

A white network diagram is overlaid on the blue background. It consists of several white dots, some of which are enclosed in white circles. These dots are interconnected by thin white lines, forming a complex web of connections that spans the upper and right portions of the slide.

IoT Platform

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About Me

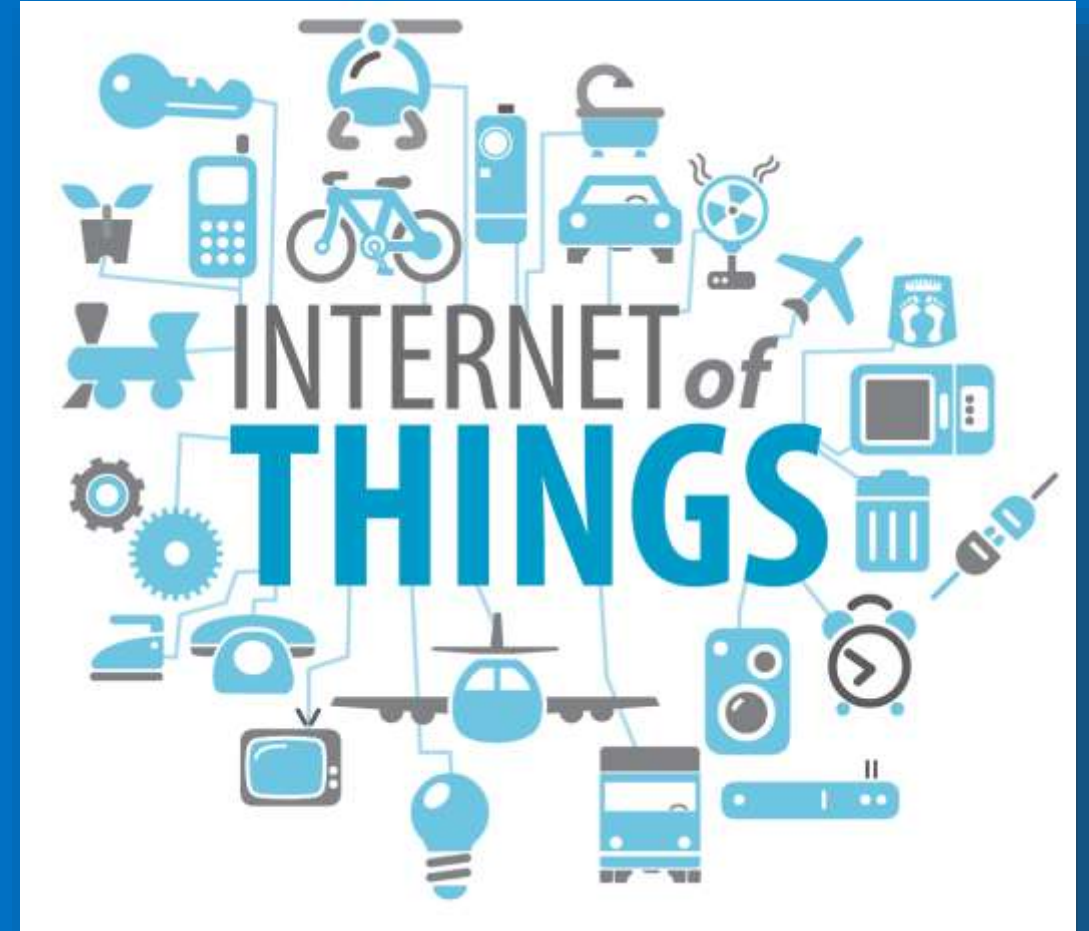


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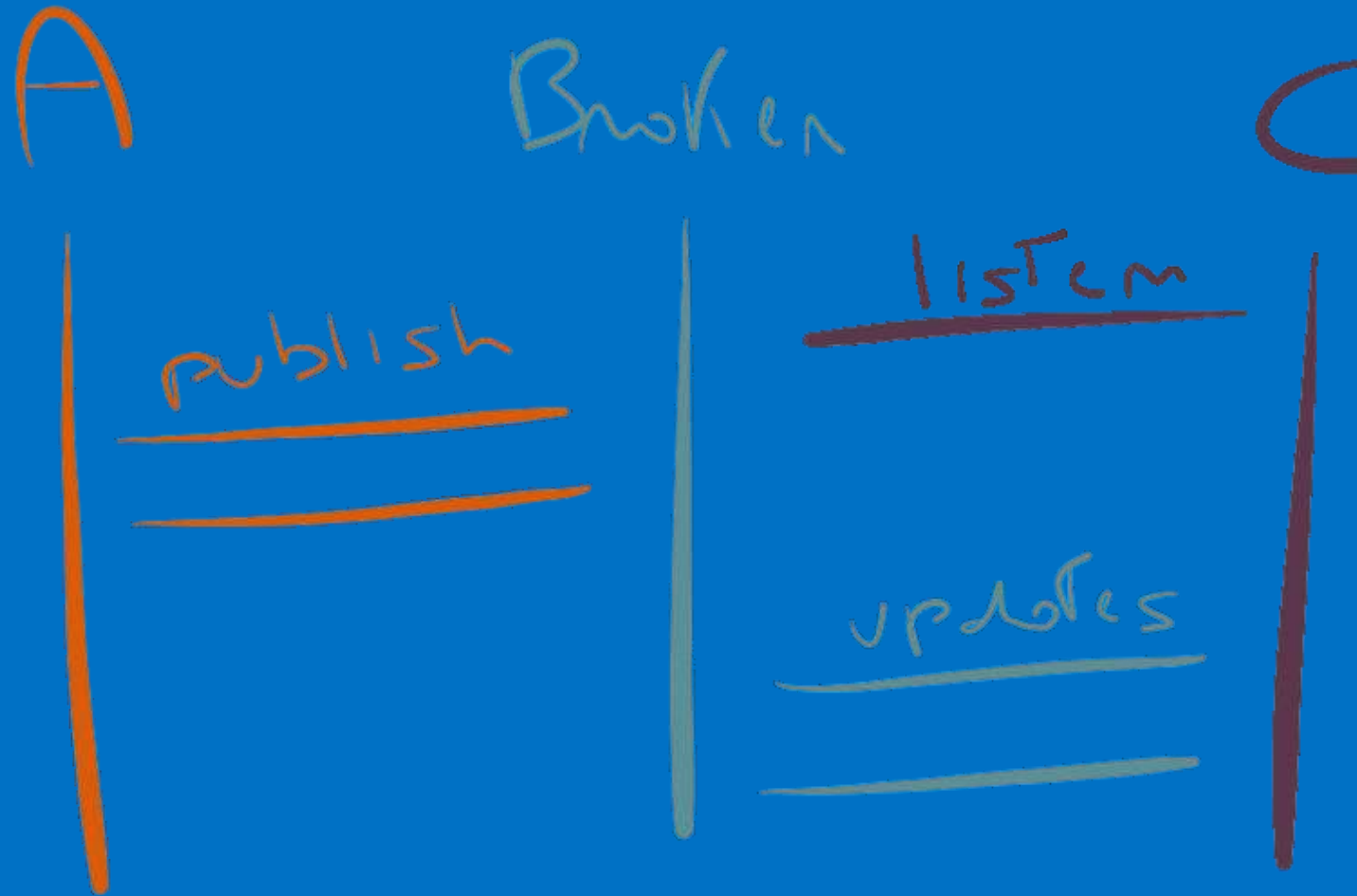
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What is Internet of Things

The Internet of Things (IoT) is the physical objects or "things" embedded with electronics, software, sensors and connectivity to enable it to achieve greater value and service by exchanging data with the manufacturer, operator and/or other connected devices based on the infrastructure



What is MQTT



What is MQTT

- publish/subscribe protocol
- multiple quality of service level....
- with at-least-once and exactly-once semantics
- slow overhead (2 bytes at minimum)
- offline messaging
- retained messages, like a key/value store

Workshop

- `$ apt-get update`
- `$ apt-get install git mosquitto mosquitto-clients mongodb nodejs npm wget vim net-tools build-essential -y --no-install-recommends`
- `$ ln -s /usr/bin/nodejs /usr/bin/node`
- `$ vi /etc/mosquitto/mosquitto.conf`
- Add
- `listener 1883`
- `listener 8081 0.0.0.0`
- `protocol websockets`
- `$ mosquitto -c /etc/mosquitto/mosquitto.conf`

Workshop

- `$ npm install grunt -g`
- `$ mkdir ~/IoTServer`
- `$ cd ~/IoTServer`
- `$ git clone https://github.com/Freeboard/freeboard.git`
- `$ cd freeboard`
- `$ npm install`
- `$ npm install grunt-serve`
- `$ vi Gruntfile.js`
`grunt.loadNpmTasks('grunt-serve');`
- `$ grunt`

Workshop

- `$ cd ~/IoTServer/freeboard/plugins`
- `$ mkdir mqtt`
- `$ cd mqtt`
- `$ wget --output-document mqttws31.js`
<https://raw.githubusercontent.com/eclipse/paho.mqtt.java/master/src/mqttws31.js>
- `$ ls`
`mqttws31.js`

Workshop

- `$ cd ~/IoTServer`
- `$ git clone https://github.com/alsm/freeboard-mqtt`
- `$ cd freeboard/plugins/mqtt`
- `$ cp ~/IoTServer/freeboard-mqtt/paho.mqtt.plugin.js .`

Workshop

```
$ vi ~/IoTServer/freeboard/plugins/mqtt/paho.mqtt.plugin.js
```

```
"external_scripts" : [  
    "<full address of the paho mqtt javascript  
client>"  
    ],
```

```
to  
"external_scripts" : [  
    "plugins/mqtt/mqttws31.js"  
    ],
```

Workshop

```
$ vi ~/IoTServer/freeboard/index.html
```

```
<scripttype="text/javascript">  
    head.js("js/freeboard+plugins.min.js",  
        // *** Load more plugins here ***  
        function(){
```

to

```
<scripttype="text/javascript">  
    head.js("js/freeboard+plugins.min.js",  
        "plugins/mqtt/paho.mqtt.plugin.js",  
        // *** Load more plugins here ***  
        function(){
```

Workshop

- `$ cd ~/IoTServer/freeboard`
- `$ grunt serve`
- open localhost:9000

Freeboard

freeboard

LOAD FREEBOARD

SAVE FREEBOARD [PRETTY] [MINIFIED]

ADD PANE

DATASOURCES

Name	Last Updated	
tes	8:35:34 AM	<div><div></div><div></div></div>
ADD		

Freeboard

DATASOURCE

Receive data from an MQTT server.

TYPE **Paho MQTT**

NAME **tes**

MQTT SERVER **localhost**
Hostname for your MQTT Server

PORT **8081**
The port to connect to the MQTT Server on

USE SSL ☐ **NO**
Use SSL/TLS to connect to the MQTT Server

CLIENT ID

USERNAME

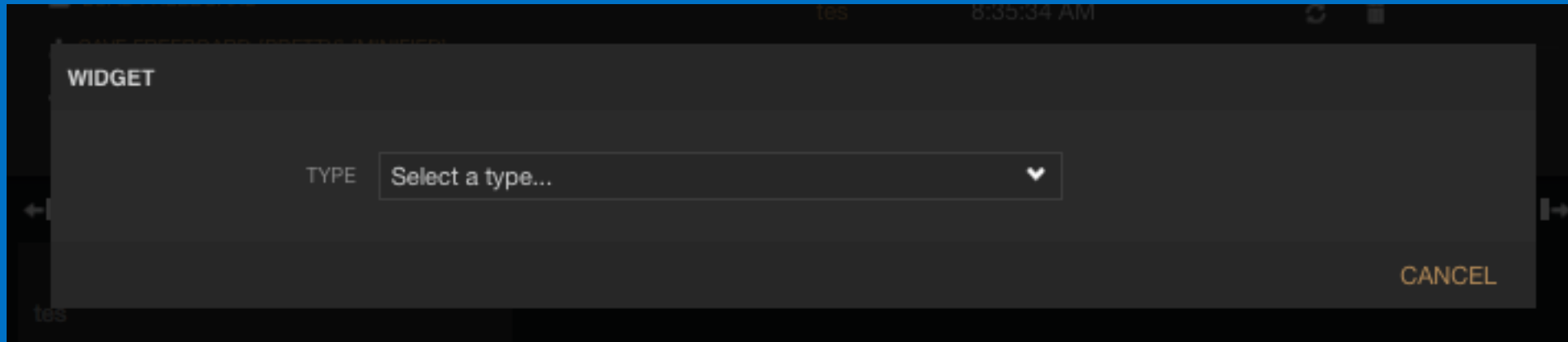
PASSWORD

TOPIC **/data**
The topic to subscribe to

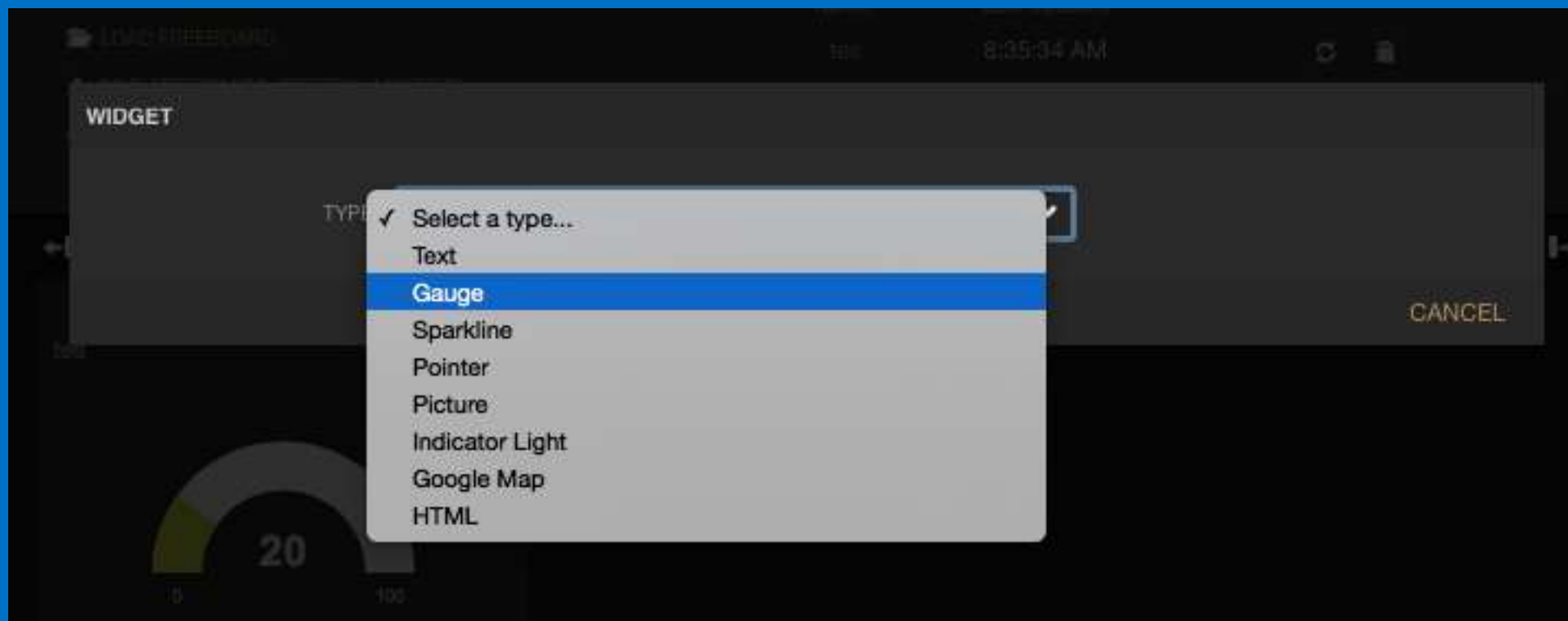
JSON MESSAGES? ☐ **NO**
If the messages on your topic are in JSON format they will be parsed so the individual fields can be used in freeboard widgets

SAVE **CANCEL**

Freeboard



Freeboard



Freeboard

tes 8:35:34 AM

WIDGET

TYPE Gauge

TITLE

VALUE datasources["tes"] + DATASOURCE X .JS EDITOR

UNITS

MINIMUM

MAXIMUM 100

SAVE CANCEL

Freeboard

LOAD FREEBOARD tes 8:35:34 AM

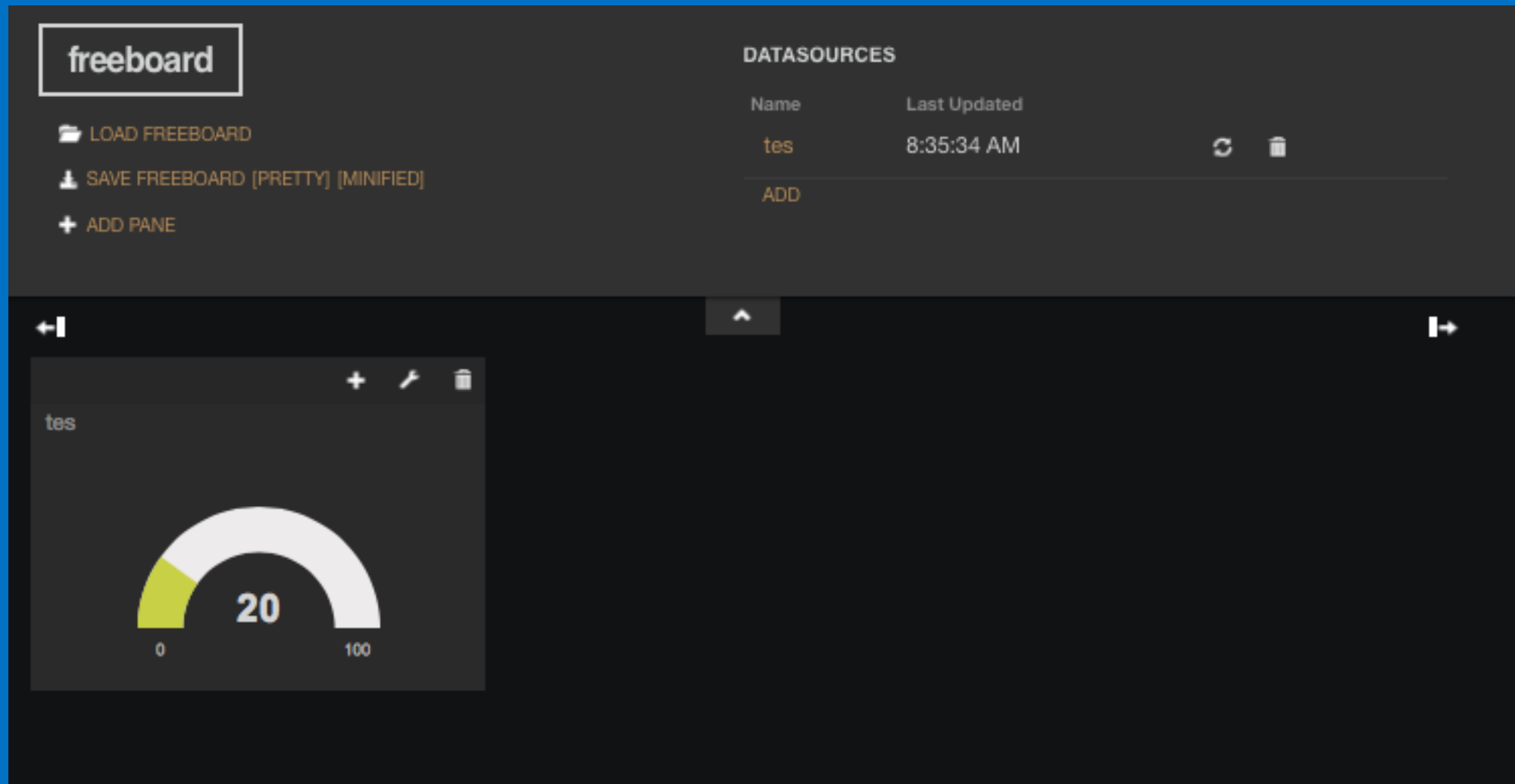
SAVE FREEBOARD (PENDING)

WIDGET

TYPE	Gauge	
TITLE	Suhu	
VALUE	<code>datasources["tes"].msg</code>	+ DATASOURCE X JS EDITOR
UNITS		
MINIMUM	0	
MAXIMUM	100	

SAVE CANCEL

Freeboard



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Software



Software

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