IBM System Storage N series

Snap Creator Framework 4.1 Installation Guide

Contents

Preface

Supported features

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

Information about supported features can also be found on the N series support website (accessed and navigated as described in *Websites* on page 5).

Websites

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

- A listing of currently available N series products and features can be found at the following web page:

  www.ibm.com/storage/nas/

- The IBM System Storage N series support website requires users to register in order to obtain access to N series support content on the web. To understand how the N series support web content is organized and navigated, and to access the N series support website, refer to the following publicly accessible web page:

  www.ibm.com/storage/support/nseries/

  This web page also provides links to AutoSupport information as well as other important N series product resources.

- IBM System Storage N series products attach to a variety of servers and operating systems. To determine the latest supported attachments, go to the IBM N series interoperability matrix at the following web page:

  www.ibm.com/systems/storage/network/interophome.html

- For the latest N series hardware product documentation, including planning, installation and setup, and hardware monitoring, service and diagnostics, see the IBM N series Information Center at the following web page:

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

Getting information, help, and service

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

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

Before you call

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

- Check all cables to make sure they are connected.
- Check the power switches to make sure the system is turned on.
- Use the troubleshooting information in your system documentation and use the diagnostic tools that come with your system.
- Refer to the N series support website (accessed and navigated as described in *Websites* on page 5) for information on known problems and limitations.

Using the documentation

The latest versions of N series software documentation, including Data ONTAP and other software products, are available on the N series support website (accessed and navigated as described in *Websites* on page 5).

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

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

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

Hardware service and support

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

www.ibm.com/planetwide/

Firmware updates

IBM N series product firmware is embedded in Data ONTAP. As with all devices, ensure that you run the latest level of firmware. Any firmware updates are posted to the N series support website (accessed and navigated as described in *Websites* on page 5).

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

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

How to send your comments

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

Be sure to include the following:

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

What the Snap Creator Framework does

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

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

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

The following illustration shows the components.
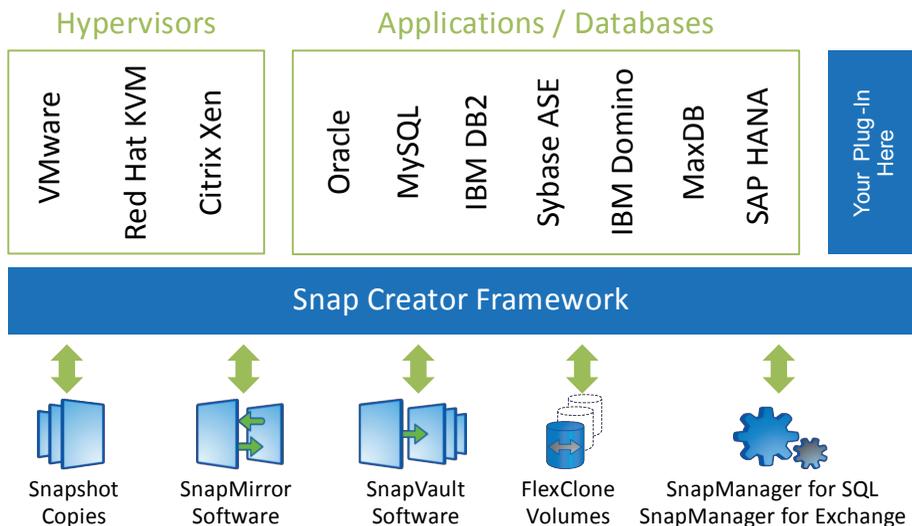
Snap Creator architecture

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

Snap Creator interacts and integrates with various technologies and products as depicted in the following high-level diagram.
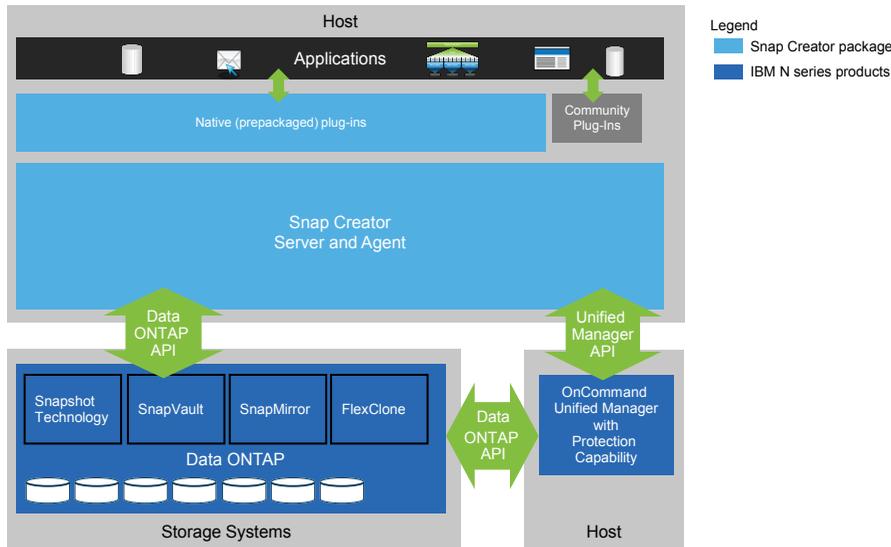
The IBM N series software products in the high-level diagram are optional; except for Snapshot technology, the other software products are not required for Snap Creator Framework to function.

Snap Creator Server

Snap Creator actions are initiated by the Snap Creator Server.

The Snap Creator 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 be 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 IBM N series 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 OnCommand Unified Manager through the Unified Manager API.

For details about the Snap Creator Server, see the *Snap Creator Framework 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 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.

For details about the Snap Creator Agent, see the *Snap Creator Framework Administration Guide*.

Plug-ins

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

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

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

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

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

For details, visit the *Snap Creator Developer Community* and *Snap Creator Community forum* sites.

Preinstallation requirements for 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 Java on the 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 information

Before you install the Snap Creator Framework, you should be aware of the certain installation and configuration information such as license requirements, software information, and hardware requirements.

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)
- OnCommand Unified Manager Core Package (for IBM N series Management Console data protection capability and Operations Manager console)
- Open Systems SnapVault (OSSV)
- SnapDrive (for SnapDrive actions)
- SnapMirror (for SnapMirror actions)
- SnapRestore (for restoring)
- SnapVault (for SnapVault actions)

See the N series Interoperability Matrices website (accessed and navigated as described in *Websites* on page 5) for details regarding the supported software.

Software information

The following software might be needed depending on your environment:

- Java (required)
- Data ONTAP (required)
- Microsoft .NET Framework
- Operating system:
    - UNIX platforms:
        - AIX
        - HP-UX
        - Linux
        - Solaris

        Note: Snap Creator supports only Bash Shell for all UNIX platforms.
    - Microsoft Windows

        Note: Only U.S.-based operating systems are currently supported.
- Web browsers:
    - Internet Explorer
    - Firefox

See the N series Interoperability Matrices website (accessed and navigated as described in *Websites* on page 5) for details regarding the supported software.

Hardware requirements

The Snap Creator hardware requirements are as follows:

- Snap Creator Server requirements:

	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

Download the Snap Creator software from the N series support website (accessed and navigated as described in *Websites* on page 5).

Related information

[IBM N series support website: www.ibm.com/storage/support/nseries](#)

Creating a Snap Creator user for Data ONTAP

Prior to installing Snap Creator, you should create a Data ONTAP user for Snap Creator.

The process that you follow to create the Snap Creator user depends on the Data ONTAP mode running on your storage systems:

- Data ONTAP operating in 7-Mode
- 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.

About this task

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.

Note: 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.

Steps

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
```

> **Note:** 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).

Example

```
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
```

Example

```
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
```

Example

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

4. Enter the password for the account.

Result

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.

About this task

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

- Clustered Data ONTAP prior to 8.2 - create a cluster and SVM user
- Clustered Data ONTAP 8.2 or later - create a SVM user

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

For details about creating a Snap Creator role, see the information in the related links about CLI commands in clustered Data ONTAP for creating a SnapCreator role.

Both types of user require the Data ONTAPI application. 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 instructions below reference **admin** and **vsadmin** roles; however, you can replace these roles with the appropriate roles that you created.

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

> **Note:** 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.

Steps

1. Create the SVM user *svm_username01* with the appropriate role (vsadmin or the role created for the user) on the *svm_name* SVM and allow ONTAPI, which is required for Snap Creator by entering the following command and the 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 of Clustered Data ONTAP prior to 8.2 only)* Create a cluster user by entering the following command and the 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 references

Installing Java on Snap Creator hosts

Java Runtime Environment (JRE) 1.6 Update 24 or later must be installed on any Snap Creator Server and Agent host.

Steps

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

    Note: 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 the JRE, verify the version and bit level of Java by entering the following command:

    ```
    java -version
    ```

    Example

    ```
    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 example above), then the installation is 32-bit.

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. 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.

Step

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.

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

After you finish

If you added the Domino path to the environment variables after the Snap Creator Agent is installed, you must restart the Snap Creator Agent service. You can use the Windows Service Control Manager (SCM) to restart the service. For example:

1. Select **Start > Run** and enter services.msc.

2. Locate and select the Snap Creator Agent service and then restart the service.

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.

   Note: Domino does not support the HP-UX operating system.

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

Perform this procedure to add symbolic links on Linux and Solaris hosts.

About this task

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.

Steps

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.

Example

```
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 these commands.

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

Perform this procedure to add symbolic links on AIX hosts.

About this task

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.

Steps

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.

Example

```
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 these commands.

   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 the Snap Creator Server on a Windows host by using the Windows installer.

Before you begin

JRE 1.6 Update 24 or later must be installed.

For details, see information in the related links about installing Java on Snap Creator servers.

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

The default port for the Snap Creator Server is 8443. 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"`).

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

Steps

1. Double-click `Snap_Creator_Framework`*`release`*`-Windows`*`version`*`.exe` file (for example, `Snap_Creator_Framework4.1.0-Windows64.exe`) to launch the Snap Creator installer.

2. On the Welcome page, click **Next** to start the installation.

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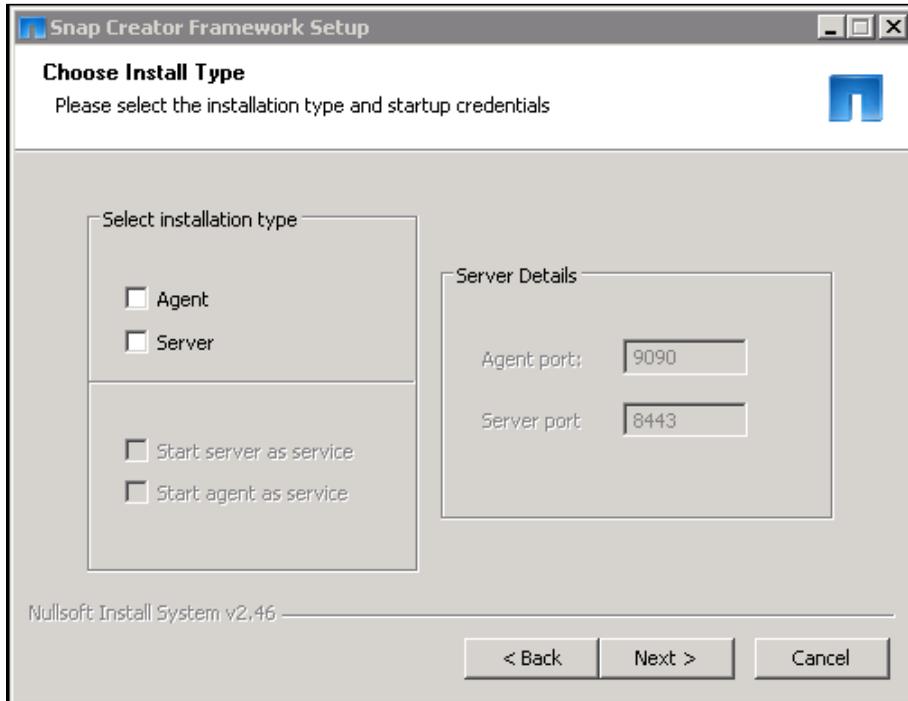
4. On the **Choose Install Type** page, change the following settings to fit various installation types and click **Next**.

Select installation type	Select **Server**. Both the Snap Creator Server and Agent can be installed at the same time if you want them both on the same system.
Start server as service	Select this option to automatically install and start the snapcreatorserverservice immediately after the installation process is complete. If it is not selected, the **Server port** field is disabled. **Note:** 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. For details, see information in the related links about starting the server from a command prompt.
Server port	Accept the default port of 8443 or specify the port number.

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

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

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. **Note:** 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\IBM\Snap_Creator_Framework) and 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 click **Install**.

8. After the installation completes, 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.

After you finish

If you did not select the **Start server as service** option during the installation process, you must manually start the Snap Creator Server. For details, see information in the related links about starting the Server from a command prompt.

Validate the Snap Creator Framework GUI startup by navigating to the local host on the specified 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 tasks

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).

About this task

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

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.

Step

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

   ```
   cd \install_path\scServer4.1.0\bin\
   scServer.bat start
   ```

Example

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

After you finish

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.

Installing the Snap Creator Server on UNIX

For UNIX platforms (AIX, HP-UX, Linux, 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.

Before you begin

JRE 1.6 Update 24 or later must be installed. For details, see information in the related links about
installing Java on Snap Creator servers.

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

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

The default port for the Snap Creator Server is 8443. 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 enter: `netstat -nap | grep 8443`).

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

About this task

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

Steps

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

   a) To create a subdirectory, enter the following command with the directory name:

   ```
   mkdir snap_creator_directory
   ```

   Example

   ```
   mkdir /SC_41
   ```

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

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

   Example

   ```
   cp IBM_N_Series_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:

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

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

   where:

- *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

Example

```
cd /sc_41
tar -xvf IBM_N_Series_Snap_Creator_Framework4.1.0-Linux32.tar.gz
```

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

```
IBM_N_Series_Snap_Creator_Framework4.1.0-Linux32.tar.gz  scServer4.1.0
scAgent4.1.0
```

3. Enter the following commands and respond to the prompts to perform the initial setup of Snap Creator.

```
cd scServer*
./snapcreator --setup
Welcome to the IBM N series Snap Creator Framework 4.1.0!
### Installation options ###
01. IBM N series Snap Creator Framework 4.1.0 Server
02. IBM N series Snap Creator Framework 4.1.0 Remote CLI
Select install option (enter a number or "q" to quit):
```

Enter 01 to install the Snap Creator Server.

- Option 01 performs the initial setup of the Snap Creator Server by configuring a Snap Creator user and password, designating the GUI port where the Snap Creator Server will run, and configuring other parameters.
- Option 02 sets up the 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. To accept the end user license agreement, enter "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. This information can be used to help troubleshoot any issues that might happen later.

6. Enter the server port and 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>
```

Note: 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>

INFO: Updated IBM N series Snap Creator Framework 4.1.0
/install_path/scServer4.1.0/engine/etc/snapcreator.properties
INFO: Updated IBM N series Snap Creator Framework 4.1.0
/install_path/scServer4.1.0/bin/scServer

INFO: To start scServer please do the following:

/install_path/scServer4.1.0/bin/scServer start

INFO: To access IBM N series Snap Creator Framework 4.1.0 GUI goto
https://hostname:gui_port
```

7. Start the Snap Creator Framework Server by entering the following command:

```
/install_path/scServer4.1.0/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 tasks

Installing the Snap Creator Agent

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

When installing Snap Creator, you should use **netstat** or a similar tool to verify that the ports that Snap Creator uses are available and not already in use. The default port for the Snap Creator Agent is 9090, but you can specify any available port.

Installing the Snap Creator Agent on Windows

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

Before you begin

JRE 1.6 Update 24 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 administrator-level 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, in Windows, enter: `netstat -na | find "9090"`).

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

Steps

1. Double-click the `Snap_Creator_Framework`*`release`*`-Windows`*`version`*`.exe` file (for example, `Snap_Creator_Framework4.1.0-Windows64.exe`) to launch the Snap Creator installer.

2. On the Welcome page, click **Next** to start the installation.

3. Review and accept the terms of the license agreement.
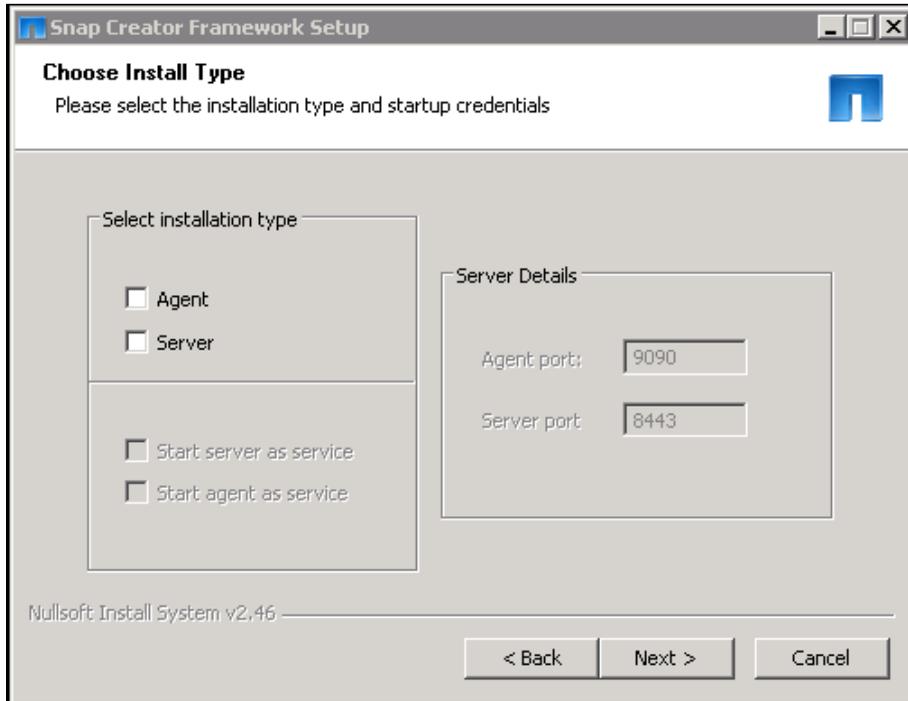
4. On the **Choose Install Type** page, change the following settings to fit various installation types and click **Next**.

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 it is not selected, the **Agent port** field is disabled.
	Note: If you do not select this option, the service is not installed and you must manually start the Agent by running a batch script from a command prompt. For details, see the information in the related links about starting the Agent from a command prompt.
Agent port	Accept the default port of 9090 or specify the port number.

5. On the **Choose Install Location** page, enter the Snap Creator installation path or accept the default (C:\Program Files\IBM\Snap_Creator_Framework) and click **Next**.

6. 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 click **Install**.

7. After the installation completes, 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.

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

After you finish

If you did not select the **Start agent as service** option during the installation process, you must manually start the Snap Creator Agent. For details, see information in the related links about starting the Agent from a command prompt.

Related tasks

Installing Java on Snap Creator hosts on page 16
Downloading the Snap Creator software on page 13
Starting the Agent from a command prompt on page 29

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).

About this task

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.

Step

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

```
cd \install_path\scAgent4.1.0\bin\
scAgent.bat start
```

Example

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

After you finish

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

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

Before you begin

JRE 1.6 Update 24 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, in UNIX enter: `netstat -nap | grep 9090`).

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

About this task

Linux is used here as the example.

Steps

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

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

   ```
   mkdir snap_creator_directory
   ```

   Example

   ```
   mkdir /SC_41
   ```

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

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

   Example

   ```
   cp IBM_N_Series_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:

> **Note:** Depending on the UNIX environment, you might be required to unzip the file before entering the `tar` command.

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

where:

- *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

Example

```
cd /sc_41
tar -xvf IBM_N_Series_Snap_Creator_Framework4.1.0-Linux32.tar.gz
```

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

```
IBM_N_Series_Snap_Creator_Framework4.1.0-Linux32.tar.gz  scServer4.1.0
scAgent4.1.0
```

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

```
cd scAgent*
./snapcreator --setup
Welcome to the IBM N series Snap Creator Framework 4.1.0!
### Installation options ###
01. IBM N series Snap Creator Framework 4.1.0 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 IBM N series Snap Creator Framework 4.1.0
/install_path/scAgent4.1.0/engine/etc/agent.properties


INFO: To start scAgent please do the following:

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

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

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

Note: 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 tasks

Changing the Snap Creator Agent port after installation

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

About this task

The procedure is the same for Windows and UNIX; the following procedure uses the UNIX environment in the examples.

To change the Snap Creator Agent port after installation, perform the following steps.

Steps

1. Log in to the system where the Snap Creator Agent is running and change directories to the etc subdirectory within the installation directory.

Example

```
cd /install_path/scAgent4.1.0/etc
```

2. Open the `agent.properties` file with a text editor.

3. Change the value of the DEFAULT_PORT parameter (by default, the port is 9090) to the new port.

Example

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

```
DEFAULT_PORT=9191
```

Save and close the file after making changes.

4. Restart the Snap Creator Agent.

Example

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

> **Note:** 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.

Upgrading Snap Creator

You can upgrade to Snap Creator 4.1 directly from Snap Creator 3.6.x and from Snap Creator 4.0.x.

Snap Creator can be upgraded as follows:

- Releases earlier than 3.6. If upgrading from a version prior to Snap Creator 3.6, you must first upgrade from your current version to Snap Creator 3.6.
- 3.6.x to 4.1
- 4.0.x to 4.1

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, make sure you set the job monitor size equal to or greater than the previous setting to avoid the data loss in the job monitor database. Snap Creator retrieves jobs only up to the new 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 Snap Creator 4.1.

To check the job monitor size, you can do one of the following:

- Check the SNAPCREATOR_JOB_MONITOR_SIZE variable in the Snap Creator Server properties files (/*install_path*/scServer4.1.*x*/engine/etc/ snapcreator.properties)
- From the GUI, select **Management > Job Monitor** and then click **Size**.

In addition, when upgrading Snap Creator, make sure the upgrade takes place on a host using the same operating system environment. For example, if you are upgrading in a Windows environment, when copying backed up data, make sure to copy the data back to a Windows environment and not UNIX.

> **Important:** Snap Creator does not have a downgrade (revert) option. During an upgrade process, you will be backing up several files. It is important to keep the backed up files until you are certain that you will not need to revert to an older version of Snap Creator.

Upgrading from releases earlier than Snap Creator 3.6

If you are upgrading to Snap Creator 4.1 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 4.1. During this upgrade process, you can install the Snap Creator Agent at the same time as you upgrade the Snap Creator Server.

For details, see information in the related links about upgrading from Snap Creator 3.6.x.

Related tasks

Upgrading from Snap Creator 3.6.x to 4.1

When you upgrade from Snap Creator 3.6.x to Snap Creator 4.1, the database schema is upgraded and all the configuration file passwords are updated for compatibility with Snap Creator 4.1.

Upgrading the Snap Creator Server 3.6.x on Windows

You can upgrade directly from the Snap Creator Server 3.6.x to Snap Creator Server 4.1 on Windows.

Before you begin

- If you have any Snap Create user names that contain special characters, you must rename those users using only alphabetic characters (a-z, A-Z) before performing the upgrade.
- Back up the following directories and all associated subdirectories and files, within the Snap Creator 3.6.x Server directory (`C:\Program Files\IBM\IBM_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\IBM \IBM_Snap_Creator_Framework\scServer3.6.x\config\agent.conf`)

About this task

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.

Steps

1. Stop the Snap Creator services (`snapcreatorserverservice` and `snapcreatoragentservice`).

   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
```

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

   For details about the uninstall process, see information in the related links about uninstalling Snap Creator on Windows.

3. Install Snap Creator Server 4.1.

   For details, see information in the related links 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 Snap Creator Server 4.1, then stop the service.

   For information on stopping the service, see step 1.

5. Delete the Snap Creator Server 4.1 database folder (`C:\Program Files\IBM \Snap_Creator_Framework\scServer4.1.0\engine\snapcreator`).

6. Copy the backed up Snap Creator 3.6.x database directory to the 4.1 location (`C:\Program Files\IBM\Snap_Creator_Framework\scServer4.1.0\engine\snapcreator`).

7. Copy the backed up Snap Creator 3.6.x profiles and configuration directory to the 4.1 location (`C:\Program Files\IBM\Snap_Creator_Framework\scServer4.1.0\engine \configs`).

8. Copy the backed up Snap Creator 3.6.x logs directory to the 4.1 location (`C:\Program Files \IBM\Snap_Creator_Framework\scServer4.1.0\engine\logs`).

9. Open a command prompt and change the directory to the `engine` subdirectory in the Snap Creator installation path (`C:\Program Files\IBM\Snap_Creator_Framework \scServer4.1.0\engine`).

10. Upgrade Snap Creator by entering the following command:

```
java -jar snapcreator.jar -upgrade
```

11. 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`).

After you finish

Validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port (`https://IP_address:gui_port`).

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

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," then the state remains the same even after the upgrade process is complete.
- The default administrator in Snap Creator 4.1 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.

Related concepts

[Installing the Snap Creator Server](#) on page 20

Related tasks

[Uninstalling Snap Creator on Windows](#) on page 51

Upgrading the Snap Creator Server 3.6.x on UNIX

You can upgrade directly from the Snap Creator Server 3.6.x to the Snap Creator Server 4.1 on UNIX.

Before you begin

- If you have any user names that contain special characters in Snap Creator, you must rename those users using only alphabetic characters (a-z, A-Z) before performing the upgrade.
- Back 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.

About this task

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.

Steps

1. Stop the Snap Creator processes by using the following scripts:

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

2. Install Snap Creator 4.1. Do not start the Snap Creator Server service.

For details about the installation process, see information in related links about installing the Snap Creator Server on UNIX.

3. Copy the backed up Snap Creator 3.6.x database directory to the 4.1 database location (/ `install_path`/scServer4.1.0/engine/snapcreator).

4. Copy the backed up Snap Creator 3.6.x profiles and configuration folder to the 4.1 location (/ `install_path`/scServer4.1.0/engine/configs).

5. Copy the backed up Snap Creator 3.6.x logs folder to the 4.1 location (/`install_path`/ scServer4.1.0/engine/logs).

6. Change directories to the `engine` subdirectory in the Snap Creator install path (/ `install_path`/scServer4.1.0/engine).

7. Upgrade the Snap Creator Server by entering the following command:

```
java -jar snapcreator.jar -upgrade
```

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

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

9. Delete the Snap Creator 3.6 install directory.

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

After you finish

Validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port (https://`IP_address`:`gui_port`).

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

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 Snap Creator 4.1 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.

Related tasks

Upgrading the Snap Creator Agent 3.6.x on Windows

You can upgrade directly from the Snap Creator Agent 3.6.x to the Snap Creator Agent 4.1 on Windows.

Before you begin

Back up the following within the Snap Creator Agent directory (`C:\Program Files\IBM\IBM_Snap_Creator_Framework\scAgent3.6.`*x*`)`:

- `agent.conf` file (`..\config\agent.conf`)

    Note: 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`)

About this task

The 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 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.

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

   Note: 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.

Steps

1. Stop the Snap Creator Agent service (`snapcreatoragentservice`).

    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 also open a command prompt and enter the following command:

    ```
    sc stop snapcreatoragentservice
    ```

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

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

3. Install the Snap Creator Agent 4.1.

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.

Example

An example of `agent.conf`:

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

5. Open the new `allowed_commands.config` file (`C:\Program Files\IBM\Snap_Creator_Framework\scAgent4.1.0\etc\allowed_commands.config`) in a text editor and copy the command line from `agent.conf` into the `allowed_commands.config` file. Save and close the file after making changes.

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

```
command: sdcli.exe
```

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

6. Open the `agent.properties` file (`C:\Program Files\IBM\Snap_Creator_Framework\scAgent4.1.0\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. Save and close the file after making changes.

From the previous example, the AUTHORIZED_HOSTS parameter should contain:

```
AUTHORIZED_HOSTS=Tampico
```

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

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

7. Restart the Snap Creator Agent service by doing one of the following:

- Use the Services snap-in and restart the service.
- From a command prompt, enter the following command: `sc restart snapcreatoragentservice`).

Related tasks

Upgrading the Snap Creator Agent 3.6.x on UNIX

You can upgrade the Snap Creator Agent 3.6.x to the Snap Creator Agent 4.1 on UNIX.

Before you begin

Back up the following 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`)

About this task

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.

Note: If you did not use these parameters, a simple install 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.

Steps

1. Stop the Snap Creator Agent service (`snapcreatoragentservice`) by entering the following command:

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

2. Install the Snap Creator Agent 4.1.

   For details about the installation process, see information in the related links about installing the Snap Creator Agent on UNIX.

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

   Example

   An example of `agent.conf`:

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

4. Open the new `allowed_commands.config` file (`/install_path/scAgent4.1.0/etc/allowed_commands.config`) in a text editor and copy the command line from `agent.conf` into the `allowed_commands.config` file. Save and close the file after making changes.

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

   ```
   command: rc_domino
   ```

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

5. Open the `agent.properties` file (`/install_path/scAgent4.1.0/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. Save and close the file after making changes.

   From the previous example, the AUTHORIZED_HOSTS parameter should contain:

   ```
   AUTHORIZED_HOSTS=Lyon
   ```

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

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

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

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

Related tasks

[Installing the Snap Creator Agent on UNIX](#) on page 30

Upgrading from Snap Creator 4.0.x to 4.1

When you upgrade from Snap Creator 4.0.x to Snap Creator 4.1, the database schema is upgraded.

Upgrading the Snap Creator Server 4.0.x on Windows

You can upgrade the Snap Creator Server 4.0.x to Snap Creator Server 4.1 on Windows.

Before you begin

- If you have any user names that contain special characters in Snap Creator, you must rename those users using only alphabetic characters (a-z, A-Z) before performing the upgrade.
- Back up the following directories, and all associated subdirectories and files, within the Snap Creator 4.0.x Server engine subdirectory (`C:\Program Files\IBM\Snap_Creator_Framework\scServer4.0.x\engine`):
  - Snap Creator database (`..\snapcreator`)

- Snap Creator Server properties (`..\etc`)
- Profiles and configuration (`..\configs`)
- Logs (`..\logs`)

    Note: Do not delete 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 back up the `agent.conf` file (`C:\Program Files\IBM\Snap_Creator_Framework\scAgent4.0.x\config\agent.conf`)

About this task

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.

Steps

1. Stop the Snap Creator services (`snapcreatorserverservice` and `snapcreatoragentservice`).

    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
    ```

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

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

3. Install the Snap Creator Server 4.1.

    For details, see the information in the related links 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 Snap Creator Server 4.1, then stop the service.

    For information on stopping the service, see step 1.

5. Delete the Snap Creator Server 4.1 database folder (`C:\Program Files\IBM\Snap_Creator_Framework\scServer4.1.0\engine\snapcreator`).

6. Copy the backed up Snap Creator 4.0.x database directory to the 4.1 location (`C:\Program Files\IBM\Snap_Creator_Framework\scServer4.1.0\engine\snapcreator`).

7. Copy the backed up Snap Creator 4.0.x profiles and configuration directory to the 4.1 location (`C:\Program Files\IBM\Snap_Creator_Framework\scServer4.1.0\engine \configs`).

8. Copy the backed up Snap Creator 4.0.x logs directory to the 4.1 location (`C:\Program Files \IBM\Snap_Creator_Framework\scServer4.1.0\engine\logs`).

9. Open a command prompt and change the directory to the `engine` subdirectory in the Snap Creator install path (`C:\Program Files\IBM\Snap_Creator_Framework \scServer4.1.0\engine`).

10. Upgrade Snap Creator by entering the following command:

    ```
    java -jar snapcreator.jar -upgrade
    ```

11. 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`.

After you finish

Validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port (`https://IP_address:gui_port`).

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

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 Snap Creator 4.1 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.

Related concepts

Related tasks

Upgrading the Snap Creator Server 4.0.x on UNIX

You can upgrade the Snap Creator Server 4.0.x to the Snap Creator Server 4.1 on UNIX.

Before you begin

- If you have any user names that contain special characters in Snap Creator, you must rename those users using only alphabetic characters (a-z, A-Z) before performing the upgrade.
- Back 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: Do not delete the Snap Creator 4.0.x backup copies that you created.

About this task

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.

Steps

1. Stop the Snap Creator processes by entering the following command:

   ```
   /install_path/scServer4.0.0/bin/scServer stop
   /install_path/scAgent4.0.0/bin/scAgent stop
   ```

2. Install Snap Creator 4.1. Do not start the Snap Creator Server service.

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

3. Copy the backed up Snap Creator 4.0.x database directory to the 4.1 location (`/install_path/scServer4.1.0/engine/snapcreator`).

4. Copy the backed up 4.0.x profiles and configuration directory to the 4.1 location (`/install_path/scServer4.1.0/engine/configs`).

5. Copy the backed up 4.0.x logs directory to the 4.1 location (`/install_path/scServer4.1.0/engine/logs`).

6. Change directories to the `engine` subdirectory in the Snap Creator install path (`/install_path/scServer4.1.0/engine`).

7. Upgrade the Snap Creator Server by entering the following command:

   ```
   java -jar snapcreator.jar -upgrade
   ```

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

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

9. Delete the Snap Creator 4.0 install directory.

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

After you finish

Validate the Snap Creator Framework GUI startup by navigating to the local host on the specified port (https://*IP_address*:*gui_port*).

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

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," then the state remains the same even after the upgrade process is complete.
- The default administrator in Snap Creator 4.1 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.

Related tasks

Upgrading the Snap Creator Agent 4.0.x on Windows

You can upgrade the Snap Creator Agent 4.0.x to the Snap Creator Agent 4.1 on Windows.

Before you begin

Back up the following within the Snap Creator Agent directory (C:\Program Files\IBM \IBM_Snap_Creator_Framework\scAgent4.0.*x*):

- agent.conf file (..\config\agent.conf)

  Note: 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 4.0.x.

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

About this task

The 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 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.

Note: If you did not use these parameters, a simple install 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.

Steps

1. Stop the Snap Creator Agent service (`snapcreatoragentservice`).

   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
   ```

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

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

3. Install the Snap Creator Agent 4.1.

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

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

   Example

   An example of `agent.conf`:

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

5. Open the new `allowed_commands.config` file (`C:\Program Files\IBM \Snap_Creator_Framework\scAgent4.1.0\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 Snap Creator 4.1, make sure that the command is fully qualified.

Example

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

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

Note: 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.

Save and close the file after making changes.

6. Open the agent.properties file (C:\Program Files\IBM\Snap_Creator_Framework \scAgent4.1.0\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.

Example

From the previous example, the AUTHORIZED_HOSTS parameter should contain:

```
AUTHORIZED_HOSTS=Tampico
```

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

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

Save and close the file after making changes.

7. 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 the Snap Creator Agent if it is running when the changes are made.

Related tasks

Upgrading the Snap Creator Agent 4.0.x on UNIX

You can upgrade the Snap Creator Agent 4.0.x to the Snap Creator Agent 4.1 on UNIX.

Before you begin

Back up the following 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`)

About this task

The 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 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 replaces that feature.

Note: If you did not use these parameters, a simple install 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.

Steps

1. Stop the Snap Creator Agent service (command:script

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

2. Install the Snap Creator Agent 4.1.

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

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

   Example

   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/scAgent4.1.0/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 Snap Creator 4.1, make sure that the command is fully qualified.

Example

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

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

> **Note:** 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/scAgent4.1.0/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.

Example

From the previous example, the AUTHORIZED_HOSTS parameter should contain:

```
AUTHORIZED_HOSTS=Lyon
```

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

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

Save and close the file after making changes.

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

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

> **Note:** 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 tasks

Installing the Snap Creator Agent on UNIX on page 30

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.

Before you begin

- Back up the following directories and all associated subdirectories and files, within the Snap Creator Server engine directory (C:\Program Files\IBM\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\IBM\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, you must close the command prompt and stop it.

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

Steps

1. Select **Start > All programs > Snap Creator > Uninstall IBM N series 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.

Before you begin

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

About this task

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

Note: The paths provided in the following steps refer to the generic installation path. The path in the commands below will need to be changed to reflect your install path.

Steps

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.

Before you begin

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)

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

About this task

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

    Note: The paths provided in the following steps refer to the generic installation path. The path in the commands below will need to be changed to reflect your install path.

Steps

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 snmphistory	`role create -role CRBAC_New -cmddirname "event snmphistory" -vserver clus3240rre`
event status	`role create -role CRBAC_New -cmddirname "event status" -vserver clus3240rre`

Command directory name	Command to be run
fcp	`role create -role CRBAC_New -cmddirname "fcp" -vserver Snapcreator -vserver clus3240rre`
iscsi	`role create -role CRBAC_New -cmddirname "iscsi" -vserver Snapcreator -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`
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 mapped show	`role create -role CRBAC_New -cmddirname "lun mapped 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`

Command directory name	Command to be run
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`
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`
nfs	`role create -role CRBAC_New -cmddirname "nfs" -vserver Snapcreator -vserver clus3240rre`
options	`role create -role CRBAC_New -cmddirname "options" -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`

Command directory name	Command to be run
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
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 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 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

Command directory name	Command to be run
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`
vserver nfs status	`role create -role CRBAC_New -cmddirname "vserver nfs status" -vserver clus3240rre`
vserver services unix-group create	`role create -role CRBAC_New -cmddirname "vserver services unix-group create" -vserver clus3240rre`
vserver services unix-user create	`role create -role CRBAC_New -cmddirname "vserver services unix-user create" -vserver clus3240rre`
vserver services unix-group show	`role create -role CRBAC_New -cmddirname "vserver services unix-group show" -vserver clus3240rre`
vserver services unix-user show	`role create -role CRBAC_New -cmddirname "vserver services 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`
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`

Command directory name	Command to be run
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`
event generate-autosupport-log	`role create -role VSERVERRBACROLE_New -cmddirname "event generate-autosupport-log" -vserver Snapcreator`
fcp	`role create -role VSERVERRBACROLE_New -cmddirname "fcp" -vserver Snapcreator`
iscsi	`role create -role VSERVERRBACROLE_New -cmddirname "iscsi" -vserver Snapcreator`

Command directory name	Command to be run
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 mapped show	`role create -role VSERVERRBACROLE_New -cmddirname "lun mapped 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`
lun resize	`role create -role VSERVERRBACROLE_New -cmddirname "lun resize"-vserver Snapcreator`
lun show	`role create -role VSERVERRBACROLE_New -cmddirname "lun show" -vserver Snapcreator`

Command directory name	Command to be run
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`
nfs	`role create -role VSERVERRBACROLE_New -cmddirname "nfs" -vserver Snapcreator`
options	`role create -role VSERVERRBACROLE_New -cmddirname "options" -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`
volume clone	`role create -role VSERVERRBACROLE_New -cmddirname "volume clone" -vserver Snapcreator`

Command directory name	Command to be run
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`
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`

Command directory name	Command to be run
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 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
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

Command directory name	Command to be run
vserver iscsi status	`role create -role VSERVERRBACROLE_New -cmddirname "vserver iscsi status" -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 dns hosts show" -vserver SnapCreator`
vserver services unix-group create	`role create -role VSERVERRBACROLE_New -cmddirname "vserver services unix-group create" -vserver Snapcreator`
vserver services unix-group show	`role create -role VSERVERRBACROLE_New -cmddirname "vserver services unix-group show" -vserver Snapcreator`
vserver services unix-user create	`role create -role VSERVERRBACROLE_New -cmddirname "vserver services unix-user create" -vserver Snapcreator`
vserver services unix-user show	`role create -role VSERVERRBACROLE_New -cmddirname "vserver services unix-user show" -vserver Snapcreator`

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