

# THS-U01 Temperature and Relative Humidity Sensor Quick Configuration Guide



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# Introduction

The THS-U01 sensor acquires environmental temperature and relative humidity readings. The compact probe easily integrates in space-constrained locations, and gets precise measurements. The built-in particle filter protects components against particle contaminants. The sensor controls and read status is accessed via CLI, SNMP, Restful APIs. Nodegrid device (Kibana), Nodegrid Data Lake (ZPE Cloud).

## Hardware:

- Sensor
- Cable: 4 Meters (13 feet)

## Channels:

- Channel ID: 00 (Temperature)
- Channel ID: 01 (Relative Humidity)

## Temperature:

- Probe operating range: -40°C to 70°C
- Accuracy:  $\pm 0.3^{\circ}\text{C}$  (-20°C to 70°C), max  $\pm 0.4^{\circ}\text{C}$
- Resolution: 0.015°C (typical)
- Repeatability: 0.06°C (typical)

## Relative humidity:

- Operating range: 0 to 100 %RH
- Accuracy: (at 25°C)
  - Typical:  $\pm 2\%$  from 0 to 90 %RH
  - Max:  $\pm 2.5\%$  from 0 to 90 %RH,  $\pm 4.5\%$  from 90 to 100 %RH
- Resolution: 0.01 %RH (typical)
- Repeatability: 0.1 %RH

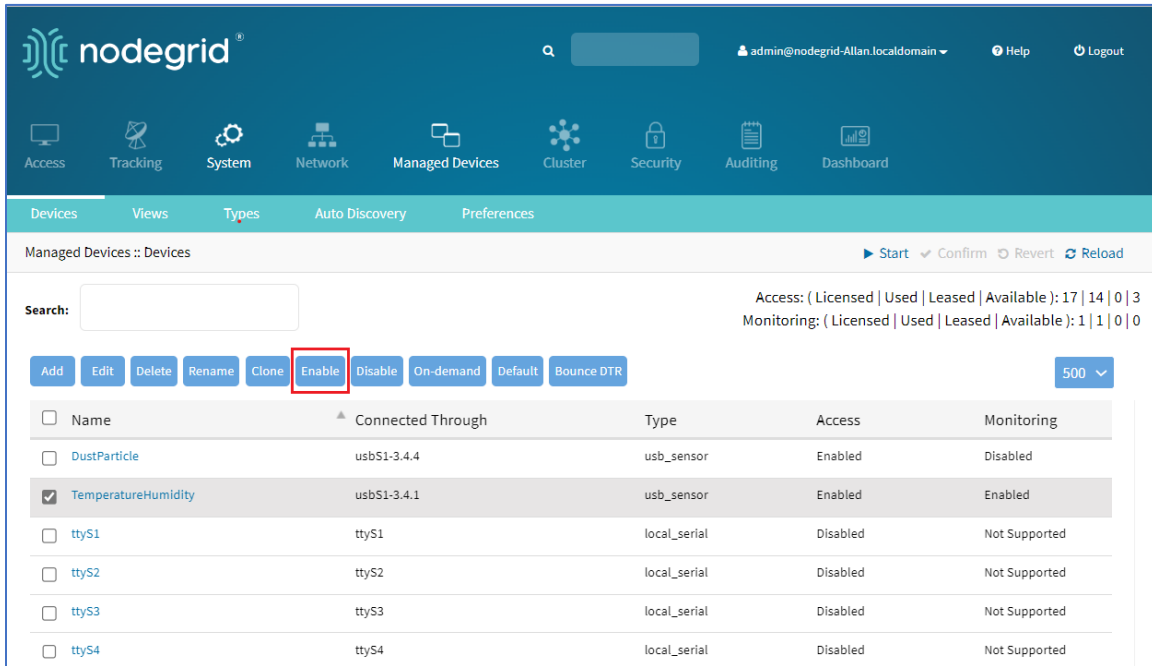
# Install USB Sensor

## Connect Sensor to Nodegrid Device

1. Connect sensor directly to a Nodegrid device's USB slot or on a USB hub.
2. See the sensor's Quick Install Guide for additional information.
3. The Nodegrid OS automatically uses a discover process to recognize the sensor.
4. After discovery, the sensor must be enabled to provide readings.

## Enable Sensor on Nodegrid Device

1. Log into the Nodegrid device.
2. Go to *Managed Devices :: Devices*.
3. In the *Name* column, locate and select **TemperatureHumidity** checkbox.



4. Click **Enable** button.

The sensor is now enabled on the Nodegrid device.

## View Sensor Readings on the Nodegrid Device

There are two ways to see current sensor readings: Sensor Status or USB Sensors.

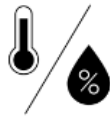
### **Sensor Status (Access tab)**

1. Go to *Access :: Table*.

The screenshot displays the Nodegrid web interface. At the top, there is a navigation bar with the Nodegrid logo, a search bar, and user information (admin@nodegrid.localdomain). Below the navigation bar is a menu with icons for Access, Tracking, System, Network, Managed Devices, Cluster, Security, Auditing, and Dashboard. The main content area is titled 'Access :: Table' and includes a search bar, filter buttons for 'Connected', 'In-Use', 'Disconnected', and 'Unknown', and a 'Columns' button. A table lists two devices: 'PDUcPI' and 'TemperatureHumidity'. The 'PDUcPI' device has a 'Web' button next to it.

Name	Action
PDUcPI	<a href="#">Web</a>
TemperatureHumidity	

2. In the table *Name* column, click on **TemperatureHumidity** (displays pop-up dialog)


×

Sensors Status

Name	Value	Unit	Description
TemperatureHumidity_cn0	26.07	Celsius	Temperature sensor
TemperatureHumidity_cn1	44.90	Percent	Humidity sensor

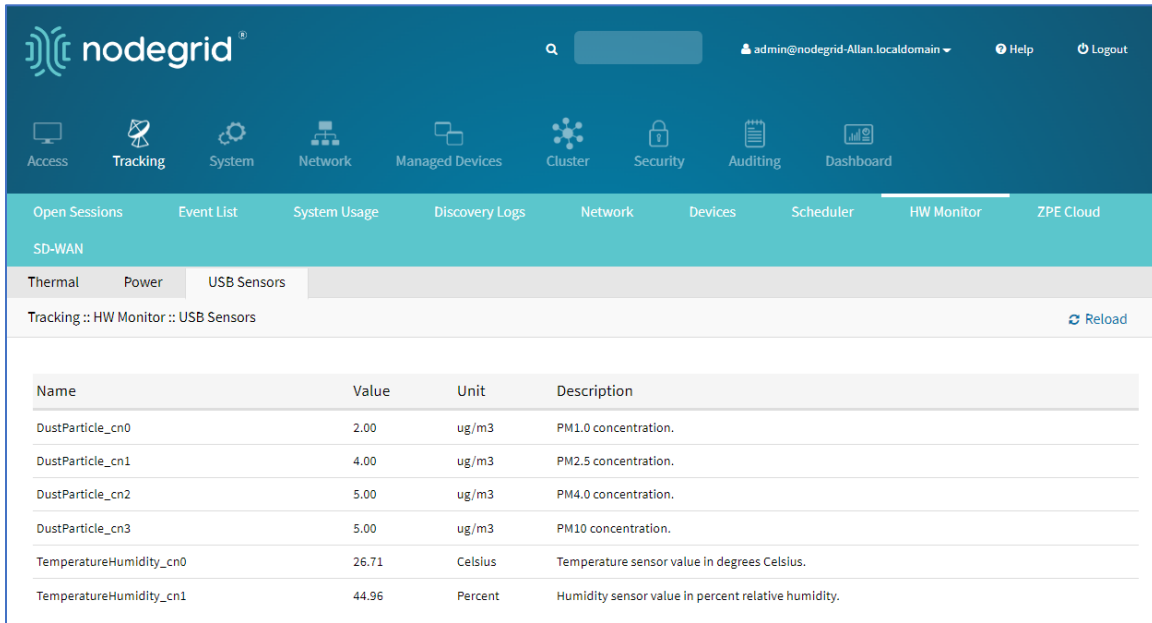
  

Description	Value
Name	TemperatureHumidity
Local Serial Port	usbS1-3.4.1
Status	Connected
Type	usb_sensor
Mode	Enabled
Licensed	Yes
Nodegrid Host	nodegrid.localdomain
Groups	default, admin, user

### **USB Sensors (Tracking tab)**

To view current USB sensor readings:

1. Go to *Tracking ::HW Monitor :: USB Sensors*.



2. On the table review the sensor’s current readings.

## Centralized Data Collection with ZPE Cloud Data Lake Application

This configures the sensor readings and historical trends to be shown on the ZPE Cloud application.

**NOTE:** The Nodegrid device must be available on the ZPE Cloud environment. Instructions to connect the device to the ZPE Cloud are in the *Nodegrid User Guide* ([v5.4](#), [v5.6](#)). To enable the device on ZPE Cloud, see the *ZPE Cloud User Guide*, [Devices :: Available](#)..

### Configure Nodegrid Data Lake for Sensor

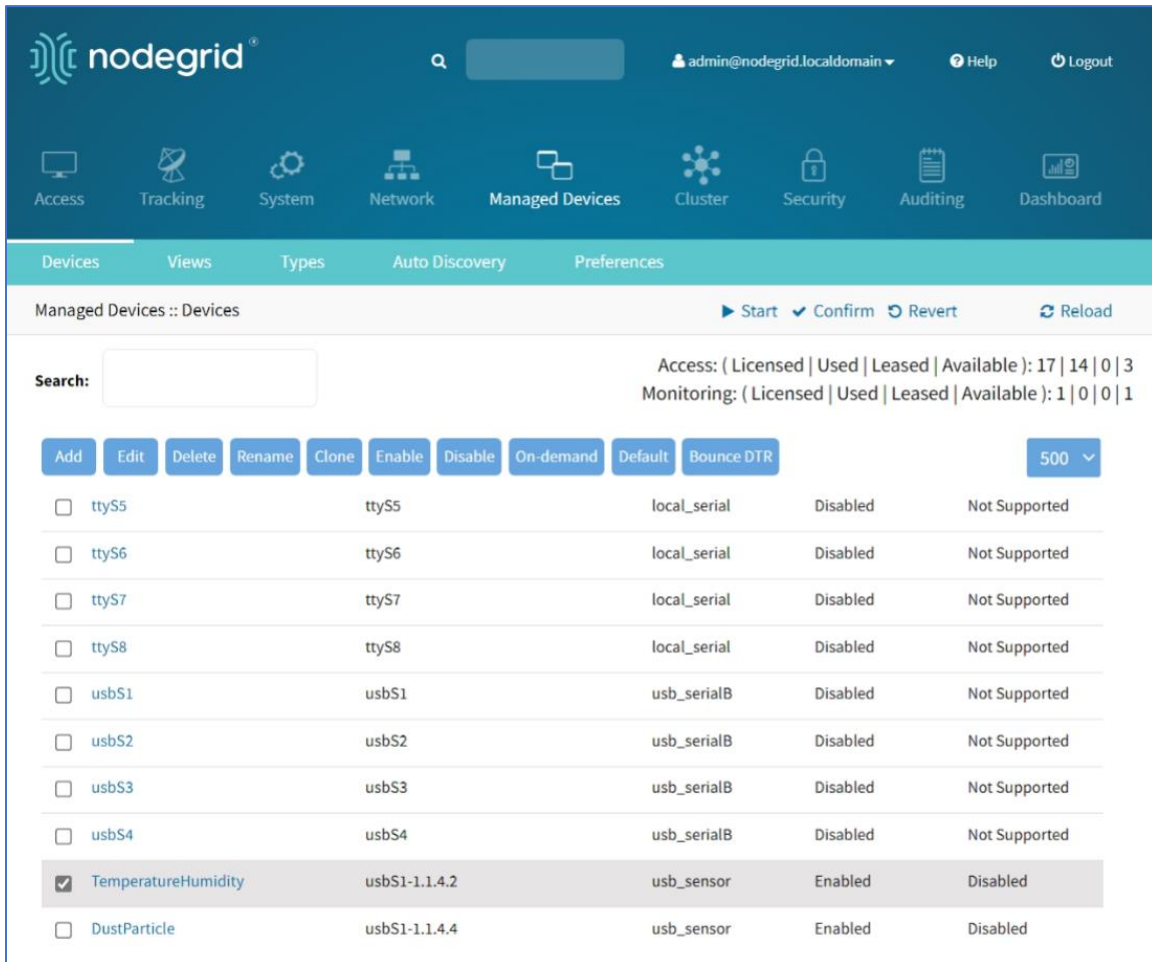
Nodegrid Data Lake must be enabled for your ZPE Cloud. If not contact Customer Support at [support@zpesystem.com](mailto:support@zpesystem.com).

**NOTE:** This procedure is an example, details may vary on your ZPE Cloud.

#### Step 1 – Configure Data Lake Plugin

To configure the Data Lake plugin, the device’s **Local Serial Port** must be provided.

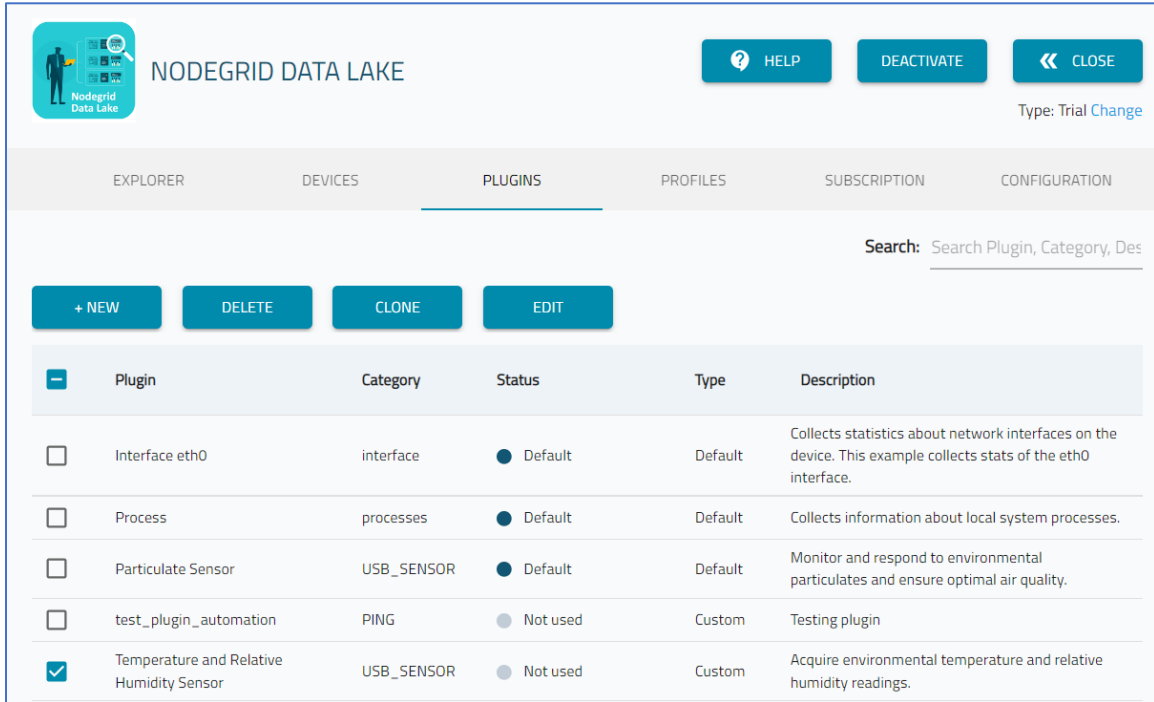
- To access the Local Serial Port, log into the Nodegrid device and go to *Access :: Table*, On the table *Name* column, locate and click **TemperatureHumidity**



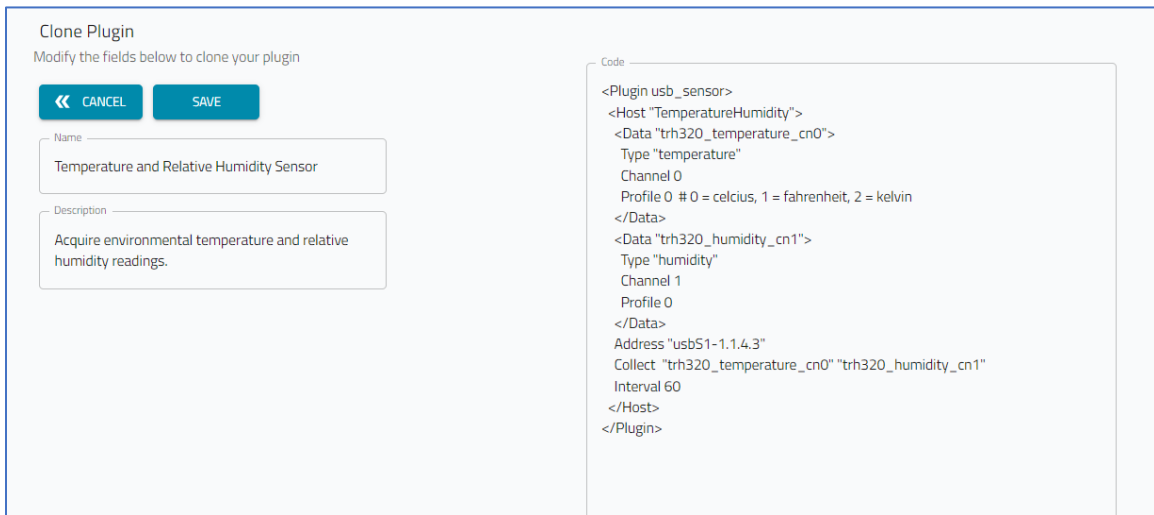
On the pop-up dialog, write down the **Local Serial Port** (i.e., **usbS1-3.4.1**)

Description	Value
Name	TemperatureHumidity
Local Serial Port	usbS1-3.4.1
Status	Connected
Type	usb_sensor
Mode	Enabled

- On the ZPE Cloud app, go to *APPS :: NODEGRID DATA LAKE :: PLUGINS*.



3. Locate **Temperature and Relative Humidity Sensor**, select checkbox, and click **Clone** (displays dialog).



4. For **Name**, enter **Temperature and Relative Humidity Sensor EXAMPLE**.

5. In the **Code** textbox:

Set **Address** to **usbS1-3.4.1**

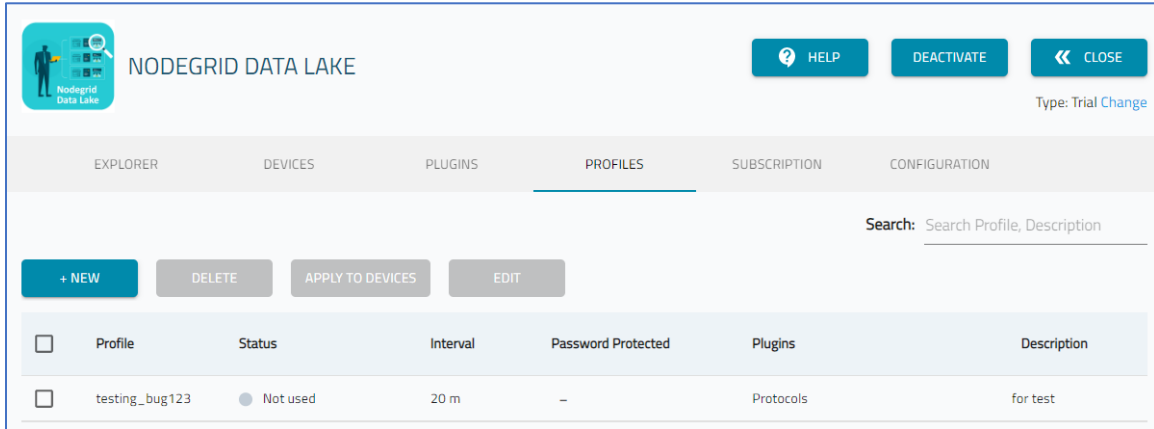
On **Profile** line (as needed), change to **Profile 0** (Celsius).

6. Click **Save**

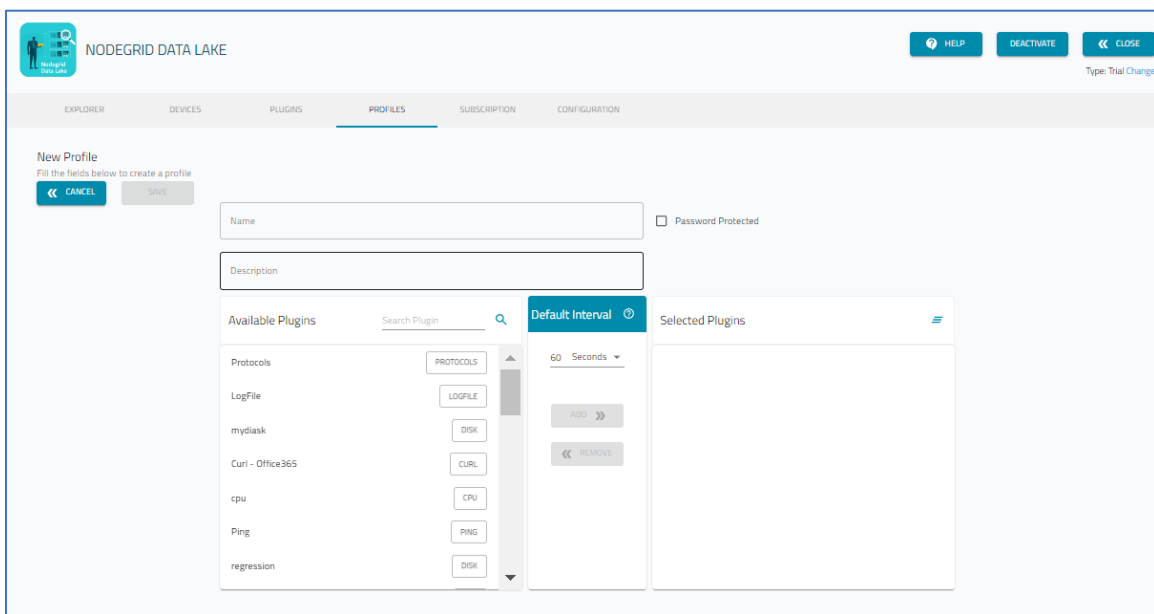
## Step 2 – Configure Data Lake Profile

1. Go to *APPS :: NODEGRID DATA LAKE :: PROFILES*.





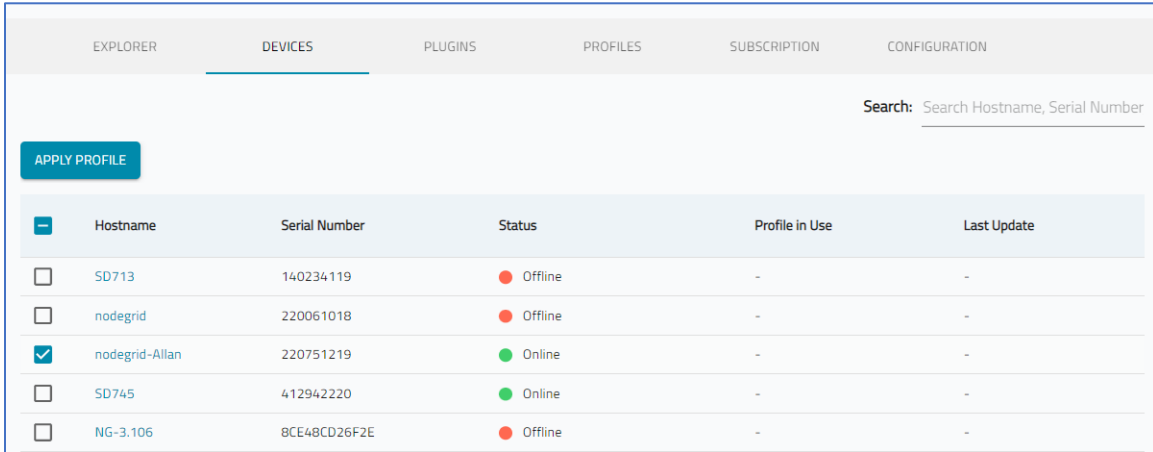
2. Click **+New** (displays dialog).



3. For **Name**, enter: **Temperature and RH Sensor PROFILE.**
4. For **Description**, enter: **Profile to collect data from Temperature and RH Sensor.**
5. In the *Available Plugins* panel, select **Temperature and Relative Humidity Sensor EXAMPLE.**
6. Click **Add >>**; (moves plugin to *Selected Plugins* panel).
7. Click **Save.**

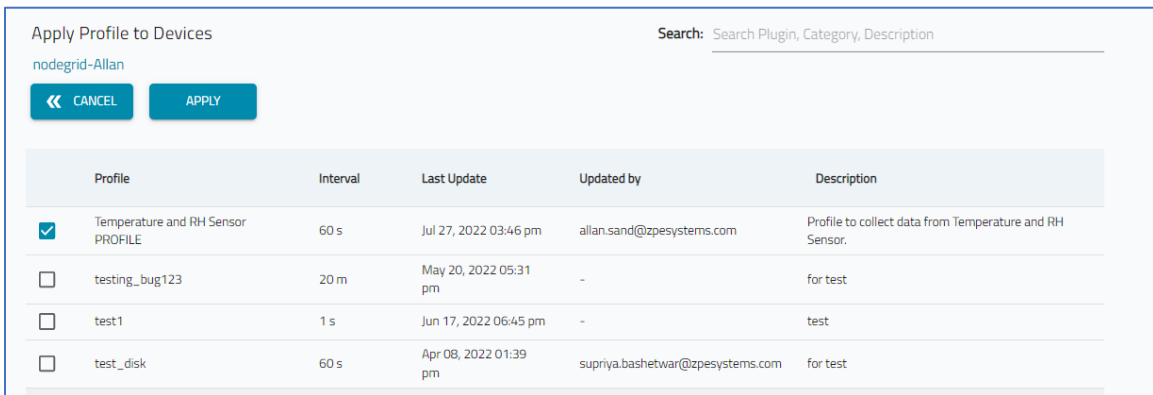
### Step 3 – Apply Profile to Device

1. Go to *APPS :: NODEGRID DATA LAKE :: DEVICES.*



	Hostname	Serial Number	Status	Profile in Use	Last Update
<input type="checkbox"/>	SD713	140234119	Offline	-	-
<input type="checkbox"/>	nodegrid	220061018	Offline	-	-
<input checked="" type="checkbox"/>	nodegrid-Allan	220751219	Online	-	-
<input type="checkbox"/>	SD745	412942220	Online	-	-
<input type="checkbox"/>	NG-3.106	8CE48CD26F2E	Offline	-	-

2. Select device (i.e., **Nodegrid-Allan**) checkbox. Click **APPLY PROFILE**.



	Profile	Interval	Last Update	Updated by	Description
<input checked="" type="checkbox"/>	Temperature and RH Sensor PROFILE	60 s	Jul 27, 2022 03:46 pm	allan.sand@zpesystems.com	Profile to collect data from Temperature and RH Sensor.
<input type="checkbox"/>	testing_bug123	20 m	May 20, 2022 05:31 pm	-	for test
<input type="checkbox"/>	test1	1 s	Jun 17, 2022 06:45 pm	-	test
<input type="checkbox"/>	test_disk	60 s	Apr 08, 2022 01:39 pm	supriya.bashtwar@zpesystems.com	for test

3. Select **Temperature and RH Sensor PROFILE**

4. Click **Apply**.

5. Confirmation dialog displays in lower right corner.

### Step 4 – Verify Apply Profile was Successful

There are two ways to confirm profile was successfully applied:

- Go to *APPS :: NODEGRID DATA LAKE :: PROFILES*.

When **Temperature and RH Sensor PROFILE** status changes **Not used** to **In Use**, the profile was successfully applied.

<input type="checkbox"/>	Profile	Status	Interval	Password Protected	Plugins	Description
<input type="checkbox"/>	Temperature and RH Sensor PROFILE	In Use	60 s	-	Temperature and Relative Humidity Sensor EXAMPLE	Profile to collect data from Temperature and RH Sensor.
<input type="checkbox"/>	testing_bug123	Not used	20 m	-	Protocols	for test
<input type="checkbox"/>	test1	Not used	1 s	-	regression	test

- Go to APPS :: NODEGRID DATA LAKE :: DEVICES.

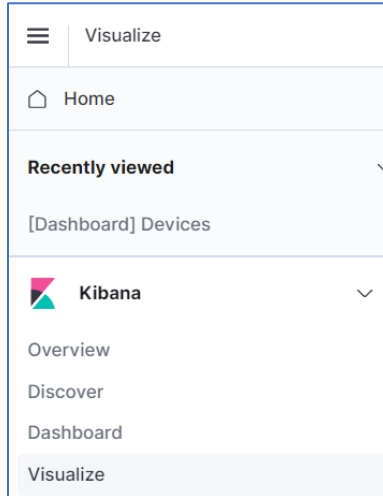
Locate **nodegrid-Allan** and check *Profile in Use* column. If applied, shows *Temperature and RH Sensor PROFILE*.

<input type="checkbox"/>	Hostname	Serial Number	Status	Profile in Use	Last Update
<input type="checkbox"/>	nodegrid	220061018	Offline	-	-
<input type="checkbox"/>	SD745	412942220	Online	-	-
<input type="checkbox"/>	SD738	15195P3003	Online	-	-
<input type="checkbox"/>	N663	000091638	Offline	-	-
<input type="checkbox"/>	N717	151272818	Online	-	-
<input type="checkbox"/>	NG-3.106	8CE48CD26F2E	Offline	-	-
<input type="checkbox"/>	nodegrid-Allan	220751219	Online	Temperature and RH Sensor PROFILE	Jul 27, 2022 04:16 pm
<input type="checkbox"/>	NG-3.185	778ADB25549A	Offline	-	-

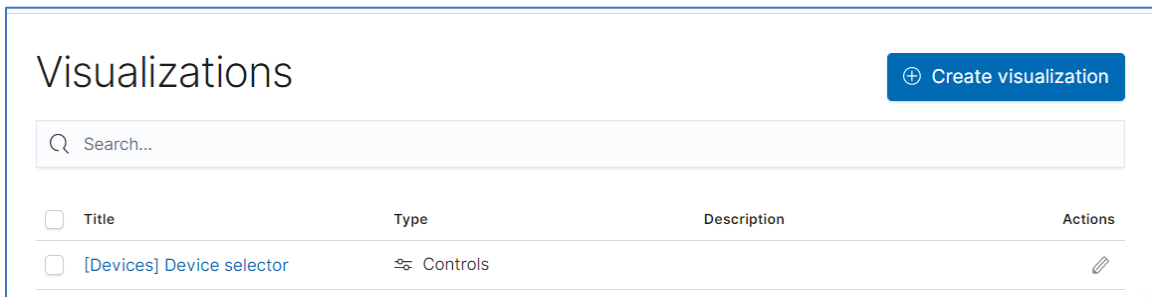
## Step 5 – Create Temperature Panel

**NOTE:** For instructions on how to manage Dashboard panels, go to the *ZPE Cloud User Guide (Appendix C :: Explorer tab)*.

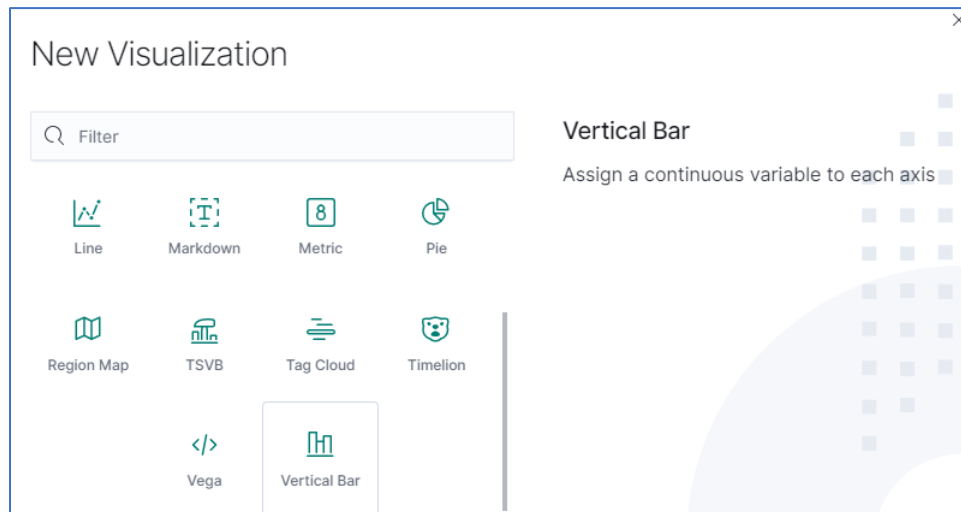
- Go to APPS :: NODEGRID DATA LAKE :: EXPLORER.
- Click **Hamburger** icon (left side). In Kibana section, click **Visualize**.



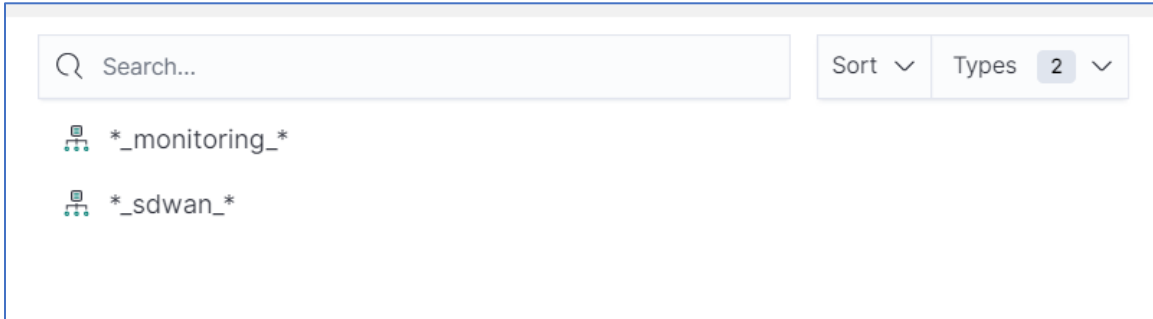
3. On *Visualizations* page, click **Create visualization**.



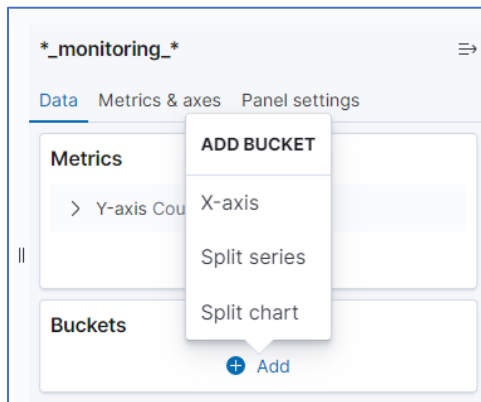
4. On the *New Visualizations* dialog, click **Vertical Bar**.



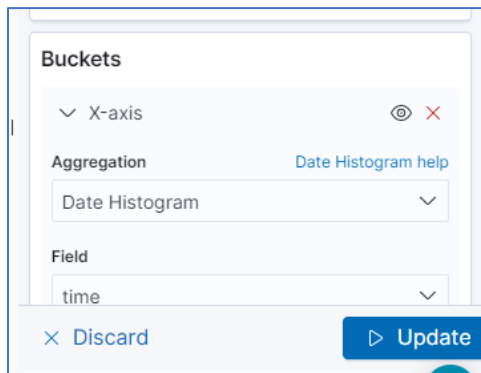
5. On the pop-up dialog, select **\*\_monitoring\_\***



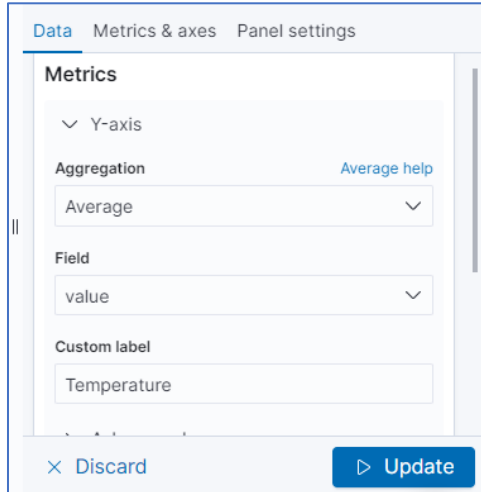
6. On the **Data** tab, **Buckets** section, click **Add**. On **ADD BUCKET**, click **X-axis**.



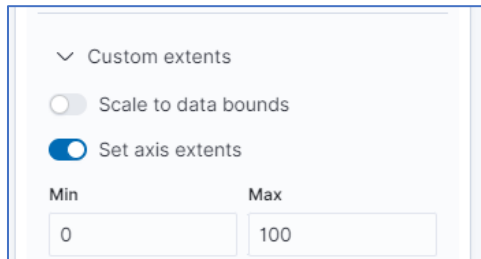
7. In **Aggregation** field, select **Date Histogram**



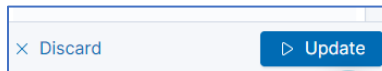
8. On **Data** tab, **Metrics** section expand **Y-Axis**. In **Aggregation** drop-down, select **Average**. On **Custom Field**, enter **Temperature**.



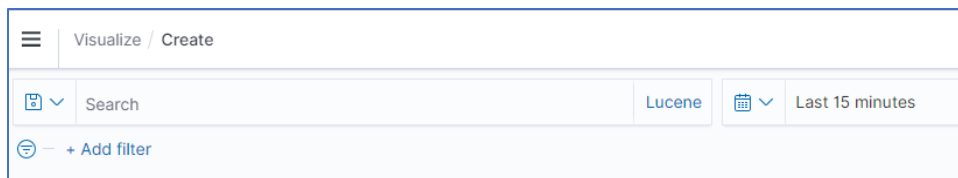
- On **Matrix & axes** tab, expand **Y axis LeftAxis-1 Temperature** section, scroll down and click **Custom extents**. On expanded dialog, select **Set axis extents** checkbox. For **Min**, enter **0**. For **Max**, enter **100**.



- Click **Update** button (right side)



- Click **Add a Filter**.



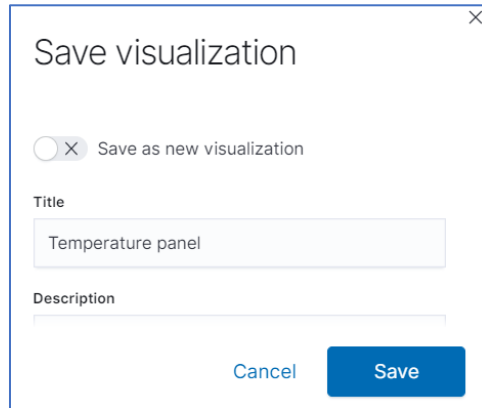
On the dialog, **Filter** drop-down, select **type**. (do not select “\_type”). Select **is**. Enter **temperature**. Click **Save**.

12. Click **Add a Filter**.

On the dialog, **Filter** drop-down, select **host**. (*do not select “\_host”*). Select **is**. Enter **TemperatureHumidity**. Click **Save**.

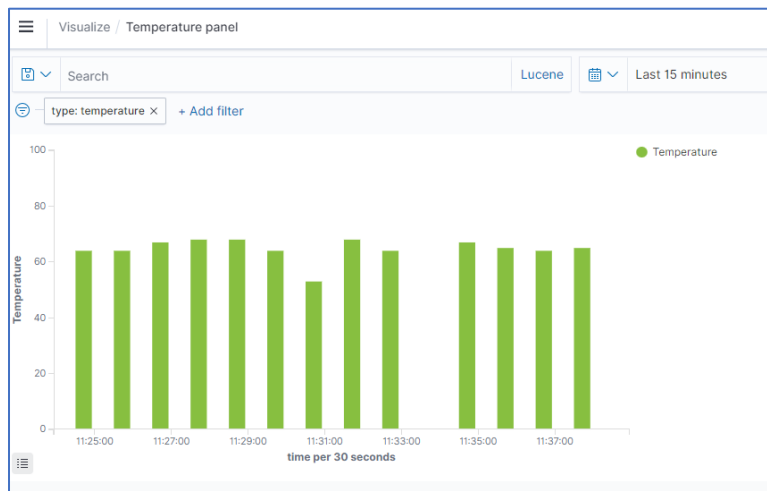
13. On the upper bar, click **Save**.

14. On the *Save Visualization* dialog, for **Name** enter **Temperature panel** and click **Save**.



A dialog box titled "Save visualization" with a close button (X) in the top right corner. It contains a radio button labeled "Save as new visualization" which is selected. Below this are two text input fields: "Title" with the text "Temperature panel" and "Description" which is empty. At the bottom are two buttons: "Cancel" and "Save".

15. The graph is displayed.

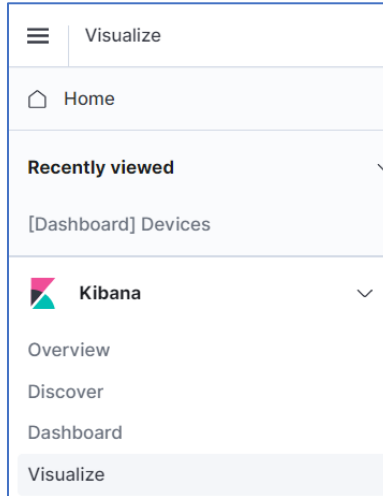


## Step 6 – Create Humidity Panel

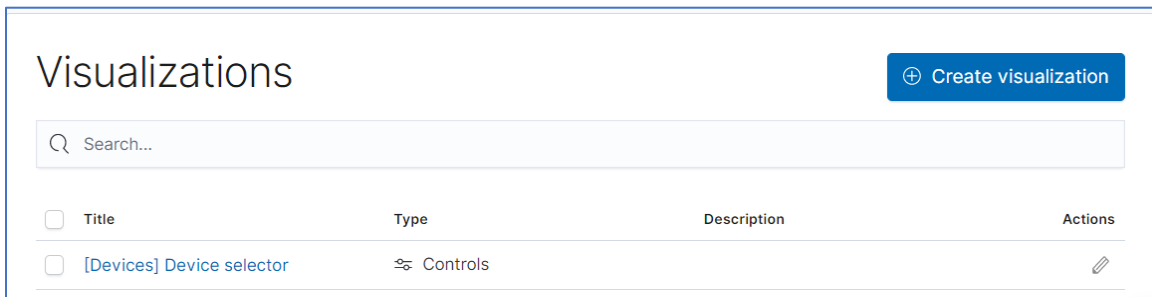
**NOTE:** For instructions on how to manage Dashboard panels, go to the *ZPE Cloud User Guide (Appendix C :: Explorer tab)*.

1. Go to *APPS :: NODEGRID DATA LAKE :: EXPLORER*.
2. Click **Hamburger** icon (left side). In Kibana section, click **Visualize**.

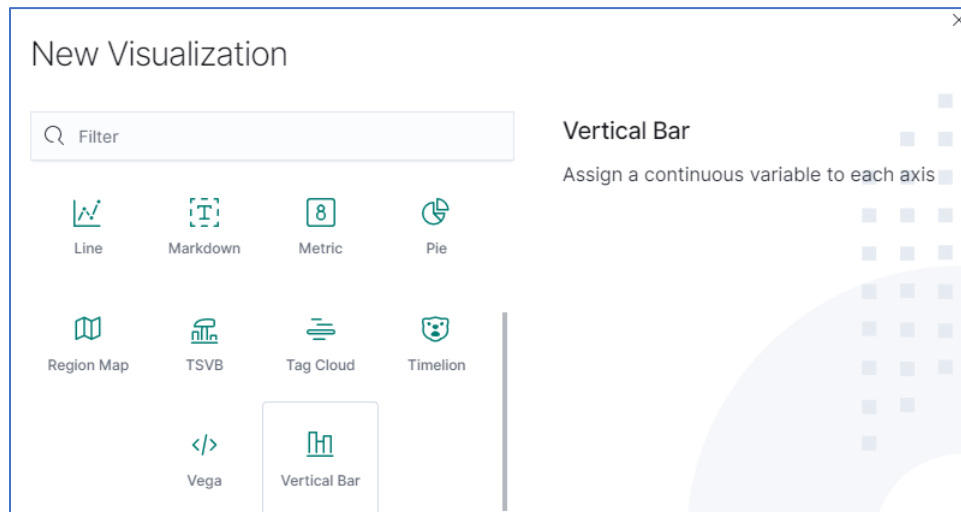




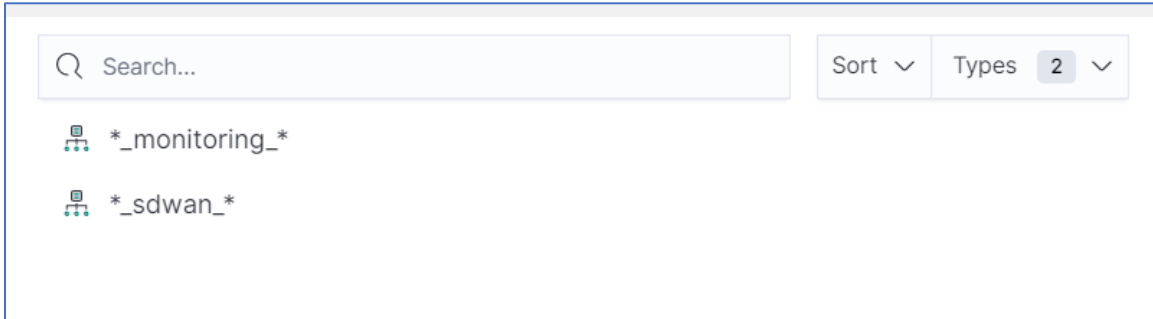
3. On *Visualizations* page, click **Create visualization**.



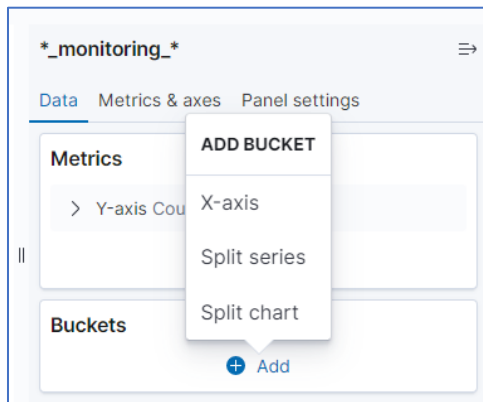
4. On the *New Visualizations* dialog, click **Vertical Bar**.



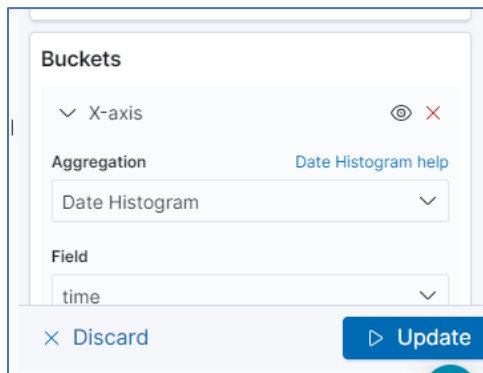
5. On the pop-up dialog, select **\*\_monitoring\_\***



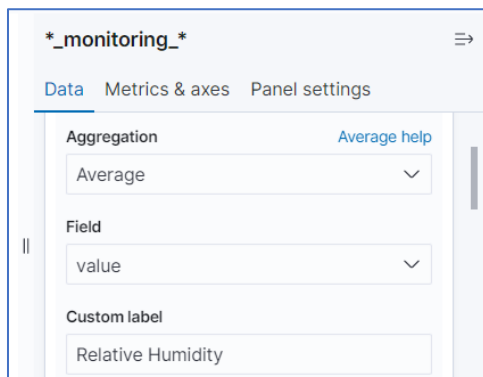
6. On the **Data** tab, **Buckets** section, click **Add**. On **ADD BUCKET**, click **X-axis**.



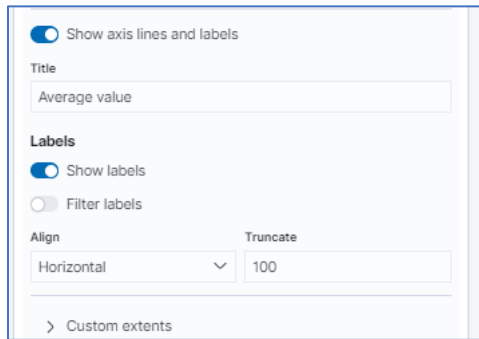
7. In **Aggregation** field, select **Date Histogram**



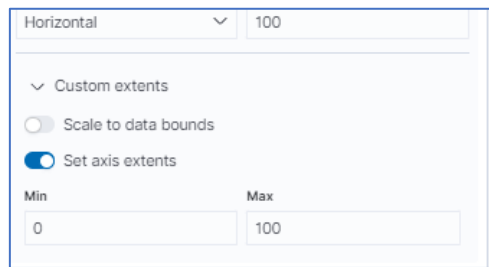
8. On **Data** tab, expand **Y-Axis**. In **Aggregation** drop-down, select **Average**. In **Field** drop-down, select **value**.



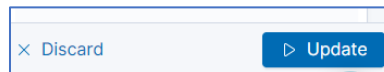
9. On **Matrix & axes** tab, **Y axis** section, scroll down and click **Custom extents**.



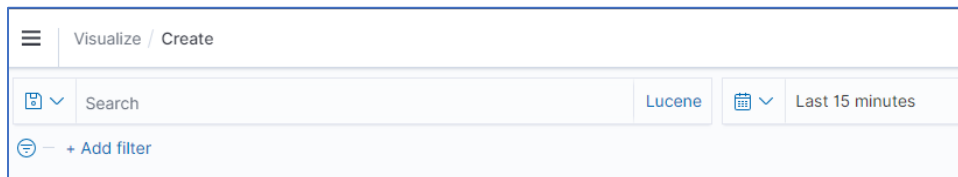
On expanded dialog, select **Set axis extents** checkbox. For **Min**, enter **0**. For **Max**, enter **100**.



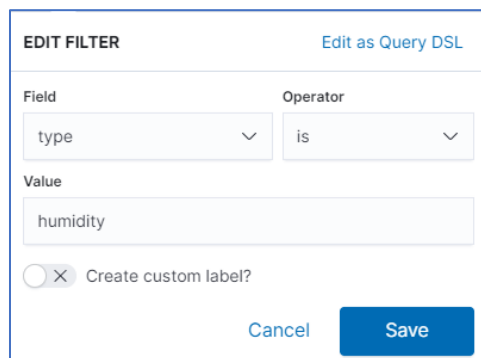
Click **Update** button (right side)



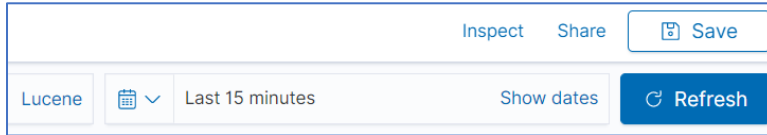
10. Click **Add a Filter**.



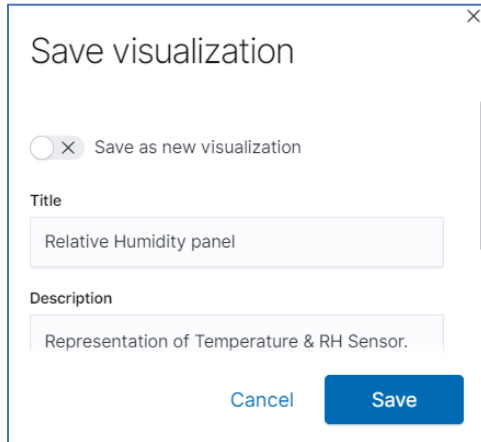
On the dialog, **Filter** drop-down, select **type**. Select **is**. Enter **humidity**. Click **Save**.



11. On the upper bar, click **Save**.



12. On the *Save Visualization* dialog, for **Name** enter: **Relative Humidity panel** and click **Save**.

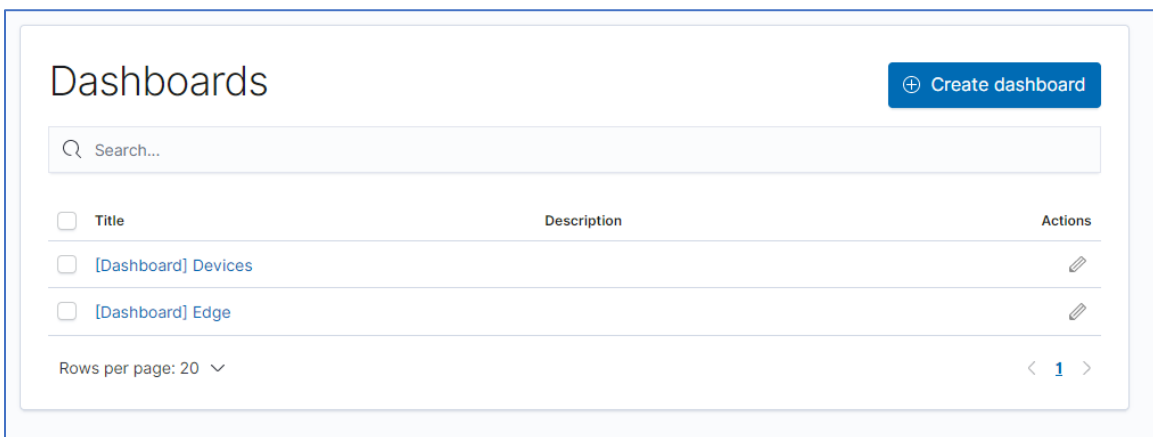


13. The graph is displayed.

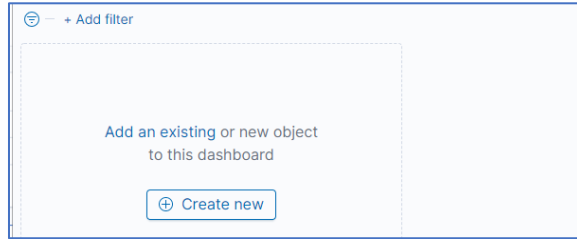
## Configure Sensor Dashboard

### Create Dashboard

1. Go to *APPS :: NODEGRID DATA LAKE :: EXPLORER*.
2. Click **Hamburger** icon (left side). In Kibana section, click **Dashboards**.

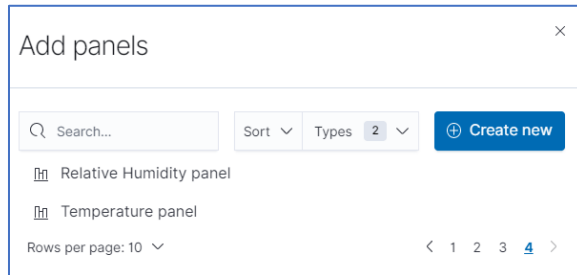


3. On the *Dashboards* dialog, click **Create Dashboard**.



Click on **Add an existing**.

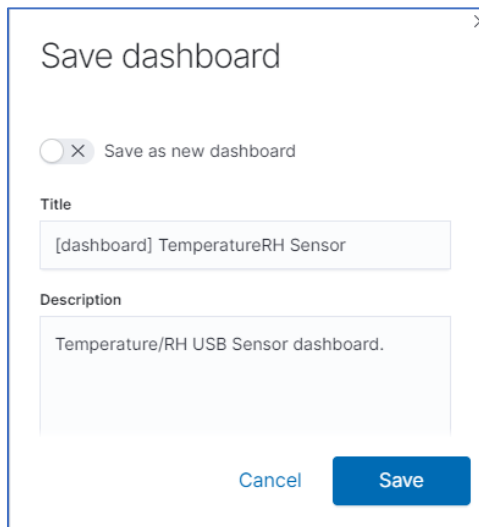
- On the *Add Panels* dialog, select **Temperature panel** and **Relative Humidity panel**.



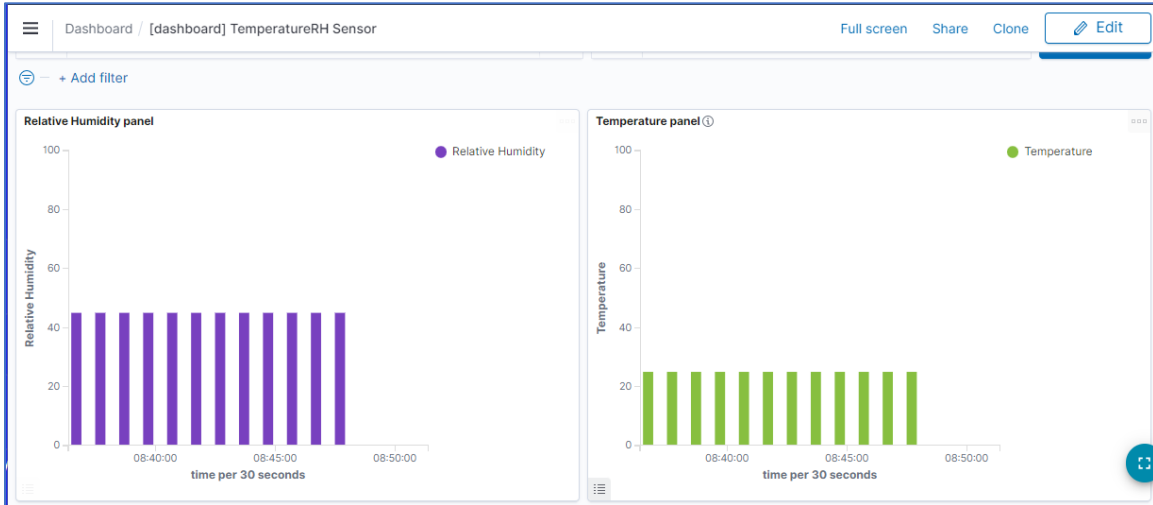
- Click outside the panel area to show the panels in the dashboard.
- Click **Save**.



- On the **Save** dialog: for **Name** enter **[dashboard] TemperatureRH Sensor**. For **Description**, enter *Temperature/RH USB Sensor dashboard*. Click **Save**.



- The new dashboard is displayed.



**NOTE:** On the main view, rearrange and resize panels, as needed.

## Configure Nodegrid Data Lake Alerts

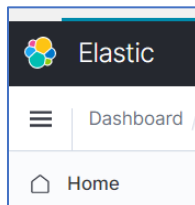
This is the general description to setup Alerts. The example uses Temperature. For Relative Humidity, use this process and adjust appropriate fields.

For the Temperature/RH sensor, these alerts need to be configured:

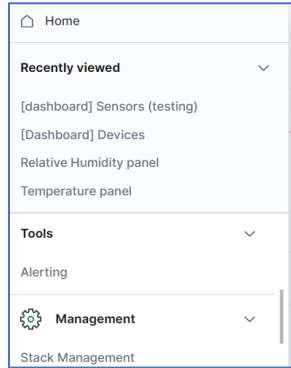
- Temperature High Critical Threshold
- Temperature High Warning Threshold
- Temperature Low Warning Threshold
- Temperature Low Critical Threshold
- Humidity High Critical Threshold
- Humidity High Warning Threshold
- Humidity Low Warning Threshold
- Humidity Low Critical Threshold

This example uses Temperature Critical.

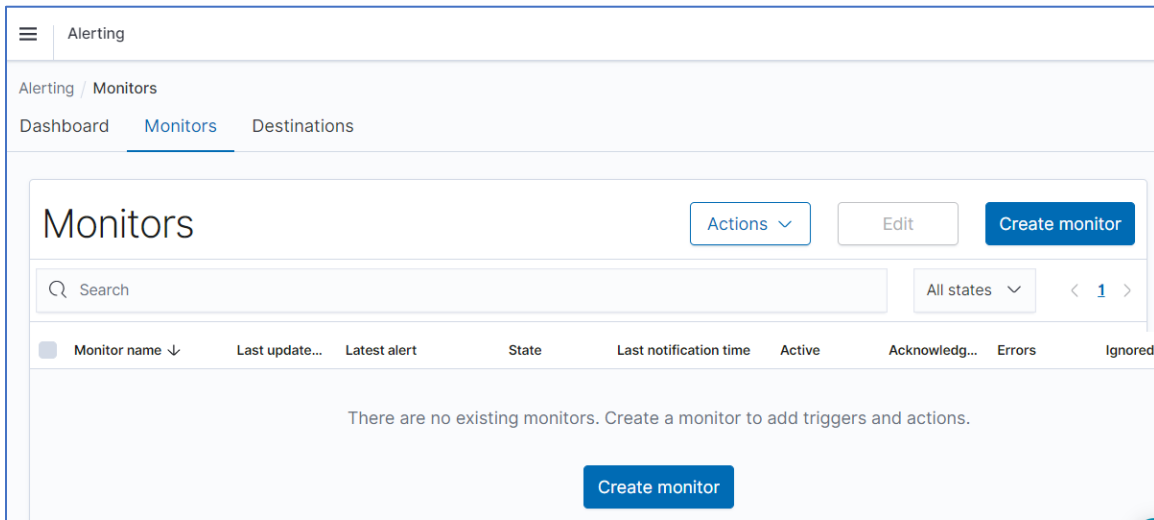
1. Go to *APPS :: NODEGRID DATA LAKE :: EXPLORER*.
2. Click the **Hamburger** icon under the *Elastic* logo



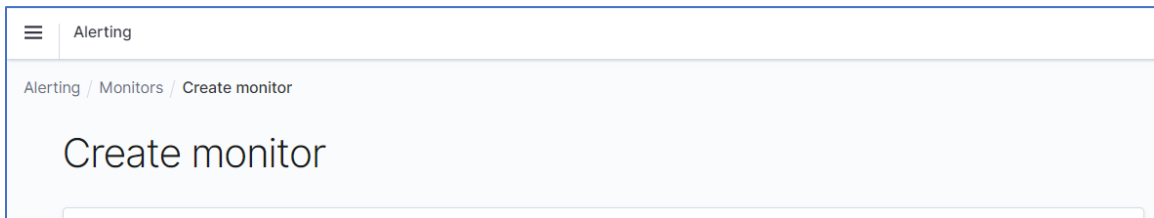
3. Scroll to **Tools** section, click **Alerting**.



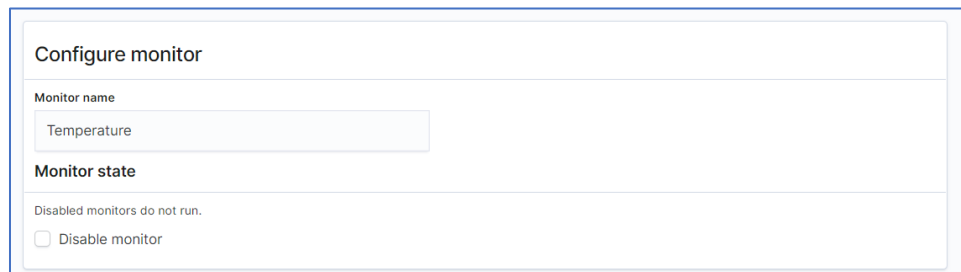
4. On the *Alerting* page, click on the **Monitors** tab.



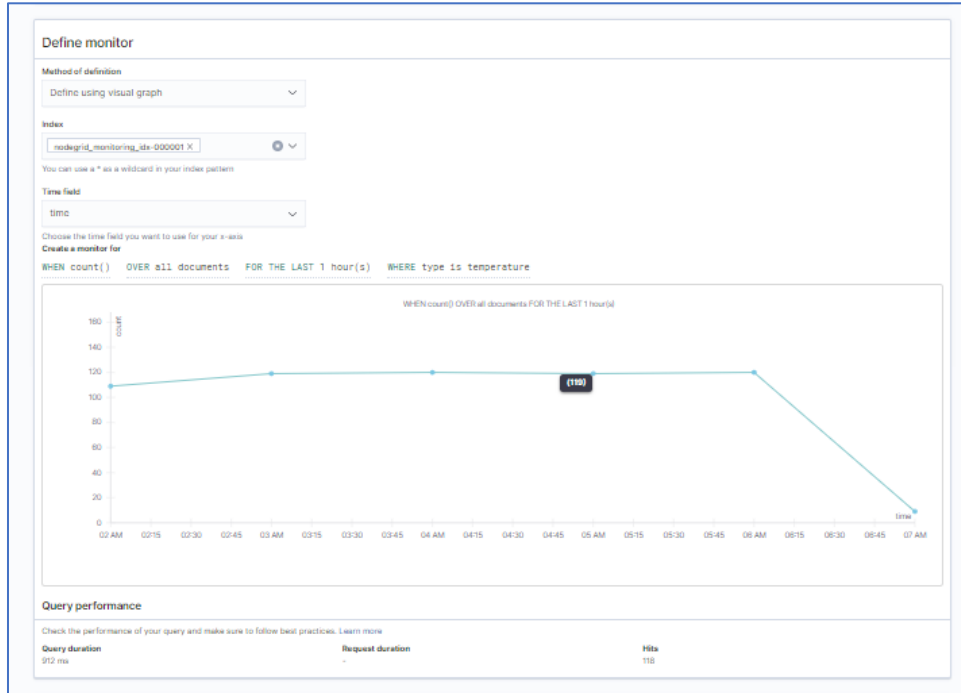
5. Click **Create monitor** (displays dialog).



6. In the *Configure monitor* section, **Monitor name** field, enter **Temperature**.



7. In *Define monitor* section:



On **Method of definition** drop-down, select **Define using visual graph**.

On **Index**, select **nodegrid\_monitoring\_idx\_000001**.

On **Time** drop-down, select **time**.

On **Create a monitor for fields**, select the following:

WHEN = average( )

OVER = all documents

FOR THE LAST = 1 minute(s)

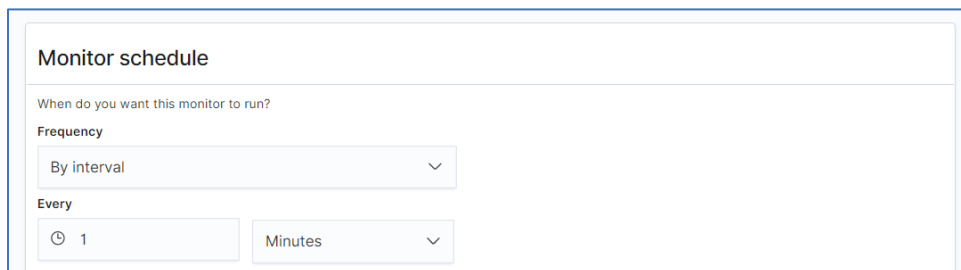
WHERE =

Select **type**

Select **Is**

Enter **temperature**

8. In *Monitor schedule* section:



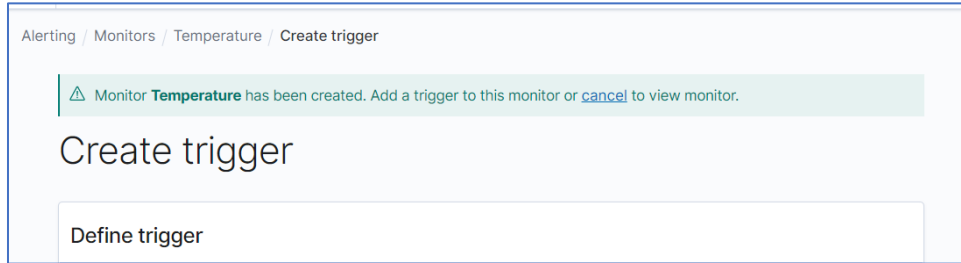
On **Frequency** drop-down, select **By interval**.



In **Every** field, enter **1 Minute**.

9. Click **Create**.

## Create Trigger



1. In *Define trigger* section:

**Trigger name**

Trigger names must be unique. Names can only contain letters, numbers, and special characters.

**Severity level**

Severity levels help you organize your triggers and actions. A trigger with a high severity level might page a specific individual, whereas a trigger with a low severity level might email a list.

**Trigger condition**

IS ABOVE 30

For **Trigger name**, enter **Temperature Waring – Critical**.

On **Severity level** drop-down, select one (1, 2, 3, 4, 5):

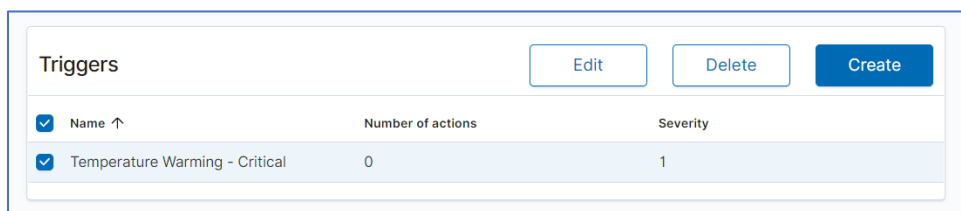
In **Trigger condition**, select:

**IS ABOVE 30**

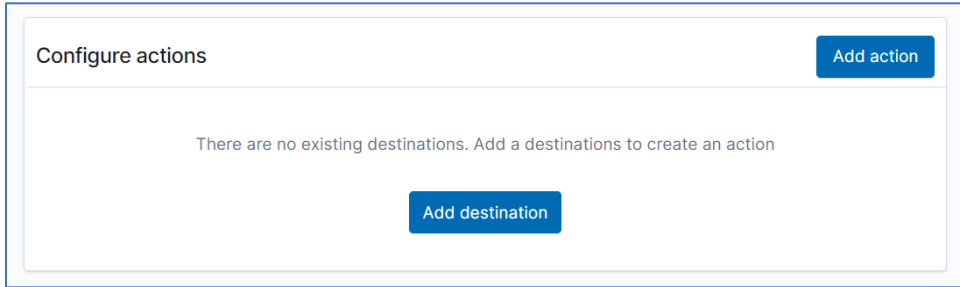
2. Click **Create**.

## Add Destination:

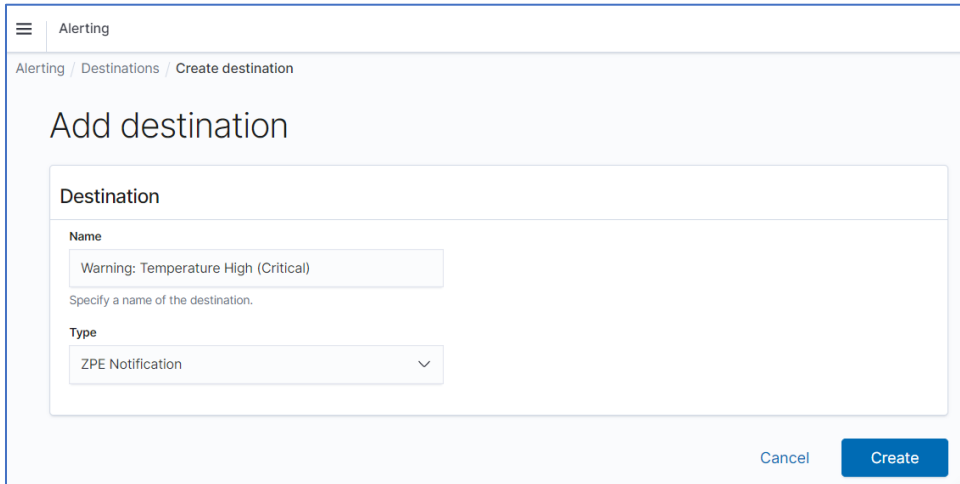
1. On **Monitors** tab, click **Temperature** (displays *Temperature* dialog).
2. Scroll to **Triggers** section, select checkbox of new trigger, and click **Edit**.



3. In **Configure actions** section, click **Add destination** (displays dialog).



4. On *Add destination* dialog



For **Name**, enter **Warning: Temperature High (Critical)**.

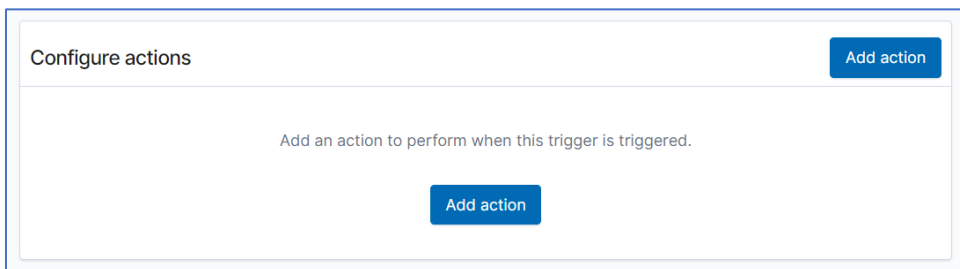
On **Type** drop-down, select **ZPE Notification**.

Click **Create**.

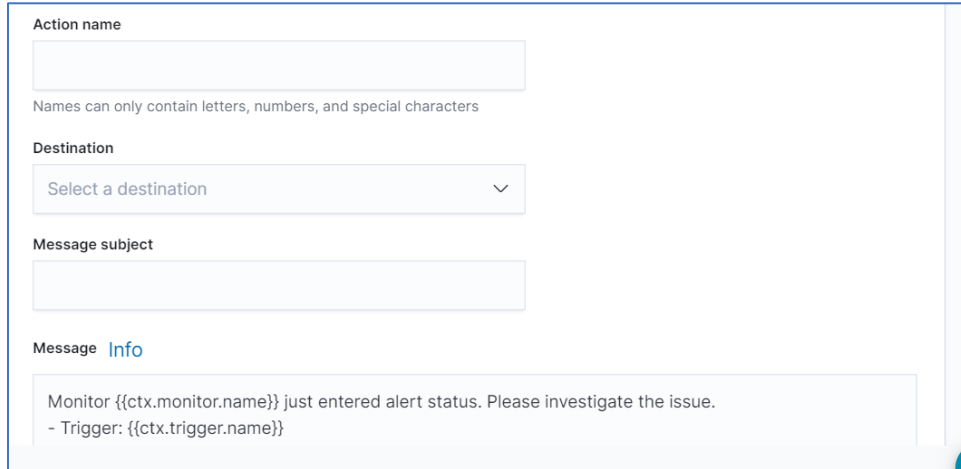
## Configure Actions

1. On **Monitors** tab, click **Temperature** (displays *Temperature* dialog).
2. Scroll to **Triggers** section, select checkbox of new trigger, and click **Edit**.

In **Configure actions** section, click **Add action** (displays dialog).



3. On **Configure actions** dialog:



The screenshot shows a configuration form with the following fields and sections:

- Action name:** A text input field with a placeholder. Below it, a note states: "Names can only contain letters, numbers, and special characters".
- Destination:** A dropdown menu with the placeholder text "Select a destination".
- Message subject:** A text input field.
- Message:** A section with a blue "Info" icon and a text area containing the following text:  
Monitor {{ctx.monitor.name}} just entered alert status. Please investigate the issue.  
- Trigger: {{ctx.trigger.name}}

For **Action name**, enter **Temp-Notif-Critical**.

On **Destination** drop-down, select **Warning: Temperature High (Critical)**.

On **Message subject**, enter **Critical Temperature Alert**.

In **Message panel**, edit as needed.

Click **Update**.

4. Under *Alerting :: Monitor :: Temperature :: History*, the graph of the trigger should appear
5. When an alarm is triggered, see *Alerting :: Dashboard* for details.

The alarm will show up on the ZPE Cloud Notifications. Emails are distributed (if assigned to Warning level notifications).

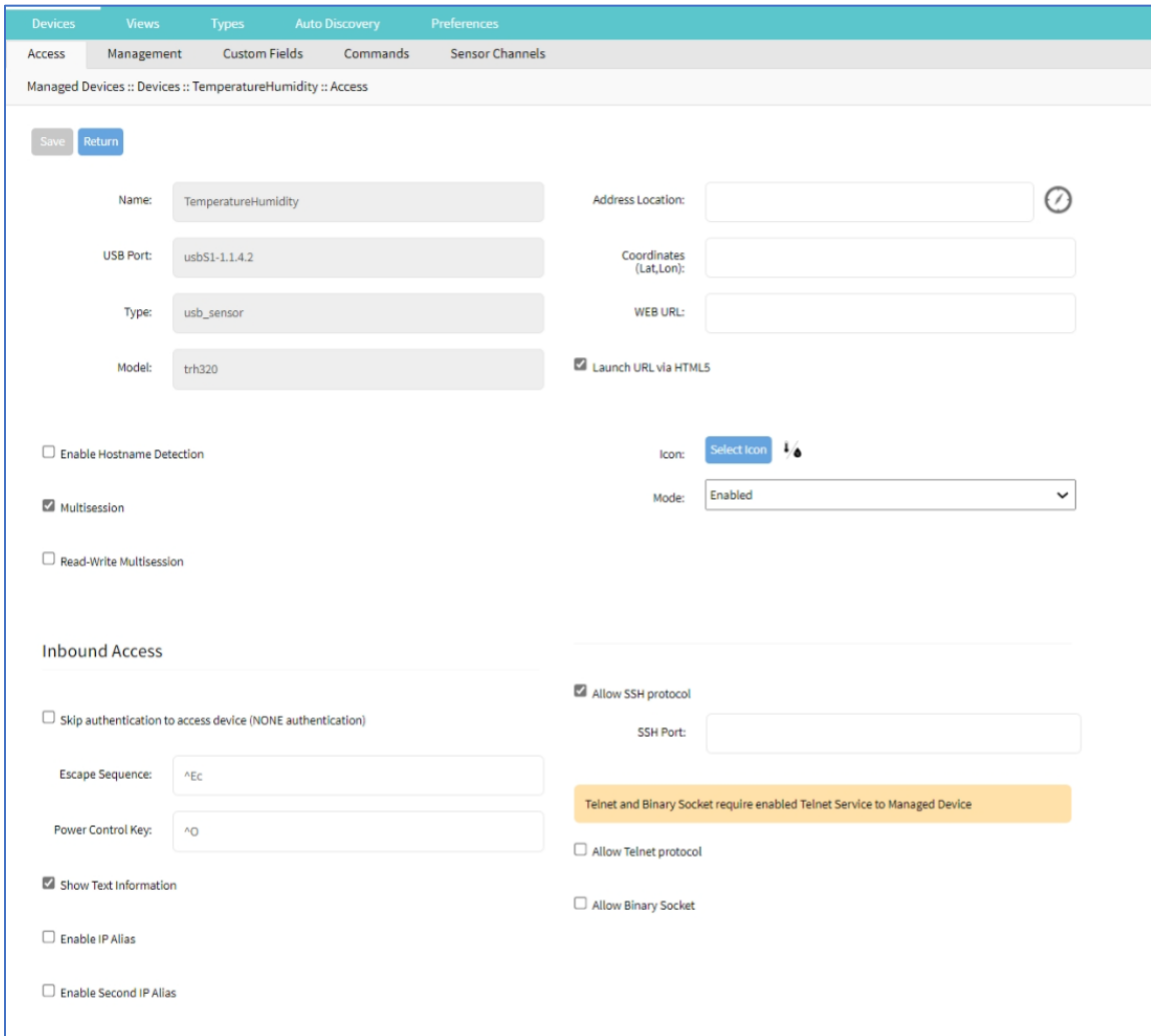
## Additional Functions

### Configure Sensor Settings on Nodegrid Device

To perform these procedures, log into the Nodegrid Device.

## Access sub-tab

1. Go to *Managed Devices :: Devices :: TemperatureHumidity :: Access*.



The screenshot displays the configuration interface for the 'Access' sub-tab of a 'TemperatureHumidity' device. The interface includes a top navigation bar with tabs for 'Devices', 'Views', 'Types', 'Auto Discovery', and 'Preferences'. Below this, there are sub-tabs for 'Access', 'Management', 'Custom Fields', 'Commands', and 'Sensor Channels'. The main content area is titled 'Managed Devices :: Devices :: TemperatureHumidity :: Access' and contains several sections:

- General Settings:** Includes fields for Name (TemperatureHumidity), USB Port (usbS1-1.1.4.2), Type (usb\_sensor), and Model (trh320). There are also fields for Address Location, Coordinates (Lat,Lon), and WEB URL. A 'Launch URL via HTML5' checkbox is checked.
- Hostname Detection:** Includes checkboxes for 'Enable Hostname Detection' (unchecked), 'Multisession' (checked), and 'Read-Write Multisession' (unchecked).
- Inbound Access:** Includes checkboxes for 'Skip authentication to access device (NONE authentication)' (unchecked), 'Allow SSH protocol' (checked), 'Allow Telnet protocol' (unchecked), and 'Allow Binary Socket' (unchecked). There are also input fields for 'Escape Sequence' (^E), 'Power Control Key' (^Q), and 'SSH Port'. A 'Show Text Information' checkbox is checked.
- Mode:** A dropdown menu is set to 'Enabled'.
- Icon:** A 'Select Icon' button is present.

A yellow warning banner at the bottom of the configuration area states: 'Telnet and Binary Socket require enabled Telnet Service to Managed Device'.

2. As needed (many of these are optional):

Enter **Address Location**.

Enter **Coordinates (Lat,Lon)**

Enter **WEB URL**.

Select **Launch URL via HTML5** checkbox.

Select **Enable Hostname Detection** checkbox.

Select **Multisession** checkbox.

Select **Read-Write Multisession** checkbox.

Click **Icon** (on pop-up, click on the preferred icon)

On **Mode** drop-down, select one (**Enabled, On-demand, Disabled, Discovered**).

3. On *Inbound Access* menu:

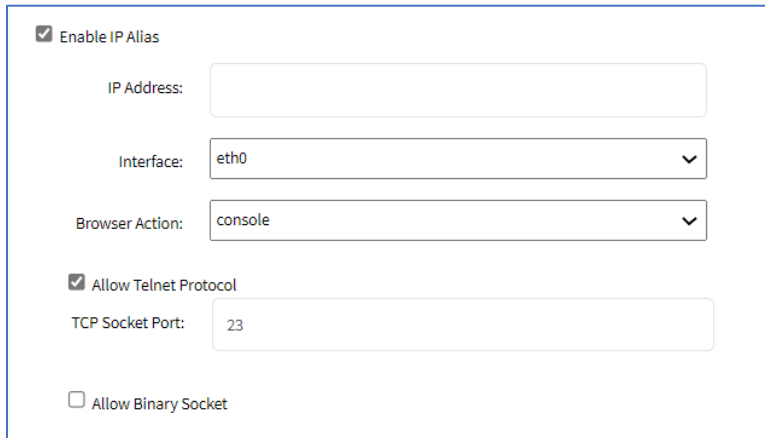
Select **Skip authentication to access device (NONE authentication)** checkbox.

Enter **Escape Sequence** (default: ^Ec)

Enter **Power Control Key** (default: ^O)

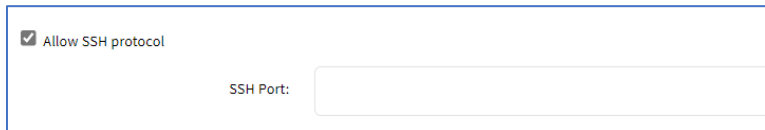
Select **Show Text Information** checkbox.

Select **Enable IP Alias** checkbox (extends dialog). Enter details as needed.

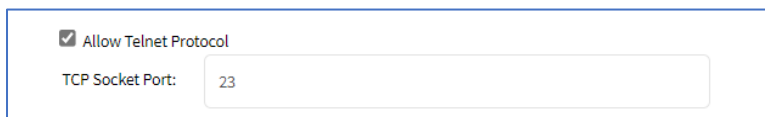


Select **Enable second IP Alias** checkbox (repeats above)

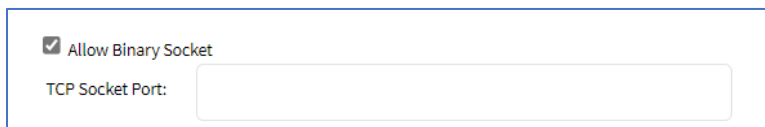
Select **Allow SSH Protocol** checkbox (extends dialog). Enter **SSH Port**.



Select **Allow Telnet** protocol checkbox (extends dialog). Enter **Telnet Port**.



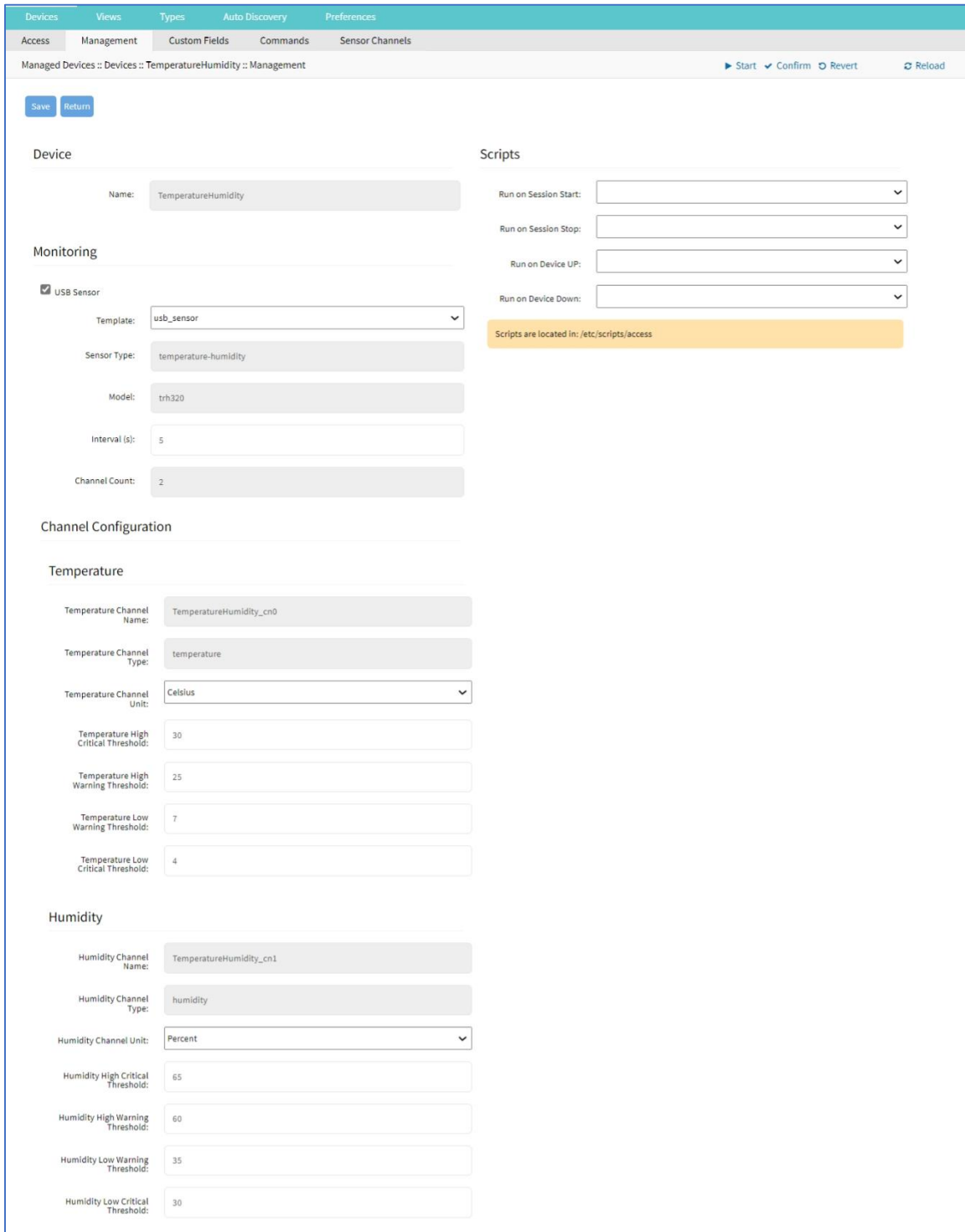
Select Allow **Binary Socket** checkbox (extends dialog). Enter **TCP Socket Port**.



4. Click **Save**.

## Management sub-tab

1. Go to *Managed Devices :: Devices :: TemperatureHumidity :: Management*.
2. In the *Monitoring* menu:
  - Select **USB Sensor** checkbox (expands dialog).



The screenshot displays the configuration interface for the THS-U01 USB Sensor. The top navigation bar includes tabs for 'Devices', 'Views', 'Types', 'Auto Discovery', and 'Preferences'. The current view is 'Management', with sub-tabs for 'Access', 'Management', 'Custom Fields', 'Commands', and 'Sensor Channels'. The breadcrumb path is 'Managed Devices :: Devices :: TemperatureHumidity :: Management'. Action buttons for 'Start', 'Confirm', 'Revert', and 'Reload' are visible.

**Device Information:**

- Name: TemperatureHumidity

**Monitoring Section:**

- USB Sensor**
- Template: usb\_sensor
- Sensor Type: temperature-humidity
- Model: trh320
- Interval (s): 5
- Channel Count: 2

**Scripts Section:**

- Run on Session Start: [Dropdown]
- Run on Session Stop: [Dropdown]
- Run on Device UP: [Dropdown]
- Run on Device Down: [Dropdown]
- Scripts are located in: /etc/scripts/access

**Channel Configuration Section:**

**Temperature**

- Temperature Channel Name: TemperatureHumidity\_cn0
- Temperature Channel Type: temperature
- Temperature Channel Unit: Celsius
- Temperature High Critical Threshold: 30
- Temperature High Warning Threshold: 25
- Temperature Low Warning Threshold: 7
- Temperature Low Critical Threshold: 4

**Humidity**

- Humidity Channel Name: TemperatureHumidity\_cn1
- Humidity Channel Type: humidity
- Humidity Channel Unit: Percent
- Humidity High Critical Threshold: 65
- Humidity High Warning Threshold: 60
- Humidity Low Warning Threshold: 35
- Humidity Low Critical Threshold: 30

On **Template** drop-down, select one (in this example, only **usb\_sensor** is available)

Enter **Interval (seconds)**.

3. In *Channel Configuration* menu: (assign values as preferred)

In *Temperature* menu:

In **Temperature Channel Unit** drop-down, select **Celsius (Celsius, Fahrenheit, Kelvin)**.

In **Temperature High Critical Threshold**, enter **30**.

In **Temperature High Warning Threshold**, enter **25**.

In **Temperature Low Warning Threshold**, enter **7**.

In **Temperature Low Critical Threshold**, enter **4**.

In *Humidity* menu:

In **Humidity Channel Unit** drop-down, select **Percent**.

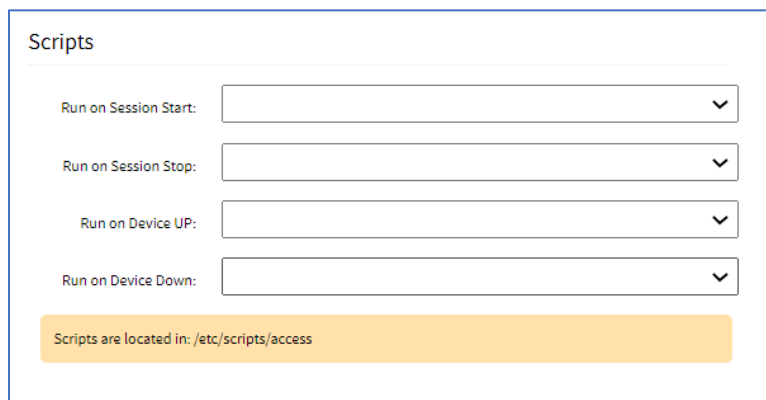
In **Humidity High Critical Threshold**, enter **65**.

In **Humidity High Warning Threshold**, enter **60**.

In **Humidity Low Warning Threshold**, enter **35**.

In **Humidity Low Critical Threshold**, enter **30**.

4. In the *Scripts* menu: (if scrips are available)



The screenshot shows a configuration window titled "Scripts". It contains four rows, each with a label and a drop-down menu:

- Run on Session Start: [drop-down menu]
- Run on Session Stop: [drop-down menu]
- Run on Device UP: [drop-down menu]
- Run on Device Down: [drop-down menu]

At the bottom of the window, there is a yellow banner with the text: "Scripts are located in: /etc/scripts/access".

On **Run on Session Start** drop-down, select a script.

On **Run on Session Stop** drop-down, select a script.

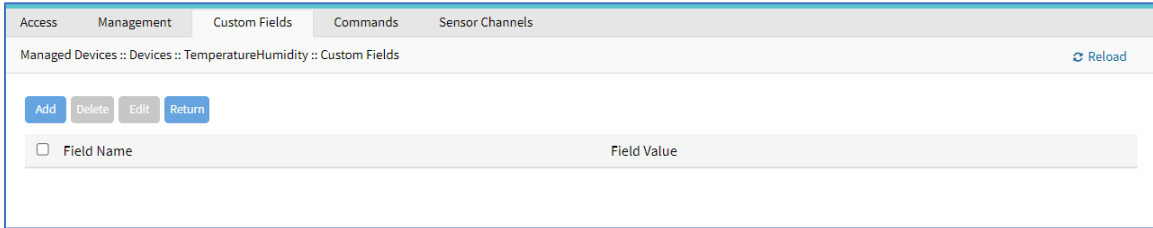
On **Run on Device UP** drop-down, select a script.

On **Run on Device Down** drop-down, select a script.

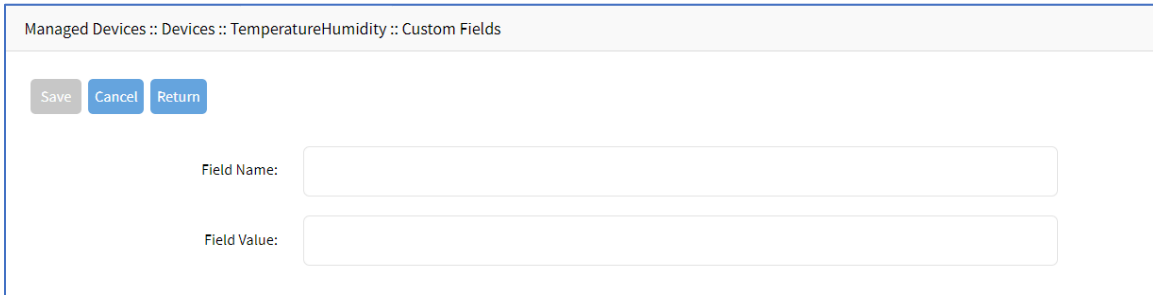
5. Click **Save**.

### **Custom Fields sub-tab**

1. Go to *Managed Devices :: Devices :: TemperatureHumidty :: Custom Fields*.



2. To create a custom field, click **Add** (display's dialog).



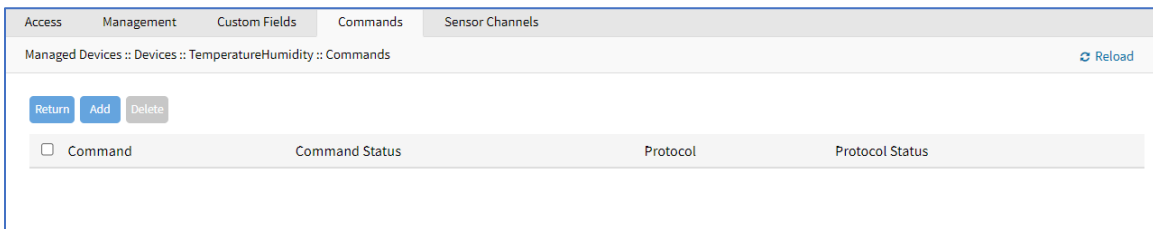
Enter **Field Name**.

Enter **Field Value**.

3. Click **Save**.

### Commands sub-tab

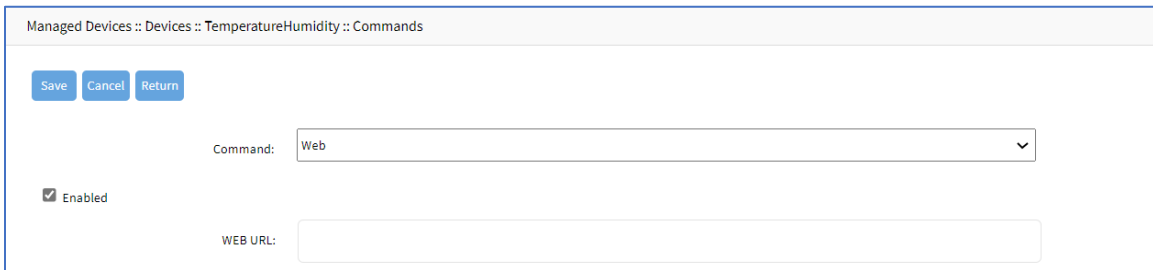
1. Go to *Managed Devices :: Devices :: TemperatureHumidity :: Commands*.



2. To create a custom command, click **Add**.

In **Command** drop-down select one (**Web, Custom Commands**).

Select **Web** (displays dialog)



Select **Enabled** checkbox.

Enter **WEB URL**.



Select **Custom Commands** (displays dialog)

Select **Enabled** checkbox.

In **Script** drop-down, select one.

Select **Enabled** checkbox.

Enter **Command Label**.

(Repeat as needed)

3. Click **Save**.

### Sensor Channels sub-tab

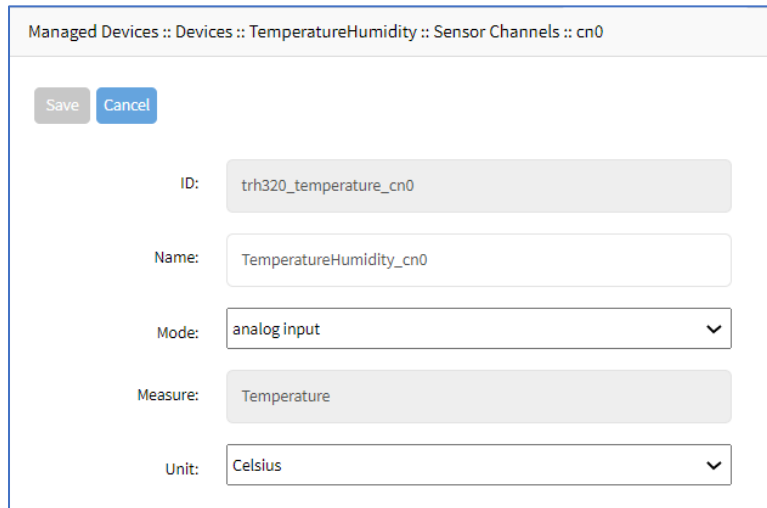
The table displays configured sensor channels.

1. Go to *Managed Devices :: Devices :: TemperatureHumidity :: Sensor Channels*.

Name	Port	Status	Type	Measure	Unit
<input type="checkbox"/> TemperatureHumidity_cn0	temperature_cn0	Enabled	analog input	Temperature	Celsius
<input type="checkbox"/> TemperatureHumidity_cn1	humidity_cn1	Enabled	analog input	Humidity	Percent

2. To edit channel details, click on name (displays dialog)

## Temperature channel



Managed Devices :: Devices :: TemperatureHumidity :: Sensor Channels :: cn0

Save Cancel

ID: trh320\_temperature\_cn0

Name: TemperatureHumidity\_cn0

Mode: analog input

Measure: Temperature

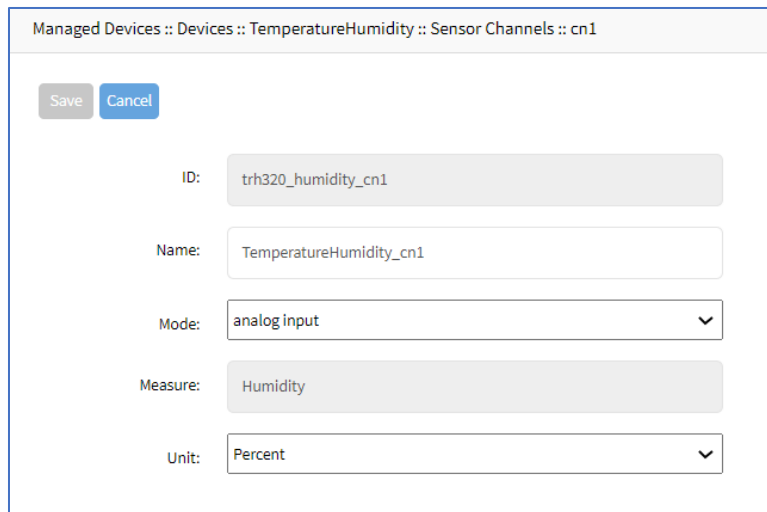
Unit: Celsius

Edit **Name** (as needed).

On **Mode** drop-down, select one (**analog input**).

On **Unit** drop-down, select one (**Celsius, Fahrenheit, Kelvin**).

## Humidity channel:



Managed Devices :: Devices :: TemperatureHumidity :: Sensor Channels :: cn1

Save Cancel

ID: trh320\_humidity\_cn1

Name: TemperatureHumidity\_cn1

Mode: analog input

Measure: Humidity

Unit: Percent

Edit **Name** (as needed).

On **Mode** drop-down, select one (**analog input**).

On **Unit** drop-down, select one (**Percent**).

3. Click **Save**.

## Configure Sensor (CLI)

After the USB sensor is installed, apply the following configuration steps.

## Show Available Channels

```
[admin@nodegrid /]# cd /settings/devices/TemperatureHumidity/sensor_channels/
[admin@nodegrid sensor_channels]# show
* name                port                status  type                measure  unit
* =====            =====            =====  =====            =====  =====
* TemperatureHumidity_cn0  temperature_cn0  Enabled  analog input       Temperature  Celsius
* TemperatureHumidity_cn1  humidity_cn1     Enabled  analog input       Humidity     Percent
[admin@nodegrid sensor_channels]#
```

## Channel Configuration

```
[admin@nodegrid /]# cd
/settings/devices/TemperatureHumidity/sensor_channels/TemperatureHumidity_cn0
[admin@nodegrid TemperatureHumidity_cn0]# set <TAB> <TAB>
name= unit=
[admin@nodegrid TemperatureHumidity_cn0]# set unit= <TAB><TAB>
celsius    Fahrenheit    kelvin
[admin@nodegrid TemperatureHumidity_cn0]# set unit=celsius
[+admin@nodegrid TemperatureHumidity_cn0]# commit
[admin@nodegrid TemperatureHumidity_cn0]#
```

## Data Acquisition

```
[admin@nodegrid /]# cd /system/hw_monitor/usb_sensors/
[admin@nodegrid usb_sensors]# show
* name                value unit  description
* =====            =====  =====  =====
* temperaturehumidity_cn0  40.32 Celsius Temperature sensor value in degrees Celsius.
* temperaturehumidity_cn1  73.54 Percent Humidity sensor value in percent relative humidity.
[admin@nodegrid usb_sensors]#
```

## Monitoring and Alarms

```
[admin@nodegrid /]# cd /settings/devices/TemperatureHumidity/management
[admin@nodegrid management]# set usb_sensor=yes
[+admin@nodegrid management]# show
name: TemperatureHumidity
usb_sensor = yes
monitoring_usb_sensor_template = usb_sensor
model: trh320
monitoring_usb_sensor_interval = 120
channel count: 2
temperature:
temperature_channel_name: TemperatureHumidity_cn0
temperature_channel_type: temperature
temperature_channel_unit = celsius
temperature_high_critical_threshold =
temperature_high_warning_threshold =
```

```

temperature_low_warning_threshold =
temperature_low_critical_threshold =
humidity:
humidity_channel_name: TemperatureHumidity_cn1
humidity_channel_type: humidity
humidity_channel_unit = percent
humidity_high_critical_threshold =
humidity_high_warning_threshold =
humidity_low_warning_threshold =
humidity_low_critical_threshold =
[+admin@nodegrid management]# set high/low critical/warning thresholds for alarms.
[+admin@nodegrid management]# commit
[admin@nodegrid management]#
    
```

## Set Sensor Monitoring Interval

The interval values are used in Nodegrid Dashboard for temperature and relative humidity.

```

[admin@nodegrid /]# cd /settings/devices/TemperatureHumidity/management
[admin@nodegrid-management]# set usb_sensor=yes
[+admin@nodegrid management]# set monitoring_usb_sensor_interval=5
[+admin@nodegrid management]# commit
[admin@nodegrid management]#
    
```

## Configure Kibana Sensor Readings on Nodegrid Device

Make sure Kibana is enabled on each Nodegrid device that needs to generate the graph (*Security :: Services :: General Services*). If there are more than one Nodegrid device with this sensor, consider using ZPE Cloud for central management and Data Lake collection.

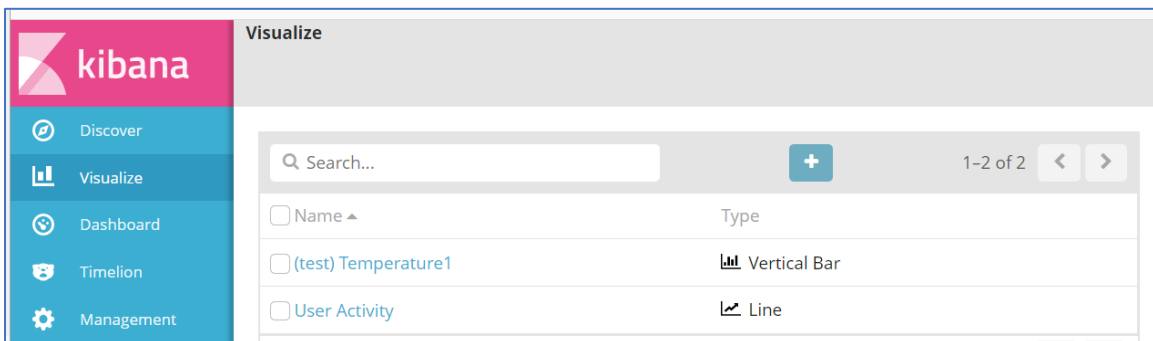
Make sure Kibana is enabled (*Security :: Services :: General Services*).

### Create Graph Panels

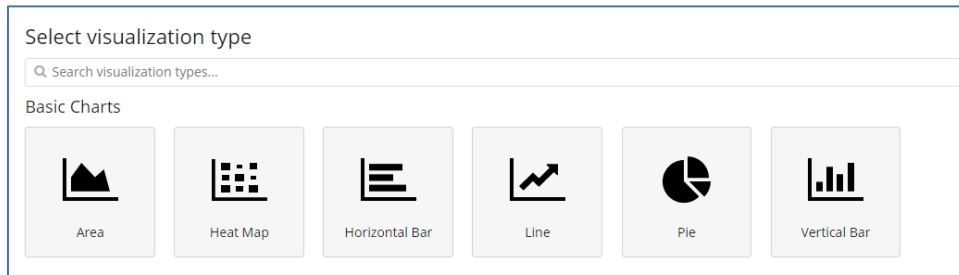
#### Create Graph: Temperature1

This example uses a bar chart graph.

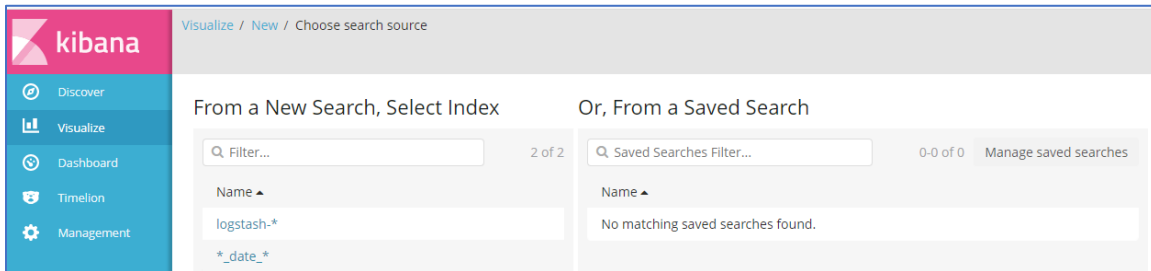
1. Go to *Dashboard :: Visualize* and click the  icon.



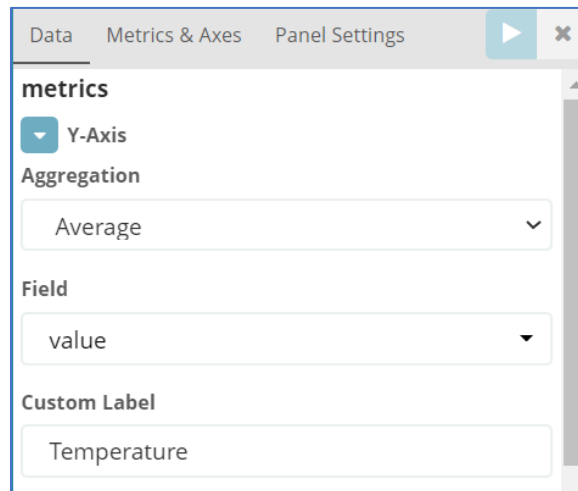
- Click **Vertical Bar** chart.



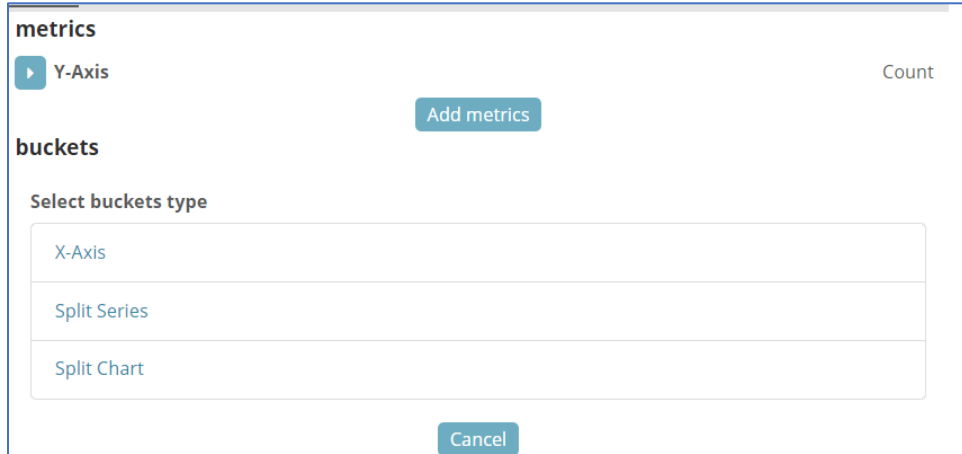
- In **Name** column, click **logstash.\***



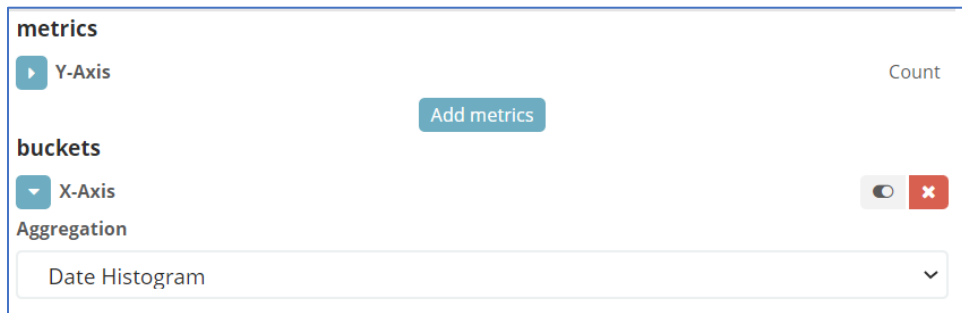
- On **Data** tab, expand **Y-Axis**. In **Aggregation** drop-down, select **Average**. On **Field** drop-down, select **value**. On **Custom Label**, enter **Temperature**.



- In **Buckets** section, click **X-Axis**.

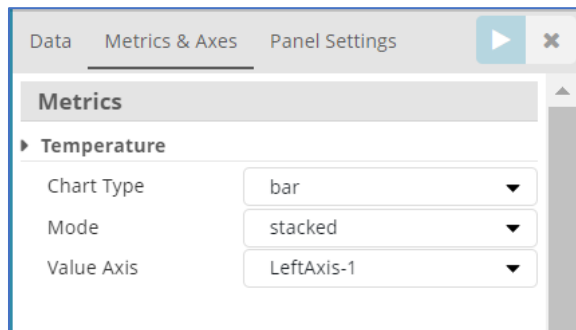


Click in **Aggregation** field, and on the drop-down, select **Date Histogram**.



6. On **Metrics & Axes** tab:

In **Temperature** section, set values as shown:

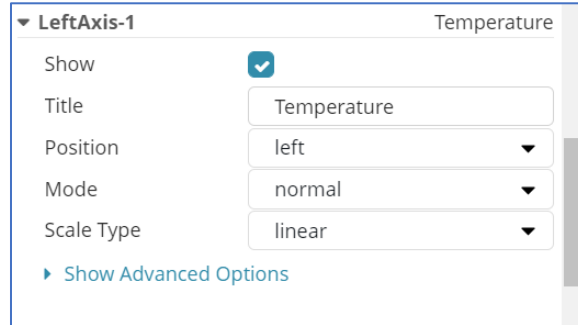


**Chart type = bar**

**Mode** (default)

**Value Axis** (default)

In **Y-Axis** section, expand **LeftAxis-1**

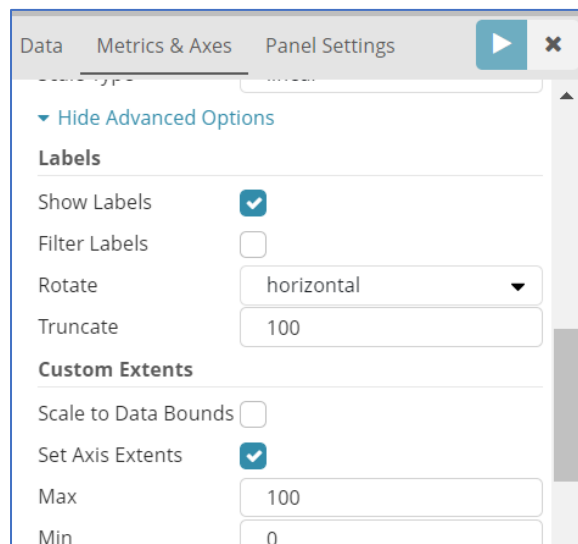


Select **Show** checkbox.

For **Title**, enter **Temperature**.

Other settings (default).

Click **Show Advanced Options** (expands dialog).



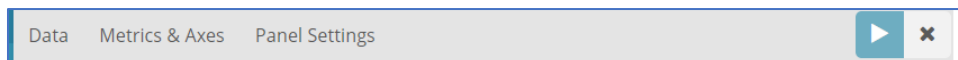
In **Custom Extents** section,

Select **Set Axis Extents** checkbox.

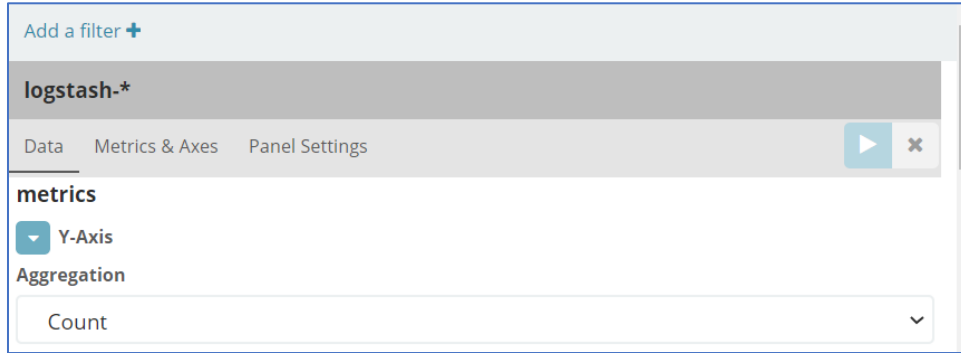
In **Max** field, enter **100**.

In **Min** field, enter **0**.

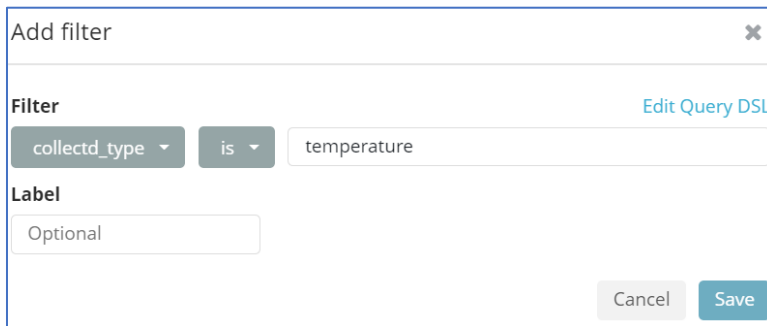
Click **Play**  button.



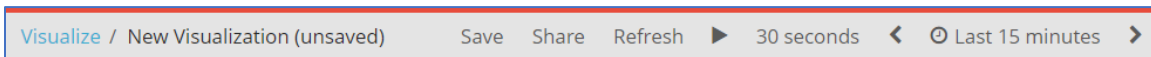
7. Click **Add a Filter**.



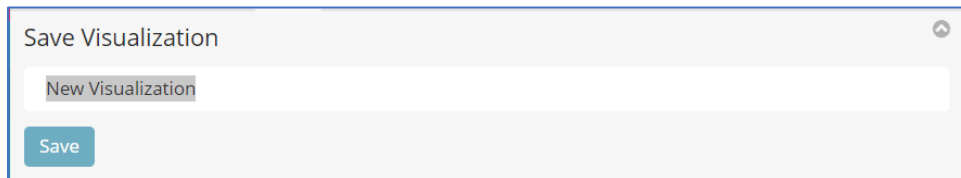
On the dialog, **Filter** drop-down, select **collectd\_type**. Select **is**. Enter **temperature**. Click **Save**.



8. On the upper bar, click **Save**.

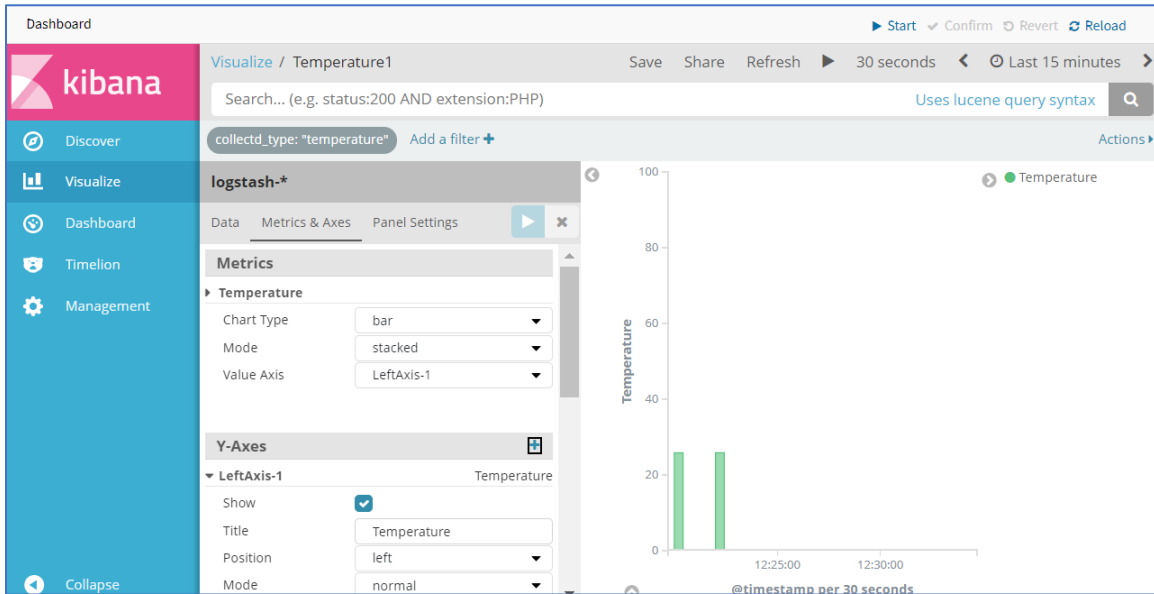


9. On the *Save Visualization* dialog, for **Name** enter **Temperature1** and click **Save**.



10. The graph is displayed.

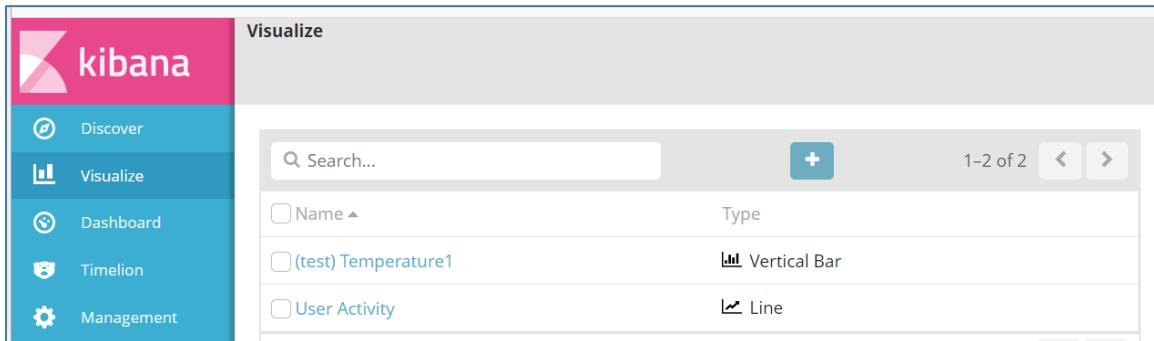




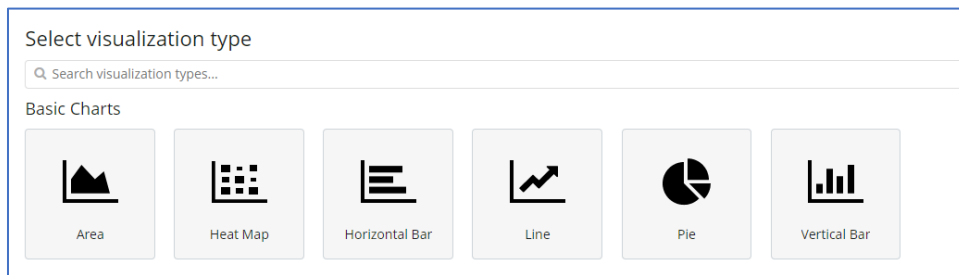
## Create Graph: Humidity1

This example uses a bar chart graph.

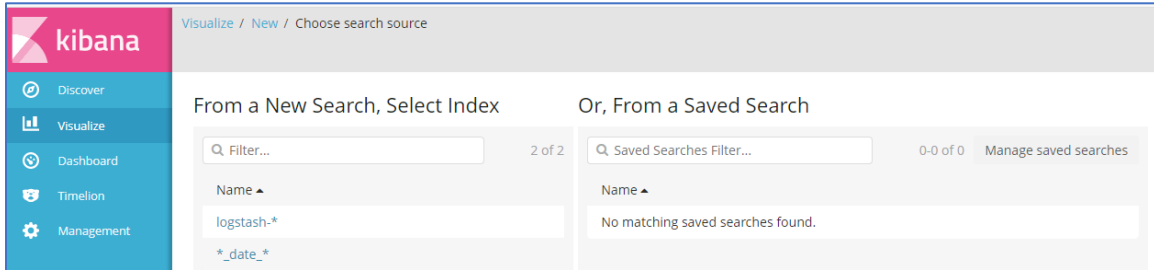
1. Go to *Dashboard :: Visualize* and click the  icon.



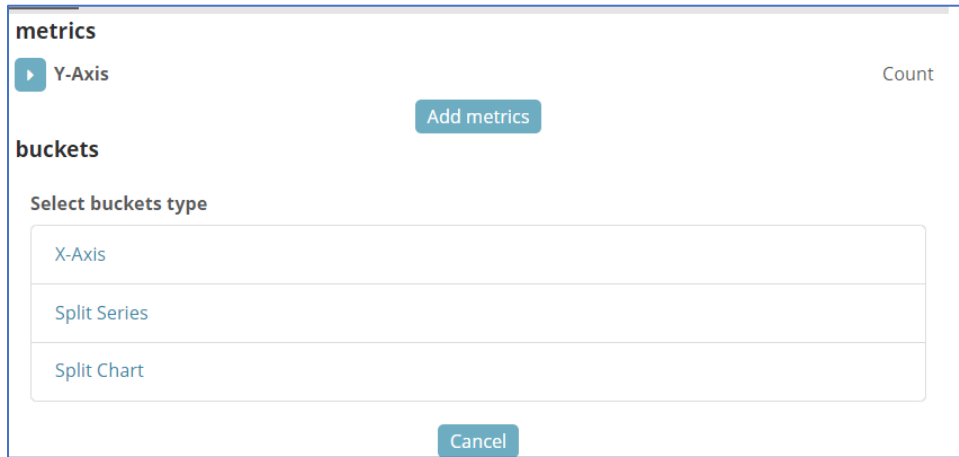
2. Click **Vertical Bar** graph.



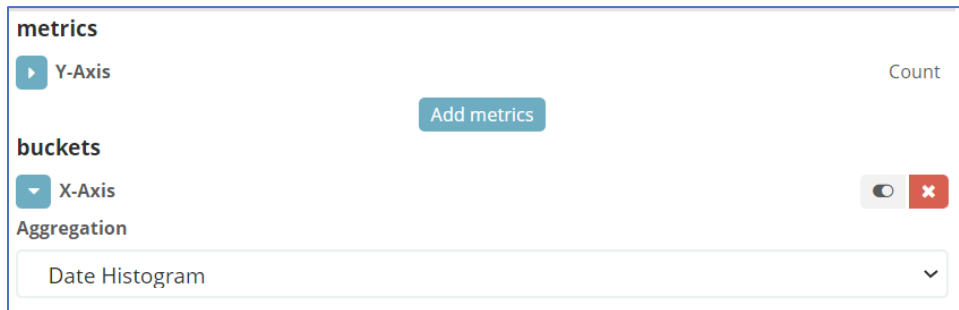
3. In **Name** column, click **logstash.\***



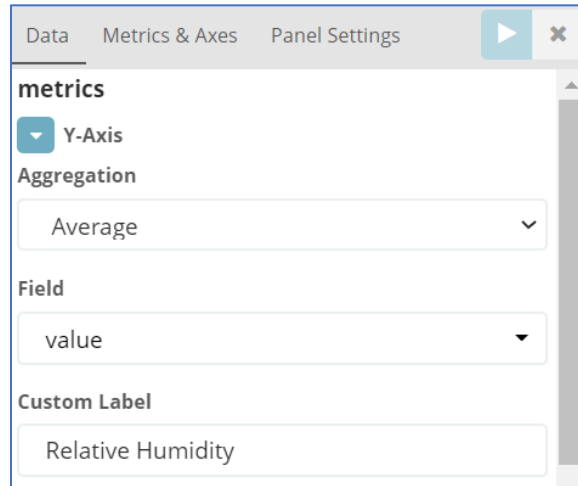
4. On **Data** tab, **Buckets** section , click **X-Axis**.



Click in **Aggregation** field, and on the drop-down, select **Date Histogram**.



5. On the **Data** tab, **metrics** section, expand **Y-Axis**.

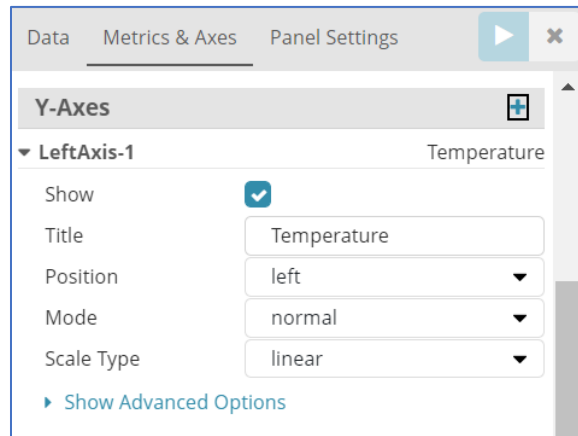


On **Aggregation** drop-down, select **Average**.

On **Field** drop-down, select **value**.

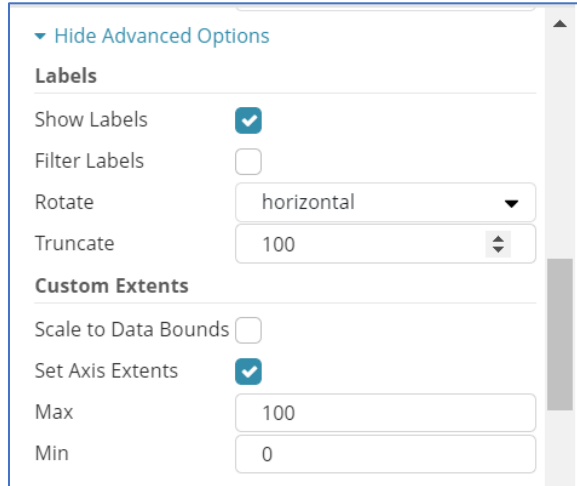
On **Custom Label**, enter **Relative Humidity**.

6. On **Metrics & Axes** tab, **Y-Axis** section, expand **LeftAxis-1**.

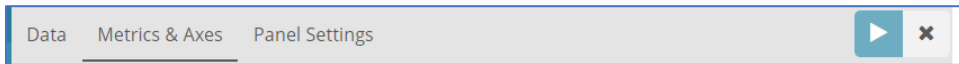


Click **Show Advanced Options** (expands dialog).

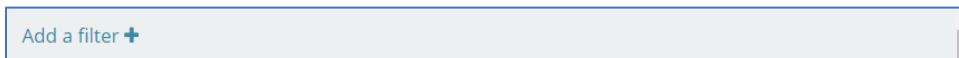
In **Custom Extents** section, In **Y-Axis** section, select **Set Axis Extents** checkbox. In **Max** field, enter **100**. In **Min** field, enter **0**.



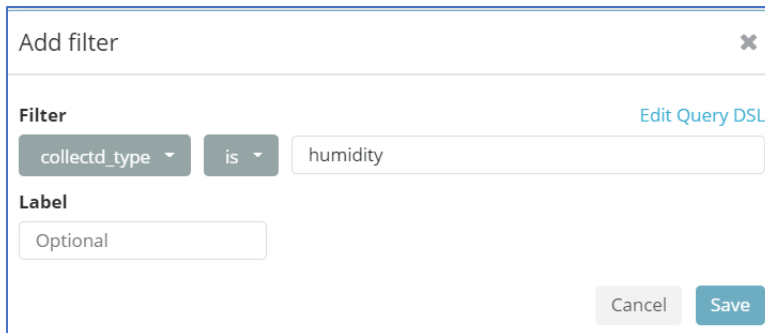
7. Click **Play**  button.



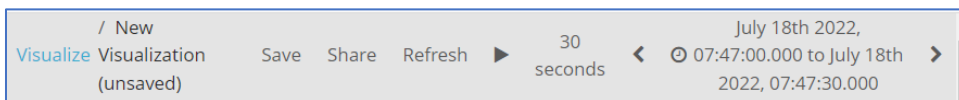
8. Click **Add a Filter**.



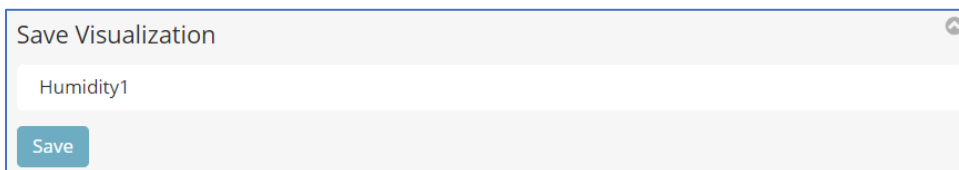
On the dialog, **Filter** drop-down, select **collectd\_type**. Select **is**. Enter **humidity**. Click **Save**.



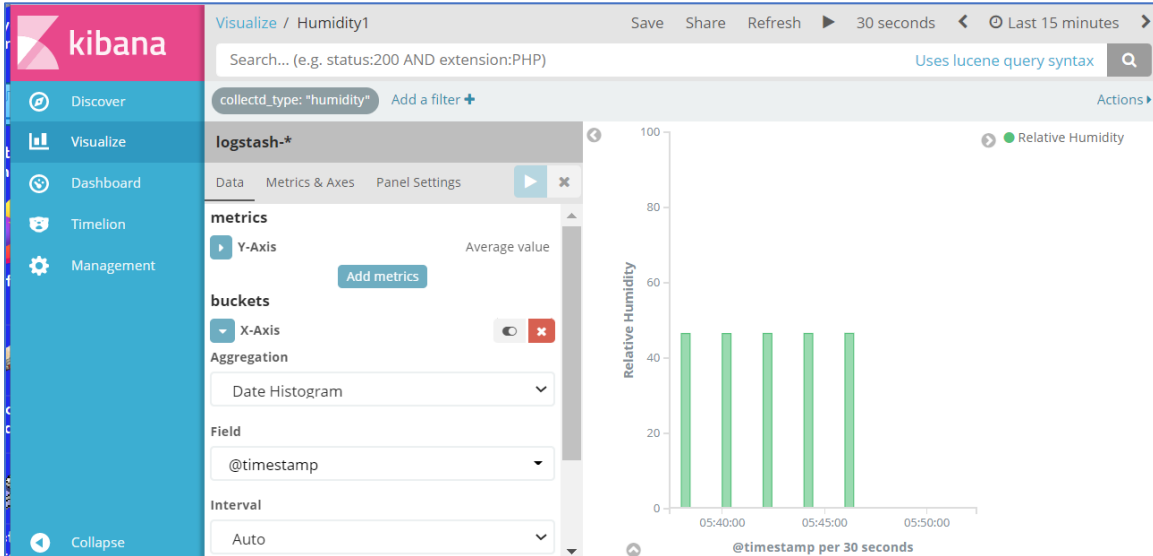
9. On the upper bar, click **Save**.



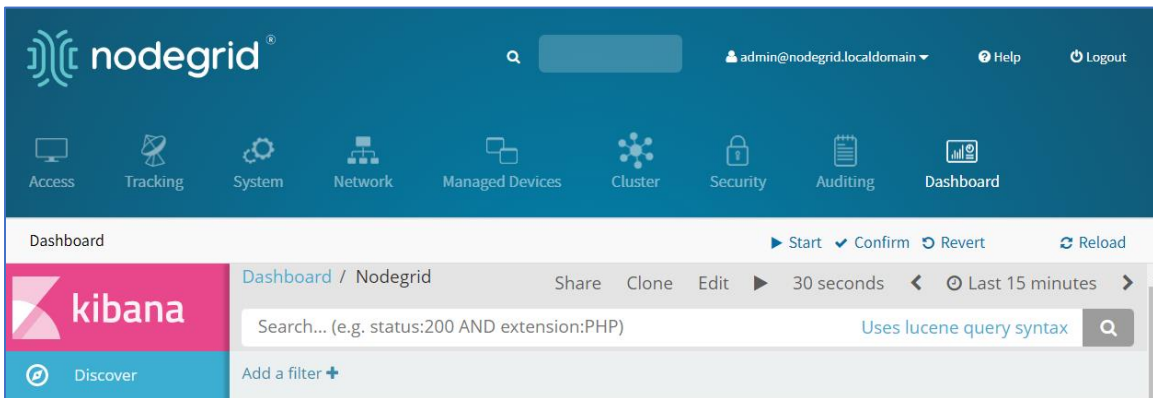
10. On the *Save Visualization* dialog, for **Name**, enter **Humidity1** and click **Save**.



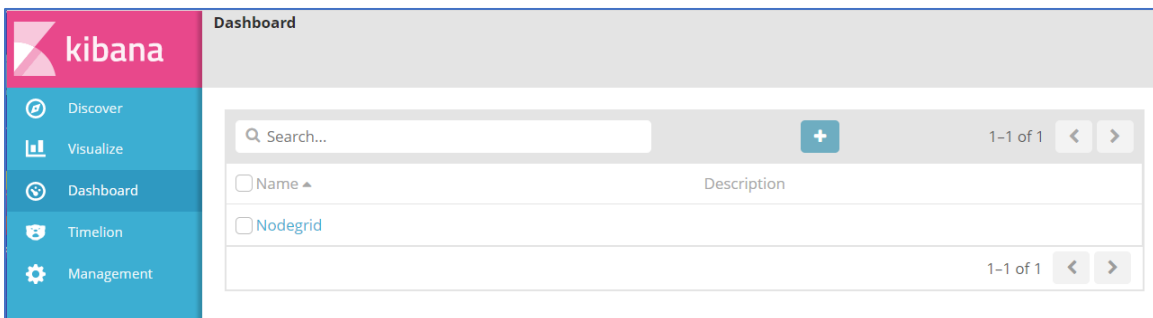
11. The graph is displayed.



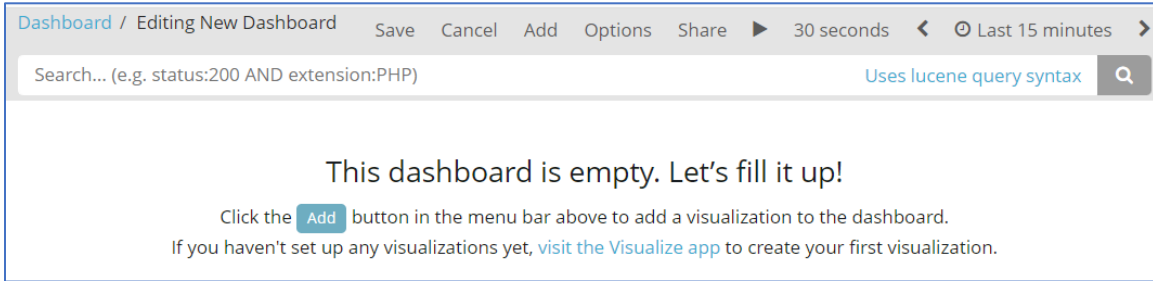
## Create Dashboard: TemperatureRH



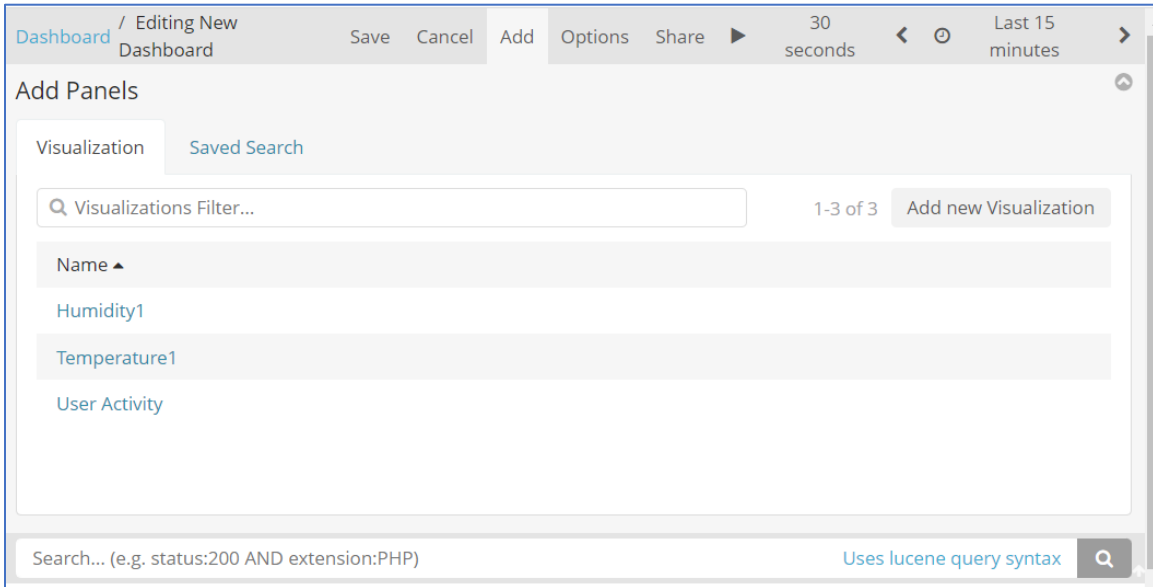
1. In the left panel, click Dashboard (displays dialog).



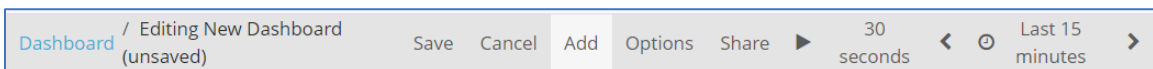
2. Click **Plus**  button (displays dialog).



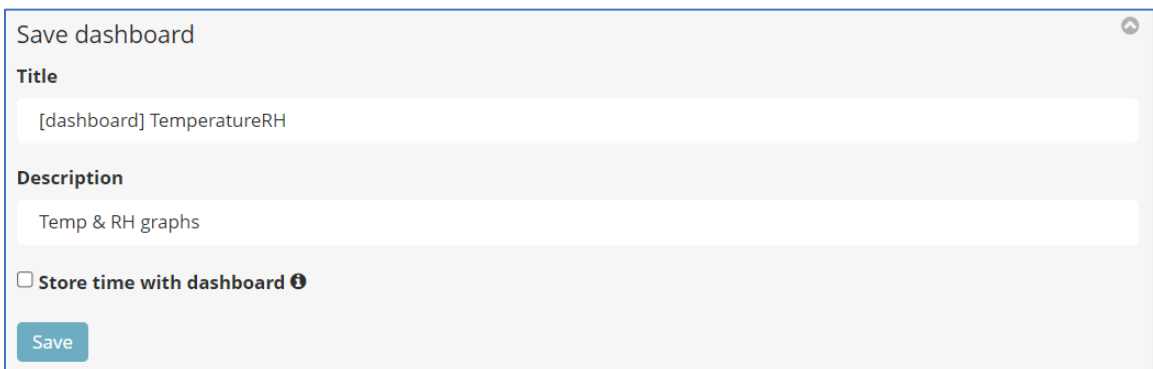
3. Click **Add** button (displays dialog).



4. Click Temperature1 to add panel.
5. Click Humidity1 to add panel.
6. Click Save.



7. On the *Save dashboard* dialog:

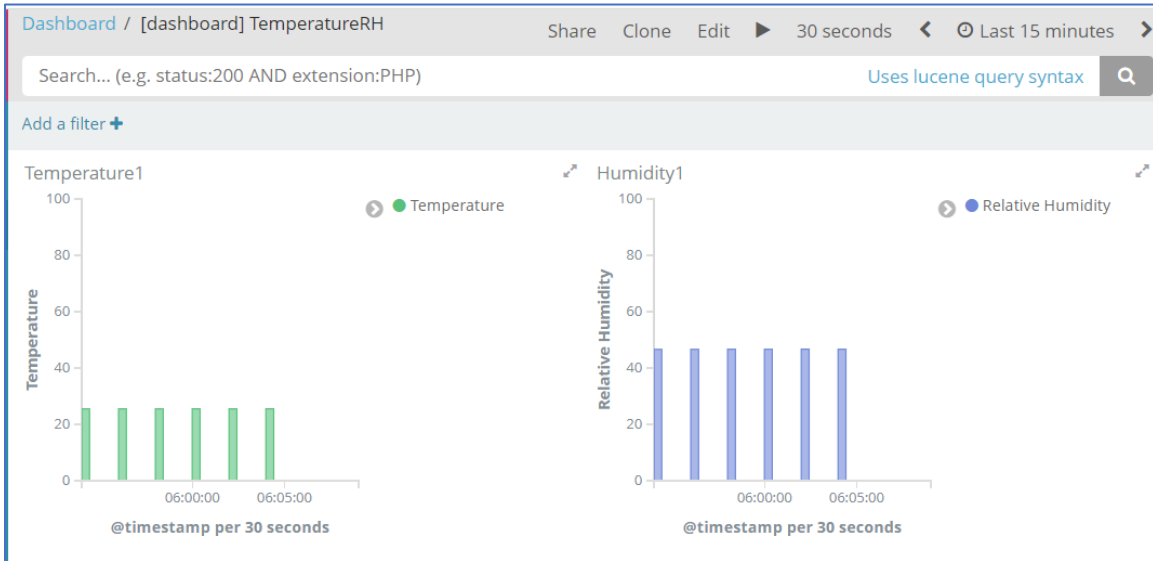


In **Title**, enter **[dashboard] TemperatureRH**.

In **Description**, enter **Temp & RH graphs**.

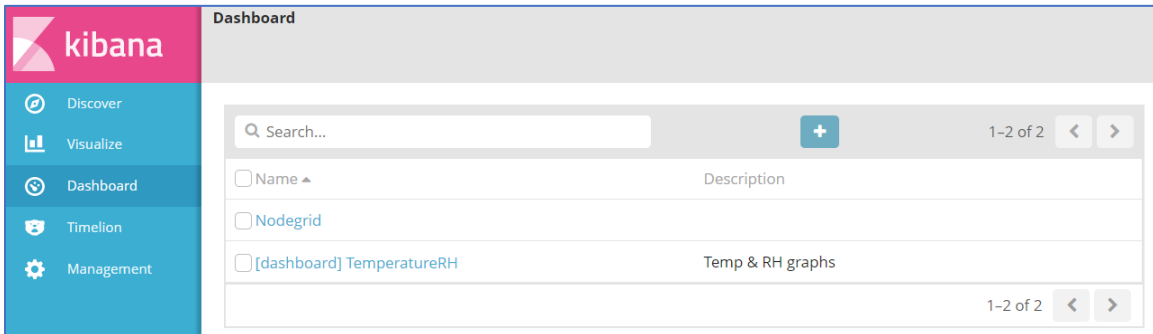
Click **Save**.

8. This displays the dashboard.



## View TemperatureRH Dashboard

1. Go to *Dashboard :: Dashboard*.



2. On the list, click **[dashboard] TemperatureRH** (displays dashboard with the Temperature1 and Humidity1 panels).