIM_VSPHERE_NAMES field is incorrect. Review the format in the Snap Creator configuration file for accuracy.
vmw-00015	Query of virtual machine object failed: \$server_fault!	A SOAP error (web access) occurred while trying to query a specific virtual machine object in VMware. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00016	Query of virtual machine object failed!	A general vSphere API error occurred while trying to query a specific virtual machine object in VMware. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00017	Could not get API versions from vCD:	The REST API call /api/versions to the vCloud Director failed. This call should always succeed, which might mean the vCD server specified in the Snap Creator configuration file is not correct. Verify the Snap Creator configuration file or check the vCD logs for more information.
vmw-00018	Could not get login URL in API versions results from vCD:	The REST API call /api/versions to the vCloud Director did not return a proper authentication cookie. This call should always succeed, which might mean the vCD server specified in the Snap Creator configuration file is not correct. Verify the Snap Creator configuration file or check the vCD logs for more information.
vmw-00019	Could not login to vCD:	The REST API call /login to the vCloud Director failed. Verify the proper user name, password and URL for the vCD and review the vCD logs for any RBAC or other error conditions.

Error code	Error message	Description/resolution
vmw-00020	Could not get Organizations:	The REST API call to list all Organizations within vCloud Director failed. Verify the proper user name, password and URL for the vCD and review the vCD logs for any RBAC or other error conditions.
vmw-00021	Could not get vDCs for Organization \$org:	The REST API call to query a specific Organization within vCloud Director failed. Verify the proper user name, password and URL for the vCD and review the vCD logs for any RBAC or other error conditions.
vmw-00022	Could not get vCD vApps:	The REST API call to query the list of vApps associated to a vDC within vCloud Director failed. Verify the proper user name, password and URL for the vCD and review the vCD logs for any RBAC or other error conditions.
vmw-00023	Could not get vCenter data:	The REST API call to collect the vCenter server associated to a given vApp within vCloud Director failed. Verify the proper user name, password and URL for the vCD and review the vCD logs for any RBAC or other error conditions.
vmw-00024	Could not get vCD VMs:	The REST API call to get the specific virtual machines associated to a vApp within vCloud Director failed. Verify the proper user name, password and URL for the vCD and review the vCD logs for any RBAC or other error conditions.
vmw-00025	No IP address for host	The gethostbyname() call for the specified vCenter server in the Snap Creator configuration file could not be translated. Verify if the specified vCenter name can be translated to an IP address, or specify an IP address instead.
vmw-00026	Cannot ping [%s]	The IP address associated to the vCenter server cannot be pinged via ICMP. Verify the IP address is correct, or use the VIBE_NOPING= <input type="checkbox"/> field in the Snap Creator configuration file.
vmw-00027	vCenter server login failed -- invalid login!	The permissions associated to the vCenter user name or password is invalid. Verify the vCenter server access with the vCenter user name and password specified in the Snap Creator configuration file.

Error code	Error message	Description/resolution
vmw-00028	vCenter server login failed -- internal error!	A general login error occurred using the vCenter user name and password in the Snap Creator configuration file. Review the event and access logs in the vSphere infrastructure client for more details.
vmw-00029	vCenter server login failed -- check authentication and firewall settings	An authentication error occurred using the vCenter user name and password in the Snap Creator configuration file. Either the user name or password is incorrect. Review the event and access logs in the vSphere infrastructure client for more details.
vmw-00030	Cannot ping storage controller/Vserver named	The IP address associated to the storage controller cannot be pinged using ICMP. Verify the IP address is correct, or use the VIBE_NOPING=Y field in the Snap Creator configuration file.
vmw-00031		The Data ONTAP API call system-get-info failed. If RBAC is in use, verify that the user has access to the system-get-info API call. In addition, verify if API access is available to the default HTTPS port for Data ONTAP API access.
vmw-00032	Storage controller/Vserver did not have network configuration information!	Execution of the Data ONTAP API call system-cli was unsuccessful, and the 'ifconfig -a' output could not be pulled from the controller. Verify if the network interface and Data ONTAP API network configuration information is available and correct.
vmw-00033	Data ONTAP API inquiry snapshot-list-info on \$volName failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00034	Data ONTAP API inquiry snapshot-list-info on \$volName failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.

Error code	Error message	Description/resolution
vmw-00035	Power off of the virtual machine \$vmName failed: \$server_fault!	A general SOAP error occurred when executing the PowerOffVM() operation in vSphere. Review the vSphere infrastructure client logs for details on why the operation could not be completed.
vmw-00036	Power off of the virtual machine \$vmName failed!	The vSphere PowerOffVM() call was unsuccessful. Review the vSphere infrastructure client logs for details on why the operation could not be completed.
vmw-00037	Problem powering on VM \$vmName: \$server_fault!	A general SOAP error occurred when executing the PowerOnVM() operation in vSphere. Review the vSphere infrastructure client logs for details on why the operation could not be completed.
vmw-00038	Problem powering on VM \$vmName!	The vSphere PowerOnVM() call was unsuccessful. Review the vSphere infrastructure client logs for details on why the operation could not be completed.
vmw-00039	Could not power off vApp	The vCloud power off REST API operation failed. Review the vCD logs for specific reasons on why the operation could not be completed.
vmw-00040	Could not power on vApp	The vCloud power on REST API operation failed. Review the vCD logs for specific reasons on why the operation could not be completed.
vmw-00041	Failure in parsing volume path format of \	The volume path does not consist of <controller_name>:<volume_name>. Review the logs and see where the volume or storage controllers are not being translated properly.
vmw-00042	Data ONTAP API file-list-directory-iter-next failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.

Error code	Error message	Description/resolution
vmw-00043	Data ONTAP API call snapshot-restore-file failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00044	Data ONTAP API file-list-directory-iter-end failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00045	Timer expired on busy Single File SnapRestore, still running (increase VIBE_RESTORE_TIME)!	There are situations where the restore operation on the storage controller takes a very long time, either due to a busy Filesystem or a large amount of data requiring to be restored. In this case, the VIBE_RESTORE_TIME value in the Snap Creator configuration file must be increased to allow for a longer restoration period.
vmw-00046	Data ONTAP API call license-list-info failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00047	Data ONTAP API call volume-clone-create failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.

Error code	Error message	Description/resolution
vmw-00048	Data ONTAP API call lun-create-clone failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00049	Data ONTAP API call volume-offline failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00050	Data ONTAP API call volume-destroy failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00051	Data ONTAP API call lun-destroy failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00052	Data ONTAP API call lun-online failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.

Error code	Error message	Description/resolution
vmw-00053	Data ONTAP API call lun-map-list-info failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00054	Initiators for LUN \$lunName do not exist!	The LUN with the appropriate UUID mapped to an vSphere host does not have any initiator groups associated to the LUN, which means that the datastore might have either been unmapped or removed in the middle of a restore operation. Verify the LUN IDs on the storage controller are unique and that there are no forced mounts of duplicate datastores in the vSphere environment.
vmw-00055	Data ONTAP API call lun-map failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00056	Storage query of host system	Execution of the RefreshStorageSystem() vSphere API call failed due to a general SOAP error (web services). Verify connectivity to the vCenter server and proper vSphere host and cluster configuration within the vSphere environment where the virtual machine restore is taking place.
vmw-00057	Storage query of host system	Execution of the RefreshStorageSystem() vSphere API call failed to the vCenter server. Verify connectivity to the vCenter server and proper vSphere host and cluster configuration within the vSphere environment where the virtual machine restore is taking place.
vmw-00058	Rescan of VMFS file systems on host system. \$restoreHS->summary->config->name. " failed: \$server_fault!"	Execution of the RescanVmfs() vSphere API call failed due to a general SOAP error (web services). Verify connectivity to the vCenter server and proper vSphere host and cluster configuration within the vSphere environment where the virtual machine restore is taking place.

Error code	Error message	Description/resolution
vmw-00059	Rescan of VMFS file systems on host system. \$restoreHS->summary->config->name. "failed!"	Execution of the RescanVmfs() vSphere API call failed to the vCenter server. Verify connectivity to the vCenter server and proper vSphere host and cluster configuration within the vSphere environment where the virtual machine restore is taking place.
vmw-00060	Data ONTAP API call snapshot-create failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00061	Data ONTAP API call snapshot-delete failed:	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00062	vCenter validation of session failed: \$server_fault!	A SOAP error occurred when refreshing the vSphere session to the vCenter server. This is called after a restore operation, primarily for situations where a long restore operation is taking place and the connection to the vCenter server times out. Verify the timeout values in the vCenter server or ensure proper network connectivity to the vCenter server.
vmw-00063	vCenter validation of session failed!	A general error occurred when refreshing the vSphere session to the vCenter server. This is called after a restore operation, primarily for situations where a long restore operation is taking place and the connection to the vCenter server times out. Verify the timeout values in the vCenter server or ensure proper network connectivity to the vCenter server.

Error code	Error message	Description/resolution
vmw-00064	vCenter view validation of session failed: \$server_fault!	A SOAP error occurred when refreshing the session manager Managed Object view of the vSphere session to the vCenter server. This is called after a restore operation, primarily for situations where a long restore operation is taking place and the connection to the vCenter server times out. Verify the timeout values in the vCenter server or ensure proper network connectivity to the vCenter server.
vmw-00065	vCenter view validation of session failed!	A general error occurred when refreshing the session manager Managed Object view of the vSphere session to the vCenter server. This is called after a restore operation, primarily for situations where a long restore operation is taking place and the connection to the vCenter server times out. Verify the timeout values in the vCenter server or ensure proper network connectivity to the vCenter server.
vmw-00066	vCenter new login failed -- invalid login!	Creation of a new vCenter session after a long restore operation has failed. Verify the timeout values in the vCenter server or ensure proper network connectivity to the vCenter server. This should normally not occur unless someone is changing the vCenter configuration and authentication during an active restore operation.
vmw-00067	vCenter new login failed -- internal error!	Creation of a new vCenter session after a long restore operation has failed. Verify the timeout values in the vCenter server or ensure proper network connectivity to the vCenter server. This should normally not occur unless someone is changing the vCenter configuration and authentication during an active restore operation and is even more unique in that the vSphere API call has come back with an undefined error condition.

Error code	Error message	Description/resolution
vmw-00068	vCenter new login failed -- check authentication and firewall settings!	The permissions associated to the vCenter user name and password is invalid. Verify vCenter server access with the vCenter user name and password specified in the Snap Creator configuration file. This would only happen if there is an active restore, a timeout has occurred to the vCenter server and the authentication parameters to the vCenter server for the user have changed.
vmw-00069	Query of host systems failed: \$server_fault!	A SOAP error (web access) occurred while trying to query a specific Host System object in vSphere during a restore operation on an NFS datastore. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00070	Query of host systems failed!	A general error occurred while trying to query a specific Host System object in vSphere during a restore operation on an NFS datastore. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00071	Could not find entity views for HostSystem!	When querying for host systems associated to the vCenter server, no hosts came back as connected to the vCenter server. This is a highly improbable error -- verify connectivity to the vCenter server and proper configuration of host systems through the vSphere infrastructure client.
vmw-00072	No host system with datastore named \$dsName found!	The datastore specified for restore does not show on any host system in vSphere. This is highly unlikely to occur unless the datastore is disconnected in the middle of a restore operation. Verify the connectivity to the vCenter server and proper configuration of host systems through the vSphere infrastructure client.

Error code	Error message	Description/resolution
vmw-00073	Query of host system view failed: \$pserver_fault!	Collection of the entity view of the host system specified for restore where the original VMFS datastore is found could not be executed to the vCenter server. Given the restore host system has already been uncovered, this query should always be successful unless there is a connectivity problem or an vSphere host is put into maintenance mode during a restore operation. Verify the connectivity to the vCenter server and proper configuration of host systems through the vSphere infrastructure client.
vmw-00075	Could not find entity views for Host System!	Query of the entity view on the restore host could not be executed to the vCenter server. Given the restore host system has already been uncovered, this query should always be successful unless there is a connectivity problem or an vSphere host is put into maintenance mode during a restore operation. Verify connectivity to the vCenter server and proper configuration of host systems through the vSphere infrastructure client.
vmw-00076	Could not find new datastore to copy VMs from!	Discovery of the new VMFS datastore that has been cloned, mapped and rescanned to the restore host has failed. This means that despite multiple HBA and VMFS rescans, mapping of the cloned LUN associated to the VMFS datastore and refreshing of the restore host, the new datastore is still not shown. Verify the advanced options settings with the vSphere host, ensure that the resignatured VMFS volumes can be discovered, verify connectivity to the vCenter server and validate proper configuration of host systems through the vSphere infrastructure client.
vmw-00077	vCenter validation of session failed: \$server_fault!	A query of the session manager in the vCenter server object failed due to a SOAP error (web services). Verify that the connection to the vCenter server has not timed out.
vmw-00078	vCenter validation of session failed!	A query of the session manager in the vCenter server object failed. Verify that the connection to the vCenter server has not timed out.

Error code	Error message	Description/resolution
vmw-00079	CopyDatastoreFile() on datastore \$dsName failed:	Data cannot be copied from the VMFS datastore Snapshot copy into the original datastore for the virtual machine. The <msg> output outlines why the VMware API call failed. Verify proper configuration and permissions to the datastore folder through the vSphere infrastructure client.
vmw-00080		A SOAP error (web access) occurred while trying to execute the RevertToCurrentSnapshot() on a virtual machine in vSphere during a restore operation on a VMFS datastore. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00081		A general error occurred while trying to execute the RevertToCurrentSnapshot() on a virtual machine in vSphere during a restore operation on a VMFS datastore. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00082	Could not clear LUN -- LUN/volume clone must be cleared manually!	The LUN or volume clone associated to the restore of a virtual machine on a VMFS datastore could not be taken offline or destroyed. If FlexClone licensing exists on the storage controller, it is the volume clone that cannot be taken offline or destroyed. If a LUN clone was created, then the cloned LUN cannot be taken offline or destroyed. Review the storage controller event messages for errors related to the Data ONTAP API calls.
vmw-00083	Could not destroy temporary Snapshot copies -- might need manual cleanup!	The VIBE restore Snapshot copies created as part of the restore process cannot be removed. The storage controller Snapshot copies on the volume where the datastore was created must be removed manually.
vmw-00084	Restore operation of VM files failed -- reverting to original contents!	The single-file snap restore (SFSR) operation on the storage controller failed. There will generally be another error message in the Snap Creator log displaying exactly why the SFSR operation did not complete. Look for timeout conditions, space availability or vSphere refresh times for more clues as to why the SFSR operation did not complete.

Error code	Error message	Description/resolution
vmw-00085	Restore operation of VM files failed -- confirm contents of the VM directory!	If the first SFSR restore operation on the NFS datastore did not complete, and the second SFSR restoring back to the VIBE restore Snapshot copy also fails, this message appears. Review storage controller and Snap Creator logs for more detailed messages as to why the SFSR operations are not completing.
vmw-00086	Problem reverting to VM Snapshot copy for \$vmName:	A SOAP error (web access) occurred while trying to execute the RevertToCurrentSnapshot() on a virtual machine in vSphere during a restore operation on an NFS datastore. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00087		A general error occurred while trying to execute the RevertToCurrentSnapshot() on a virtual machine in vSphere during a restore operation on an NFS datastore. Review the event logs in the vSphere infrastructure client to remove any unwanted Snapshot copies.
vmw-00088	Could not destroy temporary Snapshot copies -- might need manual cleanup!	The VIBE restore Snapshot copy created as part of the restore process cannot be removed. The storage controller Snapshot copy on the volume where the datastore was created must be removed manually.
vmw-00089	Could not find matching storage controller/Vserver for vCenter/datastore pair!	If the storage does not appear in an internal list based on a vCenter and datastore pair internally to VIBE, then the list was improperly configured based on data collection of existing vSphere and vCloud objects. Review the logs and Snap Creator configuration files and ensure that all the parameters are properly defined and no other errors appear in the Snap Creator log files.
vmw-00090	Restore Snapshot copy \$VIBEconfig_h{'USER_SNAP_NAME'} does not exist on storage controller/Vserver \$saName, volume \$volName!	The Snapshot copy specified with the -- snap_name option does not exist for the volume and storage controller listed. Confirm the spelling and existence of the Snapshot copy being restored.

Error code	Error message	Description/resolution
vmw-00091	Could not query state information on restore Snapshot copy \$VIBEconfig_h{'USER_SN AP_NAME'} !	The Data ONTAP API call snaphost-list-info failed -- see the Snap Creator log for other error messages indicating why the Data ONTAP API call failed.
vmw-00092	Restore Snapshot copy \$VIBEconfig_h{'USER_SN AP_NAME'}. " is in a busy state -- select a different Snapshot copy!	VIBE requires that the Snapshot copy being used for restore purposes on the storage controller not be busy -- it cannot be part of a clone or be busy according to the status on the storage controller. Running backupList on the storage controller and looking at the state of the Snapshot copy in the volume where the datastore is located indicates if the Snapshot copy is busy, and why.
vmw-00093	Restoring of VM(s) on datastore \$i failed!	This is a general failure message. Look for other error messages for specific failure conditions.
vmw-00094	VIBE_VCENTER_USER not defined!	The VIBE_VCENTER_USER field in the Snap Creator configuration file must always be defined. Check the Snap Creator configuration file and make sure that the value is defined and not commented out.
vmw-00095	VIBE_VCENTER_PASSWD not defined!	The VIBE_VCENTER_PASSWD field in the Snap Creator configuration file must always be defined. Check the Snap Creator configuration file and make sure that the value is defined and not commented out.
vmw-00096	VIBE_VCLOUD_USER not defined!	The VIBE_VCLOUD_USER field in the Snap Creator configuration file must always be defined when the VIBE_VCLOUD_NAMES configuration option is being used. Check the Snap Creator configuration file and make sure that the value is defined and not commented out.
vmw-00097	VIBE_VCLOUD_PASSWD not defined!	The VIBE_VCLOUD_PASSWD field in the Snap Creator configuration file must always be defined when the VIBE_VCLOUD_NAMES configuration option is being used. Check the Snap Creator configuration file and make sure that the value is defined and not commented out.

Error code	Error message	Description/resolution
vmw-00098	ACTION not defined!	The action field must be defined. This generally happens through use of the <code>--action</code> option when executing Snap Creator. Verify proper command line use of Snap Creator.
vmw-00100	USER_SNAP_NAME not defined (use <code>--snap_name <Snapshot copy name></code>)!	When performing a restore operation, the Snapshot copy name must be specified on the command line or through execution in the GUI in order to know which Snapshot copy to perform the restore from. Verify the Snap Creator command line for proper syntax.
vmw-00101	VIBE_VCLOUD_NAMES format is wrong (no extra colons, semi-colons or commas allowed per Org entry)!	The format of VIBE_VCLOUD_NAMES must be defined based on the format specified in the comments of the Snap Creator configuration file. If any organizations, vDCs or vApps have colons in the names, or any objects within vSphere use colons, use different naming conventions so that parsing of VIBE_VCLOUD_NAMES works properly.
vmw-00102	Organization field must be defined for each VIBE_VCLOUD_NAMES entry!	When defining a new backup set within a Snap Creator configuration file, the organization field must always be specified. Verify the VIBE_VCLOUD_NAMES syntax in the Snap Creator configuration file.
vmw-00103	VIBE_VSPHERE_NAMES format is wrong (no extra colons, semi-colons or commas allowed per vCenter entry)!	The format of VIBE_VSPHERE_NAMES must be defined based on the format specified in the comments of the Snap Creator configuration file. If any vCenters, datastores or virtual machines have colons in the names, use different naming conventions so that parsing of VIBE_VCLOUD_NAMES works properly.
vmw-00104	vCenter field must be defined for each VIBE_VSPHERE_NAMES entry!	When defining a new backup set within a Snap Creator configuration file, the vCenter field must always be specified. Verify the VIBE_VSPHERE_NAMES syntax in the Snap Creator configuration file.
vmw-00105	VIBE_VMWARE_SNAPS_HOT must be set to Y or N!	This value must be either Y (the default) or N to specify not to take VMware Snapshot copies.

Error code	Error message	Description/resolution
vmw-00106	NTAP_USERS value must be <ip>:<user>/<passwd> pairs (separated by semi-colons)!	Check the NTAP_USERS value in the Snap Creator configuration file for proper syntax and format.
vmw-00107	NTAP_USERS value must be <ip>:<user>/<passwd> pairs (separated by semi-colons)!	Check the NTAP_USERS value in the Snap Creator configuration file for proper syntax and format.
vmw-00108	Could not create Snapshot copy for VM \$vm->config->name!	The virtual machine Snapshot copy creation process failed. There will be another error message in the log indicating the failure. Review the vSphere infrastructure client logs for VMware error messages.
vmw-00109	Snapshot copy creation process was NOT completed successfully!	At least one of the virtual machines where Snapshot copies were being created did not execute properly. Review the Snap Creator and vSphere infrastructure client logs for error messages.
vmw-00110	Could not remove Snapshot copies for VM	The virtual machine Snapshot copy removal process failed. There will be another error message in the log indicating the failure. Review the vSphere infrastructure client logs for VMware error messages.
vmw-00111	Snapshot copy removal process was NOT completed successfully!	At least one of the virtual machines where Snapshot copies were being removed did not execute properly. Review the Snap Creator and vSphere infrastructure client logs for error messages.
vmw-00112	Collection of operating system information failed: \$@	The scdump() function used for support debugging requires collection of the operating system information. The internal request to check the operating system version did not succeed. Review the Snap Creator logs for information as to why the error occurred.
vmw-00113	Collection of operating system information failed: \$@	The scdump() function used for support debugging requires collection of the operating system information. The internal request to check the operating system version did not succeed. Review the Snap Creator logs for information as to why the error occurred.

Error code	Error message	Description/resolution
vmw-00114		Check the NTAP_PM_UPDATE value in the Snap Creator configuration file for proper syntax and format.
vmw-00115	No datastore systems available on vSphere host \$restoreHS->summary->config->name!	The datastore system associated to the vSphere session context is invalid. Check if the vSphere host used for restores is operational and not in maintenance mode. Review the vSphere infrastructure client logs for more information about the vSphere host status.
vmw-00116	No storage systems available on vSphere host \$restoreHS->summary->config->name!	The storage system associated to the vSphere session context is invalid. Check if the vSphere host used for restores is operational and not in maintenance mode. Review the vSphere infrastructure client logs for more information about the vSphere host status.
vmw-00117	Collection of datastore systems for vSphere host failed: \$server_fault2!	The datastore system associated to the vSphere session context does not have any managed object reference. Check if the vSphere host used for restores is operational and not in maintenance mode. Review the vSphere infrastructure client logs for more information about the vSphere host status.
vmw-00118	Collection of storage systems for vSphere host failed: \$server_fault3!	The storage system associated to the vSphere session context does not have any managed object reference. Check if the vSphere host used for restores is operational and not in maintenance mode. Review the vSphere infrastructure client logs for more information about the vSphere host status.
vmw-00119	Scan of unresolved VMFS volumes for vSphere host \$restoreHS->summary->config->name failed!	The QueryUnresolvedVmfsVolumes() vSphere API call on the host system failed. Review the vSphere infrastructure client logs for more information about the vSphere host status.
vmw-00120	Re-signature of unresolved VMFS volumes on vSphere host failed: \$server_fault4!	The ResolveMultipleUnresolvedVmfsVolumes() vSphere API call on the host system failed. Review the vSphere infrastructure client logs for more information about the vSphere host status.

Error code	Error message	Description/resolution
vmw-00121	Failure in file-list-directory-iter-start: \$results->results_reason()!	The reported Data ONTAP API call was unsuccessful. Read the error message and contact technical support for any necessary assistance in translating the error message. The condition can normally occur in situations where RBAC is in use and the Snap Creator user on the storage controllers do not have sufficient access for the API call.
vmw-00122		A SOAP error (web access) occurred while trying to call RemoveSnapshot() in VMware for a Snapshot copy taken as part of the backup or restore operation. Use Snapshot Manager in the vSphere infrastructure client to remove any Snapshot copy created that is unwanted.
vmw-00123	Storage query of host system \$restoreHS->summary->config->name failed: \$server_fault!	Execution of the RescanAllHba() vSphere API call failed due to a general SOAP error (web services). Verify the connectivity to the vCenter server and proper vSphere host and cluster configuration within the vSphere environment where the virtual machine restore is taking place.
vmw-00124	Storage query of host system \$restoreHS->summary->config->name failed!	Execution of the RescanAllHba() vSphere API call failed to the vCenter server. Verify the connectivity to the vCenter server and proper vSphere host and cluster configuration within the vSphere environment where the virtual machine restore is taking place.
vmw-00125	vCenter view validation of session failed: \$server_fault3!	A query of the file manager in the vCenter server object failed due to a SOAP error (web services). Verify the connection to the vCenter server has not timed out.
vmw-00126	vCenter view validation of session failed!	A query of the file manager in the vCenter server object failed. Verify that the connection to the vCenter server has not timed out.

Error code	Error message	Description/resolution
vmw-00127	Query of virtual machine object failed: \$server_fault3!	Collection of the entity view of the virtual machine during the virtual machine iteration process could not be executed to the vCenter server. This is specifically for when vCloud objects are re-translated to virtual machine objects in vSphere. Verify the connectivity to the vCenter server and proper configuration of host systems through the vSphere infrastructure client and that the vCenter IP address is correct.
vmw-00128	Query of virtual machine object failed!	Collection of the entity view of the virtual machine during the virtual machine iteration process could not be executed to the vCenter server. This is specifically for when vCloud objects are re-translated to virtual machine objects in vSphere. Verify the connectivity to the vCenter server and proper configuration of host systems through the vSphere infrastructure client and that the vCenter IP address is correct.
vmw-00129	Power off condition of vApp \$vObjs[\$i] [\$VOBJ_VAPP_NAME] unknown: (\$r->code() : \$r->message())!	When the vApp powerOff REST API is executed, the REST return status indicates an unknown condition. The powerOff call should always return a Task or Error, so it means a third condition of unknown type was returned. Check with VMware on the possible return codes for vCloud powerOff API operations.
vmw-00130	Power on condition of vApp \$vObjs[\$i] [\$VOBJ_VAPP_NAME] unknown: (\$r->code() : \$r->message())!	When the vApp powerOn REST API is executed, the REST return status indicates an unknown condition. The powerOn call should always return a Task or Error, so it means a third condition of unknown type was returned. Check with VMware on the possible return codes for vCloud powerOn API operations.
vmw-00131	Could not power off vApp \$vObjs[\$i] [\$VOBJ_VAPP_NAME]: (\$r->code() : \$r->message() : \$root->getAttribute('message'))!	When the vApp powerOff REST API is executed, the REST return status indicates an error condition. Review the error code for information about the failure, and check with VMware on the possible return codes for vCloud powerOff API operations.

Error code	Error message	Description/resolution
vmw-00132	Could not power on vApp \$vObjs[\$i] [\$VOBJ_VAPP_NAME]: (\$r->code() : \$r->message() : \$root->getAttribute('message'))!	When the vApp powerOn REST API is executed, the REST return status indicates an error condition. Review the error code for information about the failure, and check with VMware on the possible return codes for vCloud powerOn API operations.
vmw-00133	Scan for unresolved VMFS volumes did not find any entries!	This condition occurs when VMware is unable to see new datastores listed in the vSphere environment during restore operations. The sequence of events is to clone, map and online the new LUN associated to the VMFS datastore being restored on the identified ESX host. Once this is done, the vSphere API call QueryUnresolvedVmfsVolumes() is called to find unresolved VMFS volumes not currently mapped to a datastore or resigned on the ESX host. Essentially, the API call returned no new entries, which means VMware does not see the new LUN. Check the existing vSphere configuration to determine if new datastores can be provisioned on the restore ESX host, as well as check with VMware on the condition of the ESX host when new datastores are connected.
vmw-00134	Collection of storage systems for vSphere host failed: \$server_fault9!	This condition occurs when the vSphere API call QueryUnresolvedVmfsVolumes() fails on the ESX host identified for restore. Check the existing vSphere configuration to determine if new datastores can be provisioned on the restore ESX host, as well as check with VMware on the condition of the ESX host when new datastores are connected.
vmw-00135	Could not remove snapshot (s) for VM \$yvm->config->name!	Snap Creator deletes virtual machine Snapshot copies on VMs about to be restored before starting the restore process. It is called to remove leftover Snapshot copies if any exist. If this operation fails, it means Snap Creator has found leftover virtual machine Snapshot copies (created by Snap Creator) that it cannot delete. Delete these virtual machine Snapshot copies manually before attempting the restore operation.

Error code	Error message	Description/resolution
vmw-00136	No Snapshot copy named \$SC_VCLOUD_SNAPSHO T found for VM \$vm->config->name!	When attempting to remove virtual machine Snapshot copies, the remove function could not find a Snap Creator created virtual machine Snapshot copy. Verify the existing VMware Snapshot copies and also ensure two Snap Creator backup jobs of the same virtual machine objects are not taking place at the same time.
vmw-00137	Restore process had errors and did not complete successfully!	The restore operation failed. Look for additional vmw-<num> errors in the log output for more details as to what failed during the restore process.
vmw-00138	No root snapshot list found for VM \$vm->config->name!	When attempting to remove virtual machine Snapshot copies, the remove function could not find a Snap Creator created virtual machine Snapshot copy. In addition, there were no Snapshot copies (period) for the virtual machine. There is no root Snapshot copy list when this error occurs. Verify the existing VMware Snapshot copies and also ensure two Snap Creator backup jobs of the same virtual machine objects are not taking place at the same time.
vmw-00139	VIBE plug-in module not supported with this version of Data ONTAP!	
vmw-00140	Could not get the list of clustered Data ONTAP network interfaces!	
vmw-00141	Could not get the list of clustered Data ONTAP network IP aliases!	
vmw-00142	Data ONTAP API connection to \$sObjs[\$!] [\$SOBJ_IPADDR] failed: \$results->results_reason()	
vmw-00143	Data ONTAP API call \$zapiCall failed:	

Error code	Error message	Description/resolution
vmw-00144	Could not find the clustered Data ONTAP volume for remote path \$remotePath, remote host \$remoteHost on NFS datastore	
vmw-00145	Could not get the list of clustered Data ONTAP LUNs from Vserver!	
vmw-00146	Could not get the list of clustered Data ONTAP directory files for volume path \$volPath!	
vmw-00147	Could not get the list of clustered Data ONTAP files in path \$snapVolPath!	
vmw-00148	Failure in parsing clustered Data ONTAP volume path format of \(\$volPath\)!	
vmw-00149	Data ONTAP API call clone-create failed:	
vmw-00150	VOLUMES is empty -- not updating (please check NTAP_USERS and VIBE configuration values!)	
vmw-00151	Storage controller/Vserver did not have vFiler configuration information!	
vmw-00152	Could not get the list of clustered Data ONTAP volumes!	
vmw-00153	NTAP_SIS_CLONE_BAC KUP only supports one controller for SIS clone-based backup!	
vmw-00154	No VM files exist for SIS-based backup!	

Error code	Error message	Description/resolution
vmw-00155	Failure in file-read-file of backupMetaData.txt SIS clone file from Datastore \$ds: \$restoreResults->results_reason()!	
vmw-00156	Failure to read any data from backupMetaData.txt SIS clone file for Datastore \$ds!	
vmw-00157	Did not find a content line in the backupMetaData.txt file for datastore \$ds!	
vmw-00158	No backupMetaData.txt content string for datastore \$DS!	
vmw-00159	No volume path defined for datastore \$DS!	
vmw-00160	Could not destroy temporary Snapshot copy -- might need manual cleanup!	
vmw-00161	Could not get the list of clustered Data ONTAP directory files for volume path \$srcPath!	
vmw-00162	Could not get the list of clustered Data ONTAP files in path \$srcPath!	
vmw-00163	Failure in file-list-directory-iter-start: \$results->results_reason()!	
vmw-00164	Data ONTAP API file-list-directory-iter-next failed:	
vmw-00165	Data ONTAP API file-list-directory-iter-end failed:	
vmw-00166	Could not destroy temporary Snapshot copy -- might need manual cleanup!	

Error code	Error message	Description/resolution
vmw-00167	Data ONTAP API call clone-start failed:	
vmw-00168	Data ONTAP API call nfs-exports-list-rules-2 failed:	
vmw-00169	Did not find export path for NFS datastore	
vmw-00170	Could not create Snapshot copy for VM \$vm->config->name, continuing.	
vmw-00171	Could not remove (leftover ? leftover:) Snapshot copy for VM \$vm->config->name: \$server_fault, continuing.	
vmw-00172	No Snapshot copy named \$SC_VCLOUD_SNAPSHOT found for VM \$vm->config->name, continuing.	
vmw-00173	Snapshot copy removal process was NOT completed successfully, but APP_IGNORE_ERROR=Y was set.	
vmw-00174	Snapshot copy creation process was NOT completed successfully, but APP_IGNORE_ERROR=Y was set.	

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