

# USER GUIDE

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# 1 INTRODUCTION

This document describes how to install and run the Snow Inventory Agent for macOS.

The Snow Inventory Agent for macOS is part of the Snow Inventory solution, and is used for inventory of macOS computers. The agent scans the computers and saves the collected data to a compressed and encrypted file, which is sent to a Snow Inventory server (Master Server or Service Gateway).

Metering data is collected by the separate xMetering agent.

For detailed information on the configuration of the agent, refer to the document *Snow Inventory Agents Configuration Guide*.

## 1.1 PREREQUISITES

### 1.1.1 DEPENDENCY ON OTHER SNOW PRODUCTS

This version of the Snow Inventory Agent can only be used in a Snow Inventory Server 5.0 environment.

### 1.1.2 SUPPORTED OPERATING SYSTEMS

For information on supported operating systems, see [Snow System Requirements](#) document, in the Snow Knowledge Base, which is available for customers and partners.

## 2 INSTALLATION

The Snow Inventory Agent for macOS can be installed using a prepared package or using copies of the binary files.

The files of the Snow Inventory Agent for macOS are one executable file called **snowagent** and one configuration file called **snowagent.config**. These two files are by default located in the same directory. To see a command line summary of the executable, use the following command from a command prompt:

```
/opt/snow/snowagent -?
```

### 2.1 PREPARED INSTALLATION PACKAGE

Installation packages are prepared by and ordered from Snow Support. The current configuration file needs to be provided before a package can be prepared. If no configuration file exists, certain information is needed in order to create one.

Required information:

- address to the Snow Inventory Server, including port number
- site name
- if xMetering should be included

Optional information:

- name of the configuration file
- if previous versions of the Snow Inventory Client for macOS should be removed

The installation package can be copied to any folder on the target computer.

#### 2.1.1 INSTALL

The installation can be run in two ways, either as a user interface or as a command.

##### 2.1.1.1 USER INTERFACE

1. Double-click on the package.  
An installation wizard starts.
2. Follow the displayed instructions.

##### 2.1.1.2 COMMAND

1. Start a terminal
2. Run the following command:

```
sudo installer -pkg snowagent-<version>.x86.pkg -target /
```

## 2.1.2 UNINSTALL

During the installation an uninstall script is created. Follow the instructions for a manual uninstallation, see section below.

## 2.2 MANUAL INSTALLATION

This section describes how to manually install and uninstall the Snow Inventory Agent for macOS.

### 2.2.1 INSTALL

1. Start a terminal and use **sudo** for all commands.
2. Copy the following files to the **opt/snow** directory on the computer:
  - **snowagent**
  - **xMetering2** (optionally)
  - **snowagent.config**
3. Copy the following files to the **Library/LaunchDaemons** directory on the computer:
  - **com.snowsoftware.Inventory.plist**
  - **com.snowsoftware.Metering.plist** (if xMetering2 is installed)
  - **com.snowsoftware.Cloudmetering.plist**

4. Make **snowagent** and **xMetering2** executable with the command lines:

```
chmod +x /opt/snow/snowagent
chmod +x /opt/snow/xMetering2
```

5. Load and start the **snowagent** and **xMetering** daemon processes with the command lines:

```
launchctl load /Library/LaunchDaemons/com.snowsoftware.Inventory.plist
launchctl load /Library/LaunchDaemons/com.snowsoftware.Metering.plist
```

### 2.2.2 UNINSTALL

1. Start a terminal and use **sudo** for all commands.
2. Stop the **snowagent** and **xMetering** daemon processes with the command lines:

```
launchctl unload /Library/LaunchDaemons/com.snowsoftware.Inventory.plist
launchctl unload /Library/LaunchDaemons/com.snowsoftware.Metering.plist
launchctl unload /Library/LaunchDaemons/com.snowsoftware.Cloudmetering.plist
```

3. Delete all installed files, data files, and temporary files with the following command lines:

```
sudo rm -fR /opt/snow
sudo rm /Library/LaunchDaemons/com.snowsoftware.Inventory.plist
sudo rm /Library/LaunchDaemons/com.snowsoftware.Metering.plist
sudo rm /Library/LaunchDaemons/com.snowsoftware.Cloudmetering.plist
```

## 2.3 DEFAULT LOCATION OF FILES

The table below shows the default locations of the binary files and log files of the agent after an installation using a prepared package.

File name	Directory	Description
snowagent	<b>/opt/snow</b>	Binary file of the Snow Inventory Agent
snowagent.config	<b>/opt/snow</b>	Configuration file of the Snow Inventory Agent
*.snowpack	<b>/opt/snow/data</b>	Inventory result file
snowagent.log	<b>/opt/snow/data</b>	Log file of the Snow Inventory Agent
.hst.lg	<b>/opt/snow/data</b>	Log file for information on installation date and last scan date
xMetering2	<b>/opt/snow</b>	Binary file for the metering
*.met	<b>/opt/snow/data</b>	Result file for the metering
metering.log	<b>/opt/snow/data</b>	Log file for the metering

Temporary files are by default located in the **/tmp/snow** directory and will be deleted when no longer needed.

## 3 COMMAND LINE

The command line format for the Snow Inventory Agent for macOS is:

```
snowagent [options] [<command> [<arguments>]]
```

Some command lines require superuser privileges. To temporarily gain superuser privileges, send the command line as an argument to the command **sudo**.

```
sudo /opt/snow/snowagent test
```

Global option	Description
<b>-w &lt;dir&gt;</b>	Override working directory otherwise inherited from shell/environment
<b>-v</b>	Enable verbose mode, bump all logging to max level (enable all tags)
<b>-c snowagent.config</b>	Override the default location of the configuration file
<b>-data-dir &lt;dir&gt;</b>	Override data directory (regardless of configuration).  When this option is used, only the directory of inventory result file will be changed. The log file will still be placed in the default location.
<b>-log-dir &lt;dir&gt;</b>	Override log directory (regardless of configuration)
<b>-? or -h</b>	Print help text and exit

Command	Option	Description
<b>copyright</b>		Show copyright notice
<b>manifest</b>		Print the manifest in json format and exit
<b>scan</b>		Scan the current device and create a snowpack file in the target destination (as set by configuration). This will start a scan regardless of any schedule or other configuration. It will not start a scan if there's a running scan in progress. After the scan has completed the agent will exit. The scan result is not automatically sent.
<b>send</b>		Send files from the data directory. Files that are successfully sent are deleted
<b>test</b>		Run a self-test. Check configuration and server connectivity, then exit with a 0 (if successful) otherwise with a non-zero exit code
<b>update</b>	<b>-package &lt;location&gt;</b>	Check for updates now, and install if any are found.  Use an update package from a specific location
<b>version</b>		Print the current snowagent version and exit

## 4 SCANNING

The Snow Inventory Agent for macOS scans the computers regularly, which by default is once every 24 hours. By configuration, it is possible to schedule when the agent should scan; for example at 01:00 am every day, at 4:05 am every Sunday, or at 00:30 am on the first of every month.

Using the system setting **env.allowonlyonescanperday**, the agent will check when the last scan was performed before it starts a new. If it was run the same day, no new scan will be performed. This means that a scheduled scan will never be performed more frequently than once a day. This check is not done when a scan is run from the command line.

Configuration of scan scheduling:

- The scan scheduling is defined in:  
**/Library/LaunchDaemons/com.snowsoftware.Inventory.plist**

When the scan is completed, the agent sends the inventory file with all scan data to a Snow Inventory Server. If the agent for any reason cannot send data to the server, it will by default try again every 15 minutes. The inventory data file is stored until the data has been sent successfully. Total number of inventory files that can be stored is decided by the system setting **send.max\_scan\_result\_backlog\_count** in the configuration file.

### 4.1 FILE SYSTEMS

The Snow Inventory Agent for macOS gathers information by scanning the file systems.

All file systems are scanned except for those listed for exclusion in the agent configuration file (**<Software> <Exclude> <Filesystem>**). Also, the file systems in the table below are all excluded from the scan by default and cannot be included using the include criteria.

Excluded file systems	
<b>cifs</b>	<b>nfs4</b>
<b>devfs</b>	<b>none</b>
<b>fuseblk</b>	<b>smbfs</b>
<b>mtmfs</b>	<b>vmhgfs</b>
<b>nfs</b>	

## 4.2 MANUAL SCAN

When a change has been made or if a scan needs to be run for support reasons, a scan can be manually initiated outside of the regular schedule.

### 4.2.1 SCAN OF ONLINE COMPUTERS

Use the commands below to trigger the agent to start a manual scan of the current computer and send the scan result to a server endpoint as defined in the agent configuration file. A manual scan will start regardless of any schedule or other configuration. However, if there is a scan already running, a manual scan will not start.

Scan and send the scanning result:

```
/opt/snow/snowagent
```

### 4.2.2 SCAN OF OFFLINE COMPUTERS

In scenarios where a computer cannot communicate with a Snow Inventory server, a “one time scan” can be performed.

1. Copy the binary files of the agent to a directory on a USB memory stick.
2. On the offline computer to be scanned:
  - a. Insert the memory stick into the USB port.
  - b. In a command prompt, navigate to the folder where the binary files are placed.
  - c. Run the following command to make the agent perform an instant scan of the current computer:

```
/opt/snow/snowagent scan
```

The scan result is put in a subdirectory on the USB memory stick.

3. Move the USB memory stick to an online computer with access to Snow Inventory.
4. On the online computer, run the following command to make the agent send the scan result to a server endpoint, as defined in the agent configuration file:

```
/opt/snow/snowagent send
```

## 5 CLOUD APPLICATION DISCOVERY AND METERING

The Snow Inventory Agent can report usage of cloud applications, also known as Software as a Service (SaaS). It reports usage of cloud applications accessed via the internet browser, used for example for messaging, office software, invoicing and service desk services.

The feature is disabled by default, but can be enabled in the Snow Inventory Admin Console.

For more detailed information about how the feature works and the available browser extensions, refer to the document *Technical Description, Cloud Application Metering*.

## 6 PRINCIPLE OF LEAST PRIVILEGES

The list shows the commands that are used by the Snow Inventory Agent for macOS. The user running the agent needs to have access to all of the commands.

The agent searches for commands in **/usr/bin** , **/bin** , **/usr/sbin** , **/sbin**, and **/usr/local/bin**.

- sudo
- dsconfigad
- system\_profiler
- diskutil
- vm\_stat
- usb-devices
- last
- uname
- plutil
- xMetering
- launchctl
- kill

### NOTE

The minimum **sudo** version required by the Snow Inventory Agent for macOS is **sudo 1.7.8**. If the agent needs to be run with an older version, the recommendation is running as root.

### EXAMPLE

#### Sudoers configuration

In this example;

- the user **snw** has permission to run all commands in the **SNOWAGENT** list as any other user (including root),
- the **Cmnd\_Alias** creates an alias for one or several commands. It is a comma-separated list where all commands must be written on one and the same row,
- the Inventory agent will only use **sudo** for commands that are prefixed by **NOPASSWD:** since it runs "non-interactive".

```
Cmnd_Alias SNOWAGENT = /usr/bin/last, /usr/bin/uname
```

```
snw ALL=(ALL) NOPASSWD: SNOWAGENT
```

### NOTE

If a command is configured in sudoers to be run without providing a password, that path will be used before the search path of the agent.

## 6.1 CHANGE THE USER RUNNING THE SCAN

To change who the scan is run as:

- Run **launchctl unload com.snowsoftware.Inventory** as root to unload.
- Run **launchctl load /Library/Laundemons/com.snowsoftware.Inventory** as the snow user to load.