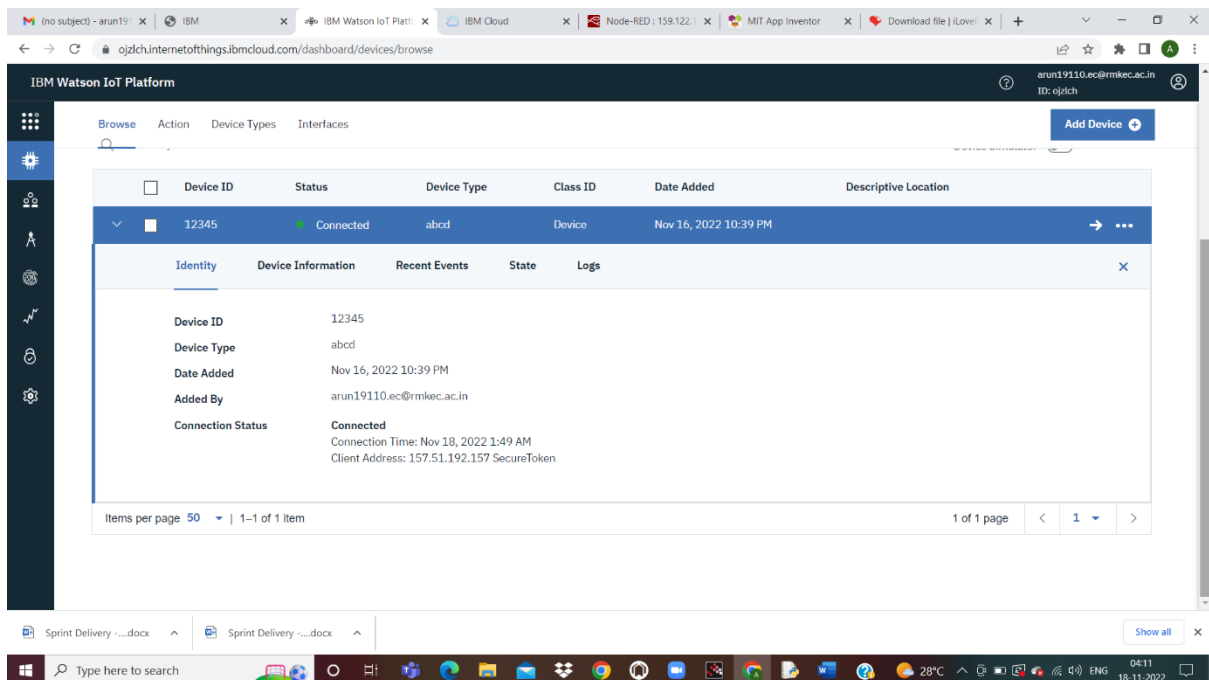


# SmartFarmer - IoT Enabled Smart Farming Application

## Project Development Phase – Sprint 2

### IBM Watson IOT Platform

- Create a device



**Organization ID - ojzlc**

**Device Type - abcd**

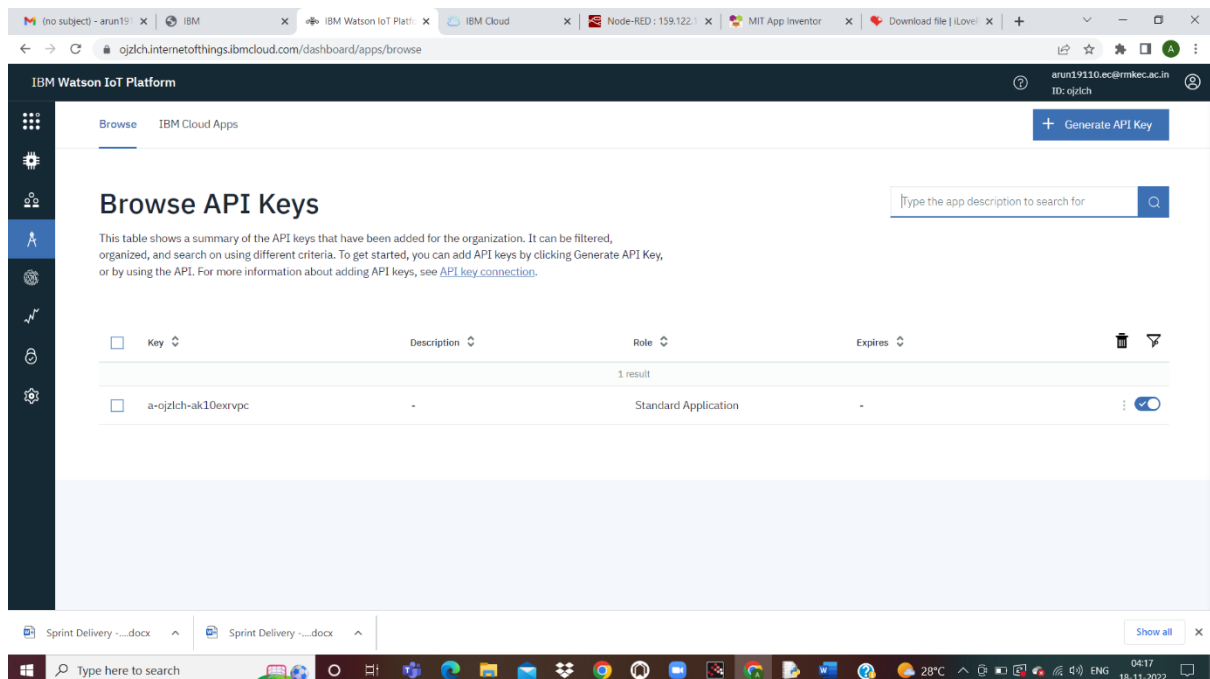
**Device ID – 12345**

**Authentication Method - use-token-auth**

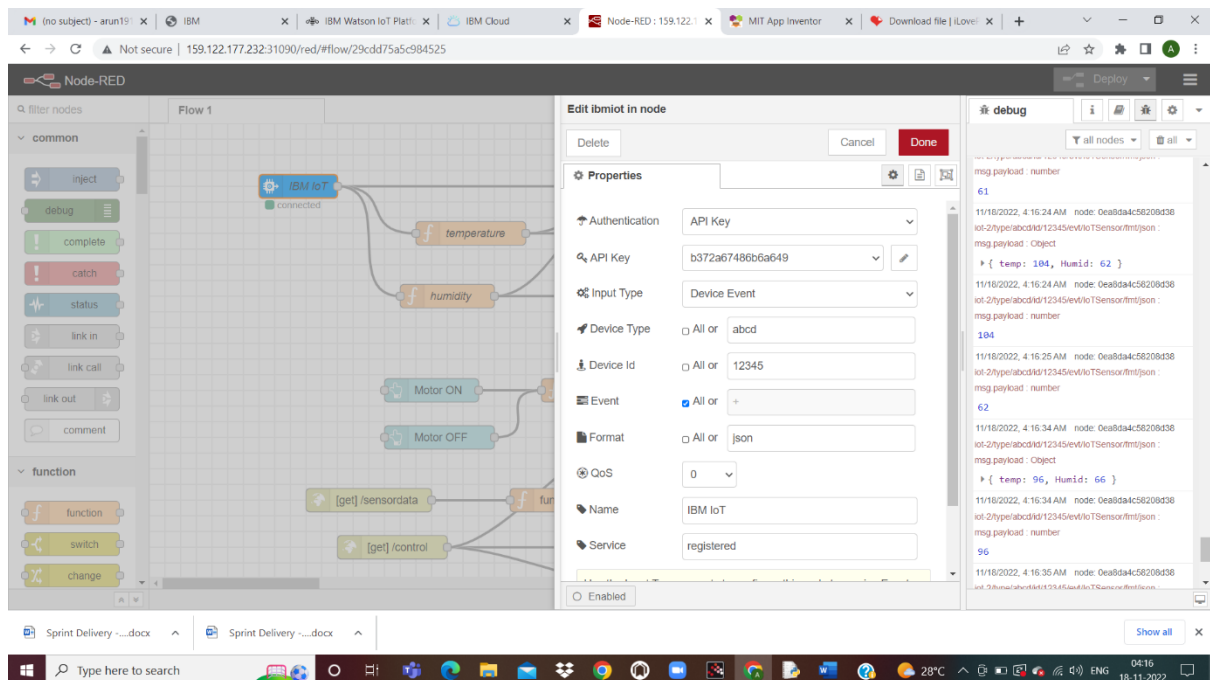
**Authentication Token – 12345678**

# Configuration of Node-Red to collect IBM cloud data

- **Generate API Key in IBM Watson platform**



- **API key - a-ojzch-ak10exrvpc**
- **API token - 9ytp@m&GQxWYIs5J2h**



- The node IBM IoT App In is added to Node-Red workflow. Then the appropriatedevice credentials obtained earlier are entered into the node to connect and fetch device telemetry to Node red.
- Once it is connected Node-Red receives data from the deviceDisplay the data using debug node for verification Connect function node and write the Java script code to get each readingseparately.

The screenshot shows the Node-RED web interface. On the left, the 'common' node palette includes 'inject', 'debug', 'complete', 'catch', 'status', 'link in', 'link call', 'link out', and 'comment'. The 'function' node palette includes 'function', 'switch', and 'change'. The main workspace shows a flow with an 'IBM IoT' node connected to a 'function' node. The 'Edit function node' dialog is open, showing the following JavaScript code:

```
1 msg.payload=msg.payload.d.temperature;
2 global.set('t',msg.payload);
3 return msg;
```

The 'debug' console on the right shows the following output:

```
11/18/2022, 4:16:24 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : Object
  { temp: 104, Humid: 62 }
11/18/2022, 4:16:24 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : number
104
11/18/2022, 4:16:25 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : number
62
11/18/2022, 4:16:34 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : Object
  { temp: 96, Humid: 66 }
11/18/2022, 4:16:34 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : number
96
11/18/2022, 4:16:35 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
```

- The Java script code for the function node is:  
`msg.payload=msg.payload.d.temperature; returnmsg;`
- Finally connect Gauge nodes from dashboard to see the data in UI.

The screenshot shows the Node-RED web interface. On the left, the 'common' node palette includes 'inject', 'debug', 'complete', 'catch', 'status', 'link in', 'link call', 'link out', and 'comment'. The 'function' node palette includes 'function', 'switch', and 'change'. The main workspace shows a flow with an 'IBM IoT' node connected to a 'function' node. The 'Edit IBMiot out node' dialog is open, showing the following configuration:

- Authentication: API Key
- API Key: b372a67486b6a649
- Output Type: Device Command
- Device Type: abcd
- Device Id: 12345
- Command Type: cmd
- Format: json
- Data: data
- QoS: 0
- Name: IBM IoT

The 'debug' console on the right shows the following output:

```
11/18/2022, 4:24:44 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : Object
  { temp: 100, Humid: 96 }
11/18/2022, 4:24:44 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : number
100
11/18/2022, 4:24:45 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : number
96
11/18/2022, 4:24:56 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : Object
  { temp: 105, Humid: 85 }
11/18/2022, 4:24:56 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : number
105
11/18/2022, 4:24:57 AM node: 0ea8da4c58208438
iot-2?type=abcd&id=12345&ev=IoTSensor/rmt/json :
msg.payload : number
85
```

Node-RED interface showing a flow for sensor data processing. The flow includes an IBM IoT node, a function node for temperature, a function node for humidity, and a gauge node for temperature. The gauge node is configured with the following properties:

- Group: [humidity] sensor data
- Size: auto
- Type: Gauge
- Label: Temperature
- Value format: {{value}}
- Units: centigrade
- Range: min 90, max 110
- Colour gradient: Green, Yellow, Red
- Sectors: 90, optional, optional, 110
- Class: Optional CSS class name(s) for widget

The debug console shows the following log entries:

```
11/18/2022, 4:16:24 AM node: 0ea8da4c58208438  
iot-2/type/abcdid/12345ev6/iotSensor/rmt/json :  
msg.payload : Object  
{ temp: 104, Humid: 62 }  
11/18/2022, 4:16:24 AM node: 0ea8da4c58208438  
iot-2/type/abcdid/12345ev6/iotSensor/rmt/json :  
msg.payload : number  
104  
11/18/2022, 4:16:25 AM node: 0ea8da4c58208438  
iot-2/type/abcdid/12345ev6/iotSensor/rmt/json :  
msg.payload : number  
62  
11/18/2022, 4:16:34 AM node: 0ea8da4c58208438  
iot-2/type/abcdid/12345ev6/iotSensor/rmt/json :  
msg.payload : Object  
{ temp: 96, Humid: 66 }  
11/18/2022, 4:16:34 AM node: 0ea8da4c58208438  
iot-2/type/abcdid/12345ev6/iotSensor/rmt/json :  
msg.payload : number  
96  
11/18/2022, 4:16:35 AM node: 0ea8da4c58208438  
iot-2/type/abcdid/12345ev6/iotSensor/rmt/json :  
msg.payload : number  
66
```

