Collecting Data

Cloud Insights

NetApp
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Collecting Data

Getting started gathering data

After you have signed up for Cloud Insights and log in to your environment for the first time, you will be guided through the following steps in order to begin collecting and managing data.

Data collectors discover information from your data sources, such as storage devices, network switches, and virtual machines. The information gathered is used for analysis, validation, monitoring and troubleshooting.

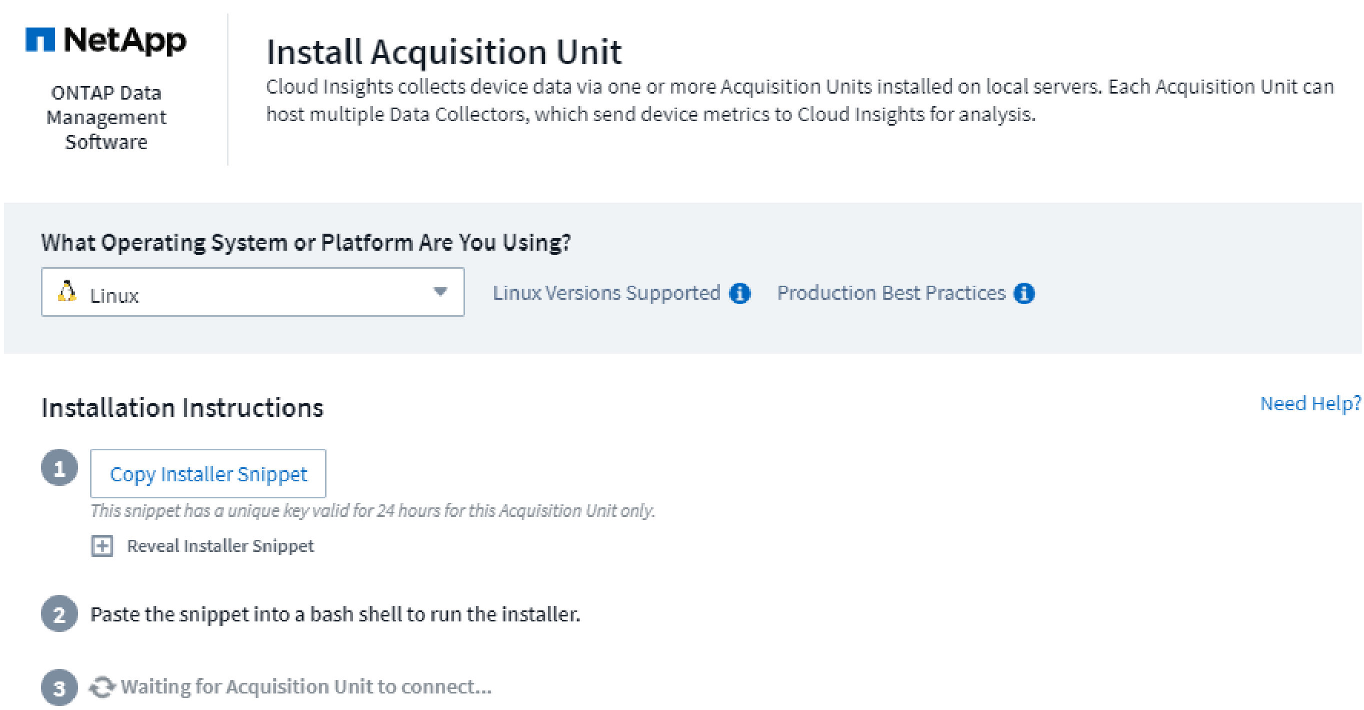
Cloud Insights utilizes three types of data collectors:

- Operating Systems
- Services
- Infrastructure

Select your first data collector from the supported vendors and models available. You can easily add additional data collectors later.

Install an Acquisition Unit

If you selected an *Infrastructure* data collector, an Acquisition Unit is required to inject data into Cloud Insights. You will need to download and install the Acquisition Unit software on a server or VM to collect data for Cloud Insights. A single Acquisition Unit can be used for multiple data collectors.



- Follow the instructions displayed to install your Acquisition Unit. Once the Acquisition Unit software is installed, the Continue button is displayed and you can proceed to the next step.

You may set up additional acquisition units later if needed. For example, you may want different Acquisition Units collecting information from data centers in different regions.

Configure the Data Collector - Infrastructure

For *Infrastructure* data collectors, you will be asked to fill out the data collector fields presented:

- Give the data collector a unique and meaningful name.
- Enter the user name and password to connect to the device, as appropriate.
- Fill in any other mandatory fields in *Configuration* and *Advanced Configuration* sections.
- Click **Test Connection** to test the connection to the device.
- Click **Add Collector** to save the data collector.

You will be able to configure additional data collectors later.

Configure the Data Collector - Operating Systems and Services

Operating System:

For *Operating System* data collectors, choose a platform (MacOS, Linux, Windows) to install a Cloud Insights Agent.
You must have at least one agent to collect data from Services.
The agent also collects data from the host itself, for use in Cloud Insights. This data is categorized as "Node" data in widgets, etc.

- Open a terminal or command window on the agent host or VM, and paste the displayed command to install the agent.
- When installation is complete, click **Complete Setup**.

Services:

For *Service* data collectors, click on a tile to open the instructions page for that service.

- Choose a platform and an Agent Access Key.
- If you don't have an agent installed on that platform, follow the instructions to install the agent.
- Click **Continue** to open the data collector instruction page.
- Follow the instructions to configure the data collector.
- When configuration is complete, click **Complete Setup**.

Add Dashboards

Depending on the type of initial data collector you selected to configure (storage, switch, etc.), one or more relevant dashboards will be imported. For example, if you configured a storage data collector, a set of storage-related dashboards will be imported, and one will be set as your Cloud Insights Home Page. You can change the home page from the **Dashboards > Show All Dashboards** list.

You can import additional dashboards later, or create your own.

That’s all there is to it

After you complete the initial setup process, your environment will begin to collect data.

If your initial setup process is interrupted (for example, if you close the browser window), you will need to follow the steps manually:

- Choose a Data Collector
- Install an Agent or Acquisition Unit if prompted
- Configure the Data Collector

Acquisition Unit Requirements

You must install an Acquisition Unit (AU) in order to acquire information from your infrastructure data collectors (storage, VM, port, EC2, etc.). Before you install the Acquisition Unit, you should ensure that your environment meets operating system, CPU, memory, and disk space requirements.

Requirements

Component	Linux Requirement	Windows Requirement
Operating system	A computer running a licensed version of one of the following: * Centos (64-bit): 7.2 through 7.9, 8.1 through 8.4 * Debian (64-bit): 9 and 10 * Oracle Enterprise Linux (64-bit): 7.5 through 7.9, 8.1 through 8.4 * Red Hat Enterprise Linux (64-bit): 7.2 through 7.9, 8.1 through 8.4 * Ubuntu Server: 18.04 and 20.04 LTS This computer should be running no other application-level software. A dedicated server is recommended.	A computer running a licensed version of one of the following: * Microsoft Windows 10 64-bit * Microsoft Windows Server 2012 * Microsoft Windows Server 2012 R2 * Microsoft Windows Server 2016 * Microsoft Windows Server 2019 This computer should be running no other application-level software. A dedicated server is recommended.
CPU	2 CPU cores	Same
Memory	8 GB RAM	Same
Available disk space	50 GB For Linux, disk space should be allocated in this manner: /opt/netapp 10 GB /var/log/netapp 40 GB	50 GB

Network	100 Mbps /1 Gbps Ethernet connection, static IP address, IP connectivity to all FC devices, and a required port to the Cloud Insights instance (80 or 443).	Same
Permissions	Sudo permissions on the Acquisition Unit server. /tmp must be mounted with exec capabilities.	Administrator permissions on the Acquisition Unit server
Virus Scan		During installation, you must completely disable all virus scanners. Following installation, the paths used by the Acquisition Unit software must be excluded from virus scanning.

Additional recommendations

- For accurate audit and data reporting, it is strongly recommended to synchronize the time on the Acquisition Unit machine using **Network Time Protocol (NTP)** or **Simple Network Time Protocol (SNTP)**.

Regarding Sizing

You can get started with a Cloud Insights Acquisition Unit with just 8GB memory and 50GB of disk space, however, for larger environments you should ask yourself the following questions:

Do you expect to:

- Discover more than 2500 virtual machines or 10 large (> 2 node) ONTAP clusters, Symmetrix, or HDS/HPE VSP/XP arrays on this Acquisition Unit?
- Deploy 75 or more total data collectors on this Acquisition Unit?

For each "Yes" answer above, it is recommend to add 8 GB of memory and 50 GB of disk space to the AU. So for example if you answered "Yes" to both, you should deploy a 24GB memory system with 150GB or more of disk space. On Linux, the disk space to be added to the log location.

For additional sizing questions, contact NetApp Support.

Configuring Acquisition Units

Cloud Insights collects device data using one or more Acquisition Units installed on local servers. Each Acquisition Unit can host multiple Data Collectors, which send device metrics to Cloud Insights for analysis.

This topic describes how to add Acquisition Units and describes additional steps required when your environment uses a proxy.

For accurate audit and data reporting, it is strongly recommended to synchronize the time on the Acquisition Unit machine using **Network Time Protocol (NTP)** or **Simple Network Time Protocol (SNTP)**.

Adding a Linux Acquisition Unit

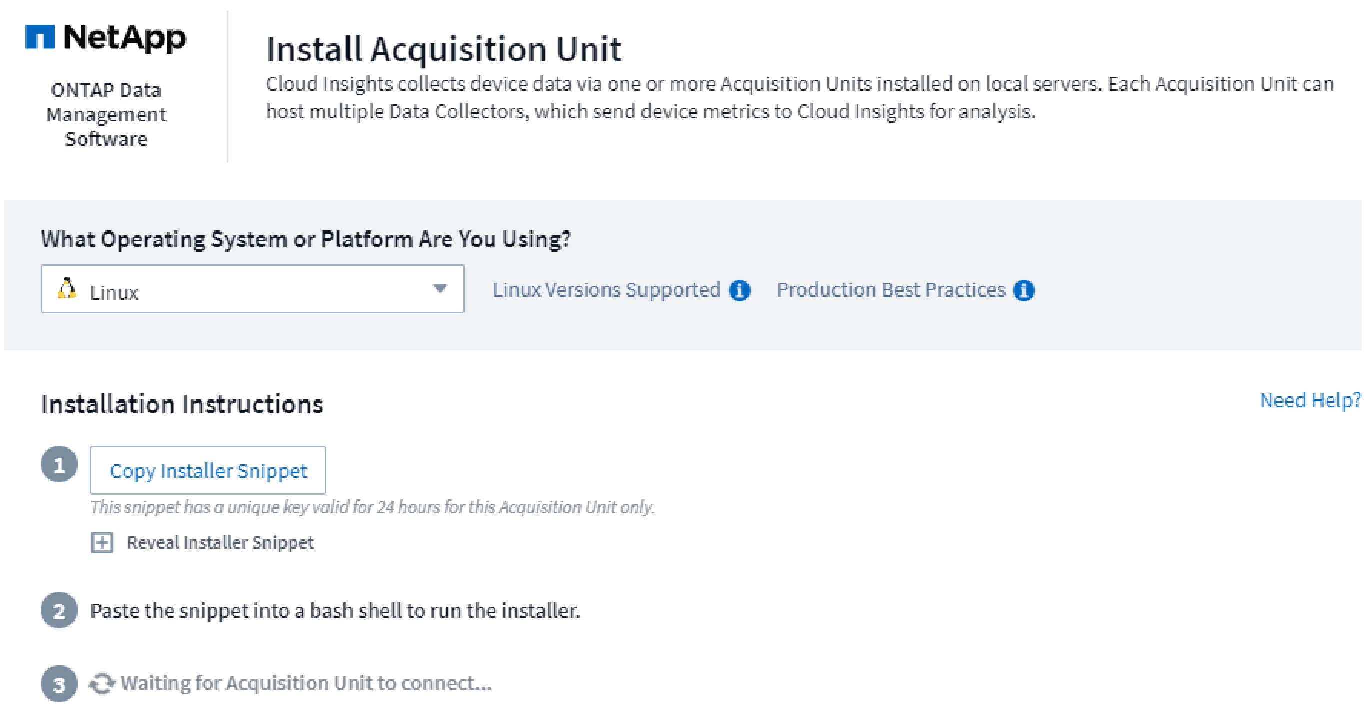
Before you begin

- If your system is using a proxy, you must set the proxy environment variables before the acquisition unit is installed. For more information, see Setting proxy environment variables.

Steps for Linux Acquisition Unit Installation

1. Log in as Administrator or Account Owner to your Cloud Insights environment.
2. Click **Admin > Data Collectors > Acquisition Units > +Acquisition Unit**

   The system displays the *Install Acquisition Unit* dialog. Choose Linux.



1. Verify that the server or VM hosting the Acquisition Unit meets the recommended system requirements.
2. Verify that the server is running a supported version of Linux. Click *OS Versions Supported (i)* for a list of supported versions.
3. Copy the Installation command snippet in the dialog into a terminal window on the server or VM that will host the Acquisition unit.
4. Paste and execute the command in the Bash shell.

After you finish

- Click **Admin > Data Collectors > Acquisition units** to check the status of Acquisition Units.
- You can access the Acquisition Unit logs at /var/log/netapp/cloudinsights/acq/acq.log
- Use the following script to control the Acquisition Unit:

    ◦ cloudinsights-service.sh (stop, start, restart, check the status)

- Use the following script to uninstall the Acquisition Unit:
    ◦ cloudinsights-uninstall.sh

Setting proxy environment variables

For environments that use a proxy, you must set the proxy environment variables before you add the Acquisition Unit. The instructions for configuring the proxy are provided on the *Add Acquisition Unit* dialog.

1. Click + in *Have a Proxy Server?*
2. Copy the commands to a text editor and set your proxy variables as needed.

   Note: Be aware of restrictions on special characters in proxy username and password fields: '%' and '!' are allowed in the username field. ':', '%', and '!' are allowed in the password field.

3. Run the edited command in a terminal using the Bash shell.
4. Install the Acquisition Unit software.

Proxy Configuration

The Acquisition Unit uses 2-way/mutual authentication to connect to the Cloud Insights server. The client certificate must be passed to the Cloud Insights server to be authenticated. To accomplish this, the proxy must be set up to forward the https request to the Cloud Insights server without decrypting the data.

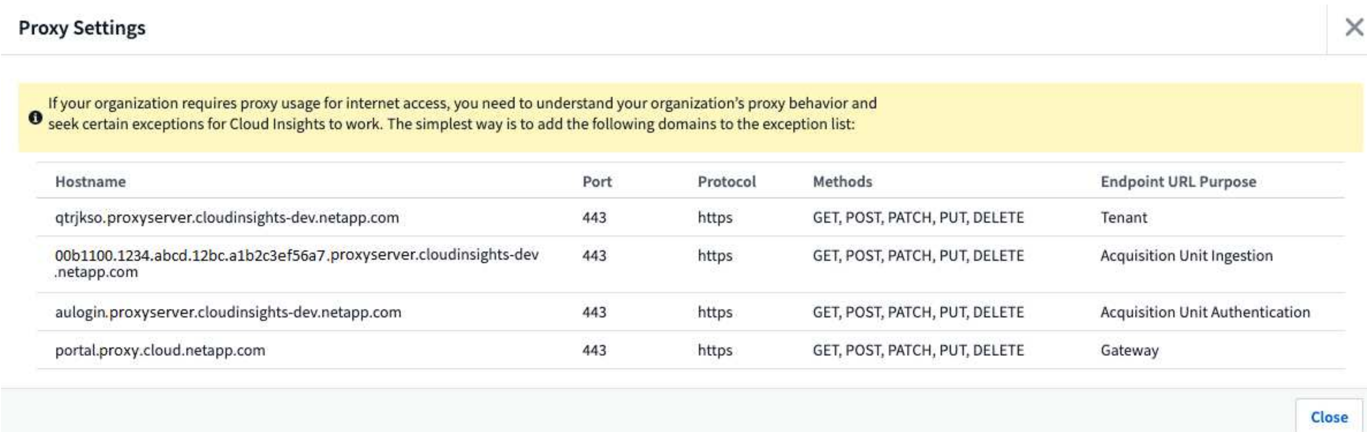
The simplest way to do this is to specify wildcard configuration in your proxy/firewall to communicate with Cloud Insights, for example:

```
*.cloudinsights.netapp.com
```

> The use of an asterisk (*) for wildcard is common, but your proxy/firewall configuration may use a different format. Check with your proxy documentation to ensure correct wildcard specification in your environment.

Viewing Proxy URLs

You can view your proxy endpoint URLs by clicking the **Proxy Settings** link when choosing a data collector during onboarding, or the link under *Proxy Settings* on the **Help > Support** page. A table like the following is displayed.



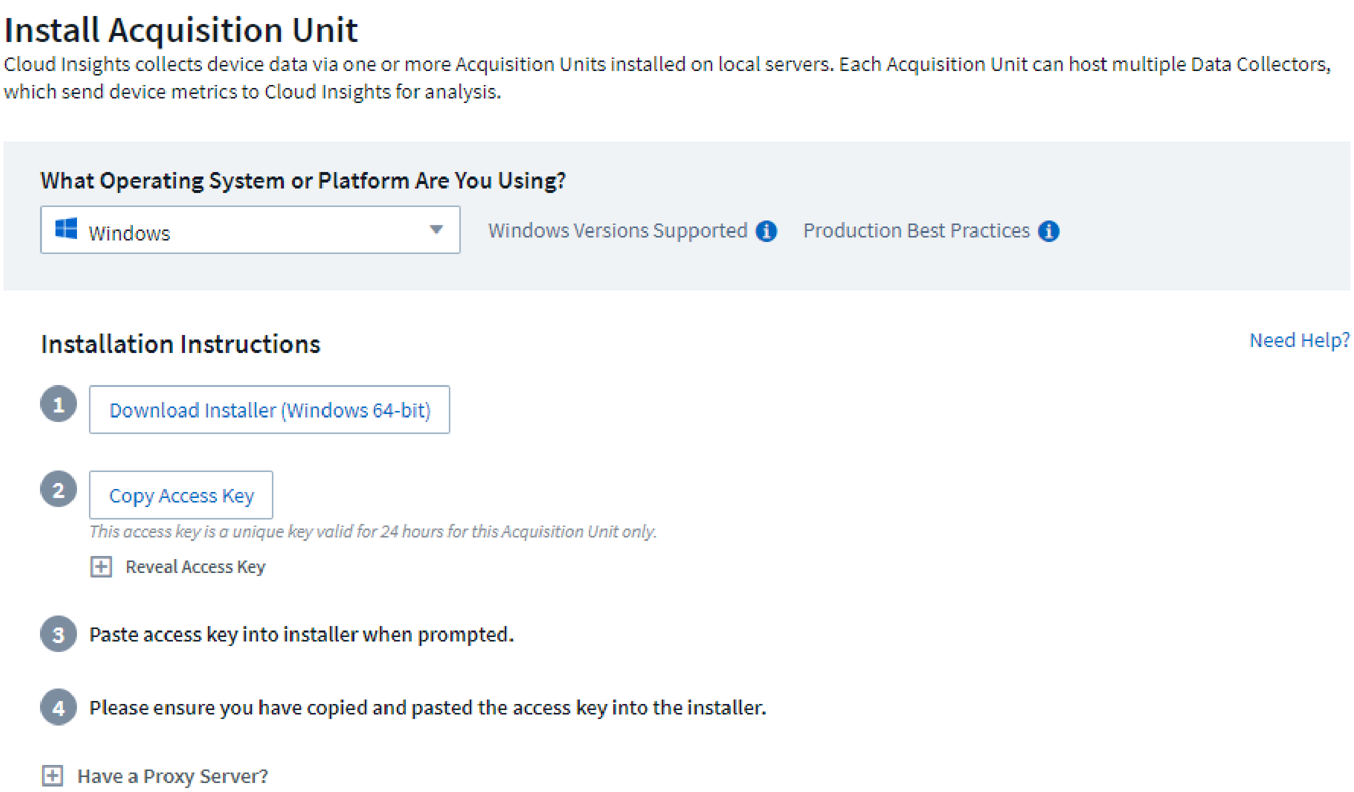
If you have Cloud Secure in your environment, the configured endpoint URLs will also be displayed in this list.

Adding a Windows Acquisition Unit

Steps for Windows Acquisition Unit Installation

1. Log in to the Acquisition Unit server/VM as a user with Administrator permissions.
2. On that server, open a browser window and log in to your Cloud Insights environment as Administrator or Account Owner.
3. Click **Admin > Data Collectors > Acquisition Units > +Acquisition Unit** .

   The system displays the *Install Acquisition Unit* dialog. Choose Windows.



1. Verify that the server or VM hosting the Acquisition Unit meets the recommended system requirements.
2. Verify that the server is running a supported version of Windows. Click *OS Versions Supported (i)* for a list of supported versions.

3. Click the **Download Installer (Windows 64-bit)** button.
4. Copy the Access Key. You will need this during the Installation.
5. On the Acquisition Unit server/VM, execute the downloaded installer.
6. Paste the Access Key into the installation wizard when prompted.
7. During installation, you will be presented with the opportunity to provide your proxy server settings.

After you finish

- Click **Admin > Data Collectors > Acquisition units** to check the status of Acquisition Units.
- You can access the Acquisition Unit log in <install dir>\Cloud Insights\Acquisition Unit\log\acq.log
- Use the following script to stop, start, restart, or check the status of the Acquisition Unit:

```
cloudinsights-service.sh
```

Proxy Configuration

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```
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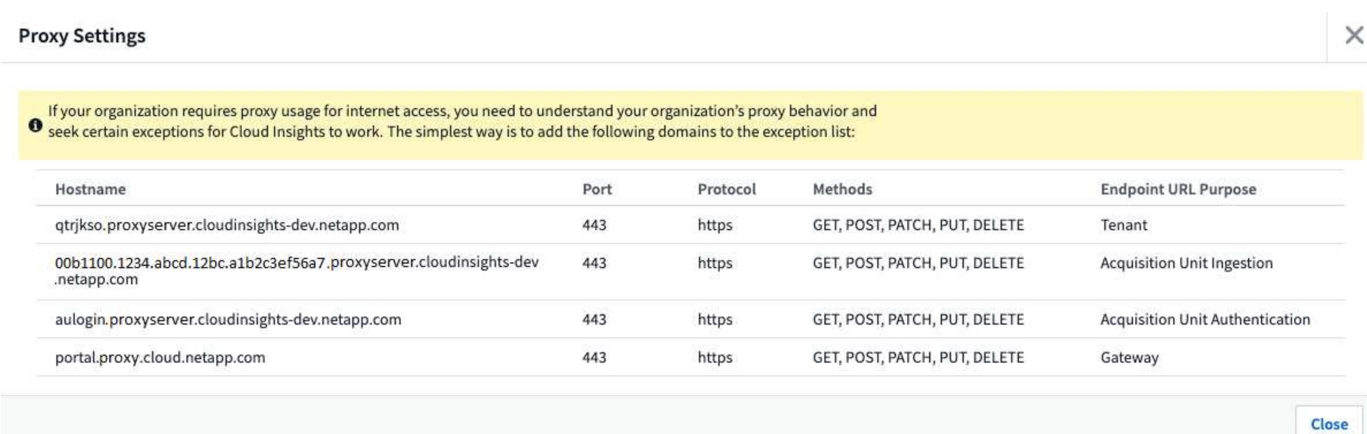


Proxy Settings

If your organization requires proxy usage for internet access, you need to understand your organization's proxy behavior and seek certain exceptions for Cloud Insights to work. The simplest way is to add the following domains to the exception list:

Hostname	Port	Protocol	Methods	Endpoint URL Purpose
qtrjkso.proxyserver.cloudinsights-dev.netapp.com	443	https	GET, POST, PATCH, PUT, DELETE	Tenant
00b1100.1234.abcd.12bc.a1b2c3ef56a7.proxyserver.cloudinsights-dev.netapp.com	443	https	GET, POST, PATCH, PUT, DELETE	Acquisition Unit Ingestion
aulogin.proxyserver.cloudinsights-dev.netapp.com	443	https	GET, POST, PATCH, PUT, DELETE	Acquisition Unit Authentication
portal.proxy.cloud.netapp.com	443	https	GET, POST, PATCH, PUT, DELETE	Gateway

Close

If you have Cloud Secure in your environment, the configured endpoint URLs will also be displayed in this list.

Uninstalling an Acquisition Unit

To uninstall the Acquisition Unit software, do the following:

Windows:

1. On the Acquisition Unit server/VM, open Control Panel and choose **Uninstall a Program**. Select the Cloud Insights Acquisition Unit program for removal.
2. Click Uninstall and follow the prompts.

Linux:

1. On the Acquisition Unit server/VM, run the following command:

```
sudo cloudinsights-uninstall.sh -p
```

2. For help with uninstall, run:

```
sudo cloudinsights-uninstall.sh --help
```

Both:

1. After uninstalling the AU software, go to **Admin > Data Collectors** and select the **Acquisition Units** tab.
2. Click the Options button to the right of the Acquisition Unit you wish to uninstall, and select *Delete*. You can delete an Acquisition Unit only if there are no data collectors assigned to it.

NOTE:You cannot delete the default Acquisition Unit. Select another AU as the default before deleting the old one.

Reinstalling an Acquisition Unit

To re-install an Acquisition Unit on the same server/VM, you must follow these steps:

Before you begin

You must have a temporary Acquisition Unit configured on a separate server/VM before re-installing an Acquisition Unit.

Steps

1. Log in to the Acquisition Unit server/VM and uninstall the AU software.
2. Log into your Cloud Insights environment and go to **Admin > Data Collectors**.
3. For each data collector, click the Options menu on the right and select *Edit*. Assign the data collector to the temporary Acquisition Unit and click **Save**.

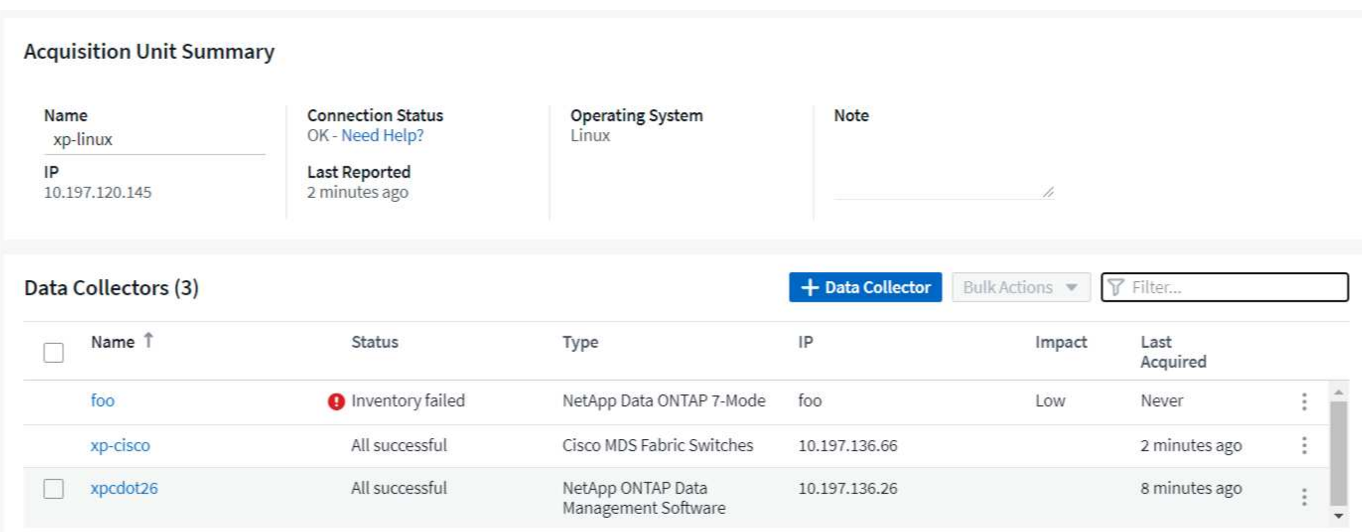
   You can also select multiple data collectors of the same type and click the **Bulk Actions** button. Choose *Edit* and assign the data collectors to the temporary Acquisition Unit.

4. After all of the data collectors have been moved to the temporary Acquisition Unit, go to **Admin > Data Collectors** and select the **Acquisition Units** tab.
5. Click the Options button to the right of the Acquisition Unit you wish to re-install, and select *Delete*. You can delete an Acquisition Unit only if there are no data collectors assigned to it.
6. You can now re-install the Acquisition Unit software on the original server/VM. Click **+Acquisition Unit** and follow the instructions above to install the Acquisition Unit.
7. Once the Acquisition Unit has been re-installed, assign your data collectors back to the Acquisition Unit.

Viewing AU Details

The Acquisition Unit (AU) detail page provides useful detail for an AU as well as information to help with troubleshooting. The AU detail page contains the following sections:

- A **summary** section showing the following:
  - **Name** and **IP** of the Acquisition Unit
  - Current connection **Status** of the AU
  - **Last Reported** successful data collector poll time
  - The **Operating System** of the AU machine
  - Any current **Note** for the AU. Use this field to enter a comment for the AU. The field displays the most recently added note.
- A table of the AU's **Data Collectors** showing, for each data collector:
  - **Name** - Click this link to drill down into the data collector's detail page with additional information
  - **Status** - Success or error information
  - **Type** - Vendor/model
  - **IP** address of the data collector
  - Current **Impact** level
  - **Last Acquired** time - when the data collector was last successfully polled



For each data collector, you can click on the "three dots" menu to Clone, Edit, Poll, or Delete the data collector. You can also select multiple data collectors in this list to perform bulk actions on them.

To restart the Acquisition Unit, click the **Restart** button at the top of the page. Drop down this button to attempt to **Restore Connection** to the AU in the event of a connection problem.

Configuring an Agent to Collect Data

Cloud Insights uses Telegraf as its agent for collection of integration data. Telegraf is a plugin-driven server agent that can be used to collect and report metrics, events, and logs. Input plugins are used to collect the desired information into the agent by accessing the system/OS directly, by calling third-party APIs, or by listening to configured streams (i.e. Kafka, statsD, etc). Output plugins are used to send the collected metrics, events, and logs from the agent to Cloud Insights.

The current Telegraf version for Cloud Insights is **1.19.3**.

For accurate audit and data reporting, it is strongly recommended to synchronize the time on the Agent machine using **Network Time Protocol (NTP)** or **Simple Network Time Protocol (SNTP)**.

If you want to verify the installation files before instaling the Agent, see the section below on Verifying Checksums.

Installing an Agent

If you are installing a Service data collector and have not yet configured an Agent, you are prompted to first install an Agent for the appropriate Operating System. This topic provides instructions for installing the Telegraf agent on the following Operating Systems:

- Windows
- RHEL and CentOS
- Ubuntu and Debian
- macOS
- Kubernetes

To install an agent, regardless of the platform you are using, you must first do the following:

1. Log into the host you will use for your agent.
2. Log in to your Cloud Insights site and go to **Admin > Data Collectors**.
3. Click on **+Data Collector** and choose a data collector to install.

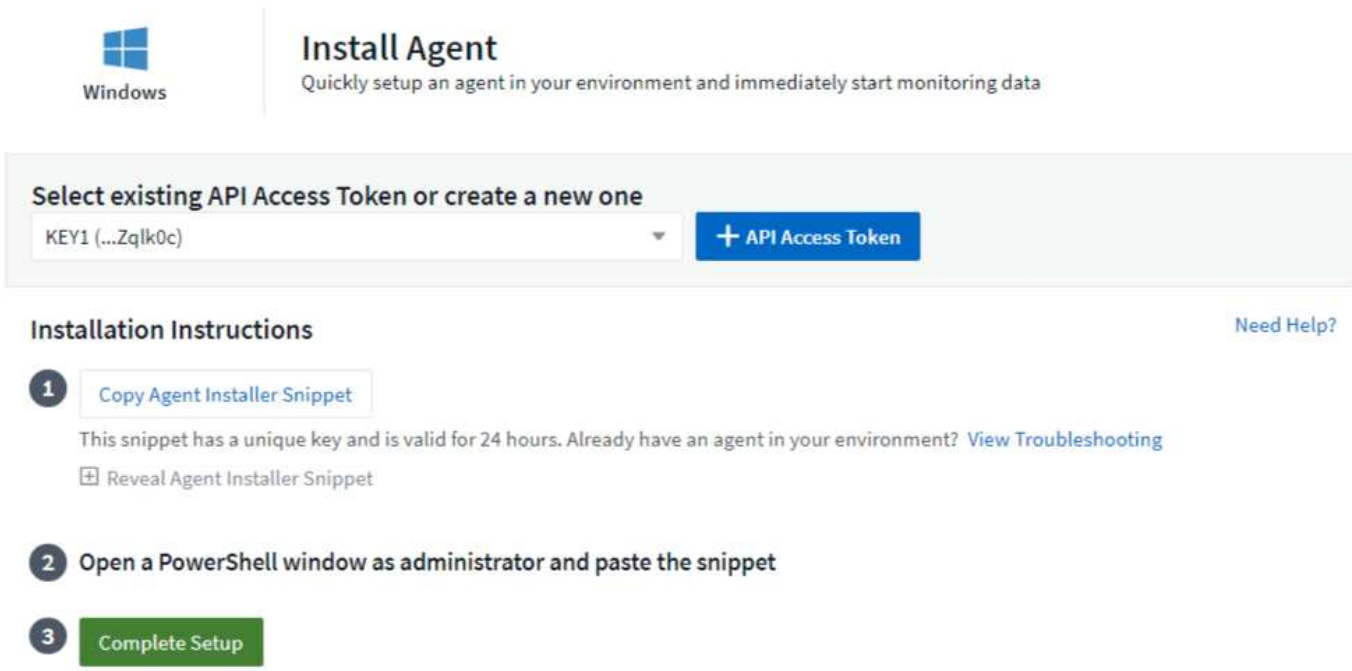
1. Choose the appropriate platform for your host (Windows, Linux, macOS, etc.)
2. Follow the remaining steps for each platform.

Once you have installed an agent on a host, you do not need to install an agent again on that host.

Once you have installed an agent on a server/VM, Cloud Insights collects metrics from that system in addition to collecting from any data collectors you configure. These metrics are gathered as "Node" metrics.

If you are using a proxy, read the proxy instructions for your platform before installing the Telegraf agent.

Windows



Pre-requisites:

- PowerShell must be installed
- If you are behind a proxy, follow the instructions in the **Configuring Proxy Support for Windows** section.

Steps to install agent on Windows:

1. Choose an Agent Access Key.
2. Copy the command block from the agent installation dialog. You can click the clipboard icon to quickly copy the command to the clipboard.
3. Open a PowerShell window
4. Paste the command into the PowerShell window and press Enter.
5. The command will download the appropriate agent installer, install it, and set a default configuration. When finished, it will restart the agent service. The command has a unique key and is valid for 24 hours.
6. Click **Finish** or **Continue**

After the agent is installed, you can use the following commands to start/stop the service:

```
Start-Service telegraf
Stop-Service telegraf
```

Configuring Proxy Support for Windows

> The steps below outline the actions needed to set the *http_proxy/https_proxy* environment variables. For some proxy environments, users may also need to set the *no_proxy environment* variable.

For systems residing behind a proxy, perform the following to set the *https_proxy* and/or *http_proxy* environment variable(s) **PRIOR** to installing the Telegraf agent:

```
[System.Environment]::SetEnvironmentVariable("https_proxy",
"<proxy_server>:<proxy_port>",
[System.EnvironmentVariableTarget]::Machine)
```

Uninstalling the Agent

To uninstall the agent on Windows, do the following in a PowerShell window:

1. Stop and delete the Telegraf service:

   ```
   Stop-Service telegraf
   sc.exe delete telegraf
   ```

2. Remove the certificate from the trustore:

   ```
   cd Cert:\CurrentUser\Root
   rm E5FB7B68C08B1CA902708584C274F8EFC7BE8ABC
   ```

3. Delete the *C:\Program Files\telegraf* folder to remove the binary, logs, and configuration files
4. Remove the *SYSTEM\CurrentControlSet\Services\EventLog\Application\telegraf* key from the registry

Upgrading the Agent

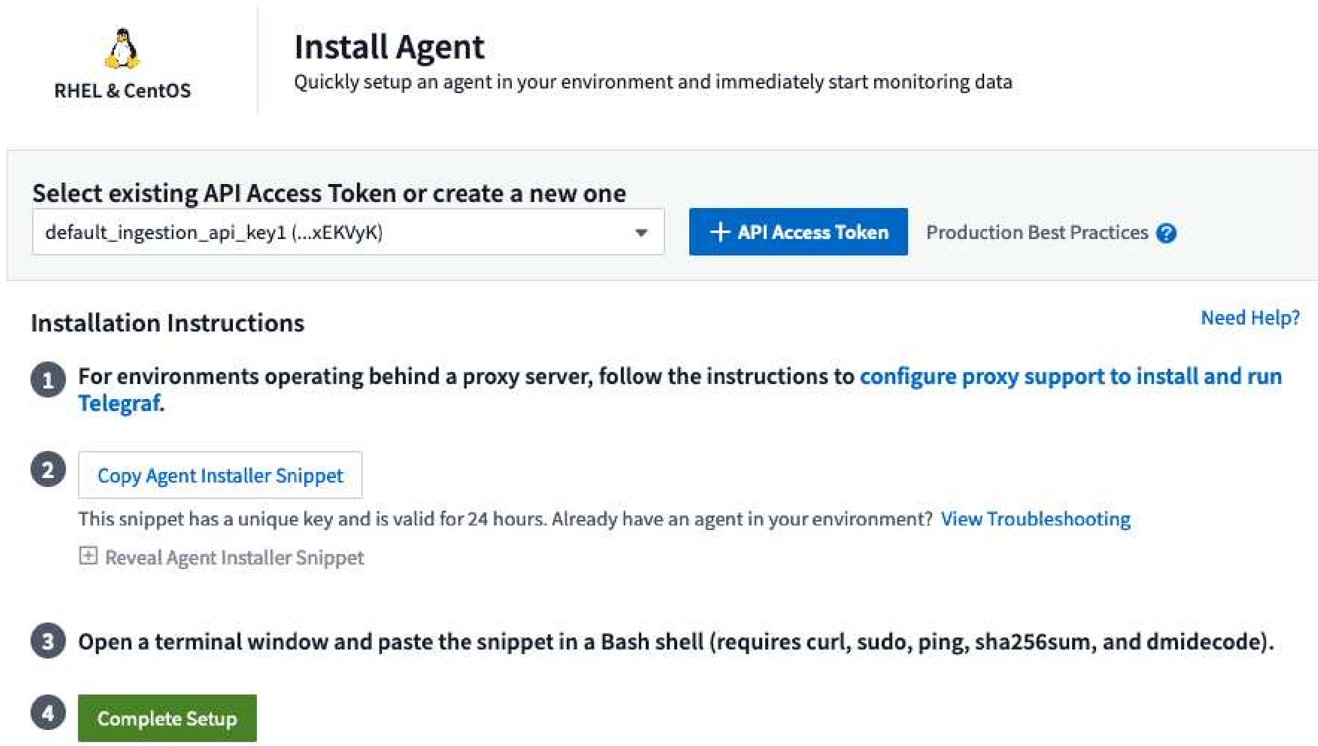
To upgrade the telegraf agent, do the following:

1. Stop and delete the telegraf service:

   ```
   Stop-Service telegraf
   sc.exe delete telegraf
   ```

2. Delete the *SYSTEM\CurrentControlSet\Services\EventLog\Application\telegraf* key from the registry
3. Delete *C:\Program Files\telegraf\telegraf.conf*
4. Delete *C:\Program Files\telegraf\telegraf.exe*
5. Install the new agent.

RHEL and CentOS



Pre-requisites:

- The following commands must be available: curl, sudo, ping, sha256sum, openssl, and dmidecode
- If you are behind a proxy, follow the instructions in the **Configuring Proxy Support for RHEL/CentOS** section.

Steps to install agent on RHEL/CentOS:

1. Choose an Agent Access Key.
2. Copy the command block from the agent installation dialog. You can click the clipboard icon to quickly copy the command to the clipboard.
3. Open a Bash window
4. Paste the command into the Bash window and press Enter.
5. The command will download the appropriate agent installer, install it, and set a default configuration. When finished, it will restart the agent service. The command has a unique key and is valid for 24 hours.
6. Click **Finish** or **Continue**

After the agent is installed, you can use the following commands to start/stop the service:

If your operating system is using systemd (CentOS 7+ and RHEL 7+):

```
sudo systemctl start telegraf
sudo systemctl stop telegraf
```

If your operating system is not using systemd (CentOS 7+ and RHEL 7+):

```
sudo service telegraf start
sudo service telegraf stop
```

Configuring Proxy Support for RHEL/CentOS

> The steps below outline the actions needed to set the *http_proxy/https_proxy* environment variables. For some proxy environments, users may also need to set the *no_proxy environment* variable.

For systems residing behind a proxy, perform the following steps **PRIOR** to installing the Telegraf agent:

1. Set the *https_proxy* and/or *http_proxy* environment variable(s) for the current user:

   ```
   export https_proxy=<proxy_server>:<proxy_port>
   ```

2. Create */etc/default/telegraf*, and insert definitions for the *https_proxy* and/or *http_proxy* variable(s):

   ```
   https_proxy=<proxy_server>:<proxy_port>
   ```

Uninstalling the Agent

To uninstall the agent on RHEL/CentOS, in a Bash terminal, do the following:

1. Stop the Telegraf service:

   ```
   systemctl stop telegraf (If your operating system is using systemd
   (CentOS 7+ and RHEL 7+)
   /etc/init.d/telegraf stop (for systems without systemd support)
   ```

2. Remove the Telegraf agent:

   ```
   yum remove telegraf
   ```

3. Remove any configuration or log files that may be left behind:

   ```
   rm -rf /etc/telegraf*
   rm -rf /var/log/telegraf*
   ```

Upgrading the Agent

To upgrade the telegraf agent, do the following:

1. Stop the telegraf service:

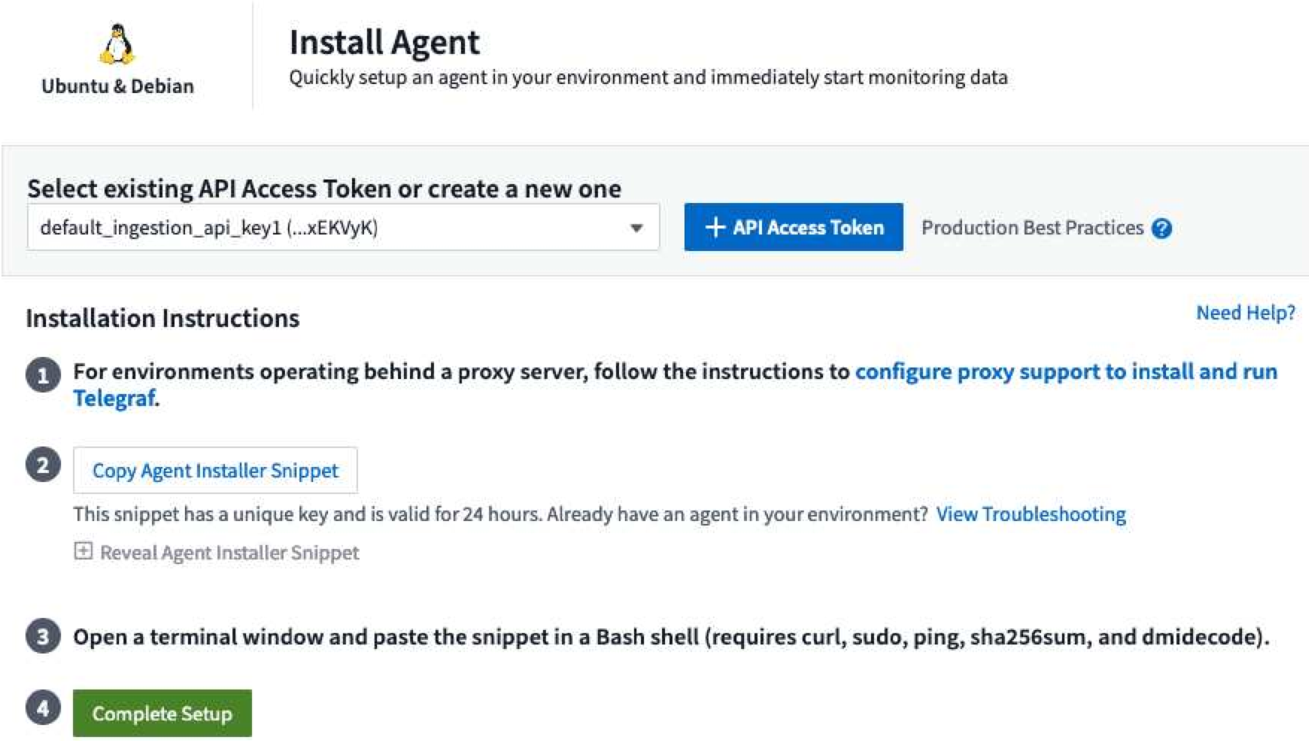
```
systemctl stop telegraf (If your operating system is using systemd
(CentOS 7+ and RHEL 7+)
/etc/init.d/telegraf stop (for systems without systemd support)
```

2. Remove the previous telegraf agent:

```
yum remove telegraf
```

3. Install the new agent.

Ubuntu and Debian



Pre-requisites:

- The following commands must be available: curl, sudo, ping, sha256sum, openssl, and dmidecode
- If you are behind a proxy, follow the instructions in the **Configuring Proxy Support for Ubuntu/Debian** section.

Steps to install agent on Debian or Ubuntu:

1. Choose an Agent Access Key.
2. Copy the command block from the agent installation dialog. You can click the clipboard icon to quickly copy the command to the clipboard.
3. Open a Bash window

4. Paste the command into the Bash window and press Enter.
5. The command will download the appropriate agent installer, install it, and set a default configuration. When finished, it will restart the agent service. The command has a unique key and is valid for 24 hours.
6. Click **Finish** or **Continue**

After the agent is installed, you can use the following commands to start/stop the service:

If your operating system is using systemd:

```
sudo systemctl start telegraf
sudo systemctl stop telegraf
```

If your operating system is not using systemd:

```
sudo service telegraf start
sudo service telegraf stop
```

Configuring Proxy Support for Ubuntu/Debian

The steps below outline the actions needed to set the *http_proxy/https_proxy* environment variables. For some proxy environments, users may also need to set the *no_proxy environment* variable.

For systems residing behind a proxy, perform the following steps **PRIOR** to installing the Telegraf agent:

1. Set the *https_proxy* and/or *http_proxy* environment variable(s) for the current user:

   ```
   export https_proxy=<proxy_server>:<proxy_port>
   ```

2. Create /etc/default/telegraf, and insert definitions for the *https_proxy* and/or *http_proxy* variable(s):

   ```
   https_proxy=<proxy_server>:<proxy_port>
   ```

Uninstalling the Agent

To uninstall the agent on Ubuntu/Debian, in a Bash terminal, run the following:

1. Stop the Telegraf service:

   ```
   systemctl stop telegraf (If your operating system is using systemd)
   /etc/init.d/telegraf stop (for systems without systemd support)
   ```

2. Remove the Telegraf agent:

```
dpkg -r telegraf
```

3. Remove any configuration or log files that may be left behind:

```
rm -rf /etc/telegraf*
rm -rf /var/log/telegraf*
```

Upgrading the Agent

To upgrade the telegraf agent, do the following:

1. Stop the telegraf service:

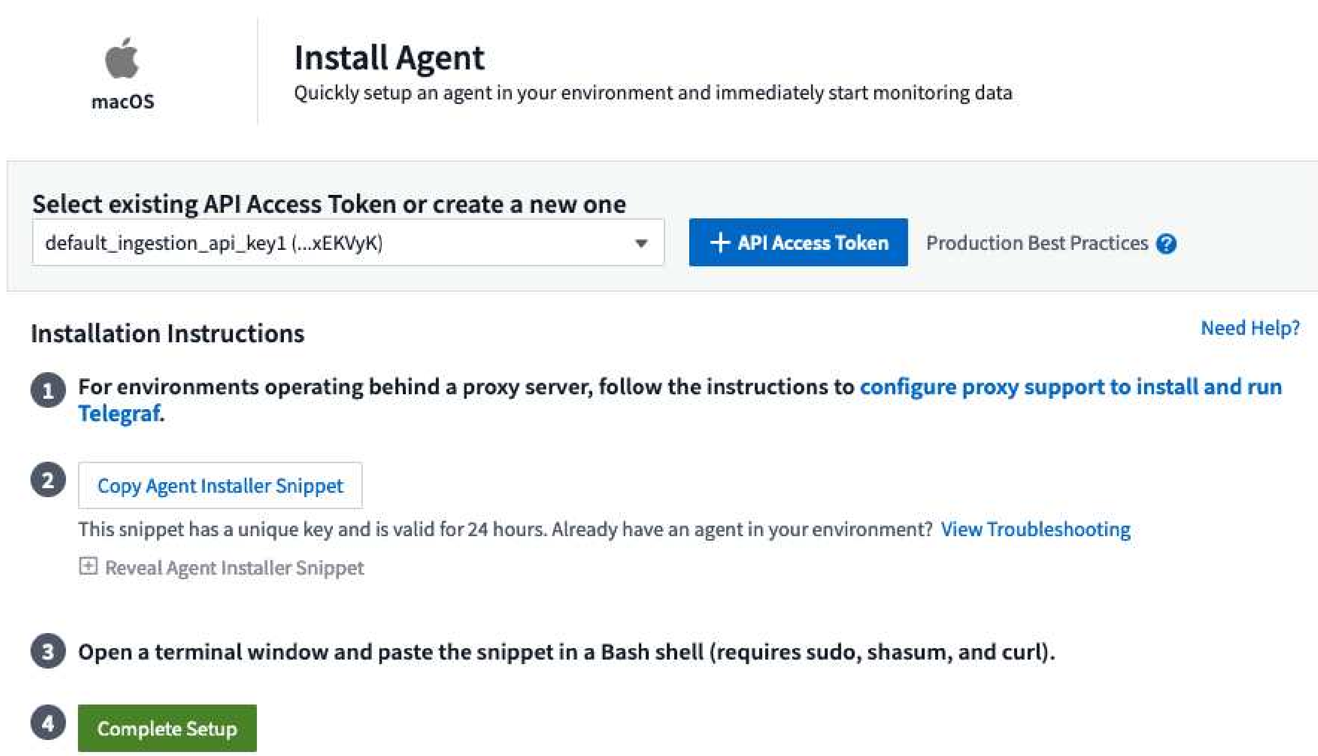
```
systemctl stop telegraf (If your operating system is using systemd)
/etc/init.d/telegraf stop (for systems without systemd support)
```

2. Remove the previous telegraf agent:

```
dpkg -r telegraf
```

3. Install the new agent.

macOS



Pre-requisites:

- The following commands must be available: curl, sudo, openssl, and shasum
- If you are behind a proxy, follow the instructions in the **Configuring Proxy Support for macOS** section.

Steps to install agent on macOS:

1. Choose an Agent Access Key.
2. Copy the command block from the agent installation dialog. You can click the clipboard icon to quickly copy the command to the clipboard.
3. Open a Bash window
4. Paste the command into the Bash window and press Enter.
5. The command will download the appropriate agent installer, install it, and set a default configuration. When finished, it will restart the agent service. The command has a unique key and is valid for 24 hours.
6. If you previously installed a Telegraf agent using Homebrew, you will be prompted to uninstall it. Once the previously installed Telegraf agent is uninstalled, re-run the command in step 5 above.
7. Click **Finish** or **Continue**

After the agent is installed, you can use the following commands to start/stop the service:

```
sudo launchctl start telegraf
sudo launchctl stop telegraf
```

Configuring Proxy Support for macOS

> The steps below outline the actions needed to set the *http_proxy/https_proxy* environment variables. For some proxy environments, users may also need to set the *no_proxy environment* variable.

For systems residing behind a proxy, perform the following to set the *https_proxy* and/or *http_proxy* environment variable(s) for the current user **PRIOR** to installing the Telegraf agent:

```
export https_proxy=<proxy_server>:<proxy_port>
```

AFTER installing the Telegraf agent, add and set the appropriate *https_proxy* and/or *http_proxy* variable(s) in */Applications/telegraf.app/Contents/telegraf.plist*:

```
…
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN"
"http://www.apple.com/DTDs/PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
   <key>EnvironmentVariables</key>
   <dict>
          <key>https_proxy</key>
          <string><proxy_server>:<proxy_port></string>
   </dict>
   <key>Program</key>
   <string>/Applications/telegraf.app/Contents/MacOS/telegraf</string>
   <key>Label</key>
   <string>telegraf</string>
   <key>ProgramArguments</key>
   <array>
     <string>/Applications/telegraf.app/Contents/MacOS/telegraf</string>
     <string>--config</string>
     <string>/usr/local/etc/telegraf.conf</string>
     <string>--config-directory</string>
     <string>/usr/local/etc/telegraf.d</string>
   </array>
   <key>RunAtLoad</key>
   <true/>
</dict>
</plist>
…
```

Then, restart Telegraf after loading the above changes:

```
sudo launchctl stop telegraf
sudo launchctl unload -w /Library/LaunchDaemons/telegraf.plist
sudo launchctl load -w /Library/LaunchDaemons/telegraf.plist
sudo launchctl start telegraf
```

Uninstalling the Agent

To uninstall the agent on macOS, in a Bash terminal, run the following:

1. Stop the Telegraf service:

   ```
   sudo launchctl stop telegraf
   ```

2. Uninstall the telegraf agent:

```
cp /Applications/telegraf.app/scripts/uninstall /tmp
sudo /tmp/uninstall
```

3. Remove any configuration or log files that may be left behind:

```
rm -rf /usr/local/etc/telegraf*
rm -rf /usr/local/var/log/telegraf.*
```

Upgrading the Agent

To upgrade the telegraf agent, do the following:

1. Stop the telegraf service:

```
sudo launchctl stop telegraf
```

2. Uninstall the previous telegraf agent:

```
cp /Applications/telegraf.app/scripts/uninstall /tmp
sudo /tmp/uninstall
```

3. Install the new agent.

Kubernetes

Kubernetes offers two ways to collect data:

- NetApp Kubernetes Monitoring Operator configuration. This is the recommended installation method for Kubernetes.
- Traditional script-based Agent installation

Installation instructions vary based on which you choose.

kubernetes
Operator-based

kubernetes
Script-based

> NetApp Kubernetes Monitoring Operator installation is considered a *Preview* feature and is therefore subject to change.

Pre-requisites:

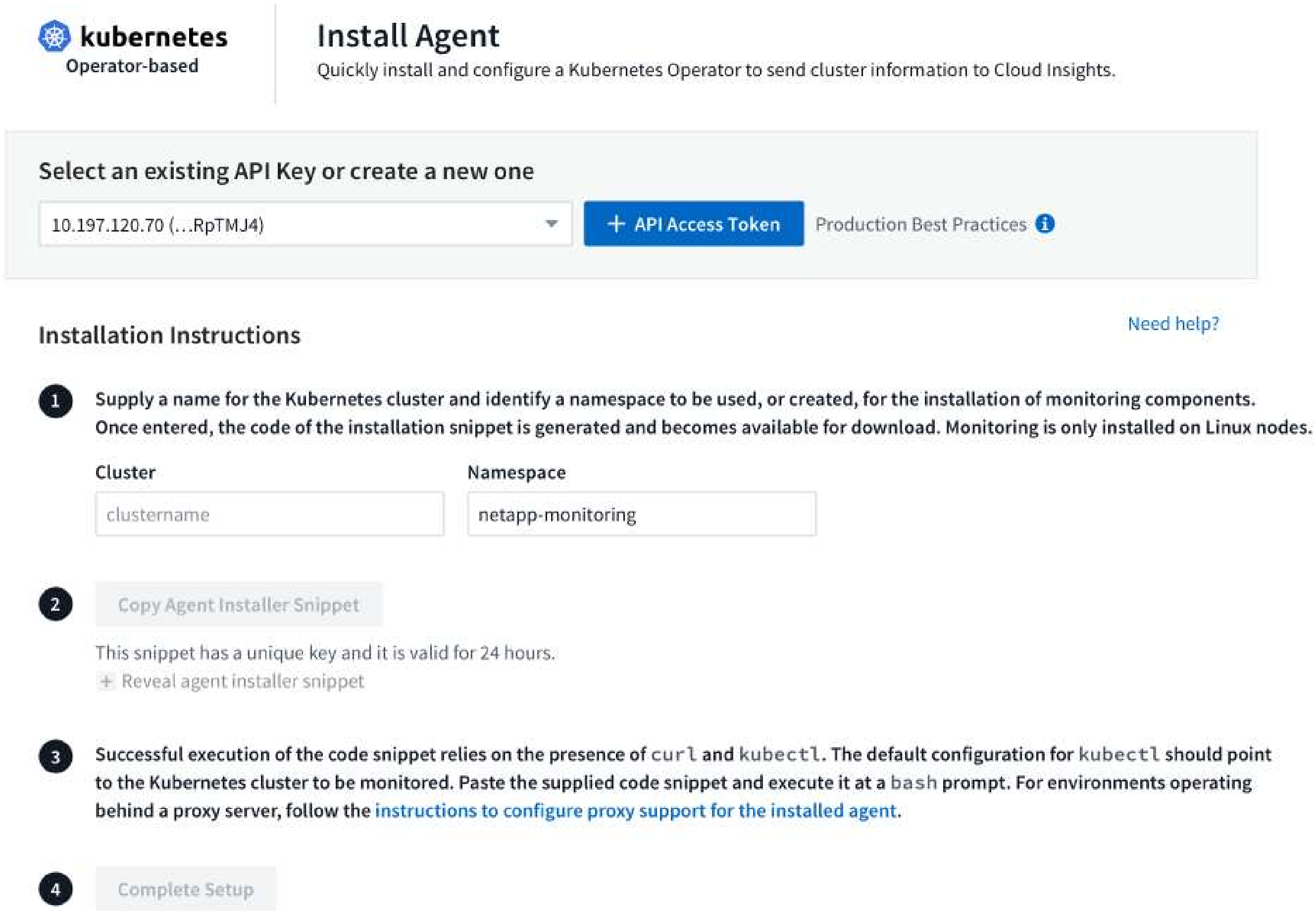
- NetApp Kubernetes Monitoring Operator installation has been tested and is expected to work with the following:
  - AWS EKS 1.18 - 1.21
  - OpenShift 4.6 - 4.8
  - Rancher 2.4 - 2.6.
- If you are running on OpenShift 4.6 - 4.8, you must follow the **OpenShift Instructions** below in addition to ensuring these pre-requisites are met.
- The following commands must be available: *curl*, *sudo*, *openssl*, *sha256sum*, and *kubectl*. For best results, add these commands to the PATH.
- kube-state-metrics must be installed. See below for more information. kube-state-metrics is automatically installed with Operator-based installation.
- If you are behind a proxy, follow the instructions in the **Configuring Proxy Support for Kubernetes** section.
- If you are running a Kubernetes variant that requires security context constraints, follow the instructions in the **Configuring the Agent to Collect Data from Kubernetes** section. Operator-based installation installs this for you.
- You must have permissions to create Kubernetes cluster roles and role bindings.

Monitoring is only installed on Linux nodes

Cloud Insights supports monitoring of Kubernetes nodes that are running Linux, by specifying a Kubernetes node selector that looks for the following Kubernetes labels on these platforms:

Platform	Label
Kubernetes v1.17 and above	Kubernetes.io/os = linux
Rancher + cattle.io as orchestration/Kubernetes platform	cattle.io/os = linux

NetApp Kubernetes Monitoring Operator Installation



Steps to install NetApp Kubernetes Monitoring Operator agent on Kubernetes:

1. Enter the cluster name and namespace.
2. Once these are entered, you can copy the Agent Installer snippet
3. Click the button to copy this snippet to the clipboard.
4. Paste the snippet into a *bash* window and execute it.
5. The installation proceeds automatically. When it is complete, click the *Complete Setup* button.

OpenShift Instructions

If you are running on OpenShift 4.6 - 4.8, you must change the "privileged-mode" setting. Run the following command to open the agent for editing. If you are using a namespace other than "netapp-monitoring", specify that namespace in the command line:

```
kubectl edit agent agent-monitoring-netapp -n netapp-monitoring
```

In the file, change *privileged-mode: false* to *privileged-mode: true*

Configuring Proxy Support for NetApp Kubernetes Monitoring Operator

To configure a proxy for the monitoring operator, perform the following steps.

First, open the *agent-monitoring-netapp* file for editing:

```
kubectl -n netapp-monitoring edit agent agent-monitoring-netapp
```

In the *spec:* section of this file, add the following code block:

```
spec:
  proxy:
    isAuProxyEnabled: <true or false>
    isTelegrafProxyEnabled: <true or false>
    isFluentbitProxyEnabled: <true or false>
    password: <password for proxy, optional>
    port: <port for proxy>
    server: <server for proxy>
    username: <username for proxy, optional>
    noProxy: <comma separated list of IPs or resolvable hostnames that
should bypass a proxy>
```

Using a custom/private docker repository

If using a custom docker repository, do the following:

Get the docker secret:

```
kubectl -n netapp-monitoring get secret docker -o yaml
```

Copy/paste the value of *.dockerconfigjson:* from the output of the above command.

Decode the docker secret:

```
echo <paste from _.dockerconfigjson:_  output above> | base64 -d
```

The output of this will be in the following json format:

```
{ "auths":
  {"docker.<cluster>.cloudinsights.netapp.com" :
    {"username":"<tenant id>",
     "password":"<password which is the CI API key>",
     "auth"    :"<encoded username:password basic auth key. This is
internal to docker>"}
  }
}
```

Log in to the docker repository:

```
docker login docker.<cluster>.cloudinsights.netapp.com (from step #2) -u
<username from step #2>
password: <password from docker secret step above>
```

Pull the operator docker image from Cloud Insights:

```
docker pull docker.<cluster>.cloudinsights.netapp.com/netapp-
monitoring:<version>
```

Find the <version> field using the following command:

```
kubectl -n netapp-monitoring get deployment monitoring-operator | grep
"image:"
```

Push the operator docker image to your private/local/enterprise docker repository according to your corporate policies.

Download all open source dependencies to your private docker registry. The following open source images need to be downloaded:

```
docker.io/telegraf:1.19.3
gcr.io/kubebuilder/kube-rbac-proxy:v0.5.0
k8s.gcr.io/kube-state-metrics/kube-state-metrics:v2.1.0
```

If fluent-bit is enabled, also download:

```
docker.io/fluent-bit:1.7.8
docker.io/kubernetes-event-exporter:0.10
```

Edit the agent CR to reflect the new docker repo location, disable auto upgrade (if enabled).

```
kubectl -n netapp-monitoring edit agent agent-monitoring-netapp
```

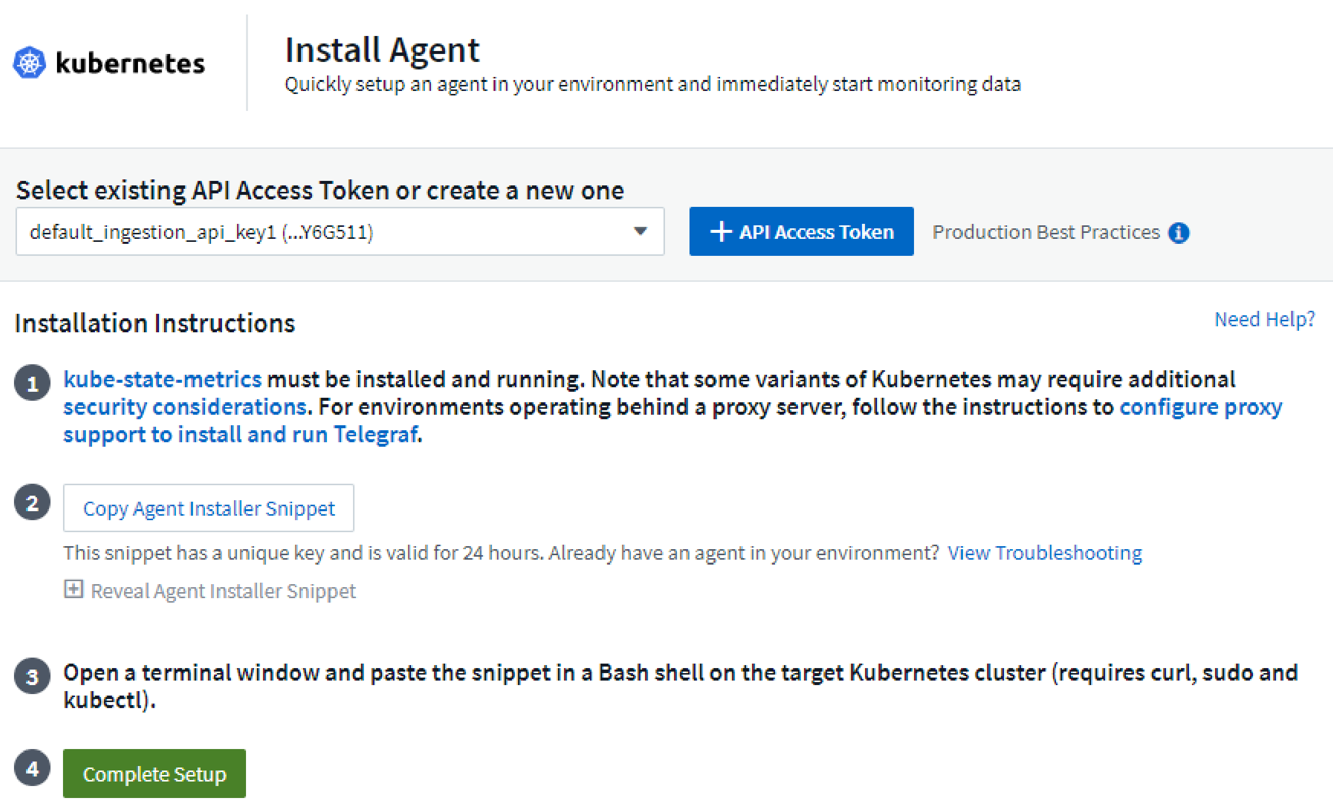
```
enableAutoUpgrade: false
```

```
docker-repo: <docker repo of the enterprise/corp docker repo>
dockerRepoSecret: <optional: name of the docker secret of enterprise/corp
docker repo, this secret should be already created on the k8s cluster in
the same namespace>
```

In the *spec:* section, make the following changes:

```
spec:
  telegraf:
    - name: ksm
      substitutions:
        - key: k8s.gcr.io
          value: <same as "docker-repo" field above>
```

Script-Based Installation



Steps to install Script-based agent on Kubernetes:

1. Choose an Agent Access Key.
2. Click the **Copy Agent Installer Snippet** button in the installation dialog. You can optionally click the *+Reveal Agent Installer Snippet* button if you want to view the command block.
3. Paste the command into a *bash* window.
4. Optionally, you can override the namespace or provide the cluster name as part of the install command by modifying the command block to add one or both of the following before the final *./$installerName*

- CLUSTER_NAME=<Cluster Name>
- NAMESPACE=<Namespace>

  Here it is in place in the command block:

```
installerName=cloudinsights-kubernetes.sh ... &&
CLUSTER_NAME=<cluster_name> NAMESPACE=<new_namespace> sudo -E -H
./$installerName --download --install
```

> *CLUSTER_NAME* is the name of the Kubernetes cluster from Cloud Insights collects metrics, while *NAMESPACE* is the namespace to which the Telegraf agent will be deployed. The specified namespace will be created if it does not already exist.

5. When ready, execute the command block.
6. The command will download the appropriate agent installer, install it, and set a default configuration. If you have not explicitly set the *namespace*, you will be prompted to enter it. When finished, the script will restart the agent service. The command has a unique key and is valid for 24 hours.
7. When finished, click **Complete Setup**.

Configuring Proxy Support for Kubernetes - Script-Based

> The steps below outline the actions needed to set the *http_proxy/https_proxy* environment variables. For some proxy environments, users may also need to set the *no_proxy environment* variable.

For systems residing behind a proxy, perform the following to set the *https_proxy* and/or *http_proxy* environment variable(s) for the current user **PRIOR** to installing the Telegraf agent:

```
export https_proxy=<proxy_server>:<proxy_port>
```

AFTER installing the Telegraf agent, add and set the appropriate *https_proxy* and/or *http_proxy* environment variable(s) to the *telegraf-ds* daemonset and *telegraf-rs* replicaset.

```
kubectl edit ds telegraf-ds
```

```
…
       env:
       - name: https_proxy
         value: <proxy_server>:<proxy_port>
       - name: HOSTIP
         valueFrom:
           fieldRef:
             apiVersion: v1
             fieldPath: status.hostIP
…
```

```
kubectl edit rs telegraf-rs
```

```
…
       env:
       - name: https_proxy
         value: <proxy_server>:<proxy_port>
       - name: HOSTIP
         valueFrom:
           fieldRef:
             apiVersion: v1
             fieldPath: status.hostIP
…
```

Then, restart Telegraf:

```
kubectl delete pod telegraf-ds-*
kubectl delete pod telegraf-rs-*
```

DaemonSet, ReplicaSet, and Stopping/Starting the agent

A DaemonSet and ReplicaSet will be created on the Kubernetes cluster to run the required Telegraf agents/pods. By default, these Telegraf agents/pods will be scheduled on both master and non-master nodes.

To facilitate stopping and restarting of the agent, generate the Telegraf DaemonSet YAML and ReplicaSet YAML using the following commands. Note that these commands are using the default namespace "ci-monitoring". If you have set your own namespace, substitute that namespace in these and all subsequent commands and files:

If you have set your own namespace, substitute that namespace in these and all subsequent commands and files:

```
kubectl --namespace ci-monitoring get ds telegraf-ds -o yaml >
/tmp/telegraf-ds.yaml
kubectl --namespace ci-monitoring get rs telegraf-rs -o yaml >
/tmp/telegraf-rs.yaml
```

You can then use the following commands to stop and start the Telegraf service:

```
kubectl --namespace ci-monitoring delete ds telegraf-ds
kubectl --namespace ci-monitoring delete rs telegraf-rs
```

```
kubectl --namespace ci-monitoring apply -f /tmp/telegraf-ds.yaml
kubectl --namespace ci-monitoring apply -f /tmp/telegraf-rs.yaml
```

Configuring the Agent to Collect Data from Kubernetes

Note: The default namespace for Script-based installation is *ci-monitoring*. For Operator-based installation, the default namespace is *netapp-monitoring*. In commands involving namespace, be sure to specify the correct namespace for your installation.

The pods in which the agents run need to have access to the following:

- hostPath
- configMap
- secrets

These Kubernetes objects are automatically created as part of the Kubernetes agent install command provided in the Cloud Insights UI. Some variants of Kubernetes, such as OpenShift, implement an added level of security that may block access to these components. The *SecurityContextConstraint* is not created as part of the Kubernetes agent install command provided in the Cloud Insights UI, and must be created manually. Once created, restart the Telegraf pod(s).

```
    apiVersion: v1
    kind: SecurityContextConstraints
    metadata:
      name: telegraf-hostaccess
      creationTimestamp:
      annotations:
        kubernetes.io/description: telegraf-hostaccess allows hostpath
volume mounts for restricted SAs.
      labels:
        app: ci-telegraf
    priority: 10
    allowPrivilegedContainer: true
    defaultAddCapabilities: []
    requiredDropCapabilities: []
    allowedCapabilities: []
    allowedFlexVolumes: []
    allowHostDirVolumePlugin: true
    volumes:
    - hostPath
    - configMap
    - secret
    allowHostNetwork: false
    allowHostPorts: false
    allowHostPID: false
    allowHostIPC: false
    seLinuxContext:
      type: MustRunAs
    runAsUser:
      type: RunAsAny
    supplementalGroups:
      type: RunAsAny
    fsGroup:
      type: RunAsAny
    readOnlyRootFilesystem: false
    users:
    - system:serviceaccount:ci-monitoring:monitoring-operator
    groups: []
```

Installing the kube-state-metrics server

> Operator-based install handles the installation of kube-state-metrics. Skip this section if you are performing Operator-based installation.

> It is strongly recommended to use kube-state-metrics version 2.0 or later in order to take advantage of the full feature set including the ability to link Kubernetes persistent volumes (PVs) to backend storage devices. Note also that with kube-state-metrics version 2.0 and above, Kubernetes object labels are not exported by default. To configure kube-state-metrics to export Kubernetes object labels, you must specify a metric labels "allow" list. Refer to the *--metric -labels-allowlist* option in the kube-state-metrics documentation.

Use the following steps to install the kube-state-metrics server (required if you are performing script-based installation):

Steps

1. Create a temporary folder (for example, */tmp/kube-state-yaml-files/*) and copy the .yaml files from https://github.com/kubernetes/kube-state-metrics/tree/master/examples/standard to this folder.
2. Run the following command to apply the .yaml files needed for installing kube-state-metrics:

```
kubectl apply -f /tmp/kube-state-yaml-files/
```

kube-state-metrics Counters

Use the following links to access information for the kube state metrics counters:

1. ConfigMap Metrics
2. DaemonSet Metrics
3. Deployment Metrics
4. Ingress Metrics
5. Namespace Metrics
6. Node Metrics
7. Persistent Volume Metrics
8. Persistant Volume Claim Metrics
9. Pod Metrics
10. ReplicaSet metrics
11. Secret metrics
12. Service metrics
13. StatefulSet metrics

Uninstalling the Agent

Note that these commands are using the default namespace "ci-monitoring". If you have set your own namespace, substitute that namespace in these and all subsequent commands and files.

To uninstall the script-based agent on Kubernetes, do the following:

If the monitoring namespace is being used solely for Telegraf:

```
kubectl --namespace ci-monitoring delete
ds,rs,cm,sa,clusterrole,clusterrolebinding -l app=ci-telegraf
```

```
kubectl delete ns ci-monitoring
```

If the monitoring namespace is being used for other purposes in addition to Telegraf:

```
kubectl --namespace ci-monitoring delete
ds,rs,cm,sa,clusterrole,clusterrolebinding -l app=ci-telegraf
```

For Operator-based installation run the following commands:

```
kubectl delete ns netapp-monitoring
kubectl delete agent agent-monitoring-netapp
kubectl delete crd agents.monitoring.netapp.com
kubectl delete role agent-leader-election-role
kubectl delete clusterrole agent-manager-role agent-proxy-role agent-
metrics-reader
kubectl delete clusterrolebinding agent-manager-rolebinding agent-proxy-
rolebinding agent-cluster-admin-rolebinding
```

If a Security Context Constraint was previously-created manually for a script-based Telegraf installation:

```
kubectl delete scc telegraf-hostaccess
```

Upgrading the Agent

Note that these commands are using the default namespace "ci-monitoring". If you have set your own namespace, substitute that namespace in these and all subsequent commands and files.

To upgrade the telegraf agent, do the following:

1. Back up the existing configurations:

   ```
   kubectl --namespace ci-monitoring get cm -o yaml > /tmp/telegraf-
   configs.yaml
   ```

1. Uninstall the Agent (see above for instructions)
2. Install the new agent.

Verifying Checksums

The Cloud Insights agent installer performs integrity checks, but some users may want to perform their own verifications before installing or applying downloaded artifacts. To perform a download-only operation (as opposed to the default download-and-install), these users can edit the agent installation command obtained from the UI and remove the trailing “install” option.

Follow these steps:

1. Copy the Agent Installer snippet as directed.
2. Instead of pasting the snippet into a command window, paste it into a text editor.
3. Remove the trailing “--install” (Linux/Mac) or “-install” (Windows) from the command.
4. Copy the entire command from the text editor.
5. Now paste it into your command window (in a working directory) and run it.

Non-Windows (these examples are for Kubernetes; actual script names may vary):

- Download and install (default):

```
installerName=cloudinsights-kubernetes.sh … && sudo -E -H
./$installerName --download –-install
```

- Download-only:

```
installerName=cloudinsights-kubernetes.sh … && sudo -E -H
./$installerName --download
```

Windows:

- Download and install (default):

```
!$($installerName=".\cloudinsights-windows.ps1") … -and
$(&$installerName -download -install)
```

- Download-only:

```
!$($installerName=".\cloudinsights-windows.ps1") … -and
$(&$installerName -download)
```

The download-only command will download all required artifacts from Cloud Insights to the working directory. The artifacts include, but may not be limited to:

- an installation script
- an environment file

* YAML files
* a signed checksum file (sha256.signed)
* a PEM file (netapp_cert.pem) for signature verification

The installation script, environment file, and YAML files can be verified using visual inspection.

The PEM file can be verified by confirming its fingerprint to be the following:

```
E5:FB:7B:68:C0:8B:1C:A9:02:70:85:84:C2:74:F8:EF:C7:BE:8A:BC
```

More specifically,

* Non-Windows:

  ```
  openssl x509 -fingerprint -sha1 -noout -inform pem -in netapp_cert.pem
  ```

* Windows:

  ```
  Import-Certificate -Filepath .\netapp_cert.pem -CertStoreLocation
  Cert:\CurrentUser\Root
  ```

The signed checksum file can be verified using the PEM file:

* Non-Windows:

  ```
  openssl smime -verify -in sha256.signed -CAfile netapp_cert.pem -purpose
  any
  ```

* Windows (after installing the certificate via Import-Certificate above):

  ```
  Get-AuthenticodeSignature -FilePath .\sha256.ps1 $result = Get-
  AuthenticodeSignature -FilePath .\sha256.ps1 $signer =
  $result.SignerCertificate Add-Type -Assembly System.Security
  [Security.Cryptography.x509Certificates.X509Certificate2UI]::DisplayCert
  ificate($signer)
  ```

Once all of the artifacts have been satisfactorily verified, the agent installation can be initiated by running:

Non-Windows:

```
sudo -E -H ./<installation_script_name> --install
```

Windows:

```
.\cloudinsights-windows.ps1 -install
```

Troubleshooting Agent Installation

Some things to try if you encounter problems setting up an agent:

Problem:	**Try this:**
I already installed an agent using Cloud Insights	If you have already installed an agent on your host/VM, you do not need to install the agent again. In this case, simply choose the appropriate Platform and Key in the Agent Installation screen, and click on **Continue** or **Finish**.
I already have an agent installed but not by using the Cloud Insights installer	Remove the previous agent and run the Cloud Insights Agent installation, to ensure proper default configuration file settings. When complete, click on **Continue** or **Finish**.
I do not see a hyperlink/connection between my Kubernetes Persistent Volume and the corresponding back-end storage device. My Kubernetes Persistent Volume is configured using the hostname of the storage server.	Follow the steps to uninstall the existing Telegraf agent, then re-install the latest Telegraf agent. You must be using Telegraf version 2.0 or later.

Problem:	Try this:
I'm seeing messages in the logs resembling the following: E0901 15:21:39.962145 1 reflector.go:178] k8s.io/kube-state-metrics/internal/store/builder.go:352: Failed to list *v1.MutatingWebhookConfiguration: the server could not find the requested resource E0901 15:21:43.168161 1 reflector.go:178] k8s.io/kube-state-metrics/internal/store/builder.go:352: Failed to list *v1.Lease: the server could not find the requested resource (get leases.coordination.k8s.io) etc.	These messages may occur if you are running kube-state-metrics version 2.0.0 or above with Kubernetes version 1.17 or below. To get the Kubernetes version: *kubectl version* To get the kube-state-metrics version: *kubectl get deploy/kube-state-metrics -o jsonpath='{..image}'* To prevent these messages from happening, users can modify their kube-state-metrics deployment to disable the following Leases: *mutatingwebhookconfigurations* *validatingwebhookconfigurations* *volumeattachments resources* More specifically, they can use the following CLI argument: resources=certificatesigningrequests,configmaps,cronjobs,daemonsets, deployments,endpoints,horizontalpodautoscalers,ingresses,jobs,limitranges, namespaces,networkpolicies,nodes,persistentvolumeclaims,persistentvolumes, poddisruptionbudgets,pods,replicasets,replicationcontrollers,resourcequotas, secrets,services,statefulsets,storageclasses The default resource list is: "certificatesigningrequests,configmaps,cronjobs,daemonsets,deployments, endpoints,horizontalpodautoscalers,ingresses,jobs,leases,limitranges, mutatingwebhookconfigurations,namespaces,networkpolicies,nodes, persistentvolumeclaims,persistentvolumes,poddisruptionbudgets,pods,replicasets, replicationcontrollers,resourcequotas,secrets,services,statefulsets,storageclasses, validatingwebhookconfigurations,volumeattachments"

Problem:	Try this:
I installed or upgraded Telegraf on Kubernetes, but the Telegraf pods are not starting up. The Telegraf ReplicaSet or DaemonSet is reporting a failure resembling the following: Error creating: pods "telegraf-rs-" is forbidden": unable to validate against any security context constraint: [spec.volumes[2]: Invalid value: "hostPath": hostPath volumes are not allowed to be used]	Create a Security Context Constraint (refer to the Configuring the Agent to Collect Data from Kubernetes section above) if one does not already exist. Ensure the namespace and service account specified for the Security Context Constraint matches the namespace and service account for the Telegraf ReplicaSet and DaemonSet. kubectl describe scc telegraf-hostaccess |grep serviceaccount kubectl -n ci-monitoring --describe rs telegraf-rs | grep -i "Namespace:" kubectl -n ci-monitoring describe rs telegraf-rs | grep -i "Service Account:" kubectl -n ci-monitoring --describe ds telegraf-ds | grep -i "Namespace:" kubectl -n ci-monitoring describe ds telegraf-ds | grep -i "Service Account:"
I see error messages from Telegraf resembling the following, but Telegraf does start up and run: Oct 11 14:23:41 ip-172-31-39-47 systemd[1]: Started The plugin-driven server agent for reporting metrics into InfluxDB. Oct 11 14:23:41 ip-172-31-39-47 telegraf[1827]: time="2021-10-11T14:23:41Z" level=error msg="failed to create cache directory. /etc/telegraf/.cache/snowflake, err: mkdir /etc/telegraf/.ca che: permission denied. ignored\n" func="gosnowflake.(*defaultLogger).Errorf" file="log.go:120" Oct 11 14:23:41 ip-172-31-39-47 telegraf[1827]: time="2021-10-11T14:23:41Z" level=error msg="failed to open. Ignored. open /etc/telegraf/.cache/snowflake/ocsp_response_cache.json: no such file or directory\n" func="gosnowflake.(*defaultLogger).Errorf" file="log.go:120" Oct 11 14:23:41 ip-172-31-39-47 telegraf[1827]: 2021-10-11T14:23:41Z I! Starting Telegraf 1.19.3	This is a known issue. Refer to This GitHub article for more details. As long as Telegraf is up and running, users can ignore these error messages.

Problem:	Try this:
On Kubernetes, my Telegraf pod(s) are reporting the following error: "Error in processing mountstats info: failed to open mountstats file: /hostfs/proc/1/mountstats, error: open /hostfs/proc/1/mountstats: permission denied"	If SELinux is enabled and enforcing, it is likely preventing the Telegraf pod(s) from accessing the /proc/1/mountstats file on the Kubernetes nodes. To relax this restriction, do ONE of the following: • For script-based installations, edit the telegraf DS (`kubectl edit ds telegraf-ds`), and change "privileged: false" to "privileged: true" • For operator-based installation, edit the agent (`kubectl edit agent agent-monitoring-netapp`), and change "privileged-mode: false" to "privileged-mode: true"
On Kubernetes, my Telegraf ReplicaSet pod is reporting the following error: [inputs.prometheus] Error in plugin: could not load keypair /etc/kubernetes/pki/etcd/server.crt:/etc/kubernetes/pki/etcd/server.key: open /etc/kubernetes/pki/etcd/server.crt: no such file or directory	The Telegraf ReplicaSet pod is intended to run on a node designated as a master or for etcd. If the ReplicaSet pod is not running on one of these nodes, you will get these errors. Check to see if your master/etcd nodes have taints on them. If they do, add the necessary tolerations to the Telegraf ReplicaSet, telegraf-rs. For example, edit the ReplicaSet… kubectl edit rs telegraf-rs …and add the appropriate tolerations to the spec. Then, restart the ReplicaSet pod.

Additional information may be found from the Support page or in the Data Collector Support Matrix.

Configuring Data Collectors

You configure Data Collectors in your Cloud Insights environment to collect data from devices in the data center.

Before you begin

- You must have configured an Acquisition Unit before you can start collecting data.
- You need credentials for the devices from which you are collecting Data.
- Device network addresses, account information, and passwords are required for all devices you are collecting data from.

Steps

1. From the Cloud Insights menu, click **Admin > Data Collectors**

   The system displays the available Data Collectors arranged by vendor.

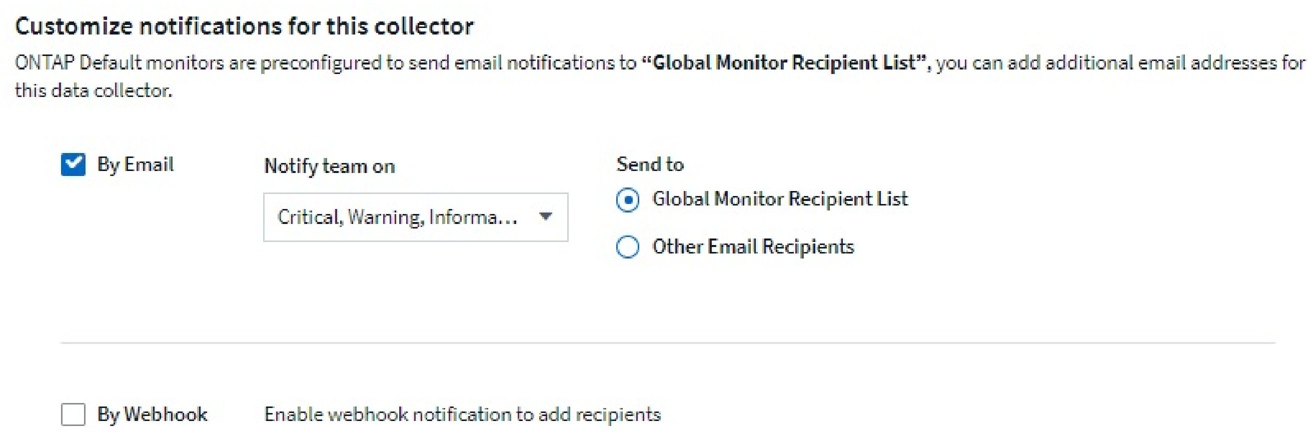
2. Click **+ Collector** on the required vendor and select the data collector to configure.

   In the dialog box you can configure the data collector and add an Acquisition Unit.

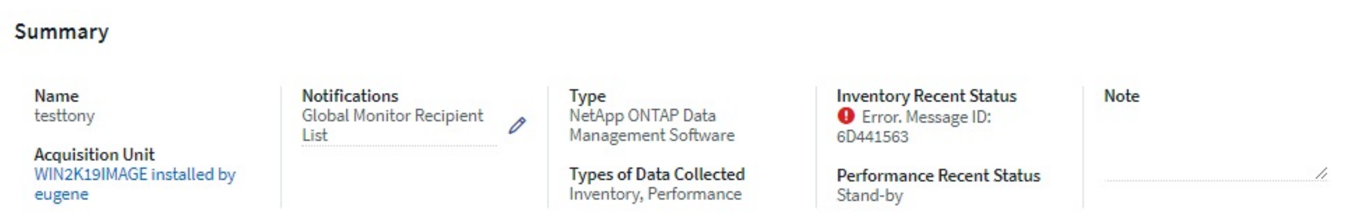
3. Enter a name for the data collector.

   Names can contain can contain letters (a-z), numbers (0-9), dashes (-), underscores (_), apostrophes ('), and periods (.).

4. Enter the Acquisition Unit to associate with this data collector.
5. Enter the required fields in the Configuration screen.
6. When prompted to configure notifications, choose to alert by Email, Webhook, or both, and choose the alert types on which to notify (Critical, Warning, Informational, and/or Resolved). You can choose to notify to the Global Monitor Recipient list (configured in **Admin > Notifications**), or specify additional recipients. When ready to continue, click **Complete Setup**.



When viewing a data collector landing page, you can modify the notifications by clicking the pencil icon in the "Notifications" field of the data collector summary section.



1. Click **Advanced Configuration** to add additional configuration fields. (Not all data collectors require advanced configuration.)
2. Click **Test Configuration** to verify that the data collector is properly configured.
3. Click **Add Collector** to save the configuration and add the data collector to your Cloud Insights tenant.

After adding a new data collector, Cloud Insights initiates three polls:

- 1st inventory poll: immediately
- 1st performance data poll to establish a baseline: immediately after inventory poll
- 2nd performance poll: within 15 seconds after completion of 1st performance poll

Polling then proceeds according to the configured inventory and performance poll intervals.

Determining data collector acquisition status

Because data collectors are the primary source of information for Cloud Insights, it is imperative that you ensure that they remain in a running state.

Data collector status is displayed in the upper right corner of any asset page as the message "Acquired N minutes ago", where N indicates the most recent acquisition time of the asset’s data collector(s). The acquisition time/date is also displayed.

Clicking on the message displays a table with data collector name, status, and last successful acquisition time. If you are signed in as an Administrator, clicking on the data collector name link in the table takes you to detail page for that data collector.

Managing configured data collectors

The Installed Data Collectors page provides access to the data collectors that have been configured for Cloud Insights. You can use this page to modify existing data collectors.

Steps

1. In the Cloud Insights menu, click **Admin > Data Collectors**

   The Available Data Collectors screen is displayed.

2. Click **Installed Data Collectors**

   A list of all of the installed Data Collectors is displayed. The list provides collector name, status, the IP address the collector is accessing, and when data was last acquired from the a device. Action that can be performed on this screen include:

   - Control polling
   - Change data collector credentials
   - Clone data collectors

Controlling Data Collector polling

After making a change to a data collector, you might want it to poll immediately to check your changes, or you might want to postpone the data collection on a data collector for one, three, or five days while you work on a problem.

Steps

1. In the Cloud Insights menu, click **Admin > Data Collectors**
2. Click **Installed Data Collectors**
3. Select the check box to the left of the Data Collector you want to change
4. Click **Bulk Actions** and select the polling action you want to take.

   Bulk actions can be performed simultaneously on multiple Data Collectors. Select the data collectors, and chose the action to perform from the **Bulk Action** menu.

Editing data collector information

You can edit existing data collector setup information.

To edit a single data collector:

1. In the Cloud Insights menu, click **Admin > Data Collectors** to open the list of installed Data Collectors.
2. In the options menu to the right of the data collector you want to modify, click **Edit**.

   The Edit Collector dialog is opened.

3. Enter the changes and click **Test Configuration** to test the new configuration or click **Save** to save the configuration.

You can also edit multiple data collectors:

1. Select the check box to the left of each data collector you want to change.
2. Click the **Bulk Actions** button and choose **Edit** to open the Edit data Collector dialog.
3. Modify the fields as above.

   > The data collectors selected must be the same vendor and model, and reside on the same Acquisition Unit.

   When editing multiple data collectors, the Data Collector Name field shows “Mixed” and cannot be edited. Other fields such as user name and password show “Mixed” and can be edited. Fields that share the same value across the selected data collectors show the current values and can be edited.

   When editing multiple data collectors, the **Test Configuration** button is not available.

Cloning data collectors

Using the clone facility, you can quickly add a data source that has the same credentials and attributes as another data source. Cloning allows you to easily configure multiple instances of the same device type.

Steps

1. In the Cloud Insights menu, click **Admin > Data Collectors**.
2. Click **Installed Data Collectors**.
3. Click the check box to the left of the data collector you want to copy.
4. In the options menu to the right of the selected data collector, click **Clone**.

   The Clone Data Collector dialog is displayed.

5. Enter new information in the required fields.
6. Click **Save**.

After you finish

The clone operation copies all other attributes and settings to create the new data collector.

Performing bulk actions on data collectors

You can simultaneously edit some information for multiple data collectors. This feature allows you to initiate a poll, postpone polling, and resume polling on multiple data collectors. In addition, you can delete multiple data collectors.

Steps

1. In the Cloud Insights menu, click **Admin > Data Collectors**
2. Click **Installed Data Collectors**
3. Click the check box to the left of the data collectors you want to modify.
4. In the options menu to the right, click the option you want to perform.

After you finish

The operation you selected is performed on the data collectors. When you chose to delete data collectors, a dialog is displayed requiring you to conform the action.

Researching a failed data collector

If a data collector has failure message and a High or Medium Impact, you need to research this problem using the data collector summary page with its linked information.

Use the following steps to determine the cause of failed data collectors. Data collector failure messages are displayed on the **Admin** menu and on the **Installed Data Collectors** page.

Steps

1. Click **Admin** > **Data Collectors** > **Installed Data Collectors**.
2. Click the linked Name of the failing data collector to open the Summary page.
3. On the Summary page, check the Comments area to read any notes that might have been left by another engineer who might also be investigating this failure.
4. Note any performance messages.
5. Move your mouse pointer over the segments of the Event Timeline graph to display additional information.
6. Select an error message for a Device and displayed below the Event Timeline and click the Error details icon that displays to the right of the message.

   The Error details include the text of the error message, most likely causes, information in use, and suggestions of what can be tried to correct the problem.

7. In the Devices Reported By This Data Collector area, you might filter the list to display only devices of interest, and you can click the linked **Name** of a device to display the asset page for that device.
8. When you return to the data collector summary page, check the **Show Recent Changes** area at the bottom of the page to see if recent changes could have caused the problem.