

# Exploring IOT

with Raspberry Pi, Bluemix

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# What it does.

A Tweet is sent out Whenever Input is Pressed



This project explores and demos the concept of IOT and capability to wire together Hardware and software components

IBM Bluemix provides Instance to Run Apps

RaspberryPi sends data to Bluemix App via MQTT Messaging

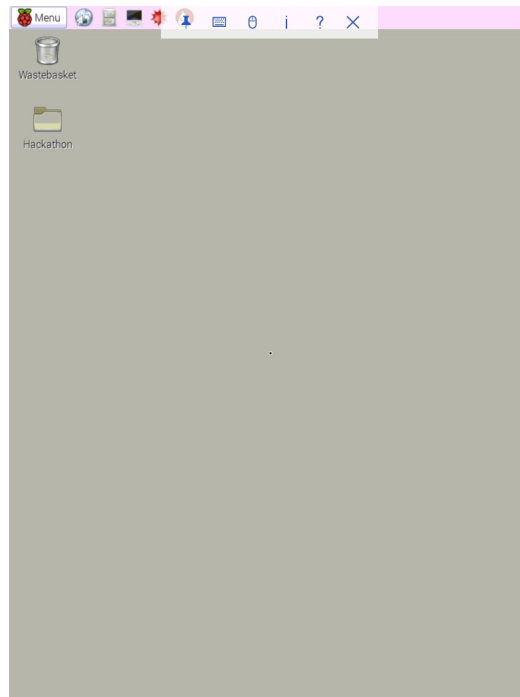
Raspberry Pi is running  
Raspbian OS (a Linux Distro),  
is connected to Internet



# SSH in to Machine


```
pavan-(@)-Tesseract ~  
> ssh pi@192.168.1.104 17:17  
pi@192.168.1.104's password:  
Linux raspberrypi 3.18.7+ #755 PREEMPT Thu Feb 12 17:14:31 GMT 2015 armv6l  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Mon Apr 20 15:44:44 2015 from tesseract  
  
NOTICE: the software on this Raspberry Pi has not been fully configured. Please  
run 'sudo raspi-config'  
  
pi@raspberrypi ~ $
```


# VNC (GUI mode)



# IBM Bluemix

## IOT Service



 IBM Internet of Things Foundation




QuickstartService StatusDocumentation

Organization: hxx558 (Bluemix Free)

[Home](#)[Devices \(1\)](#)[API Keys](#)[People](#)[Usage](#)

This table shows the devices that have been added to your organization. Add and remove devices, or see more information on a device to view and chart the data being received by the IoT Foundation. If you want to share the data from your devices outside of the IoT Foundation, use the [API Keys](#) tab.

 [Add Device](#) [Remove Device\(s\)](#)

<input type="checkbox"/>	Device Type	Device ID	Last Event	Message Rate	Date Added	Added By	
<input type="checkbox"/>	 Raspi-Home	b827eba98fc1	↕ Just now 	Every 934 milliseconds	Monday, April 20, 2015	pcn92@mail.umkc.edu	

[Latest 10 Inbound Events](#)

Click on a row to get more detailed message information.

Event Type	Event	Timestamp
Message published	status	Monday, April 20, 2015 5:24:51 PM
Message published	status	Monday, April 20, 2015 5:24:52 PM
Message published	status	Monday, April 20, 2015 5:24:52 PM
Message published	status	Monday, April 20, 2015 5:24:53 PM
Message published	status	Monday, April 20, 2015 5:24:55 PM
Message published	status	Monday, April 20, 2015 5:24:55 PM
Message published	status	Monday, April 20, 2015 5:24:57 PM

# Node-Red

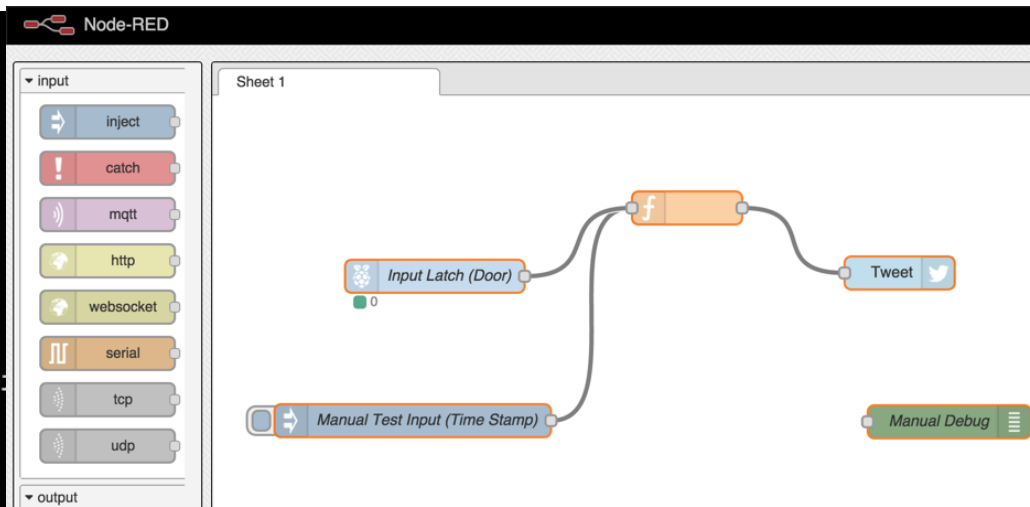
A flow based editor to wire h/w and s/w together.

Raspi running node-red

```
pi@raspberrypi ~ $ node-red
```

```
Welcome to Node-RED
```

```
=====
20 Apr 15:44:59 - [info] Node-RED version: v0.10.6
20 Apr 15:44:59 - [info] Node.js version: v0.10.36
20 Apr 15:44:59 - [info] Loading palette nodes
20 Apr 15:45:17 - [warn] -----
20 Apr 15:45:17 - [warn] Failed to register 3 node types
20 Apr 15:45:17 - [warn] Run with -v for details
20 Apr 15:45:17 - [warn] -----
20 Apr 15:45:17 - [info] User Directory : /home/pi/.node-red
20 Apr 15:45:17 - [info] Flows file : /home/pi/.node-red/flows_raspberrypi.
son
20 Apr 15:45:17 - [info] Server now running at http://127.0.0.1:1880/
20 Apr 15:45:17 - [info] Starting flows
20 Apr 15:45:17 - [info] Started flows
```



# Real life use case

The input source can be anything (Motion sensor, temp readings) and action can be pushing data for visualization and analysis and remotely control and monitor, as the Raspi is always connected to Internet (IOT)

Here, we're sending Tweet about Input switch event

Can be upgraded to a Smart Home Automation System