

SPRINT DELIVERY – II

Project Name: SmartFarmer-Iot Enabled SmartFarming Application.

Team ID: PNT2022TMID32489

CONNECTING IOT SIMULATOR (IBM WATSON)& CREATING THE WEB APPLICATION (NODE-RED)

Connecting IOT Simulator:-

- Login to the IBM cloud
- Adding or Creating the device which is need for Simulation
- While registering, generated terms

Organization ID : mwh51s

Device Type : NodeMCU

Device ID : BDDSJS

Authentication Method : use-token-auth

Authentication Token : BDDSJS1234

(Our Project Device)

IBM Watson IoT Platform

810019205031@smartinternz.com
ID: mwh51s

Search by Device ID

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
12345	Disconnected	NodeMCU	Device	Nov 19, 2022 10:42 AM	
BDDSJS	Disconnected	NodeMCU	Device	Nov 19, 2022 6:51 PM	

Identity | Device Information | Recent Events | State | Logs

Device ID: BDDSJS
Device Type: NodeMCU
Date Added: Nov 19, 2022 6:51 PM
Added By: 810019205031@smartinternz.com
Connection Status: Disconnected

Items per page: 50 | 1-2 of 2 Items

1 of 1 page

2 Simulations running

BOARD CONFIGURATION

The screenshot shows the IBM Watson IoT Platform dashboard. The top navigation bar includes "Your boards" and "Public boards" tabs, with a "Create New Board" button. The main area displays three boards: "IOT SMART FARMING" (4 Cards), "SMART FARMING" (3 Cards), and "RISK AND SECURITY OVERVIEW" (4 Cards). A fourth board slot is empty, marked with a large plus sign. Below the boards, it says "Boards shared with you". At the bottom right, a status bar indicates "2 Simulations running". The browser's address bar shows the URL: `mwh51s.internetofthings.ibmcloud.com/dashboard/boards/`. The system tray at the bottom shows the date and time as 01:00 on 20-11-2022.

The screenshot shows the IBM Watson IoT Platform dashboard with the "Devices" tab selected. The "Browse" sub-tab is active, displaying a table of devices. The device "BDDJSJS" is selected, and its details are shown in the "Device Information" section. The "Recent Events" section is also visible. A modal window for configuring the device's events is open, showing the "Events" tab. The event type is "event_1" with a frequency of "20 x Every Minute". The payload is configured with the following JSON:

```
0 {
1   "randomNumber": random(0, 100),
2   "temperature": random(10, 90),
3   "moisture": random(70, 100),
4   "humidity": random(10, 100)
5 }
6
7
```

The modal window includes a "Send" button and a "Save" button. The browser's address bar shows the URL: `mwh51s.internetofthings.ibmcloud.com/dashboard/devices/browse`. The system tray at the bottom shows the date and time as 00:59 on 20-11-2022.

Here when we click the send button, the recent events shows the message.

IBM Watson IoT Platform

Simulations

2/50 Simulations Running

+ New Simulation

Device Type: NodeMCU

1 Event

2 Devices

BDD5JS

12345

1 x Create Simulated Device Use Registered Device

602 events sent (2 failed) 31.54 KB sent

Event	Value	Format	Last Received
event_1	{"randomNumber":61,"temperature":13,"moistu...	json	a few seconds ago
event_1	{"randomNumber":21,"temperature":78,"moistu...	json	a few seconds ago
event_1	{"randomNumber":29,"temperature":54,"moistu...	json	a few seconds ago
event_1	{"randomNumber":69,"temperature":52,"moistu...	json	a few seconds ago
event_1	{"randomNumber":23,"temperature":22,"moistu...	json	a few seconds ago

CARD CONFIGURATION

IBM Watson IoT Platform

IOT Smart Farming

Add New Card Settings

Line chart

80 60 40 20 0

00:56 00:57 00:58 00:59 01:00

5 minutes now

temperature moisture

Gauge

22.0 °C

Donut chart

moisture 84.0 %

Value

25 humidity 2 Simulations running

IBM App Develop...IBM Watson IoT P...Node-RED Dashb...IBMIoT-B8-2A4E (Eve...IoT-B8-2A4E (Aft...SPRINT-2.pdf(18) WhatsApp

mwh51s.internetofthings.ibmcloud.com/dashboard/boards/313597d3-c327-4660-8030-1a0eadd36ade

IBM Watson IoT Pla...Node-RED : 169.51...IBM App Developm...

IBM Watson IoT Platform810019205031@smartinternz.comID: mwh51s

IOT Smart Farming

5 minutes

00:5600:5700:5800:5901:00

temperaturemoisture

now

Donut chart

moisture78.0 %

Total78 %

Value

16.0humidity

2 Simulations running

21°C
Mostly clear

Search

ENG
IN

01:00
20-11-2022

CREATING THE WEB APPLICATION (NODE-RED)

CONFIGURE AND DEPLOY THE NODE-RED

Install the Node-Red using kubernetes

The screenshot shows the IBM Cloud Developer console for an application named "Node RED KUAOK 2022-11-19". The interface includes a sidebar with "Resource list" and "App details". The main content area displays the following details:

- Details:**
 - App URL: <http://169.51.194.215:31918>
 - Source: <https://us-south.git.cloud.ibm.com/810019205031/NodeRED...>
 - Resource group: Default
 - Deployment target: Kube/Helm
 - Created: 11/19/2022
- Services:**
 - Cloudant: Open dashboard, Documentation, API reference
 - Connect existing services: +
 - Create service: +
- Deployment Automation:**
 - Name: NodeREDKUAOK2022-11-19
 - Location: Dallas
 - Tool integrations: [Icons]
 - Delivery Pipelines:
 - Name: pr-pipeline, Status: No stages detected
 - Name: ci-pipeline, Status: Success
- Getting started quickly:**
 - Configuring your app: To connect services and DevOps toolchains to your app:
 - Use the **Services** card to connect a service to your app. Select an existing service instance, or create a new one. [Learn more.](#)
 - If you want to view the code before your app is deployed, click **Download code** to obtain the .zip file.
 - Click **Deploy your app** in the **Deployment Automation** card to select the deployment target and configure the Continuous Delivery service. The deployment begins automatically.
 - After the deployment begins, you can view the status of the deployment, modify your app, view your repo, or view the app's URL.

Generate the API Keys

The screenshot shows the IBM Watson IoT Platform dashboard for the user "810019205031@smartinternz.com". The "Browse" tab is selected, and the "API Keys" section is displayed. The page includes a "Generate API Key" button and a search bar. Below the search bar, a table lists the API keys:

Key	Description	Role	Expires
3 results			
a-mwh51s-13j8phn4sz	API Key for the device simulator	Standard Application	-
a-mwh51s-vxybdo8dc9	API Key for the device simulator	Standard Application	-
a-mwh51s-znn9mcw295	-	Device Application	-

At the bottom of the dashboard, a status bar indicates "2 Simulations running".

IbmIoT & API Config

The screenshot shows the Node-RED web interface in a browser. The main workspace displays a flow with an 'IBM IoT' node connected to four function nodes labeled 'temperature', 'humidity', 'moisture', and 'randomnu'. The 'Edit ibmiot in node' panel is open on the right, showing the following configuration:

- Authentication:** API Key
- API Key:** apikey
- Input Type:** Device Event
- Device Type:** All or +
- Device Id:** All or device id e.g. ab12cd231a21
- Event:** All or +
- Format:** All or json
- QoS:** 0
- Name:** IBM IoT
- Service:** registered
- Enabled:** ☐ Enabled

The bottom of the screen shows a Windows taskbar with the date 20-11-2022 and time 01:26.

Function Configuration

The screenshot shows the Node-RED web interface with the 'Edit chart node' panel open. The flow configuration is the same as in the previous image. The 'Edit chart node' panel shows the following configuration:

- Group:** [Smart Field] Field
- Size:** auto
- Label:** Moisture
- Type:** Line chart
- X-axis:** last 1 hours OR 1000 points
- X-axis Label:** HH:mm:ss
- Y-axis:** min max
- Legend:** None
- Interpolate:** linear
- Series Colours:** (Six color swatches: blue, green, orange, red, purple, yellow)
- Enabled:** ☐ Enabled

The bottom of the screen shows a Windows taskbar with the date 20-11-2022 and time 01:26.

Node-RED interface showing a flow configuration. The flow starts with an IBM IoT node (connected) and branches into four parallel paths, each leading to a function node. The function node is currently being edited, showing the following code:

```
1 msg.payload = msg.payload.temp
2 return msg;
```

The right sidebar shows the dashboard configuration, including a Smart Field and a Field. The bottom status bar indicates the temperature is 21°C and the system is mostly clear.

DASHBOARD CREATION

Node-RED interface showing a more complex flow configuration. The flow starts with an IBM IoT node (connected) and branches into four parallel paths, each leading to a function node (temperature, humidity, moisture, and randomnumber). These function nodes then connect to a msg.payload node, which branches into four parallel paths, each leading to a corresponding output node (Temp, Moisture, Humidity, and Humidity). The right sidebar shows the dashboard configuration, including a Smart Field and a Field. The bottom status bar indicates the temperature is 21°C and the system is mostly clear.

USER INTERFACE NODE RED



