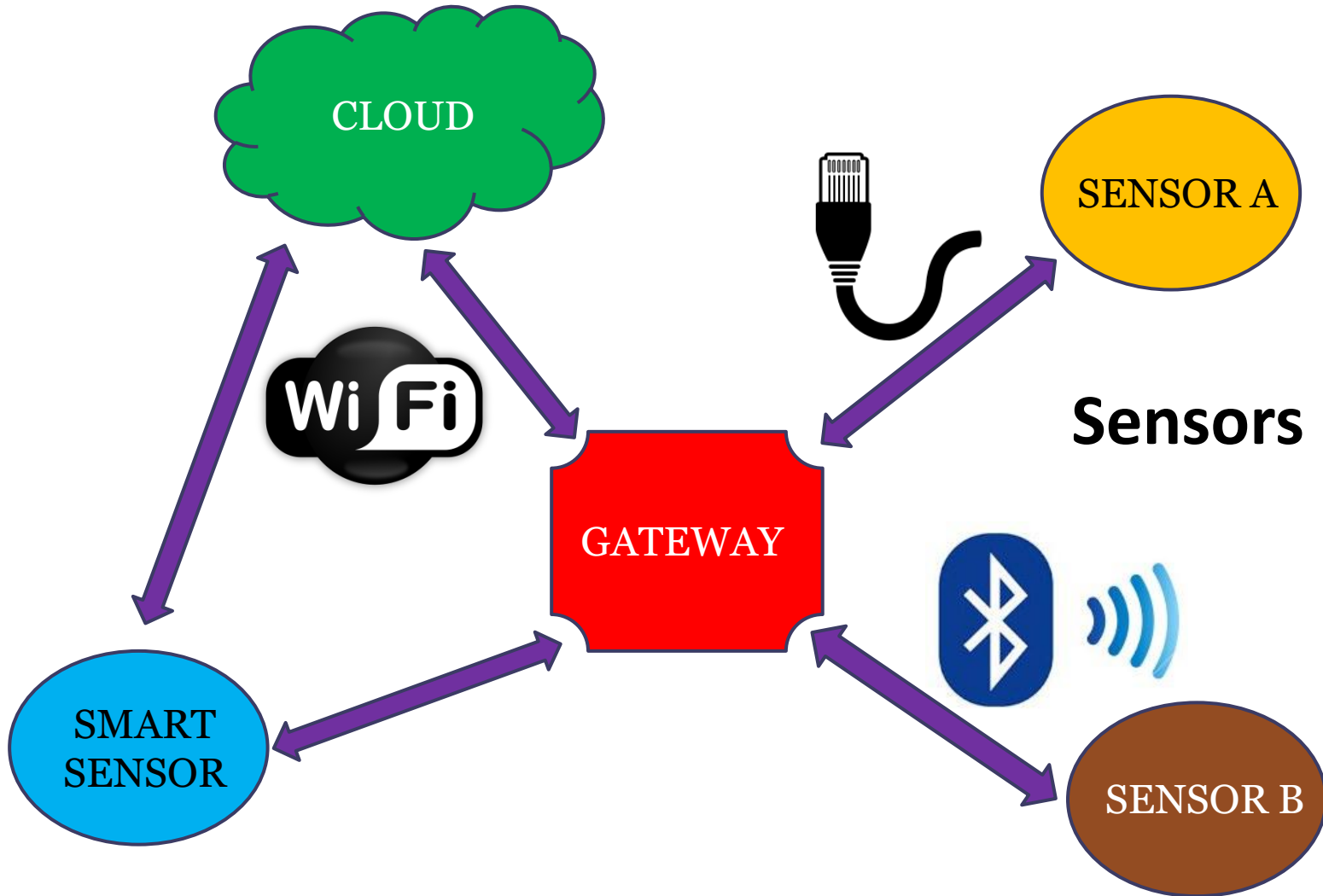


IOT Architecture



Node RED

The screenshot displays the Node-RED web interface. At the top left, the Node-RED logo and name are visible. Below the header, there are two tabs labeled "Sheet 1" and "Sheet 2". On the left side, a vertical panel lists various nodes: debug, mqtt, http response, websocket, tcp, udp, and meshblu. The main workspace shows a workflow in Sheet 2. It starts with an "inject" node (blue) connected to a "meshblu" node (green) with a star icon and a "connected" indicator. This "meshblu" node is then connected to another "meshblu" node (green) with a star icon and a "connected" indicator. Finally, this second "meshblu" node is connected to a "msg.payload" node (green) with a menu icon and a toggle switch.

Installing Node JS (Linux)

- ❖ `sudo yum groupinstall 'Development Tools'`
- ❖ `wget http://nodejs.org/dist/node-v0.10.21.tar.gz`
- ❖ `tar xvfz node-v0.10.21.tar.gz`
- ❖ `cd node-v0.10.21`
- ❖ `./configure`
- ❖ `make`
- ❖ `sudo make install`

Installing Node RED (Linux)

- ❖ `sudo npm install -g`
- ❖ `node-red` //To start node red

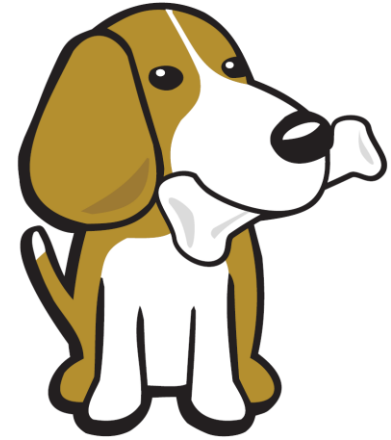
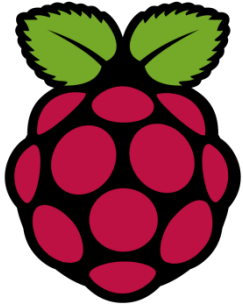
Using Cloud Instance of Node Red without installation

<https://fred.sensetecnic.com>

Installation (Windows)

- ❖ Download node-v4.x version from Node Js website
- ❖ Run executable file
- ❖ Open command prompt(cmd) as administrator and run following command
- ❖ `npm install -g --unsafe-perm node-red` //To install Node red
- ❖ `node-red` //To open Node red

Supported Hardware's



And Many
More.....

Installing Additional Nodes

Arduino Nodes

- ❖ `npm install node-red-node-arduino -g`

GPIO Nodes

- ❖ `npm install node-red-contrib-gpio -g`

Mobile SMS and Call

- ❖ `npm install node-red-node-twilio -g`

IBM IOT Cloud

- ❖ `npm install node-red-contrib-scx-ibmiotapp -g`

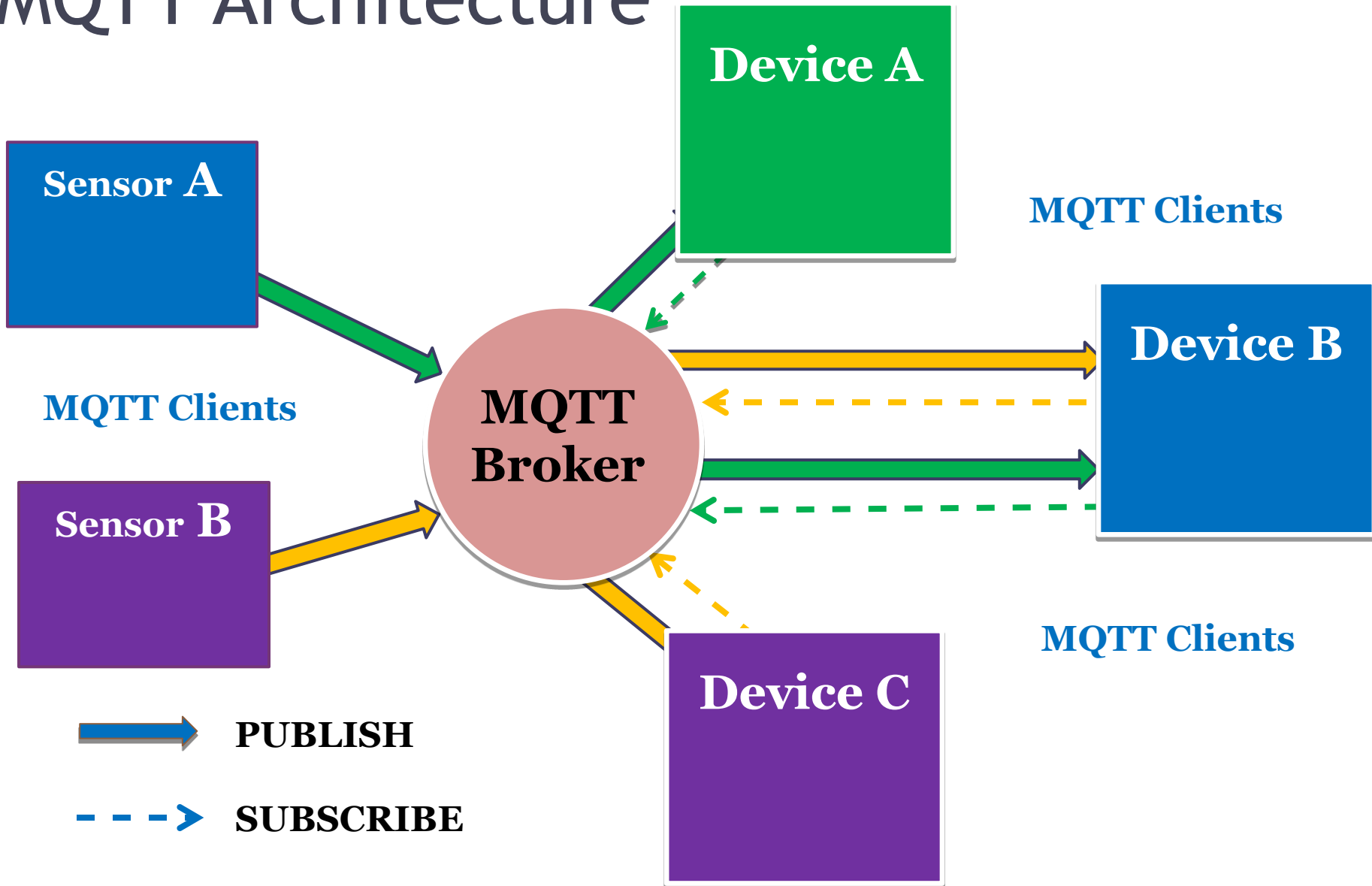
Plotting Graphs and Data Analytics

- ❖ `npm install node-red-contrib-graphs -g`

IOT Protocols

- ❖ MQTT
- ❖ COAP
- ❖ Web Sockets
- ❖ RESTful API

MQTT Architecture



IOT Cloud Platforms

- ❖ IBM Bluemix - MQTT
- ❖ Thingspeak - HTTP
- ❖ Carriots - HTTP, MQTT
- ❖ Opensensors.io - MQTT
- ❖ thethings.io - MQTT, CoAP, Websockets
- ❖ AWS IOT - MQTT