



# Installation

## Snap Creator Framework

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# Installation Guide

This guide describes how to install and set up Snap Creator 4.3.3.

## What Snap Creator Framework does

The Snap Creator Framework enables you to use prepackaged 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.

Snap Creator provides the following by leveraging Snapshot, SnapVault, Open Systems SnapVault, and SnapMirror functionalities, as well as NetApp Management Console data protection capabilities, the Operations Manager console, and FlexClone:

- Application-consistent data protection

A centralized solution for backing up critical information, integrating with existing application architectures to ensure data consistency and reduced operating costs.

- Extensibility

Achieve fast integration using modular architecture and policy-based automation.

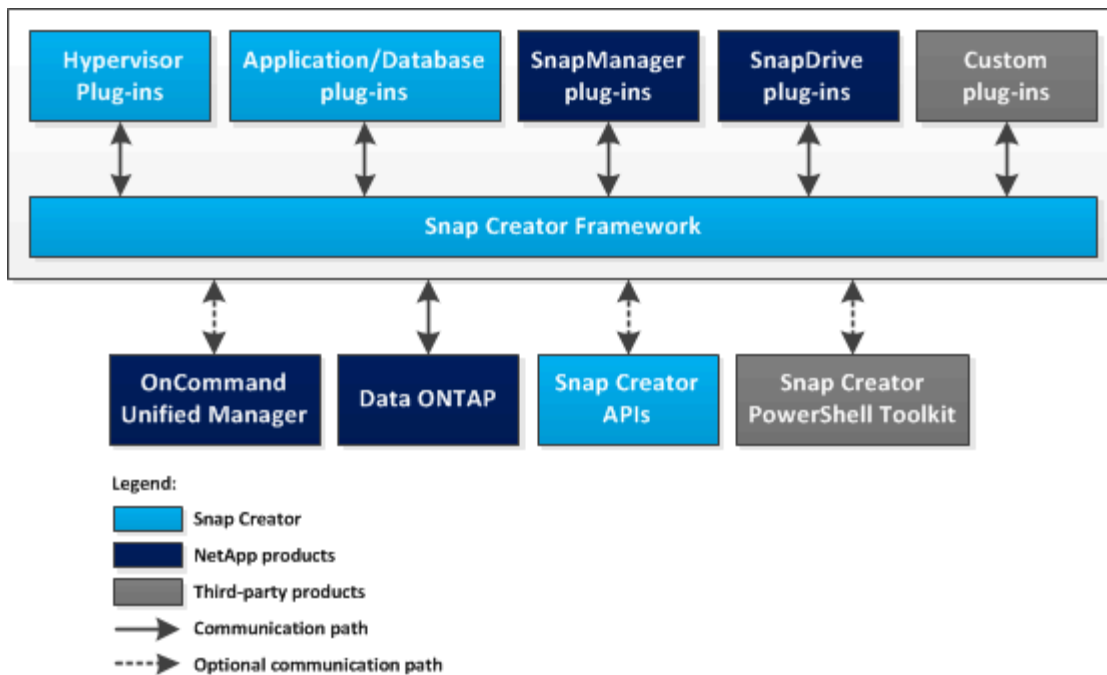
- Cloud readiness

An operating system-independent Snap Creator functionality that 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 testing purposes.

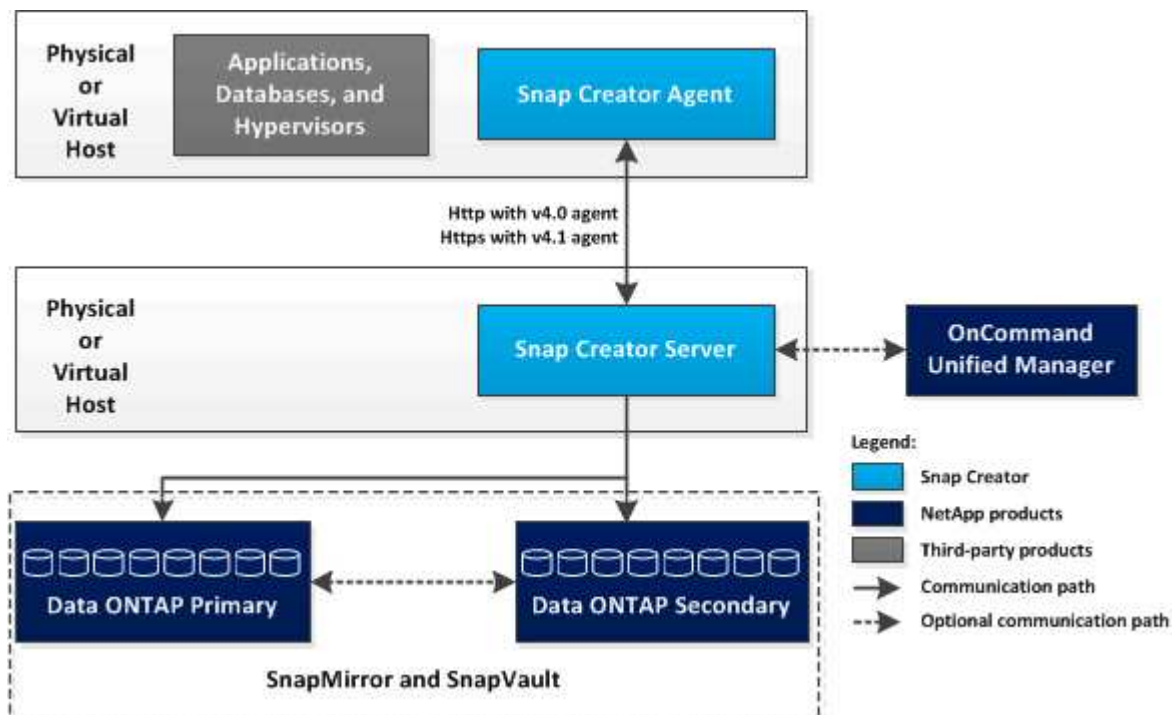
The following illustration shows the components of the Snap Creator Framework:



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

## Snap Creator Server

Snap Creator actions are initiated by the Snap Creator Server.

Typically, the Snap Creator Server is installed on a physical or virtual host. The Server hosts the Snap Creator GUI and necessary databases for storing information about jobs, schedules, users, roles, profiles, configuration files, and metadata from plug-ins. The Server is sometimes shortened to scServer within Snap Creator.

The Server sends quiesce or unquiesce operations to the supported applications (database, email, hypervisor, or any other custom application) through the Snap Creator Agent. Communication between the Server and the Snap Creator Agent occurs by default on port 9090, but you can customize the port to fit your needs.

By default, the Snap Creator Server uses Data ONTAP API calls to communicate with the storage systems and other NetApp software products. Commands to the storage system from the Snap Creator Server occur over port 80 or port 443 and handle all Snapshot, SnapVault, and SnapMirror-type functions before committing changes to storage devices or pools.

The Snap Creator Server communicates with Active IQ Unified Manager through the Unified Manager API.

### Related information

[Snap Creator Framework 4.3.3 Administration Guide](#)

## Snap Creator Agent

The Snap Creator Agent is typically installed on the same host where an application or database is installed. The Agent is where the plug-ins are located. The Agent is sometimes shortened to scAgent within Snap Creator.

The Agent accepts application quiesce and unquiesce commands, as well as other PRE/POST commands, from the Snap Creator Server. The Snap Creator Agent is required when using plug-ins.

[Snap Creator Framework 4.3.3 Administration Guide](#)

## Plug-ins for application integration

Plug-ins are used to put applications or databases into a consistent state. Snap Creator contains several plug-ins that are already part of the binary file and do not require any additional installation.

Types of applications that are supported include database, email, hypervisor, or custom applications. The following plug-ins are supported for use with Snap Creator:

- Application and database plug-ins:
  - DB2
  - IBM Domino (Domino)
  - MaxDB
  - MySQL



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

- Oracle
- SAP High-Performance Analytic Appliance (HANA)
- Sybase Adaptive Server Enterprise (ASE)
- SnapManager plug-ins:
  - SnapManager for Microsoft Exchange
  - SnapManager for Microsoft SQL Server
- Hypervisor plug-ins:
  - Citrix XenServer
  - Red Hat Kernel-based Virtual Machine (KVM)
  - VMware (vSphere for individual virtual machine backup and vCloud Director for vApp backup)

Custom (also called "community") plug-ins are written by the developer community, and can be enabled by Snap Creator but are not supported. These plug-ins leverage the interface provided by Snap Creator and enable the developers to concentrate their development efforts on their target applications.

For more information, visit the [Snap Creator Framework Discussions Community forum](#) site.

[Snap Creator Framework 4.3.3 Administration Guide](#)

## Preinstallation requirements for ONTAP Snap Creator

There are system license, software, and hardware requirements that you should consider before you install Snap Creator.

In addition, you should perform the following tasks before installing Snap Creator:

- Download the Snap Creator software.
- Create a Data ONTAP user.
- Install Oracle Java or OpenJDK Java Runtime Environment (JRE) 1.8 Update 72 or later versions on the Snap Creator Server and Agent hosts.
- Synchronize time on Snap Creator Server and Agent hosts.
- Configure settings for the IBM Domino plug-in (required only if you are using the Domino plug-in).
- Add Secure Sockets Layer (SSL) libraries for the UNIX environment (required only when running Snap Creator using the CLI on UNIX platforms).

For details, see the *Troubleshooting* section in the *Snap Creator Framework Administration Guide*.

## Snap Creator installation and configuration requirements

Before you install the Snap Creator Framework, you should be aware of certain installation and configuration requirements for licenses, software, and hardware.

## License requirements

Although Snap Creator does not require a license, the following licenses might be required, depending on the actions you want to perform while using Snap Creator:

- FlexClone (for volume cloning)
- Active IQ Unified Manager Core Package (for NetApp Management Console data protection capability and Operations Manager console)
- Open Systems SnapVault (for OSSV actions)
- SnapDrive (for SnapDrive actions)
- SnapMirror (for SnapMirror actions)
- SnapRestore (for restoring)
- SnapVault (for SnapVault actions)

See the Interoperability Matrix, which is online at [mysupport.netapp.com/matrix](https://mysupport.netapp.com/matrix), for details regarding the supported software.

## Software information

The following software might be needed depending on your environment:

- Java (required)



Snap Creator Framework 4.3.3 only supports OpenJDK and Oracle Java 1.8 Update 72 and later.

- Data ONTAP (required)
- Microsoft .NET Framework
- Operating system:



Only U.S.-based operating systems are currently supported.

- UNIX platforms:



Snap Creator supports only Bash Shell for all UNIX platforms.

- AIX
- HP-UX
- Linux
- Solaris
- Microsoft Windows
- Web browsers:
  - Internet Explorer
  - Firefox

See the Interoperability Matrix, which is online at [mysupport.netapp.com/matrix](https://mysupport.netapp.com/matrix), for details regarding the supported software.

## Hardware requirements

The Snap Creator hardware requirements are as follows:

- Snap Creator Server requirements:

Hardware component	Minimum	Recommended
Processor	1 core	4 cores, 2 GHz or faster
Memory (for Snap Creator plus the operating system)	2 GB RAM	4 GB RAM
Disk space	5 GB	50 GB or greater (based on the number of logs to be stored)

- Snap Creator Agent requirements:

Requires a minimum of 256 MB memory when either no plug-in is deployed or when prepackaged plug-ins are used.

Prepackaged plug-ins should not need any additional memory requirements. Other plug-ins might have additional requirements.

## Downloading the Snap Creator software

You download the Snap Creator software from the NetApp Support Site. Snap Creator is listed in the “Software Download” section under Snap Creator Framework.

1. Go to the Software page at the NetApp Support Site.

Snap Creator is listed in the **Downloads > Software** section as **Snap Creator Framework**.

2. Select a platform, and then click **Go**.
3. Select the version of Snap Creator to download by clicking **View & Download**.
4. From Software download instructions, click **CONTINUE**.
5. Read and accept the End User License Agreement.
6. Select the operating system and bit level of the software package.

### Related information

NetApp Support Site: [mysupport.netapp.com](https://mysupport.netapp.com)

## Creating a Snap Creator user for Data ONTAP

Prior to installing Snap Creator, you should create a Snap Creator user for Data ONTAP. The process that you follow to create the Snap Creator user depends on whether your systems are running Data ONTAP in 7-Mode or clustered Data ONTAP.



## Creating a Snap Creator user for Data ONTAP operating in 7-Mode

Snap Creator uses the Data ONTAP APIs to communicate with the storage system. To ensure that the user account is granted access to only Snap Creator, create a new role, group, and user on each storage controller. The role is assigned to the group and the group contains the user. This controls the access and limits the scope of the Snap Creator account.

You must perform this procedure once for each storage controller on which Snap Creator is installed.

To create a Snap Creator user for Data ONTAP operating in 7-Mode by using the Data ONTAP CLI (SSH, console connection, or Telnet), complete the following steps.



You should not copy and paste commands directly from this document; errors might result such as incorrectly transferred characters caused by line breaks and hard returns. Copy and paste the commands from this procedure into a text editor, verify the commands, and then enter them in the CLI.

1. Create a role defining the rights required for Snap Creator on the storage system by running the following command:

```
useradmin role add rolename -a login-\*,api-snapshot-\*,api-system-\*,  
api-ems-\*,api-snapvault-\*,api-snapmirror-\*,api-volume-\*,  
api-lun-\*,api-cg-\*,api-nfs-\*,api-file-\*,api-license-\*,  
api-net-\*api-clone-\*, api-options-get, api-wafl-sync
```



The command shown in this step includes all the API roles used by Snap Creator. However, you can restrict the user access by including only the required roles (for example, if SnapMirror will not be used, then api-snapmirror-\* is not needed).

```
useradmin role add sc_role -a login-*,api-snapshot-*,api-system-*,api-  
ems-*,api-snapvault-*,api-snapmirror-*,api-volume-*,  
api-lun-*,api-cg-*,api-nfs-*,api-file-*,api-license-*, api-net-*, api-  
clone-*, api-options-get, api-wafl-sync
```

2. Create a new group on the storage system and assign the newly created role to the group by running the following command:

```
useradmin group add groupname -r rolename
```

```
useradmin group add snap_creator_group -r snap_creator_role
```

3. Create a user account by running the following command:

```
useradmin user add username -g groupname
```

```
useradmin user add snap_creator_user -g snap_creator_group
```

4. Enter the password for the account.

Use this restricted account when creating configuration files for Snap Creator.

### Creating a Snap Creator user for clustered Data ONTAP

For clustered Data ONTAP, you should create users for Snap Creator. However, the type of user that you create depends on the version of clustered Data ONTAP. The two types of users are a cluster user and a storage virtual machine (SVM) user.

Create the following users, with the appropriate roles as defined in the *Snap Creator Framework Administration Guide*, for your version of Data ONTAP:

- Data ONTAP releases prior to clustered Data ONTAP 8.2: Create a cluster and SVM user.
- Clustered Data ONTAP 8.2 or later: Create an SVM user.

For increased security, you should create a Data ONTAP user and role specifically for Snap Creator. Alternatively, you can use other user accounts, such as admin or vsadmin.

For more information about creating a Snap Creator role using the CLI, see [Related references](#).

Both types of user require access to the Data ONTAPI library. In addition, a Management LIF is also needed for clustered Data ONTAP, regardless of the version.

The two users are not interchangeable. For example, the cluster user does not have access to the required APIs to perform certain actions, such as creating a Snapshot copy. This is true even if you use the default cluster admin account. SVM accounts should use the **vsadmin** role or a customer-created role for Snap Creator to work properly.

You must perform this procedure once on each SVM and cluster where Snap Creator is used.

For ease of use, the following instructions refer to admin and vsadmin roles; however, you can replace these role names with those roles that you create.



You should not copy and paste commands directly from this document; errors (such as incorrectly transferred characters caused by line breaks and hard returns) might result. Copy and paste the commands from this procedure into a text editor, verify the commands, and then enter them in the CLI.

1. Create the SVM user `svm_username01` with the appropriate role (vsadmin or the role created for the user) on the `svm_nameSVM` and enable access to the ONTAPI library by entering the following command and a user password:

```
security login create -username svm_username01
-vserver svm_name -application ontapi
-authmethod password -role vsadmin
```

Please enter a password for user 'svm\_username01':  
Please enter it again:

2. (For versions prior to clustered Data ONTAP 8.2 only) Create a cluster user by entering the following command and a user password:

```
security login create -username svm_username02
-vserver svm_clustername -application ontapi
-authmethod password -role admin
```

Please enter a password for user 'svm\_username02':  
Please enter it again:

## Related information

[CLI commands for creating a role for a Snap Creator user in clustered Data ONTAP](#)

## Installing Java on Snap Creator hosts

OpenJDK and Oracle Java Runtime Environment (JRE) 1.8 Update 72 or later must be installed on any Snap Creator Server and Agent host. To avoid the Transport Layer Security (TLS) vulnerability, it is best to install any later version of JRE 1.8 Update 72 on Snap Creator Server and Agent host.

1. Download and install JRE on each Snap Creator Server or Snap Creator Agent host.

The bit levels (32-bit or 64-bit) of Java and Snap Creator must be the same.

If necessary, download Java from the [Java Downloads for All Operating Systems](#) page.

2. After you install JRE, verify the version and bit level of Java: `java -version`

```
C:\Documents and Settings\Administrator>java -version
java version "1.7.0_04-ea"
Java(TM) SE Runtime Environment (build 1.7.0_04-ea-b01)
Java HotSpot(TM) Client VM (build 23.0-b03, mixed mode, sharing)
```

The output of the command displays the installed version of Java. If the bit level is not displayed (as in the preceding example), then the installation is 32-bit.

## Synchronizing time on Snap Creator Server and Agent hosts

Before installing Snap Creator, you should ensure that the time on the Snap Creator Server host is in sync with the time on the Agent host. You can do this by synchronizing the time of the hosts with the same Network Time Protocol (NTP) server.

For more information, refer to the following documentation:

- Clustered Data ONTAP--*Clustered Data ONTAP Software Setup Guide* for your version of Data ONTAP; in particular, refer to the information regarding verifying the system time and synchronizing the system time across the cluster.
- Data ONTAP operating in 7-Mode—Knowledgebase article 1011954 How to setup NTP time synchronization at [How to set up NTP time synchronization in Data ONTAP 7-Mode](#).

## Configuring settings for the Domino plug-in

You need to configure specific settings only if you plan to use the IBM Domino plug-in, which is included as part of the Snap Creator Agent installation.



It is a best practice to install Snap Creator Server and Snap Creator Agent on different hosts.

Depending on your operating system, you must configure these settings before installing the Snap Creator Agent for the IBM Domino plug-in to work properly.

- For a Windows environment, you must add the Domino path to the environment variables.
- For a UNIX environment, you must create symbolic links to link to Domino's shared object files.

### Configuring Windows-specific settings: Adding path to the environment variables

If you are going to install the Snap Creator Agent on Windows, you must add the path to the Domino binary files to the environment variables for Windows.

1. Access the advanced settings for your Windows OS (for example, **My Computer > Properties > Advanced > Environment Variables**) and add the Domino path to the Path variable.



For details about modifying your system variables, see the documentation for your Windows operating system.

If you add the Domino path to the environment variables after the Snap Creator Agent is installed, you must restart the Snap Creator Agent service. For example, on the host where the Snap Creator Agent is installed, open a command prompt and enter the following commands:

```
sc stop SnapCreatorAgentService
sc start SnapCreatorAgentService
```

### Configuring UNIX-specific settings: Creating symbolic links

If you are going to install the Snap Creator Agent on a UNIX operating system (AIX,

Linux, and Solaris), for the IBM Domino plug-in to work properly, three symbolic links (symlinks) must be created to link to Domino's shared object files.

Installation procedures vary slightly depending on the operating system. Refer to the appropriate procedure for your operating system.



Domino does not support the HP-UX operating system.

#### Creating symbolic links for the Domino plug-in on Linux and Solaris hosts

You need to perform this procedure if you want to create symbolic links for the Domino plug-in on Linux and Solaris hosts.

You should not copy and paste commands directly from this document; errors (such as incorrectly transferred characters caused by line breaks and hard returns) might result. Copy and paste the commands into a text editor, verify the commands, and then enter them in the CLI console.



The paths provided in the following steps refer to the 32-bit systems; 64-bit systems must create simlinks to /usr/lib64 instead of /usr/lib.

1. Add links to /usr/lib for the following files:

- libxmlproc.so
- libndgts.so
- libnotes.so
- libgsk8iccs.so (for Domino 9.0 or later only) A typical method of creating a symbolic link is to use the ln command:

```
ln -s /path/to/source_file /usr/lib/linked_file
```

+ where:

- -s instructs the operating system to make a symbolic link.
- /path/to/source\_file is the path to one of the Domino library files, including the file name.
- linked\_file is the name of the file that is being linked.

```
ln -s /opt/ibm/domino/notes/latest/linux/libxmlproc.so
/usr/lib/libxmlproc.so
ln -s /opt/ibm/domino/notes/latest/linux/libndgts.so
/usr/lib/libndgts.so
ln -s /opt/ibm/domino/notes/latest/linux/libnotes.so
/usr/lib/libnotes.so
ln -s /opt/ibm/domino/notes/latest/linux/libgsk8iccs.so
/usr/lib/libgsk8iccs.so
```

2. Verify the path to the files listed in Step 1.

## Creating symbolic links for the Domino plug-in on AIX hosts

You must perform this procedure to add symbolic links for the Domino plug-in on AIX hosts.

You should not copy and paste commands directly from this document; errors (such as incorrectly transferred characters caused by line breaks and hard returns) might result. Copy and paste the commands into a text editor, verify the commands, and then enter them in the CLI console.



The paths provided in the following steps refer to the 32-bit systems; 64-bit systems must create simlinks to `/usr/lib64` instead of `/usr/lib`.

1. Add links to `/usr/lib` for the following files:

- `libxmlproc_r.a`
- `libndgts_r.a`
- `libnotes_r.a`
- `libgsk8iccs_r.a` (for Domino 9.0 or later only) A typical method of creating a symbolic link is to use the `ln` command:

```
ln -s /path/to/source_file /usr/lib/linked_file
```

+ where:

- `-s` instructs the operating system to make a symbolic link.
- `/path/to/source_file` is the path to one of the Domino library files, including the file name.
- `linked_file` is the name of the file that is being linked.

```
ln -s /opt/ibm/domino/notes/latest/ibmpow/libxmlproc_r.a
/usr/lib/libxmlproc_r.a
ln -s /opt/ibm/domino/notes/latest/ibmpow/libndgts_r.a
/usr/lib/libndgts_r.a
ln -s /opt/ibm/domino/notes/latest/ibmpow/libnotes_r.a
/usr/lib/libnotes_r.a
ln -s /opt/ibm/domino/notes/latest/linux/libgsk8iccs.so
/usr/lib/libgsk8iccs_r.a
```

2. Verify the path to the files listed in Step 1.

The commands in this example use the default path for AIX, but installations can vary.

## Installing the Snap Creator Server

You can install the Snap Creator Server on Windows and UNIX hosts.

In a typical installation, the Snap Creator Server and the Snap Creator Agent are installed on separate hosts. However, in some instances, the Server and Agent can be installed at the same time. In this setup, only the Server is configured during the installation.

## Installing the Snap Creator Server on a Windows host

You can install Snap Creator Server on a Windows host by using Windows installer.

- JRE 1.8 Update 72 or later must be installed.
- The person performing the installation must have admin-level privileges to perform the installation.
- The default port for the Snap Creator Server must be 8443.

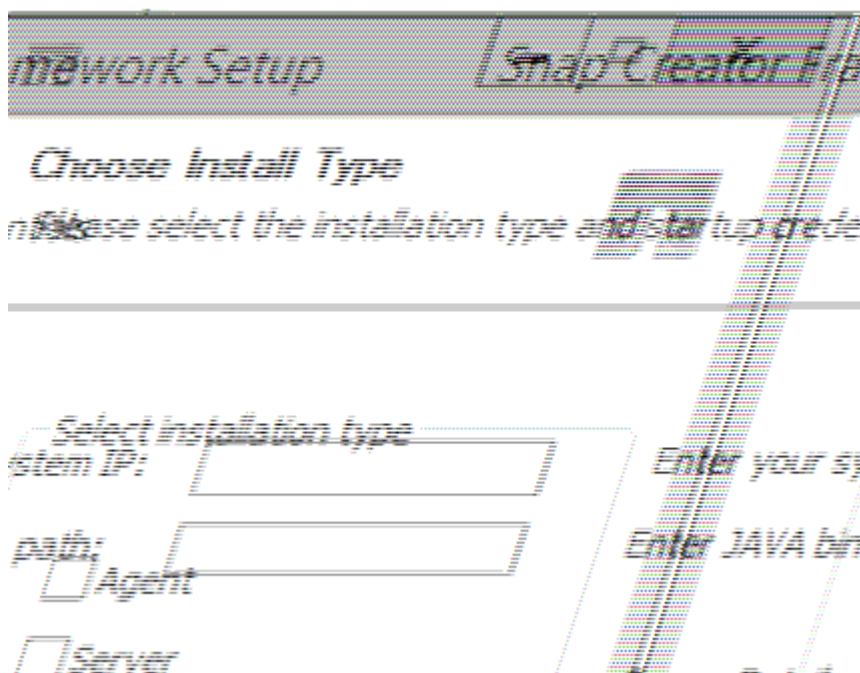
You can use netstat or a similar tool to verify that the network port that you want to use (as long as the port supports HTTPS) is available and is not already in use (for example, Windows: `netstat -na | find "8443"`).

- You must have already downloaded Snap Creator.

1. Double-click the Snap\_Creator\_Frameworkrelease-Windowsversion.exe file.

To launch the Snap Creator installer, you would use Snap\_Creator\_Framework4.1.0-Windows64.exe.

2. On the Welcome page, click **Next** to start the installation.
3. Read and accept the terms of the license agreement.
4. On the **Choose Install Type** page, change the settings to fit various installation types, and then click **Next**.



### ▪ Select installation type

Select **Server**. Both the Snap Creator Server and Snap Creator Agent can be installed at the same time if you want both on the same system.

### ▪ Start server as service

Select this option to automatically install and start the snapcreatorserverservice service immediately after the installation process is complete. If it is not selected, the **Server port** field is disabled.



If you do not select this option, the service is not installed and you need to manually start the Snap Creator Server by running a batch script from a command prompt.

- **Enter your system IP**

Select this option to provide the IP address of the system on which Snap Creator Server or Snap Creator Agent is installed. This option is used for generating the SSL certificate during Snap Creator installation.

- **Enter JAVA bin path**

Select this option to provide the Java bin path to locate the keytool utility. Keytool is used to generate an SSL certificate during the Snap Creator installation.

- **Server port**

Accept the default port of 8443 or specify the port number.

5. Configure the **Profile Setup** page, and then click **Next**.

The information entered on the **Profile Setup** page is used to set up the profile required for the Snap Creator GUI.

- **Storage controller serial number**

This parameter is optional. Enter the serial number of one of your storage controllers. When this information is provided, the controller serial number is embedded into the Snap Creator properties file and included in support and log outputs. This information can be used to help troubleshoot any issues that happen in the future.

- **User name**

Enter the name of the Snap Creator Server administrator.

- **Password and confirmation**

Enter the password for the Snap Creator Server administrator.

- **Enable job monitor**

If you want to enable job monitoring, select the **Enable job monitor** check box. Job Monitor is a separate section in the GUI that monitors all of the jobs that are run by Snap Creator and the status of these jobs.

- **Job log size**

Enter the number of jobs to keep in the history of the job log. The default is 100; the size should be between 1 and 1000.



Although the maximum accepted value for the **Job log size** is 10,000, the recommended maximum size that you provide is 1000.

6. On the **Choose Install Location** page, enter the Snap Creator installation path or accept the default (C:\Program Files\NetApp\Snap\_Creator\_Framework), and then click **Next**.



7. On the **Choose Start Menu Folder** page, customize the folder in which Snap Creator should appear in the Windows Start Menu or accept the default, and then click **Install**.
8. After the installation is complete, click **Next**.

During the Snap Creator Server service installation, a command prompt is displayed if a service was selected as part of the installation options. This process attempts to start existing services; therefore, it is common to see failure messages listed as part of this step.

9. Click **Finish** to close the Windows installer.
10. Validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port ([https://IP\\_address:gui\\_port](https://IP_address:gui_port)).

You must connect using HTTPS; otherwise, the connection is not automatically redirected to an HTTPS connection and the GUI will not work.

## Related information

[Installing Java on Snap Creator hosts](#)

[Downloading the Snap Creator software](#)

[Starting the Server from a command prompt](#)

## Starting the Server from a command prompt

You can manually start the Snap Creator Server from a command prompt by running a batch script (scServer.bat).

Typically, you must follow this procedure only if you did not select the **Start server as service** option during installation.

You can also schedule the batch script (scServer.bat) to run at startup through the Windows task scheduler. For details about using the Windows task scheduler, see the documentation for your Windows operating system.

Because the batch script (scServer.bat) runs Snap Creator in the foreground, the Snap Creator Server continues to run only as long as the command prompt is open. Closing the command prompt quits the Snap Creator Server. To run in the background, the Snap Creator Server service should be used.

1. Open a command prompt and enter the following commands:

```
cd \install_path\scServerrelease-version\bin\  
scServer.bat start
```

```
cd \Program Files\NetApp\Snap_Creator_Framework\scServer4.1.0\bin\  
scServer.bat start
```

## Installing the Snap Creator Server on UNIX-based systems

For UNIX platforms (AIX, HP-UX, Linux, and Solaris), the process of installing Snap Creator consists of extracting the Snap Creator software package (a .tar file containing both the Snap Creator Server and the Snap Creator Agent), running a setup script, starting the service, and validating the port.

JRE 1.8 Update 72 or later must be installed.

The person performing the installation must have sufficient access and privileges to perform the installation.



You must have root-level privileges to perform the initial setup.

The default port for the Snap Creator Server is 8443. You can use netstat or a similar tool to verify that the network port that you want to use supports HTTPS, is available, and is not already in use (for example, on UNIX hosts you can enter `netstat -nap | grep 8443`).

You must have already downloaded Snap Creator.

The UNIX Services (Server and Agent) feature provides a start script for Snap Creator Server and Snap Creator Agent. The start scripts are written in a UNIX shell script (Bourne shell) and are designed to run on all UNIX environments that are supported by Snap Creator.

1. Copy the downloaded Snap Creatortar.gz file to the location where you want to install Snap Creator Server:
  - a. Create a subdirectory: `mkdir snap_creator_directory`

```
mkdir /SC_41
```

- b. Copy the Snap Creatortar.gz file to the newly created directory:

```
cp NetApp_Snap_Creator_Frameworkrelease-os.tar.gz  
/snap_creator_directory
```

```
cp NetApp_Snap_Creator_Framework4.1.0-Linux32.tar.gz  
/SC_41
```

2. Change to the directory where the Snap Creator Framework .tar file is located, and then extract the file:



Depending on the UNIX environment, you might be required to unzip the file before entering the tar command.

```
cd snap_creator_directory  
tar -xvf NetApp_Snap_Creator_Frameworkrelease-os.tar.gz
```

- `snap_creator_directory` is the location where Snap Creator will be installed.
- `release` is the current release of the Snap Creator software package.
- `os` is the operating system.

```
cd /sc_41
tar -xvf NetApp_Snap_Creator_Framework4.1.0-Linux32.tar.gz
```

This extracts both the Server and the Agent software. Typically, only Snap Creator Server is configured. The agents typically reside on the database or application servers to be protected, as seen in the following example:

+

```
NetApp_Snap_Creator_Framework4.1.0-Linux32.tar.gz  scServer4.1.0
scAgent4.1.0
```

### 3. Perform the initial setup of Snap Creator:

```
cd scServer*
./snapcreator --setup
Welcome to the NetApp Snap Creator Framework release-version!
\#\#\# Installation options \#\#\#
01. NetApp Snap Creator Framework release-version Server
02. NetApp Snap Creator Framework release-version Remote CLI
Select install option (enter a number or "q" to quit):
```

Enter 01 to install Snap Creator Server.

- Option 01 performs the initial setup of Snap Creator Server by configuring a Snap Creator user and password, designating the GUI port where Snap Creator Server will run, and configuring other parameters.
- Option 02 sets up Snap Creator Server as a local binary and enables you to issue commands from your local system CLI to a remote Snap Creator Server.

### 4. Accept the end user license agreement by entering y here:

```
END USER LICENSE AGREEMENT
...the EULA displays...

Do you accept the End User License Agreement (y|n): <Enter y>

Enter controller serial number (Recommended): <OPTIONAL: Enter serial
number for one of your storage controllers>
```

5. Enter the controller serial number.

The controller serial number is embedded in the Snap Creator properties file and included in support and log outputs. You can use this information to help troubleshoot any issues that might happen later.

6. Enter the server port, system IP, and JAVA bin path, and then continue with the prompts.

```
Enter Snap Creator server port [8443]: <Enter server port>

Enable job monitor (Y|N): <Enter Y>

Enter job monitor size, how many jobs to allow [100]: <Enter the number
of jobs from 1-1000>
```



Although the maximum accepted value for the **job monitor size** is 10,000, the recommended maximum size that you provide is 1000.

```
Enter scServer Administrator Username: <Enter the Administrator
username>
Enter password for snap_creator_administrator: <Enter the password>
Confirm password for snap_creator_administrator: <Enter the password
again>

Enter JAVA Bin Path: /usr/java/default/bin
Enter Your System IP: 10.232.30.18
INFO: Updated NetApp Snap Creator Framework release-version
/install_path/scServerrelease-version/engine/etc/snapcreator.properties
INFO: Updated NetApp Snap Creator Framework release-version
/install_path/scServerrelease-version/bin/scServer

INFO: To start scServer please do the following:

/install_path/scServerrelease-version/bin/scServer start

INFO: To access NetApp Snap Creator Framework release-version GUI goto
https://hostname:gui_port
```

7. Start the Snap Creator Framework Server:

```
/install_path/scServerrelease-version/bin/scServer start
Checking Status of scServer:
Running
```

8. Validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port (for

example, <https://10.12.123.123:8443>).

You must connect using HTTPS; otherwise, the GUI does not work.

If communication goes through a firewall, open the network port.

## Related information

[Installing Java on Snap Creator hosts](#)

[Downloading the Snap Creator software](#)

# Installing the Snap Creator Agent

You can install the Snap Creator Agent on Windows and UNIX hosts.



Although installing and running multiple agents on a single host is allowed, the best practice is to use a single agent per host.

If you plan to use the IBM Domino plug-in, the plug-in requires Snap Creator Agent to be installed in a location other than the Domino data folder.

## Installing Snap Creator Agent on Windows

You can install Snap Creator Agent on Windows hosts by using the Windows installer.

- JRE 1.8 Update 72 or later must be installed.
  - You must have administrator-level privileges.
  - The default port (9090) or another network port must be available.
  - Snap Creator must be downloaded.
1. Launch the Snap Creator installer by double-clicking the Snap\_Creator\_Frameworkrelease-Windowsversion.exe file icon (for example, Snap\_Creator\_Framework4.1.0-Windows64.exe).
  2. On the Welcome page, click **Next** to start the installation.
  3. Review and accept the terms of the license agreement.
  4. On the Choose Install Type page, configure the following settings to suit various installation types:
    - **Select installation type**  
  
Select **Agent**.
    - **Start agent as service**  
  
Select this option to install and start the **snapcreatoragentservice** immediately after the installation process is complete.

If this option is not selected, the Agent port field is disabled.



If you do not select this option, the service is not installed, and you must manually start Snap Creator Agent by running a batch script from a command prompt.

- **Enter your system IP**

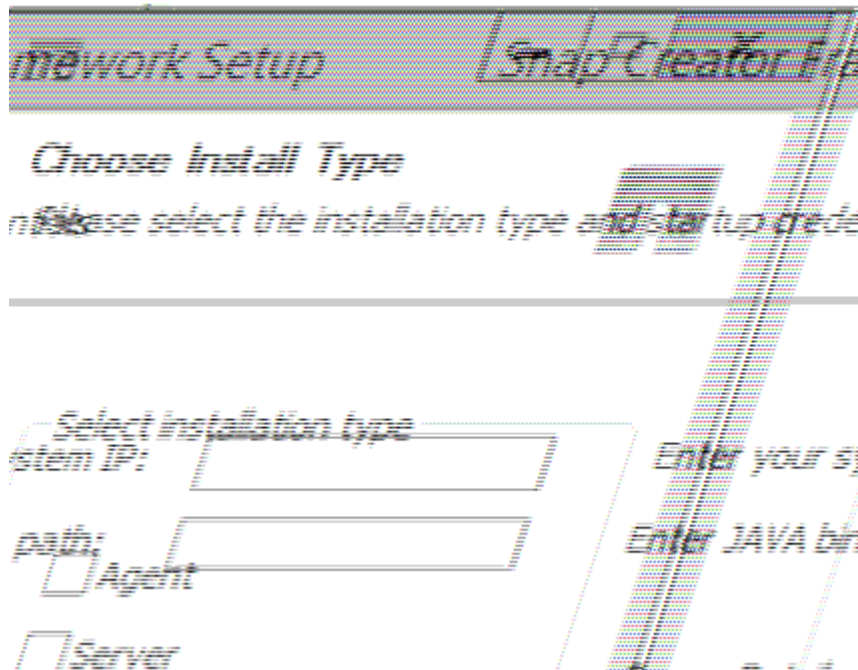
Select this option to provide the IP address of the system on which Snap Creator Server or Snap Creator Agent is installed. This option is used for generating the SSL certificate during the Snap Creator installation process.

- **Enter JAVA bin path**

Select this option to provide the Java bin path to locate the keytool utility. The keytool utility is used to generate an SSL certificate during the Snap Creator installation process.

- **Agent port**

Accept the default port (9090) or specify a port number.



1. Click **Next**.
2. On the Choose Install Location page, either enter a Snap Creator installation path or accept the default path (C:\Program Files\NetApp\Snap\_Creator\_Framework), and then click **Next**.



If you plan to use the IBM Domino plug-in, you must select a location other than the Domino data folder.

3. On the Choose Start Menu Folder page, either customize the folder in which Snap Creator should appear in the Windows Start Menu or accept the default folder option, and then click **Install**.
4. After the installation finishes, click **Next**.

During the Snap Creator Agent service installation, a command prompt is displayed if a service was selected as part of the installation options. This process attempts to start existing services; therefore, it is common to see failure messages listed as part of this step, which you should ignore.

5. Click **Finish** to close the Windows installer.

If you did not select the **Start agent as service** option during the installation process, you must manually start

Snap Creator Agent.

## Related information

[Installing Java on Snap Creator hosts](#)

[Downloading the Snap Creator software](#)

[Starting the Agent from a command prompt](#)

## Starting the Agent from a command prompt

You can manually start the Snap Creator Agent from a command prompt by running a batch script (scAgent.bat).

Typically, you should follow this procedure only if you did not select the **Start agent as service** option during the installation process.

You can also schedule the batch script (scAgent.bat) to run at startup through the Windows task scheduler. For details about using the Windows task scheduler, see the documentation for your Windows operating system.

1. Open a command prompt and enter the following commands:

```
cd \install_path\scAgentrelease-version\bin\  
scAgent.bat start
```

```
cd \Program Files\NetApp\Snap_Creator_Framework\scAgent4.1.0\bin\  
scAgent.bat start
```

Because the batch script (scAgent.bat) runs Snap Creator in the foreground, the Snap Creator Agent continues to run only as long as the command prompt is open. Closing the command prompt will quit the Snap Creator Agent. To run Snap Creator in the background, the Snap Creator Agent service should be used.

## Installing the Snap Creator Agent on UNIX-based systems

The Snap Creator Agent runs on any open systems platform (AIX, HP-UX, Linux, and Solaris).

JRE 1.8 Update 72 or later must be installed. For details, see information in related links about installing Java on Snap Creator servers.

The person performing the installation must have sufficient access and privileges.

The default port for the Snap Creator Agent is 9090. Use netstat or a similar tool to verify that the network port (9090 or the port that you want to use) is available and is not already in use (for example, enter: `netstat -nap | grep 9090`).

Snap Creator should already be downloaded. For details, see information about downloading the Snap Creator software.

Linux is used here as the example platform.

1. Copy the downloaded Snap Creator tar.gz file to the location where you want to install Snap Creator Agent.



If you plan to use the IBM Domino plug-in, select a location other than the Domino data folder.

- a. To make a subdirectory, enter the following command with the directory name:

```
mkdir snap_creator_directory
```

```
mkdir /SC_41
```

- b. Copy the Snap Creator tar.gz file to the newly created directory by entering the following command:

```
cp NetApp_Snap_Creator_Frameworkrelease-os.tar.gz  
/snap_creator_directory
```

```
cp NetApp_Snap_Creator_Framework4.1.0-Linux32.tar.gz  
/SC_41
```

2. Change to the directory to where the Snap Creator Framework .tar file is located and extract the file by entering the following commands:



Depending on the UNIX environment, you might be required to unzip the file before entering the tar command.

```
cd snap_creator_directory  
tar -xvf NetApp_Snap_Creator_Frameworkrelease-os.tar.gz
```

- snap\_creator\_directory is the location where Snap Creator will be installed.
- release is the current release of the Snap Creator software package.
- os is the operating system.

```
cd /sc_41  
tar -xvf NetApp_Snap_Creator_Framework4.1.0-Linux32.tar.gz
```

This extracts both the Server and the Agent software. Typically, only the Snap Creator Server is configured. The agents normally reside on the database or application servers to be protected as seen in the following example:



+

```
NetApp_Snap_Creator_Framework4.1.0-Linux32.tar.gz  scServer4.1.0
scAgent4.1.0
```

3. Enter the following commands and respond to the prompts shown in the example to set up the Snap Creator Agent.

```
cd scAgent*
./snapcreator --setup
Welcome to the NetApp Snap Creator Framework release-version!
\#\#\# Installation options \#\#\#
01. NetApp Snap Creator Framework release-version Agent
Select install option (enter a number or "q" to quit): <Enter 01>

END USER LICENSE AGREEMENT
<...the EULA displays...>

Do you accept the End User License Agreement (y|n): <Enter y>

Enter Snap Creator server port [9090]: <Enter agent port>

INFO: Updated NetApp Snap Creator Framework release-version
/install_path/scAgentrelease-version/engine/etc/agent.properties

INFO: To start scAgent please do the following:

/install_path/scAgentrelease-version/bin/scAgent start
```

4. Start the Snap Creator Agent:

```
/install_path/scAgentrelease-version/bin/scAgent start
```



To have the Snap Creator Agent run automatically at startup, add the start command to a script.

The steps to create a script differ slightly depending on the operating system used and the preferences of the system administrator managing the server. Generally, the start command for the Snap Creator Agent can be added to a file beginning with S9 (for example, S99scAgent) that is placed in the /path/to/rc2.d subdirectory. The rc2.d subdirectory is commonly located under /etc/, but this can depend on the host operating system and the particular configuration of the server. For more information, refer to the documentation of the operating system in use.

The following message appears:

```
Starting scAgent:
  Watchdog: Running
  Agent: Running
```

## Related information

[Installing Java on Snap Creator hosts](#)

[Downloading the Snap Creator software](#)

## Changing the Snap Creator Agent port after installation

To change the port on which the Snap Creator Agent is listening, you can make a change in the `Snap Creatoragent.properties` file and restart the agent.

The procedure for changing the Snap Creator Agent port is the same for Windows and UNIX. The following procedure uses examples from the UNIX environment.

1. Log in to the system on which the Snap Creator Agent is running, and switch to the `etc` subdirectory within the installation directory.

```
cd /install_path/scAgent4.3.0/etc
```

2. Open the `agent.properties` file using a text editor.
3. Change the value of the `DEFAULT_PORT` parameter to the new port (by default, the port is 9090).

For example, to use port 9191, change the `DEFAULT_PORT` parameter as follows:

```
DEFAULT_PORT=9191
```

4. Save and close the `agent.properties` file.
5. Restart the Snap Creator Agent.

```
/install_path/scAgent4.3.0/bin/scAgent restart
```



If the Snap Creator Agent is running when any changes are made to the `allowed_commands.config` file or the `agent.properties` file, then the agent must be restarted.

## Upgrading Snap Creator

You can upgrade to the latest version of Snap Creator from various supported versions.



If you have any questions about whether you can upgrade from releases posted on the Communities site, you can submit general questions to the NetApp Communities Forum. The NetApp Communities Forum is online at: [https://communities.netapp.com/community/products\\_and\\_solutions/databases\\_and\\_enterprise\\_apps/snapcreator](https://communities.netapp.com/community/products_and_solutions/databases_and_enterprise_apps/snapcreator)

Before upgrading to the latest version of Snap Creator, check the job monitor size for the currently installed version of Snap Creator. When you upgrade Snap Creator, you must set the job monitor size equal to or greater than the previous setting to avoid data loss in the job monitor database.

In addition, when upgrading Snap Creator, you must ensure the upgrade takes place on a host that uses the same operating system environment. For example, if you are upgrading in a Windows environment, you should make sure that when you copy backed-up data you also copy the data back to a Windows environment and not UNIX-based system.



Snap Creator does not have a downgrade (revert) option. During an upgrade process, you back up several files. It is important to keep the backed-up files until you are certain that you do not need to revert to an earlier version of Snap Creator.

## Related information

[Checking job monitor size](#)

## Checking job monitor size

Before upgrading to the latest version of Snap Creator, you should check the job monitor size for the currently installed version of Snap Creator.

When you upgrade Snap Creator, make sure that you set the job monitor size equal to or greater than the previous setting to avoid data loss in the job monitor database. Snap Creator retrieves jobs only up to the updated job monitor size limit.

For example, if the job monitor size is 500 in Snap Creator 4.0, make sure to set the job monitor size to a number equal to or greater than 500 when upgrading to the latest Snap Creator.

1. Check the job monitor size by performing one of the following options:
  - Open the Snap Creator Server properties files (/install\_path/scServer4.1.x/engine/etc/snapcreator.properties) and check the SNAPCREATOR\_JOB\_MONITOR\_SIZE variable.
  - From the Snap Creator GUI main menu, select **Management > Job Monitor** and then click **Size**.

The Job Monitor Size dialog box is displayed with the current size in the top field.

## Upgrading from releases earlier than Snap Creator 3.6

If you are upgrading from releases earlier than Snap Creator 3.6, you must first upgrade to Snap Creator 3.6 one version at a time.

For example, to upgrade from Snap Creator 3.5.x, you must first upgrade from 3.5.x to 3.6. After you are running Snap Creator 3.6, you can complete the upgrade to latest version. During this upgrade process, you can install the Snap Creator Agent at the same time as you upgrade the Snap Creator Server.

## Related information

[Upgrading the Snap Creator Server 3.6.x on Windows](#)

### Upgrading from Snap Creator 3.6.x

When you upgrade from Snap Creator 3.6.x, the database schema is upgraded and all the configuration file passwords are updated for compatibility with the latest Snap Creator.

#### Upgrading the Snap Creator Server 3.6.x on Windows

You can upgrade directly from the Snap Creator Server 3.6.x on Windows.

- If you have any Snap Create user names that contain special characters, you must have renamed those users using only alphabetic characters (a-z, A-Z) before performing the upgrade.
- You have stopped Snap Creator services (`snapcreatorserverservice` and `snapcreatoragentservice`) before backing up the Snap Creator directories to ensure that the backed up data is complete.

For example, you can use the Services snap-in to stop the services:

- a. Select **Start > Run** and enter `services.msc`.
- b. Locate and select the Snap Creator service; then, stop the service. Alternatively, you can open a command prompt and enter the following commands:

```
sc stop snapcreatorserverservice
sc stop snapcreatoragentservice
```

- You have backed up the following directories and all associated subdirectories and files, within the Snap Creator 3.6.x Server directory (`C:\Program Files\NetApp\NetApp_Snap_Creator_Framework\scServer3.6.x`):
  - Snap Creator database (`..\gui\snapcreator`)
  - Profiles and configuration files (`..\configs`)
  - Logs (`..\logs`) **Note:** Do not delete the Snap Creator 3.6.x backup copies that you created.
- (Optional) If the Snap Creator Agent is installed on the same host as the Snap Creator Server, you should backup the `agent.conf` file (`C:\Program Files\NetApp\NetApp_Snap_Creator_Framework\scServer3.6.x\config\agent.conf`)

The paths provided in the following steps refer to the default installation path for Windows. Your path information might differ if the defaults were not used.

After the upgrade process is complete, consider the following issues:

- If the Snap Creator database that is upgraded contains some tasks marked a “in progress”, the state remains the same even after the upgrade process is complete.
- The default administrator in latest Snap Creator must be an administrator in Snap Creator 3.6.x. If the 3.6.x user is not an administrator, then the upgrade assigns an operator role to the 3.6.x user.

1. Stop the Snap Creator services if you have not already done so.

For information about stopping the services, see the details provided earlier in this topic.

2. Uninstall the Snap Creator (for Windows) by selecting **Start > Programs > Snap Creator > Uninstall NetApp Snap Creator Framework**.

For details, see information about uninstalling Snap Creator on Windows.

3. Install the latest Snap Creator Server.

For details, see the information about installing the Snap Creator Server on Windows.

4. If you selected to start the Snap Creator Server as a service when you installed the latest Snap Creator Server, then stop the service.

For information on stopping the service, see the details provided earlier in this topic.

5. Delete the latest Snap Creator Server database folder (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\snapcreator).
6. Copy the backed up Snap Creator 3.6.x database directory to the latest location (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\snapcreator).
7. Copy the backed up Snap Creator 3.6.x profiles and configuration directory to the latest location (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\configs).
8. Copy the backed up Snap Creator 3.6.x logs directory to the latest location (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\logs).
9. Open a command prompt and change the directory to the engine subdirectory in the Snap Creator installation path (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine).
10. Upgrade Snap Creator by entering the following command: `java -jar snapcreator.jar -upgrade`

After the upgrade process is complete, start the Snap Creator Server service by doing one of the following:

- Use the Services snap-in and start the service.
- Enter the following command from a command prompt: `sc start snapcreatorserverservice`

Also, you must validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port ([https://IP\\_address:gui\\_port](https://IP_address:gui_port)).

You must connect using HTTPS; otherwise, the connection is not automatically redirected to an HTTPS connection and the GUI will not work.

## Related information

[Installing the Snap Creator Server](#)

[Uninstalling Snap Creator on Windows](#)

## Upgrading the Snap Creator Server 3.6.x on UNIX-based systems

You can upgrade directly from the Snap Creator Server 3.6.x on UNIX-based systems.

- If you have any user names that contain special characters in Snap Creator, you must have renamed those

users using only alphabetic characters (a-z, A-Z) before performing the upgrade.

- You have stopped the Snap Creator processes before backing up the Snap Creator directories to ensure that the backed up data is complete.

For example, enter the following commands:

```
/install_path/scServer3.6.x/bin/scServer stop
/install_path/scAgent3.6.x/bin/scAgent stop
```

- You have backed up the up the following directories and all associated subdirectories and files, within the Snap Creator 3.6.x Server directory (/install\_path/scServer3.6.x):
  - Snap Creator database (./gui/snapcreator)
  - Profiles and configuration files (./configs)
  - Logs (./logs) **Note:** Do not delete the Snap Creator 3.6.x backup copies that you created.

The paths provided in the following steps refer to the default installation path. The path in the commands below might differ from your installation path.

After the upgrade process is complete, consider the following issues:

- If the Snap Creator database that is upgraded contains some tasks marked as “in progress”, the state remains the same even after the upgrade process is complete.
- The default administrator in the latest Snap Creator must be an administrator in Snap Creator 3.6.x. If the 3.6.x user is not an administrator, then the upgrade assigns an operator role to the 3.6.x user.
  1. Stop the Snap Creator processes if you have not already done so.

For information about stopping the processes, see the details provided earlier in this topic.

2. Install the latest Snap Creator, but do not start the Snap Creator Server service.

For details, see information about installing the Snap Creator Server on UNIX.

3. Copy the backed up Snap Creator 3.6.x database directory to the latest database location (/install\_path/scServer4.1.x/engine/snapcreator).
4. Copy the backed up Snap Creator 3.6.x profiles and configuration folder to the latest location (/install\_path/scServer4.1.x/engine/configs).
5. Copy the backed up Snap Creator 3.6.x logs folder to the latest location (/install\_path/scServer4.1.x/engine/logs).
6. Change directories to the engine subdirectory in the Snap Creator install path (/install\_path/scServer4.1.x/engine).
7. Upgrade Snap Creator by entering the following command: `java -jar snapcreator.jar -upgrade`

After the upgrade process is complete, start the Snap Creator Server service by entering the following command:

```
/install_path/scServer4.1.x/bin/scServer start
```

Also, delete the Snap Creator 3.6.x install directory.



Do not delete your backup copies until you are certain you do not need to revert to an older version.

You must also validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port ([https://IP\\_address:gui\\_port](https://IP_address:gui_port)).

You must connect using HTTPS; otherwise, the connection is not automatically redirected to an HTTPS connection and the GUI will not work.

## Related information

[Installing the Snap Creator Server on UNIX-based systems](#)

## Upgrading Snap Creator Agent 3.6.x on Windows

You can upgrade directly from Snap Creator Agent 3.6.x on Windows.

- You have stopped Snap Creator Agent service (`snapcreatoragentservice`) before backing up the Snap Creator Agent directories to ensure that the backed up data is complete.

For example, you can use the Services snap-in to stop the service:

- a. Select **Start > Run** and enter `services.msc`.
- b. Locate and select the Snap Creator Agent service; then, stop the service. Alternatively, you can open a command prompt and enter the following command:

```
sc stop snapcreatoragentservice
```

- You have backed up the following directories, and all associated subdirectories and files, within the Snap Creator Agent directory (`C:\Program Files\NetApp\NetApp_Snap_Creator_Framework\scAgent3.6.x`):
  - `agent.conf` file (`..\config\agent.conf`)



If you have the Snap Creator Server installed on the same system, you might have already backed up this file when you upgraded the Snap Creator Server 3.6.x.

- Logs directory, if enabled (`..\logs`)
- Plug-ins directory (`..\plugins`)

Snap Creator Agent in versions prior to 4.1 used a file named `agent.conf` to list commands outside of Snap Creator that might be executed on Snap Creator Agent. In 4.1, the `allowed_commands.config` file is used.

Similarly, the `agent.conf` file listed hosts that the Snap Creator Agent was allowed to communicate with. By default, the Snap Creator Agent allowed communications with all Snap Creator Servers. However, if you chose to use this feature in previous versions of Snap Creator, the `AUTHORIZED_HOSTS` parameter in the `agent.properties` file now replaces that feature.



If you did not use these parameters, a simple installation of the new agent is all that is required.

The paths provided in the following steps refer to the default installation path for Windows. Path information might differ from your installation path if the defaults were not used.

1. Stop the Snap Creator Agent service if you have not already done so.

For information about stopping the service, see the details provided earlier in this topic.

2. Uninstall Snap Creator (for Windows) by selecting **Start > Programs > Snap Creator > Uninstall NetApp Snap Creator Framework**.

For details, see the information about uninstalling Snap Creator on Windows.

3. Install the latest Snap Creator Agent.

For details, see the information about installing Snap Creator Agent on Windows.

4. Open the backed up copy of the agent.conf file in a text editor.

Following is an example of agent.conf:

```
host: scServer@Tampico
command: sdcli.exe
```

5. Open the new allowed\_commands.config file (C:\Program Files\NetApp\Snap\_Creator\_Framework\scAgent4.1.x\etc\allowed\_commands.config) in a text editor and copy the command line from agent.conf into the allowed\_commands.config file; however, due to the enhanced security in the latest Snap Creator, make sure that the command is fully qualified.

From the previous example, the allowed\_commands.config file should contain the following:

```
command: "C:\Program Files\NetApp\SnapDrive\sdcli.exe"
```



Because of the space between "Program Files", quotation marks must be included to encapsulate the command. If the command does not contain any spaces, then quotation marks are not needed.

You can add commands as needed, with each command on a separate line.

6. Save and close the file.
7. Open the agent.properties file (C:\Program Files\NetApp\Snap\_Creator\_Framework\scAgent4.1.x\etc\agent.properties) in a text editor and change the default entry of AUTHORIZED\_HOSTS=\* to reflect the host setting in the agent.conf file.

From the previous example, the AUTHORIZED\_HOSTS parameter should contain the following:

```
AUTHORIZED_HOSTS=Tampico
```

Hosts can be added as needed, using commas to separate host names. Both host names and IP addresses are supported:



```
AUTHORIZED_HOSTS=Tampico, 10.10.10.192, Fuji01
```

8. Save and close the file.
9. Start the Snap Creator Agent service by doing one of the following:
  - Use the Services snap-in and start the service.
  - From a command prompt, enter the following command: `sc start snapcreatoragentservice`

## Related information

[Installing Snap Creator Agent on Windows](#)

[Uninstalling Snap Creator on Windows](#)

## Upgrading the Snap Creator Agent 3.6.x on UNIX

You can upgrade directly from Snap Creator Agent 3.6.x on UNIX.

- You have stopped Snap Creator Agent before backing up the Snap Creator Agent directories to ensure that the backed up data is complete.

For example, enter the following command:

```
/install_path/scAgent3.6.x/bin/scAgent stop
```

- You have backed up the following directories, and all associated subdirectories and files, within the Snap Creator Agent directory (/install\_path/scAgent3.6.x):
  - agent.conf file (../config/agent.conf)
  - Logs directory, if enabled (../logs)
  - Plug-ins directory (../plugins)

The Snap Creator Agent in versions prior to 4.1 used a file named agent.conf to list commands outside of Snap Creator that could be executed on a Snap Creator Agent. In 4.1, the allowed\_commands.config file is used.

Similarly, the agent.conf file listed hosts that the Snap Creator Agent was allowed to communicate with. By default, the Snap Creator Agent allowed communications with all Snap Creator Servers. However, if you chose to use this feature in previous versions of Snap Creator, the AUTHORIZED\_HOSTS parameter in the agent.properties file now replaces that feature.



If you did not use these parameters, a simple installation of the new agent is all that is required.

The paths provided in the following steps refer to the default installation path. The paths in the commands below might differ from those in your installation path.

1. Stop Snap Creator Agent if you have not already done so.

For information, see the details provided earlier in this topic.

2. Install the latest Snap Creator Agent, but do not start the Snap Creator Agent.

For details, see the information about installing Snap Creator Agent on UNIX.

3. Open the backed up copy of the agent.conf file in a text editor.

The following is an example of agent.conf:

```
host: scServer@Lyon  
command: rc_domino
```

4. Open the new allowed\_commands.config file (/install\_path/scAgent4.1.x/etc/allowed\_commands.config) in a text editor and copy the command line from agent.conf into the allowed\_commands.config file; however, due to the enhanced security in the latest Snap Creator, make sure that the command is fully qualified.

From the previous example, the allowed\_commands.config file should contain the following:

```
command: /etc/init.d/rc_domino
```



If the command contains any spaces, then you must encapsulate the command within quotation marks.

You can add commands as needed, with each command on a separate line.

Save and close the file after making changes.

5. Open the agent.properties file (/install\_path/scAgent4.1.x/etc/agent.properties) in a text editor and change the default entry of AUTHORIZED\_HOSTS=\* to reflect the host setting in the agent.conf file, then save and close the file.

From the previous example, the AUTHORIZED\_HOSTS parameter should contain the following:

```
AUTHORIZED_HOSTS=Lyon
```

Hosts can be added as needed, using commas to separate host names. Both host names and IP addresses are supported:

```
AUTHORIZED_HOSTS=Lyon, 10.10.10.192, Fuji01
```

6. Start Snap Creator Agent by entering the following command:

```
/install_path/scAgent4.1.x/bin/scAgent start
```

## Related information

[Installing the Snap Creator Agent on UNIX-based systems](#)

## Upgrading from Snap Creator 4.0.x

When you upgrade from Snap Creator 4.0.x, the database schema is upgraded.

### Upgrading Snap Creator Server 4.0.x on Windows

You can upgrade directly from Snap Creator Server 4.0.x on Windows.

- If you have any user names that contain special characters in Snap Creator, you must have renamed those users using only alphabetic characters (a through z and A through Z).
- You must have stopped Snap Creator services (snapcreatorserverservice and snapcreatoragentservice) before backing up the Snap Creator directories to ensure that the backed up data is complete.

For example, you can use the Services snap-in to stop the services:

- a. Select **Start > Run** and enter `services.msc`.
- b. Locate and select the Snap Creator service; then, stop the service. Alternatively, you can open a command prompt and enter the following commands:

```
sc stop snapcreatorserverservice
sc stop snapcreatoragentservice
```

- You must have backed up the following directories, and all associated subdirectories and files, must have been backed up within the Snap Creator 4.0.x Server engine subdirectory (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.0.x\engine):
  - Snap Creator database (..\snapcreator)
  - Snap Creator Server properties (..\etc)
  - Profiles and configuration (..\configs)
  - Logs (..\logs) **Note:** You must not have deleted the Snap Creator 4.0.x backup copies that you created.
- (Optional) If the Snap Creator Agent is installed on the same host as the Snap Creator Server, you should have already backed up the agent.conf file (C:\Program Files\NetApp\Snap\_Creator\_Framework\scAgent4.0.x\config\agent.conf).

The paths provided in the following steps refer to the default installation path for Windows. Path information might differ from your installation path if the defaults were not used.

After the upgrade process is complete, consider the following issues:

- If the Snap Creator database that is upgraded contains some tasks marked as “in progress”, the state remains the same even after the upgrade process is complete.
- The default administrator in the latest Snap Creator must be an administrator in Snap Creator 4.0.x. If the 4.0.x user is not an administrator, then the upgrade assigns an operator role to the 4.0.x user.
  1. Stop the Snap Creator services if you have not already done so.

For information about stopping the services, see the details provided earlier in this topic.

2. Uninstall Snap Creator (for Windows) by selecting **Start > Programs > Snap Creator > Uninstall NetApp Snap Creator Framework**.

For details, see the information about uninstalling Snap Creator on Windows.

3. Install the latest Snap Creator Server.

For details, see the information about installing the Snap Creator Server on Windows.

4. If you selected to start the Snap Creator Server as a service when you installed the latest Snap Creator Server, then stop the service.

For information about stopping the service, see the details provided earlier in this topic.

5. Delete the latest Snap Creator Server database folder (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\snapcreator).

6. Copy the backed up Snap Creator 4.0.x database directory to the latest location (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\snapcreator).

7. Copy the backed up Snap Creator 4.0.x profiles and configuration directory to the latest location (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\configs).

8. Copy the backed up Snap Creator 4.0.x logs directory to the latest location (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\logs).

9. Open a command prompt and change the directory to the engine subdirectory in the Snap Creator install path (C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine).

10. Upgrade Snap Creator by entering the following command: `java -jar snapcreator.jar -upgrade`

After the upgrade process is complete, start the Snap Creator Server service by doing one of the following:

- Use the Services snap-in and start the service.
- From a command prompt, enter the following command: `sc start snapcreatorserverservice`

Also, you must validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port ([https://IP\\_address:gui\\_port](https://IP_address:gui_port)).

You must connect using HTTPS; otherwise, the connection is not automatically redirected to an HTTPS connection and the GUI will not work.

## Related information

[Installing the Snap Creator Server](#)

[Uninstalling Snap Creator on Windows](#)

## Upgrading Snap Creator Server 4.0.x on UNIX-based systems

You can upgrade directly from Snap Creator Server 4.0.x on UNIX-based systems.

- If you have any user names that contain special characters in Snap Creator, you must have renamed those users using only alphabetic characters (a through z or A through Z).
- You have stopped the Snap Creator processes before backing up the Snap Creator directories to ensure that the backed up data is complete.

For example, enter the following commands:

```
/install_path/scServer4.0.x/bin/scServer stop  
/install_path/scAgent4.0.x/bin/scAgent stop
```

- You have backed up the following directories, and all associated subdirectories and files, within the Snap Creator 4.0.x Server engine subdirectory (/install\_path/scServer4.0.x/engine):
  - Snap Creator database (./snapcreator)
  - Snap Creator Server properties (./etc)
  - Profiles and configuration (./configs)
  - Logs (./logs) **Note:** You must not have deleted the Snap Creator 4.0.x backup copies that you created.

The paths provided in the following steps refer to the default installation path. The paths in the commands below might differ from your installation path.

After the upgrade process is complete, you should consider the following issues:

- If the Snap Creator database that is upgraded contains some tasks marked as "in progress," then the state remains the same even after the upgrade process is complete.
- The default administrator in the latest Snap Creator must be an administrator in Snap Creator 4.0.x. If the 4.0.x user is not an administrator, then the upgrade assigns an operator role to the 4.0.x user.
  1. Stop the Snap Creator processes if you have not already done so.

For information about stopping the processes, see the details provided earlier in this topic.

2. Install the latest Snap Creator, but do not start the Snap Creator Server service.

For details, see information about installing the Snap Creator Server on UNIX.

3. Copy the backed up Snap Creator 4.0.x database directory to the latest location (/install\_path/scServer4.1.x/engine/snapcreator).
4. Copy the backed up 4.0.x profiles and configuration directory to the latest location (/install\_path/scServer4.1.x/engine/configs).
5. Copy the backed up 4.0.x logs directory to the latest location (/install\_path/scServer4.1.x/engine/logs).
6. Change directories to the engine subdirectory in the Snap Creator install path (/install\_path/scServer4.1.x/engine).
7. Upgrade Snap Creator by entering the following command: `java -jar snapcreator.jar -upgrade`

After the upgrade process is complete, start the Snap Creator Server service by entering the following command:

```
/install_path/scServer4.1.x/bin/scServer start
```

Also, delete the Snap Creator 4.0 installation directory.



Do not delete your backup copies until you are certain that you do not need to revert to an older version.

You must also validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port ([https://IP\\_address:gui\\_port](https://IP_address:gui_port)).

You must connect using HTTPS; otherwise, the connection is not automatically redirected to an HTTPS connection and the GUI will not work.

## Related information

[Installing the Snap Creator Server on UNIX-based systems](#)

## Upgrading Snap Creator Agent 4.0.x on Windows

You can upgrade directly from Snap Creator Agent 4.0.x on Windows.

- You have stopped Snap Creator Agent service (`snapcreatoragentservice`) before backing up the Snap Creator Agent directories to ensure that the backed up data is complete.

For example, you can use the Services snap-in to stop the service:

- a. Select **Start > Run** and enter `services.msc`.
- b. Locate and select the Snap Creator Agent service; then, stop the service. Alternatively, you can open a command prompt and enter the following command:

```
sc stop snapcreatoragentservice
```

- You have backed up the following directories, and all associated subdirectories and files, within the Snap Creator Agent directory (`C:\Program Files\NetApp\NetApp_Snap_Creator_Framework\scAgent4.0.x`):
  - `agent.conf` file (`..\config\agent.conf`)



If you have Snap Creator Server installed on the same system, you might have already backed up this file when you upgraded Snap Creator Server 4.0.x.

- Logs directory, if enabled (`..\logs`)
- Plug-ins directory (`..\plugins`)

Snap Creator Agent in versions prior to 4.1 used a file named `agent.conf` to list commands outside of Snap Creator that might be executed on Snap Creator Agent. In 4.1, the `allowed_commands.config` file is used.

Similarly, the `agent.conf` file listed hosts that Snap Creator Agent was allowed to communicate with. By default, Snap Creator Agent allowed communications with all Snap Creator Servers. However, if you chose to use this feature in previous versions of Snap Creator, the `AUTHORIZED_HOSTS` parameter in the `agent.properties` file now replaces that feature.



If you did not use these parameters, a simple installation of the new agent is all that is required.

The paths provided in the following steps refer to the default installation path for Windows. Path information might differ from your install path if the defaults were not used.

1. Stop the Snap Creator Agent service if you have not already done so.

For information about stopping the service, see the details provided earlier in this topic.

2. Uninstall Snap Creator (for Windows) by selecting **Start > Programs > Snap Creator > Uninstall NetApp Snap Creator Framework**.

For details, see information about uninstalling Snap Creator on Windows.

3. Install the latest Snap Creator Agent.

For details, see the information about installing the Snap Creator Agent on Windows.

4. Open the backed up copy of the agent.conf file in a text editor.

Following is an example of agent.conf:

```
host: scServer@Tampico
command: sdcli.exe
```

5. Open the new allowed\_commands.config file (C:\Program Files\NetApp\Snap\_Creator\_Framework\scAgent4.1.x\etc\allowed\_commands.config) in a text editor and copy the command line from agent.conf into the allowed\_commands.config file; however, due to the enhanced security in the latest Snap Creator, make sure that the command is fully qualified.

From the previous example, the allowed\_commands.config file should contain the following:

```
command: "C:\Program Files\NetApp\SnapDrive\sdcli.exe"
```



Because of the space between "Program Files", quotation marks must be included to encapsulate the command. If the command does not contain any spaces, then quotation marks are not needed.

You can add commands as needed, with each command on a separate line.

6. Save and close the file.

7. Open the agent.properties file (C:\Program Files\NetApp\Snap\_Creator\_Framework\scAgent4.1.x\etc\agent.properties) in a text editor and change the default entry of AUTHORIZED\_HOSTS=\* to reflect the host setting in the agent.conf file.

From the previous example, the AUTHORIZED\_HOSTS parameter should contain the following:

```
AUTHORIZED_HOSTS=Tampico
```

Hosts can be added as needed, using commas to separate host names. Both host names and IP addresses are supported:

```
AUTHORIZED_HOSTS=Tampico, 10.10.10.192, Fuji01
```

8. Save and close the file.

9. Start the Snap Creator Agent service by doing one of the following:

- Use the Services snap-in and start the service.

- From a command prompt, enter the following command: `sc start snapcreatoragentservice`  
**Note:** Any changes to the `allowed_commands.config` or `agent.properties` files require restarting Snap Creator Agent if it is running when the changes are made.

## Related information

[Installing Snap Creator Agent on Windows](#)

[Uninstalling Snap Creator on Windows](#)

## Upgrading the Snap Creator Agent 4.0.x on UNIX

You can upgrade directly from Snap Creator Agent 4.0.x on UNIX.

- You have stopped Snap Creator Agent before backing up the Snap Creator Agent directories to ensure that the backed up data is complete.

For example, enter the following command:

```
/install_path/scAgent4.0.x/bin/scAgent stop
```

- You have backed up the following directories, and all associated subdirectories and files, within the Snap Creator Agent directory (`/install_path/scAgent4.0.x`):
  - `agent.conf` file (`./config/agent.conf`)
  - Logs directory, if enabled (`./logs`)
  - Plug-ins directory (`./plugins`)

Snap Creator Agent in versions prior to 4.1 used a file named `agent.conf` to list commands outside of Snap Creator that might be executed on Snap Creator Agent. In 4.1, the `allowed_commands.config` file is used.

Similarly, the `agent.conf` file listed hosts that Snap Creator Agent was allowed to communicate with. By default, Snap Creator Agent allowed communications with all Snap Creator Servers. However, if you chose to use this feature in previous versions of Snap Creator, the `AUTHORIZED_HOSTS` parameter in the `agent.properties` file replaces that feature.



If you did not use these parameters, a simple installation of the new agent is all that is required.

The paths provided in the following steps refer to the default installation path. The paths in the commands below might differ from your installation path.

1. Stop Snap Creator Agent if you have not already done so.

For information, see the details provided earlier in this topic.

2. Install the latest Snap Creator Agent, but do not start the Snap Creator Agent.

For details, see the information about installing Snap Creator Agent on UNIX.

3. Open the backed up copy of the `agent.conf` file in a text editor.

The following is an example of the `agent.conf` file:



```
host: scServer@Lyon
command: rc_domino
```

4. Open the new `allowed_commands.config` file (`/install_path/scAgent4.1.x/etc/allowed_commands.config`) in a text editor and copy the command line from `agent.conf` to the `allowed_commands.config` file; however, due to the enhanced security in the latest Snap Creator, make sure that the command is fully qualified.

From the previous example, the `allowed_commands.config` file should contain the following:

```
command: /etc/init.d/rc_domino
```



If the command contains any spaces, then you must encapsulate the command within quotation marks.

You can add commands as needed, with each command on a separate line.

Save and close the file after making changes.

5. Open the `agent.properties` file (`/install_path/scAgent4.1.x/etc/agent.properties`) in a text editor and change the default entry of `AUTHORIZED_HOSTS=*` to reflect the host setting in the `agent.conf` file.

From the previous example, the `AUTHORIZED_HOSTS` parameter should contain the following:

```
AUTHORIZED_HOSTS=Lyon
```

Hosts can be added as needed, using commas to separate host names. Both host names and IP addresses are supported:

```
AUTHORIZED_HOSTS=Lyon, 10.10.10.192, Fuji01
```

Save and close the file after making changes.

6. Start Snap Creator Agent by entering the following command:

```
/install_path/scAgent4.1.x/bin/scAgent start
```



Any changes to the `allowed_commands.config` or `agent.properties` files require restarting the Snap Creator Agent if it is running when the changes are made.

## Related information

[Installing the Snap Creator Agent on UNIX-based systems](#)

## Upgrading from Snap Creator 4.1.x

You can upgrade from Snap Creator 4.1.x, including all currently available patch levels.

### Upgrading Snap Creator Server 4.1.x on Windows

You can upgrade from Snap Creator Server 4.1.x on Windows.

- You must have stopped Snap Creator services (`snapcreatorserverservice` and `snapcreatoragentservice`) before backing up the Snap Creator directories to ensure that the backed up data is complete.

For example, you can use the Services snap-in to stop the services:

- a. Select **Start > Run** and enter `services.msc`.
- b. Locate and select the Snap Creator service and then stop the service. Alternatively, you can open a command prompt and enter the following commands:

```
sc stop snapcreatorserverservice
sc stop snapcreatoragentservice
```

- You must have backed up the following directories, and all associated subdirectories and files, within the Snap Creator 4.1.x Server engine subdirectory (`C:\Program Files\NetApp\Snap_Creator_Framework\scServer4.1.x\engine`):
  - Snap Creator database (`..\snapcreator`)
  - Snap Creator Server properties (`..\etc`)
  - Configuration files (`..\configs`)
  - Logs (`..\logs`)
  - Plug-in repository, if enabled (`..\snapcreatorPlugin`)
- (Optional) If the Snap Creator Agent is installed on the same host as the Snap Creator Server, you should back up the following directories and all associated subdirectories and files within the Snap Creator Agent directory (`C:\Program Files\NetApp\Snap_Creator_Framework\scAgent4.1.x`):
  - Snap Creator Agent properties (`..\etc`), which contains the `allowed_commands.config` and `agent.properties` files
  - Logs (`..\logs`)
  - Plug-ins (`..\plugins`)
- If Snap Creator was manually started from a command prompt, you must close the command prompt and stop it.



If Snap Creator was started from a service, the uninstaller stops the service as part of the uninstall process.

The paths provided in the following steps refer to the default installation path for Windows. Path information might differ from your installation path if the defaults were not used.

After the upgrade process is complete, consider the following issues:

- If the Snap Creator database that is upgraded contains some tasks marked as “in progress”, the state remains the same even after the upgrade process is complete.
- The default administrator in the latest Snap Creator must be an administrator in Snap Creator 4.1.

If the 4.1.x user is not an administrator, then the upgrade assigns an operator role to the 4.1.x user.

1. Stop the Snap Creator services if you have not already done so.

For information about stopping the services, refer to the details provided earlier in this topic.

2. Uninstall Snap Creator (for Windows) by selecting **Start > Programs > Snap Creator > Uninstall NetApp Snap Creator Framework**.

For details, see the information about uninstalling Snap Creator on Windows.

3. Install the latest Snap Creator Server.

For details, see the information about installing the Snap Creator Server on Windows.

4. If you chose to start the Snap Creator Server as a service when you installed the latest Snap Creator Server, then stop the service.

For information about stopping the service, refer to the details provided earlier in this topic.

5. Delete the latest Snap Creator Server database folder at C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\snapcreator).
6. Copy the backed-up Snap Creator 4.1 database directory to the latest location at C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\snapcreator).
7. Copy the backed-up Snap Creator 4.1 configuration directory to the latest location at C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\configs).
8. Copy the backed-up Snap Creator 4.1 logs directory to the latest location at C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine\logs).
9. Open a command prompt and change the directory to the engine subdirectory in the Snap Creator install path at C:\Program Files\NetApp\Snap\_Creator\_Framework\scServer4.1.x\engine).
10. Upgrade Snap Creator by entering the following command: `java -jar snapcreator.jar -upgrade`

After the upgrade process is complete, start the Snap Creator Server service by doing one of the following:

- Use the Services snap-in and start the service.
- From a command prompt, enter the following command:

```
sc start snapcreatorserverservice
```

Also, you must validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port ([https://IP\\_address:gui\\_port](https://IP_address:gui_port)).

You must connect using HTTPS; otherwise, the connection is not automatically redirected to an HTTPS connection and the GUI will not work.

## Upgrading Snap Creator Server 4.1.x on UNIX-based systems

You can upgrade from Snap Creator Server 4.1.x on UNIX-based systems.

- You have stopped the Snap Creator processes before backing up the Snap Creator directories to ensure that the backed-up data is complete.

For example, enter the following commands:

```
/install_path/scServer4.1.0/bin/scServer stop
/install_path/scAgent4.1.0/bin/scAgent stop
```

- You have backed up the following directories, and all associated subdirectories and files, within the Snap Creator 4.1.x Server engine subdirectory (/install\_path/scServer4.1.x/engine):
  - Snap Creator database (./snapcreator)
  - Snap Creator Server properties (./etc)
  - Configuration files (./configs)
  - Logs (./logs)
  - Plug-in repository, if enabled (./snapcreatorPlugin) **Note:** You must not delete the Snap Creator 4.1.x backup copies that you created.

The paths provided in the following steps refer to the default installation path. Path information might differ from your installation path if the defaults were not used.

After the upgrade process is complete, you should consider the following issues:

- If the Snap Creator database that is upgraded contains some tasks marked as “in progress”, the state remains the same even after the upgrade process is complete.
- The default administrator in the latest Snap Creator must be an administrator in Snap Creator 4.1.x.

If the 4.1.x user is not an administrator, then the upgrade assigns an operator role to the 4.1.x user.

1. Stop the Snap Creator processes if you have not already done so.

For information about stopping the processes, refer to the details provided earlier in this topic.

2. Install the latest version of Snap Creator, but do not start Snap Creator Server.

For details, see the information about installing Snap Creator Server on UNIX.

3. Copy the backed-up Snap Creator 4.1.x database directory to the latest location at /install\_path/scServer4.1.x/engine/snapcreator.
4. Copy the backed-up 4.1.x configuration directory to the latest location at /install\_path/scServer4.1.x/engine/configs).
5. Copy the backed-up 4.1.x logs directory to the latest location at /install\_path/scServer4.1.x/engine/logs.
6. Change directories to the engine subdirectory in the Snap Creator install path at /install\_path/scServer4.1.x/engine.
7. Upgrade Snap Creator by entering the following command: `java -jar snapcreator.jar -upgrade`

After the upgrade process is complete, start Snap Creator Server by entering the following command:

```
/install_path/scServer4.1.x/bin/scServer start
```

Also, delete the Snap Creator 4.1.x installation directory.



Do not delete your backup copies until you are certain that you do not need to revert to an older version.

You must also validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port ([https://IP\\_address:gui\\_port](https://IP_address:gui_port)).

You must connect using HTTPS; otherwise, the connection is not automatically redirected to an HTTPS connection and the GUI will not work.

### Upgrading Snap Creator Agent 4.1.x on Windows

You can upgrade from Snap Creator Agent 4.1.x on Windows.

- You have stopped Snap Creator Agent service (snapcreatoragentservice) before backing up the Snap Creator Agent directories to ensure that the backed up data is complete.

For example, you can use the Services snap-in to stop the service:

- a. Select **Start > Run** and enter `services.msc`.
- b. Locate and select the Snap Creator Agent service; then, stop the service. Alternatively, you can open a command prompt and enter the following command:

```
sc stop snapcreatoragentservice
```

- You have backed up the following directories, and all associated subdirectories and files, within the Snap Creator Agent directory (C:\Program Files\NetApp\NetApp\_Snap\_Creator\_Framework\scAgent4.1.x):
  - Snap Creator Agent properties (..\etc), which contains the `allowed_commands.config` and `agent.properties` files
  - Logs (..\logs)
  - Plug-ins (..\plugins) **Note:** Do not delete the Snap Creator 4.1.x backup copies that you created.

The paths provided in the following steps refer to the default installation path for Windows. Path information might differ from your installation path if the defaults were not used.

1. Stop the Snap Creator Agent service if you have not already done so.

For information about stopping the service, refer to the details provided earlier in this topic.

2. Uninstall Snap Creator (for Windows) by selecting **Start > Programs > Snap Creator > Uninstall NetApp Snap Creator Framework**.

For details, see the information about uninstalling Snap Creator on Windows.

### 3. Install the latest Snap Creator Agent.

For details, see the information about installing the Snap Creator Agent on Windows.

### 4. If you chose to start the Snap Creator Agent as a service when you installed the latest Snap Creator Server, then stop the service.

For information about stopping the service, refer to the details provided earlier in this topic.

5. Copy the backed-up Snap Creator 4.1.x logs directory to the latest location (C:\Program Files\NetApp\Snap\_Creator\_Framework\scAgent4.1.x\logs).
6. Copy the backed-up Snap Creator 4.1.x plug-ins directory to the latest location (C:\Program Files\NetApp\Snap\_Creator\_Framework\scAgent4.1.x\plugins).
7. Copy the backed-up Snap Creator 4.1.x agent properties directory to the latest location (C:\Program Files\NetApp\Snap\_Creator\_Framework\scAgent4.1.x\etc).
8. Start the Snap Creator Agent service by doing one of the following:

- Use the Services snap-in and start the service.
- Enter the following at the command prompt:

```
sc start snapcreatoragentservice
```



Any changes to the `allowed_commands.config` or `agent.properties` files require restarting Snap Creator Agent if it is running when the changes are made.

## Upgrading Snap Creator Agent 4.1.x on UNIX-based systems

You can upgrade from Snap Creator Agent 4.1.x on UNIX-based systems.

- You have stopped Snap Creator Agent before backing up the Snap Creator Agent directories to ensure that the backed-up data is complete.

For example, enter the following command:

```
/install_path/scAgent4.1.0/bin/scAgent stop
```

- You have backed up the following directories, and all associated subdirectories and files, within the Snap Creator Agent directory (`/install_path/scAgent4.1.x`):
  - Snap Creator Agent properties (`../etc`), which contains the `allowed_commands.config` and `agent.properties` files
  - Logs (`../logs`)
  - Plug-ins (`../plugins`) **Note:** Do not delete the Snap Creator 4.1.x backup copies that you created.

The paths provided in the following steps refer to the default installation path. Path information might differ from your installation path if the defaults were not used.

1. Stop Snap Creator Agent if you have not already done so.

For information, refer to the details provided earlier in this topic.

2. Install the latest Snap Creator Agent, but do not start the Snap Creator Agent.

For details, see the information about installing Snap Creator Agent on UNIX.

3. Copy the backed-up Snap Creator 4.1.x logs directory to the latest location at `/install_path/scAgent4.1.x/logs`).
4. Copy the backed-up Snap Creator 4.1.x plug-ins directory to the latest location at `/install_path/scAgent4.1.x/plugins`).
5. Copy the backed-up Snap Creator 4.1.x agent properties directory to the latest location at `/install_path/scAgent4.1.x/etc`).
6. Start Snap Creator Agent by entering the following command:

```
/install_path/scAgent4.1.x/bin/scAgent start
```



Any changes to the `allowed_commands.config` or `agent.properties` files require you to restart the Snap Creator Agent if it is running when the changes are made.

## Upgrading from Snap Creator 4.3.x

You can upgrade from Snap Creator 4.3.x, including all currently available patch releases.

The upgrade procedure is the same for Snap Creator Framework 4.1.x and 4.3.x.



If you upgrade Snap Creator Framework 4.3.1 to a 4.3.1 patch release, you must omit the final step of running the `java -jar snapcreator.jar -upgrade` command.

## Uninstalling Snap Creator

You can uninstall Snap Creator from your Windows and UNIX systems.

### Uninstalling Snap Creator on Windows

You can uninstall Snap Creator using the Windows **Start** menu. The Windows uninstaller removes the Snap Creator components that are installed (for example, if both the Snap Creator Server and Snap Creator Agent are installed, both will be uninstalled). Similarly, if only one of the components is installed, that component will be uninstalled.

- Back up the following directories and all associated subdirectories and files, within the Snap Creator Server engine directory (`C:\Program Files\NetApp\Snap_Creator_Framework\scServer4.1.0\engine`):
  - Snap Creator database (`..\snapcreator`)
  - Snap Creator Server properties (`..\etc`)
  - Configuration files (`..\configs`)
  - Logs (`..\logs`)

- Plug-in repository, if enabled (..\snapcreatorPlugin)
- Back up the following directories and all associated subdirectories and files within the Snap Creator Agent directory (C:\Program Files\NetApp\Snap\_Creator\_Framework\scAgent4.1.0):
  - Logs (..\logs)
  - Plug-ins (..\plugins)
  - Snap Creator Agent properties (..\etc), which contains the allowed\_commands.config and agent.properties files
- If Snap Creator was manually started from a command prompt, stop and quit Snap Creator by closing the command prompt.



If Snap Creator was started from a service, the uninstaller stops the service as part of the uninstall process.

1. Select **Start > All programs > Snap Creator > Uninstall NetApp Snap Creator Framework**.
2. Click **Yes** when you are prompted as to whether you backed up the log and configurations files before uninstalling Snap Creator.
3. Click **Close** when prompted after the uninstall process is complete.

## Uninstalling Snap Creator on UNIX

When uninstalling Snap Creator on UNIX, first uninstall the Snap Creator Agent, then uninstall the Snap Creator Server.

### Uninstalling Snap Creator Agent on UNIX

You can uninstall Snap Creator Agent from UNIX by deleting the Snap Creator Agent installation folder.

Back up the following directories, and all associated subdirectories and files, within the Snap Creator Agent directory (/install\_path/scAgent4.1.0):

- Logs (../logs)
- Plug-ins (../plugins)
- Snap Creator Agent properties (../etc), which contains the allowed\_commands.config and agent.properties files

To uninstall the Snap Creator Agent, perform the following steps.



The paths provided in the following steps refer to the generic installation path. You can modify the path in these commands to reflect the customized Snap Creator Agent installation path.

1. Stop the Snap Creator Agent by using the following script:

```
/install_path/scAgent4.1.0/bin/scAgent stop
```

2. Delete the Snap Creator Agent installation folder.



For example, on a Linux system, run the following command:

```
rm -Rf /install_path/scAgent4.1.0
```

## Uninstalling Snap Creator Server on UNIX

You can uninstall Snap Creator Server from UNIX by deleting the Snap Creator Server installation folder.

Back up the following directories, and all associated subdirectories and files, within the Snap Creator Server engine directory (/install\_path/scServer4.1.0/engine):

- Snap Creator database (./snapcreator)
- Snap Creator Server properties (./etc)
- Configuration (./configs)
- Logs (./logs)
- Plug-in repository, if enabled (./snapcreatorPlugin)



Make sure you back up these directories; otherwise, you will lose the user data and it will not be recoverable.

To uninstall the Snap Creator Server, perform the following steps.



The paths provided in the following steps refer to the generic installation path. You can modify the path in these commands to reflect the customized Snap Creator Server installation path.

1. Stop the Snap Creator Server service (snapcreatorserverservice) by using the following script:

```
/install_path/scServer4.1.0/bin/scServer stop
```

2. Delete the Snap Creator Server installation folder.

For example, for a Linux system, run the following command:

```
rm -Rf /install_path/scServer4.1.0
```

## CLI reference

This section contains reference information for using Snap Creator from the command line interface.

## CLI commands for creating a role for a Snap Creator user in clustered Data ONTAP

While creating a Snap Creator user in clustered Data ONTAP, you must create a role for a new cluster user or SVM user by running various commands.

### CLI commands for creating cluster roles

The following table lists the commands that are required to create a role for a new cluster user.

Command directory name	Command to be run
cluster identity show	role create -role CRBAC_New -cmddirname "cluster identity show" -vserver clus3240rre
event	role create -role CRBAC_New -cmddirname "event" -vserver clus3240rre
event config	role create -role CRBAC_New -cmddirname "event config" -vserver clus3240rre
event destination	role create -role CRBAC_New -cmddirname "event destination" -vserver clus3240rre
event log	role create -role CRBAC_New -cmddirname "event log" -vserver clus3240rre
event mailhistory	role create -role CRBAC_New -cmddirname "event mailhistory" -vserver clus3240rre
event route	role create -role CRBAC_New -cmddirname "event route" -vserver clus3240rre
event snmhistory	role create -role CRBAC_New -cmddirname "event snmhistory" -vserver clus3240rre
event status	role create -role CRBAC_New -cmddirname "event status" -vserver clus3240rre
lun comment	role create -role CRBAC_New -cmddirname "lun comment" -vserver clus3240rre
lun create	role create -role CRBAC_New -cmddirname "lun create" -vserver clus3240rre
lun delete	role create -role CRBAC_New -cmddirname "lun delete" -vserver clus3240rre

Command directory name	Command to be run
lun geometry	role create -role CRBAC_New -cmddirname "lun geometry" -vserver clus3240rre
lun igroup add	role create -role CRBAC_New -cmddirname "lun igroup add" -vserver clus3240rre
lun igroup create	role create -role CRBAC_New -cmddirname "lun igroup create" -vserver clus3240rre
lun igroup set	role create -role CRBAC_New -cmddirname "lun igroup set" -vserver clus3240rre
lun igroup show	role create -role CRBAC_New -cmddirname "lun igroup show" -vserver clus3240rre
lun map	role create -role CRBAC_New -cmddirname "lun map" -vserver clus3240rre
lun mapping show	role create -role CRBAC_New -cmddirname "lun mapping show" -vserver clus3240rre
lun modify	role create -role CRBAC_New -cmddirname "lun modify" -vserver clus3240rre
lun move	role create -role CRBAC_New -cmddirname "lun move" -vserver clus3240rre
lun offline	role create -role CRBAC_New -cmddirname "lun offline" -vserver clus3240rre
lun online	role create -role CRBAC_New -cmddirname "lun online" -vserver clus3240rre
lun resize	role create -role CRBAC_New -cmddirname "lun resize" -vserver clus3240rre
lun show	role create -role CRBAC_New -cmddirname "lun show" -vserver clus3240rre
lun unmap	role create -role CRBAC_New -cmddirname "lun unmap" -vserver clus3240rre
network	role create -role CRBAC_New -cmddirname "network" -vserver clus3240rre

Command directory name	Command to be run
network fcp adapter show	role create -role CRBAC_New -cmddirname "network fcp adapter show" -vserver clus3240rre
network interface show	role create -role CRBAC_New -cmddirname "network interface show" -vserver clus3240rre
security login role show	role create -role CRBAC_New -cmddirname "security login role show" -vserver clus3240rre
security login show	role create -role CRBAC_New -cmddirname "security login show" -vserver clus3240rre
snapmirror	role create -role CRBAC_New -cmddirname "snapmirror" -vserver clus3240rre
storage aggregate	role create -role CRBAC_New -cmddirname "storage aggregate" -vserver clus3240rre
system license show	role create -role CRBAC_New -cmddirname "system license show" -vserver clus3240rre
system node	role create -role CRBAC_New -cmddirname "system node" -vserver clus3240rre
system node autosupport	role create -role CRBAC_New -cmddirname "system node autosupport" -vserver clus3240rre
system node autosupport invoke	role create -role CRBAC_New -cmddirname "system node autosupport invoke" -vserver clus3240rre
system node show	role create -role CRBAC_New -cmddirname "system node show" -vserver clus3240rre
system node run	role create -role CRBAC_New -cmddirname "system node run" -vserver clus3240rre
system services ndmp	role create -role CRBAC_New -cmddirname "system services ndmp" -vserver clus3240rre
version	role create -role CRBAC_New -cmddirname "version" -vserver clus3240rre
version	security login role create -role bainew1 -vserver SnapCreator -cmddirname "version" -access readonly

Command directory name	Command to be run
vserver export-policy rule create	role create -role CRBAC_New -cmddirname "vserver export-policy rule create" -vserver clus3240rre
vserver export-policy rule show	role create -role CRBAC_New -cmddirname "vserver export-policy rule show" -vserver clus3240rre
vserver export-policy show	role create -role CRBAC_New -cmddirname "vserver export-policy show" -vserver clus3240rre
vserver fcp	role create -role CRBAC_New -cmddirname "vserver fcp" -vserver Snapcreator -vserver clus3240rre
vserver fcp initiator show	role create -role CRBAC_New -cmddirname "vserver fcp initiator show" -vserver clus3240rre
vserver fcp show	role create -role CRBAC_New -cmddirname "vserver fcp show" -vserver clus3240rre
vserver fcp status	role create -role CRBAC_New -cmddirname "vserver fcp status" -vserver clus3240rre
vserver iscsi connection show	role create -role CRBAC_New -cmddirname "vserver iscsi connection show" -vserver clus3240rre
vserver iscsi	role create -role CRBAC_New -cmddirname "vserver iscsi" -vserver Snapcreator -vserver clus3240rre
vserver iscsi interface accesslist add	role create -role CRBAC_New -cmddirname "vserver iscsi interface accesslist add" -vserver clus3240rre
vserver iscsi interface accesslist show	role create -role CRBAC_New -cmddirname "vserver iscsi interface accesslist show" -vserver clus3240rre
vserver iscsi nodename	role create -role CRBAC_New -cmddirname "vserver iscsi nodename" -vserver clus3240rre
vserver iscsi session show	role create -role CRBAC_New -cmddirname "vserver iscsi session" show -vserver clus3240rre
vserver iscsi show	role create -role CRBAC_New -cmddirname "vserver iscsi show" -vserver clus3240rre
vserver iscsi status	role create -role CRBAC_New -cmddirname "vserver iscsi status" -vserver clus3240rre

Command directory name	Command to be run
vserver nfs	role create -role CRBAC_New -cmddirname "vserver nfs" -vserver Snapcreator -vserver clus3240rre
vserver nfs status	role create -role CRBAC_New -cmddirname "vserver nfs status" -vserver clus3240rre
vserver options	role create -role CRBAC_New -cmddirname "vserver options" -vserver clus3240rre
vserver services unix-group create	role create -role CRBAC_New -cmddirname "vserver services name-service unix-group create" -vserver clus3240rre
vserver services unix-user create	role create -role CRBAC_New -cmddirname "vserver services name-service unix-user create" -vserver clus3240rre
vserver services unix-group show	role create -role CRBAC_New -cmddirname "vserver services name-service unix-group show" -vserver clus3240rre
vserver services unix-user show	role create -role CRBAC_New -cmddirname "vserver services name-service unix-user show" -vserver clus3240rre
vserver show	role create -role CRBAC_New -cmddirname "vserver show" -vserver clus3240rre
volume autosize	role create -role CRBAC_New -cmddirname "volume autosize" -vserver clus3240rre
volume clone create	role create -role CRBAC_New -cmddirname "volume clone create" -vserver clus3240rre
volume create	role create -role CRBAC_New -cmddirname "volume create" -vserver clus3240rre
volume destroy	role create -role CRBAC_New -cmddirname "volume destroy" -vserver clus3240rre
volume efficiency off	role create -role CRBAC_New -cmddirname "volume efficiency off" -vserver clus3240rre
volume efficiency on	role create -role CRBAC_New -cmddirname "volume efficiency on" -vserver clus3240rre

Command directory name	Command to be run
volume efficiency show	role create -role CRBAC_New -cmddirname "volume efficiency show" -vserver clus3240rre
volume efficiency start	role create -role CRBAC_New -cmddirname "volume efficiency start" -vserver clus3240rre
volume file	role create -role CRBAC_New -cmddirname "volume file" -vserver clus3240rre
volume file clone create	role create -role CRBAC_New -cmddirname "volume file clone create" -vserver clus3240rre
volume file show-disk-usage	role create -role bainew1 -vserver SnapCreator -cmddirname "volume file show-disk-usage" -access all
volume modify	role create -role CRBAC_New -cmddirname "volume modify" -vserver clus3240rre
volume offline	role create -role CRBAC_New -cmddirname "volume offline" -vserver clus3240rre
volume show	role create -role CRBAC_New -cmddirname "volume show" -vserver clus3240rre
volume size	role create -role CRBAC_New -cmddirname "volume size" -vserver clus3240rre
volume snapshot create	role create -role CRBAC_New -cmddirname "volume snapshot create" -vserver clus3240rre
volume unmount	role create -role CRBAC_New -cmddirname "volume unmount" -vserver clus3240rre

### CLI commands for creating SVM roles

The following table lists the commands that are required to create a role for a new SVM user.

Command directory name	Command to be run
adduser	role create -role VSERVERRBACROLE_New -cmddirname "adduser" -vserver Snapcreator

Command directory name	Command to be run
event generate-autosupport-log	role create -role VSERVERRBACROLE_New -cmddirname "event generate-autosupport-log" -vserver Snapcreator
lun comment	role create -role VSERVERRBACROLE_New -cmddirname "lun comment" -vserver Snapcreator
lun create	role create -role VSERVERRBACROLE_New -cmddirname "lun create" -vserver Snapcreator
lun delete	role create -role VSERVERRBACROLE_New -cmddirname "lun delete" -vserver Snapcreator
lun geometry	role create -role VSERVERRBACROLE_New -cmddirname "lun geometry" -vserver Snapcreator
lun igroup add	role create -role VSERVERRBACROLE_New -cmddirname "lun igroup add" -vserver Snapcreator
lun igroup create	role create -role VSERVERRBACROLE_New -cmddirname "lun igroup create" -vserver Snapcreator
lun igroup set	role create -role VSERVERRBACROLE_New -cmddirname "lun igroup set" -vserver Snapcreator
lun igroup show	role create -role VSERVERRBACROLE_New -cmddirname "lun igroup show" -vserver Snapcreator
lun map	role create -role VSERVERRBACROLE_New -cmddirname "lun map" -vserver Snapcreator
lun mapping show	role create -role VSERVERRBACROLE_New -cmddirname "lun mapping show" -vserver Snapcreator
lun modify	role create -role VSERVERRBACROLE_New -cmddirname "lun modify" -vserver Snapcreator
lun move	role create -role VSERVERRBACROLE_New -cmddirname "lun move" -vserver Snapcreator
lun offline	role create -role VSERVERRBACROLE_New -cmddirname "lun offline" -vserver Snapcreator
lun online	role create -role VSERVERRBACROLE_New -cmddirname "lun online" -vserver Snapcreator



Command directory name	Command to be run
lun resize	role create -role VSERVERRBACROLE_New -cmddirname "lun resize" -vserver Snapcreator
lun show	role create -role VSERVERRBACROLE_New -cmddirname "lun show" -vserver Snapcreator
lun unmap	role create -role VSERVERRBACROLE_New -cmddirname "lun unmap" -vserver Snapcreator
network	role create -role VSERVERRBACROLE_New -cmddirname "network" -vserver SnapCreator
network connections	role create -role VSERVERRBACROLE_New -cmddirname "network connections" -vserver SnapCreator
network connections active	role create -role VSERVERRBACROLE_New -cmddirname "network connections active" -vserver SnapCreator
network connections listening show	role create -role VSERVERRBACROLE_New -cmddirname "network connections listening show" -vserver SnapCreator
network interface	role create -role VSERVERRBACROLE_New -cmddirname "network interface" -vserver SnapCreator
network routing-groups	role create -role VSERVERRBACROLE_New -cmddirname "network routing-groups" -vserver SnapCreator
restore-file	role create -role VSERVERRBACROLE_New -cmddirname "restore-file" -vserver Snapcreator
snapmirror	role create -role VSERVERRBACROLE_New -cmddirname "snapmirror" -vserver SnapCreator
version	role create -role VSERVERRBACROLE_New -cmddirname "version" -vserver Snapcreator
volume	role create -role VSERVERRBACROLE_New -cmddirname "volume"
volume autosize	role create -role VSERVERRBACROLE_New -cmddirname "volume autosize" -vserver Snapcreator

Command directory name	Command to be run
volume clone	role create -role VSERVERRBACROLE_New -cmddirname "volume clone" -vserver Snapcreator
volume clone create	role create -role VSERVERRBACROLE_New -cmddirname "volume clone create" -vserver Snapcreator
volume create	role create -role VSERVERRBACROLE_New -cmddirname "volume create" -vserver Snapcreator
volume destroy	role create -role VSERVERRBACROLE_New -cmddirname "volume destroy" -vserver Snapcreator
volume efficiency off	role create -role VSERVERRBACROLE_New -cmddirname "volume efficiency off" -vserver Snapcreator
volume efficiency on	role create -role VSERVERRBACROLE_New -cmddirname "volume efficiency on" -vserver Snapcreator
volume efficiency start	role create -role VSERVERRBACROLE_New -cmddirname "volume efficiency start" -vserver Snapcreator
volume efficiency show	role create -role VSERVERRBACROLE_New -cmddirname "volume efficiency show" -vserver Snapcreator
volume file	role create -role VSERVERRBACROLE_New -cmddirname "volume file" -vserver Snapcreator
volume file clone	role create -role VSERVERRBACROLE_New -cmddirname "volume file clone" -vserver Snapcreator
volume file clone create	role create -role VSERVERRBACROLE_New -cmddirname "volume file clone create" -vserver Snapcreator
volume modify	role create -role VSERVERRBACROLE_New -cmddirname "volume modify" -vserver Snapcreator
volume mount	role create -role VSERVERRBACROLE_New -cmddirname "volume mount" -vserver Snapcreator

Command directory name	Command to be run
volume offline	role create -role VSERVERRBACROLE_New -cmddirname "volume offline" -vserver Snapcreator
volume show	role create -role VSERVERRBACROLE_New -cmddirname "volume show" -vserver Snapcreator
volume size	role create -role VSERVERRBACROLE_New -cmddirname "volume size" -vserver Snapcreator
volume snapshot create	role create -role VSERVERRBACROLE_New -cmddirname "volume snapshot create" -vserver Snapcreator
volume snapshot delete	role create -role VSERVERRBACROLE_New -cmddirname "volume snapshot delete" -vserver Snapcreator
volume snapshot restore	role create -role VSERVERRBACROLE_New -cmddirname "volume snapshot restore" -vserver Snapcreator
volume unmount	role create -role VSERVERRBACROLE_New -cmddirname "volume unmount" -vserver Snapcreator
vserver export-policy rule show	role create -role VSERVERRBACROLE_New -cmddirname "vserver export-policy rule show" -vserver Snapcreator
vserver export-policy show	role create -role VSERVERRBACROLE_New -cmddirname "vserver export-policy show" -vserver Snapcreator
vserver fcp	role create -role VSERVERRBACROLE_New -cmddirname "vserver fcp" -vserver Snapcreator
vserver fcp initiator show	role create -role VSERVERRBACROLE_New -cmddirname "vserver fcp initiator show" -vserver Snapcreator
vserver fcp show	role create -role VSERVERRBACROLE_New -cmddirname "vserver fcp show" -vserver Snapcreator
vserver fcp status	role create -role VSERVERRBACROLE_New -cmddirname "vserver fcp status" -vserver Snapcreator

Command directory name	Command to be run
vserver iscsi	role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi" -vserver Snapcreator
vserver iscsi connection show	role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi connection show" -vserver Snapcreator
vserver iscsi interface accesslist add	role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi interface accesslist add" -vserver Snapcreator
vserver iscsi interface accesslist show	role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi interface accesslist show" -vserver Snapcreator
vserver iscsi isns query	role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi isns query" -vserver Snapcreator
vserver iscsi nodename	role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi nodename" -vserver Snapcreator
vserver iscsi session show	role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi session show" -vserver Snapcreator
vserver iscsi show	role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi show" -vserver Snapcreator
vserver iscsi status	role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi status" -vserver Snapcreator
vserver nfs	role create -role VSERVERRBACROLE_New -cmddirname "vserver nfs" -vserver Snapcreator
vserver nfs status	role create -role VSERVERRBACROLE_New -cmddirname "vserver nfs status" -vserver Snapcreator
vserver services dns hosts show	role create -role VSERVERRBACROLE_New -cmddirname "vserver services name-service dns hosts show" -vserver SnapCreator

Command directory name	Command to be run
vserver services unix-group create	role create -role VSERVERRBACROLE_New -cmddirname "vserver services name-service unix-group create" -vserver Snapcreator
vserver services unix-group show	role create -role VSERVERRBACROLE_New -cmddirname "vserver services name-service unix-group show" -vserver Snapcreator
vserver services unix-user create	role create -role VSERVERRBACROLE_New -cmddirname "vserver services name-service unix-user create" -vserver Snapcreator
vserver services unix-user show	role create -role VSERVERRBACROLE_New -cmddirname "vserver services name-service unix-user show" -vserver Snapcreator

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