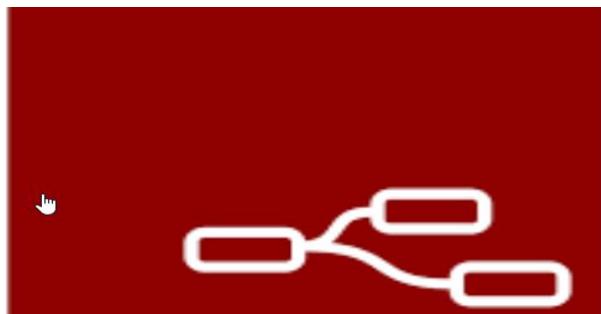


# M015 Uf1 IoT



**Curs:** 2019-20

**CFGS:** DAM2

**Alumne :** Arnau Subirós Puigarnau

**Data :** 20/1/2020(actualitzat)

*[ampliació a partir de la pàgina 49 ]*

Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

## Dashboard Node-Red -Mqtt i Esp8266

- Primer accedirem al Node- Red utilitzant navegador ( amb la IP del pc i el port 1880)

```
node-red
9 Dec 15:17:15 - [info]

Welcome to Node-RED
=====
9 Dec 15:17:15 - [info] Node-RED version: v0.20.8
9 Dec 15:17:15 - [info] Node.js version: v10.16.3
9 Dec 15:17:15 - [info] Windows_NT 10.0.18362 x64 LE
9 Dec 15:17:17 - [info] Loading palette nodes
9 Dec 15:17:18 - [warn] rpi-gpio : Raspberry Pi specific node set inactive
9 Dec 15:17:18 - [info] Dashboard version 2.17.1 started at /ui
9 Dec 15:17:18 - [info] Settings file : %USER%\node-red\settings.js
9 Dec 15:17:18 - [info] Context store : 'default' [module=memory]
9 Dec 15:17:18 - [info] User directory : %USER%\node-red
9 Dec 15:17:18 - [warn] Projects disabled : editorTheme.projects.enabled=false
9 Dec 15:17:18 - [info] Flows file : %USER%\node-red\flows_W10-ASP2019.json
9 Dec 15:17:18 - [info] Server now running at http://127.0.0.1:1880/
9 Dec 15:17:18 - [warn]

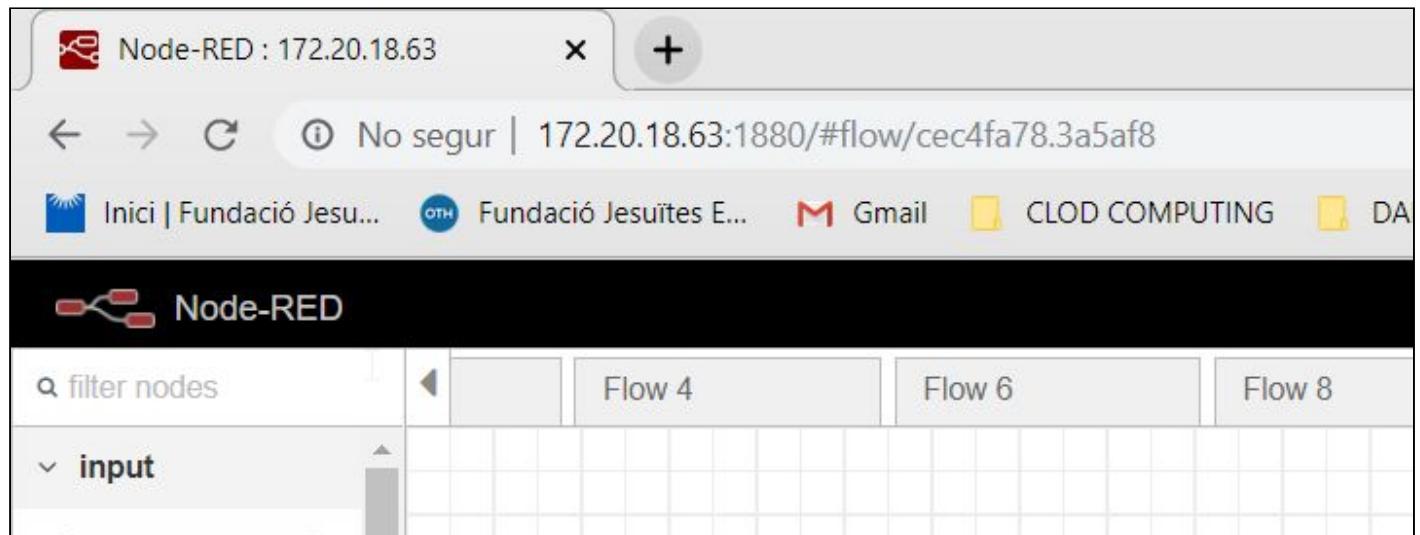
-----
Your flow credentials file is encrypted using a system-generated key.

If the system-generated key is lost for any reason, your credentials
file will not be recoverable, you will have to delete it and re-enter
your credentials.

You should set your own key using the 'credentialSecret' option in
your settings file. Node-RED will then re-encrypt your credentials
file using your chosen key the next time you deploy a change.

-----
9 Dec 15:17:18 - [info] Starting flows
```

Nom i Cognoms	Data
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- Un cop això utilitzant un nou flux.
- Hem de tenir habilitat el Dashboard per Node-Red
  - <https://flows.nodered.org/node/node-red-dashboard>
  
- Hem de tenir habilitat el Dashboard per Node-Red
- Ens interessa utilitzar el protocol MQTT i poder comunicant-se amb la ESP8266.
- Abans de continuar obrim el ARDUINO IDE
  - utilitzem el codi esp\_8266\_MQTT\_PUB\_04 on haurem de modificar alguns paràmetres

Es volia accedir des de la Raspberry PI ( rasp-asp.ddns.net) on té un servidor mosquito però tot i que he intentat accedir des de la connexió des de meu mobil ( degut al NO-IP) no he aconseguit connectar-me, tot i que a casa de forma local i en la variable “Const char \* mqtt server” anotava la meva IP local sí que funcionava correctament.

Nom i Cognoms	Data
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```

#include <PubSubClient.h>
#include <Wire.h>

#define EXTERNAL_BUTTON 4

// Connect to the WiFi
//const char* ssid = "WLAN_FE55";
//const char* password = "XXXXXXXXXXXXXX";
//const char* ssid = "ASP";
//const char* password = "XXXXXXXXXXXXXX";

const char* ssid = "JESUITESFP_P5";
const char* password = "XXXXXXXXXXXXXX";

const char* mqtt_server = "test.mosquitto.org";
const int mqtt_port = 1883; // normally 1883
//const char* mqtt_server = "test.mosquitto.org";
//const int mqtt_port = 1883; // normally 1883

#define TEMA_PUBLICA_ESTAT_LDR "/arnau/ldr"
#define TEMA_SUBSCRIPCIO_ORDRES "/arnau/ordres"

WiFiClient espClient;
PubSubClient client(espClient);

```

Hem establert un publicador i subscriptor. ( El broker en aquest cas, serà de prova test-mosquitto.org:1883. Ja que la màquina virtual l'ha tinc instal.lada però en un disc extern.

```

#define TEMA_PUBLICA_ESTAT_LDR "/arnau/ldr"
#define TEMA_SUBSCRIPCIO_ORDRES "/arnau/ordres"

WiFiClient espClient;

```

- Aquesta línia de codi ens interessa per poder subscriure'ns i podrem canviar l'estat dels leds de la plaqueta via node.red

**#define TEMA\_SUBSCRIPCIO\_ORDRES "/arnau/ordres"**

## Nom i Cognoms

Arnau Subirós Puigarnau

## Data

20-01-2020

```

Serial.println(szRx);
if (szTema == TEMA_SUBSCRIPCIO_ORDRES) {

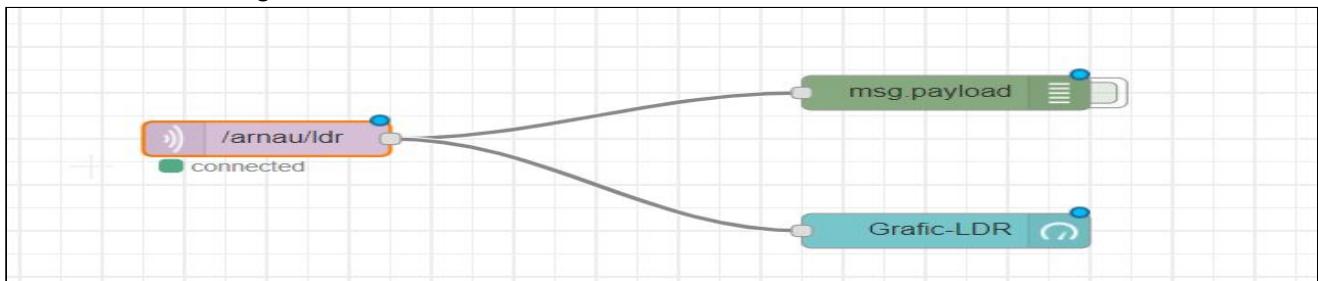
//-----
if (szRx == "true") digitalWrite(ledPin, LOW);
if (szRx == "false") digitalWrite(ledPin, HIGH);
if (szRx == "2L") digitalWrite(ledPin, LOW);
if (szRx == "2H") digitalWrite(ledPin, HIGH);
if (szRx == "12L") digitalWrite(ledBlue, LOW);
if (szRx == "12H") digitalWrite(ledBlue, HIGH);
if (szRx == "13L") digitalWrite(ledGreen, LOW);
if (szRx == "13H") digitalWrite(ledGreen, HIGH);
if (szRx == "15L") digitalWrite(ledRed, LOW);
if (szRx == "15H") digitalWrite(ledRed, HIGH);

//-----

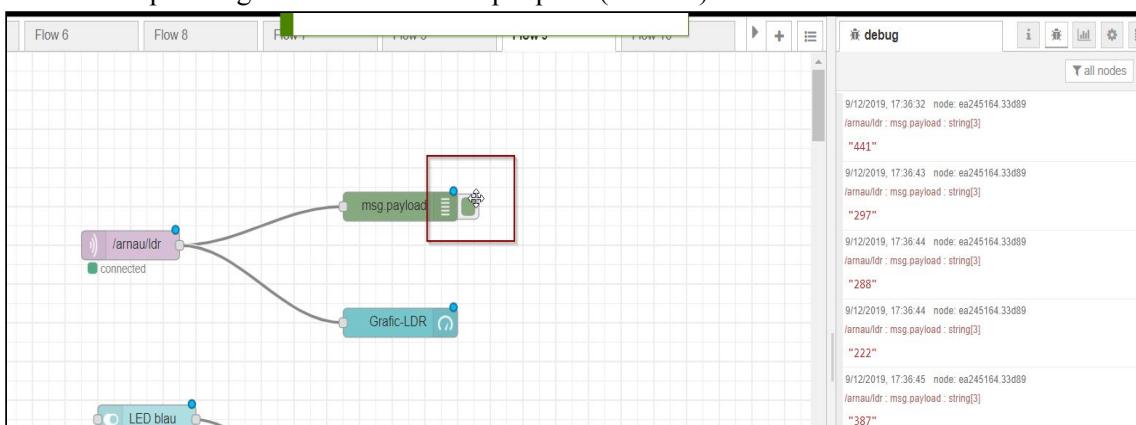
if (szRx == "A") {
    int a = analogRead(A0);
    char sz[99];
    sprintf(sz, "%d", a);
    client.publish(TEMA_PUBLICA_ESTAT_LDR, sz);
}
}

```

- Un cop això tornem al NODE-RED
  - Ens interessa el node INPUT de MQTT on farà de publicador en el Dashboard i en el Debug

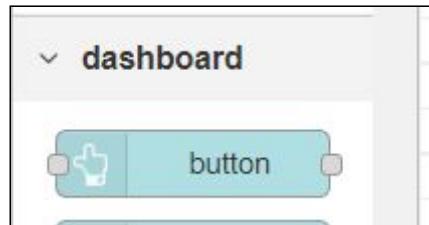


Visualitzem per debg el valor LDR de la plaqueta ( 0-1024 ) on indica l'intensitat de llum

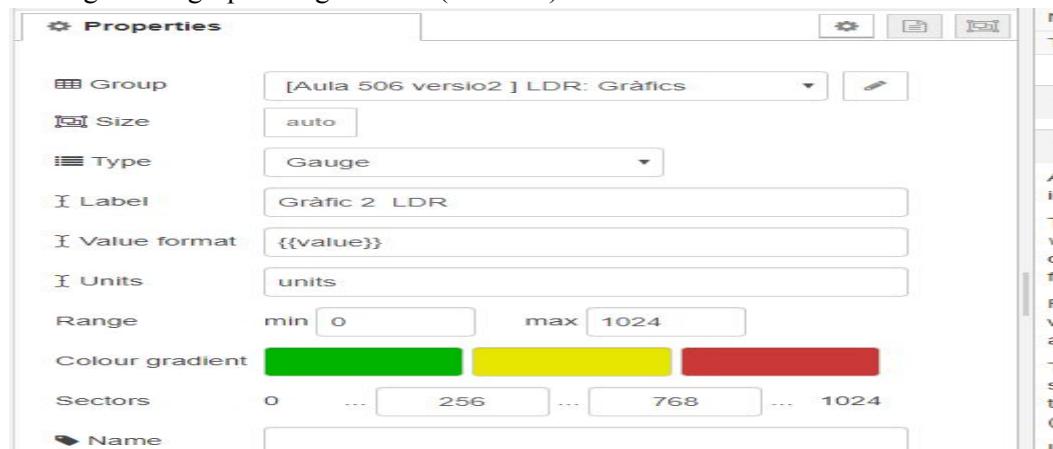


Nom i Cognoms	Data
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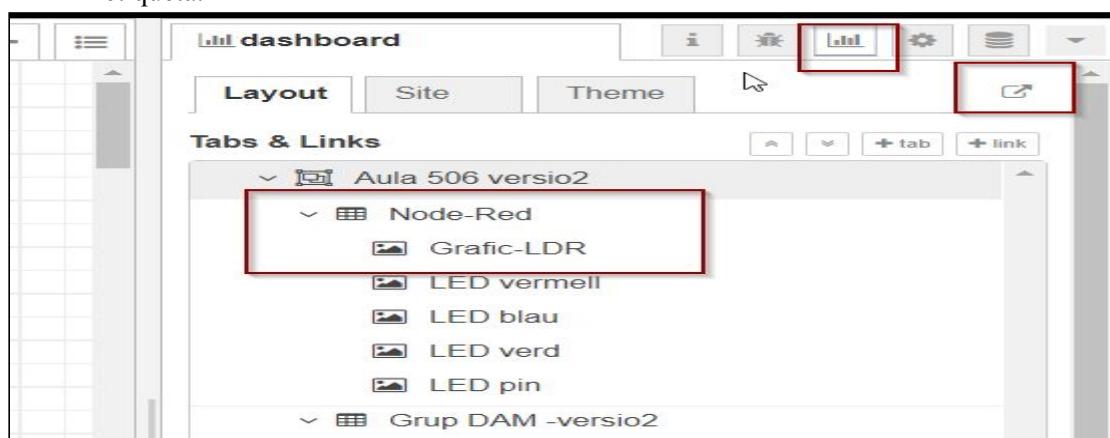
- Afegim el node de Dashboard “Button” que li direm’etiqueta Grafic-LDR



On afegirem el grup el rang de LDR (0 a 1024)



- Seleccionem Dashboard en lloc de Debug on s’indica el Grup creat i la seva corresponent etiqueta.



Nom i Cognoms	Data
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Ens interessa un OUTPUT MQTT on volem subscriptor en el Dashboard

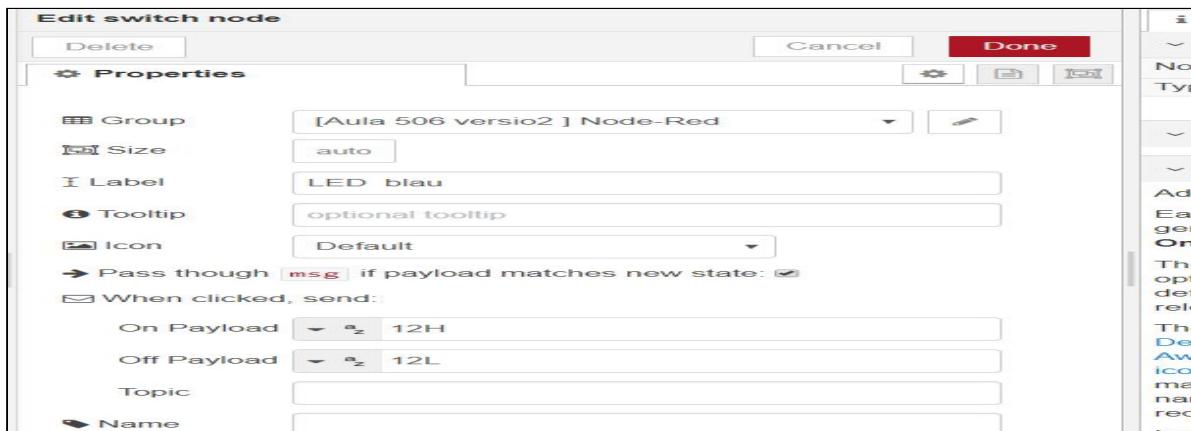
**#define TEMA\_PUBLICA\_ESTAT\_LDR "/arnau/ldr"**

Ens interessa afegir l'etiqueta "switch (del Dashboard) on l'únic que modificarem s'era el payload ( mirar codi arduino )

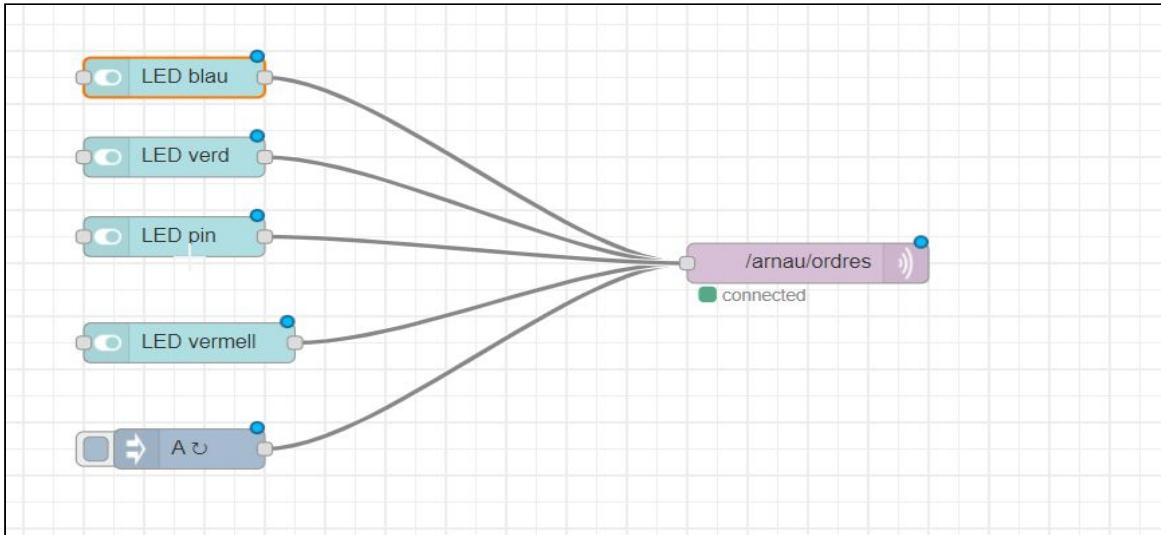
```
WiFiClient espClient;
PubSubClient client(espClient);

const byte ledPin = 2, ledRed = 15, ledGreen = 12, ledBlue = 13;
const byte button = EXTERNAL_BUTTON;

void callback(char* topic, byte* payload, unsigned int length) {
    String szRx = "", szTema(topic);
```



Nom i Cognoms	Data
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**NOTA:** com que vull visualitzar el Dashboard de Node- Red hauré de modificar la configuració de l'arxiu .ino referent a la connexió wifi ( i de pas afegire el meu servidor mqtt

La meva idea era posa el nom complet (rasp-asp.ddns.net) que es confirma que tinc comunicació, però a l'hora d'introduir-ho al codi no es connecta

```

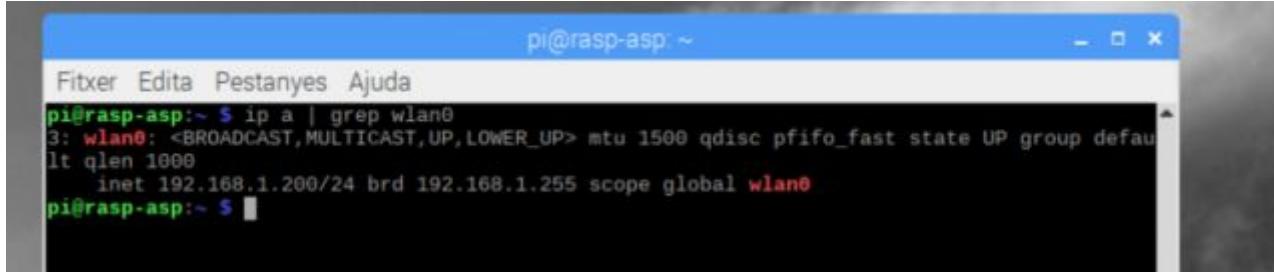
C:\Users\arnau>ping rasp-asp.ddns.net

Haciendo ping a rasp-asp.ddns.net [79.158.191.62] con 32 bytes de datos:
Respuesta desde 79.158.191.62: bytes=32 tiempo<1ms TTL=64
Respuesta desde 79.158.191.62: bytes=32 tiempo<1ms TTL=64
Respuesta desde 79.158.191.62: bytes=32 tiempo<1ms TTL=64

Estadísticas de ping para 79.158.191.62:
Paquetes: enviados = 3, recibidos = 3, perdidos = 0
(0% perdidos),
Tiempos aproximados de ida y vuelta en milisegundos:
Mínimo = 0ms, Máximo = 0ms, Media = 0ms
  
```

Accedim remotament a la raspberry i l'hi introduim la IP estàtica en lloc del nom complet

Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020



Compilem el codi en l'Arduino IDE i confirmem que la plaqueta està conectada a la WIFI i MQTT

```
esp8266_MQTT_pub_sub_02 | Arduino 1.8.5
Fitxer Edita Esbós Eines Ajuda
esp8266_MQTT_pub_sub_02
#include <PubSubClient.h>
#include <Wire.h>

#define EXTERNAL_BUTTON 4

// Connect to the WiFi
const char* ssid = "WLAN_FESS5";
const char* password = "██████████";

//const char* ssid = "ASP";
//const char* password = ██████████;

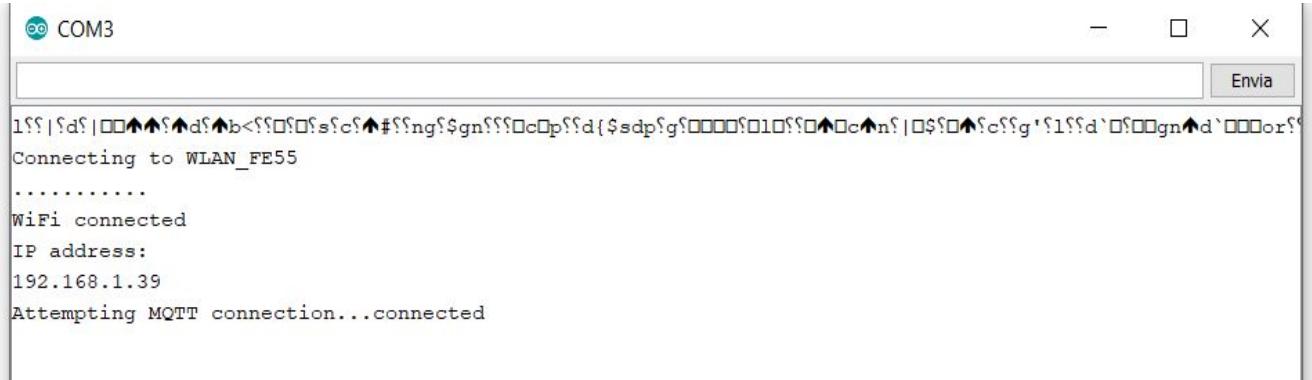
//const char* ssid = "JESUITESFP_P5";
//const char* password = "██████████";

const char* mqtt_server = "192.168.1.200";
const int mqtt_port = 1883; // normally 1883

Pujada enllestida.
Stub running...
Configuring flash size...
Auto-detected Flash size: 4MB
Compressed 281184 bytes to 203014...

Writing at 0x00000000... (7 %)
Writing at 0x00004000... (15 %)
Writing at 0x00008000... (23 %)
Writing at 0x0000c000... (30 %)
Writing at 0x00010000... (38 %)
Writing at 0x00014000... (46 %)
Writing at 0x00018000... (53 %)
Writing at 0x0001c000... (61 %)
Writing at 0x00020000... (69 %)
Writing at 0x00024000... (76 %)
Writing at 0x00028000... (84 %)
Writing at 0x0002c000... (92 %)
Writing at 0x00030000... (100 %)
Wrote 281184 bytes (203014 compressed) at 0x00000000 in 17.9 seconds (effective 125.7 kbit/s)...
Hash of data verified.
```

Nom i Cognoms	Data
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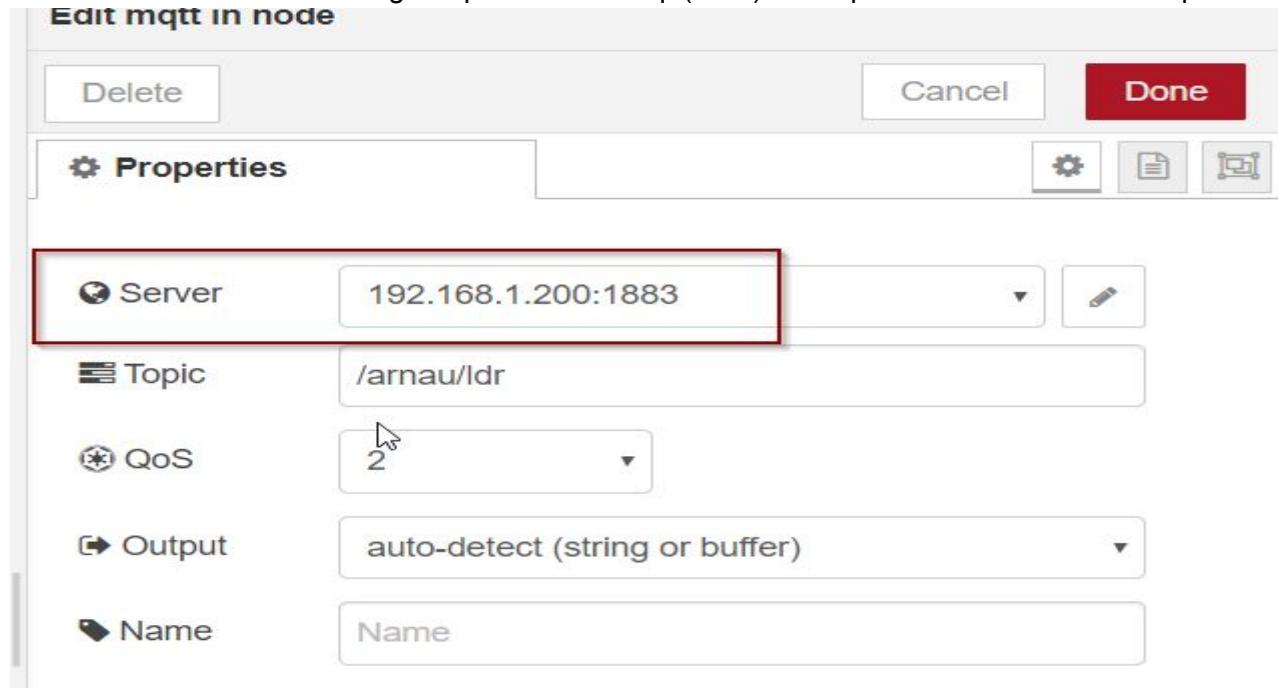
```

COM3
Envia
1$|?d$|00$#b<#0$c$#ng$gn$#c$p$#d{${sd$p#g$#0000010#0#0c$#n$|0$#0$c$#g,$1$#d$#0$gn$#d$#000or$#
Connecting to WLAN_FE55
.....
WiFi connected
IP address:
192.168.1.39
Attempting MQTT connection...connected

```

I al NODE-RED haurem d'afegir aquest broker mqtt(local) tan al publicador com el subscriptor

**Edit mqtt in node**



The screenshot shows the 'Edit mqtt in node' dialog. It has tabs for 'Delete', 'Cancel', and 'Done'. The 'Properties' tab is selected. The configuration fields are:

- Server:** 192.168.1.200:1883 (highlighted with a red box)
- Topic:** /arnau/ldr
- QoS:** 2
- Output:** auto-detect (string or buffer)
- Name:** Name

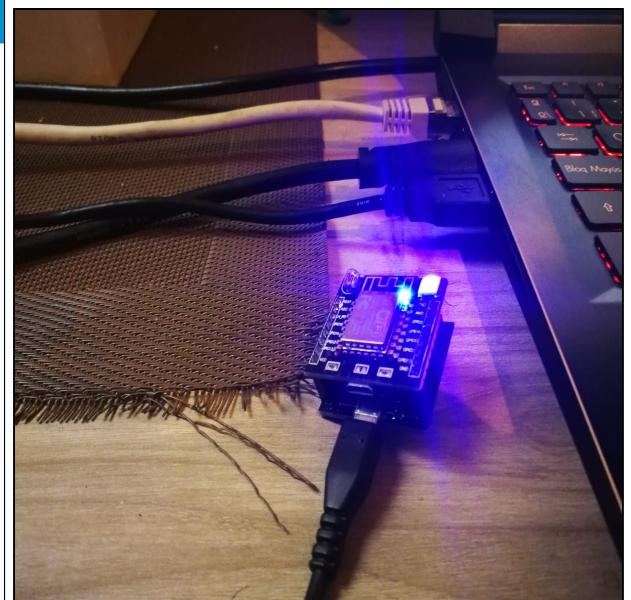
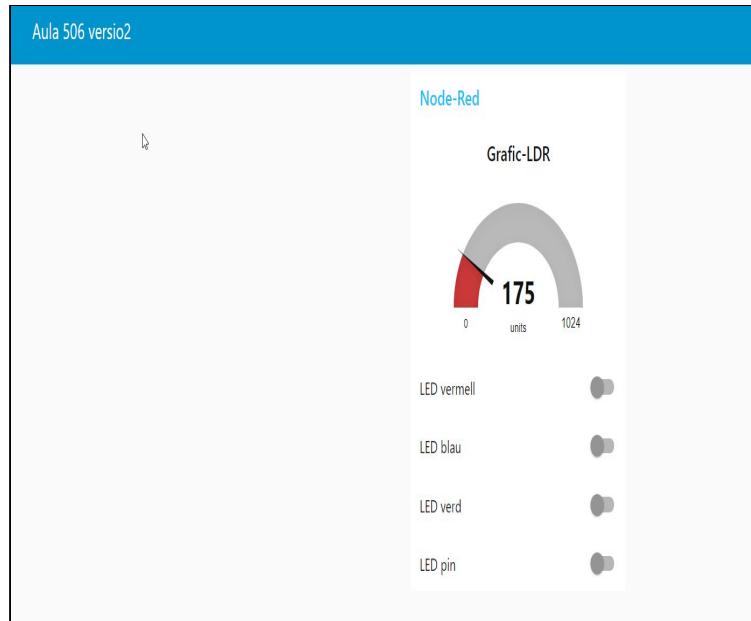
Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

**Edit mqtt out node**

Delete	Cancel	Done	
<b>Properties</b>			
<b>Server</b> 192.168.1.200:1883			
<b>Topic</b> /arnau/ordres			
<b>QoS</b>		<b>Retain</b>	
<b>Name</b> Name			

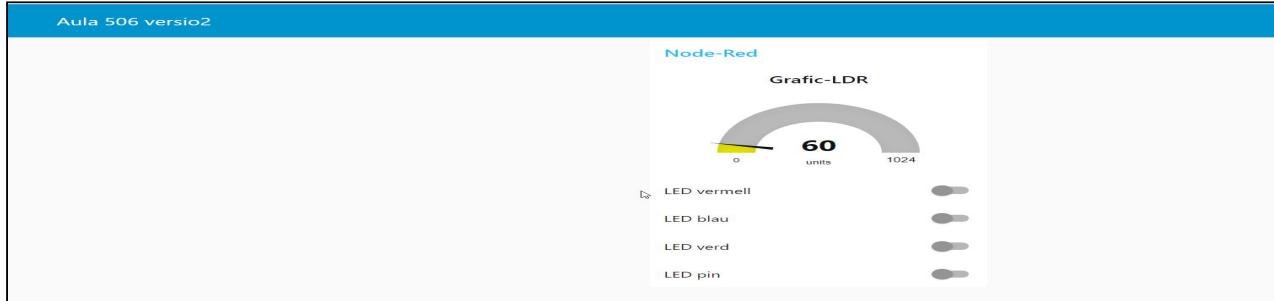
## Visualització del DASHBOARD NODE-RED

M'indica l'intensitat de LDR de la plaqueta

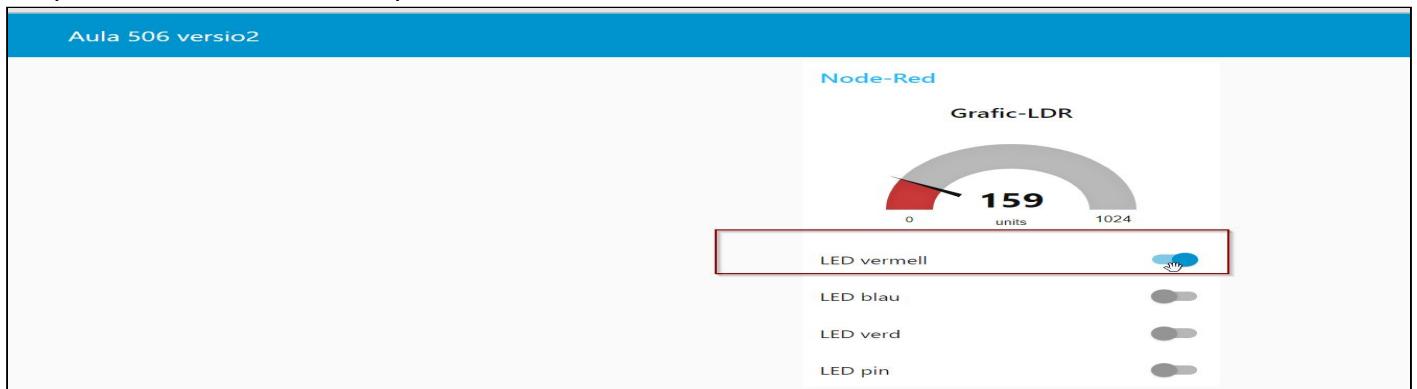


Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

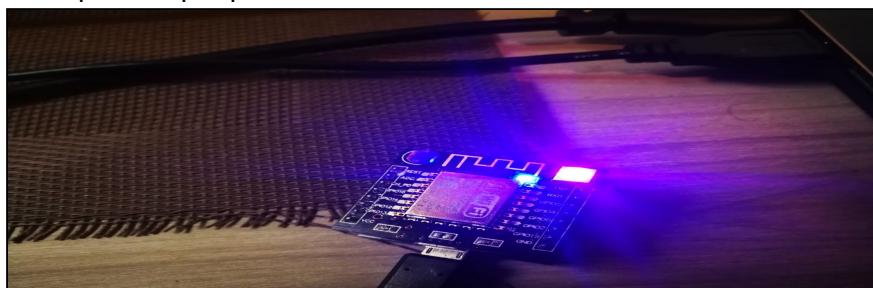
Posteriorment poso la mà perquè detecti menys llum i m'ho indica al gràfic



Després seleccionem l'interruptor del LED vermell

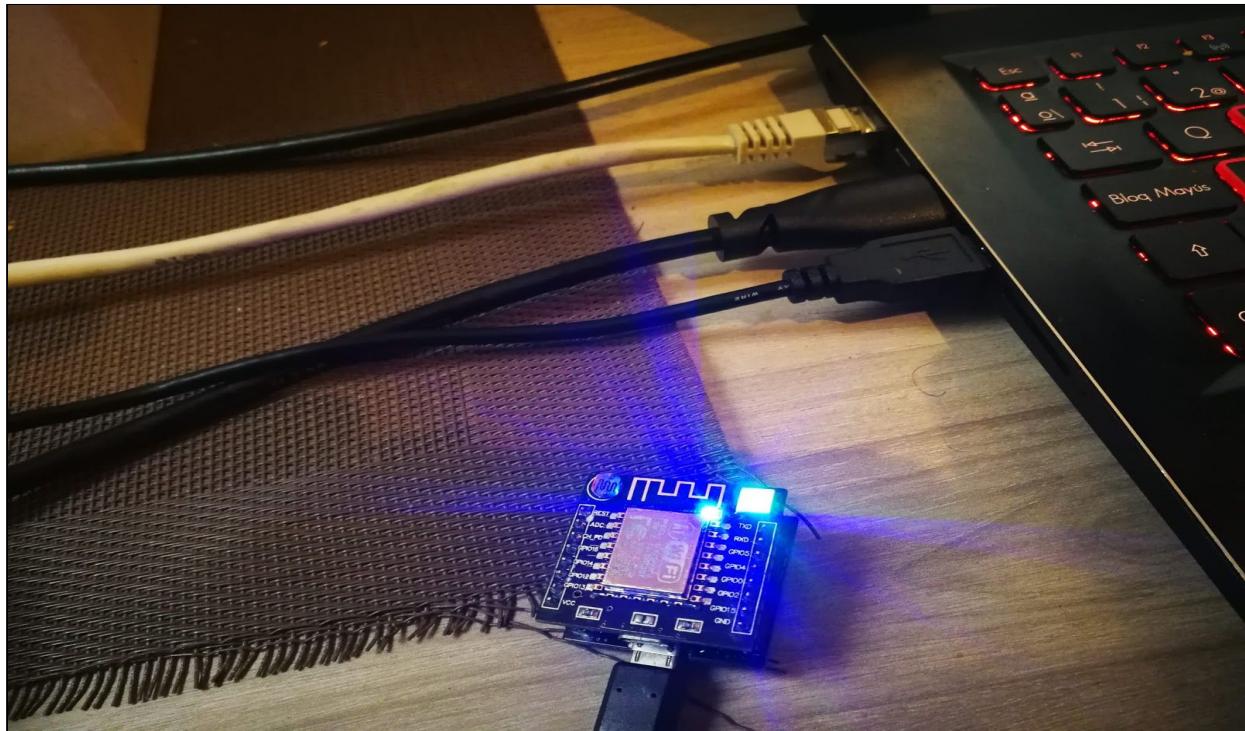
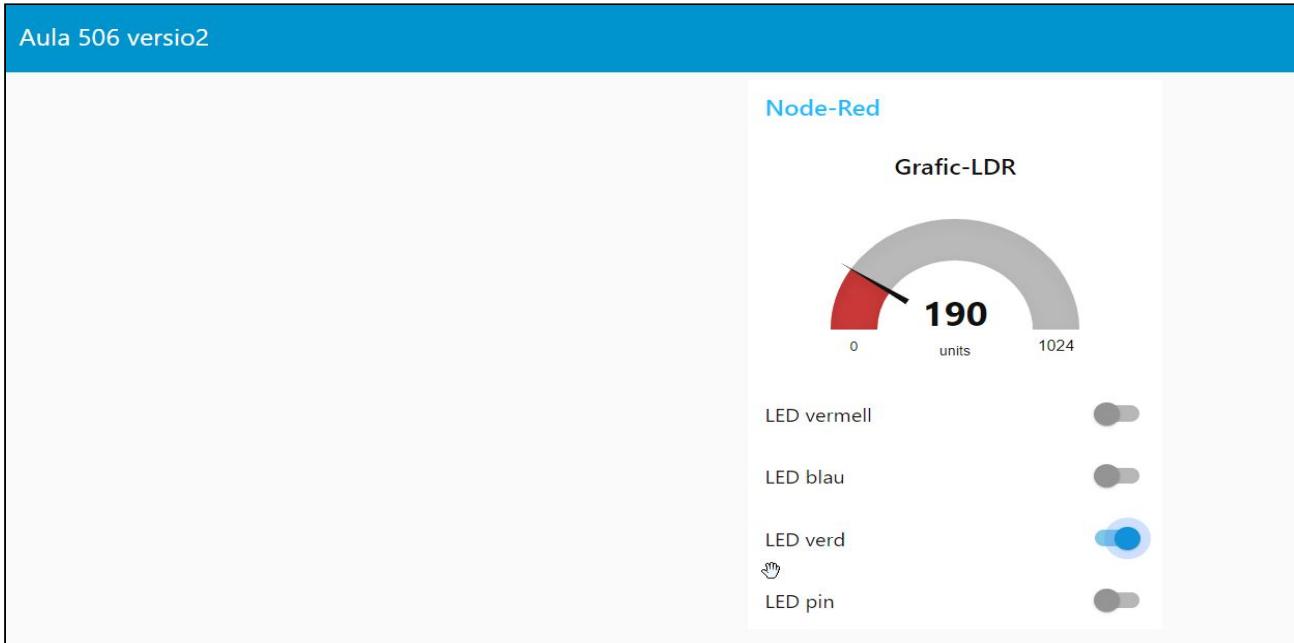


Verifiquem la plaqueta , el LED vermell està encès



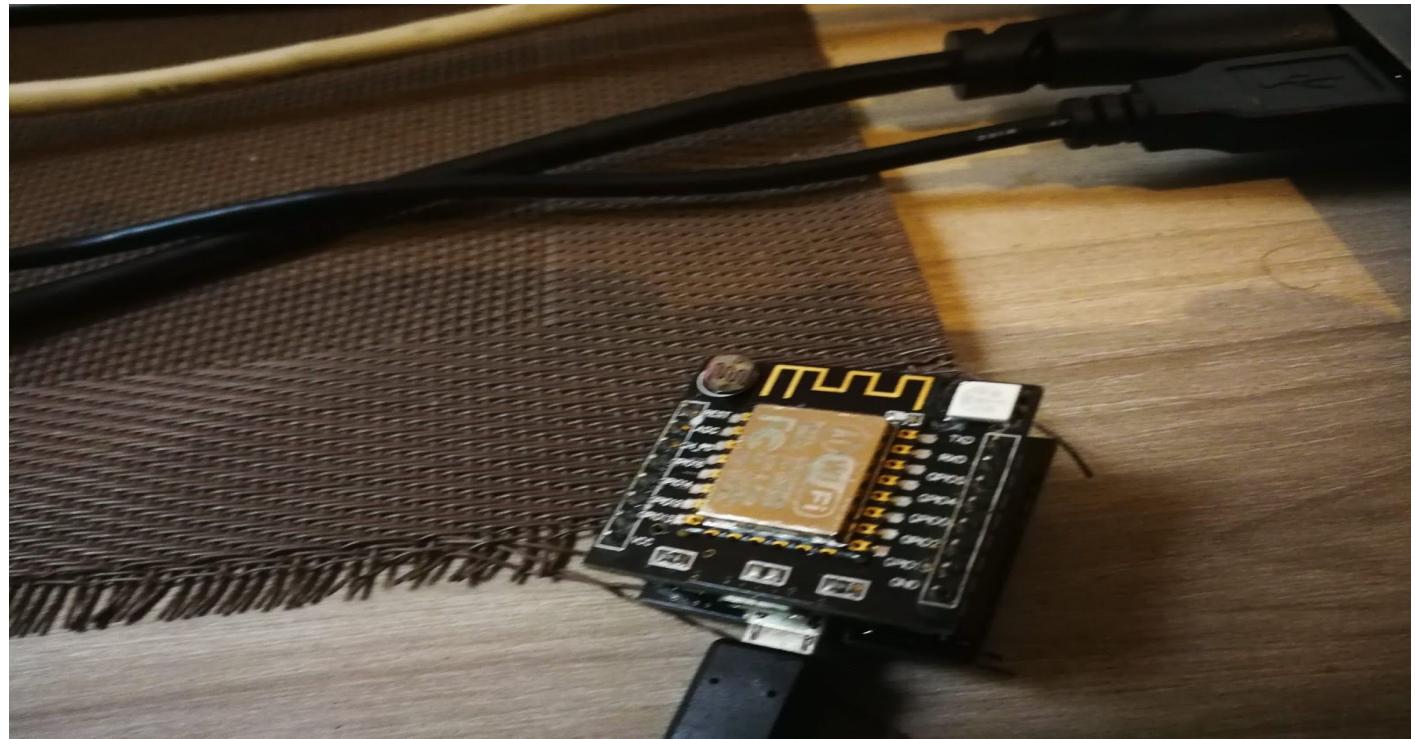
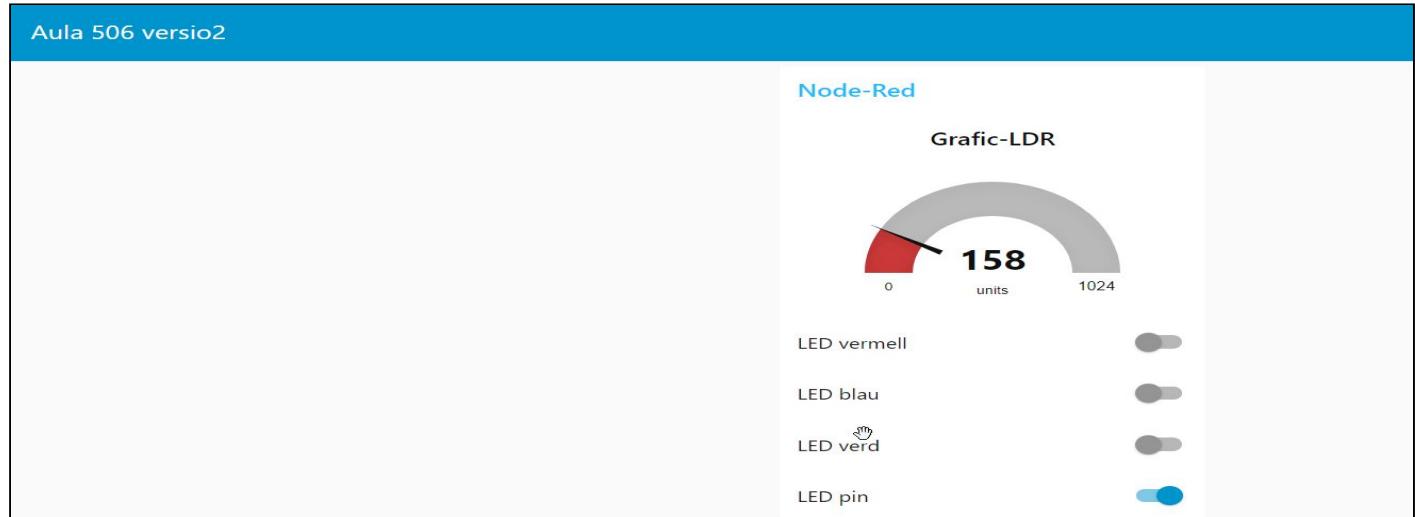
Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

Després seleccionem l'interruptor del LED verd



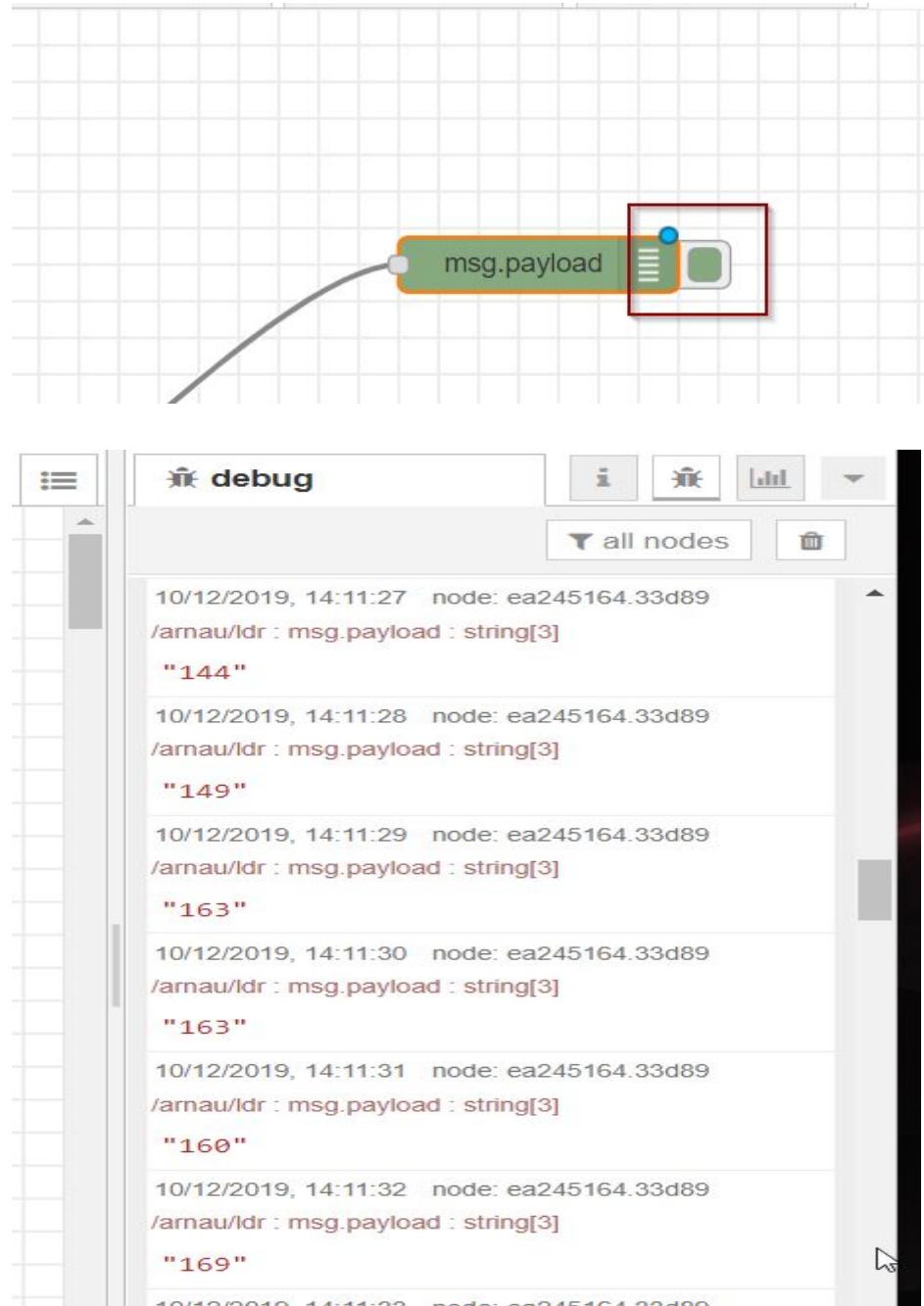
Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

Com última prova seleccionem per apagar el LED



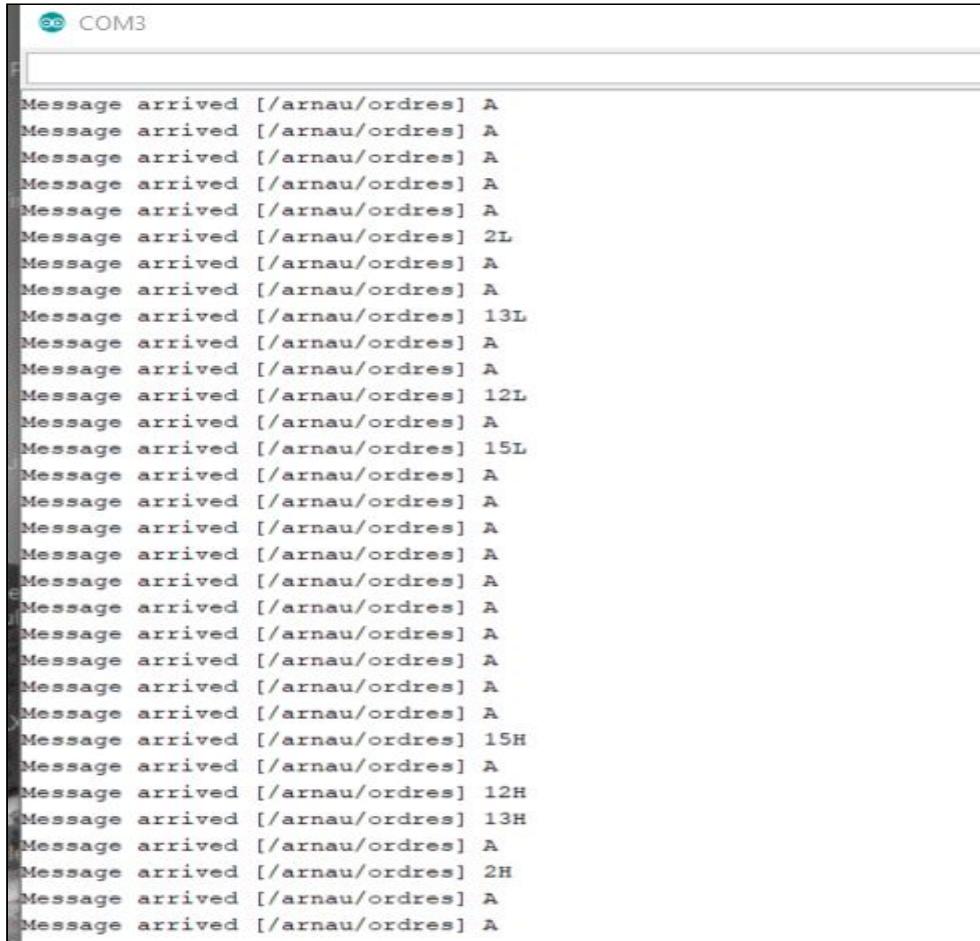
Nom i Cognoms	Data
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Però tenim un problema no ens apareix res a "Debug Messages" ja que no s'ha activat.



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

Revisem la consola del Arduino IDE per confirmar que tenim comunicació bidireccional

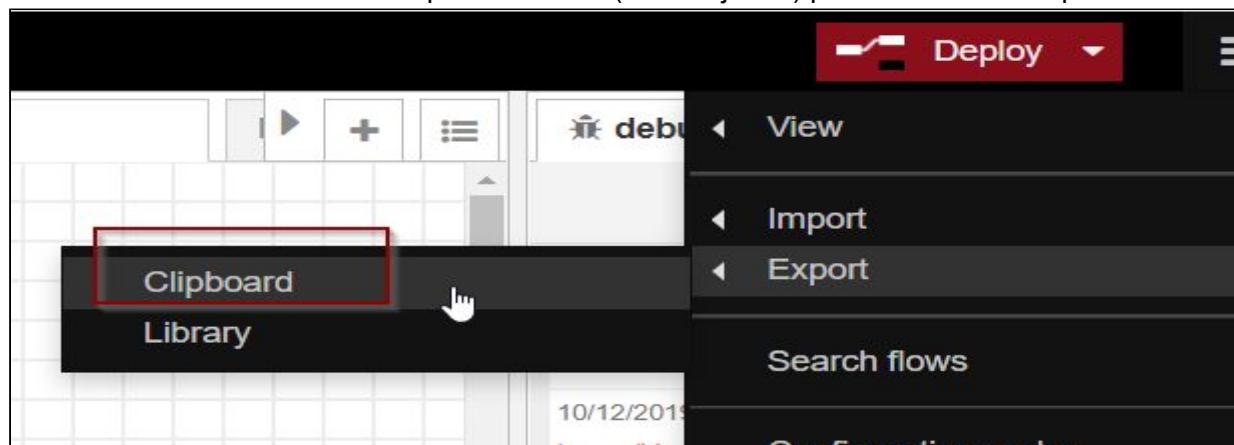


The screenshot shows the Arduino IDE's Serial Monitor window. The title bar says "COM3". The main area displays a continuous stream of text messages. The messages are as follows:

```
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] 2L
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] 13L
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] 12L
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] 15L
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] 15H
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] 12H
Message arrived [/arnau/ordres] 13H
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] 2H
Message arrived [/arnau/ordres] A
Message arrived [/arnau/ordres] A
```

Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

Per evitar "sustos" hauriem d'exportar el fluxe ( format jason) per tenir una backup del fluxe.



### Export nodes

Export to clipboard

selected nodes current flow all flows

```
[{"id": "c62c5377.07033", "type": "ui_group", "z": "", "name": "Node-Red", "tab": "43bc4029.e6c1f", "disp": true, "width": "6", "collapse": false}, {"id": "43bc4029.e6c1f", "type": "ui_tab", "z": "", "name": "Aula 506 versio2", "icon": "dashboard", "order": 1, "disabled": false, "hidden": false}]
```

compact formatted

Cancel Download Export to clipboard

Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

Utilitzem un compilador de Jason perquè ens cambie el format

JSON Editor Online

```

233     "compatmode": "true",
234     "keepalive": "60",
235     "cleansession": true,
236     "birthTopic": "",
237     "birthQos": "0",
238     "birthPayload": "",
239     "closeTopic": "",
240     "closeQos": "0",
241     "closePayload": "",
242     "willTopic": "",
243     "willQos": "0",
244     "willPayload": ...
245   },
246   {
247     "id": "c62c5377.07033",
248     "type": "ui_group",
249     "z": "",
250     "name": "Node-Red",
251     "tab": "43bc4029.e6c1f",
252     "disp": true,
253     "width": "6",
254     "collapse": false
255   },
256   {
257     "id": "43bc4029.e6c1f",
258     "type": "ui_tab",
259     "z": "",
260     "name": "Aula 506 versio2",
261     "icon": "dashboard",
262     "order": 1,
263     "disabled": false,
264     "hidden": false

```

Seguidament obrim un editor de text, on enganxem la copia del codi guardant amb extensió . json

fluxe9mqtt20191209.json

```

163   "height": 0,
164   "passthru": true,
165   "decouple": "false",
166   "topic": "",
167   "style": "",
168   "onvalue": "2H",
169   "onvalueType": "str",
170   "onicon": "",
171   "oncolor": "",
172   "offvalue": "2L",
173   "offvalueType": "str",
174   "officon": "",
175   "offcolor": "",
176   "X": 600,
177   "Y": 600,
178   "wires": [
179     {
180       "x": 600,
181       "y": 400
182     }
183   ],
184   "id": "80c43ee6.02045",
185   "type": "ui_gauge",
186   "z": "590e5418.11531c",
187   "name": "",
188   "group": "c62c5377.07033",
189   "cwidth": 2,
190   "width": 0,
191   "height": 0,
192   "gttype": "dage",
193   "title": "Grafic-LDR",
194   "label": "units",
195

```

nom del fitxer: fluxe9mqtt20191209.json  
tipus de fitxer: All types (\*.\*)

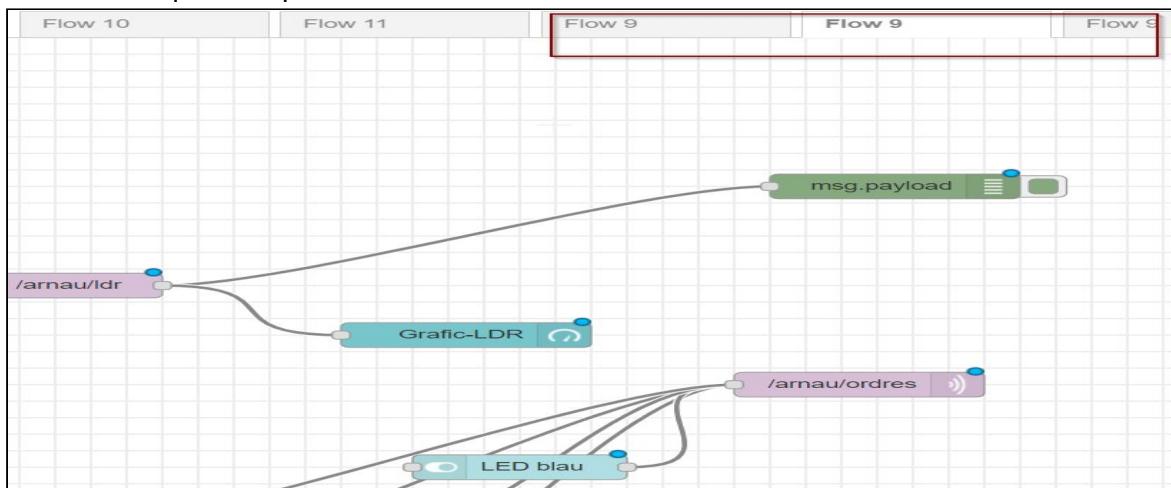
## Nom i Cognoms

Arnau Subirós Puigarnau

## Data

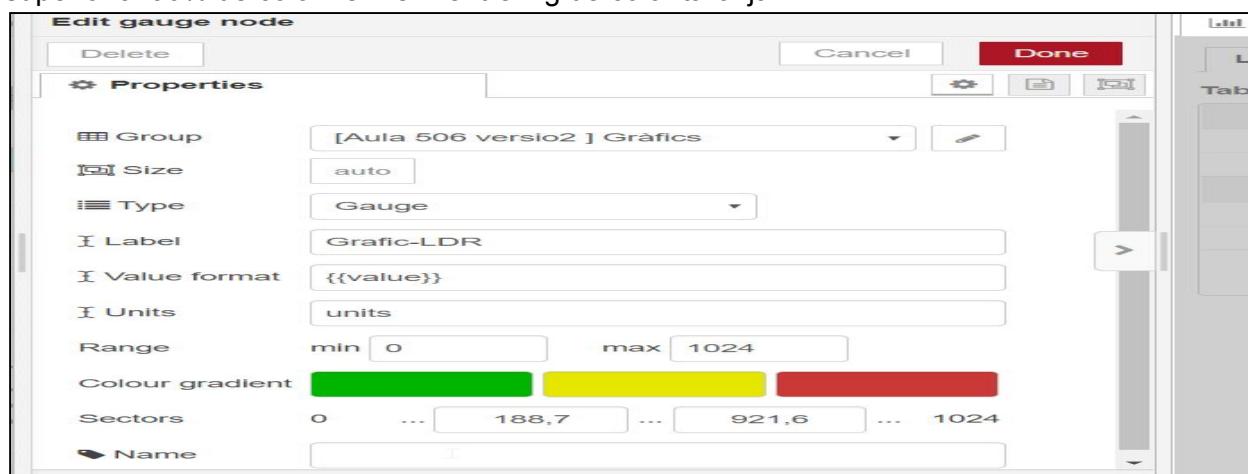
20-01-2020

I confirmem que al exportar tenim de nou el fluxe 9

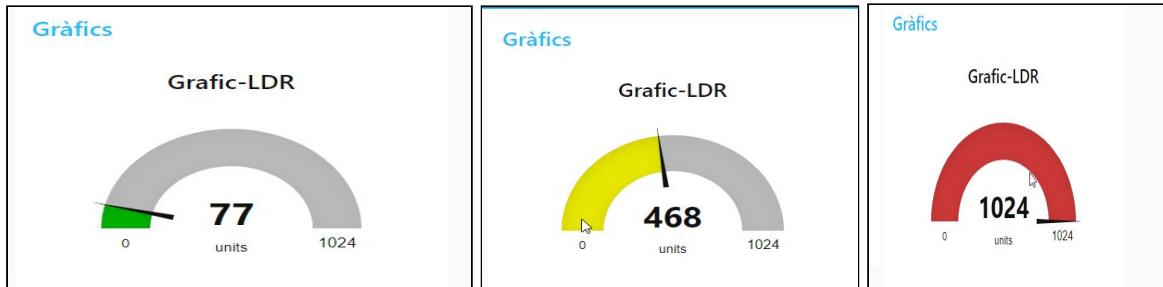


## AMPLIACIÓ -VERSIÓ 3

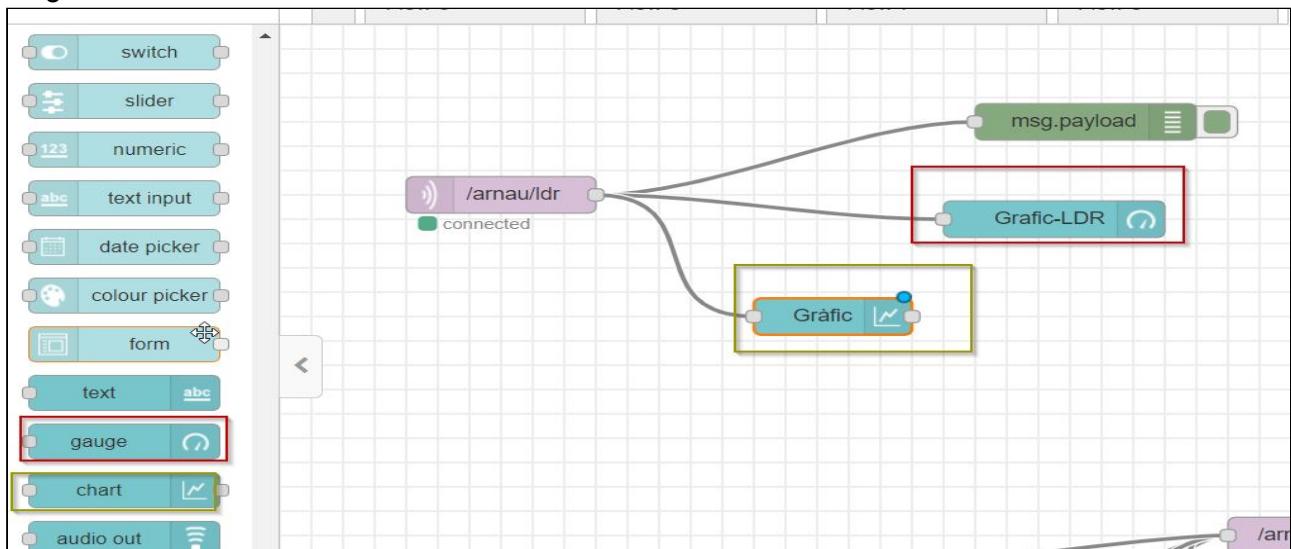
Fem una modificació perquè si la intensitat de llum és inferior al 20% de 1024 es vegi de color verd, superior al 90% de color vermell i entremig de color taronja



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020



Afegim un altre node del Dashboard Node-Red anomenat “Chart”



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

**Properties**

**Group:** [Aula 506 versio2] Gràfics

**Size:** auto

**Label:** Gràfic

**Type:** Line chart  enlarge points

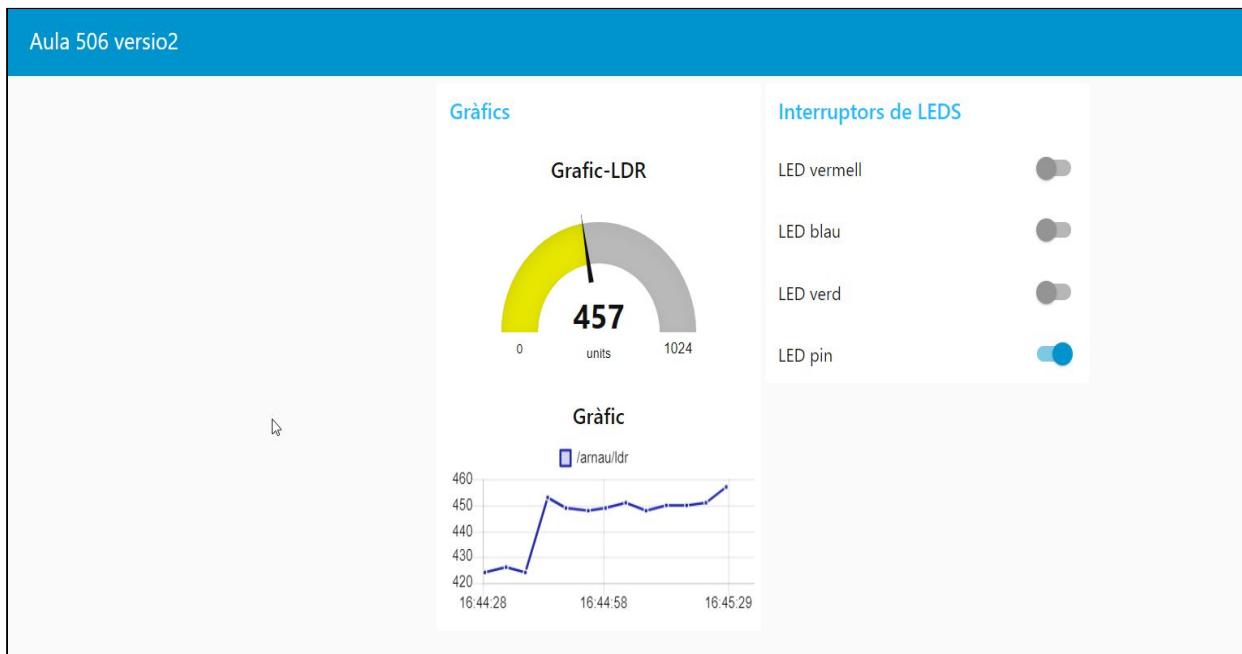
**X-axis:** last 1 minutes OR 100 points

**X-axis Label:** HH:mm:ss

**Y-axis:** min max

**Legend:** Show Interpolate linear

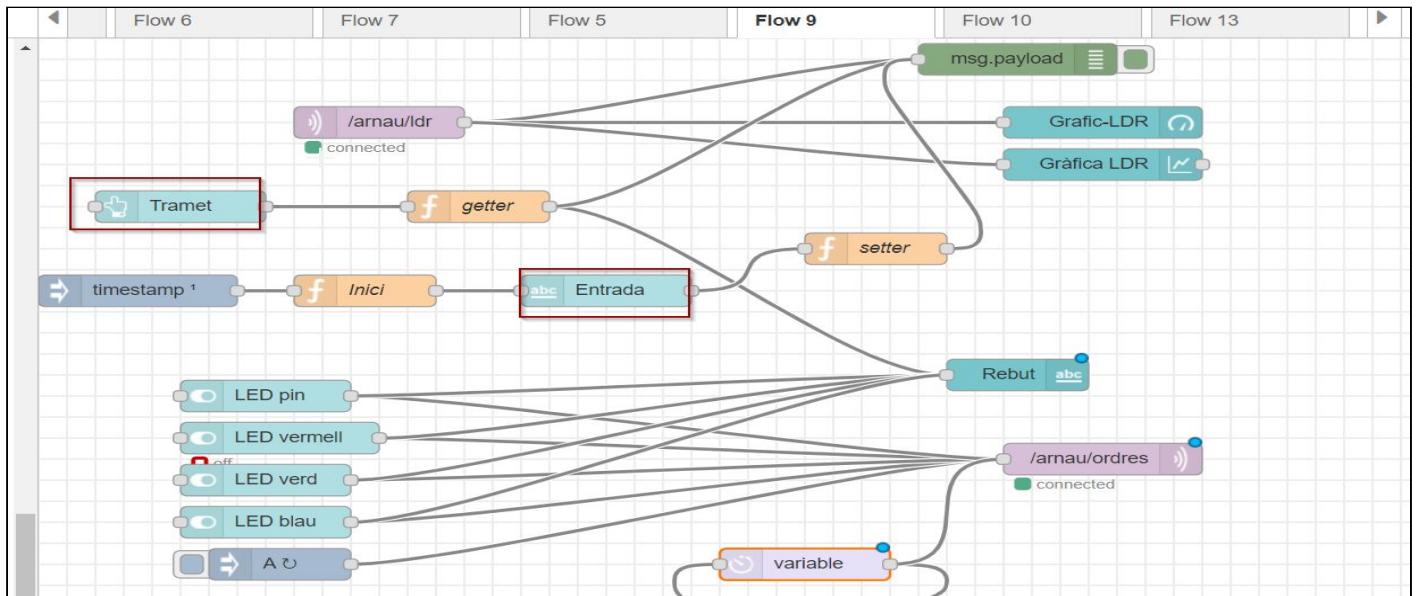
**Series Colours:** Blue, Light Blue, Orange



Nom i Cognoms	Data
Arnaud Subirós Puigarnau	20-01-2020

En el Dashboard s'ha creat un altre Grup “Altres” on ens mostrarà quan premem un LED concret, el seu valor.

- S'ha creat una funció perquè al premer Tramet deixem de visualitzar el valor específic del LED ( 12H,12L...)
- **MOLT DE COMPTA, s'ha de vigilar no crear un bucle infinit (i tinguem problemes amb el Node -Red, hauríem de fer una còpia dels fluxes abans evitar problemes)**
- 



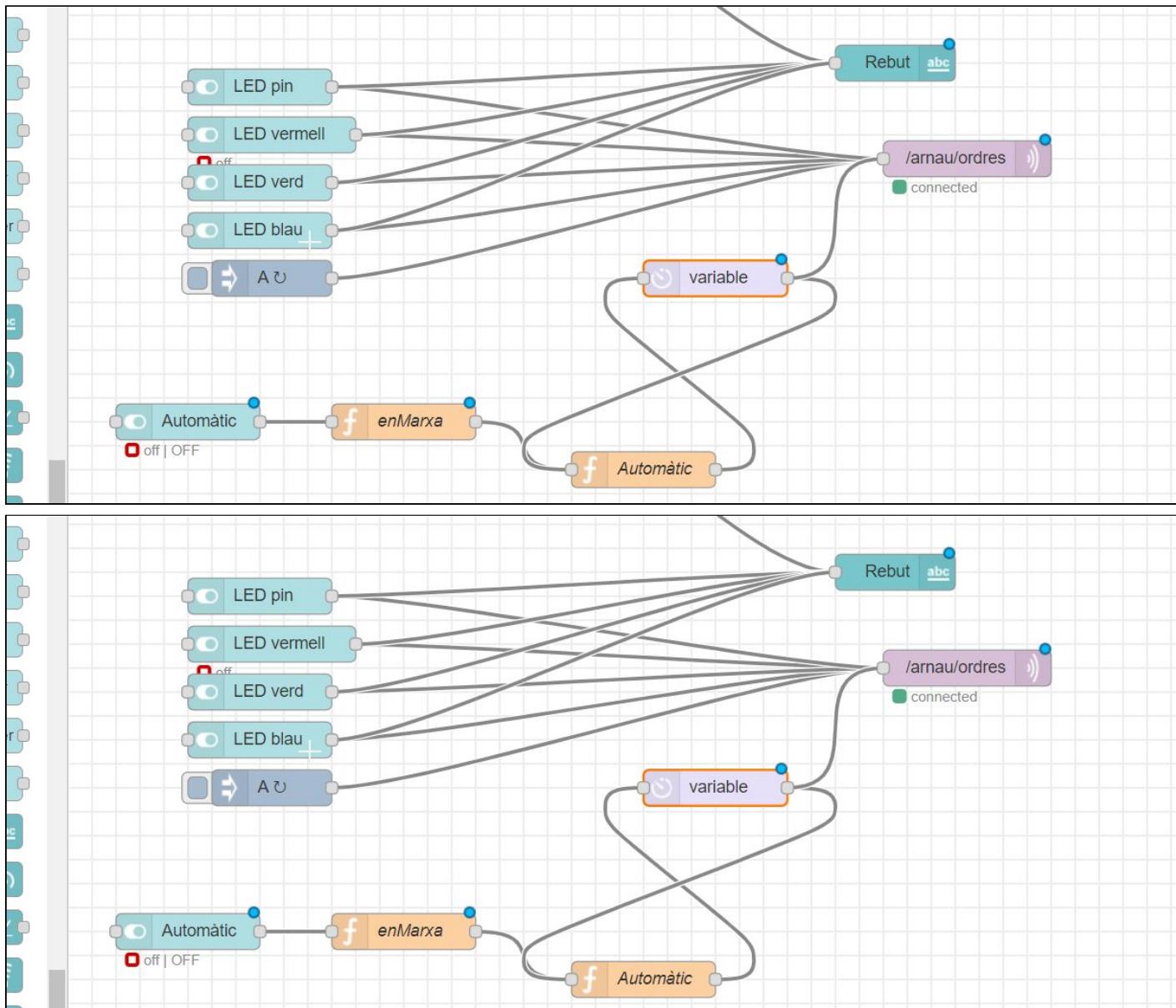


Nom i Cognoms

Arnau Subirós Puigarnau

Data

20-01-2020

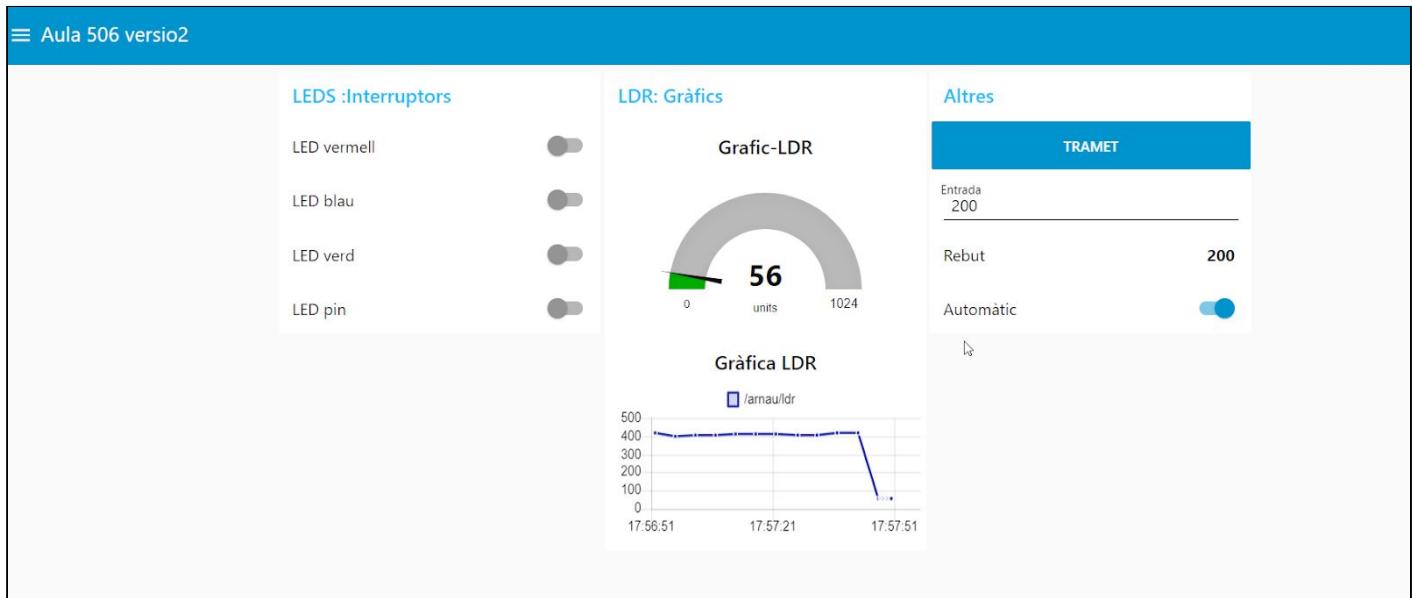
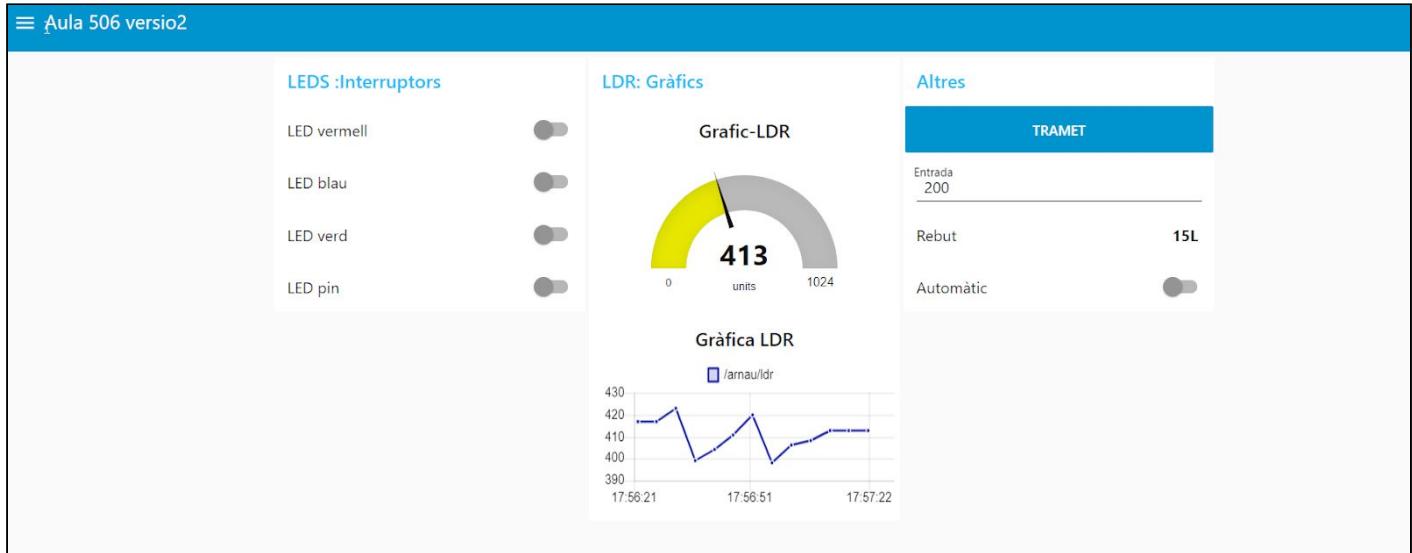


**Nom i Cognoms**

Arnaud Subirós Puigarnau

**Data**

20-01-2020



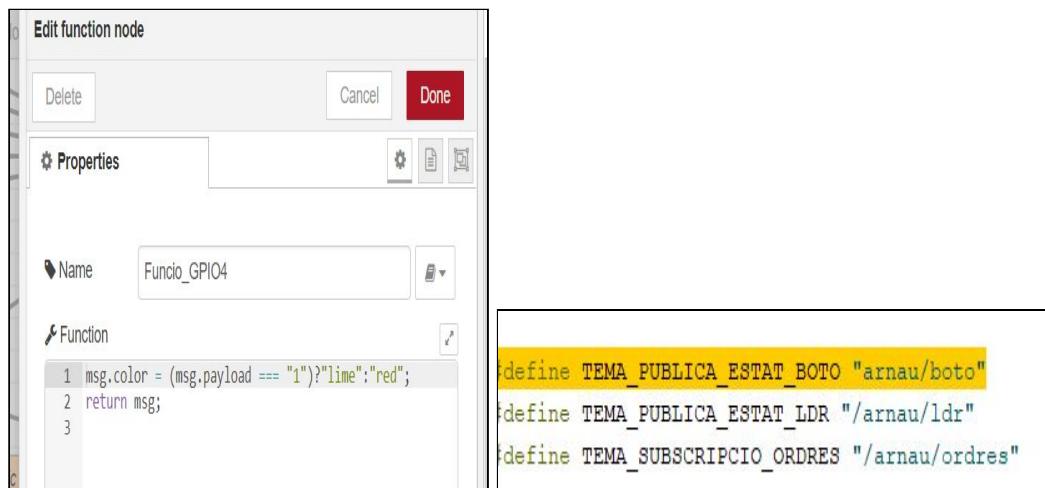
Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

Modificació 17/12/2019 -INACABAT (per revisar)

- Se intenta que es visualitzi en el Dashboard un “led” verd si premem el GPIO4 i en cas contrari “led” vermell
- S'intenta des de el MQTT Dashboard APP del mòbil”



Pero no m'ha sortit



```

#define TEMA_PUBLICA_ESTAT_BOTO "arnau/boto"
#define TEMA_PUBLICA_ESTAT_LDR "/arnau/ldr"
#define TEMA_SUBSCRIPCIO_ORDRES "/arnau/ordres"

void loop() {
  boolean bButtonState = !digitalRead(EXTERNAL_BUTTON);
  static boolean bLastButtonState = bButtonState;

  if (!client.connected()) {
    reconnect();
  }

  if (bButtonState != bLastButtonState) {
    bLastButtonState = bButtonState;
    delay(50);
    if (bButtonState)
      client.publish(TEMA_PUBLICA_ESTAT_BOTO, "1");
    else
      client.publish(TEMA_PUBLICA_ESTAT_BOTO, "0");
  }
  client.loop();
}

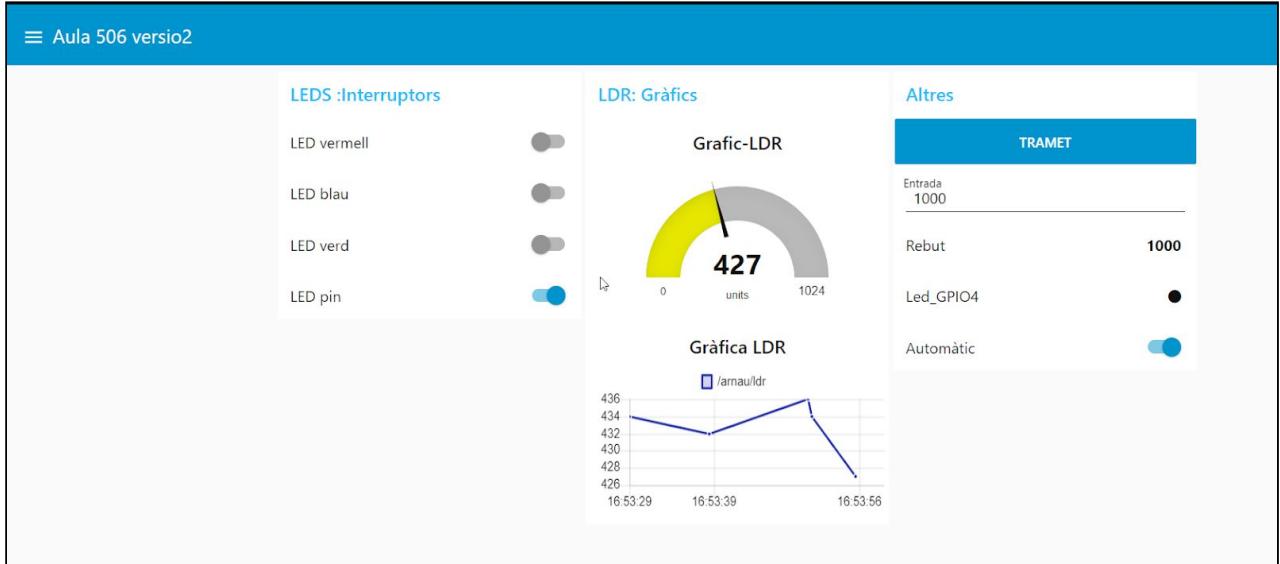
```

## Nom i Cognoms

Arnau Subirós Puigarnau

## Data

20-01-2020



Torno a revisar, em donava error perquè al codi d'Arduino m'havia deixat “/”

```
esp8266_MQTT_pub_sub_02_versio4
//const char* ssid = "WLAN_FE55";
//const char* password = "4ec040328834f2a0ad26";

const char* ssid = "ASB";
const char* password = "eb2a63d14881";

//const char* ssid = "JESUITESFP_PS";
//const char* password = "8ecc6g8b";

//const char* mqtt_server = "192.168.1.200";
//const int mqtt_port = 1883; // normally 1883

const char* mqtt_server = "test.mosquitto.org";
const int mqtt_port = 1883; // normally 1883
//const char* mqtt_server = "test.mosquitto.org";
//const int mqtt_port = 1883; // normally 1883

#define TEMA_PUBLICA_ESTAT_BOTO "/arnau/boto"
#define TEMA_PUBLICA_ESTAT_LDR "/arnau/ldr"
#define TEMA_SUBSCRIPCIO_ORDRES "/arnau/ordres"

WiFiClient espClient;
PubSubClient client(espClient);

const byte ledPin = 2, ledRed = 15, ledGreen = 12, ledBlue = 13;
const byte button = EXTERNAL_BUTTON;

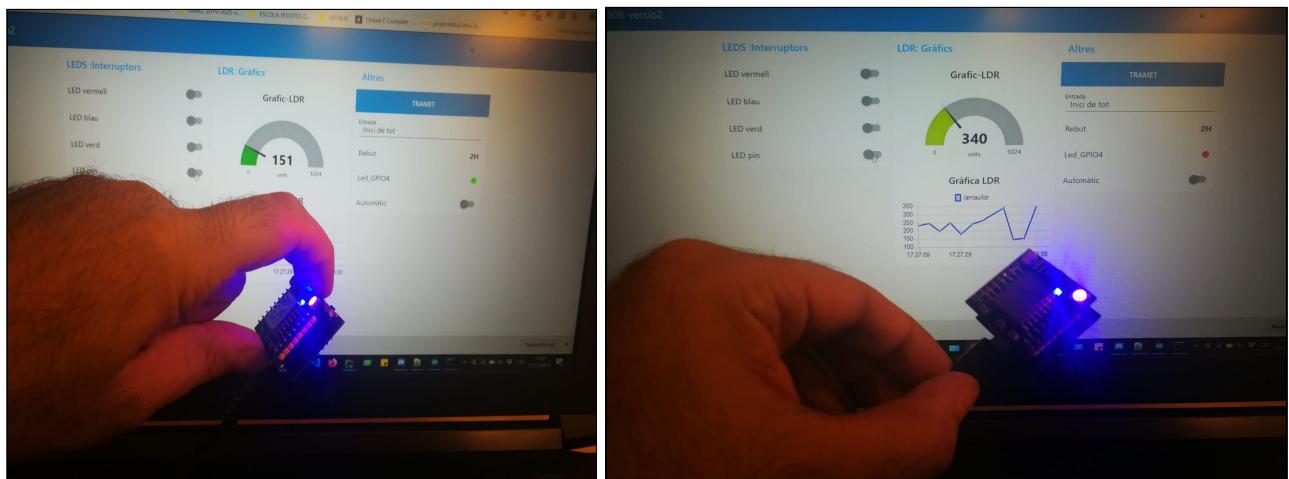
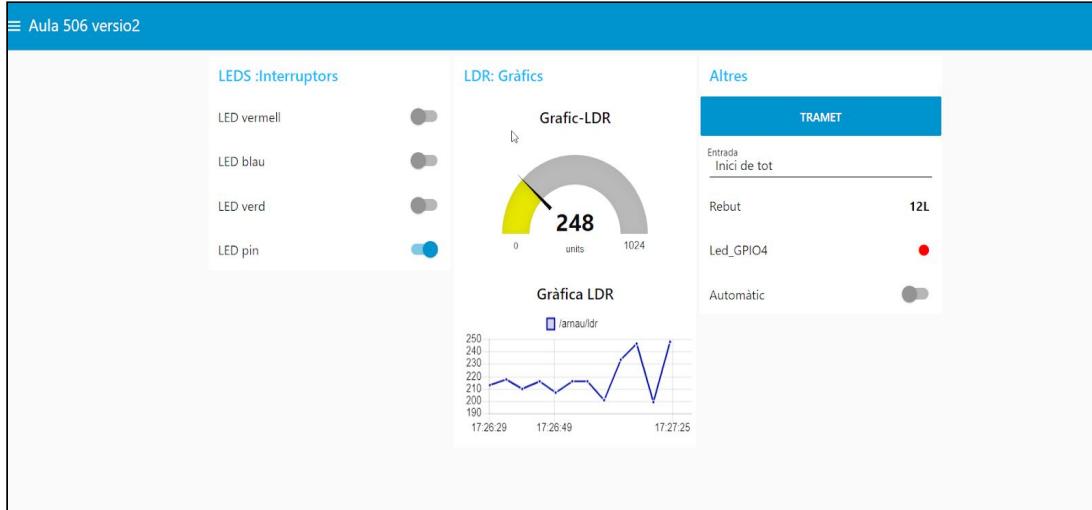
void callback(char* topic, byte* payload, unsigned int length) {
    Serial.print("TOPIC = ");
    Serial.println(topic);
    Serial.print("PAYLOAD = ");
    Serial.println(payload);
}
```

## Nom i Cognoms

Arnau Subirós Puigarnau

## Data

20-01-2020



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

# INFLUXDB

- S'ha instal.lat 2 cops:
  - En una màquina virtual (VIRTUALBOX) amb sistema operatiu Debian 10
  - I en el Windows 10
- **INFLUXDB en la màquina virtual (hostname :asp-debian10)**

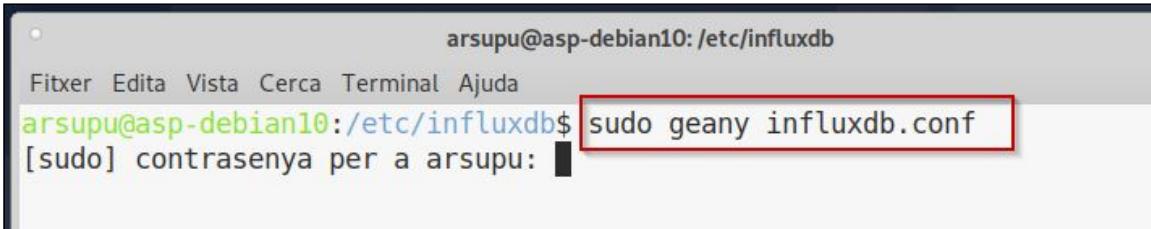
```
arsupu@asp-debian10 :~$ curl -sL https://repos.influxdata.com/influxdb.key | sudo apt-key add -
arsupu@asp-debian10 :~$ source /etc/os-release
arsupu@asp-debian10 :~$ test $VERSION_ID = "9" && echo "deb https://repos.influxdata.com/debian stretch
arsupu@asp-debian10 :~$ stable" | sudo tee /etc/apt/sources.list.d/influxdb.list
arsupu@asp-debian10 :~$ sudo apt-get update && sudo apt-get install influxdb influxdb-client
arsupu@asp-debian10 :~$ sudo systemctl unmask influxdb.service
arsupu@asp-debian10 :~$ sudo systemctl start influxdb
arsupu@asp-debian10 :~$ sudo apt-get update
```

Creacio de la Base de Dades ( aula206)

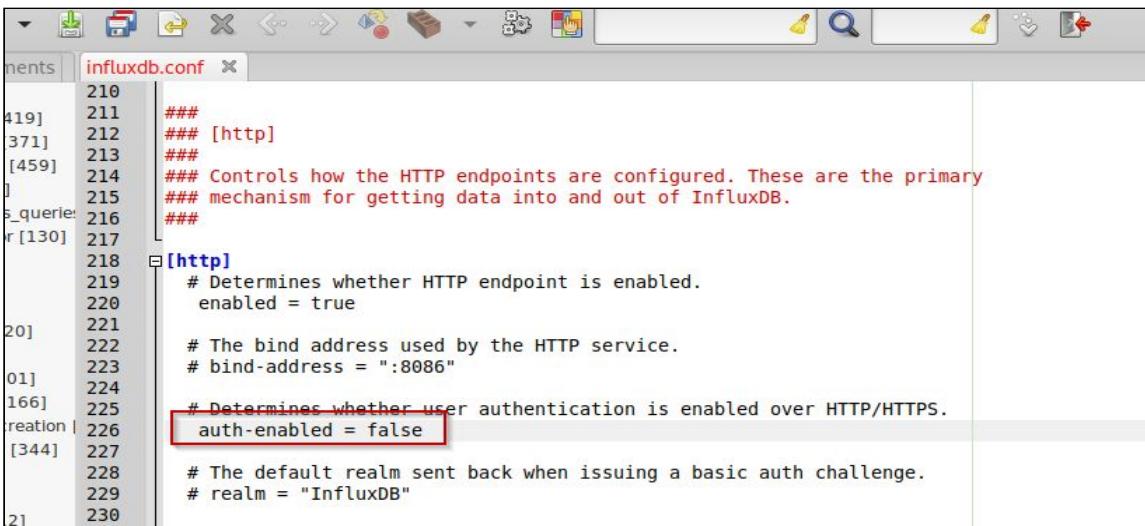
```
arsupu@asp-debian10 :~$ influx0
arsupu@asp-debian10 :~$ CREATE USER "admin" WITH PASSWORD 'fjeclot2019' WITH ALL PRIVILEGES
Nota: !!! amb cometes dobles dona error "fjeclot2019"
arsupu@asp-debian10 :~$ create database aula206
arsupu@asp-debian10 :~$ show databases
arsupu@asp-debian10 :~$ use aula206
arsupu@asp-debian10 :~$ insert Temperatura value=24.5
arsupu@asp-debian10 :~$ insert Pressio value=1000.0
arsupu@asp-debian10 :~$ CREATE USER "iot" WITH PASSWORD 'iot'
arsupu@asp-debian10 :~$ GRANT ALL ON "aula206" TO "iot"
arsupu@asp-debian10 :~$ CREATE USER "convidat" WITH PASSWORD 'benvingut'
arsupu@asp-debian10 :~$ GRANT READ ON "aula206" TO "convidat"
arsupu@asp-debian10 :~$ show users
arsupu@asp-debian10 :~$ quit
```

Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

Modifiquem l'arxiu de configuració per obligar accedir només als usuaris autenticats

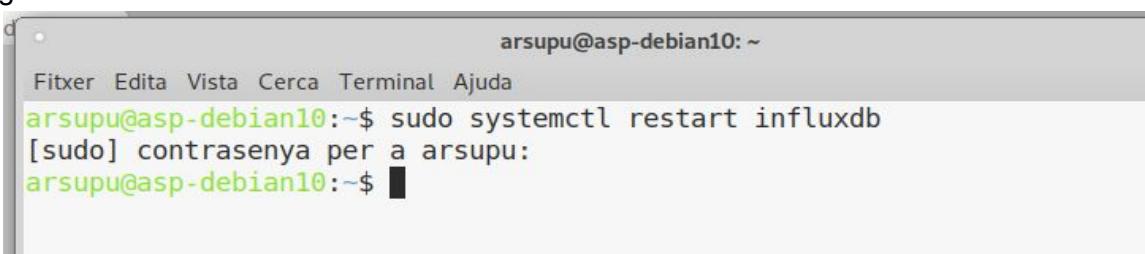


```
arsupu@asp-debian10: /etc/influxdb
Fitxa Edita Vista Cerca Terminal Ajuda
arsupu@asp-debian10:/etc/influxdb$ sudo geany influxdb.conf
[sudo] contrasenya per a arsupu:
```



```
210
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230
### [http]
### Controls how the HTTP endpoints are configured. These are the primary
### mechanism for getting data into and out of InfluxDB.
#
[http]
# Determines whether HTTP endpoint is enabled.
enabled = true
# The bind address used by the HTTP service.
# bind-address = ":8086"
# Determines whether user authentication is enabled over HTTP/HTTPS.
auth-enabled = false
# The default realm sent back when issuing a basic auth challenge.
# realm = "InfluxDB"
```

guardem els canvis i reiniciem el servidor InfluxDB



```
arsupu@asp-debian10: ~
Fitxa Edita Vista Cerca Terminal Ajuda
arsupu@asp-debian10:~$ sudo systemctl restart influxdb
[sudo] contrasenya per a arsupu:
arsupu@asp-debian10:~$
```

## Nom i Cognoms

Arnau Subirós Puigarnau

## Data

20-01-2020

### Seguidament revisem l'estat del servidor

```
arsupu@asp-debian10:~$ sudo systemctl restart influxdb
[sudo] contrasenya per a arsupu:
arsupu@asp-debian10:~$ sudo systemctl status influxdb
● influxdb.service - InfluxDB is an open-source, distributed, time series database
  Loaded: loaded (/lib/systemd/system/influxdb.service; enabled; vendor preset:
  Active: active (running) since Mon 2020-01-13 19:06:55 CET; 1min 0s ago
    Docs: man:influxd(1)
   Main PID: 2869 (influxd)
     Tasks: 8 (limit: 2347)
    Memory: 59.9M
      CGroup: /system.slice/influxdb.service
              └─2869 /usr/bin/influxd -config /etc/influxdb/influxdb.conf

de gen. 13 19:06:56 asp-debian10 influxd[2869]: ts=2020-01-13T18:06:56.554542Z l
de gen. 13 19:06:56 asp-debian10 influxd[2869]: ts=2020-01-13T18:06:56.554701Z l
```

### Verifiquem que podem accedir amb els 3 usuaris.



The image shows three separate terminal windows, each displaying an InfluxDB shell session. The top window shows a connection for user 'admin' with password 'fjeclot2019'. The middle window shows a connection for user 'iot' with password 'iot'. The bottom window shows a connection for user 'convidat' with password 'benvingut'. Each window displays the InfluxDB version (1.6.4), the shell version (1.6.4), and the database being used (aula206).

```
arsupu@asp-debian10:~$ influx -username admin -password fjeclot2019
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> 
```

```
arsupu@asp-debian10:~$ influx -username iot -password iot
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> use aula206
Using database aula206
> 
```

```
arsupu@asp-debian10:~$ influx -username convidat -password benvingut
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> 
```

Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

Accedim amb l'usuari iot i revisem que podem visualitzar el valor introduït a temperatura i humitat

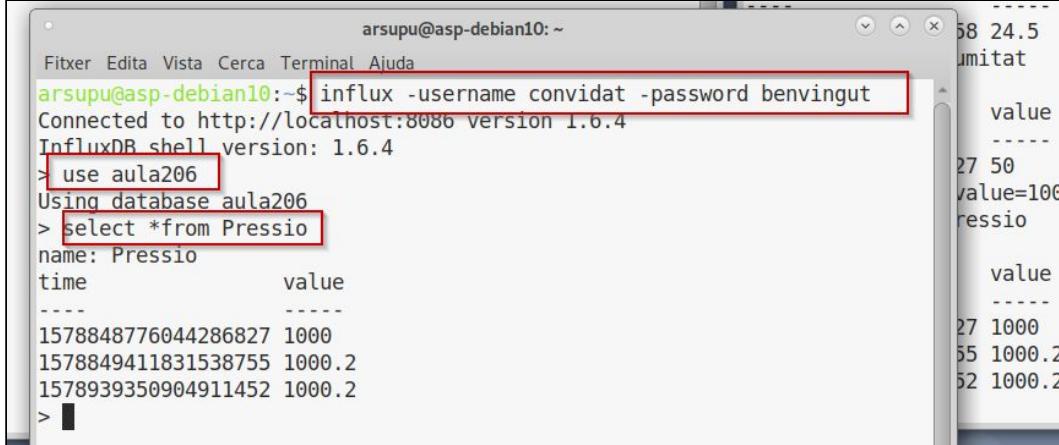
```
arsupu@asp-debian10: ~
Fitxer Edita Vista Cerca Terminal Ajuda
arsupu@asp-debian10:~$ influx -username iot -password iot
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> use aula206
Using database aula206
> select * from Temperatura
name: Temperatura
time           value
----           -----
1578848763097001258 24.5
> select * from Humitat
name: Humitat
time           value
----           -----
1578848787266809527 50
> ■
```

Confirmem que aquest usuari pot afegir dades

```
arsupu@asp-debian10: ~
Fitxer Edita Vista Cerca Terminal Ajuda
arsupu@asp-debian10:~$ influx -username iot -password iot
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> use aula206
Using database aula206
> select * from Temperatura
name: Temperatura
time           value
----           -----
1578848763097001258 24.5
> select * from Humitat
name: Humitat
time           value
----           -----
1578848787266809527 50
> Insert Pressio value=1000.20
> select * from Pressio
name: Pressio
time           value
----           -----
1578848776044286827 1000
1578849411831538755 1000.2
1578939350904911452 1000.2
> ■
```

Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

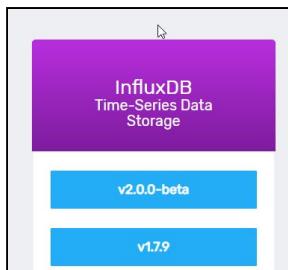
Finalment accedim amb l'usuari “convidat” que només té permisos de lectura. Confirmem que podem visualitzar els inserts de l'usuari iot



```
arsupu@asp-debian10:~$ influx -username convidat -password benvingut
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> use aula206
Using database aula206
> select *from Pressio
name: Pressio
time          value
----          -----
1578848776044286827 1000
1578849411831538755 1000.2
1578939350904911452 1000.2
>
```

- En el host físic( W10-ASP2019)Windows10

En aquest cas s'ha descarregat d'aquest link : <https://portal.influxdata.com/downloads/>  
S'ha seleccionat la versió estable (v.1.7.9)

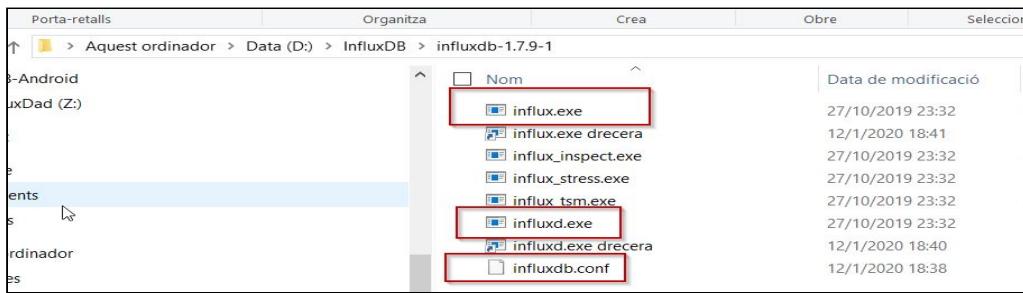


S'ha descarregat l'arxiu zip en la ubicació que ens interessa. En el meu cas he creat un directori anomenat InfluxDB en la unitat D:



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

En aquest cas s'ha de tenir en compte que a diferència de Linux, haurem d'obrir l'executable que correspon al servidor i accedir a influx amb l'executable client (tenint en compte que si accedim com a client, amb aquest mètode, només seria admin). Per accedir amb els altres usuaris, haurem d'accendir des del terminal (cmd).



- influx.exe → client
- influxd.exe → servidor (l'hem de tenir engegat, per comoditat, he creat un accés directe a l'escriptori)
- influxdb.conf → l'arxiu de configuració que haurem de modificar el mateix ( accedint amb un editor de text, com notepad++)

## ACTIVEM el SERVIDOR

```

2020-01-13T14:09:04.601668Z    info  InfluxDB starting {"log_id": "OKJocrM0000", "version": "1.7.9", "branch": "1.7", "commit": "23bc63d43a8dc05f53afa46e3526ebb5578f3d88", "pid": 601668}
2020-01-13T14:09:04.601668Z    info  Go runtime {"log_id": "OKJocrM0000", "version": "go1.12.6", "maxprocs": 12}
2020-01-13T14:09:04.734660Z    info  Using data dir {"log_id": "OKJocrM0000", "service": "store", "path": "C:\\Users\\arnau\\.influxdb\\data"}
2020-01-13T14:09:04.734660Z    info  Compaction settings {"log_id": "OKJocrM0000", "service": "store", "max_concurrent_compactions": 6, "throughput_bytes_per_second": 50331648, "throughput_bytes_per_second_burst": 50331648}
2020-01-13T14:09:04.734660Z    info  Open store (start) {"log_id": "OKJocrM0000", "service": "store", "trace_id": "OKJocrsw000", "op_name": "tsdb_open", "op_event": "start"}
2020-01-13T14:09:04.742468Z    info  Reading file {"log_id": "OKJocrM0000", "engine": "tsm1", "service": "cacheLoader", "path": "C:\\Users\\arnau\\.influxdb\\wal\\internal\\monitor\\\\_000001.wal", "size": 1687575}
2020-01-13T14:09:04.744419Z    info  Opened file {"log_id": "OKJocrM0000", "engine": "tsm1", "service": "filestore", "path": "C:\\Users\\arnau\\.influxdb\\data\\internal\\monitor\\\\_000001.wal", "size": 93344}
2020-01-13T14:09:04.744419Z    info  Reading file {"log_id": "OKJocrM0000", "engine": "tsm1", "service": "cacheLoader", "path": "C:\\Users\\arnau\\.influxdb\\wal\\internal\\monitor\\\\_000001.wal", "size": 93344}

```

Accedim amb l'executable client(usuari : admin)

```

Connected to http://localhost:8086 version 1.7.9
InfluxDB shell version: 1.7.9
> show databases
name: databases
name
-----
_internal
aula507
test01
>

```

Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

Accedim amb els usuaris lot i Convidat via terminal (CMD)

```
rt [cmd] Indicador d'ordres
Microsoft Windows [Versión 10.0.18362.535]
(c) 2019 Microsoft Corporation. Todos los derechos reservados.

C:\Users\arnau>d:
D:>cd D:\InfluxDB\influxdb-1.7.9-1
D:\InfluxDB\influxdb-1.7.9-1>
```

```
rt [cmd] Indicador d'ordres - influx -username iot -password iot
Microsoft Windows [Versión 10.0.18362.535]
(c) 2019 Microsoft Corporation. Todos los derechos reservados.

C:\Users\arnau>d:
D:>cd D:\InfluxDB\influxdb-1.7.9-1
D:\InfluxDB\influxdb-1.7.9-1>influx -username iot -password iot
Connected to http://localhost:8086 version 1.7.9
InfluxDB shell version: 1.7.9
> show databases
name: databases
name
-----
_internal
aula507
test01
> use aula507
Using database aula507
> select * from Pressio
name: Pressio
time           value
-----
1578850519458854000 1000
1578851132284820900 1000.2
>
```

Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

```

a [1] Indicador d'ordres - influx -username convidat -password benvingut
1578850519458854000 1000
1578851132284820900 1000.2
> quit

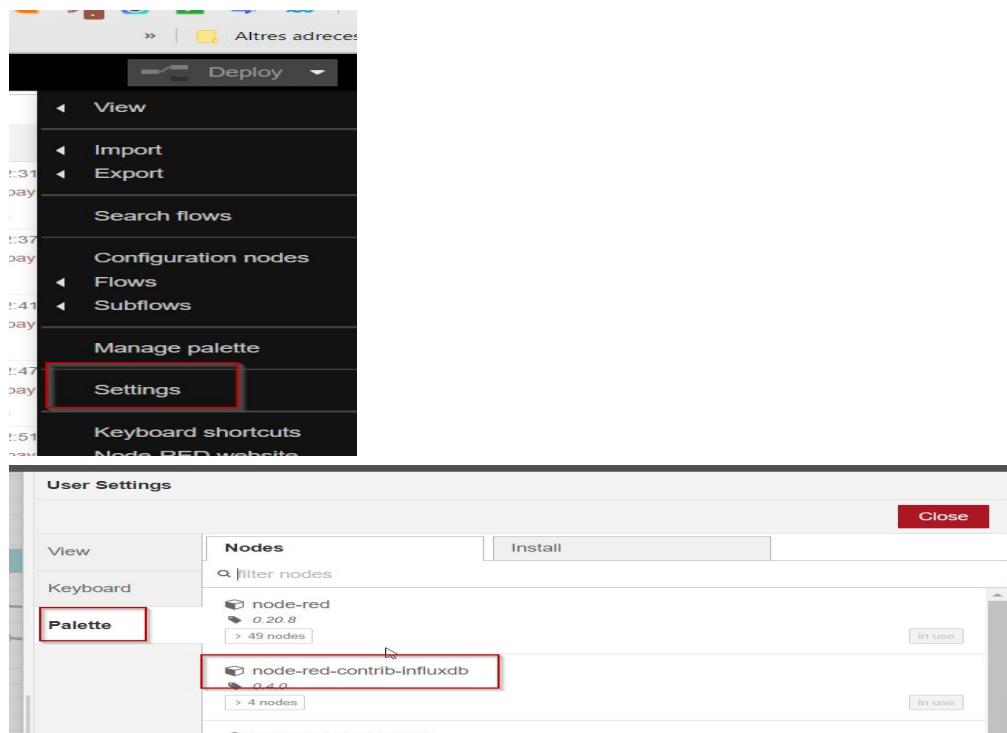
D:\InfluxDB\influxdb-1.7.9->influx -username convidat -password benvingut
Connected to http://localhost:8086 version 1.7.9
InfluxDB shell version: 1.7.9
> use aula507
Using database aula507
> select * from Pressio.
name: Pressio
time           value
----           -----
1578850519458854000 1000
1578851132284820900 1000.2
>

```

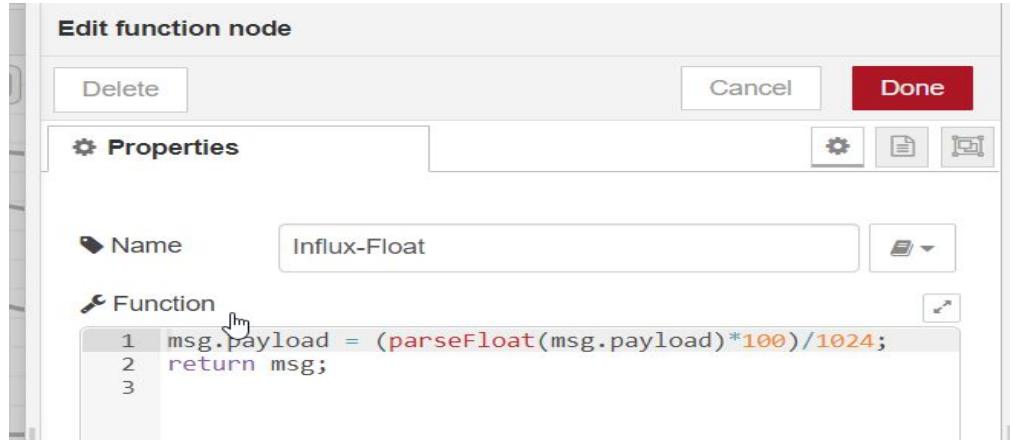
#### ❑ AFEGIM EL NODE INFLUXDB a NODE-RED

(Seleccionem Settings i Palette.

En el meu cas es veu a **nodes** perquè ja l'he instal·lat però hauria de buscar-lo a **install** (i instal·lar-lo)



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020



**Nota :** Accedirem a InfluxDB com usuari **Amin** i crearem una nova Base de Dades que emmagatzemarà els valors que se li envia desde Node-RED

```
D:\InfluxDB\influxdb-1.7.9-1\influx.exe
Connected to http://localhost:8086 version 1.7.9
InfluxDB shell version: 1.7.9
> create database ldrDB
> GRANT ALL ON "ldrDB" TO "iot"
>
```

Accedim des de el terminal amb l'usuari “iot”

```
Indicador d'ordres - influx -username iot -password iot
D:\InfluxDB\influxdb-1.7.9-1>influx -username iot -password iot
Connected to http://localhost:8086 version 1.7.9
InfluxDB shell version: 1.7.9
> show databases
name: databases
name
-----
_internal
aula507
test01
ldrDB
> use ldrDB
Using database ldrDB
>
```

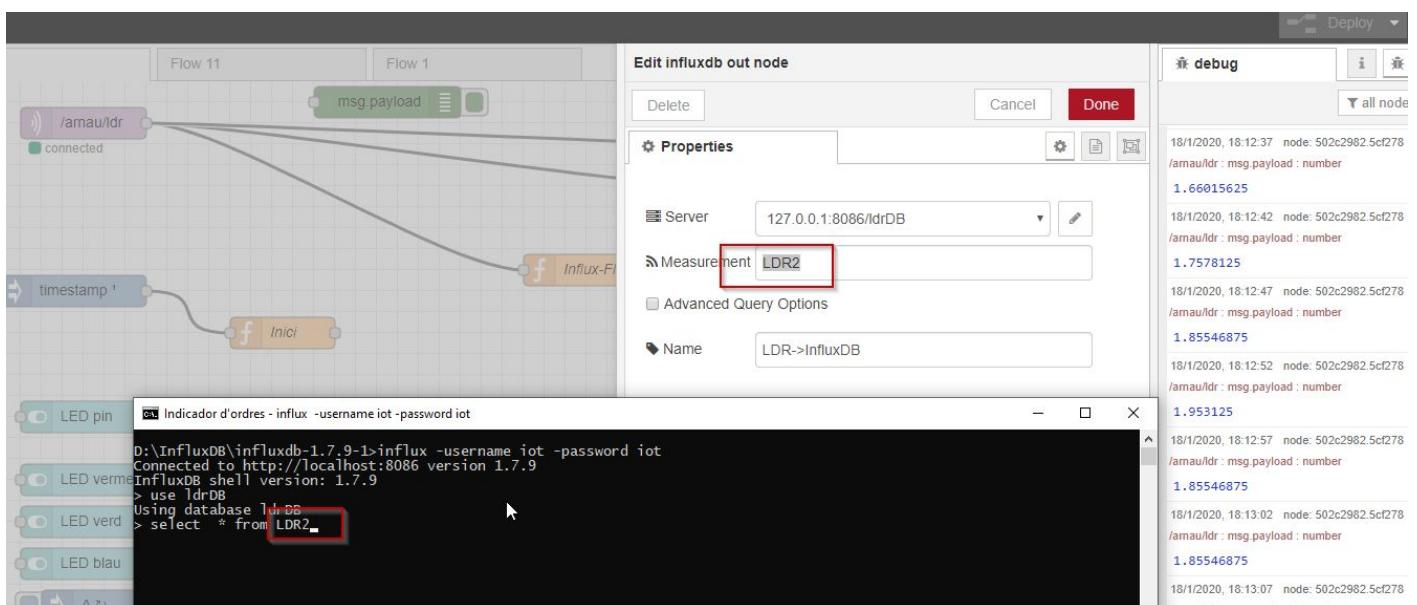
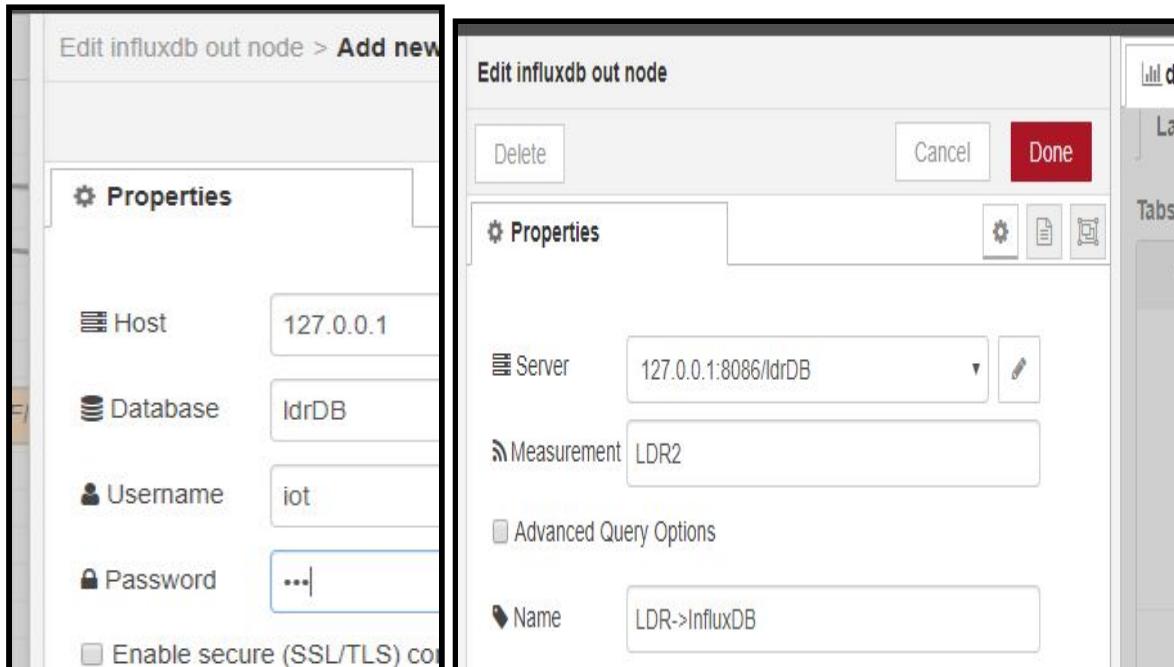
## Nom i Cognoms

Arnau Subirós Puigarnau

## Data

20-01-2020

Seleccionem la base de dades Influx ubicada a **localhost**



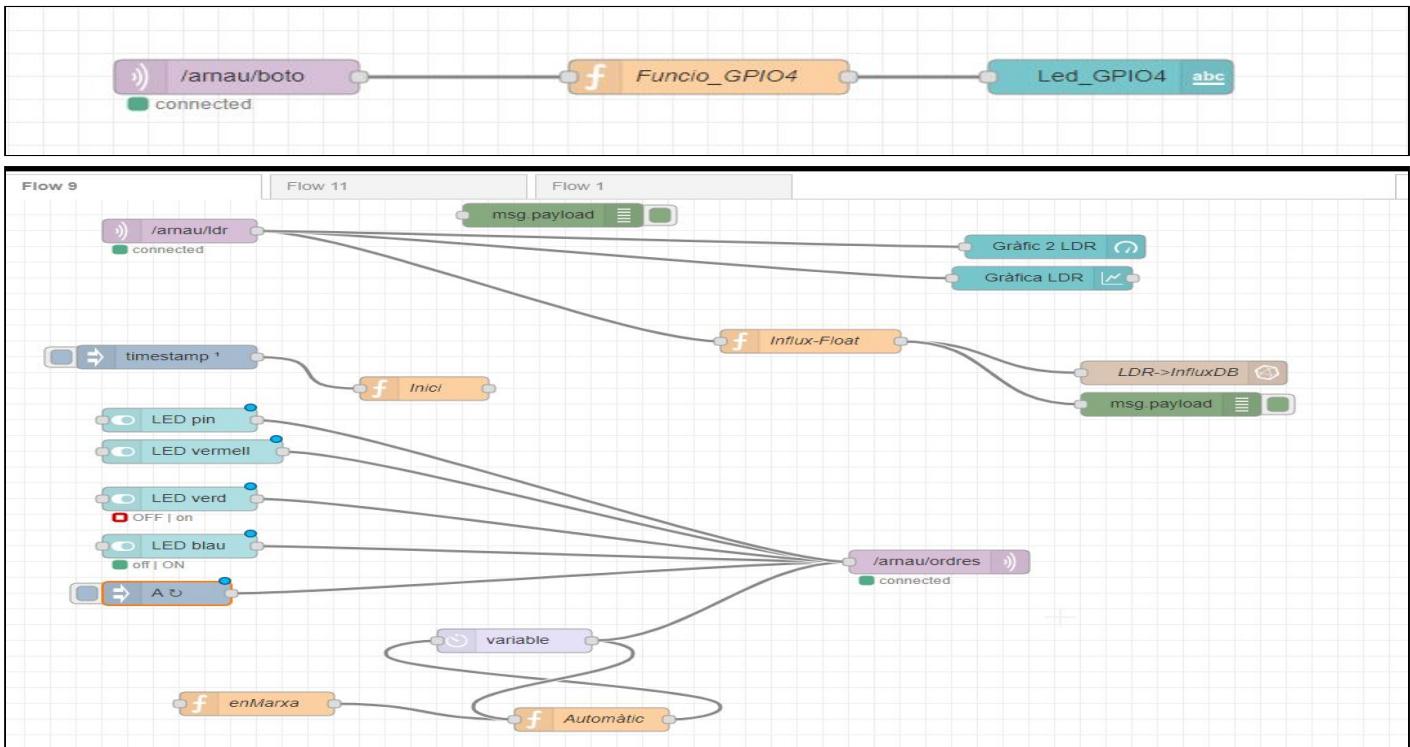
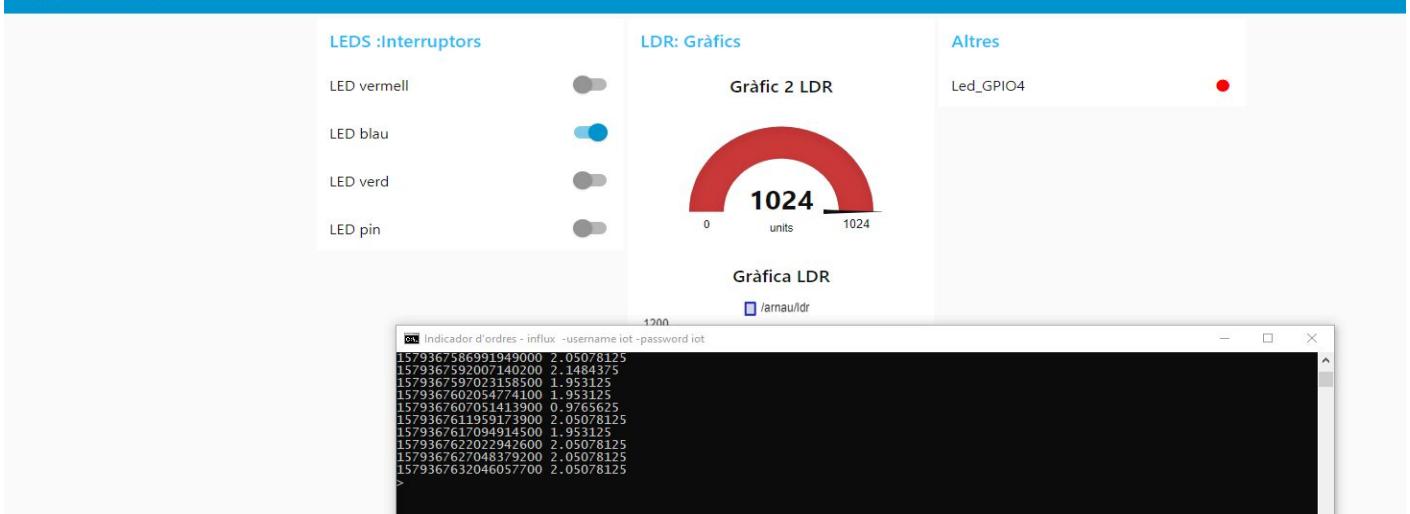
## Nom i Cognoms

Arnaud Subirós Puigarnau

## Data

20-01-2020

Aula 506 versió2



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

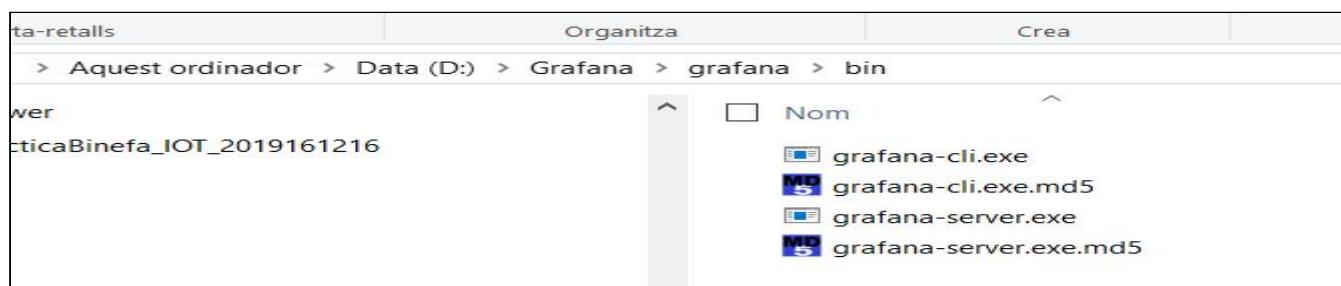
# GRAFANA

S'ha instal.lat 2 cops:

- En una màquina virtual (VIRTUALBOX) amb sistema operatiu Debian 10
- I en el Windows 10

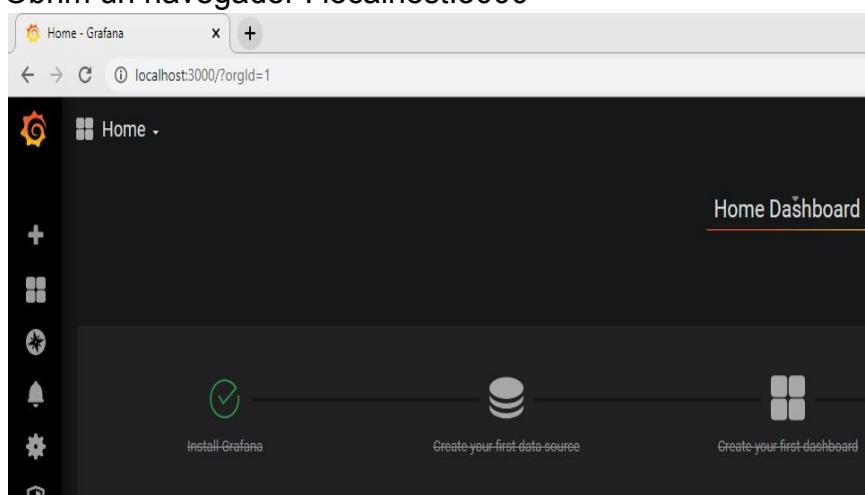
- **En el host físic( W10-ASP2019)Windows10**

- <https://grafana.com/docs/grafana/latest/installation/windows/>



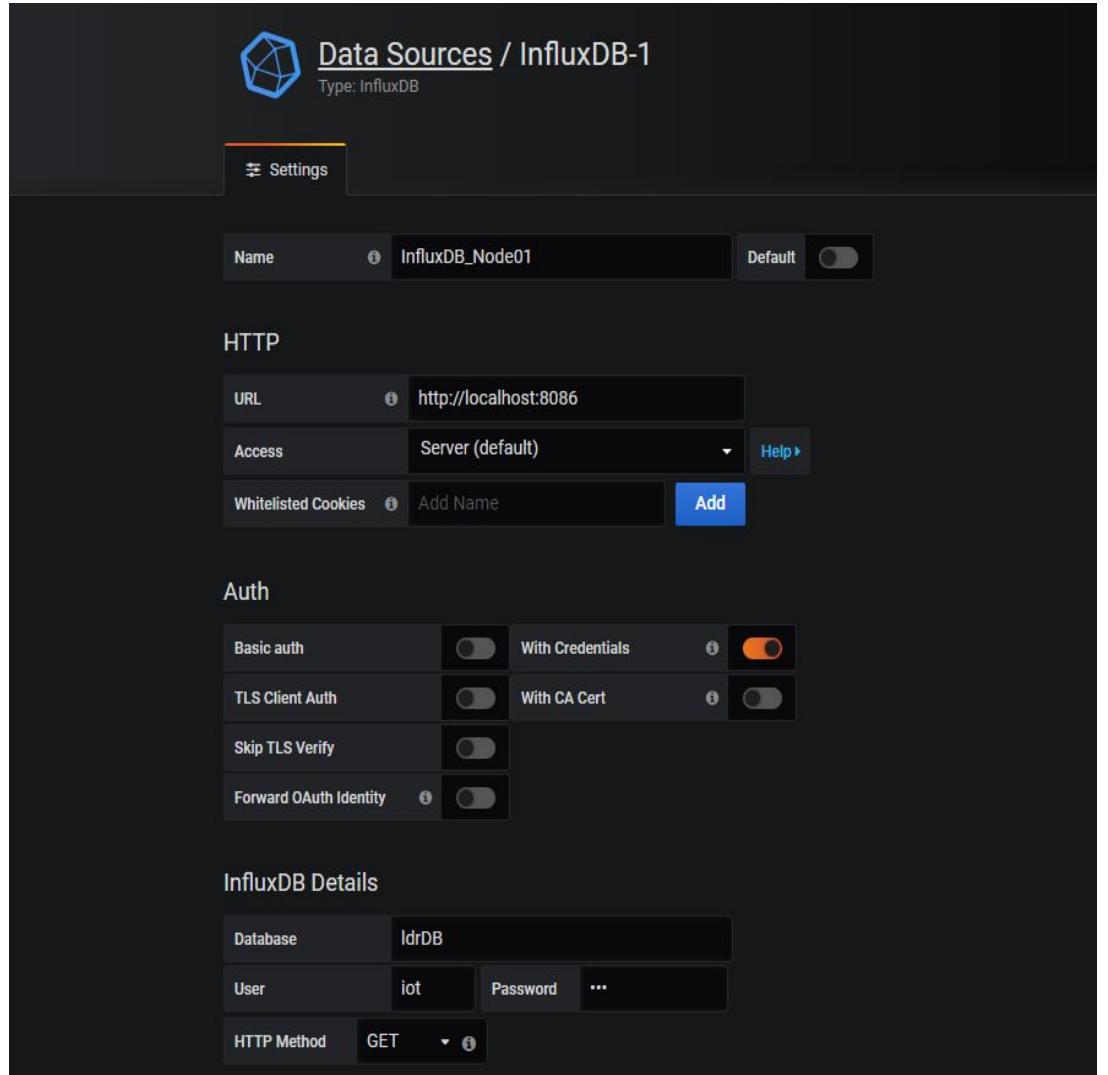
- **Hem de fer el mateix que amb InfluxDB, primer executar grafana-server**

- A diferència d'InfluxDB s'executarà en 2 pla
- Obrim un navegador : localhost:3000



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

- Seleccionem el tipus de base de dades( InfluxDB)



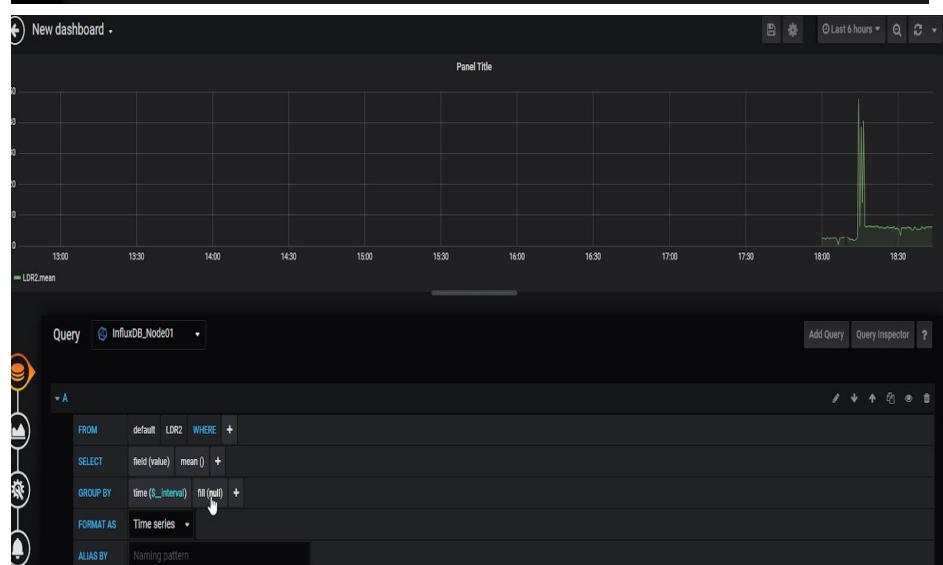
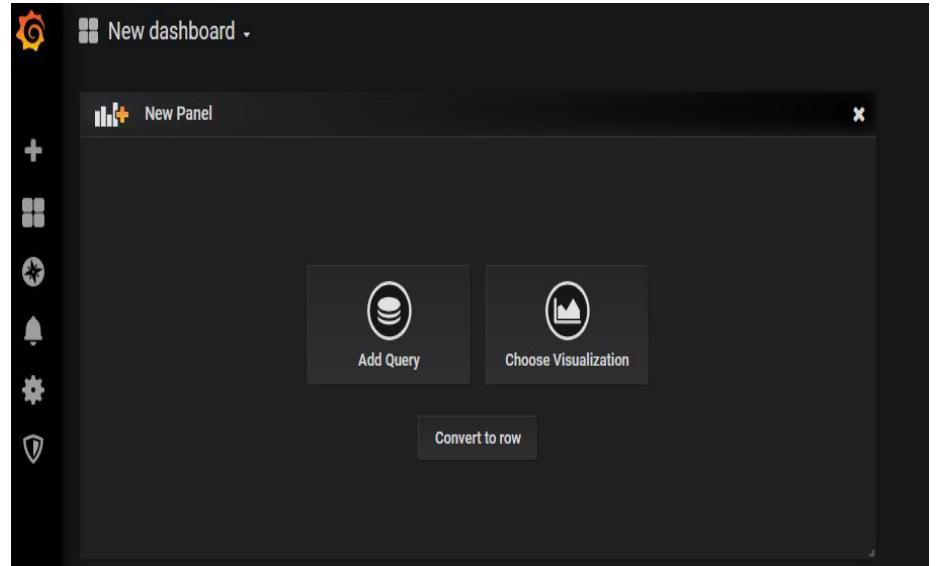
The screenshot shows the 'Data Sources / InfluxDB-1' configuration page in Grafana. The 'Type' is set to 'InfluxDB'. The 'Name' is 'InfluxDB\_Node01'. The 'Default' toggle is off. Under the 'HTTP' section, the 'URL' is 'http://localhost:8086', 'Access' is 'Server (default)', and there is a 'Whitelisted Cookies' input field with a 'Add Name' button. Under the 'Auth' section, 'Basic auth' is turned off, 'With Credentials' is turned on, 'TLS Client Auth' is turned off, 'With CA Cert' is turned off, 'Skip TLS Verify' is turned off, and 'Forward OAuth Identity' is turned off. In the 'InfluxDB Details' section, the 'Database' is 'ldrDB', 'User' is 'iot', and 'Password' is empty. The 'HTTP Method' is set to 'GET'. A green banner at the bottom states 'Data source is working' with a checkmark icon.

Nom i Cognoms

Arnau Subirós Puigarnau

Data

20-01-2020



Nom i Cognoms

Arnau Subirós Puigarnau

Data

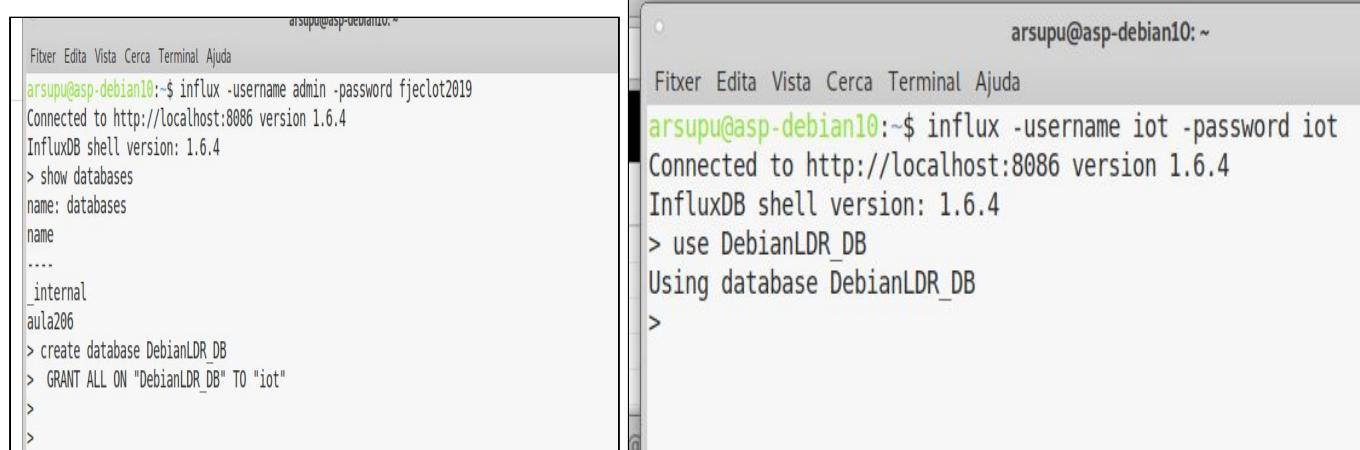
20-01-2020



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

## • GRAFANA en la màquina virtual (hostname :asp-debian10)

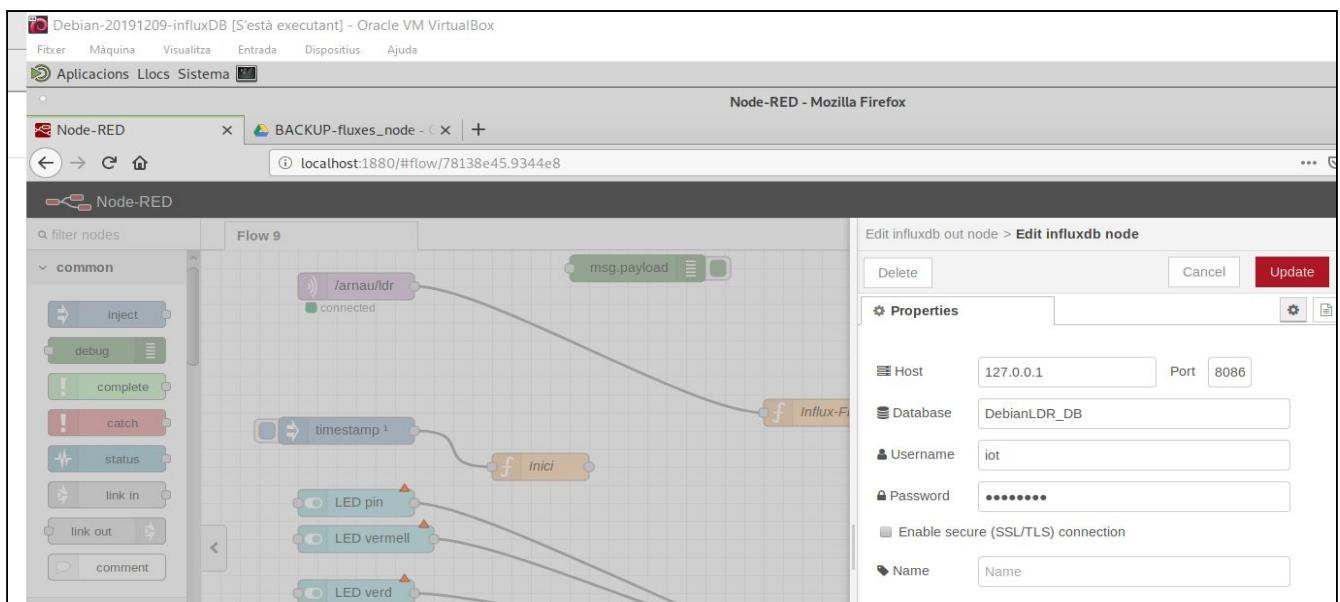
En aquest punt s'ha inserit amb un import el codi Node-Red (que ja hem utilitzat en el host físic de Windows), per evitar confusions s'ha creat una nova base de dades buida amb un nom diferent i s'ha fet proves abans de continuar amb Grafana.



```
arsupu@asp-debian10:~$ influx -username admin -password fjeclot2019
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> show databases
name: databases
name
...
internal
aula206
> create database DebianLDR_DB
> GRANT ALL ON "DebianLDR_DB" TO "iot"
>
>
```

```
arsupu@asp-debian10:~$ influx -username iot -password iot
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> use DebianLDR_DB
Using database DebianLDR_DB
>
```



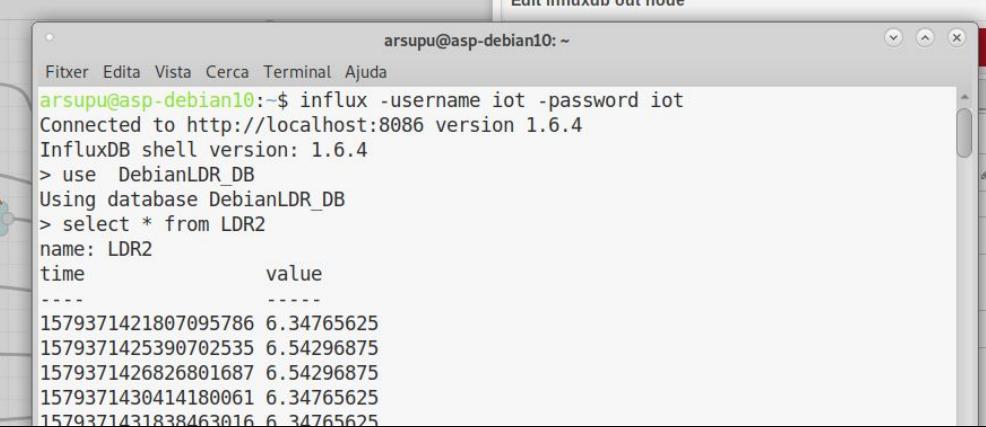
The screenshot shows the Node-RED interface running in a Firefox browser window. A flow is visible on the canvas, starting with an 'inject' node connected to a 'msg.payload' node, which then connects to an 'Influx-F' node. This node is part of an 'Edit influxdb out node > Edit influxdb node' dialog box. The dialog contains fields for Host (127.0.0.1), Port (8086), Database (DebianLDR\_DB), Username (iot), and Password (redacted). There are also checkboxes for 'Enable secure (SSL/TLS) connection' and 'Name'.

## Nom i Cognoms

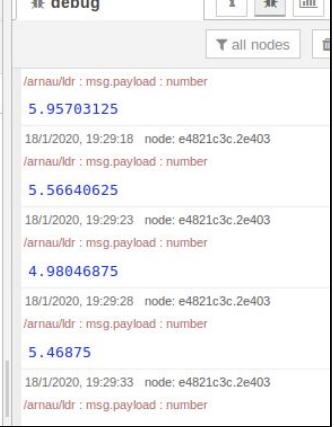
Arnau Subirós Puigarnau

## Data

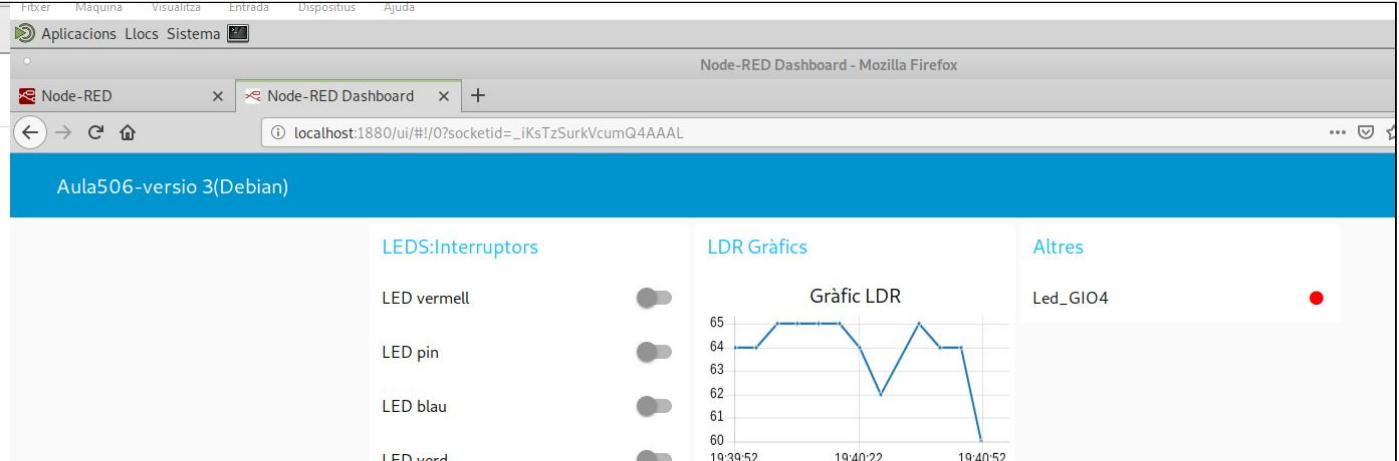
20-01-2020



```
arsupu@asp-debian10:~$ influx -username iot -password iot
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> use DebianLDR_DB
Using database DebianLDR_DB
> select * from LDR2
name: LDR2
time           value
----           -----
1579371421807095786 6.34765625
1579371425390702535 6.54296875
1579371426826801687 6.54296875
1579371430414180061 6.34765625
1579371431838463016 6.34765625
```



```
/arnau/ldr : msg.payload : number
5.95703125
18/1/2020, 19:29:18 node: e4821c3c.2e403
/arnau/ldr : msg.payload : number
5.56640625
18/1/2020, 19:29:23 node: e4821c3c.2e403
/arnau/ldr : msg.payload : number
4.98046875
18/1/2020, 19:29:28 node: e4821c3c.2e403
/arnau/ldr : msg.payload : number
5.46875
18/1/2020, 19:29:33 node: e4821c3c.2e403
/arnau/ldr : msg.payload : number
```



**LEDS:Interruptors**

- LED vermell
- LED pin
- LED blau
- LED verd

**LDR Gràfics**

Gràfic LDR

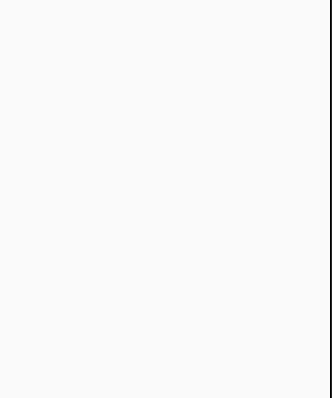


Time	Value
19:39:52	64
19:40:22	62
19:40:52	60

**Altres**

Led\_GIO4





```
arsupu@asp-debian10:~$ influx -username iot -password iot
Connected to http://localhost:8086 version 1.6.4
InfluxDB shell version: 1.6.4
> use DebianLDR_DB
Using database DebianLDR_DB
> select * from LDR2
name: LDR2
time           value
----           -----
1579371421807095786 6.34765625
1579371425390702535 6.54296875
1579371426826801687 6.54296875
1579371430414180061 6.34765625
1579371431838463016 6.34765625
```

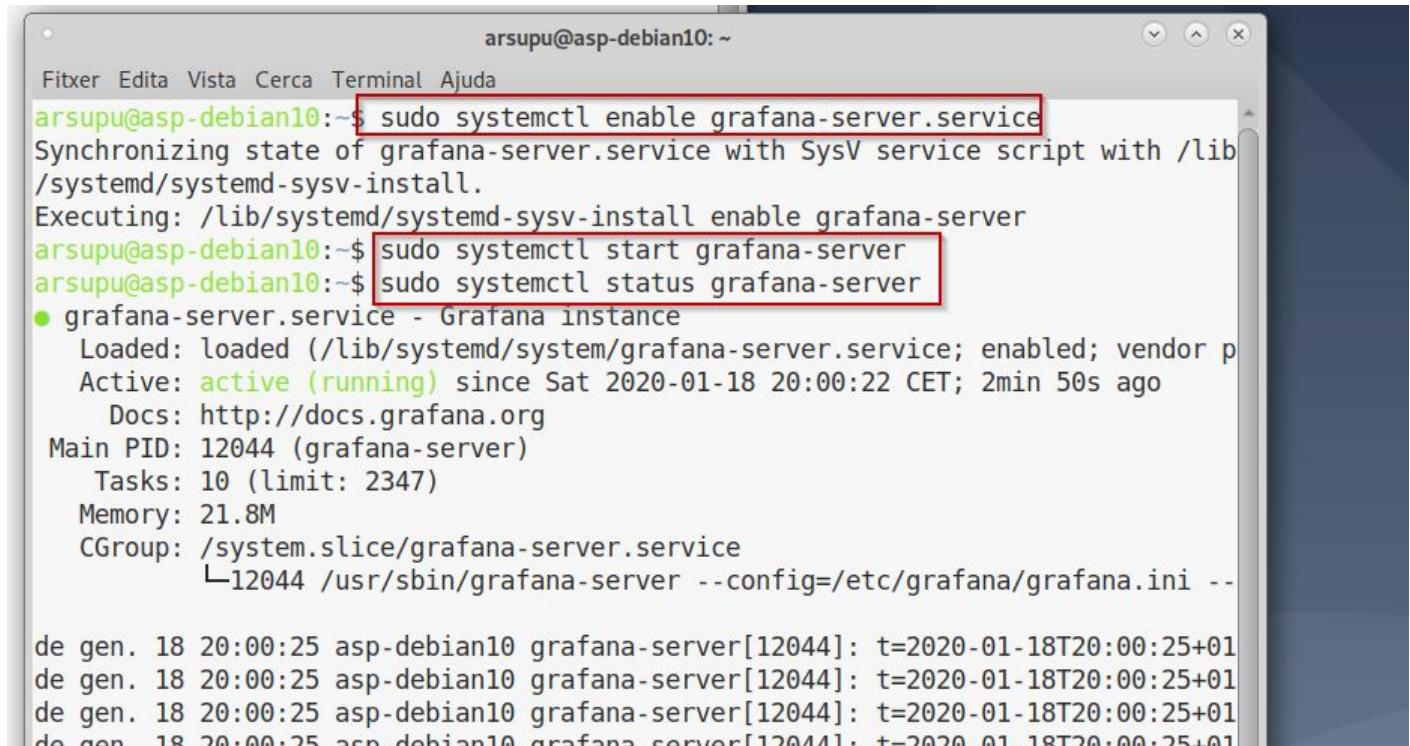
Nom i Cognoms	Data
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- Procedim amb l'instal·lació de Grafana
  - <https://grafana.com/docs/grafana/latest/installation/debian/>

```
arsupu@asp-debian10: ~
Fitxer Edita Vista Cerca Terminal Ajuda
arsupu@asp-debian10:~$ sudo apt-get install grafana
S'està llegint la llista de paquets... Fet
S'està construint l'arbre de dependències
S'està llegint la informació de l'estat... Fet
S'instal·laran els paquets NOUS següents:
  grafana
0 actualitzats, 1 nous a instal·lar, 0 a suprimir i 5 no actualitzats.
S'ha d'obtenir 61,3 MB d'arxius.
Després d'aquesta operació s'empraran 176 MB d'espai en disc addicional.
Bai:1 https://packages.grafana.com/oss/deb stable/main amd64 grafana amd64
```

```
arsupu@asp-debian10: ~
Fitxer Edita Vista Cerca Terminal Ajuda
arsupu@asp-debian10:~$ sudo systemctl daemon-reload
arsupu@asp-debian10:~$ sudo systemctl start grafana-server
arsupu@asp-debian10:~$ sudo systemctl status grafana-server
● grafana-server.service - Grafana instance
  Loaded: loaded (/lib/systemd/system/grafana-server.service; disabled; vendor
  Active: active (running) since Sat 2020-01-18 20:00:22 CET; 1min 23s ago
    Docs: http://docs.grafana.org
  Main PID: 12044 (grafana-server)
    Tasks: 10 (limit: 2347)
   Memory: 21.6M
  CGroup: /system.slice/grafana-server.service
          └─12044 /usr/sbin/grafana-server --config=/etc/grafana/grafana.ini --
```

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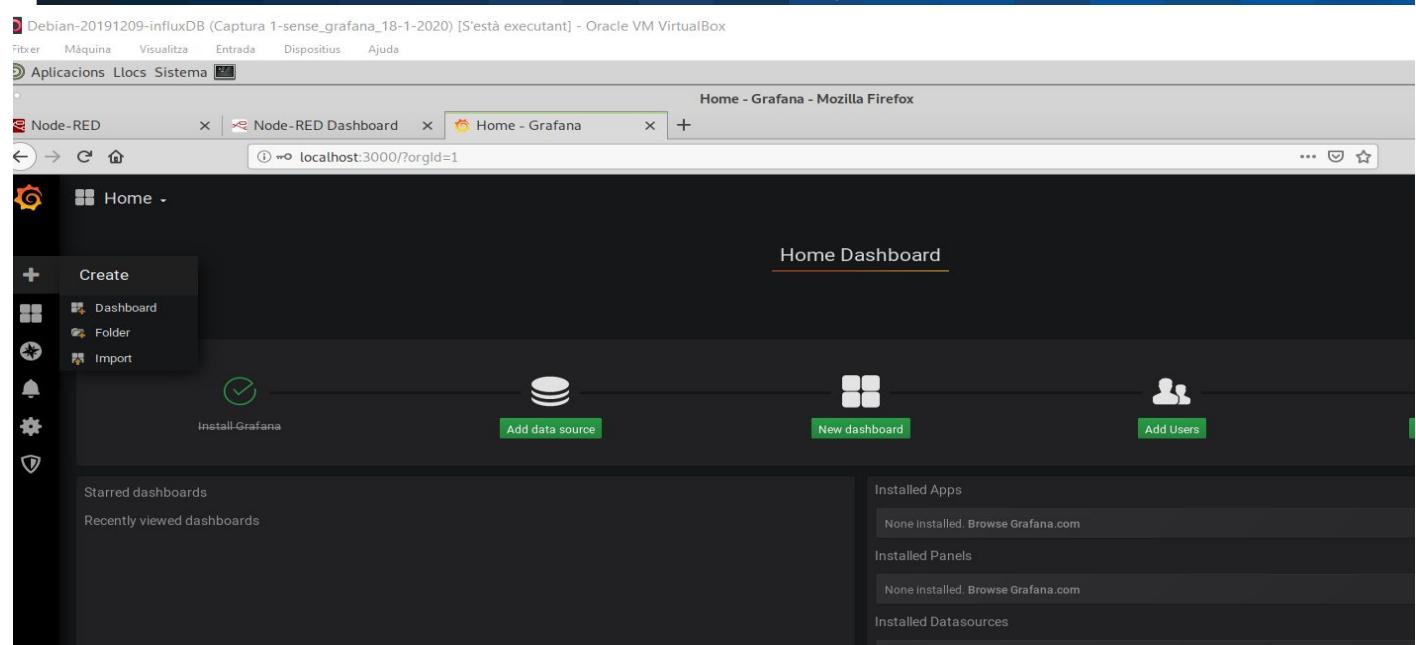
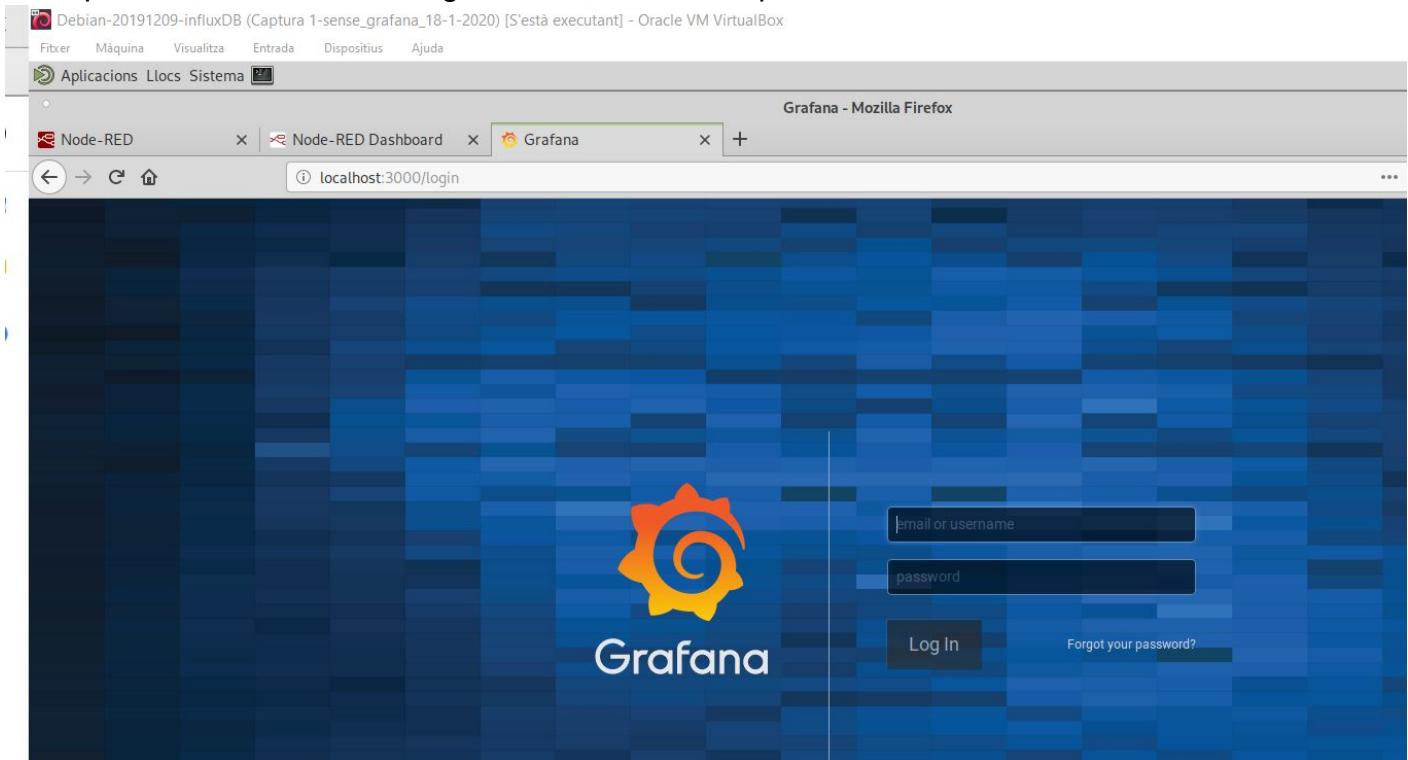


```
arsupu@asp-debian10:~$ sudo systemctl enable grafana-server.service
Synchronizing state of grafana-server.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable grafana-server
arsupu@asp-debian10:~$ sudo systemctl start grafana-server
arsupu@asp-debian10:~$ sudo systemctl status grafana-server
● grafana-server.service - Grafana instance
   Loaded: loaded (/lib/systemd/system/grafana-server.service; enabled; vendor p
   Active: active (running) since Sat 2020-01-18 20:00:22 CET; 2min 50s ago
     Docs: http://docs.grafana.org
 Main PID: 12044 (grafana-server)
    Tasks: 10 (limit: 2347)
   Memory: 21.8M
      CGroup: /system.slice/grafana-server.service
              └─12044 /usr/sbin/grafana-server --config=/etc/grafana/grafana.ini --

de gen. 18 20:00:25 asp-debian10 grafana-server[12044]: t=2020-01-18T20:00:25+01
```

Nom i Cognoms	Data
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Un cop funciona, obrim el navegador i fem el mateix que hem fet anteriorment



Nom i Cognoms	Data
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**Auth**

Basic auth	<input type="checkbox"/>	With Credentials	<input checked="" type="checkbox"/>
TLS Client Auth	<input type="checkbox"/>	With CA Cert	<input type="checkbox"/>
Skip TLS Verify	<input type="checkbox"/>		
Forward OAuth Identity	<input type="checkbox"/>		

**InfluxDB Details**

Database	DebianLDR_DB			
User	iot	Password	configured	<input type="button" value="reset"/>
HTTP Method	GET	<input type="button"/>		

**Database Access**

Setting the database for this datasource does not deny access to other databases. The InfluxDB query syntax allows switching the database. For example: `SHOW MEASUREMENTS ON _internal` or `SELECT * FROM "_internal"."database" LIMIT 10`

To support data isolation and security, make sure appropriate permissions are configured in InfluxDB.

Min time interval

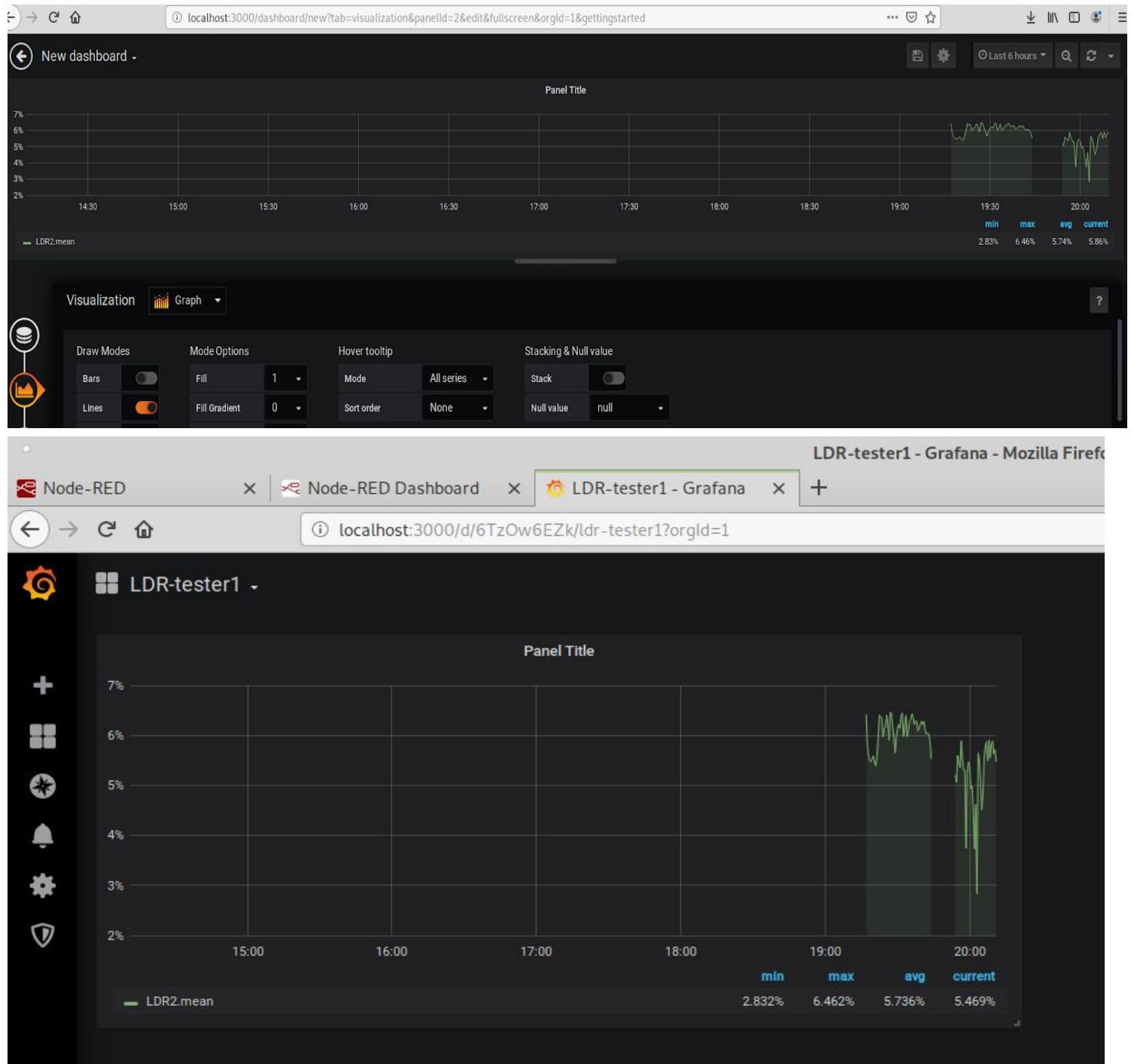
 Data source is working

## Nom i Cognoms

Arnau Subirós Puigarnau

## Data

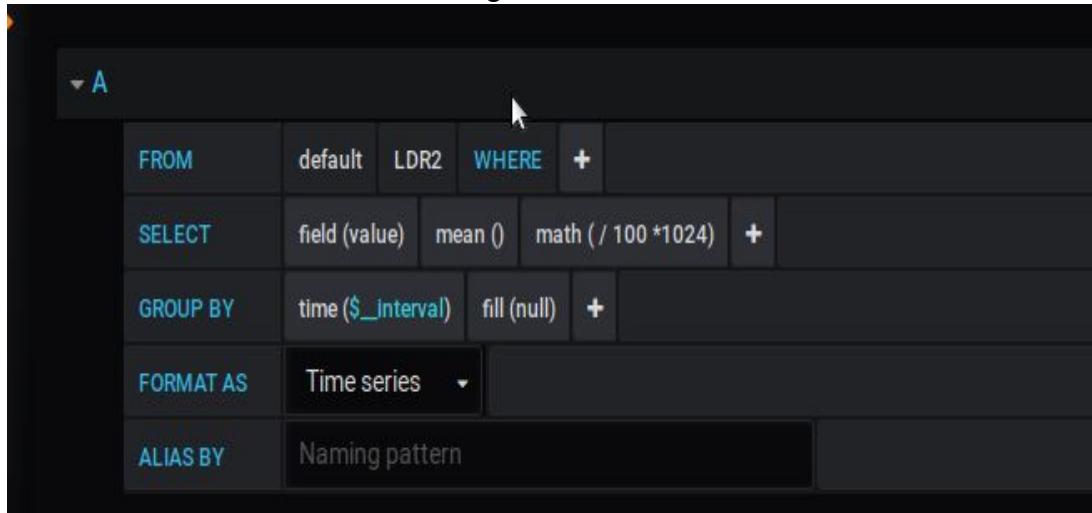
20-01-2020



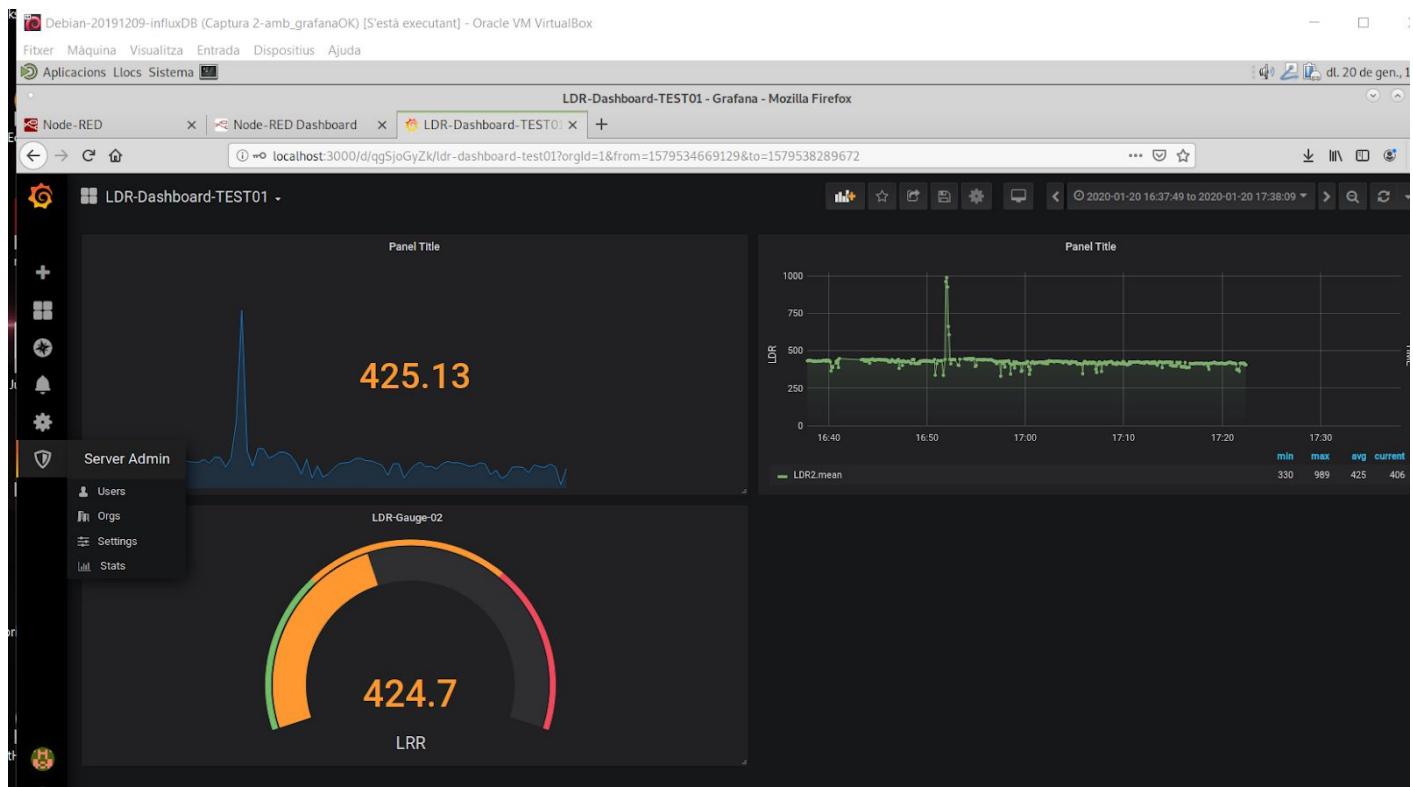
Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

# Ampliació (màquina virtual Debian)

- Editem els valors de la gràfica

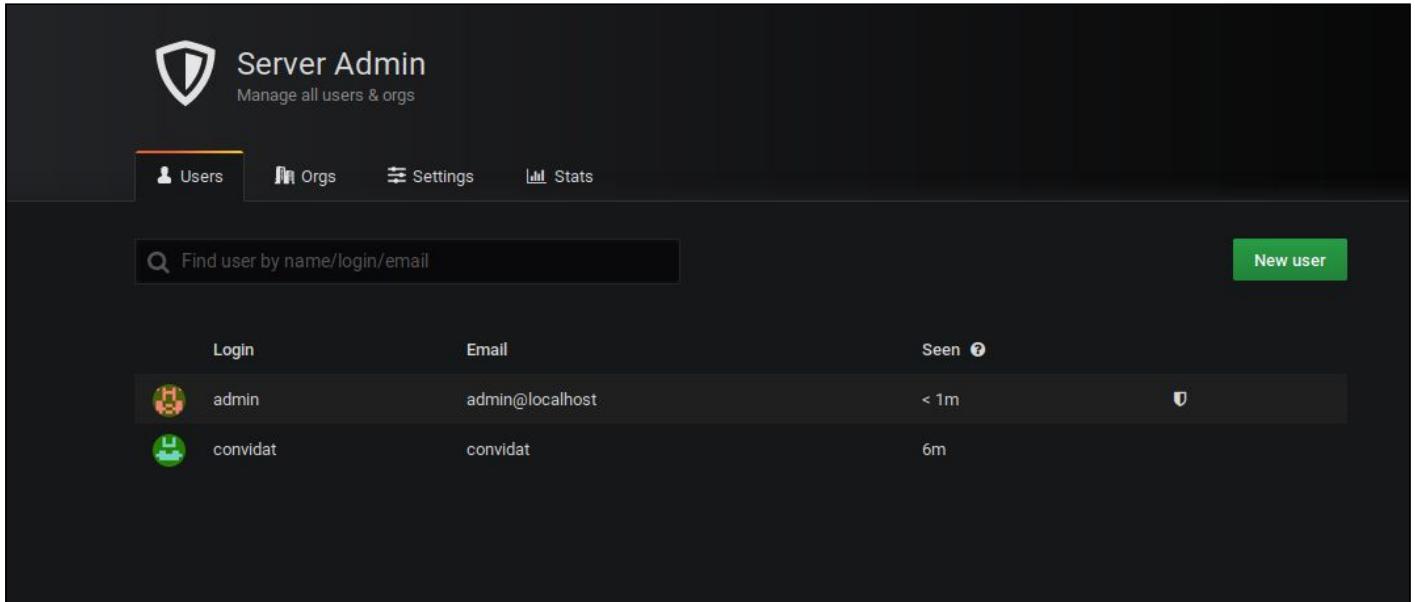


Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

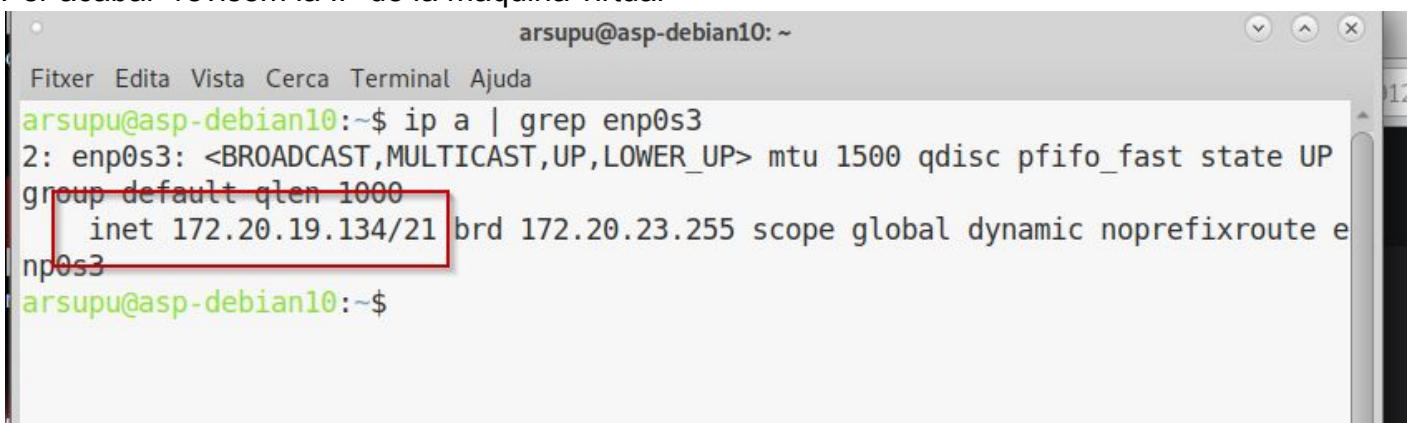
- Crearem un usuari anomenat Convidat que accedirem desde el host físic de Windows



The screenshot shows the 'Server Admin' interface with a dark theme. At the top, there's a shield icon and the text 'Server Admin' followed by 'Manage all users & orgs'. Below that is a navigation bar with four tabs: 'Users' (which is selected and highlighted in orange), 'Orgs', 'Settings', and 'Stats'. A search bar at the top right contains the placeholder 'Find user by name/login/email'. To the right of the search bar is a green button labeled 'New user'. The main area displays a table of users with columns for 'Login', 'Email', and 'Seen'. The 'seen' column includes a question mark icon. The table shows:

Login	Email	Seen
admin	admin@localhost	< 1m
convidat	convidat	6m

Per acabar revisem la IP de la màquina virtual



```
arsupu@asp-debian10:~$ ip a | grep enp0s3
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP
group default qlen 1000
    inet 172.20.19.134/21 brd 172.20.23.255 scope global dynamic noprefixroute e
nps3
arsupu@asp-debian10:~$
```

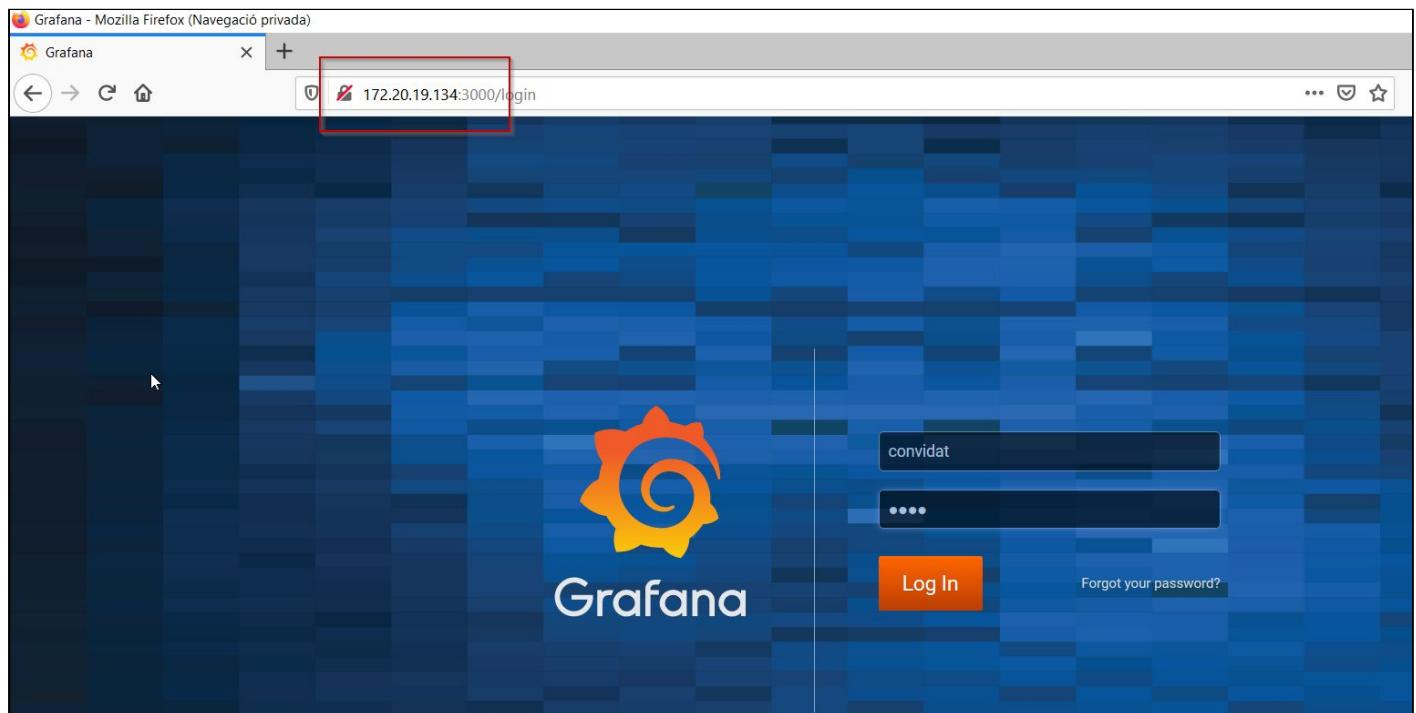
Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

- Desde el host físic (utilitzant Windows 10) obrirem un navegador per visualitzar Grafana (hem d'escriure la IP de la màquina virtual, ja que ja no és localhost)

```
Indicador d'ordres
Microsoft Windows [Versión 10.0.18362.535]
(c) 2019 Microsoft Corporation. Todos los derechos reservados.

C:\Users\arnau>hostname
W10-ASP2019

C:\Users\arnau>
```



Nom i Cognoms	Data
Arnau Subirós Puigarnau	20-01-2020

- Nomes tinc permisos per visualitzar ( no puc editar)

