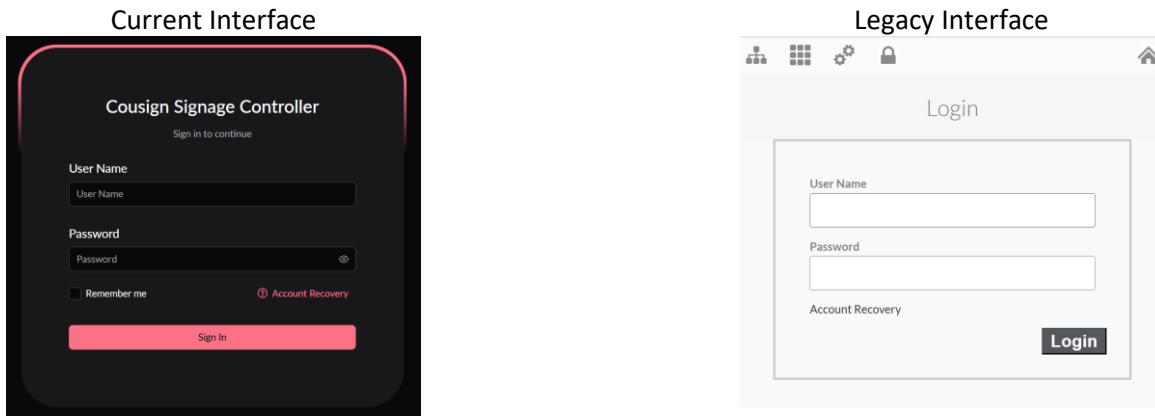




Network Controller / Scrolling Message

OPERATING INSTRUCTIONS FOR THE NETWORK CONTROLLER WITH INTEGRATED SCROLLING MESSAGE

Document Version 9.1 – 1/6/2026



This document describes the functionality of the current network controller interface.

If your login interface looks like this, please reference legacy documentation V8 or prior

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Accessing Your Network Controller

If your sign is outfitted with a Cousign network controller it will be preconfigured for use with your sign. This document describes the steps necessary to connect to your network-controlled sign and manipulate any displays connected to it. By default, your network controller will receive an IP address from your network (DHCP) and the controller configuration page can be **accessed by any computer or smartphone connected to that network.**

Before you begin

1. Ensure an active network cable is connected to the sign controller.
2. Apply power to your sign.
 - a. Wait a few minutes after your sign is powered on to allow the device to complete booting and connect to your network
 - b. Press the **Next** button on the remote control until a supported display is selected. This is the display that will show IP information.

Device Support - Scrolling IP Information

Device Type	Supported	Not Supported
Scrolling Marquee (all sizes)	X	
Numeric Display (all sizes)	X	
Flex Matrix (all sizes)	X	
Stoplights		X
RGB Lights / Safety Cross		x

Note: If your sign is not equipped with at least one supported device, ask your IT department to look for a device with the host name '**cousign-controller**' to retrieve the IP information

- c. Press **enter** three times on your Cousign remote. [**ENTER ENTER ENTER**]. The IP address will be displayed on the currently selected device if the device supports it.
3. Write this IP address down.
4. Navigate to the device web page

The IP address is in the format **XXX.XXX.XXX.XXX** and will be unique to your company's network. Enter it into your web browser of choice and press enter.



Note: The first time you access your network controller you must do so with **http://** not **https://** as a secure connection to the device is not possible without a certificate. See the [Certificates \(SSL\)](#) section for details on setting up secure connections.

The first time you access the controller you will be prompted to create an administrative account for the sign. This account will have full access to the device, including the ability to generate non administrative accounts and local ssh accounts with low level access to the device.

Please ensure this account information is kept confidential.

Note: The user name and password are both **case sensitive**

Once your administrator account has been generated, use it to login to the device.

Interface Overview

The following functionality is provided by icons in the header of all pages of the network controller website.



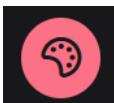
Toggle the side bar menu



Quickly access the devices page no matter where you are



Toggle between light and dark modes



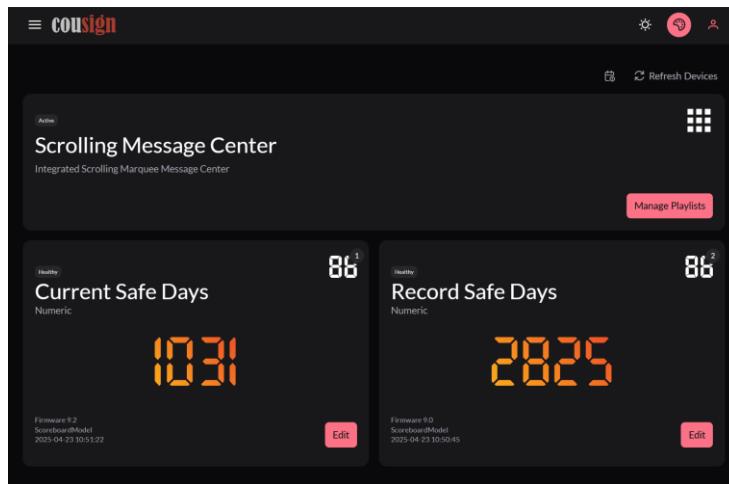
Configure the look and feel of the interface to your liking. The **primary** color selection will drive the color of main buttons and headers throughout the site. The **surface** section will adjust the look and feel of bounding boxes and other aspects of the site. The “**presets**” selections will drive the look and feel of various controls. A **menu mode** of static will integrate the side bar into the page, while overlay will cause it to float over the current page.



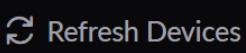
Account dropdown will provide you with details about the currently logged in user, when you authenticated, and provide an option to log out of the system.

Devices Page

After login you will be directed to the device page. If your device page does not list any devices, see the [device discovery](#) section.



Broadcast the current date and time to all attached devices. This allows all devices to synchronize time.

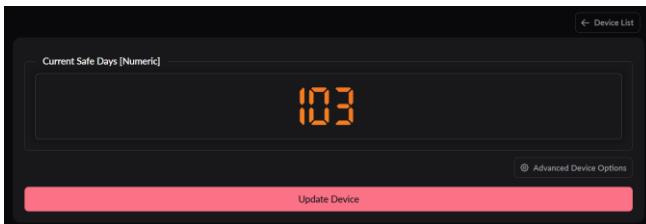


Quickly query all attached devices for current state and update the device page accordingly.

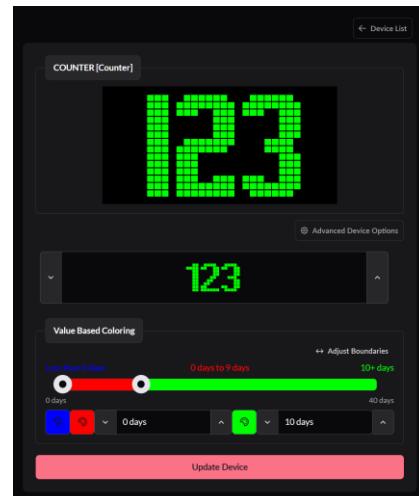
Configure Device

Each device will have unique configuration options available. Common functionality is displayed on the main page, and advanced features are accessed via the **Advanced Device Options** button. The details regarding the functionality of each setting for each device type are beyond the scope of this document. Please refer to the device specific documentation for those details.

Standard Day Counter



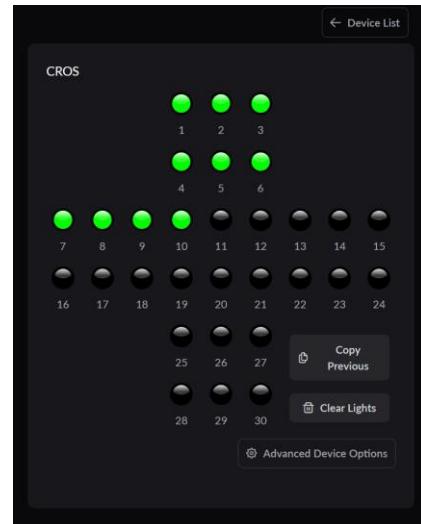
Flex Matrix Day Counter



Stoplight



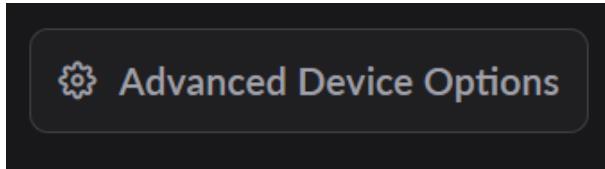
Safety Cross



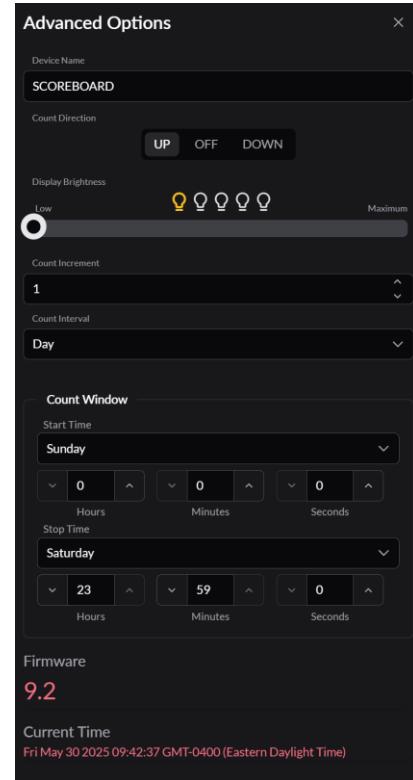
Advanced Options

Each device edit page will contain a link to “Advanced Device Options” allowing you to configure lower-level options for that display. These are options that are rarely accessed so they are tucked away.

The advanced options button is in the lower right-hand corner of the device image.



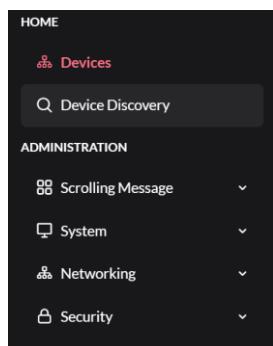
Example of advanced options slide out for numeric displays



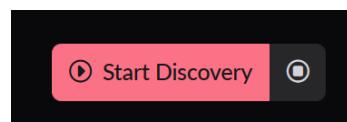
Device Discovery

The network controller must discover the various devices/displays on your sign to control them. You can initiate this process by navigating to the device discovery page.

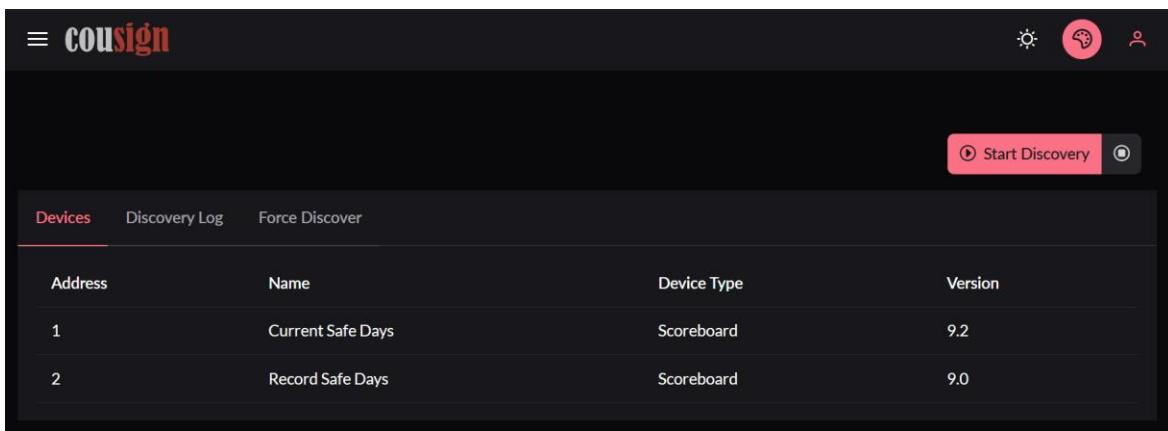
Navigate To Device Discovery



Click the **Start Discovery** button in the upper right-hand corner



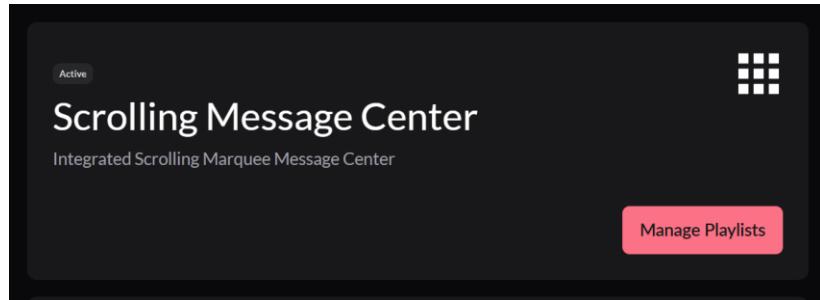
When the discovery has been completed, all discovered devices will be shown on the results page. You may now navigate back to the **Devices** page to update individual devices/displays.



Address	Name	Device Type	Version
1	Current Safe Days	Scoreboard	9.2
2	Record Safe Days	Scoreboard	9.0

Scrolling Marquee

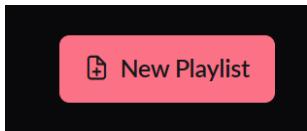
When the scrolling marquee service is enabled, a special device named **Scrolling Message Center** will appear in the device list. To manage messages and arrange your playlists, click the **Manage Playlists** button.



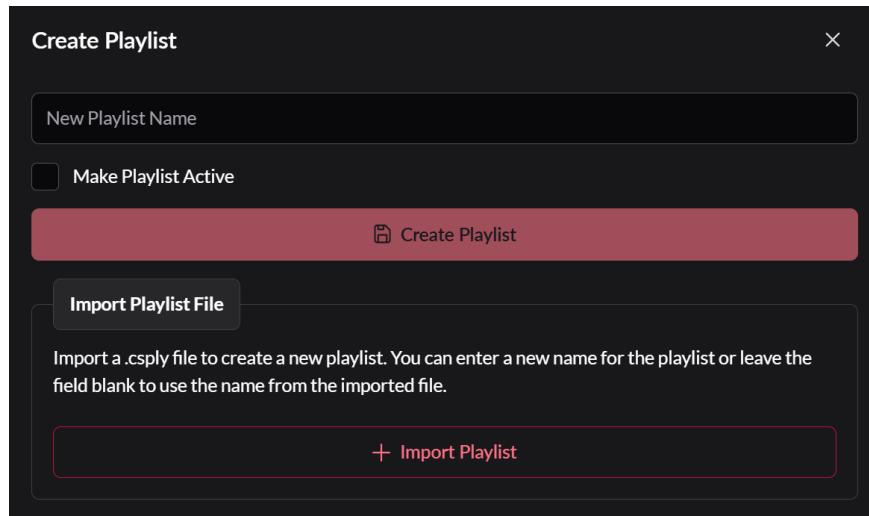
You will be presented with a tree view of all playlists each with their corresponding messages. A message is a grouping of text segments or an image that will be shown on the display and is the basic unit of work. A playlist is a group of messages that will play starting with the first message in the playlist and following through to the last message in the playlist. Messages can be skipped according to a defined schedule so that certain messages in your playlist will only be played at certain times or days of the week. When the last message in a playlist has finished, playback will resume starting again with the first message in the playlist. Only one playlist can be active at a time.

Create Playlist

To create a new playlist, click the **New Playlist** button in the upper right-hand corner of the screen



You will be presented with the following dialog

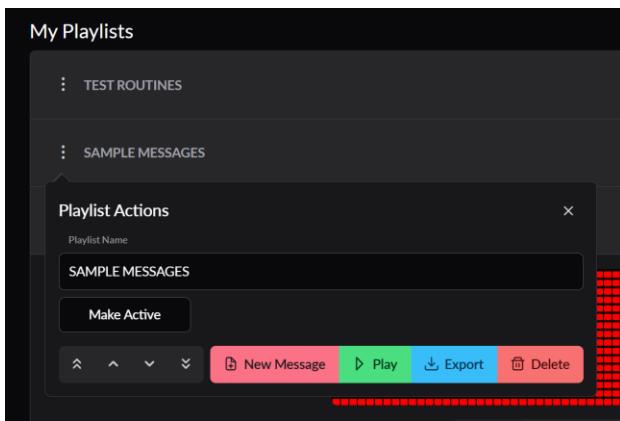


Enter the name of your new playlist. If you wish this new playlist to be the active playlist, check the 'Make Playlist Active' checkbox. When finished, click **Create Playlist** to create a new empty playlist.

Note: Alternatively, you can use the **Import Playlist** button to import a playlist from a file.

Playlist Options

Each playlist has a kebab menu (three vertical dots) which will allow you to configure options related to the corresponding playlist.



Playlist Kebab Menu Options



Adjust the name of the playlist and then click the Update button

Make Active

Set this playlist as the active playlist. This button will only appear if the playlist is not currently active.

▲ ▲ ▼ ▼

Adjust where this playlist appears in the list. Double arrows move to the very top, or bottom. Single arrows will move up or down one position.

 **New Message**

Create a new message in this playlist

 **Play**

Play this playlist on the marquee

 **Export**

Export this playlist to a file that can be saved and shared

 **Delete**

Permanently delete this playlist

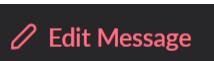
Message Menu



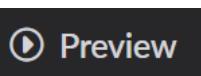
Message Toolbar Options



Adjust the order in which this message appears (and plays). Double arrow moves to the very top, single arrow moves up one space



Navigate to the edit message page where you can edit text, set schedules, etc.



Preview the message in the user interface only.



Play the message on the sign.



Permanently delete this message.



Move this message down the list. Double arrow moves the message to the bottom of the list. Single arrow moves the message one position down.

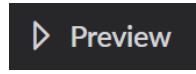


Move this message to another playlist

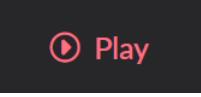
Edit Message

The edit message page allows you to configure all aspects of the message including text, positioning, colors, font, animation and schedules.

Toolbar Options



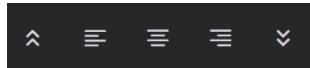
Preview the message in the user interface only.



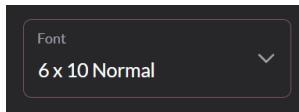
Play the message on the sign.



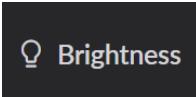
Fine grained positioning of the text on the screen, one pixel at a time.



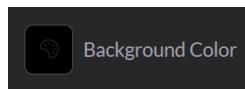
Quick positioning of the text on the screen. Top, Left, Center, Right, Bottom



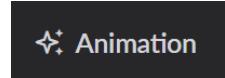
Select the font for this message.



Adjust the brightness for this message.

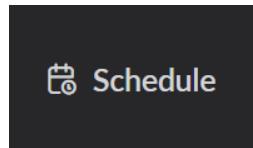


Change the background color for this message.

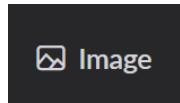


Messages enter the screen using the **Start Animation** and then begin the **Play Animation**. The play animation is repeated for a number of loops, or for a certain number of seconds as defined by the **Playtime** setting. When the play

animation completes the message is removed from the screen using the **Stop Animation**.



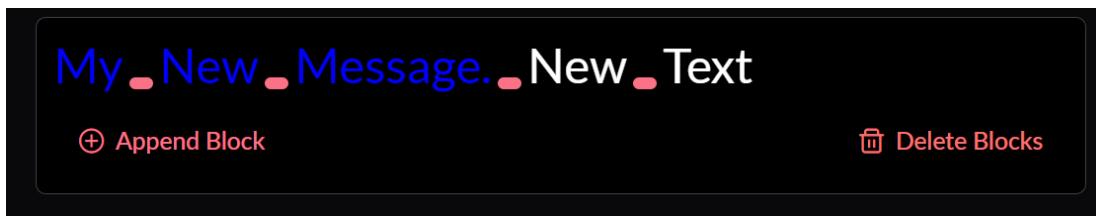
A playlist will play all messages one after another in order. However, messages can be configured with a schedule so that they will only appear during certain times of the day or on certain days of the week. Using the schedule dialog to configure when this message will be allowed to play.



Instead of displaying text, your marquee can show simple graphics. Use the image utility to crop images appropriately. Animated .gif files are supported!

Message Text Window

The text of your message can be edited in the text editing window, which will allow you to interact with the various text blocks that make up your message. Each block has a unique color and text. Spaces are accentuated with special underscores for clarity in the window only and will not be visible in your message.



Click Append Block to add a new message block to your message. Delete Blocks will clear all blocks (start over).



To edit a block, click the text you wish to change. The message block will be selected, and various options will appear.

Message Block Editing Options



Move the block to the left.



Insert a new block to the left of this one.



Edit the contents and color of this message block.



Delete this block



Move the block to the right.



Close the block selection (cancel)

Message Block Types

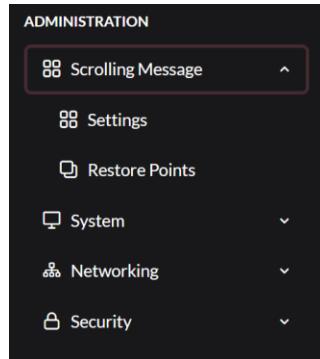
Text	Add static text of a certain color. (Most Common)
Current Date Time	Add the current date time to your message in a variety of formats. The date and time will update dynamically as the message plays. You will be asked to select a color for the text, and a format to show the date time in.
Total Days/Hours/Minutes/Seconds	Add a dynamically updated total number of days/hours/minutes/seconds between the current date and a date you define
Hours/Minutes/Seconds Component	Component options provide a dynamic value for the remainders of days/hours/minutes or seconds until a date. Example: If the total hours until the target date is 25, then the total Days is 1 with 1 hour left over. The hours component will allow you to display the 1 hour remainder. Useful for showing message like "It has been 1 days and 1 hour since our event"
Count Helper (short)	Helper for adding a message block to display "It has been DD days hh:mm:ss since ..." This will add numerous message blocks that can be further edited as desired. This is meant a tool to quickly get started with common but complex messages.
Count Helper (long)	Like the short version, but with the more verbose text "It has been DD days hh hours mm minutes and ss seconds since..."

Administration

When logged in with an account that has administrator level access, several configuration pages are available in the side bar menu.

Scrolling Message

Manage administrative settings related to the scrolling marquee.



Settings

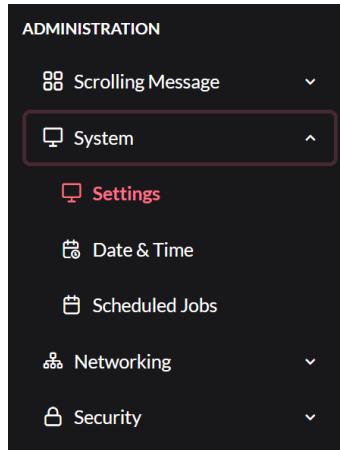
Enable or disable the marquee service and configure hardware settings for the attached panels. Various panel types and layouts are used to create marques. Use the quick settings to quickly configure the most common setups.

Restore Points

Manage the backups of your scrolling marquee messages. Creating a new restore point will capture the state of your current playlists/messages so that it can be exported or restored later.

System Settings

Configure base level options of your network controller.



System Version

API

The currently installed application programming interface version.

This is the version of the software running on the backend and is responsible for interacting

directly with the hardware. It can be accessed directly by developers to write custom integrations with the device.

UI

The currently running user interface version.

This is software that provides the web based user interface for end users.

Software Update

This is where you can upload Cousign provided patches to update the API and UI software versions.

Patches are digitally signed by Cousign and validated before installation.

Endpoint Options

Http Endpoints

Enable or Disable http (unsecure) access to the device.

Your device will ship with only http endpoints enabled. If you have configured an SSL certificate for the device, you may wish to disable http access for security reasons.

Https Endpoints

Enable or Disable https (secure) access to the device.

SSL certificate required

Documentation Endpoint

Enable or Disable the API documentation endpoints.

This information is useful to developers wishing to interface with the network controller, but exposing this information can be a security concern. If development is not active or needed, then you may wish to disable the endpoints.

Hostname

The name of this device as it appears on your network.

Configure the name of this device as appropriate based on your company standards.

Services

Several services are running on the network controller. Some are required for operation and others are optional. This section allows you to interact at a high level with the services and enable or disable them as needed. Available actions are listed in the actions dropdown and will be one of the following.

Action	Description
Start	Start a service that is currently not running
Restart	Restart a service that is currently running
Stop	Stop a running service
Disable	Disable a service so that it does not start after a reboot
Enable	Enable a service so that it is automatically started after a reboot

Service	Description
Cousign IR Remote Control Service	Required for proper operation of your IR remote control
Cousign Controller Website	Required for proper operation of the API and UI
Cousign Scrolling Marquee Service	Required for proper operation of your scrolling message marquee. If no scrolling message panels are installed on your sign, this service can safely be disabled
Secure Shell Servier (SSH)	Secure shell service provides low level access to the network controller. For security reasons it should be disabled if not used

View Log

View log entries related to the service.

System Uptime

Reports the amount of time the network controller has been powered on and running and provides options to reboot or shutdown the system safely.

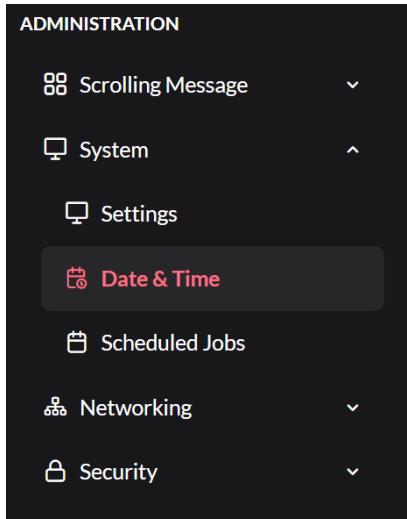
Note: Avoid abruptly removing power from your sign. Use the shutdown button here to safely bring the system down to remove power.

System Logs

Captures several important system logs and compresses them for download. These may be required when troubleshooting issues with your sign.

Date & Time

Configure how date and time are handled on your controller.



System Time

The current system time

This is the time the network controller device itself has. Any devices that maintain their own clock will be synchronized to this clock. If NTP is disabled, you can set this time based on your computer's current time.

System Timezone

The local timezone in which the controller resides

Network Time Protocol

NTP settings define which servers the device will use to set and maintain system time. If your organization uses an internal time server configure it here

Scheduled Jobs

Various jobs can be configured if applicable to your sign. Schedules are configured with CRON notation, and a helper utility is provided to easily set the desired schedule. We recommend you stick with the default recommended schedules.

Currently available job types are as follows:

Job Type	Description	Supported Devices
Time Broadcast	Will synchronize the date and time across all attached devices Schedule: Once each day	All Device Types
[Safety Cross] Advance	Automatically set the safety cross light associated with the current day to the configured color (default: green) Schedule: Once each Day	Safety Cross Only
[Safety Cross] Clear	Will clear all safety cross lights Schedule: Beginning of month	Safety Cross Only
[Flex Matrix Text] Json API Update	A job to display data from any API that meets certain compatibility requirements. See appendix Scheduled Job - Json Api Example for details. Schedule: Unique to use case	Flex Matrix in Text Display Mode
[Flex Matrix Text] Air Quality Update	Update chosen display with air quality information for the configured zip code Data fetched by zip code from https://www.airnow.gov/ Schedule: As desired	Flex Matrix in Text Display Mode

Your sign ships with the Time Broadcast job enabled and configured. It will automatically synchronize time on all devices on your sign. To add additional jobs, click the 'Schedule New Job' button.

Note: Many jobs only support specific device types. If your sign does not have the required device the job will be filtered from view.

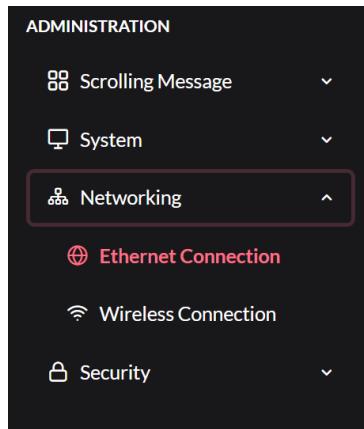
Safety Cross

If your sign contains a safety cross display, we highly recommend scheduling the clear and advance safety cross jobs. This will automatically manage your safety cross lights thus requiring intervention only when an accident occurs. Without these jobs, the cross must be updated manually each day to turn on the light corresponding to the current day.

This page also provides a link to the "Jobs Dashboard" which will allow you to monitor the status and execution history of jobs. This page is only available over ssl connections, so if the Jobs Dashboard button is disabled, make sure you have taken steps to configure [ssl certificates](#) and enabled [https endpoints](#).

Networking

Configure network connectivity for wired and wireless connections.



Ethernet Connection

Provides details about your hard wired ethernet connection status and hardware device such as MAC address. Here you can also configure device settings such as DHCP, manual IP address, etc.

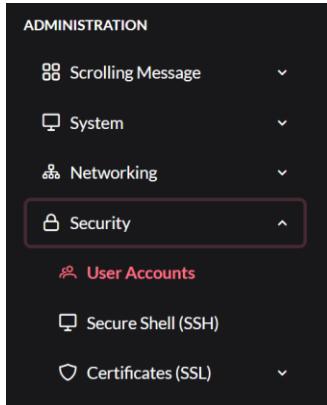
Wireless Connection

Provides details about your wireless connection status and hardware device such as MAC address. Here you can also configure device settings such as Wireless network to join, DHCP, manual IP address, etc.

Note: Wi-Fi connections are not officially supported. The functionality is provided but will only function well in ideal scenarios. It is not recommended! The antenna on the device is small, and various environmental factors can impact connectivity, especially if your sign has an outdoor enclosure. Use at your own risk and expect sporadic networking issues.

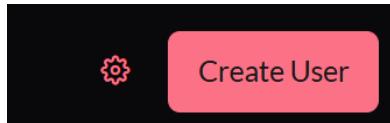
Security

Control how your system is accessed.

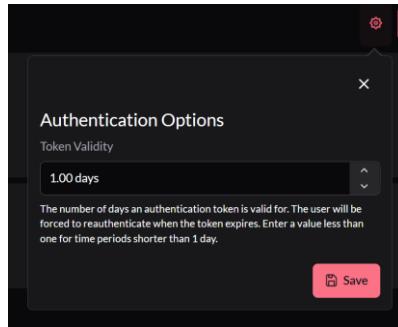


User Accounts

Add, edit, or delete user accounts. User accounts define who can access the sign and with what level of permission. An account with the “Administrator” role will have full access to all options of the sign. Accounts with the “User” role will have only access to update devices.



To create a new user account, click the create user button in the upper right-hand corner. You will be prompted to provide a username, password, and a role for the user. **Passwords must meet complexity requirements and usernames are case sensitive.**



When a user logs into the system with their username and password their credentials will be cached in the browser so that future attempts to access the site do not require another login. To configure how long these credentials remain valid (how long until the user is forced to sign in again) click the gear icon in the upper right corner and update the token validity days setting.

Secure Shell

Directly access the operating system running on your network controller. This page will allow you to enable or disable the SSH service on the device, as well as manage related credentials used for accessing the device. Unless you have a specific need, we recommend this service be disabled and no ssh accounts be created. This functionality is provided to give you complete control of the device running on your network, should you need it.

Certificates (SSL)

Configure certificates required for SSL connections. The network controller supports both self-signed certificates generated by the device, as well as those generated by your certificate authority.

Note: Ensure you have configured your host name and IP addresses before certificate generation as if these change after the certificate is generated, your certificate will be invalidated and will need to be regenerated to restore SSL.

Note: Take steps to ensure the IP address of the device will not change in the future. This will require configuration of a DHCP reservation or assigning a static IP address for the device.

Preferences

Adjust these values to match your organization before generating a certificate or CSR.

Authority Signed

Generate a certificate signing request for your certificate authority and then upload the certificate.

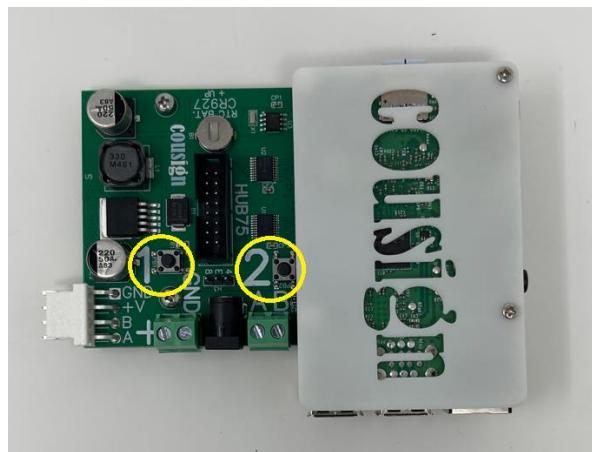
Self-Signed

Generate a self-signed certificate and then manually deploy the certificate to your clients that need it.

Recovery Options

Restore DHCP

If you have previously configured your network interfaces with manual IP addresses and wish to revert to DHCP you may do so by pressing both the 1 and 2 buttons located on the network controller daughter board at the same time.

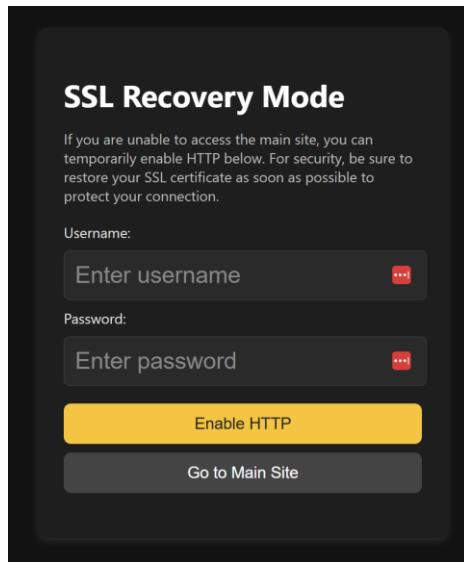


Note: Older versions of the hardware do not have these buttons. To revert to factory defaults you will need to [reimage](#) the sd card.

SSL Recovery Mode

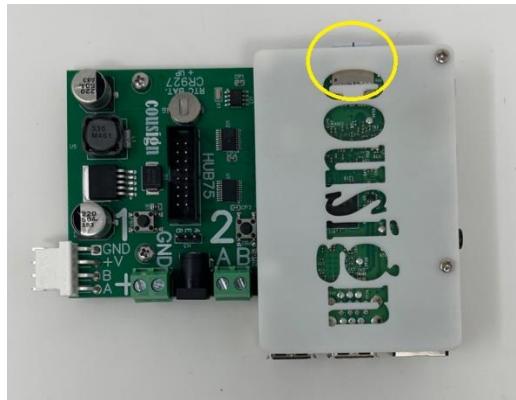
The recommended operating state of the network controller is to disable http endpoints and only make use of the https endpoints for secure communications with a properly configured certificate installed. There are scenarios where this certificate can become invalidated, and the https endpoints will cease to function, thus preventing access to the system.

A restore portal is available at <http://xxx.xxx.xxx.xxx/recovery> where **xxx.xxx.xxx.xxx** is the ip address of your sign. Enter a valid administrator username and password and click the Enable HTTP button. This will enable http endpoints and redirect you to the login screen. Your username and password will be sent over the network in clear text, so make sure to restore secure communications and disable http endpoints once the certificate issues have been resolved.



Factory Reset

To perform a complete factory reset you will need to re-image the SD card which can be found under the top cover as shown below.



For SD card creation instructions and source image files please see our [Cousign Controller Images](#) repository on Dropbox. You may remove the existing SD card and re-image it, or use a new 8GB or greater SD card and retain the existing one as backup.

Note: A pre-imaged [industrial grade SD card](#) can also be purchased on our website.

Scrolling Message Configuration via Remote Control

Some rudimentary functions of the scrolling message display can be configured with the IR remote control. Adding new simple text-based messages, editing messages including font size, foreground color, background color, changing animations, playlist selection, and several other options are available.

Note: Advanced options such as scheduling of messages, adding images, and reordering of messages are not possible with the remote. For this reason, we recommend using the web interface for all changes to the scrolling message display. If your company prohibits adding the controller to your network, this basic functionality of the display is still available.

Select the scrolling message display for control by using the **Device Select (NEXT/PREV)** buttons on the remote. When the scrolling message is selected for control it will flash a white border around the outside three times.

Upon selecting the display for control you will be entered into message selection mode. Press **UP/DOWN** to select the message you wish to alter.

Press **PROGRAM** on the remote to cycle through the top-level menus, when the menu you would like to enter is displayed press **(RE)SET** to select it.

Add Message

Upon entering the add message menu, a white cursor will appear. Use the number/letter buttons on the remote keypad to cycle through the characters associated with that button. When the character you would like to choose is displayed press **ENTER** to advance the cursor forward. Continue entering characters until your message is complete. When finished press **PROGRAM** to lock in the text and move to the **Edit Message** menu. See details below for editing your new message.

Note: Press **(RE)SET** to move backward (backspace), and **ENTER** without selecting for space. Press **UP/DOWN** to move the cursor without affecting the entered text.

Edit Message

Upon entering the edit message menu you'll be presented with a number of options to change the way the message is displayed. While in the edit message menu press **PROGRAM** at any time to cycle through the sub menu options below, and press **(RE)SET** to choose the displayed option.

Note: To move the cursor back and forth without deleting characters use the **UP/DOWN** buttons.

CHANGE FONT

Press **UP/DOWN** to cycle through the various font options. When your message is displayed in the font you would like choose **PROGRAM** to move to the next configuration option.

MOVE MESSAGE

Using the number pad buttons move the message around the display until you are happy with its location.

- (2) UP
- (4) LEFT
- (5) CENTER
- (6) RIGHT
- (8) DOWN

Note: This defines the start position of your message. If your message is longer than the display you can still set it up to scroll using the animation options in the RUN SETTINGS menu.

TEXT COLOR

Press **UP/DOWN** buttons to cycle through the color options. When finished press **PROGRAM** to move to the next option.

BACKGROUND COLOR

Press **UP/DOWN** buttons to cycle through the various color options. When finished press **PROGRAM** to move to the next option.

CHAR FG COLOR (Advanced Usage)

You can change the color of a single character by first selecting it with the cursor in the main **Edit Message** menu. Once selected press program until **CHAR FG COLOR** is displayed on the screen. Press **(RE)SET** to choose the sub menu and then use the **UP/DOWN** buttons to alter the color of the single character. To repeat for another character return to the main menu by pressing **PROGRAM** until only your message and the cursor is visible on the display. Move the cursor with **UP/DOWN** and then access the **CHAR FG COLOR** menu again by pressing **PROGRAM**.

FG BRIGHTNESS

Press **UP/DOWN** buttons to cycle through the various color options. When finished press **PROGRAM** to move to the next option.

BG BRIGHTNESS

Press **UP/DOWN** buttons to cycle through the various color options. When finished press **PROGRAM** to move to the next option.

RUN SETTINGS

Upon entering the menu you'll be presented with a prompt to select your *Intro Animation*. Use **UP/DOWN** to make your selection and then press **PROGRAM** to move to the next option. Repeat the process for *Play Animation* and then *Exit Animation*. Press **PROGRAM** again to be presented with the Display Mode prompt. Press **UP** to choose to display the message for X seconds or **DOWN** to loop X times. Use **UP/DOWN** to make your selection and **PROGRAM** to continue.

SAVE

Press **(RE)SET** to **SAVE** the message.

QUIT

Press **(RE)SET** to **QUIT** without making changes to the message.

Delete Message

Press **(RE)SET** to delete the currently selected message or any other key to return to the message selection menu.

Play Mode

When displayed press **(RE)SET** to resume playing of messages.

Change Playlist

Press **UP/DOWN** buttons to select the active playlist. Press **(RE)SET** to select the playlist and begin playing.

Scheduled Job - Json Api Examples

The Json API Update scheduled job allows you to query data from any API that meets the compatibility requirements. This can be used to target internal company web services, or a wide range of internet APIs to display data on your sign.

Requirements

1. Your sign must have a flex matrix display, and it must be configured as a **Text Display**
2. Your target API must return a single Json object, or an array of Json objects. If your API returns an array, data will be extracted from the first object only.
3. The target API must be open (no authentication) or must accept any authorization tokens as URL parameters. There is no support for bearer or other authentication schemes

Any API that meets these requirements can be used in conjunction with this job to automatically update your sign with relevant data.

Stock Ticker (Simple Case)

Here is an example of how to show stock prices using a free web API offered by FMP.

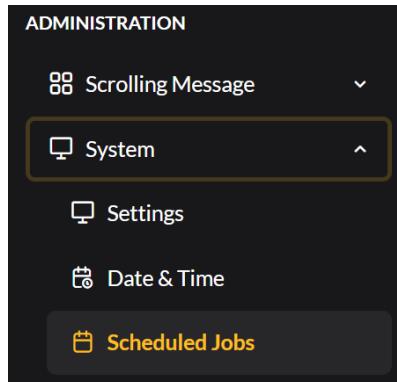
1. Sign up to get your own API token at <https://site.financialmodelingprep.com/>
2. After browsing the documentation we find the stock quote short API at:
<https://site.financialmodelingprep.com/developer/docs/stable/quote-short>



3. The documentation shows us that it returns an array of stock price objects, but by passing our ticker symbol in the URL, we know we will only receive one result, and that is the one that will be scanned for relevant data.
4. The API key is also passed as a URL parameter, so authorization is compatible.
5. Clicking the copy URL button, we're provided with a URL that includes our unique API key and the default ticker AAPL. This is the URL we'll use to schedule our job [https://financialmodelingprep.com/stable/quote-short?symbol=AAPL&apikey=\[YOUR API KEY\]](https://financialmodelingprep.com/stable/quote-short?symbol=AAPL&apikey=[YOUR API KEY])

Schedule our job

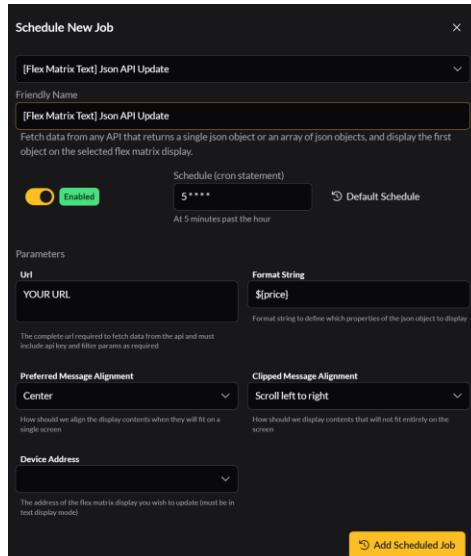
1. In the network controller user interface, navigate to Scheduled Jobs



2. Click the "Schedule New Job" in the upper right corner



3. Select the “Json API Update” job type and you will be presented with the following screen.



4. We'll update the Friendly Name to 'AAPL Ticker Update' to help us clearly know what this job is doing in the future.
5. The schedule defining when this job will run is defined with cron syntax.
Note: The syntax is out of scope for this tutorial, but you can learn more [here](#)
6. We will leave the default schedule which will run our job every hour at 5 minutes past the hour. You can adjust your schedule as needed, but keep in mind this API is rate limited.
7. We'll paste the whole URL provided by the FMP documentation, making sure it includes our unique API key after &apikey=
8. Now we define the format string. Here we can define what we want the text of our display to look like by referencing property names in our data set. The API documentation shows us we have 4 properties to work with. Let's show the **symbol**, **price**, and **change** properties. Property names should be placed inside curly brackets like so {price}. Anything inside {} that matches a property value will be replaced with the corresponding value.

Our format string is: **{symbol} \${price} ({change})** which will result in:

AAPL \$212.14 (-1.91)

Note: Software version 5.0.85 and above add support for formatting data returned by the API before display. For example if the price returned by the API is a float like “212.14345” but you only wish to display two digits following the decimal point you can use {price:N2} to format the string as desired. All .NET [format strings](#) for numbers, dates, and precision are supported.

9. We'll set preferred message alignment to **center**, which will center our message on the display when the resulting message text fits entirely on the display.
10. We'll set clipped message alignment to **Scroll left to right**, which will scroll our message if it's too wide to fit entirely on the display at one time
11. Now we choose which display we want to update. We'll choose from the list of available flex text devices on our sign

Note: Only flex text displays will show in this list, if your list is empty, check to ensure at least one of your displays is a flex matrix display set to text display mode

12. Your final screen should look something like this

Schedule New Job

AAPL Ticker Update

Friendly Name: AAPL Ticker Update

Fetch data from any API that returns a single json object or an array of json objects, and display the first object on the selected flex matrix display.

Schedule (cron statement): `5 * * * *`

At 5 minutes past the hour

Enabled

Default Schedule

Parameters

Url: `https://financialmodelingprep.com/stable/quote-short?symbol=AAPL&apikey=asdZ9DKx4tLXqclKbOdcoM0WQLv2Tfge`

The complete url required to fetch data from the api and must include api key and filter params as required

Format String: `{symbol} ${price} ({change})`

Format string to define which properties of the json object to display

Preferred Message Alignment: Center

How should we align the display contents when they will fit on a single screen

Clipped Message Alignment: Scroll left to right

How should we display contents that will not fit entirely on the screen

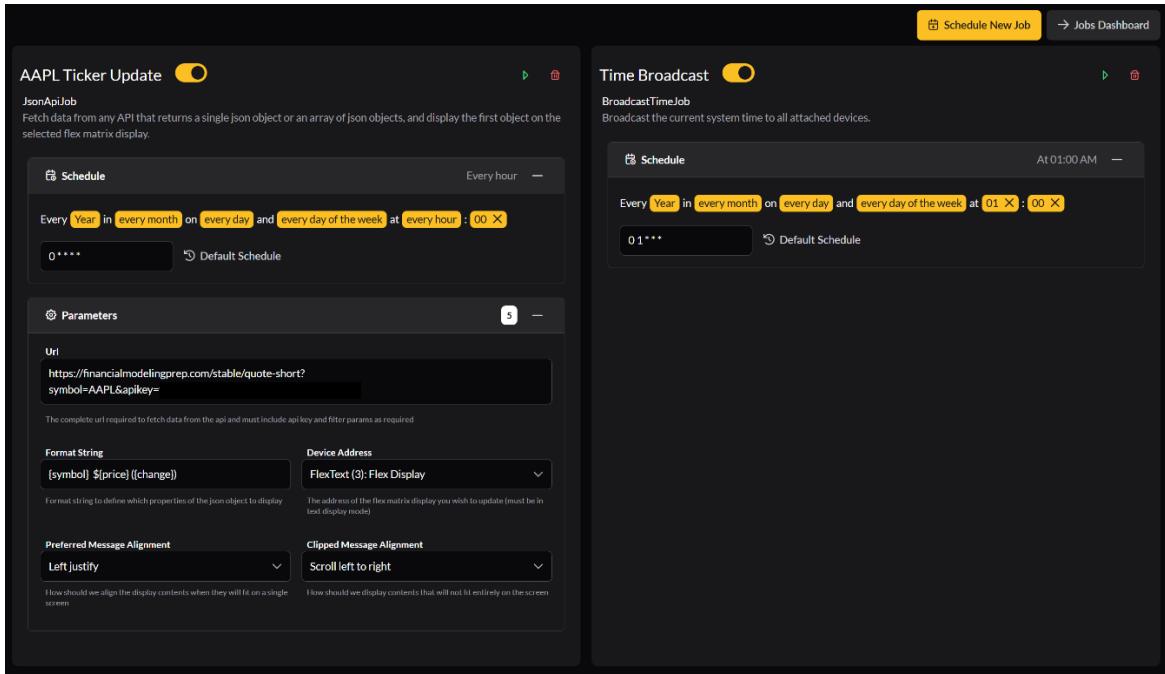
Device Address: FlexText (3): Flex Display

The address of the flex matrix display you wish to update (must be in text display mode)

Add Scheduled Job

13. Click “Add Scheduled Job”

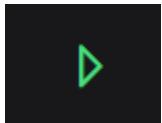
14. Our scheduled job has been added



The screenshot shows the 'Jobs Dashboard' interface with two scheduled jobs listed:

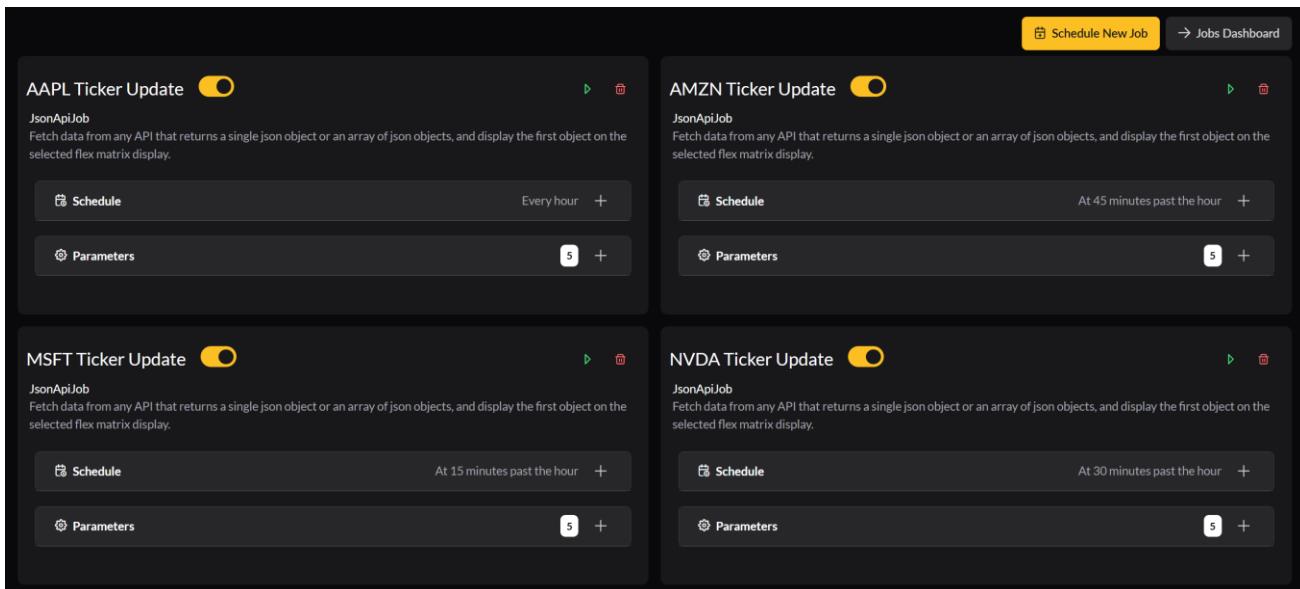
- AAPL Ticker Update** (Status: On):
 - JsonApiJob**: Fetch data from any API that returns a single json object or an array of json objects, and display the first object on the selected flex matrix display.
 - Schedule**: Every hour.
Every Year in every month on every day and every day of the week at every hour : 00 X
0**** Default Schedule
 - Parameters**:
 - Url**: <https://financialmodelingprep.com/stable/quote-short?symbol=AAPL&apikey=>
 - Format String**: `[symbol] ${price} {{change}}`
 - Device Address**: FlexText (3): Flex Display
 - Preferred Message Alignment**: Left justify
 - Clipped Message Alignment**: Scroll left to right
- Time Broadcast** (Status: On):
 - BroadcastTimeJob**: Broadcast the current system time to all attached devices.
 - Schedule**: Every Year in every month on every day and every day of the week at 01 X 00 X
01*** Default Schedule

15. To test our job, we can trigger it to run immediately by pressing the green play button.



16. It works. Our display has been updated. The job will run at 5 minutes past the hour, displaying data from the current AAPL price quote each time.

17. We can add additional jobs with different tickers targeting the same display at different times. For example, let's schedule a ticker update at 00, 15, 30, 45 minutes past the hour. This will let us rotate through 4 tickers each hour.



The screenshot shows the 'Jobs Dashboard' interface with four scheduled jobs listed:

- AAPL Ticker Update** (Status: On):
 - JsonApiJob**: Fetch data from any API that returns a single json object or an array of json objects, and display the first object on the selected flex matrix display.
 - Schedule**: Every hour +
 - Parameters**: 5 +
- AMZN Ticker Update** (Status: On):
 - JsonApiJob**: Fetch data from any API that returns a single json object or an array of json objects, and display the first object on the selected flex matrix display.
 - Schedule**: At 45 minutes past the hour +
 - Parameters**: 5 +
- MSFT Ticker Update** (Status: On):
 - JsonApiJob**: Fetch data from any API that returns a single json object or an array of json objects, and display the first object on the selected flex matrix display.
 - Schedule**: At 15 minutes past the hour +
 - Parameters**: 5 +
- NVDA Ticker Update** (Status: On):
 - JsonApiJob**: Fetch data from any API that returns a single json object or an array of json objects, and display the first object on the selected flex matrix display.
 - Schedule**: At 30 minutes past the hour +
 - Parameters**: 5 +

Weather Data (Nested Return Properties)

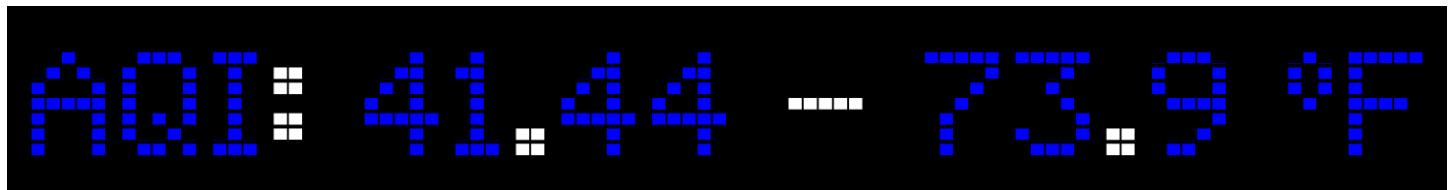
Another example of how to use the JsonAPI Job type to display weather information. This web service also reports AQI values by zip code, so we'll show an example of displaying the current AQI for fine particulates and current temperature in degrees Fahrenheit.

See the previous example for step-by-step instructions. Once you have the hang of it, let's try another API, but this one has nested properties in the return types. Everything works very similarly but you must reference the full path to the property separated by dots. For example, you can drill into a property like parent.child.grandchild

1. Sign up for an API key at <https://www.weatherapi.com/>
2. Review documentation of the current weather API at: <https://www.weatherapi.com/api-explorer.aspx>
3. Url: [https://api.weatherapi.com/v1/current.json?key=\[YOUR API KEY HERE\] &q=49024&aqi=yes](https://api.weatherapi.com/v1/current.json?key=[YOUR API KEY HERE] &q=49024&aqi=yes)
4. Here the API returns nested properties. We can reference them by naming the parent and child separated by .

AQI for Fine Particulates and Current Temperature in F

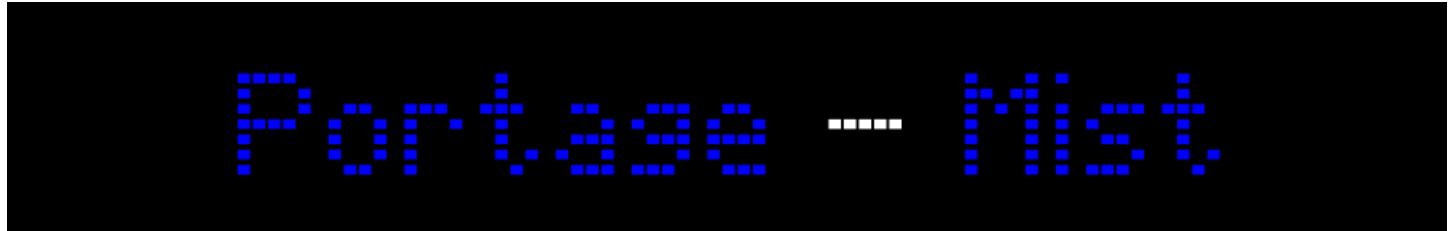
Format String: AQI: {current.air_quality.pm2_5} - {current.temp_f} 'F

A digital display showing AQI: 41.44 and Current Temperature: 73.9 F. The text is in blue on a black background, displayed in a pixelated font.

Note: The ' is a special character that will show the degrees symbol

Reporting Location and Weather Condition

Format String: {location.name} - {current.condition.text}

A digital display showing Portage - Mist. The text is in blue on a black background, displayed in a pixelated font.

This API reports several potentially useful metrics including feels like, windchill, heat index, dew point, wind measurements, and precipitation. Browse the documentation and adjust your format string as required.

Scheduled Job – Air Quality Example

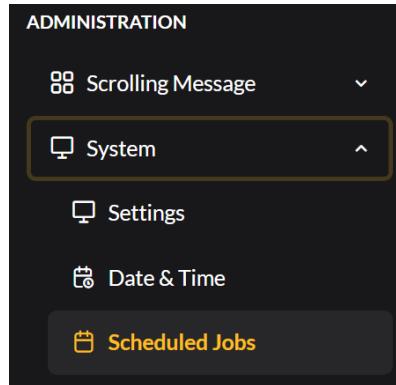
The air quality update job type pulls data from the AirNow.gov API and displays it on your flex matrix

Requirements

1. Your sign must have a flex matrix display, and it must be configured as a Text Display
2. You must have an AirNow API token. Sign up for free here: <https://docs.airnowapi.org/account/request/>

Schedule our job

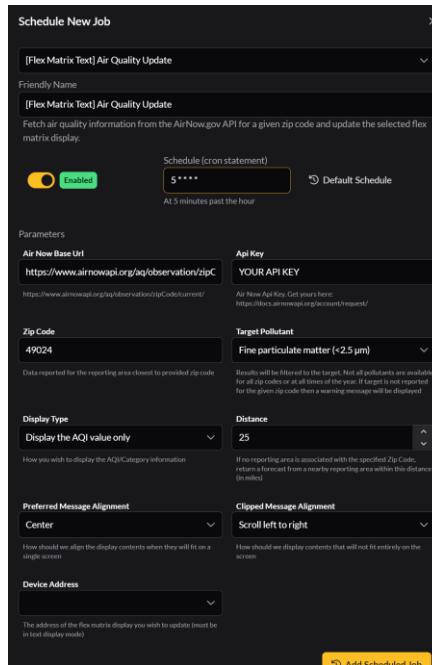
1. In the network controller user interface, navigate to Administration : System : Scheduled Jobs



2. Click the "Schedule New Job" in the upper right corner



3. Select the job type “[Flex Matrix Text] Air Quality Update” job type and you will be presented with the following screen.



4. The schedule defining when this job will run is defined with cron syntax.

Note: The syntax is out of scope for this tutorial, but you can learn more [here](#)

5. We will leave the default schedule which will run our job every hour at 5 minutes past the hour. You can adjust your schedule as needed, but keep in mind this API is rate limited so don't run it too often.
6. Confirm the base URL is correct according to the API documentation:
<https://docs.airnowapi.org/CurrentObservationsByZip/docs>
7. Enter your API key in the API key parameter input textbox
8. Enter your zip code in the zip code input textbox
9. Choose a target pollutant to display. Reference the Air now documentation, but in our experience only Fine Particulate Matter and Ozone are commonly reported for most zip codes. Depending on your zip code you may only be able to target these two pollutants. If in doubt, you are likely after fine particulate matter.
10. Choose your display type.

- a. Display the AQI value only



- b. Display the Category only



- c. Display the Category and AQI value



11. Choose the acceptable distance between your zip code and the reporting area. If no reporting area is found within this radius (in miles) you will not receive data, and your display will not update. Try increasing the distance for better results
12. Choose your preferred message alignment; how you wish to display messages that fit entirely on the display
13. Choose your clipped message alignment; how you wish to display messages that are wider than the display
14. Choose your target device address from the list of available options. Only flex matrix displays on your sign that are in text mode will appear here.
15. Click 'Add Schedule Job'
16. Test your job by pressing the play button

