

# MAXIMO MONITOR

## HANDS-ON LAB

In this Exercise, you will learn how to setup Monitor to receive data from a Node-Red simulator to devices in Monitor.

Step 1: Create a device type and setup metrics in Monitor

Step 2: Create a device in Monitor to send event data from Node-Red simulator

### Create a device type

1. Go to Setup in Monitor
2. Go to Devices tab
3. Click on + button to create a device type
4. Choose Basic template
5. Next
6. Enter a Device type name, e.g. Devicetype\_Lrng  
Take note of the name you give as you will need this in the Node-RED flow config
7. Create.

### MAS Monitor Connect Lab » Exercises » 1. Setup mobile device in Monitor

The screenshot shows the 'Create a device type' interface in the MAS Monitor application. The breadcrumb 'Setup /' is at the top left. The main heading is 'Create a device type' with a help icon. On the left, a vertical navigation pane shows two steps: 'Device type templ...' (marked with a checkmark) and 'Identity' (marked with a question mark and a blue circle). The 'Identity' section is active and contains two text input fields. The first field, labeled 'Device type name', contains the text 'Devicetype\_Lrng'. Below it is a small text note: 'Specify a unique name that describes the device type or data that the device type manages. The name can't be changed later.' The second field, labeled 'Description (optional)', contains the text 'Device Type created for Learning'.

## Create Metrics in the device type

1. Under Metrics section click Add metric
2. Click Add metric
  - a. Enter InputTemp for Metric
  - b. Enter InputTemp for Display name
  - c. Enter Voltage for Event
  - d. Choose NUMBER for Type
  - e. Optionall you can enter Unit
3. Similar way we can add two more metrics as shown below.
4. Click Save

[Setup](#) / **Devicetype\_Lrng** Device type ⓘ

**Devicetype\_Lrng**

Data **Identity** Dashboards

Device type name	Number of devices	Identify devices by ⓘ
Devicetype_Lrng	2	Device ID ⓘ

**Metrics** ⓘ [Add metric](#) +

Metric	Display name	Type	Unit	Settings
^ Voltage				
Temp_X	TempX	NUMBER		
InputTemp	InputTemp	NUMBER		
InputVoltage	InputVoltage	NUMBER		

**Dimensions** ⓘ [Add dimension](#) +

Dimensions are applied to all devices of this type by default, but you can override values for individual devices. [Learn more about dimensions](#)

Dimension	Type	Default value (optional)
You don't have any dimensions yet		
The dimensions are applied to all devices of this type, but you can override their values for individual devices.		

## Create a device in Monitor

1. Click the blue Setup link in the top left which will take you to the device types list

[Setup](#) / **Devicetype\_Lrng** Device type ⓘ

**Devicetype\_Lrng**

Data **Identity** Dashboards

Device type name	Number of devices	Identify devices by ⓘ
Devicetype_Lrng	2	Device ID ⓘ

**Metrics** ⓘ [Add metric](#) +

Metric	Display name	Type	Unit	Settings
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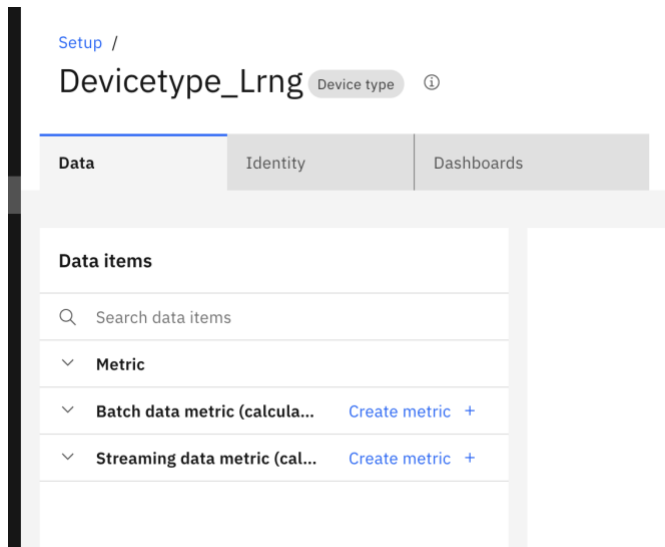
2. The device type you created should be selected
3. Click on [Add device](#) +
4. Enter Lrng\_Device1 for name
5. Choose Custom token
6. Enter Password1!

7. Click Add and Close

## Add Calculations & Alerts

The "Alerts" function allows you to be notified when anomalies are detected.

1. Click setup menu. Search on DeviceType\_Lrng
2. Click on Setup Device type button
3. Click on the + icon under Batch Data metric section to create new metric



4. Select AlertOutOfRange

Create batch data metric

×

Select the function to use to calculate the batch data metrics.

[Learn more about built-in functions](#)

Q alert

×

**AlertExpression**

Create alerts that are triggered when data values reach a particular range.

**AlertExpressionWithFilter**

Create alerts that are triggered when data values the expression is True

**AlertHighValue**

Fire alert when metric exceeds an upper threshold.

**AlertLowValue**

Fire alert when metric goes below a threshold.

**AlertOutOfRange**

Fire alert when metric exceeds an upper threshold or drops below a lower\_theshold.  
Specify at least one threshold.

**MergeByFirstValid**

Create alerts that are triggered when data values reach a particular range.

Cancel

Select

5. Select the Scope All Device of this type.
6. Select fields as below
  - a. Input Item : InputTemp
  - b. Upper\_threshold : 30
  - c. Lower\_threshold : 20
  - d. Severity : High
  - e. Status : New

Data items

Search data items

Metric

Batch data metric (calcula...
Create metric +

Hourly\_Sum\_Temp
Aggregator

New data item

Streaming data metric (cal...
Create metric +

AlertOutOfRange

Fire alert when metric exceeds an upper threshold or drops below a lower\_threshold. Specify at least one threshold.

☒ Scope
☒ Input
☐ Output

input\_item

InputTemp

Because this metric is a batch data metric, only batch data metric inputs are available

upper\_threshold

30
-
+

lower\_threshold

20
-
+

Severity

High

Status

New

Back

Next

7. Click Next
8. Click on Create

Setup /

Devicetype\_Lrng

Device type

?

Data

Identity

Dashboards

Data items

Search data items

Metric

Batch data metric (calcula...
Create metric +

Hourly\_Sum\_Temp
Aggregator

output\_alert\_lower
Alert

output\_alert\_upper
Alert

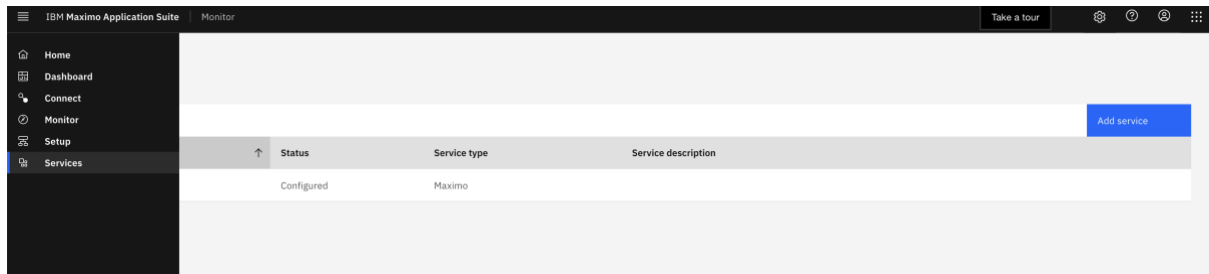
Streaming data metric (cal...
Create metric +

output

Trend

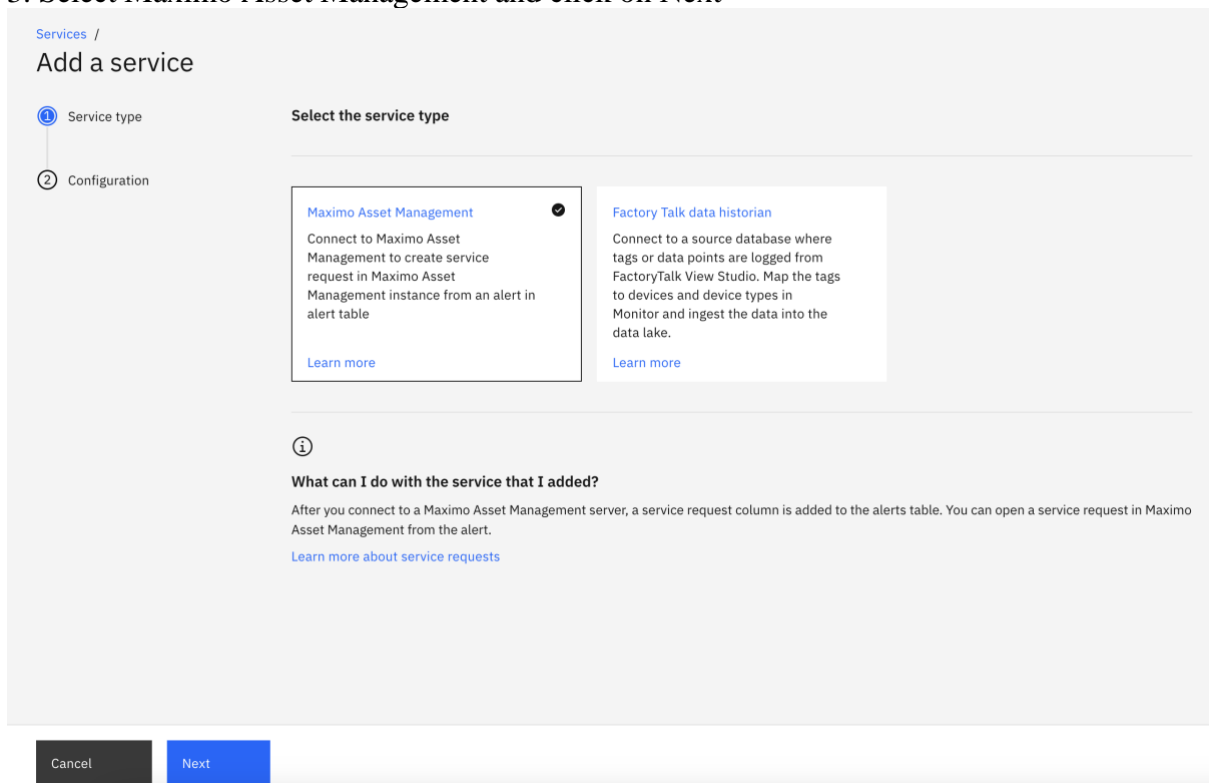
# Connect to Maximo Manage to raise Service Request

## 1. Click on Services tab



## 2. Click on Add Services

## 3. Select Maximo Asset Management and click on Next



## 4. Enter Service name : manage

## 5. Host URL : [https://<workspace\\_id>.manage.<mas\\_domain>](https://<workspace_id>.manage.<mas_domain>)

## 6. Launch endpoint URL : [https://<workspace\\_id>.manage.<mas\\_domain>](https://<workspace_id>.manage.<mas_domain>)

## 7. Username : apikey

## 8. Password : API token from API Key application

## 9. Click on Test connection and Finish

The screenshot shows the 'Add a service' configuration page in the IBM Maximo Application Suite. The page is divided into a left sidebar with navigation icons and a main content area. The main content area has a breadcrumb 'Services /' and a title 'Add a service'. Below the title, there are two steps: 'Service type' (indicated by a blue circle) and 'Configuration' (indicated by a blue circle). The 'Configuration' step is active, showing the 'Maximo Service details' form. The form fields are as follows:

Field	Value
Service name	manage1
Description	Enter description
Host URL	https://masdev.manage.demo.masgsi89-240f75f72cdf82f997ffe11d34c5adcb-0000.us-south.containers.appdomain.clo
Launch endpoint URL	https://masdev.manage.demo.masgsi89-240f75f72cdf82f997ffe11d34c5adcb-0000.us-south.containers.appdomain.clo
Username	apikey
Password	*****
Site dimension	SITEID

## Install Node-RED locally

This is a fairly easy step, as you just have to follow this guide: [Running Node-RED locally](#)

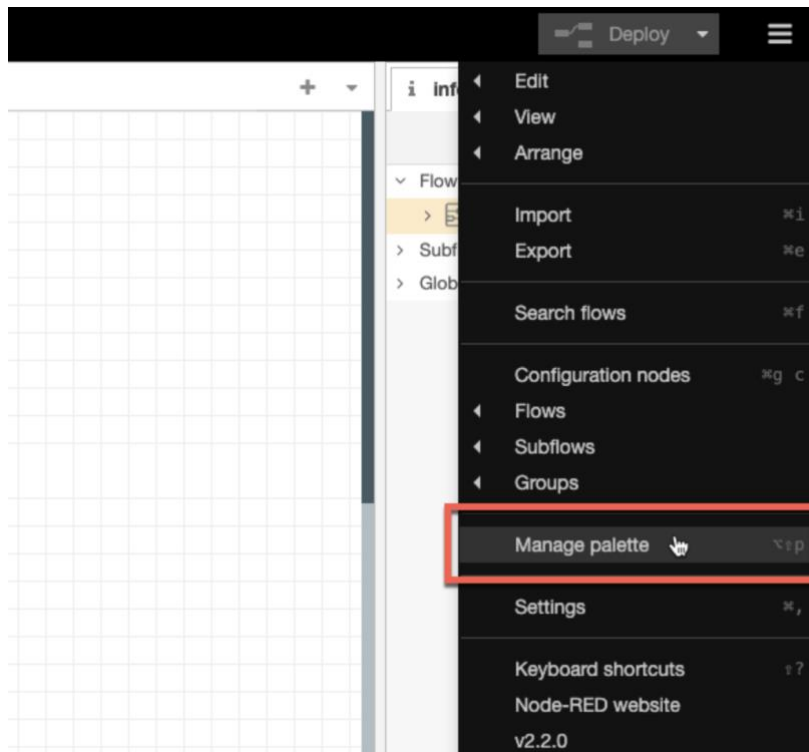
Once installed and started open the browser and start the Node-Red editor.

## Add required additional nodes

Before loading the Node-RED script you need to add the required additional node libraries. Node-RED library dependencies:

- node-red-dashboard
- node-red-contrib-ui-upload
- node-red-contrib-chunks-to-lines

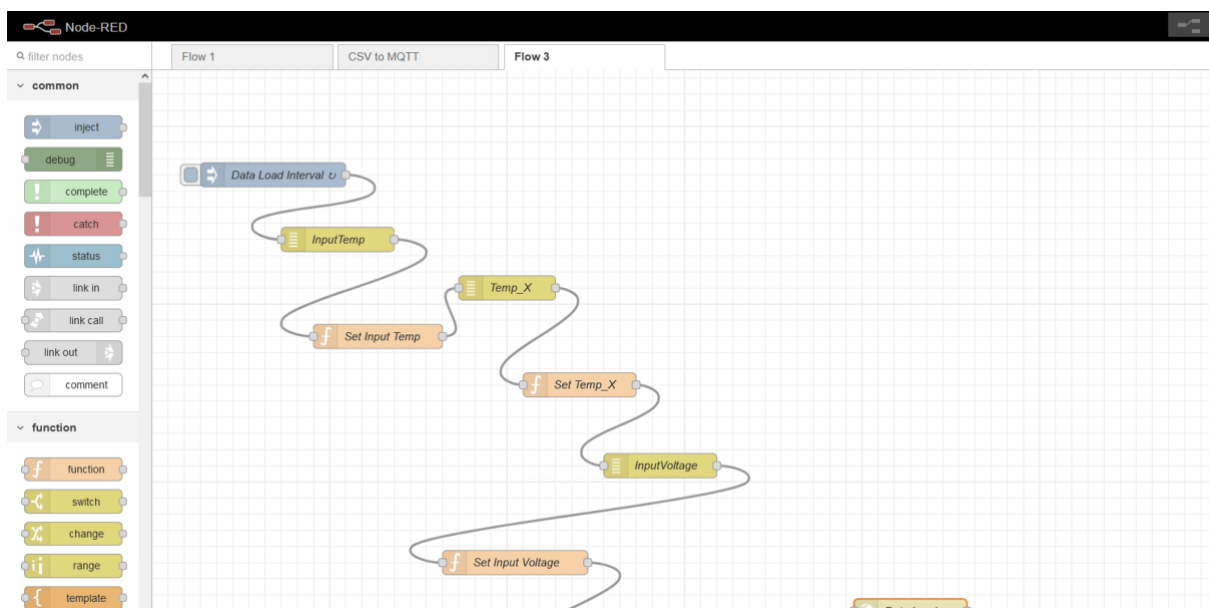
1. Click on the burger menu in upper right hand corner and select Manage Palette



2. Click on Install and write node-red-dashboard in the search field and click on Install.
3. Click on Install again.
4. Repeat the above step for other libraries.

## Import Node-RED flow

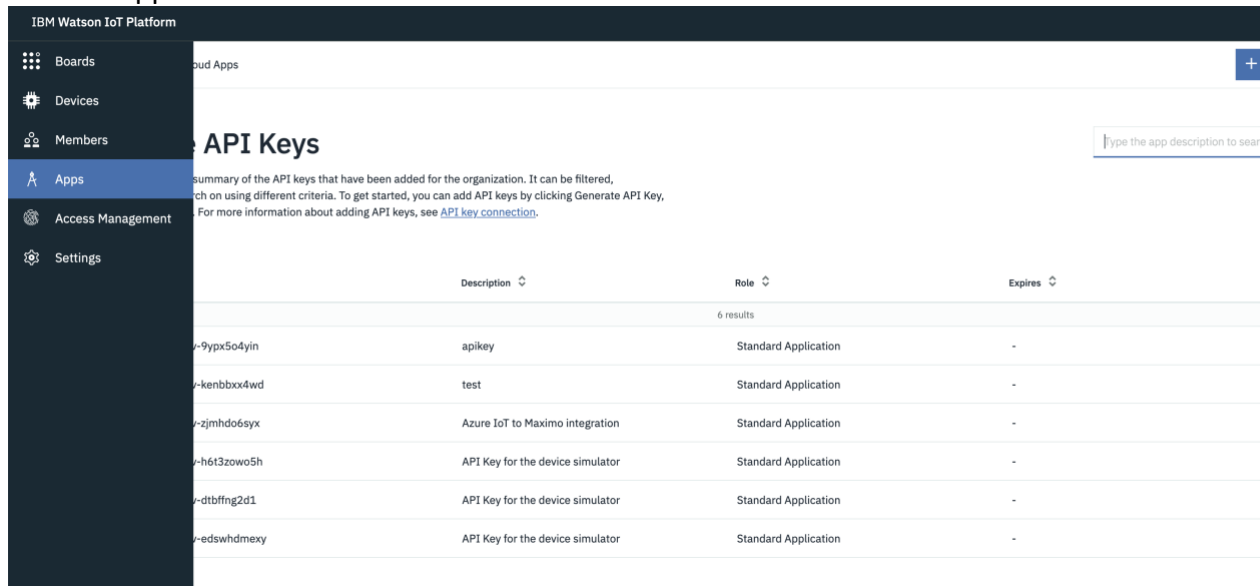
1. Download the flow from git-hub
2. Launch Node-RED
3. Click on the burger menu and choose Import
4. Click on select a file to import
5. Choose the file downloaded in step 1.
6. Click Import



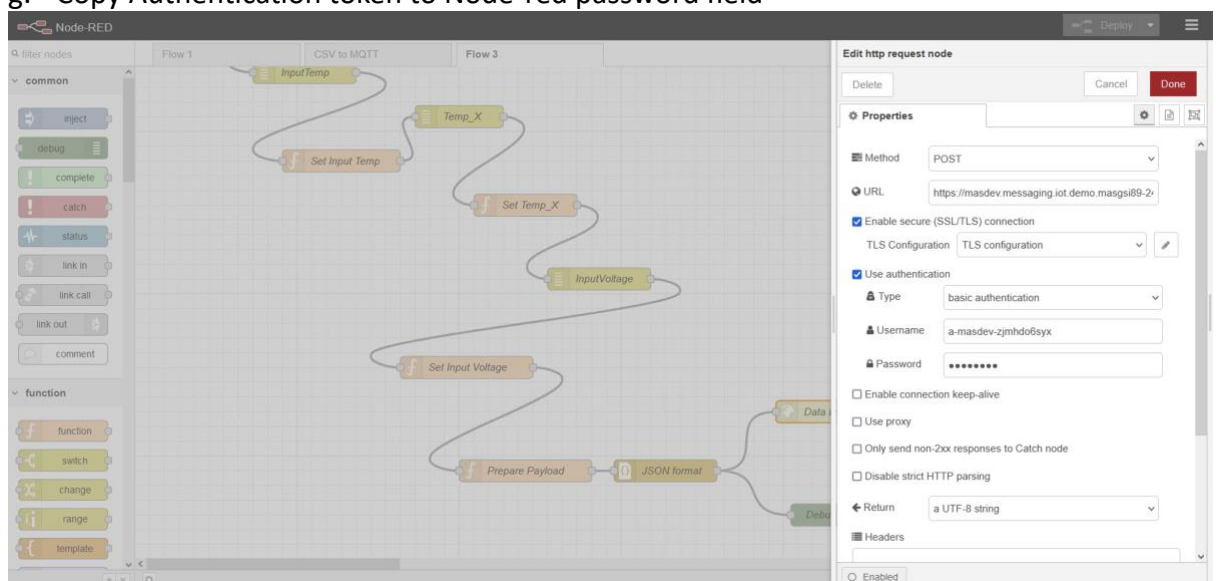


## Modify Node-Red flow to ingest data in Monitor


1. Click on Data Load node to configure it
2. Update the URL e.g.  
[https://masdev.messaging.iot.demo.masgsi89-240f75f72cdf82f997ffe11d34c5adcb-0000.us-south.containers.appdomain.cloud/api/v0002/application/types/Devicetype\\_Lrng/devices/Lrng\\_Device1/events/Voltage](https://masdev.messaging.iot.demo.masgsi89-240f75f72cdf82f997ffe11d34c5adcb-0000.us-south.containers.appdomain.cloud/api/v0002/application/types/Devicetype_Lrng/devices/Lrng_Device1/events/Voltage)
3. Open IoT application for Username & password
  - a. Click on Apps

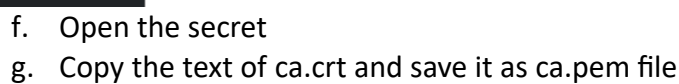


- b. Click on Generate API Key
- c. Provide Description and click Next
- d. Select role Standard Application
- e. Click on Generate Key.
- f. Copy API key to Node-red Username field
- g. Copy Authentication token to Node-red password field



4. To configure TLS configuration
  - a. Click on pencil icon beside TLS configuration field

- b. 
- c. For CA certificate login to OCP console
- d. Select Workload -> Secrets and choose IoT project e.g mas-demo-IoT
- e. Search with Public-tls word



h. Upload the ca.pem file to CA certificate

Edit http request node > Edit tls-config node

Delete Cancel Update

**Properties**

☐ Use key and certificates from local files

Certificate Upload x

Private Key Upload x

Passphrase private key passphrase (optional)

CA Certificate Upload ca.pem x

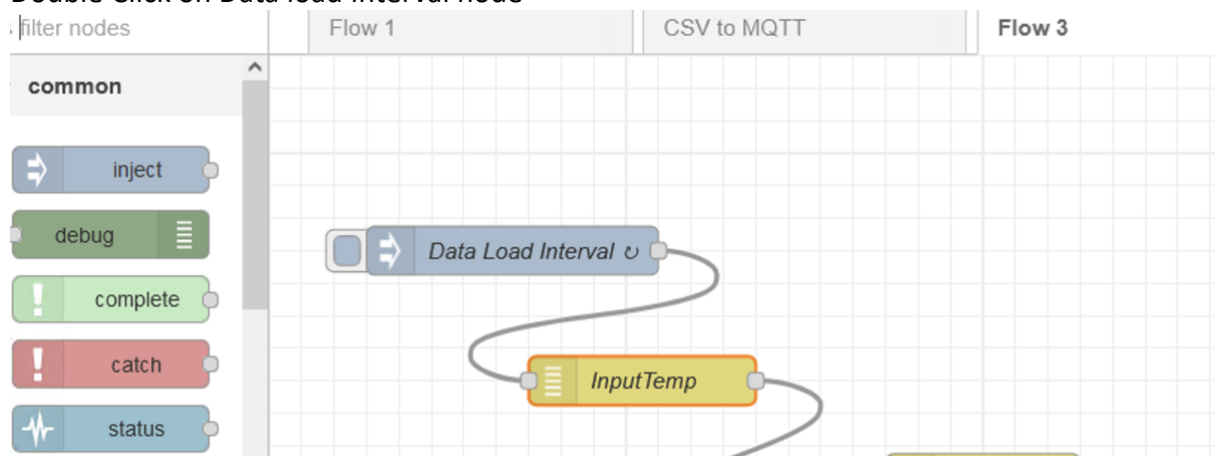
☐ Verify server certificate

Server Name

5. Provide server name e.g masdev.messaging.iot.demo.masgsi89-240f75f72cdf82f997ffe11d34c5adcb-0000.us-south.containers.appdomain.cloud
6. Click on Update
7. Click on Done
8. Click on Deploy

## Ingest data from Node-Red to Monitor device

1. Double Click on Data load Interval node



2. Set the Repeat property as below

Edit inject node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🖼️

🏷️ Name

Data Load Interval

≡ msg. payload = ▼ timestamp ×

≡ msg. topic = ▼ a<sub>z</sub> ×

+ add

inject now

☐ Inject once after 0.1 seconds, then

🔄 Repeat

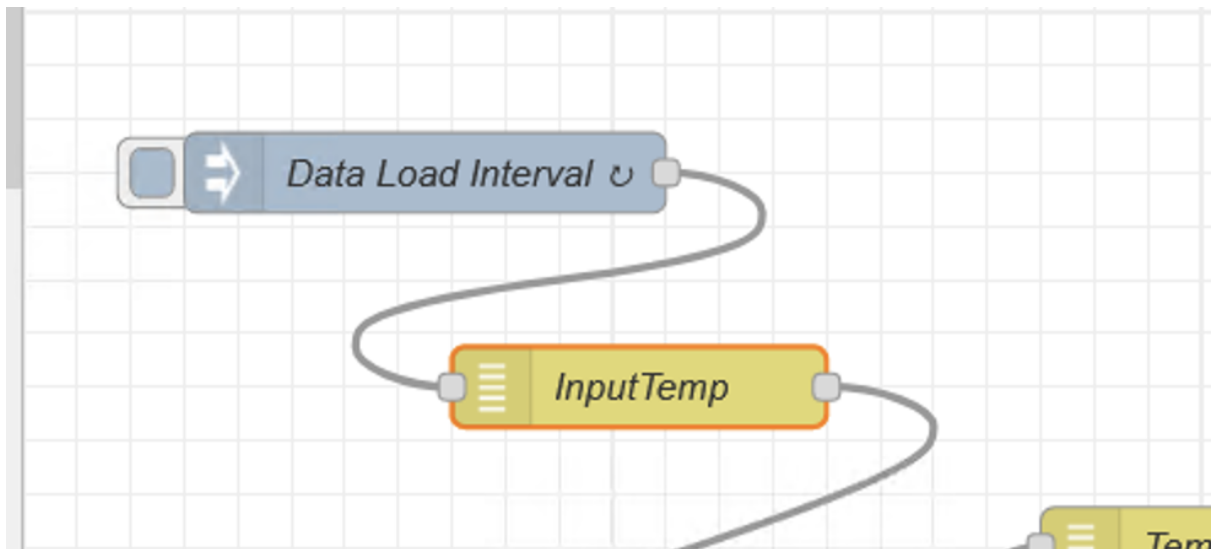
interval ▼

every 30 minutes ▼

3. Click on Done
4. Click on Deploy

### Send Anomaly data to monitor

1. Double click on Input temp flow



2. Modify the From and To property as below

The screenshot shows the 'Edit random node' dialog box. It has a title bar 'Edit random node' and three buttons: 'Delete', 'Cancel', and 'Done'. Below the buttons is a 'Properties' tab with a settings icon, a document icon, and a refresh icon. The properties are as follows:

Property	Value
msg. payload	msg. payload
Generate	a real number - floating point
From	40
To	60
Name	InputTemp

3. Click on Done and Deploy the flow
4. Click on blue button on Data Load Interval node to ingest one record manually.



5. Go back to Monitor application and select Monitor tab
6. Click on Devices tab
7. Select the Device type and device name
8. Alert will be displayed on Alert table as shown below

## Raise Service Request from Alert Table

Note: Create an asset in Manage application with the same name as device in monitor before creating service request.

1. Click on Create service request link

2. Enter the Reported by field
3. Click on create button