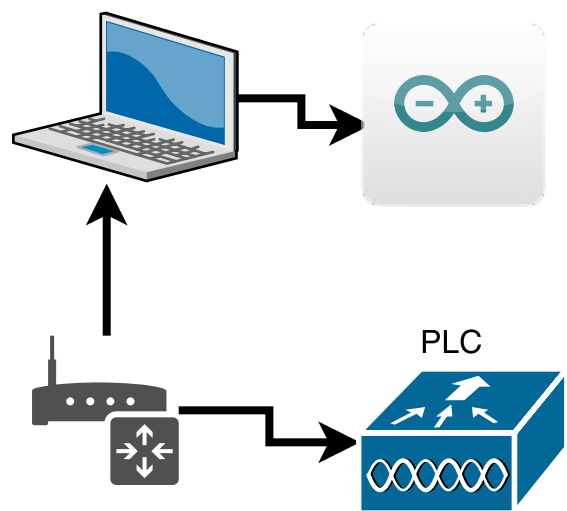


# Set-up Guide

## Material Needed

- IIOT Table
- Configured laptop
- Ethernet cable x 2
- Router
- Arduino w/ sensors connected

## Hardware Set-up



## Software Setup

1. Login to user "kafka" with password "kafka"
2. Start mqtt by running batch file in desktop called "script"
3. Start node red by running opening cmd and typing "node-red"
4. Open your browser and go to "localhost/1880/ui"

## KeyPoints

- Make sure both power supplies are powered.
- Arduino should be connected to sensors.
- YOU MUST RESTART PLC AFTER ROUTER HAS TURNED ON BECAUSE THE PLC WILL ONLY CONNECT ON BOOTUP.

# Industry 4.0 IIoT Demo table

## Intro

### Why Iot?

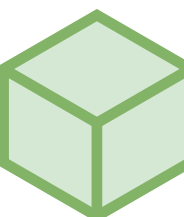
The purpose of this demo is to show the capabilities of IoT (Internet of Things) in an industrial application also referred to as IIoT (Industrial Internet of Things). In this particular case we are employing IoT to help us gather data relating to the functionality of a motor. This data allows for near real time data analytics and provides visual representations so that industrial manufacturers can gain a more in-depth and easier overview. This is to assist in the SCADA process. IIoT leads to predictive maintenance, successor to preventive maintenance. Predictive maintenance aims to prevent delays in manufacturing due to mechanical faults by predicting future events. We can deduce the benefits of IIoT to 3 M's.

1. Monitor
2. Maintain
3. Monetize



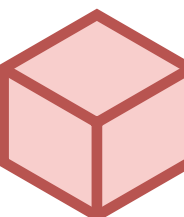
### Monetize

IoT offers big returns on investment allowing for higher returns on production, lower maintenance costs, and fewer production delays.



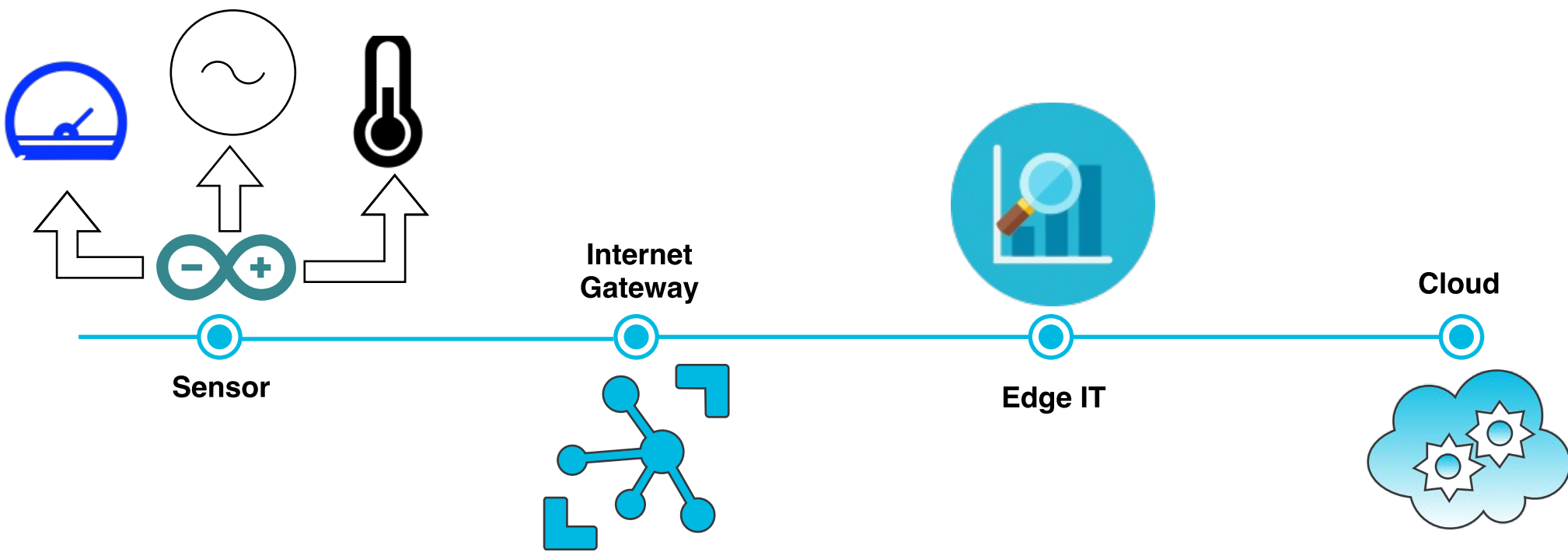
### Monitor

Near real time feature extraction is used to view information on data from various sensors. As a result, visual representations of data are easily analyzed.



### Maintain

Easy fault detection allows for faster and predictive maintenance and real time analysis of problems in the making.



Sensor

In our application 3 sensors are used.

1. Accelerometer: Detect motor vibration patterns
2. Temperature Sensor: Detect heat production from motor.
3. Current Sensor: Measure power drawn by the motor.



Internet Gateway

Our gateway is the combination of the arduino and the windows server. Analog to digital conversion is done by the arduino and data is uploaded through the Windows 7 platform.



Edge IT

Data is processed upon being received. A *time to insight* approach is used, as opposed to *depth of insight* and this occurs at the edge of a network connection. Data is processed near the source using node-red which also acts as the UI.



Cloud

Data is stored to cloud for further processing.