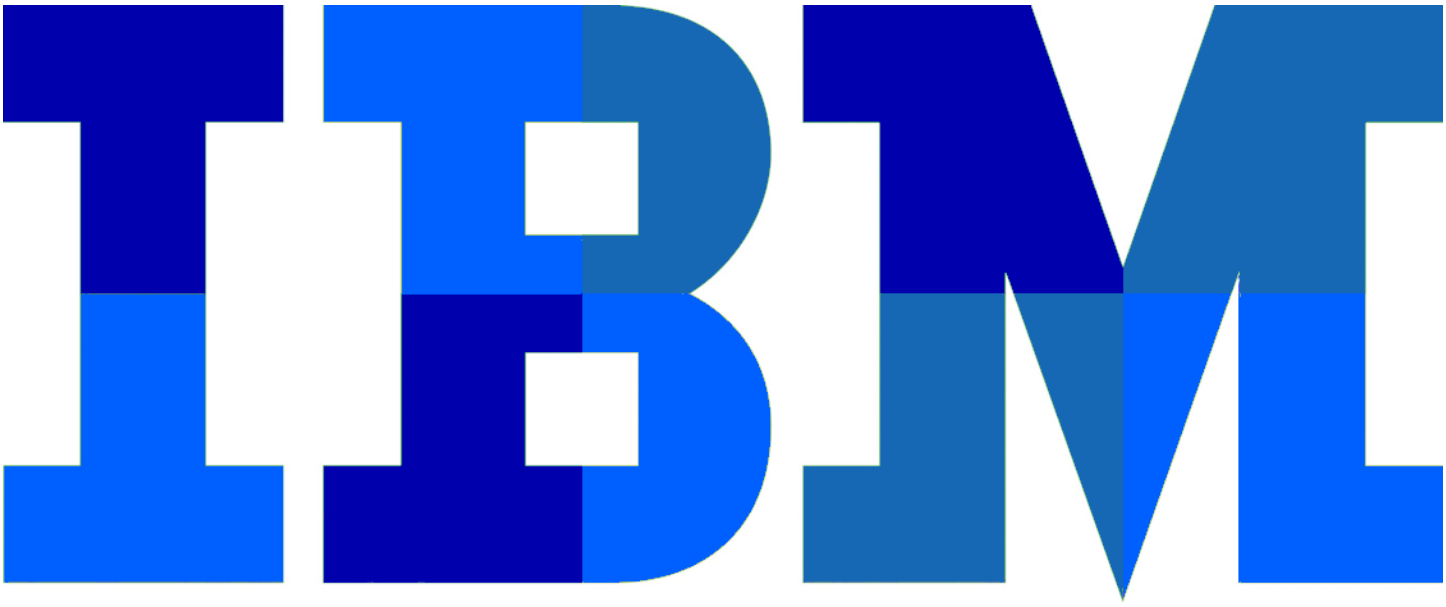
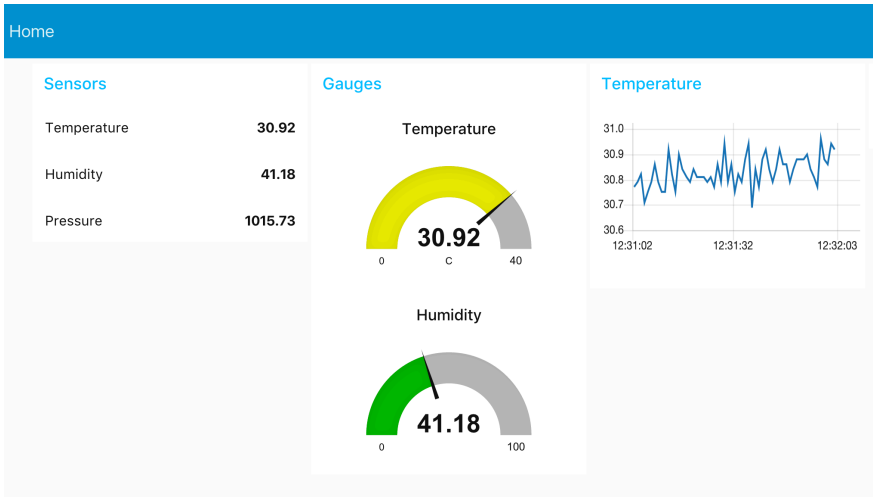
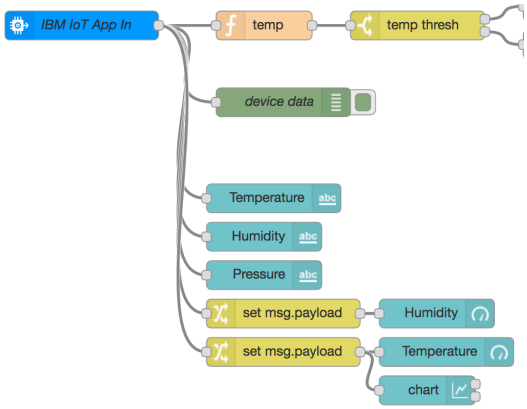
Raspberry Pi Sense HAT

Part 3: Node-RED Dashboard

Author: JeanCarl Bisson | jbisson@us.ibm.com | @dothewww







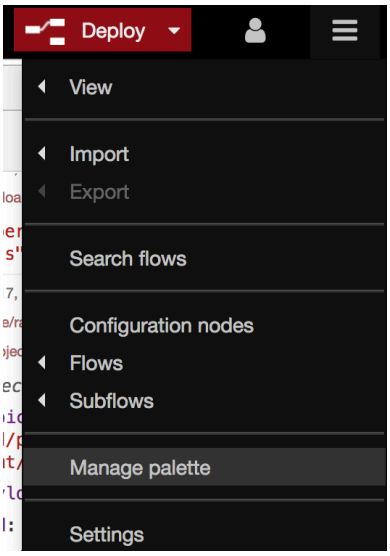
The Node-RED dashboard can display a variety of charts and UI elements containing data from IoT devices.

A digital copy of this lab and completed flows can be found at:
`http://ibm.biz/sense-hat-node-red-dashboard`

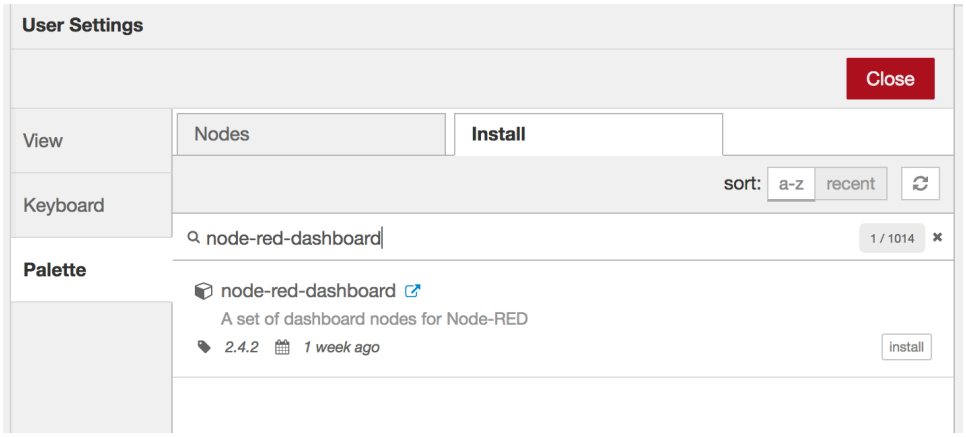
Install Node-RED Dashboard

Node-RED has a strong community of node contributors. In this lab, we'll use a set of nodes that was developed to help visualize data and make building a UI interface in Node-RED easy.

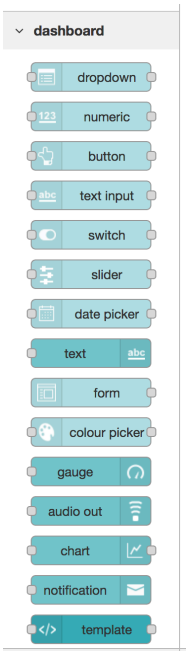
1. Select **Manage palette** from the menu in Node-RED running in IBM Bluemix.



2. Click on the **Install** tab and search for `node-red-dashboard`. Click **Install**.



When Node-RED is finished installing the package, the nodes shown to the right will be available in the palette under the **dashboard** category.

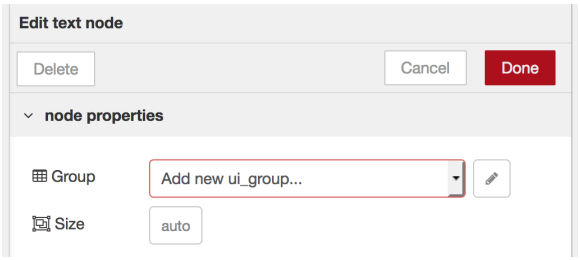


Display Sensor Data

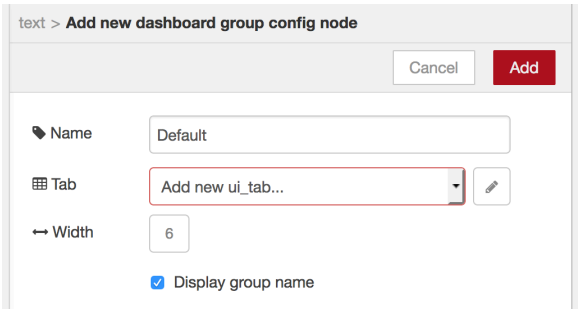
One of the nodes available in the dashboard package is a **text** label. In this section, we'll add three text labels to display the current sensor values: temperature, humidity, and pressure.

1. Add a 

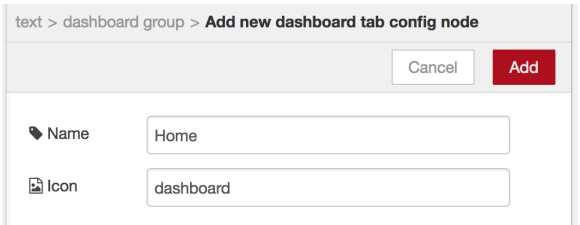
node.
2. Click on the pencil in the node configuration to create a new ui_group. A ui_group is a box on the page that can contain multiple UI elements.



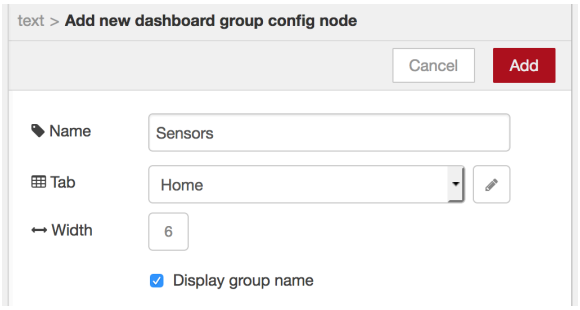
3. A ui_group can belong to a ui_tab. A ui_tab is a page, and only one ui_tab can be displayed at a time. Click on the pencil icon to create a new ui_tab.



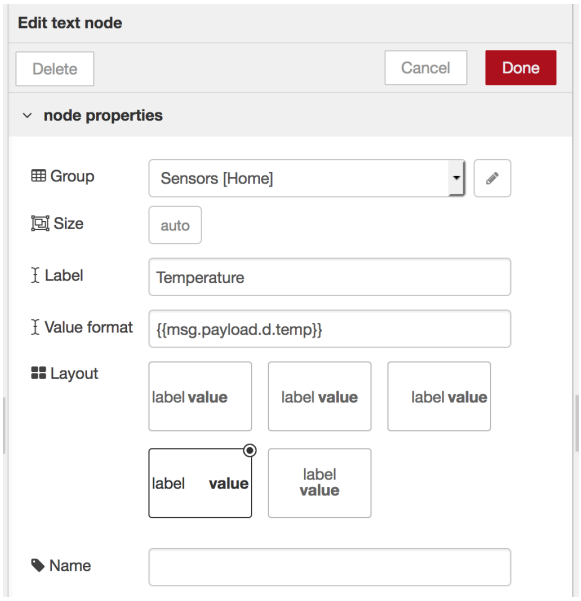
4. You can customize the name of the page, or leave it as `Home`. Click **Add**.

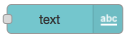


5. For the group node, change the name to `Sensors`. This will add a card labeled Sensors. Click **Add**.

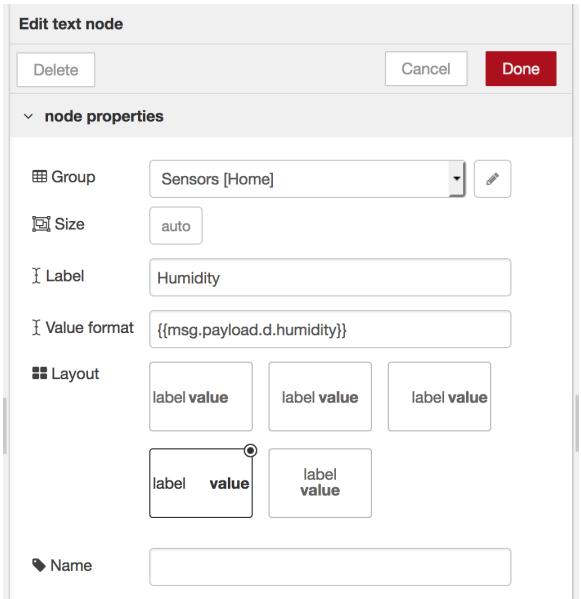


6. Back in the first configuration for the text node, change the label and value as shown below. When finished, click **Done**.

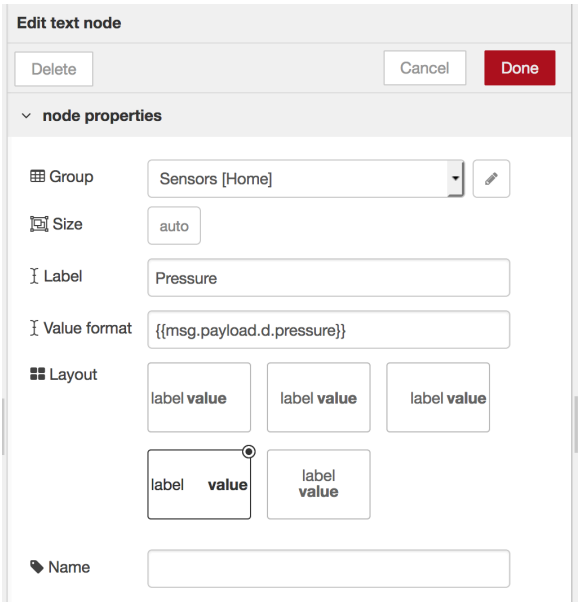


7. Add another 

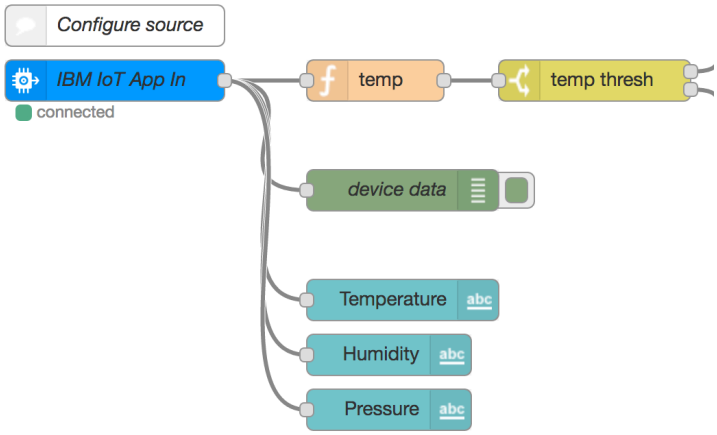
node. This time, the **Group** list contains `Sensors`, which is the box that already contains the temperature value. For the second node, you only need to change the label and value format fields as shown below. When finished, click **Done**.



8. Add a third  node with the pressure value, as shown below. When finished, click **Done**.



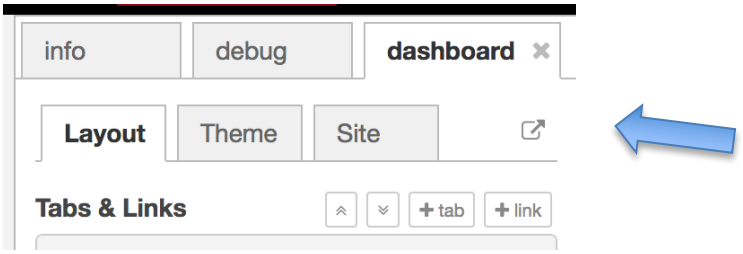
9. Connect the three nodes to the **IBM IoT App In** node as shown below.



Get the code:
`ibm.biz/BdiWpU`

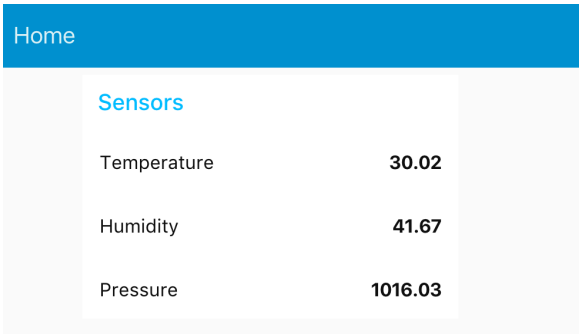
10. Click on the  button in the top right of the screen to save and deploy your changes.

11. Click on the dashboard tab in the panel on the right. Click on the square icon with an arrow pointing to the top-right corner. This will launch the dashboard.



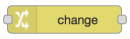
You can also access the dashboard via the IBM Bluemix application's URL, appended with `/ui`:

```
http://<<APPLICATION-HOST-NAME>>.mybluemix.net/ui
```

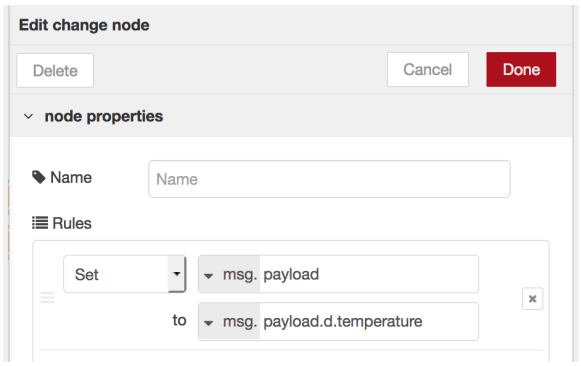


Display Temperature and Humidity Gauge

Another type of node available in the dashboard package is a **gauge**. In this section, we'll add two gauges to display the current sensor values.

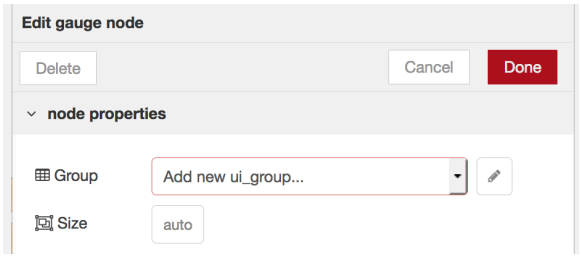
1. Add a 

node as shown below.

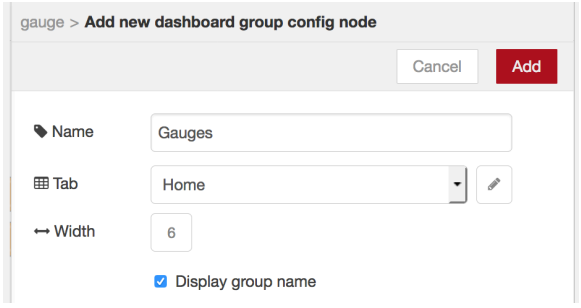


2. Add a 

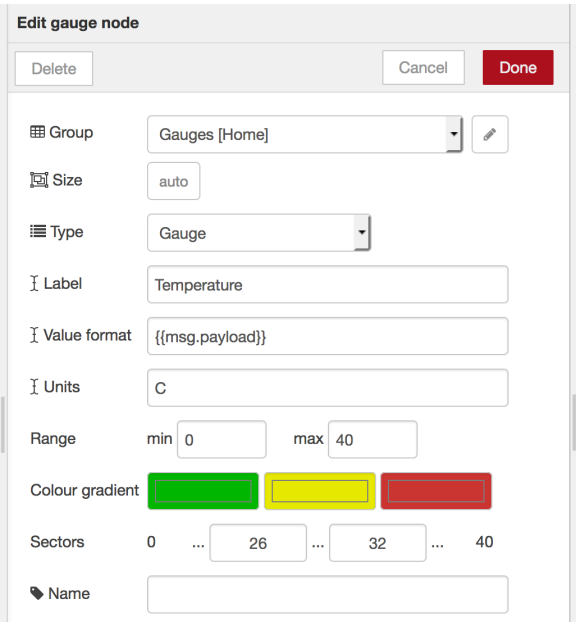
node as shown below. Select **Add new ui_group…** from the **Group** drop-down menu. Click on the pencil icon to create new group.

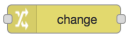


3. Name the new dashboard group `Gauges` as shown below. Click **Add**.

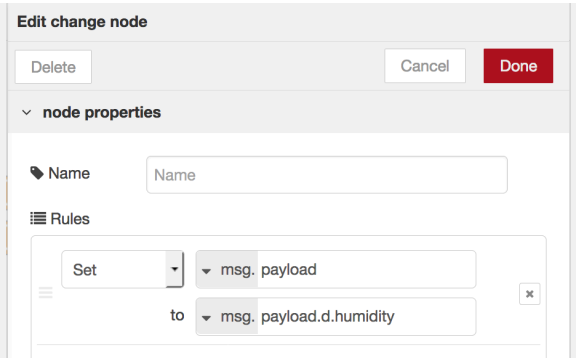


4. Customize the gauge node as shown below. When finished, click **Done**.

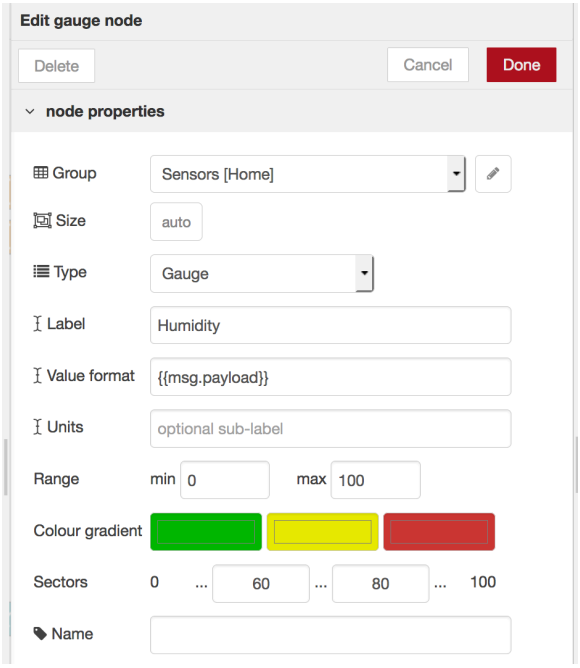


5. Add another 

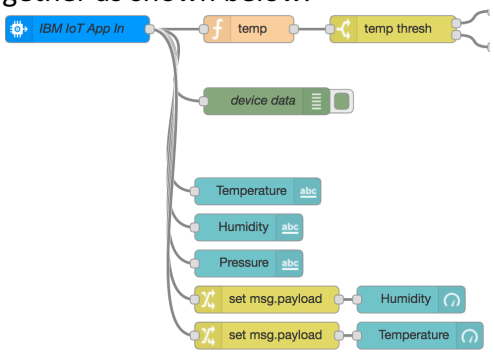
node , this time for the humidity gauge, as shown below.



6. Add a  node as shown below. Select the **Sensors [Home]** group you created in **Step #3**. Customize the node as shown below**.**

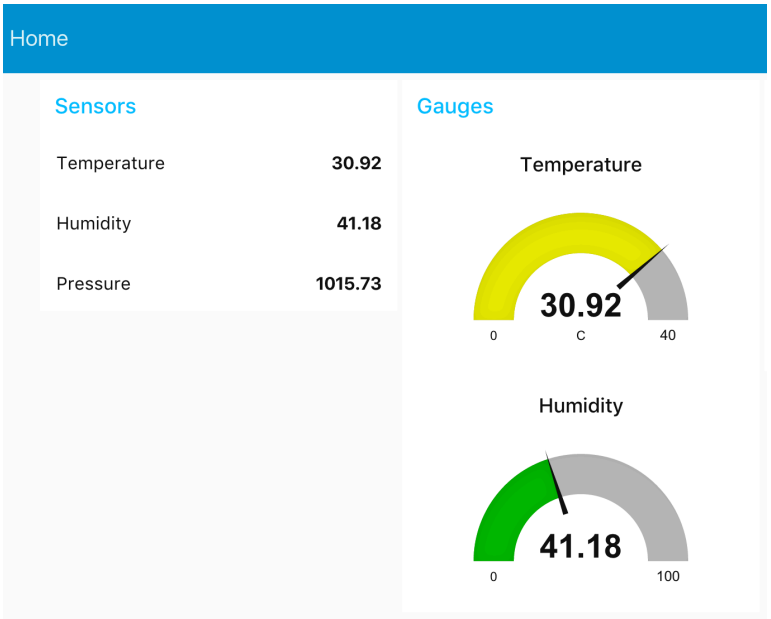


7. Connect the nodes together as shown below.



Get the code:
`ibm.biz/BdiWp5`

8. Click on  to save and deploy your changes. The dashboard now displays the temperature and humidity values as gauges.

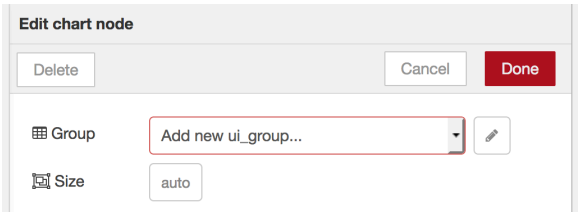


Display Temperature as a Chart

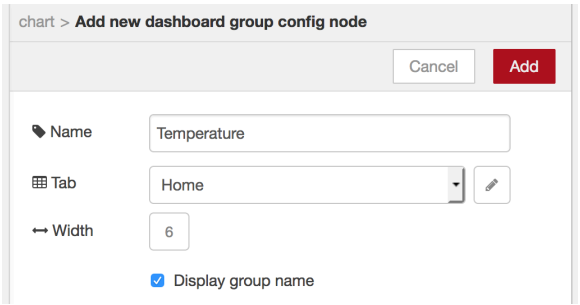
The last type of node available in the dashboard package that we will cover is a **chart**. In this section, we'll add a chart to display the temperature change over a time period of a minute.

1. Add a 

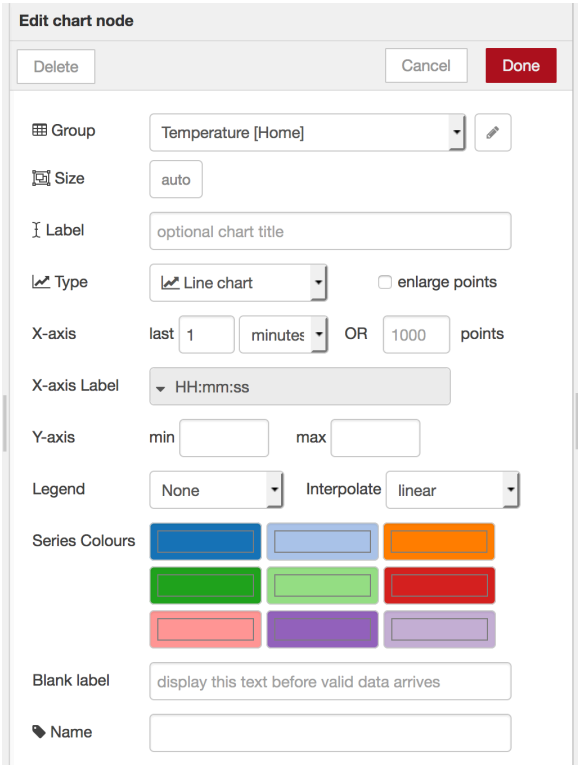
node as shown below. Select **Add new ui_group…** from the **Group** drop-down menu. Click on the pencil icon to create new group.



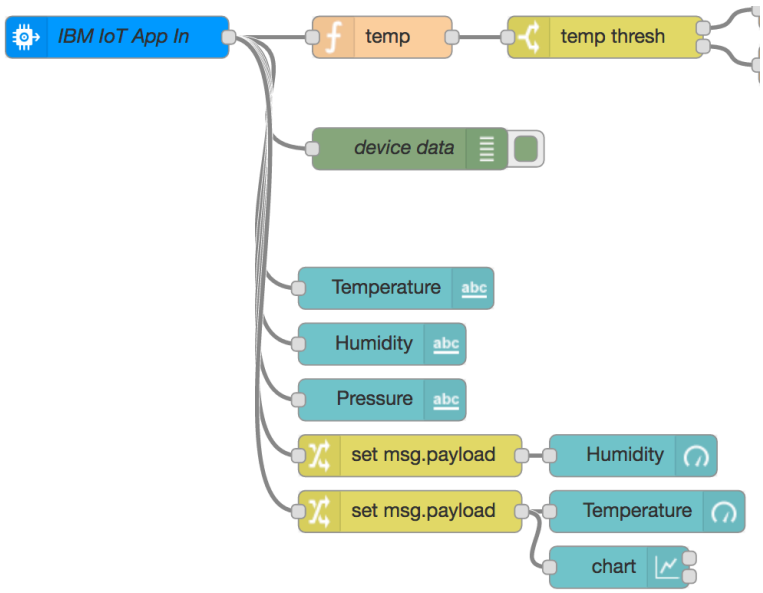
2. Name the new dashboard group `Temperature` as shown below. Click **Add**.



3. Customize the chart node as shown below. When finished, click **Done**.

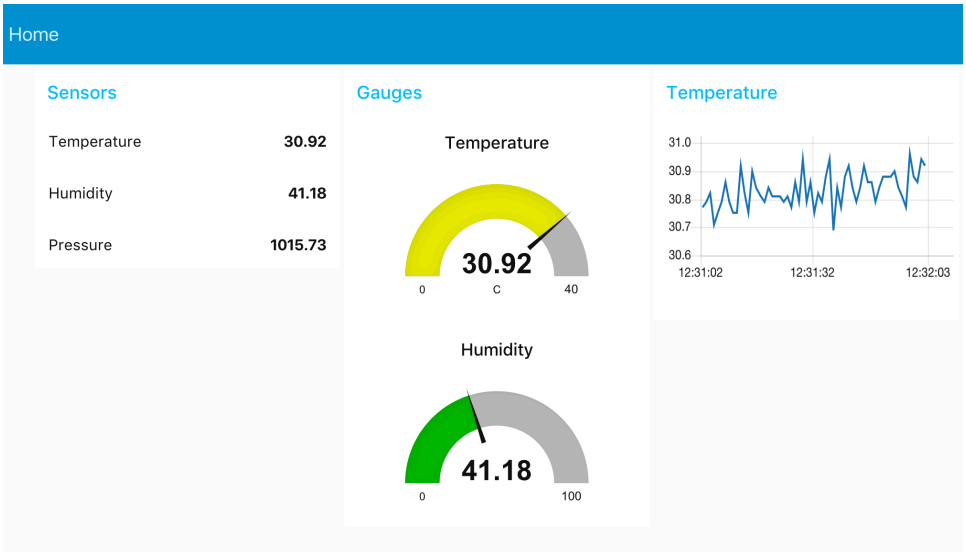


4. Connect the node to the change node created in **Step #1** of the previous section.



Get the code:
`ibm.biz/BdiWp7`

5. Click on the Deploy button in the top right of the screen to save and deploy your changes. The Node-RED dashboard now displays three groups, the last being the temperature chart.



Explore the other nodes available in the dashboard category and see how you could use them to display the IoT data.