



TESA TOPGUN

MQTT: Experimental System Setup

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Mosquitto

Download Link:

<https://mosquitto.org/download/>



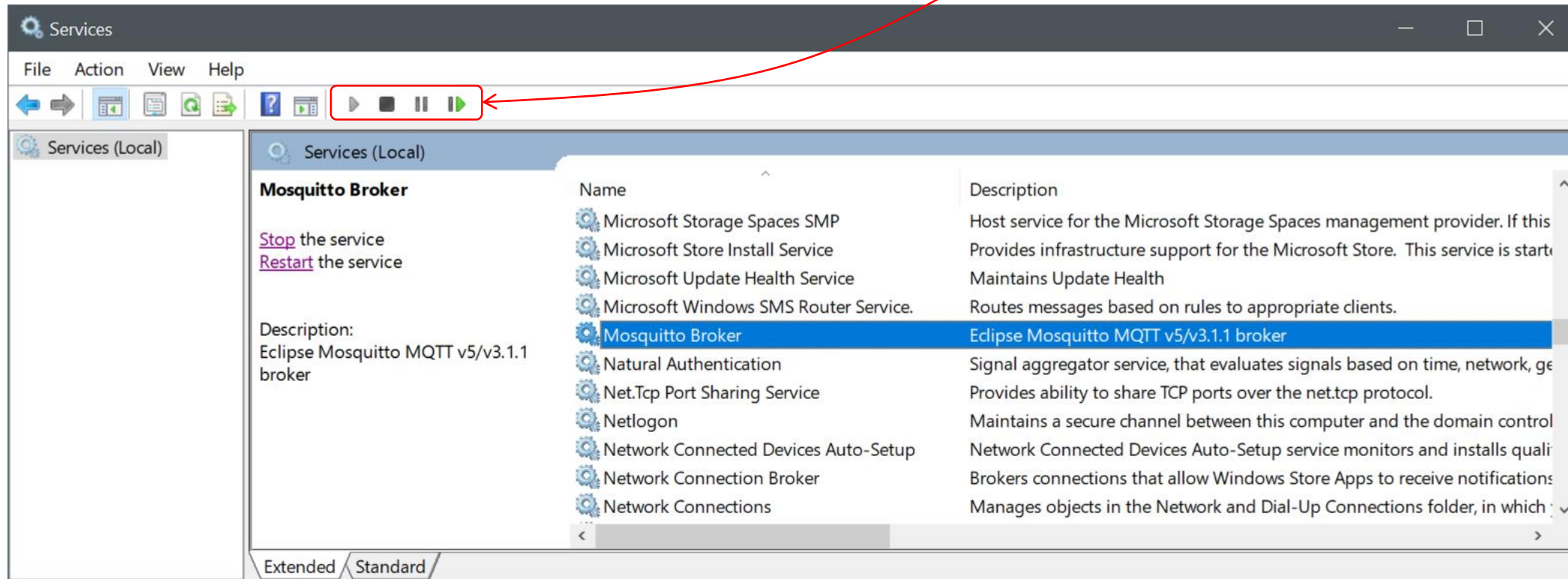
MQTT Explorer

Download Link:

<http://mqtt-explorer.com/>

Mosquitto Broker (Service)

Open the Service and check if the Mosquitto Broker is running or not. Click these buttons to change running state of the Mosquitto Broker.



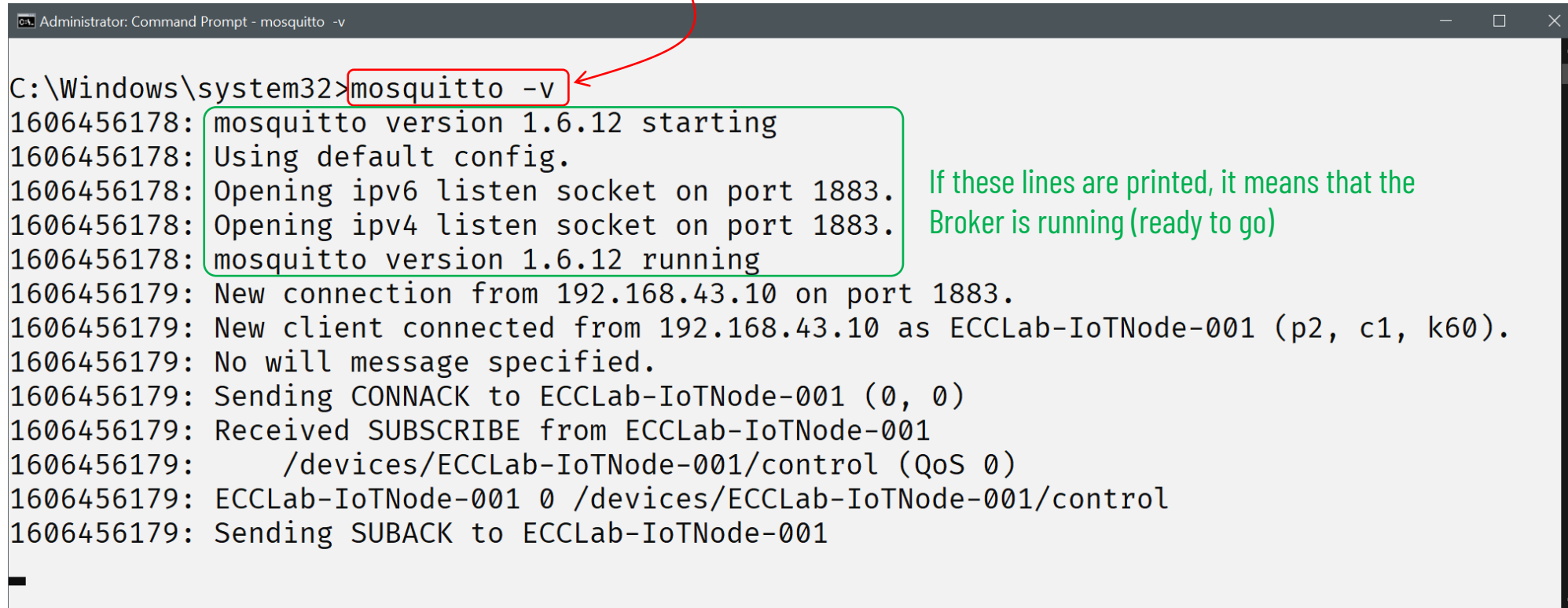
Note: For development process, **STOP** the Mosquitto Broker service and run it through a Command Line using **mosquitto -v** (check next slide)



Mosquitto Broker (Command Line)

Stop the Mosquitto Broker service (check the previous slide)

Run the Command Prompt and give it a command **mosquitto -v**



```
Administrator: Command Prompt - mosquitto -v
C:\Windows\system32>mosquitto -v
1606456178: mosquitto version 1.6.12 starting
1606456178: Using default config.
1606456178: Opening ipv6 listen socket on port 1883.
1606456178: Opening ipv4 listen socket on port 1883.
1606456178: mosquitto version 1.6.12 running
1606456179: New connection from 192.168.43.10 on port 1883.
1606456179: New client connected from 192.168.43.10 as ECCLab-IoTNode-001 (p2, c1, k60).
1606456179: No will message specified.
1606456179: Sending CONNACK to ECCLab-IoTNode-001 (0, 0)
1606456179: Received SUBSCRIBE from ECCLab-IoTNode-001
1606456179:      /devices/ECCLab-IoTNode-001/control (QoS 0)
1606456179: ECCLab-IoTNode-001 0 /devices/ECCLab-IoTNode-001/control
1606456179: Sending SUBACK to ECCLab-IoTNode-001
```

If these lines are printed, it means that the Broker is running (ready to go)



IP Address of Broker

Run the Command Prompt and give it a command **ipconfig**

```
Administrator: Command Prompt
C:\Windows\system32>ipconfig

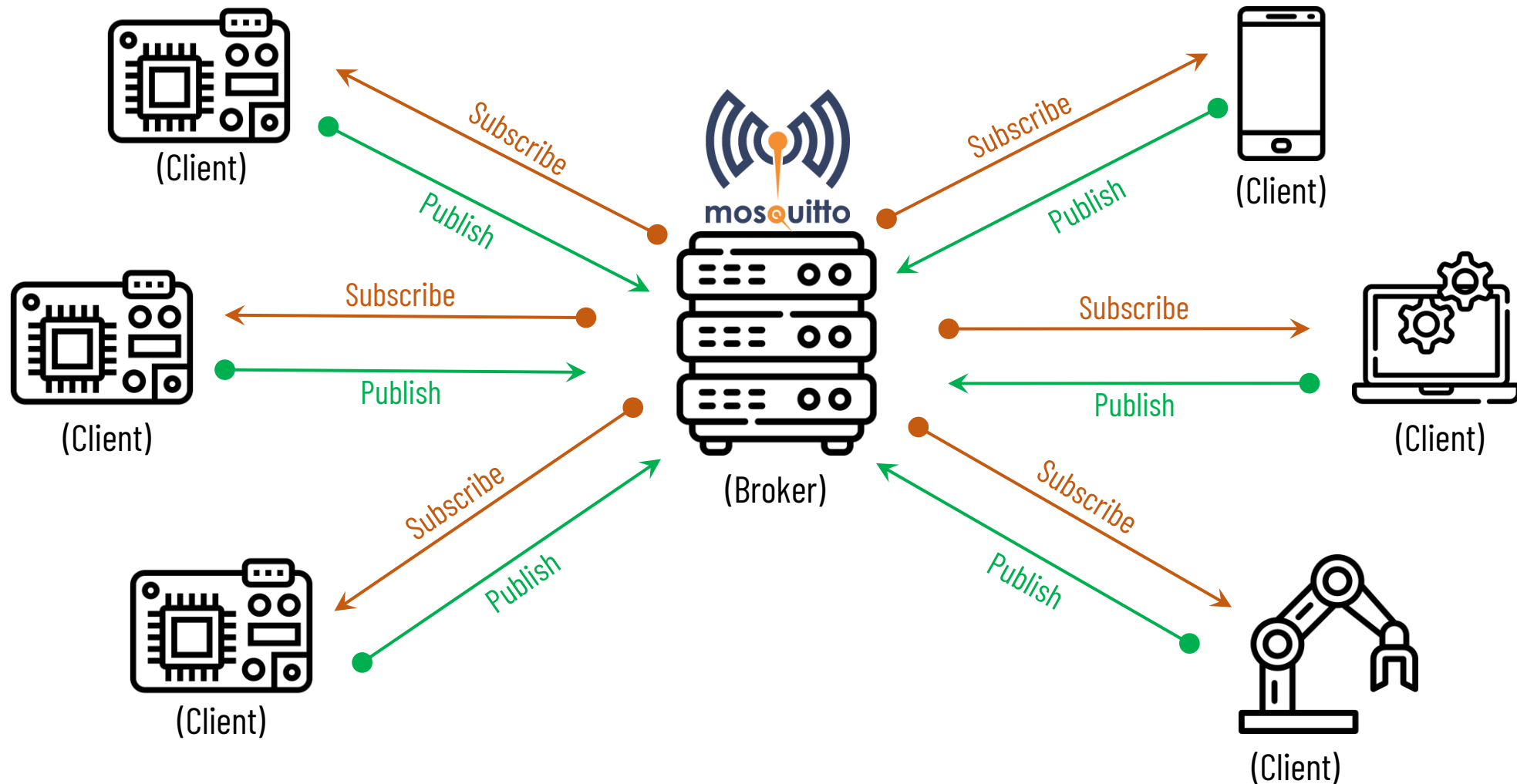
Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::ed7d:29ac:4fd0:18aa%11
    IPv4 Address. . . . . : 192.168.43.124
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.43.1
```

Note: Other devices (clients) in the same network can connect to the Broker via this IP Address

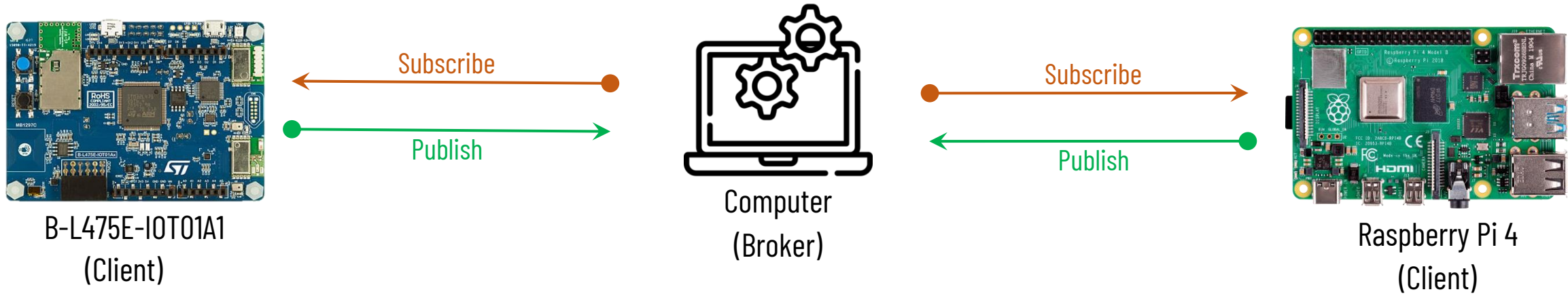


MQTT: Server-Client

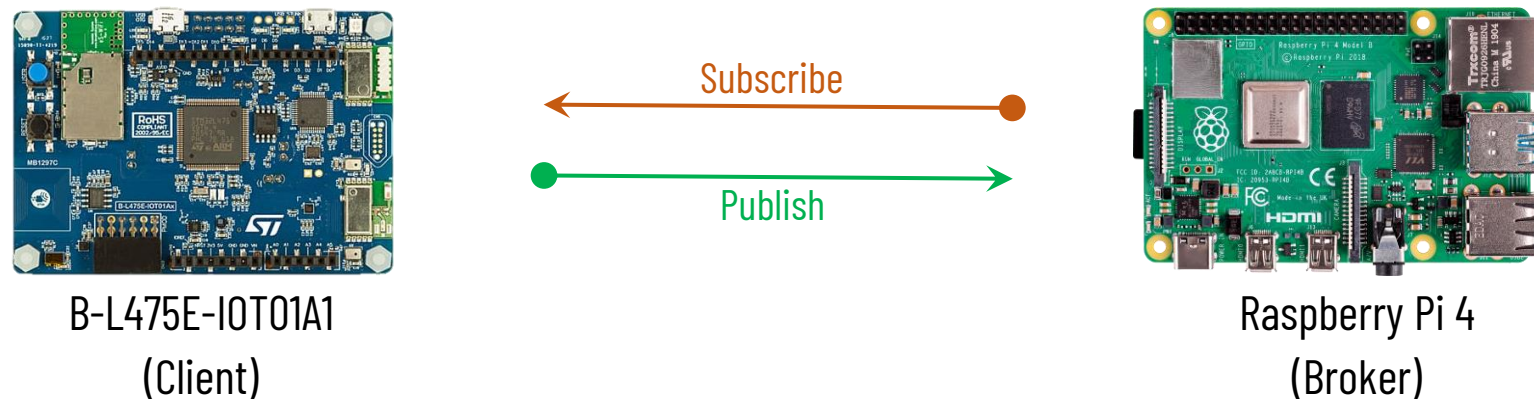


MQTT: Server-Client (for TOPGUN)

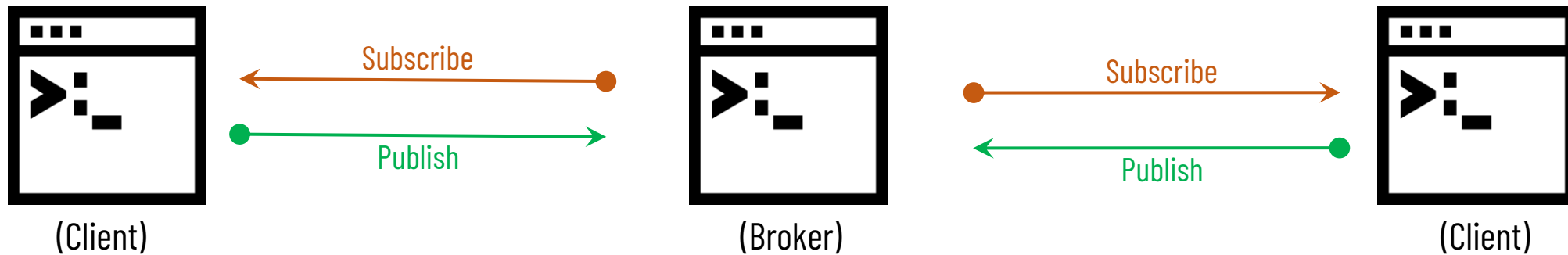
SETUP 1:



SETUP 2:



MQTT: Server-Client (for learning)

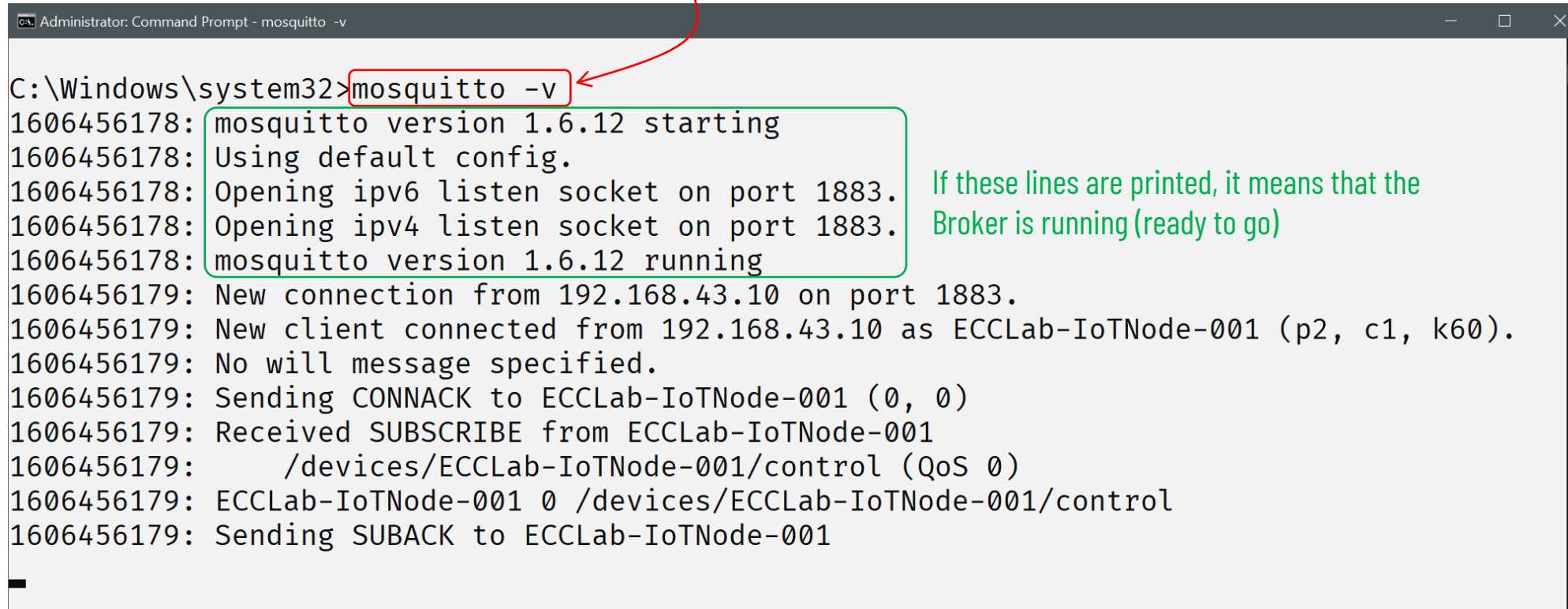


Note: We use this setup to learn some basic commands/operations of the MQTT

Server: Start the Broker

Stop the Mosquitto Broker service (check the previous slide)

Run the Command Prompt and give it a command **mosquitto -v**



```
Administrator: Command Prompt - mosquitto -v
C:\Windows\system32>mosquitto -v
1606456178: mosquitto version 1.6.12 starting
1606456178: Using default config.
1606456178: Opening ipv6 listen socket on port 1883.
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1606456179: New connection from 192.168.43.10 on port 1883.
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1606456179: No will message specified.
1606456179: Sending CONNACK to ECCLab-IoTNode-001 (0, 0)
1606456179: Received SUBSCRIBE from ECCLab-IoTNode-001
1606456179:      /devices/ECCLab-IoTNode-001/control (QoS 0)
1606456179: ECCLab-IoTNode-001 0 /devices/ECCLab-IoTNode-001/control
1606456179: Sending SUBACK to ECCLab-IoTNode-001
```

If these lines are printed, it means that the Broker is running (ready to go)



Client: Subscribe

- 1 If the Broker is not running, run it using the command **mosquitto -v**
- 2 Open a new Command Prompt and give it a command **mosquitto_sub -d -h 192.168.43.124 -p 1883 -t /ecclab/nodes/status**

mosquitto_sub -d -h 192.168.43.124 -p 1883 -t /ecclab/nodes/status

Broker IP Address

Broker Port

Topic Name

```
Administrator: Command Prompt - mosquitto_sub -d -h 192.168.43.124 -p 1883 -t /ecclab/nodes/status
C:\Windows\system32>mosquitto_sub -d -h 192.168.43.124 -p 1883 -t /ecclab/nodes/status
Client mosq-Qf3SEaGl9zvGM0zJRr sending CONNECT
Client mosq-Qf3SEaGl9zvGM0zJRr received CONNACK (0)
Client mosq-Qf3SEaGl9zvGM0zJRr sending SUBSCRIBE (Mid: 1, Topic: /ecclab/nodes/status, QoS: 0, Options: 0x00)
Client mosq-Qf3SEaGl9zvGM0zJRr received SUBACK
Subscribed (mid: 1): 0
```

Client

```
Administrator: Command Prompt - mosquitto -v
C:\Windows\system32>mosquitto -v
1606458174: mosquitto version 1.6.12 starting
1606458174: Using default config.
1606458174: Opening ipv6 listen socket on port 1883.
1606458174: Opening ipv4 listen socket on port 1883.
1606458174: mosquitto version 1.6.12 running
1606458177: New connection from 192.168.43.124 on port 1883.
1606458177: New client connected from 192.168.43.124 as mosq-Qf3SEaGl9zvGM0zJRr (p2, c1, k60).
1606458177: No will message specified.
1606458177: Sending CONNACK to mosq-Qf3SEaGl9zvGM0zJRr (0, 0)
1606458177: Received SUBSCRIBE from mosq-Qf3SEaGl9zvGM0zJRr
1606458177: /ecclab/nodes/status (QoS 0)
1606458177: mosq-Qf3SEaGl9zvGM0zJRr 0 /ecclab/nodes/status
1606458177: Sending SUBACK to mosq-Qf3SEaGl9zvGM0zJRr
```

Broker (Server)



Client: Publish

Open a new Command Prompt and give it a command **mosquitto_pub -d -h 192.168.43.124 -p 1883 -t /ecclab/nodes/status -m hello**

mosquitto_pub -d -h 192.168.43.124 -p 1883 -t /ecclab/nodes/status -m hello

Broker IP Address

Broker Port

Topic Name

Message

```
Administrator: Command Prompt
C:\Windows\system32>mosquitto_pub -d -h 192.168.43.124 -p 1883 -t /ecclab/nodes/status -m hello
Client mosq-dV4KnLRgnikiJq48qI sending CONNECT
Client mosq-dV4KnLRgnikiJq48qI received CONNACK (0)
Client mosq-dV4KnLRgnikiJq48qI sending PUBLISH (d0, q0, r0, m1, '/ecclab/nodes/status', ... (5 bytes))
Client mosq-dV4KnLRgnikiJq48qI sending DISCONNECT
```

Client

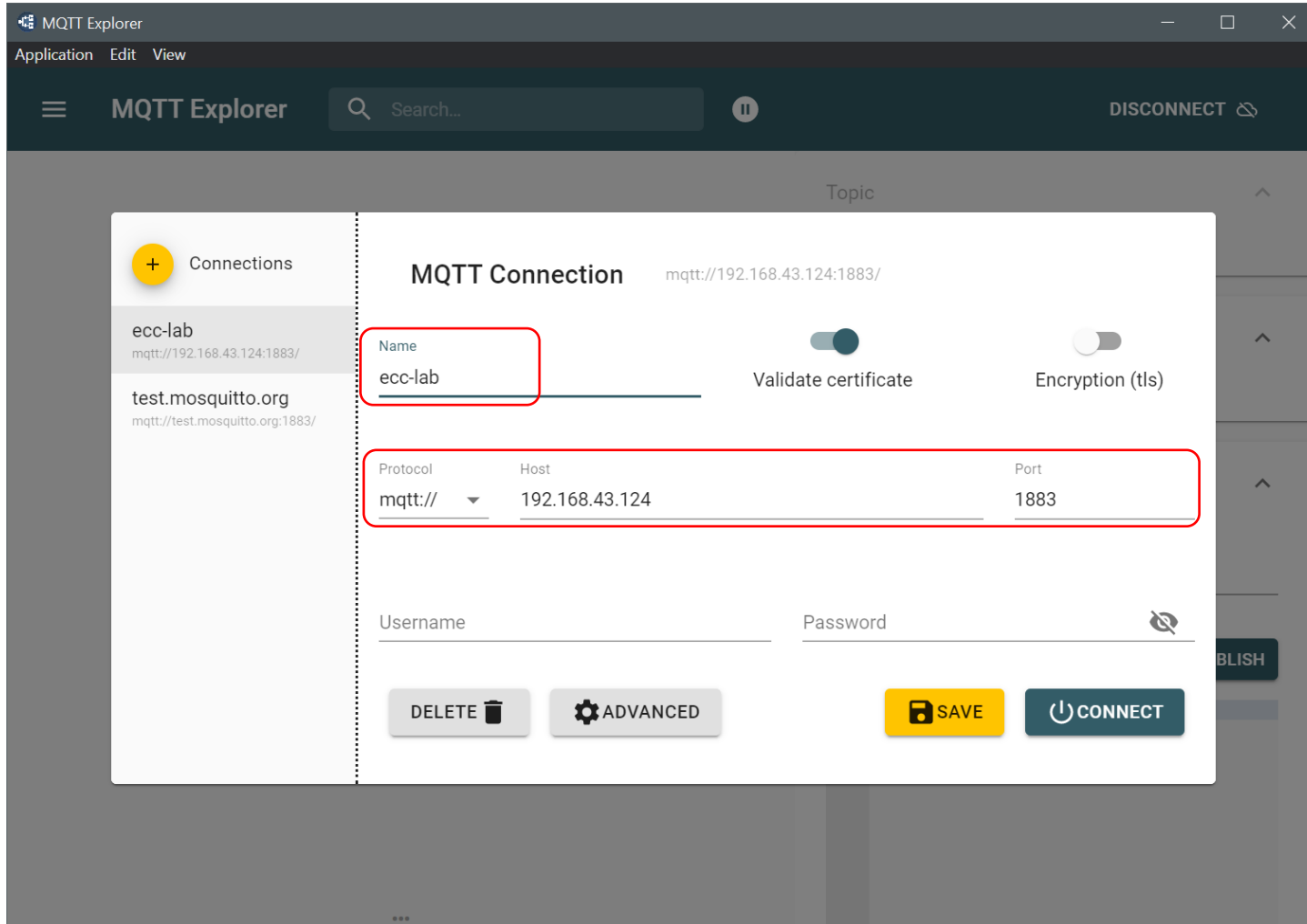
```
Administrator: Command Prompt - mosquitto -v
1606460024: Client mosq-amiNE4CuyVg7aThwqI disconnected.
1606460026: New connection from 192.168.43.124 on port 1883.
1606460026: New client connected from 192.168.43.124 as mosq-dxVYb0DF9DZQhbbd8B (p2, c1, k60).
1606460026: No will message specified.
1606460026: Sending CONNACK to mosq-dxVYb0DF9DZQhbbd8B (0, 0)
1606460026: Received PUBLISH from mosq-dxVYb0DF9DZQhbbd8B (d0, q0, r0, m0, '/ecclab/nodes/status', ... (5 bytes))
1606460026: Sending PUBLISH to mosq-Qf3SEaGl9zvgMOzJRr (d0, q0, r0, m0, '/ecclab/nodes/status', ... (5 bytes))
1606460026: Received DISCONNECT from mosq-dxVYb0DF9DZQhbbd8B
1606460026: Client mosq-dxVYb0DF9DZQhbbd8B disconnected.
```

Broker (Server)



MQTT Explorer (1)

Open the MQTT Explorer and give it the required information, then click the CONNECT button



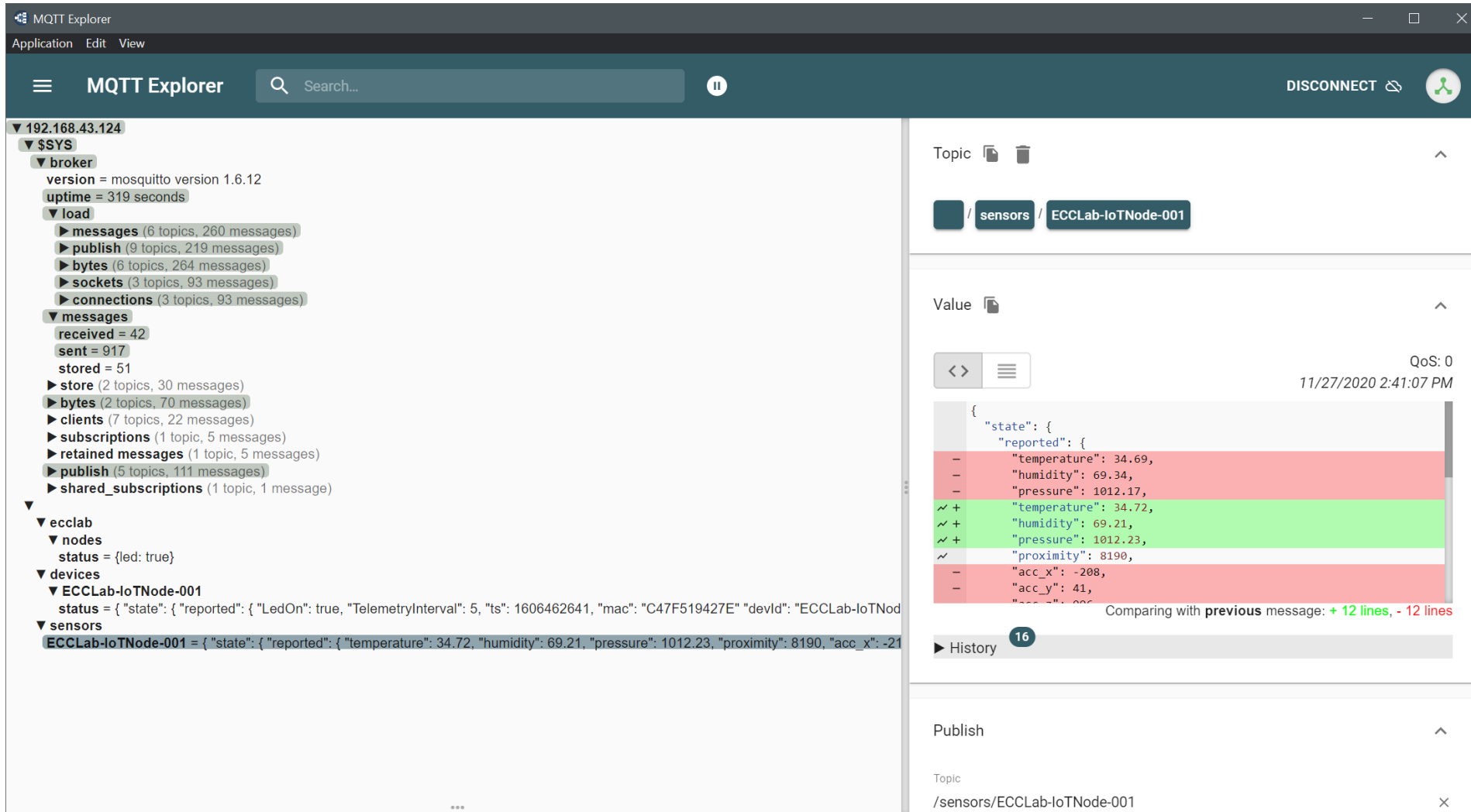
The screenshot shows the MQTT Explorer application window. The main interface has a dark theme with a menu bar (Application, Edit, View) and a search bar. A sidebar on the left lists connections: "ecc-lab" (mqtt://192.168.43.124:1883/) and "test.mosquitto.org" (mqtt://test.mosquitto.org:1883/). The "ecc-lab" connection is selected, and its configuration is shown in the main area. The "MQTT Connection" dialog is open, displaying the following fields:

- Name:** ecc-lab (highlighted with a red box)
- Validate certificate:** Toggle switch (checked)
- Encryption (tls):** Toggle switch (unchecked)
- Protocol:** mqtt:// (dropdown menu)
- Host:** 192.168.43.124 (highlighted with a red box)
- Port:** 1883 (highlighted with a red box)
- Username:** (empty field)
- Password:** (empty field with a toggle icon)

At the bottom of the dialog are four buttons: DELETE (trash icon), ADVANCED (gear icon), SAVE (floppy disk icon), and CONNECT (power icon).

MQTT Explorer (2)

Check it in details and choose the powerful functions for your development



The screenshot displays the MQTT Explorer application interface. The left sidebar shows a tree view of MQTT topics. The selected topic is `/sensors/ECCLab-IoTNode-001`. The right pane shows the details of this topic, including the value of the message and a history of previous messages.

MQTT Explorer

Application Edit View



Search...

DISCONNECT


192.168.43.124


\$\$\$SYS

- broker**
 - version = mosquitto version 1.6.12
 - uptime = 319 seconds
- load**
 - messages (6 topics, 260 messages)
 - publish (9 topics, 219 messages)
 - bytes (6 topics, 264 messages)
 - sockets (3 topics, 93 messages)
 - connections (3 topics, 93 messages)
- messages**
 - received = 42
 - sent = 917
 - stored = 51
 - store (2 topics, 30 messages)
 - bytes (2 topics, 70 messages)
 - clients (7 topics, 22 messages)
 - subscriptions (1 topic, 5 messages)
 - retained messages (1 topic, 5 messages)
 - publish (5 topics, 111 messages)
 - shared_subscriptions (1 topic, 1 message)
- ecclab**
 - nodes**
 - status = {led: true}
 - devices**
 - ECCLab-IoTNode-001**
 - status = { "state": { "reported": { "LedOn": true, "TelemetryInterval": 5, "ts": 1606462641, "mac": "C47F519427E" "devId": "ECCLab-IoTNode-001" } } }
 - sensors**
 - ECCLab-IoTNode-001** = { "state": { "reported": { "temperature": 34.72, "humidity": 69.21, "pressure": 1012.23, "proximity": 8190, "acc_x": -210, "acc_y": 41, "acc_z": 996 } } }

Topic  

`/sensors/ECCLab-IoTNode-001`

Value 

`<>` 

QoS: 0
11/27/2020 2:41:07 PM

```
{
  "state": {
    "reported": {
      "temperature": 34.69,
      "humidity": 69.34,
      "pressure": 1012.17,
      "temperature": 34.72,
      "humidity": 69.21,
      "pressure": 1012.23,
      "proximity": 8190,
      "acc_x": -208,
      "acc_y": 41,
      "acc_z": 996
    }
  }
}
```

Comparing with previous message: + 12 lines, - 12 lines

History 16

Publish

Topic

`/sensors/ECCLab-IoTNode-001`

THANK YOU!



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