



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.



ONTAP Data
Management
Software

Install Acquisition Unit

Cloud Insights collects device data via 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.

What Operating System or Platform Are You Using?

Linux

Linux Versions Supported

Production Best Practices

Installation Instructions

[Need Help?](#)

1 [Copy Installer Snippet](#)

This snippet has a unique key valid for 24 hours for this Acquisition Unit only.

[Reveal Installer Snippet](#)

2 Paste the snippet into a bash shell to run the installer.

3 Waiting for Acquisition Unit to connect...

- 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.

3 [Continue](#) New acquisition unit detected!

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	<p>A computer running a licensed version of one of the following:</p> <ul style="list-style-type: none">* Centos (64-bit): 7.2 through 7.9, 8.1 through 8.2* Debian (64-bit): 9* Oracle Enterprise Linux (64-bit): 7.5 through 7.9, 8.1 through 8.2* Red Hat Enterprise Linux (64-bit): 7.2 through 7.9, 8.1 through 8.2* Ubuntu Server: 18.04 LTS <p>This computer should be running no other application-level software. A dedicated server is recommended.</p>	<p>A computer running a licensed version of one of the following:</p> <ul style="list-style-type: none">* Microsoft Windows 10 64-bit* Microsoft Windows Server 2012* Microsoft Windows Server 2012 R2* Microsoft Windows Server 2016* Microsoft Windows Server 2019 <p>This computer should be running no other application-level software. A dedicated server is recommended.</p>
CPU	2 CPU cores	Same
Memory	8 GB RAM	Same
Available disk space	<p>50 GB</p> <p>For Linux, disk space should be allocated in this manner:</p> <ul style="list-style-type: none">/opt/netapp 25 GB/var/log/netapp 25 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, 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.

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.



ONTAP Data
Management
Software

Install Acquisition Unit

Cloud Insights collects device data via 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.

What Operating System or Platform Are You Using?

Linux ▼

[Linux Versions Supported](#) ⓘ

[Production Best Practices](#) ⓘ

Installation Instructions

[Need Help?](#)

1 [Copy Installer Snippet](#)

This snippet has a unique key valid for 24 hours for this Acquisition Unit only.

[+ Reveal Installer Snippet](#)

2 Paste the snippet into a bash shell to run the installer.

3 Waiting for Acquisition Unit to connect...

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.

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.


Install Acquisition Unit

Cloud Insights collects device data via 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.

What Operating System or Platform Are You Using?

 Windows 

[Windows Versions Supported](#) 

[Production Best Practices](#) 

Installation Instructions

[Need Help?](#)

1 [Download Installer \(Windows 64-bit\)](#)


2 [Copy Access Key](#)

This access key is a unique key valid for 24 hours for this Acquisition Unit only.

 [Reveal Access Key](#)

3 Paste access key into installer when prompted.

4 Please ensure you have copied and pasted the access key into the installer.

 [Have a Proxy Server?](#)

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

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.

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.

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

Acquisition Unit Summary

Name xp-linux	Connection Status OK - Need Help?	Operating System Linux	Note
IP 10.197.120.145	Last Reported 2 minutes ago		

Data Collectors (3)

[+ Data Collector](#) Bulk Actions

<input type="checkbox"/>	Name ↑	Status	Type	IP	Impact	Last Acquired	
<input type="checkbox"/>	foo	Inventory failed	NetApp Data ONTAP 7-Mode	foo	Low	Never	⋮
<input type="checkbox"/>	xp-cisco	All successful	Cisco MDS Fabric Switches	10.197.136.66		2 minutes ago	⋮
<input type="checkbox"/>	xpcdot26	All successful	NetApp ONTAP Data Management Software	10.197.136.26		8 minutes ago	⋮

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.



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)**.

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



Install Agent

Quickly setup an agent in your environment and immediately start monitoring data

Select existing API Access Token or create a new one

KEY1 (...Zqlk0c)

+ API Access Token

Installation Instructions

[Need Help?](#)

1 Copy Agent Installer Snippet

This snippet has a unique key and is valid for 24 hours. Already have an agent in your environment? [View Troubleshooting](#)

Reveal Agent Installer Snippet

2 Open a PowerShell window as administrator and paste the snippet

3 Complete Setup

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

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. Delete the *C:\Program Files\telegraf* folder to remove the binary, logs, and configuration files
3. 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

Select existing API Access Token or create a new one

KEY1 (...Zq|k0c)

+ API Access Token


Installation Instructions

[Need Help?](#)

1

Copy Agent Installer Snippet

This snippet has a unique key and is valid for 24 hours. Already have an agent in your environment? [View Troubleshooting](#)

 Reveal Agent Installer Snippet

2

Open a terminal window and paste the snippet in a Bash shell (requires curl, sudo, ping, and dmidecode)

3

Complete Setup

Pre-requisites:

- The following commands must be available: curl, sudo, ping, 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

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



Install Agent

Quickly setup an agent in your environment and immediately start monitoring data

Select existing API Access Token or create a new one

KEY1 (...ZqIk0c)

+ API Access Token

Installation Instructions

[Need Help?](#)

1

Copy Agent Installer Snippet

This snippet has a unique key and is valid for 24 hours. Already have an agent in your environment? [View Troubleshooting](#)

Reveal Agent Installer Snippet

2

Open a terminal window and paste the snippet in a Bash shell (requires curl, sudo, ping, and dmidecode)

3

Complete Setup

Pre-requisites:

- The following commands must be available: curl, sudo, ping, 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

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



Install Agent

Quickly setup an agent in your environment and immediately start monitoring data

Select existing API Access Token or create a new one

KEY1 (...Zqlk0c)

+ API Access Token

Installation Instructions

[Need Help?](#)

1 Copy Agent Installer Snippet

This snippet has a unique key and is valid for 24 hours. Already have an agent in your environment? [View Troubleshooting](#)

📄 Reveal Agent Installer Snippet

2 Open a terminal window and paste the snippet in a Bash shell (requires sudo and curl)

3 Complete Setup

Pre-requisites:

- The "curl" command must be available
- 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

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

Install Agent

Quickly setup an agent in your environment and immediately start monitoring data

Select existing API Access Token or create a new one

default_ingestion_api_key1 (...Y6G511) ▼

+ API Access Token

Production Best Practices ⓘ

Installation Instructions

[Need Help?](#)

- 1** **kube-state-metrics** must be installed and running. Note that some variants of Kubernetes may require additional **security considerations**. For environments operating behind a proxy server, follow the instructions to **configure proxy support to install and run Telegraf**.
- 2** [Copy Agent Installer Snippet](#)
This snippet has a unique key and is valid for 24 hours. Already have an agent in your environment? [View Troubleshooting](#)
[+ Reveal Agent Installer Snippet](#)
- 3** **Open a terminal window and paste the snippet in a Bash shell on the target Kubernetes cluster (requires curl, sudo and kubectl).**
- 4** [Complete Setup](#)

Pre-requisites:

- The following commands must be available: curl, sudo, kubectl

For best results, add these commands to the PATH.

- kube-state-metrics must be installed. See below for more information.
- 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.

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 v1.14 and above	Kubernetes.io/os = linux
Kubernetes v1.13 and below	beta.kubernetes.io/os = linux
Rancher + cattle.io as orchestration/Kubernetes platform	cattle.io/os = linux

Installation

Steps to install 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. Open a Bash window.
4. Paste the command into the Bash window.
5. 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>`

Scroll through the following example to see this in place in the command block:

```
installerName=cloudinsights-kubernetes.sh && token=<token> &&
key=c642e336-91f4-4c6f-8086-72faabd6aff6 &&
domain=tenant1.testk8.cloudinsights-test.netapp.com && curl -k -X GET
-H "Authorization: Bearer $token" -H "X-CloudInsights-ApiKey-Id:
$key" -o $installerName
https://$domain/rest/v1/lake/telegraf/platforms/installer?platform=ku
bernetes && chmod +x $installerName && sudo --preserve-env JWT=$token
DOMAIN_NAME=$domain API_KEY_ID=$key CLUSTER_NAME=TEST_CLUSTER
NAMESPACE=NEW-NAMESPACE ./$installerName
```



`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.

1. When ready, execute the command block.
2. 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.
3. When finished, click **Complete Setup**.

After the agent is installed, 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:

```
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 use the following commands to stop and start the Telegraf service:

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

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

Configuring Proxy Support for Kubernetes

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-*

```

Configuring the Agent to Collect Data from Kubernetes

For Kubernetes environments, Cloud Insights deploys the Telegraf agent as a DaemonSet and a ReplicaSet. 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: false
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:telegraf-user
groups: []
```

Installing the kube-state-metrics server

When you install the kube-state-metrics server you can enable collection of the following Kubernetes objects: StatefulSet, DaemonSet, Deployment, PV, PVC, ReplicaSet, Service, Namespace, Secret, ConfigMap, Pod Volume, and Ingress.



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.

Use the following steps to install the kube-state-metrics server:

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. [Persistent Volume Claim Metrics](#)
9. [Pod Metrics](#)
10. [ReplicaSet metrics](#)
11. [Secret metrics](#)
12. [Service metrics](#)
13. [StatefulSet metrics](#)

Uninstalling the Agent

To uninstall the agent on Kubernetes, do the following:

1. If the monitoring namespace is being used solely for Telegraf:

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

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

1. Stop and delete the Telegraf service:

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

2. Delete the Telegraf ConfigMap and ServiceAccount:

```
kubectl --namespace ci-monitoring delete cm telegraf-conf
kubectl --namespace ci-monitoring delete cm telegraf-conf-rs
kubectl --namespace ci-monitoring delete sa telegraf-user
```

3. Delete the Telegraf ClusterRole and ClusterRolebinding:

```
kubectl --namespace ci-monitoring delete clusterrole endpoint-access
kubectl --namespace ci-monitoring delete clusterrolebinding endpoint-
access
```

Upgrading the Agent

To upgrade the telegraf agent, do the following:

1. Remove the current the telegraf deployments:

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

2. Back up the existing configurations:

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

3. [Install the new agent.](#)

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.

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 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. Click **Advanced Configuration** to add additional configuration fields. (Not all data collectors require advanced configuration.)
7. Click **Test Configuration** to verify that the data collector is properly configured.

8. 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.

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