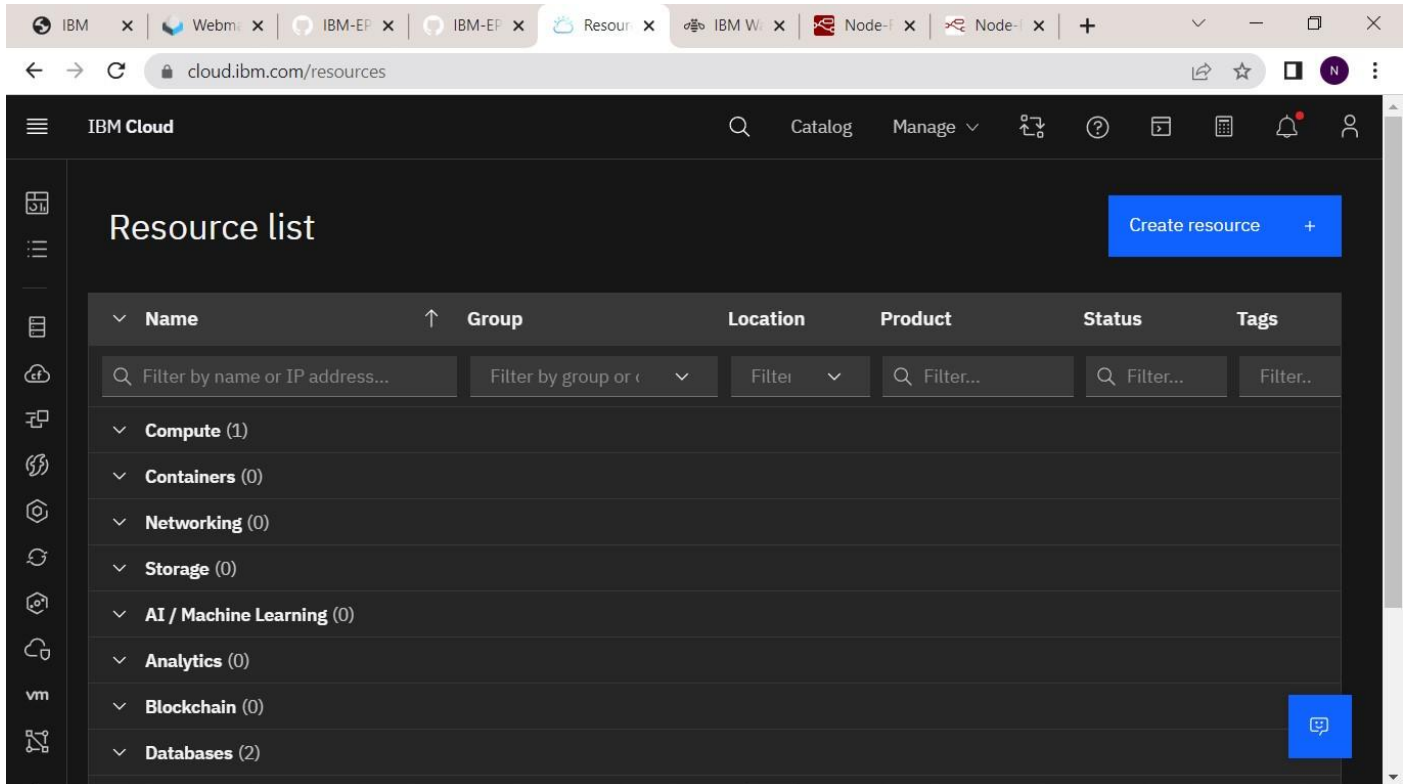


Creating a Node-Red Web Application to view data in Separate Numerical form

Date	07 November 2022
Team ID	PNT2022TMID17245
Project Name	Project - Gas Leakage Monitoring and Alerting System for Industries.

In IBM cloud dashboard, click on Cloud Foundry apps

The screenshot shows the IBM Cloud dashboard interface. At the top, there's a navigation bar with 'IBM Cloud' and a search icon. Below this is a 'Resource list' section with a 'Create resource' button. The main area displays a table with columns: Name, Group, Location, Product, Status, and Tags. The table is currently empty, showing only category headers like 'Compute (1)', 'Containers (0)', 'Networking (0)', 'Storage (0)', 'AI / Machine Learning (0)', 'Analytics (0)', 'Blockchain (0)', and 'Databases (2)'. A sidebar on the left contains various icons for different services. The browser's address bar shows 'cloud.ibm.com/resources'.

Q



Q



IBM Cloud

Resource list /

Node RED ZUOID 2022-11-07

Running [Visit App URL](#) Add tags [Details](#) Actions...

Getting started

Overview

Runtime

Connections

Logs

API Management

Autoscaling

IBM Cloud Foundry Public is being deprecated. Please see [full details](#).

Instances

Health

100%

1/1 instance(s) are running

Instances

1

MB memory per instance

0 2048 256

Runtime

Node.js

256

Total MB allocation

1.75 GB still available

<https://node-red-zuoid-2022-11-07.eu-gb.mybluemix.net>

Click on your Node-RED flow editor where you will be redirected to the Node-RED flow editor.

Node-RED on IBM Cloud

Node-RED

Flow-based programming for the Internet of Things

Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.

This instance is running as an IBM Cloud application, giving it access to the wide range of services available on the platform.

[Go to your Node-RED flow editor](#)

[Learn how to customise Node-RED](#)

<https://node-red-zuoid-2022-11-07.eu-gb.mybluemix.net/red/>

IBM x IBM-Project x IBM-EPBL/IB x NodeREDZU x Node-RED: x IOT/ibm_cod x +

node-red-zuoid-2022-11-07.eu-gb.mybluemix.net/red/#flow/6ef9bfc58fa5dc2

Node-RED

filter nodes

Flow 1 Flow 2 +

common

- inject
- debug
- complete
- catch
- status
- link in
- link call
- link out
- comment

info

Search flows

- Flows
 - Flow 1
 - Flow 2
- Subflows
- Global Configuration Nodes

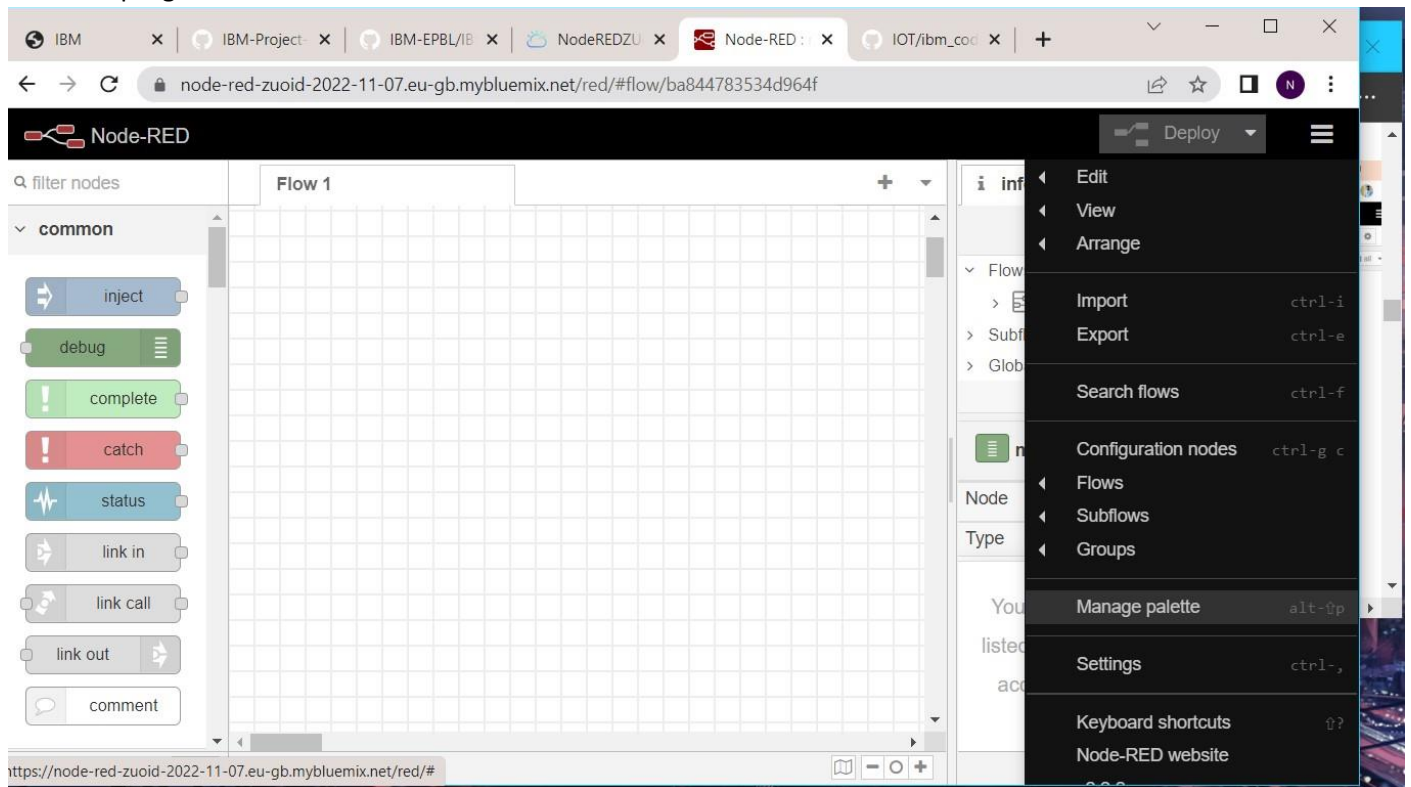
Flow 2

Flow "6ef9bfc58fa5dc2"

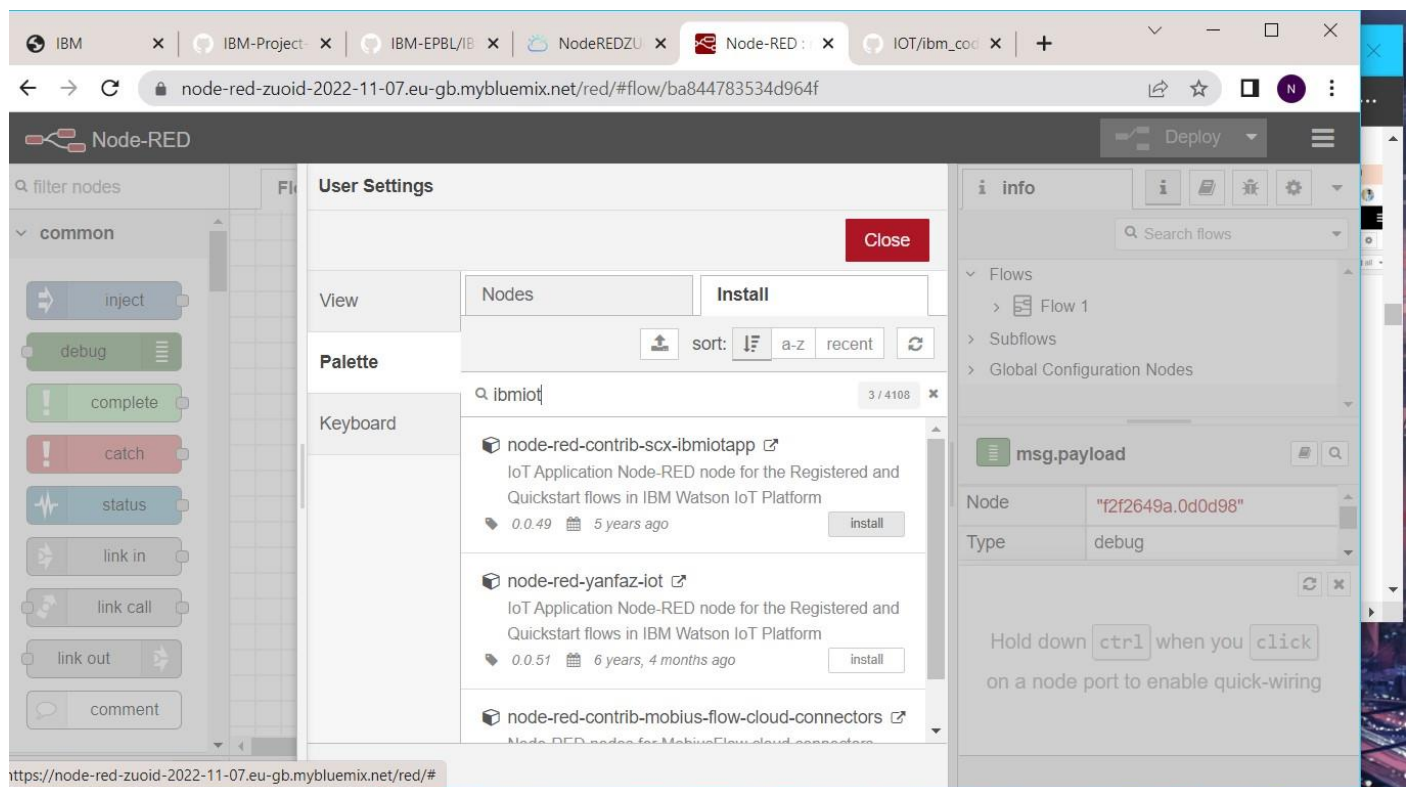
ctrl click in the workspace to open the quick-add dialog

○

To install IBM nodes in Node-red flow editor click on manage palette in the menu option which is on the top-right of the screen.



○ In install section search for ibmiot and install the ibm nodes to flow editor.





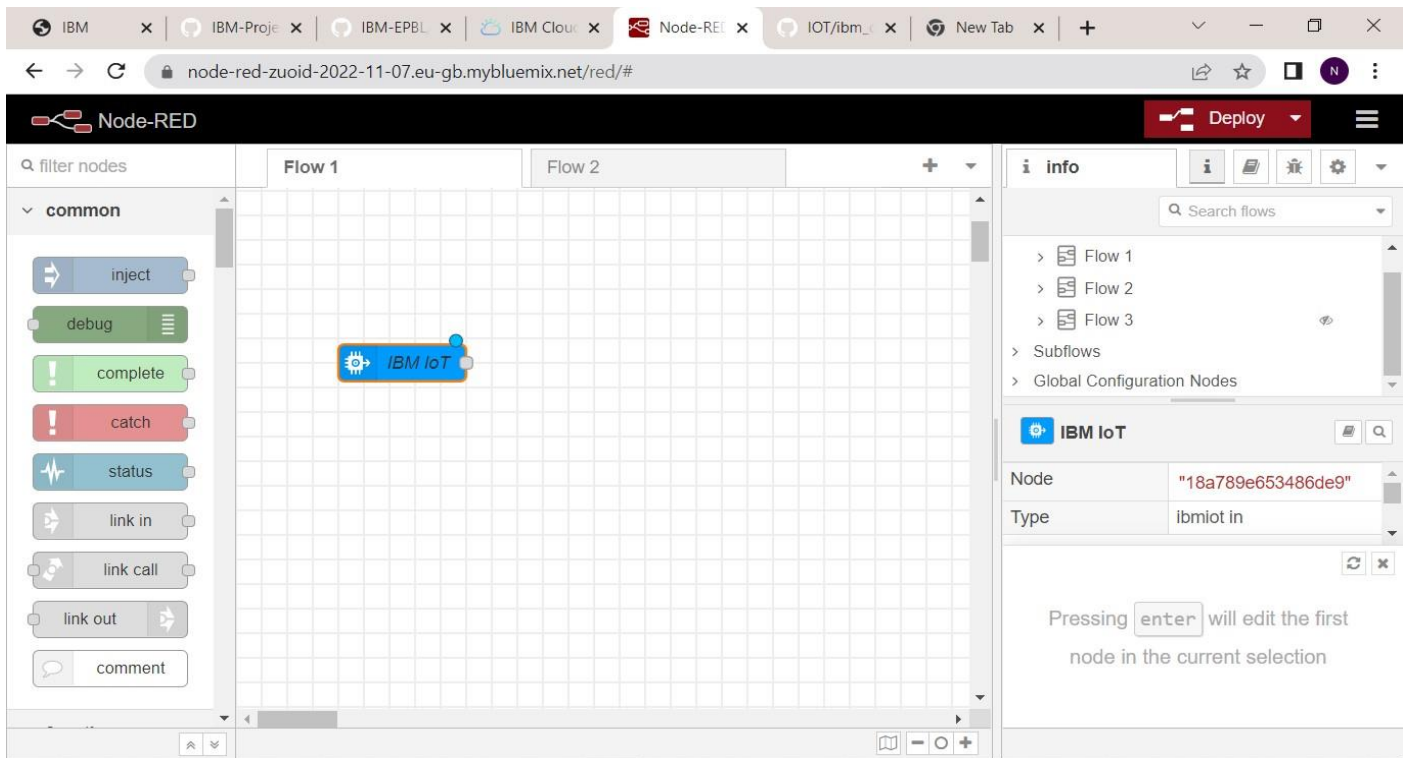


Search for IBM nodes in the filter nodes section

The screenshot shows the Node-RED web interface in a browser. The address bar indicates the URL is `node-red-zuoid-2022-11-07.eu-gb.mybluemix.net/red/#`. The interface has a top bar with a 'Deploy' button and a hamburger menu. On the left, the 'filter nodes' section is active, showing a search for 'ibm'. Under the 'input' category, the 'ibmiot in' node is visible. The main workspace shows 'Flow 1' with a grid. On the right, the 'info' sidebar is open, displaying details for the selected 'ibmiot in' node, including its ID 'ae6ddad1b995b021' and type 'ibmiot in'. Below the node details, there is a 'click' button and instructions: 'click and drag on a node port to move all of the attached wires or just the selected one'.

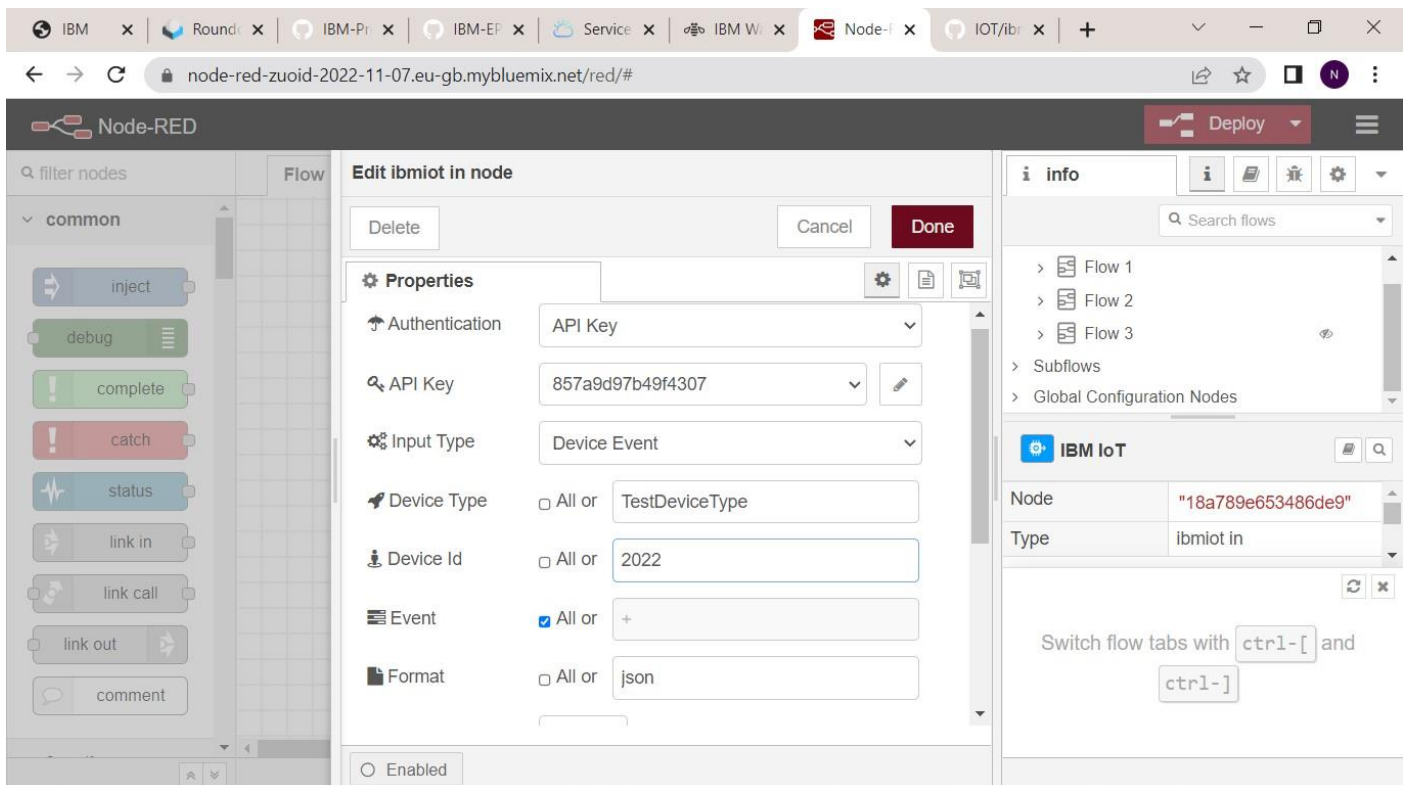
- To Retrieve the data from the IBM IoT platform by using Node-RED IBM IoT Input node and double click on the IBM IoT input node

○



Select API Key from Authentication in properties.

○ In API Key paste API Key, API Token and server name and update it



○

- Also update your input type as event, Device type, Device ID, command and format in the properties section and click on Done

○ To generate API Key go to IBM IoT platform

○ In Apps Section -> Click on Generate API Key

The screenshot shows the IBM Watson IoT Platform dashboard. The top navigation bar includes the IBM logo and a user profile section with the email 310819106054@smartinternz.com and ID: q26y5w. The main content area is titled 'IBM Cloud Apps' and features a '+ Generate API Key' button. Below this, a table lists API keys. The first key is 'a-q26y5w-q7sakhzog4', described as 'API Key for the device simulator', with a role of 'Standard Application' and an expiration of 'Never'. Below the table, the 'API Key Information' section provides details: Key (a-q26y5w-q7sakhzog4), Description (API Key for the device simulator), Date Added (Nov 9, 2022 9:34 PM), Last Update (Nov 9, 2022 9:34 PM), Last Edited By (-), and Expires (Never). A status box at the bottom indicates '1 Simulation running'.

Key	Description	Role	Expires
a-q26y5w-q7sakhzog4	API Key for the device simulator	Standard Application	-

API Key Information		Access Control/Permissions	
Key	a-q26y5w-q7sakhzog4	Last Edited By	-
Description	API Key for the device simulator	Expires	Never
Date Added	Nov 9, 2022 9:34 PM		
Last Update	Nov 9, 2022 9:34 PM		

1 Simulation running

- Click on Deploy option to check the connection status. If the status is disconnected check for IBM IoT properties and try again.

○

The screenshot shows the Node-RED web interface in a browser. The top bar includes tabs for IBM, Round, IBM-Pr, IBM-EP, Service, IBM W, Node-f, and IOT/ibr. The address bar shows the URL: node-red-zuoid-2022-11-07.eu-gb.mybluemix.net/red/#flow/ba844783534d964f. The main workspace displays a flow named 'Flow 1' with two nodes: 'IBM IoT' (blue) and 'msg.payload' (green). The 'debug' tab is active on the right, showing a list of messages. The messages are JSON objects containing temperature and humidity data.

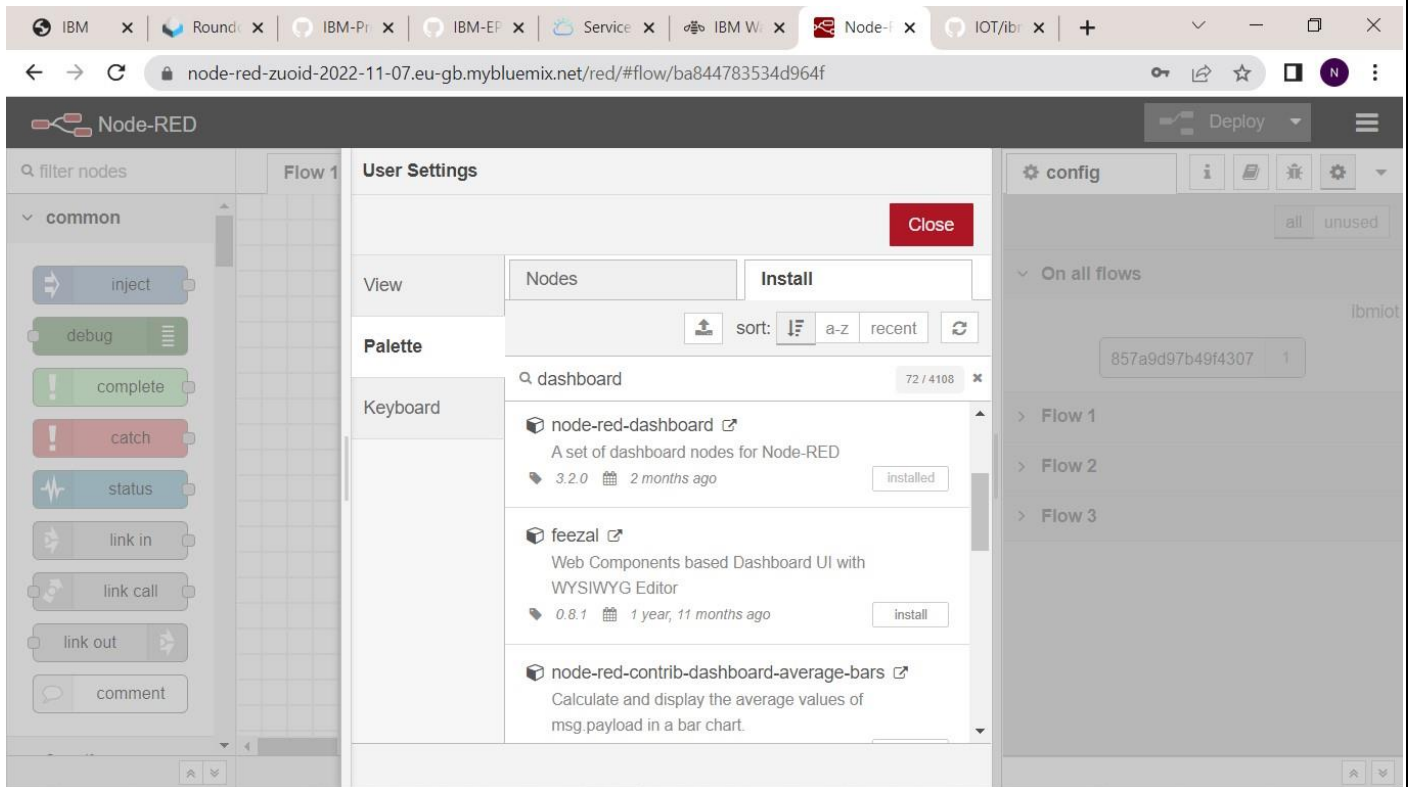
```
11/9/2022, 12:44:38 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 75, humidity: 97 }  
11/9/2022, 12:44:40 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 44, humidity: 89 }  
11/9/2022, 12:44:43 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 93, humidity: 96 }  
11/9/2022, 12:44:45 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 79, humidity: 15 }  
11/9/2022, 12:44:45 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 59, humidity: 99 }
```

Place the debug node in the flow editor and click on deploy to see the temperature and humidity value in the debug tab

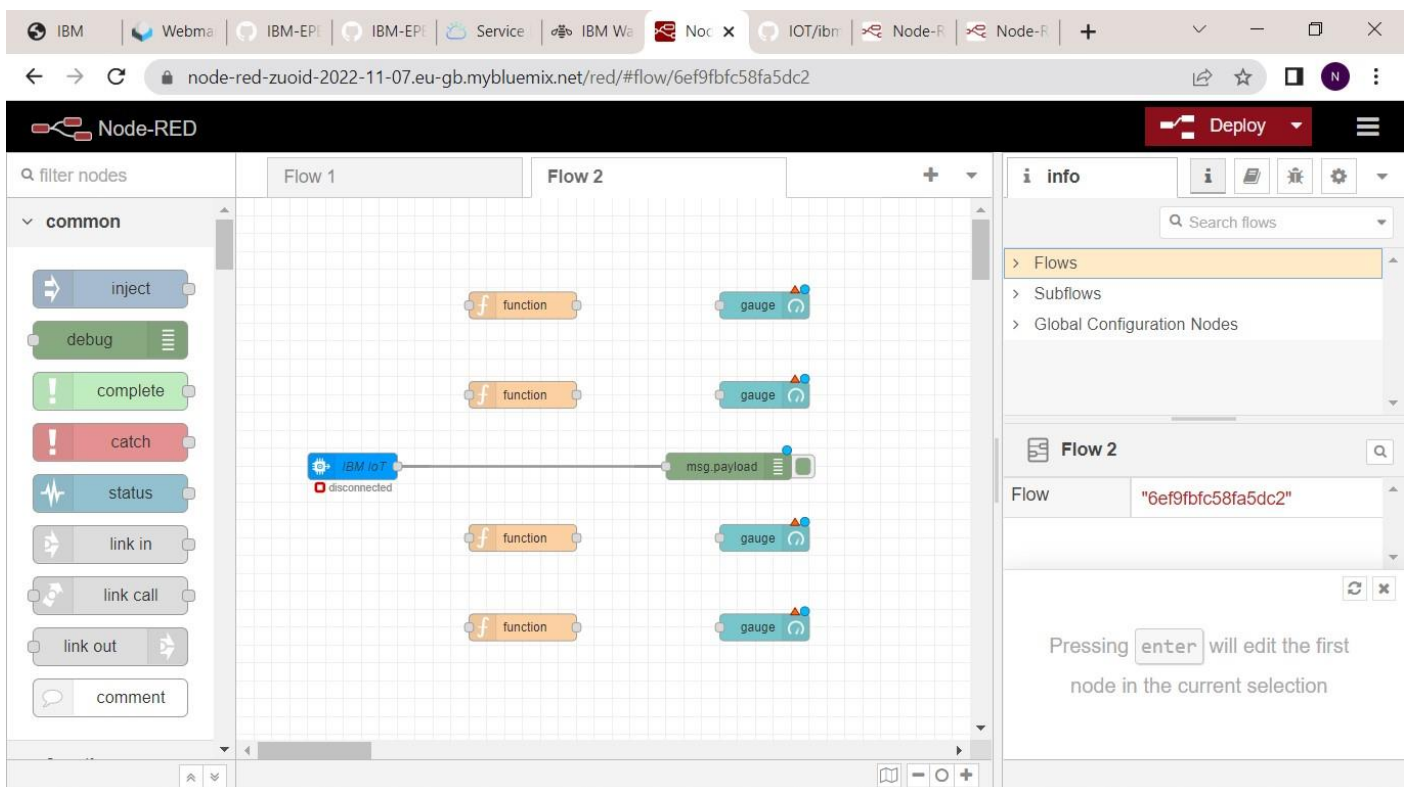
The screenshot shows the Node-RED web interface in a browser. The top bar includes tabs for IBM, Round, IBM-Pr, IBM-EP, Service, IBM W, Node-f, and IOT/ibr. The address bar shows the URL: node-red-zuoid-2022-11-07.eu-gb.mybluemix.net/red/#flow/ba844783534d964f. The main workspace displays a flow named 'Flow 1' with two nodes: 'IBM IoT' (blue) and 'msg.payload' (green). The 'debug' tab is active on the right, showing a list of messages. The messages are JSON objects containing temperature and humidity data. A red box highlights the first three messages.

```
11/9/2022, 12:46:00 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 66, humidity: 75 }  
11/9/2022, 12:46:02 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 14, humidity: 73 }  
11/9/2022, 12:46:05 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 101, humidity: 5 }  
11/9/2022, 12:46:06 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 100, humidity: 92 }  
11/9/2022, 12:46:06 PM node: f2f2649a.0d0d98  
iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json :  
msg.payload : Object  
  { temperature: 17, humidity: 8 }
```

- Install the dashboard node from the manage pallet to create a UI to display temperature and humidity values in the Dashboard



- Drag and place the function node and gauge node in the flow editor to separate the temperature and humidity value



- Double click on function and update the details as follow, ○ Type `msg.payload=msg.payload.Temperature` in one function.

○

- Type `msg.payload=msg.payload.Humidity` in another function
- Type `msg.payload=msg.payload.HazardousGas`
- Type `msg.payload=msg.payload.d.Pressure`
- To separate the humidity and temperature values from payload and click deploy

The screenshot shows the Node-RED web interface. In the center workspace, a flow is built with an 'IBM IoT' input node connected to four function nodes: 'HazardousGas', 'Temperature', 'Humidity', and 'Pressure'. Each function node is connected to a corresponding output node: 'HazardousGas', 'Temperature', 'Humidity', and 'Pressure'. The left sidebar shows the 'input' and 'output' categories with 'ibmiot in' and 'ibmiot out' nodes. The right sidebar shows the 'debug' console with a list of messages. The current message is an object: `{ temperature: 47, humidity: 5, Hazardousgas: 93, pressure: 37 }`.

Select gauge function and these nodes to temperature, pressure, hazardous gas and humidity

This screenshot shows the same Node-RED interface as the previous one, but with the 'msg.payload' node selected in the flow. The debug console shows the current message payload as an object: `{ temperature: 93, humidity: 81, Hazardousgas: 96, pressure: 97 }`. The left sidebar shows the 'input' and 'output' categories with 'ibmiot in' and 'ibmiot out' nodes. The right sidebar shows the 'debug' console with a list of messages.

- Edit temperature, hazardous gas, pressure and humidity nodes and deploy it.

The screenshot shows the Node-RED web interface in a browser. The main workspace displays a flow with two nodes: 'ibmiot in' (input) and 'ibmiot out' (output). The 'Edit gauge node' configuration panel is open, showing the following settings:

- Group:** [Hazardous gas] Gas leakage
- Size:** auto
- Type:** Compass
- Label:** Pressure
- Value format:** {{value}}
- Units:** %
- Range:** min 0, max 100
- Enabled:** ☒ Enabled

The debug console on the right shows a list of messages received from the 'ibmiot in' node. The messages are as follows:

Time	Node ID	Message
11/9/2022, 9:19:39 PM	node: f2f2649a.0d0d98	iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json : msg.payload : number
11/9/2022, 9:19:39 PM	node: f2f2649a.0d0d98	iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json : msg.payload : number
11/9/2022, 9:19:39 PM	node: f2f2649a.0d0d98	iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json : msg.payload : number
11/9/2022, 9:19:39 PM	node: f2f2649a.0d0d98	iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json : msg.payload : number
11/9/2022, 9:19:41 PM	node: f2f2649a.0d0d98	iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json : msg.payload : number

- After editing the nodes, deploy it

○

The screenshot displays the Node-RED web application interface in a browser. The address bar shows the URL: `node-red-zuoid-2022-11-07.eu-gb.mybluemix.net/red/#flow/ba844783534d964f`. The interface includes a left sidebar with a search bar and two sections: 'input' containing an 'ibmiot in' node and 'output' containing an 'ibmiot out' node. The main workspace shows 'Flow 1' with a diagram where the 'ibmiot in' node connects to four function nodes: 'HazardousGas', 'Temperature', 'Humidity', and 'Pressure'. Each function node is connected to a corresponding output node on the right: 'HazardousGas', 'Temperature', 'Humidity', and 'Pressure'. A 'msg.payload' node is also connected to the 'Temperature' and 'Humidity' function nodes. The right sidebar features a 'debug' tab showing a log of messages. The messages are as follows:

Time	Node ID	Message
11/9/2022, 9:18:41 PM	node: f2f2649a.0d0d98	iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json : msg.payload : number 40
11/9/2022, 9:18:42 PM	node: f2f2649a.0d0d98	iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json : msg.payload : number 41
11/9/2022, 9:18:43 PM	node: f2f2649a.0d0d98	iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json : msg.payload : Object { temperature: 93, humidity: 81, Hazardousgas: 96, pressure: 97 }
11/9/2022, 9:18:44 PM	node: f2f2649a.0d0d98	iot-2/type/TestDeviceType/id/2022/evt/status/fmt/json : msg.payload : number 96

RESULT:

Thus, the Node-Red Web Application is created successfully.