Installation Guide

Crestron XiO Cloud™ Gateway Software

Third-Party Device Monitoring Gateway

Crestron Electronics, Inc.

Contents

Introduction

Crestron XiO Cloud™ Gateway software provides expanded configuration and monitoring capabilities for supported third-party devices not connected directly to a Crestron® control processor. This configuration allows for monitoring via Ping, TCP, SNMP, and the Crestron Drivers framework over Ethernet. Power on and power off commands can also be executed for all third-party devices that support this functionality. Crestron XiO Cloud Gateway software resides entirely on a remote server, which is installed and configured using supported Linux® operating system platforms.

This guide provides the installation procedures needed to install the Crestron XiO Cloud Gateway package on a Red Hat Enterprise Linux® or CentOS® Linux server platform, as well as procedures for configuring various Crestron XiO Cloud Gateway features.

> **NOTE:** For more information on claiming and monitoring supported third-party devices using Crestron XiO Cloud Gateway software, refer to the XiO Cloud® Service Third-Party Device Monitoring Configuration Guide.

Prerequisites

Ensure the following prerequisites are met prior to installing the Crestron XiO Cloud Gateway server.

> **NOTE:** Crestron XiO Cloud Gateway is software that runs on a customer-supplied Red Hat Enterprise Linux server. Crestron is responsible for keeping the Crestron XiO Cloud Gateway software up to date and will provide security patches when necessary.

- The IT administrator (installer) has a working knowledge of Linux platforms and commands.
- The IT administrator is responsible for the following tasks:
  - Keeping the server operating system up to date
  - Ensuring the server is compliant with current security standards
  - Integrating the server in the corporate authentication provider (LDAP, Active Directory® service, OAuth, and others)
  - Configuring user access to the server
  - Configuring the web servers, including the rights to the path of the Crestron XiO Cloud Gateway web user interface pages.
- One of the following Linux platforms is installed on a physical or virtual machine:

  > **NOTE:** Installation on a virtual machine is recommended.

  - Red Hat Enterprise Linux Server 8.2 software (64-bit version) or greater
  - AlmaLinux OS® Server 8.3 software (64-bit version) or greater
  - Rocky Linux™ Server 8.4 software (64-bit version) or greater
- The server meets the following requirements after the Linux platform has been installed:
  - **CPU**: 4 Cores or higher
  - **RAM**: 16 GB or higher
  - **Disk space**: 200 GB or higher
- The server must be dedicated to run the Crestron XiO Cloud Gateway service only.
- The server must be able to run the Apache® 2.4.37 (or later) web server, which is installed as part of the Crestron XiO Cloud Gateway installation package.
- For Red Hat Enterprise Linux installations, the Red Hat® server must be registered with www.redhat.com.

Installation

Use the following procedures to install the Crestron XiO Cloud Gateway package onto the Linux platform. If migrating to Crestron XiO Cloud Gateway software from Crestron Virtual Control, refer also to Appendix C: Migrate from Crestron Virtual Control on page 10.

> **NOTE:** These procedures assume that the Red Hat Enterprise Linux server platforms have already been installed and meet or exceed the specifications described in Prerequisites on page 2. The subscription manager for the Red Hat server platform must also be configured prior to installation.

Install the Crestron XiO Cloud Gateway Package

To install the Crestron XiO Cloud Gateway package onto the Linux platform:

1. Download the Crestron XiO Cloud Gateway file package from the **Software & Firmware** resource page at www.crestron.com/Support/Resource-Library.
2. Log into an account with sudo privileges on the Linux platform where the Crestron XiO Cloud Gateway package will be installed.
3. Copy the package ZIP file to a location on the Linux platform.
4. Open a new terminal window.
5. Change directories to the location of the ZIP file, and then issue the following command to unzip the package, where `<version>` is the version number of the package file:

   ```
   sudo unzip xiocloudgateway_<version>.zip
   ```

6. Change directories to the location of the unzipped package file (`xiocloudgateway`).
7. Issue the following command to update the perl-libs package prior to installing Crestron XiO Cloud Gateway. The installation will fail if the perl-libs package is not updated.

   ```
   sudo yum install -y perl-libs
   ```

8. Issue the following command to start the installation. The script installs any RPM file dependencies prior to running the Crestron XiO Cloud Gateway RPM file.

   ```
   sudo ./installXiocloudgateway.sh
   ```

9. Enter `y` when prompted to confirm the installation.
10. When prompted, set the directory where Crestron XiO Cloud Gateway applications will be installed. Press **Enter** to use the default directory (`/opt/crestron`).

> **NOTE:** Crestron XiO Cloud Gateway cannot be installed in the **/home** directory.

11. When prompted, set the Redis port number. Redis is used as a database for Crestron XiO Cloud Gateway processes. Press **Enter** to use the default Redis port value.

12. Enter the root account password when prompted to have the Crestron XiO Cloud Gateway installer check whether the MariaDB® database server is installed. The MariaDB database server is installed automatically if it is not already. If the root account password is not set, you will be prompted to create and confirm a password.

> **NOTE:** [MariaDB](#) is a scalable database server used by the Crestron XiO Cloud Gateway server to turn data into structured information.

13. Enter a name to use for the Crestron XiO Cloud Gateway database. Press **Enter** to use the default database name (`VirtualControl`).

14. Enter a username to use for the Crestron XiO Cloud Gateway account. Press **Enter** to use the default username (`virtualcontrol`).

15. Enter a password for the Crestron XiO Cloud Gateway account. Press **Enter** to use the default password (random string).

16. Restart the Red Hat server.

After restarting, the Crestron XiO Cloud Gateway service starts automatically within 2 to 3 minutes.

Increase the Memory Mapping Limit

To ensure the Crestron XiO Cloud Gateway server performs optimally when running a large number of connected devices, the memory mapping limit must be increased for the server.

To increase the memory mapping limit for the Crestron XiO Cloud Gateway server:

1. Navigate to **/etc/** and open the **sysctl.conf** file in a text editing program.

2. Add the following line to the end of the file:

```
vm.max_map_count=262144
```

3. Save and exit the file.

4. Issue the following command to apply the changes without a reboot:

```
sudo sysctl -p
```

Access the Web Interface

To access the Crestron XiO Cloud Gateway web user interface after installation, enter "http://[ServerURL]/VirtualControl/config/settings/" into a supported web browser, where [ServerURL] is the IP address or hostname of the Linux platform.

The Crestron XiO Cloud Gateway user interface supports the following browsers:

- Chrome® browser
- Firefox® browser
- Microsoft Edge® browser (chromium-based)
- Safari® browser

The **Status** > **Device Info** page displays by default.

Crestron XiO Cloud Gateway Web User Interface
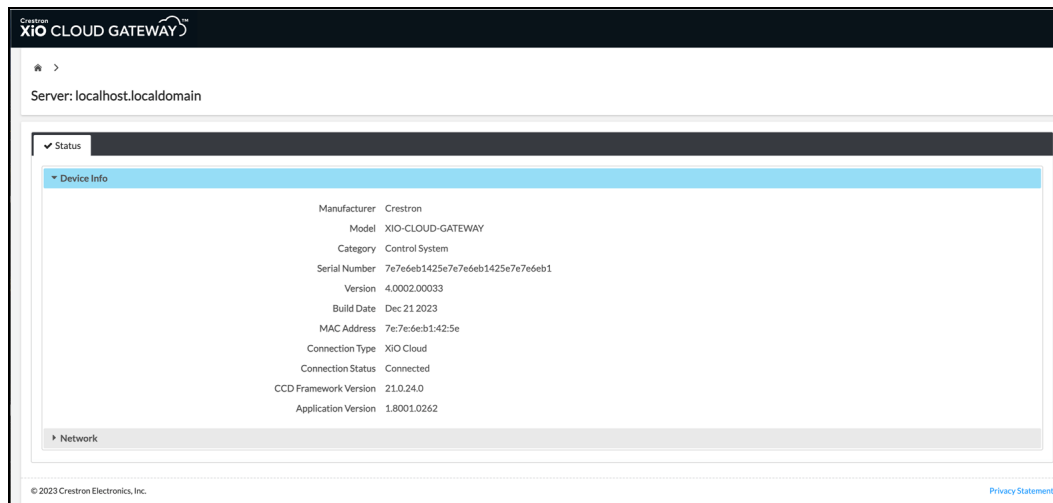
The following commands may be issued while the Crestron XiO Cloud Gateway service is running:

- To check the status of the Crestron XiO Cloud Gateway service while it is running, issue `sudo systemctl status xiocloudgateway`.
- To restart the Crestron XiO Cloud Gateway service, issue `sudo systemctl restart xiocloudgateway`.

  > **NOTE:** After a restart, wait 2 to 3 minutes for the service to initialize before attempting to access the web configuration interface.

- To stop the Crestron XiO Cloud Gateway service, issue `sudo systemctl stop xiocloudgateway`.

Update the Crestron XiO Cloud Gateway Service

When a new version of the Crestron XiO Cloud Gateway service is available, a notification is displayed on the top of the web user interface.

Web User Interface - Update Notification

⚠️ A new version of XIO Cloud Gateway is available. You can read the release notes here. Please contact your IT Administrator to perform the server software update. ×

To update the Crestron XiO Cloud Gateway service from the Linux platform:

1. Download the Crestron XiO Cloud Gateway file package from the **Software & Firmware** resource page at www.crestron.com/Support/Resource-Library.
2. Log into an account with sudo privileges on the Linux platform where the Crestron XiO Cloud Gateway package will be installed.
3. Copy the package ZIP file to a location on the Linux platform.
4. Open a new terminal window.
5. Change directories to the location of the ZIP file, and then issue the following command to unzip the package, where `<version>` is the version number of the package file:

```
sudo unzip xiocloudgateway_<version>.zip
```

6. Change directories to the location of the unzipped package file (`xiocloudgateway`).
7. Issue the following command to start the installation. The script installs any RPM files that are dependencies for the installation prior to running the Crestron XiO Cloud Gateway RPM file.

```
sudo ./installXiocloudgateway.sh
```

8. Enter `y` when prompted to confirm the update.

The update may take up to 15 minutes to complete. Once the update has completed, the Crestron XiO Cloud Gateway service starts automatically within 2 to 3 minutes.

Update the Crestron Driver Framework

When a new version of the Crestron Driver Framework is available, a notification is displayed on the top of the web user interface.

NOTE: The ability to upgrade the Crestron Driver Framework independent of the XiO Cloud Gateway software is available in software version 4.0002.00033 and later.

Web User Interface - Update Notification

> ⚠ A new version of Crestron Drivers SDK is available. You can read the release notes here. Please contact your IT Administrator to perform the Crestron Drivers SDK software update.

To update the Crestron Driver Framework from the Linux platform:

1. Navigate to the scripts folder of the XiO Cloud Gateway installation. If the folder is in the default location, this can be done by issuing the following command:

```
# cd /opt/crestron/virtualcontrol/scripts/
```

2. Issue the following command to execute the script and download the new Crestron Driver Framework:

```
# sudo ./downloadCrestronDriversRPM.sh
```

3. If a new version of the Crestron Driver Framework is available, the script will download that version and ask to install it:

```
# Do you want to install crestron_drivers_sdk version XX.YYYY.ZZZZ?(Y/N) :
```

Enter Y to install the new Crestron Driver Framework or N to cancel.

The update may take up to 15 minutes to complete. Once the update has completed, the Crestron XiO Cloud Gateway service starts automatically within 2 to 3 minutes.

Appendix A: Enable Local System Logging

The Crestron XiO Cloud Gateway service provides support for local system logging. Sample **syslog.conf** files are provided in the installation package that may be modified as needed.

> **NOTE:** SELinux must be disabled on the Red Hat platform before system logging can be enabled. For more information, refer to the [Crestron Virtual Control Server Software Product Manual](#).

To access the sample .conf files, navigate to **[XiOCloudGatewayHome]/samples/conf_files**, where **[XiOCloudGatewayHome]** is the home directory set during installation.

To enable local system logging for the Crestron XiO Cloud Gateway server:

> **NOTE:** Local Crestron log files are created in the **/var/log/crestron/** directory.

1. Move the **50-default.conf** file from **[XiOCloudGatewayHome]/samples/conf_files** to the **/etc/rsyslog.d/** directory.
2. Open the **50-default.conf** file.
3. Configure local logging settings by commenting, uncommenting, or modifying the appropriate lines as follows:
   a. Use the template below to create a customized log format for Crestron logs:

   ```
   $template crestron_template,"<%syslogseverity-text%> %timegenerated% %HOSTNAME% %syslogtag% %msg%\n"
   ```

   b. Use the template below to create a customized log file name per application (Use if a separate log file is needed for the application instead of a common log file):

   ```
   $template CUSTOM_LOGS,"/var/log/crestron/%syslogtag:F,58:1%.log"
   ```

   > **NOTE:** In the log file format above, "F" is the FromChar field, "58" is the ASCII value of the delimiter, and "1" is the first field before the delimiter.

   c. Use the template below to create a single log file for all applications:

   ```
   $template SINGLE_LOG,"/var/log/crestron/crestron.log"
   ```

   d. Comment any filters between lines 33–68 to send the commented item to the system log instead of the single log (shown on line 25).

   > **NOTE:** Comment all filters to send all items to the system log.

   e. Configure any other Linux syslog settings as needed.
4. Save and exit the file.
5. Issue `sudo systemctl restart rsyslog.service` to restart the system logging service.

Appendix B: Open Server Ports

The Crestron XiO Cloud Gateway server requires the following external and internal ports to be open while the server is running. These ports are opened when installing Crestron XiO Cloud Gateway.

Open External Server Ports

Port Number	Service	Notes
80 / 443	HTTP/HTTP(S) (TCP)	
41794	CIP communication (UDP)	

Open Internal Server Ports

Port Number	Service	Notes
3306	MySQL (TCP)	
5000	WebApp listening messages (UDP)	WebApp is the Crestron XiO Cloud Gateway interface into the web server.
(User Defined)	Redis (TCP)	Default port is 6980.
50051	DBApp listening messages (UDP)	DBApp is the Crestron XiO Cloud Gateway interface into the MariaDB database.

Appendix C: Migrate from Crestron Virtual Control

Crestron XiO Cloud Gateway software was previously a feature subset of Crestron Virtual Control (VC-4) software. Users who installed the Crestron XiO Cloud Gateway software as part of a VC-4 installation should migrate to the standalone Crestron XiO Cloud Gateway software as described below.

> **CAUTION:** Ensure that there are no Crestron Virtual Control room licenses applied to the server before migrating from Crestron Virtual Control to Crestron XiO Cloud Gateway software. Any licenses that are applied to the server after migration will be lost. For more information on managing Crestron Virtual Control licenses in the XiO Cloud® service, including adding existing licenses back to your license pool, refer to the Crestron Virtual Control Server Software Product Manual.

There are two methods for migrating from VC-4 to Crestron XiO Cloud Gateway software depending on whether the VC-4 installation contains programs or rooms:

- If running Crestron XiO Cloud Gateway software within a VC-4 installation that does not contain any programs or rooms, upgrade to the standalone Crestron XiO Cloud Gateway software package as described in Update the Crestron XiO Cloud Gateway Service on page 6. All Crestron XiO Cloud Gateway devices will migrate from the VC-4 installation automatically.

- If running Crestron XiO Cloud Gateway software within a VC-4 installation that contains programs or rooms, the standalone Crestron XiO Cloud Gateway software package must be installed on a new Virtual Machine as described in Install the Crestron XiO Cloud Gateway Package on page 3. Then, contact Crestron True Blue support via phone, email, or chat as described at www.crestron.com/Support for assistance with manually migrating devices from the VC-4 installation to the Crestron XiO Cloud Gateway software installation.

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Specifications subject to
change without notice.