



Dia, Fecha:

Sábado, 21/09/2024

Hora de Inicio:

17:20

Almacenamiento IOT Cloud con MQTT

Arquitectura de computadoras y ensambladores 2

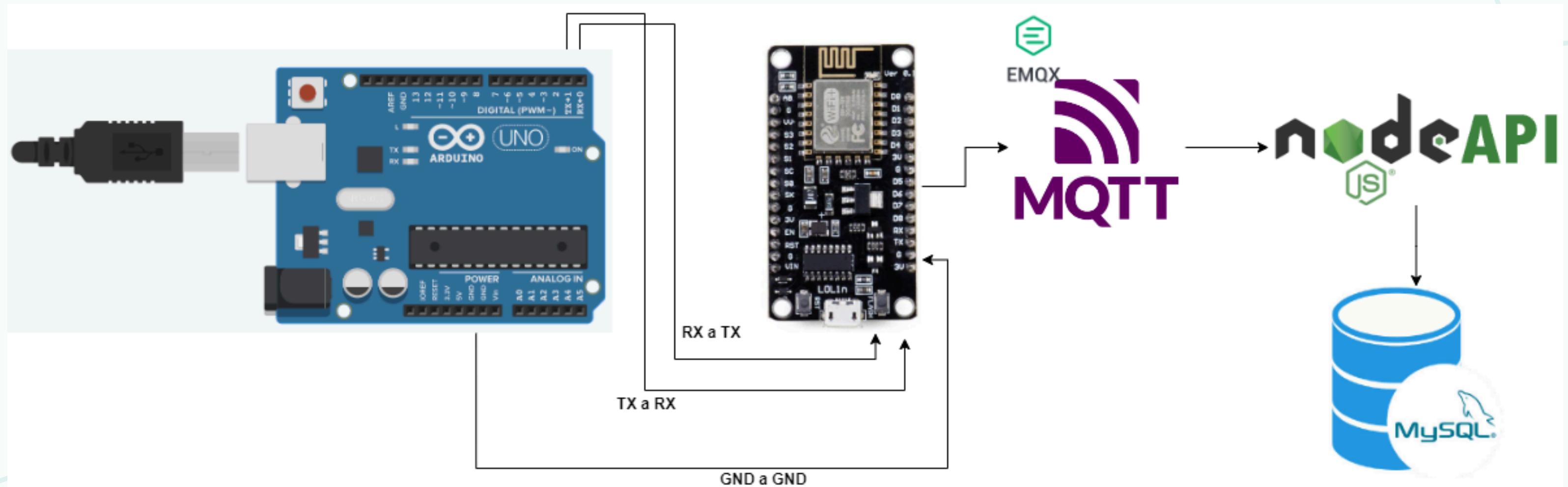
Carlos Soto

CONTENIDO

Conferencia

- Taller Práctico
 - Instalación Driver ESP8266
 - Conexión Serial Arduino y WiFi
 - Eventos MQTT
 - Almacenamiento en BD a través de API

Diagrama de Flujo



Descargar Driver Node MCU ESP8266 v.09-1.0

Download and Install VCP Drivers

Downloads for Windows, Macintosh, Linux and Android below.

*Note: The Linux 3.x.x and 4.x.x version of the driver is maintained in the current Linux 3.x.x and 4.x.x tree at www.kernel.org.

Software Downloads

[Software \(11\)](#)

[Software · 11](#)

[CP210x Universal Windows Driver](#)

v11.3.0
6/24/2023

[CP210x VCP Mac OSX Driver](#)

v6.0.2
10/26/2021

[CP210x VCP Windows](#)

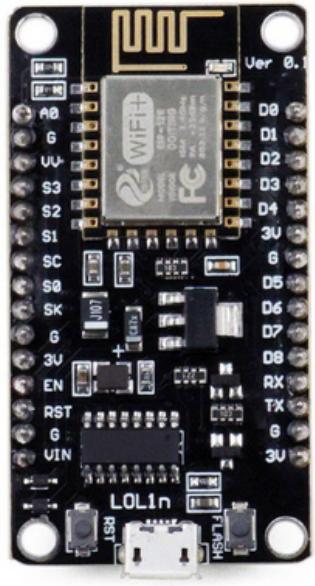
v6.7
9/3/2020

[CP210x Windows Drivers](#)

v6.7.6
9/3/2020

[CP210x Windows Drivers with Serial Enumerator](#)

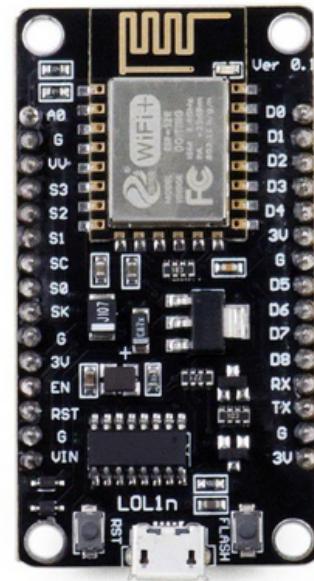
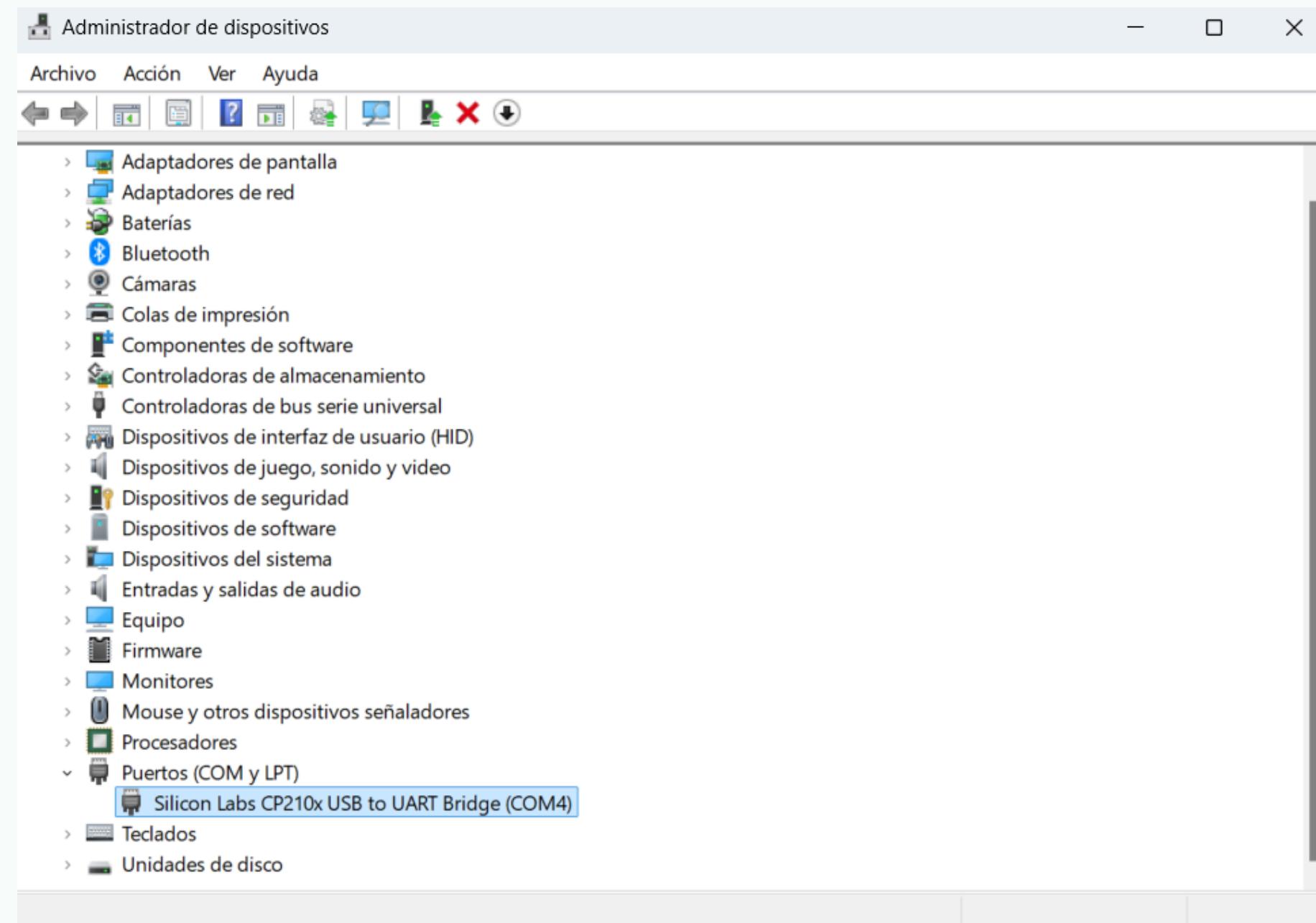
v6.7.6
9/3/2020



[https://www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?
tab=downloads](https://www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads)

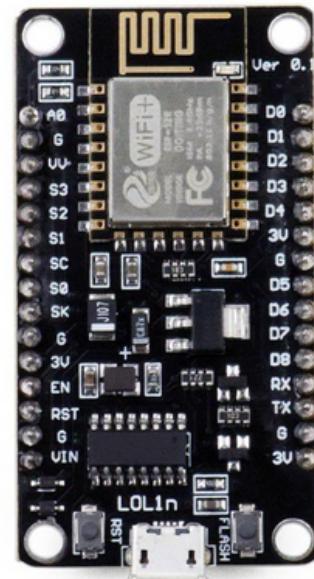
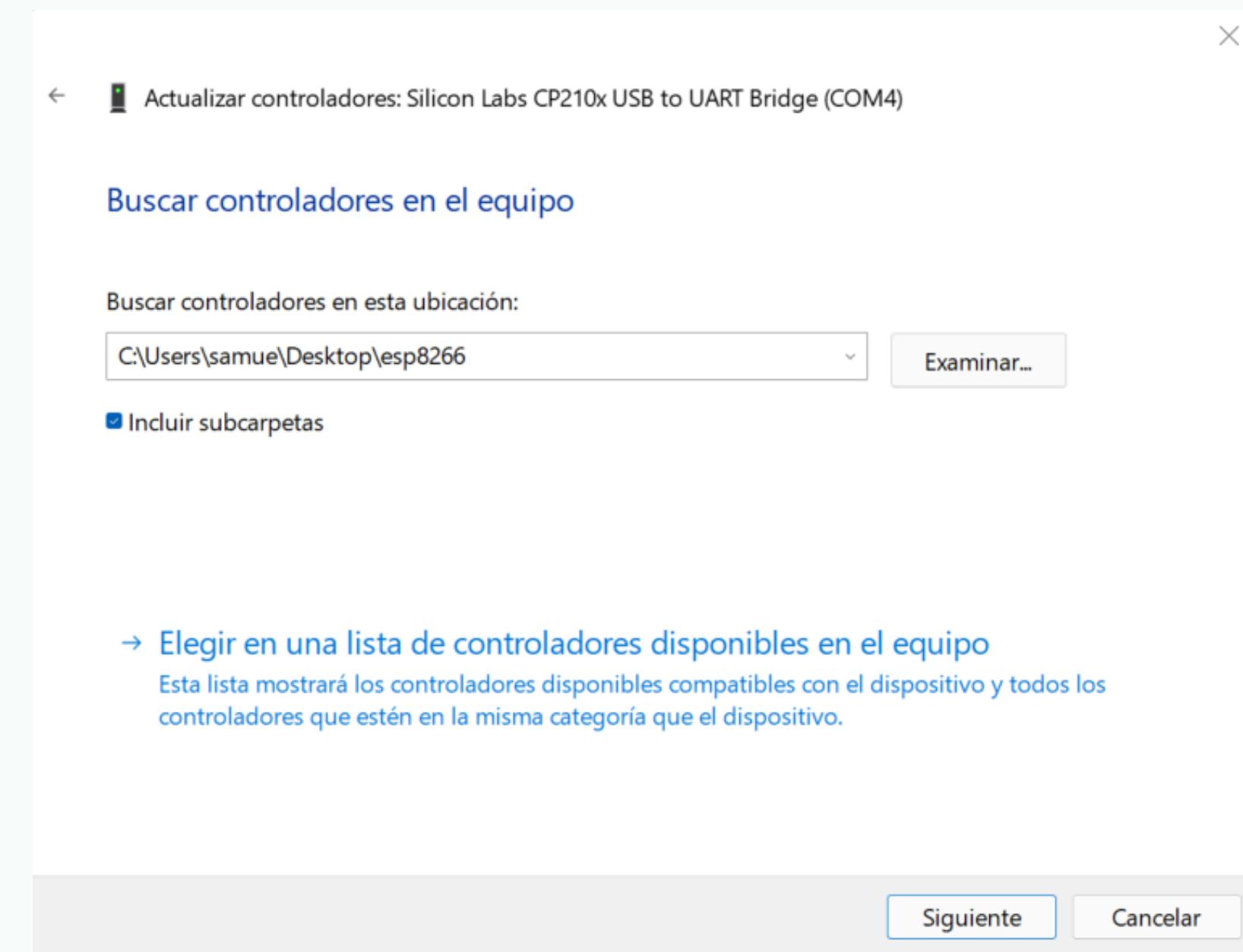
Instalar y Verificar Driver Node MCU ESP8266

Conectar la placa Node MCU y verificar en el administrador de dispositivos del sistema operativo



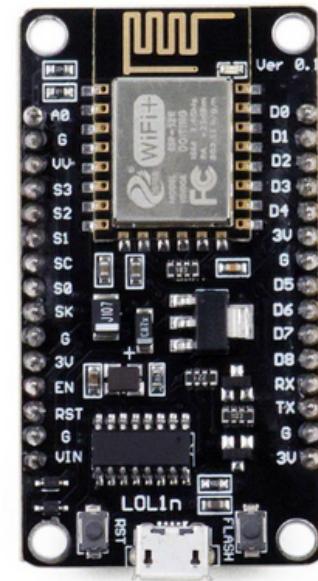
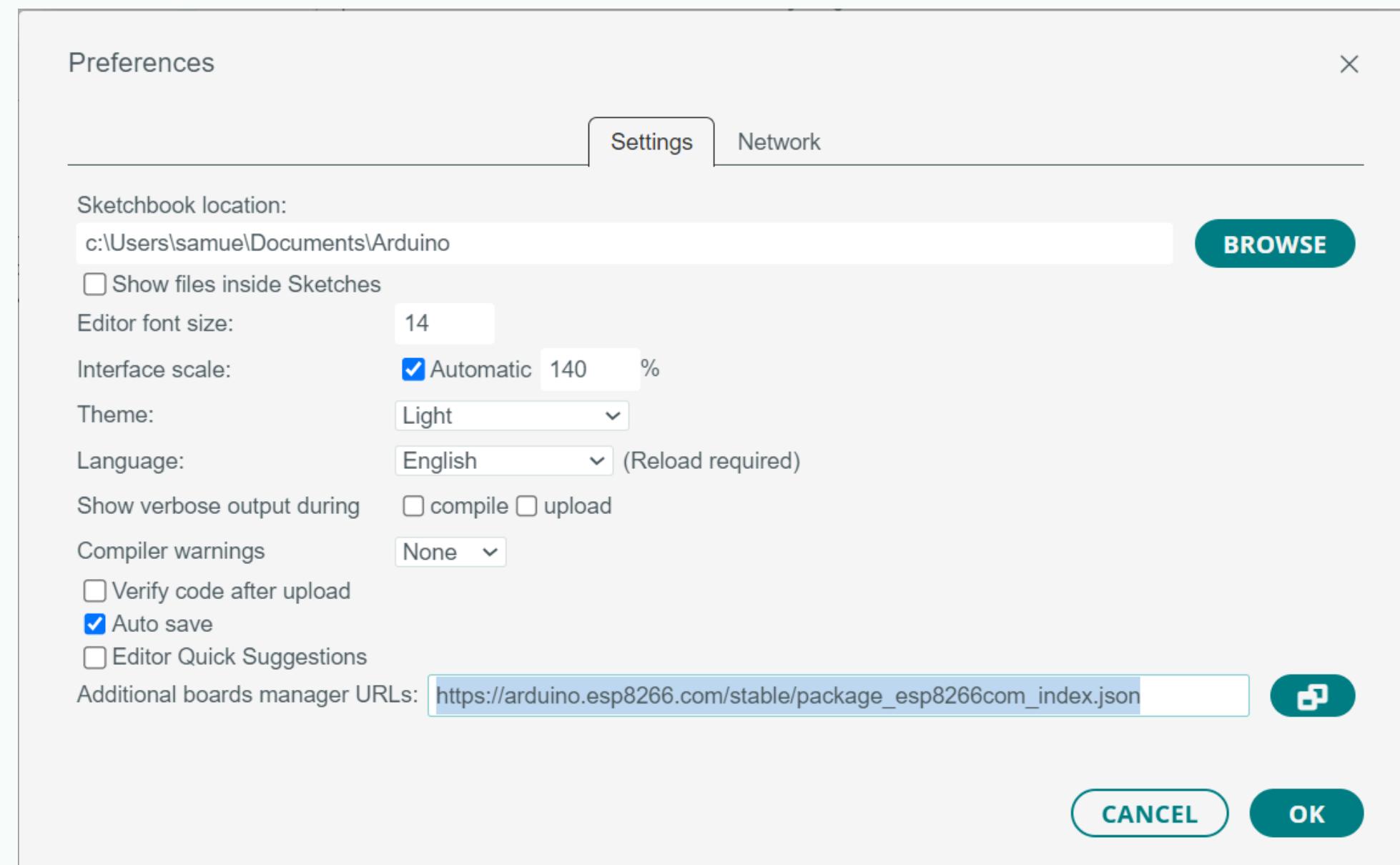
Instalar y Verificar Driver Node MCU ESP8266

Seleccionar el controlador, clic derecho y seleccionar “Actualizar controlador”, posteriormente agregar la carpeta donde se encuentra descargado el driver.



Configuraciones Arduino IDE

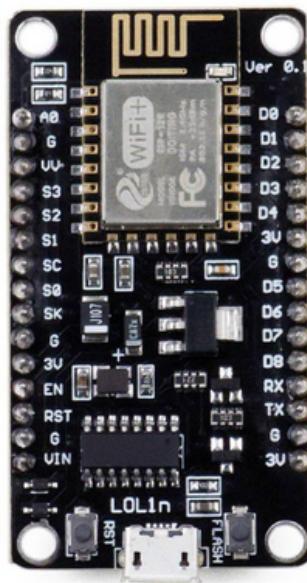
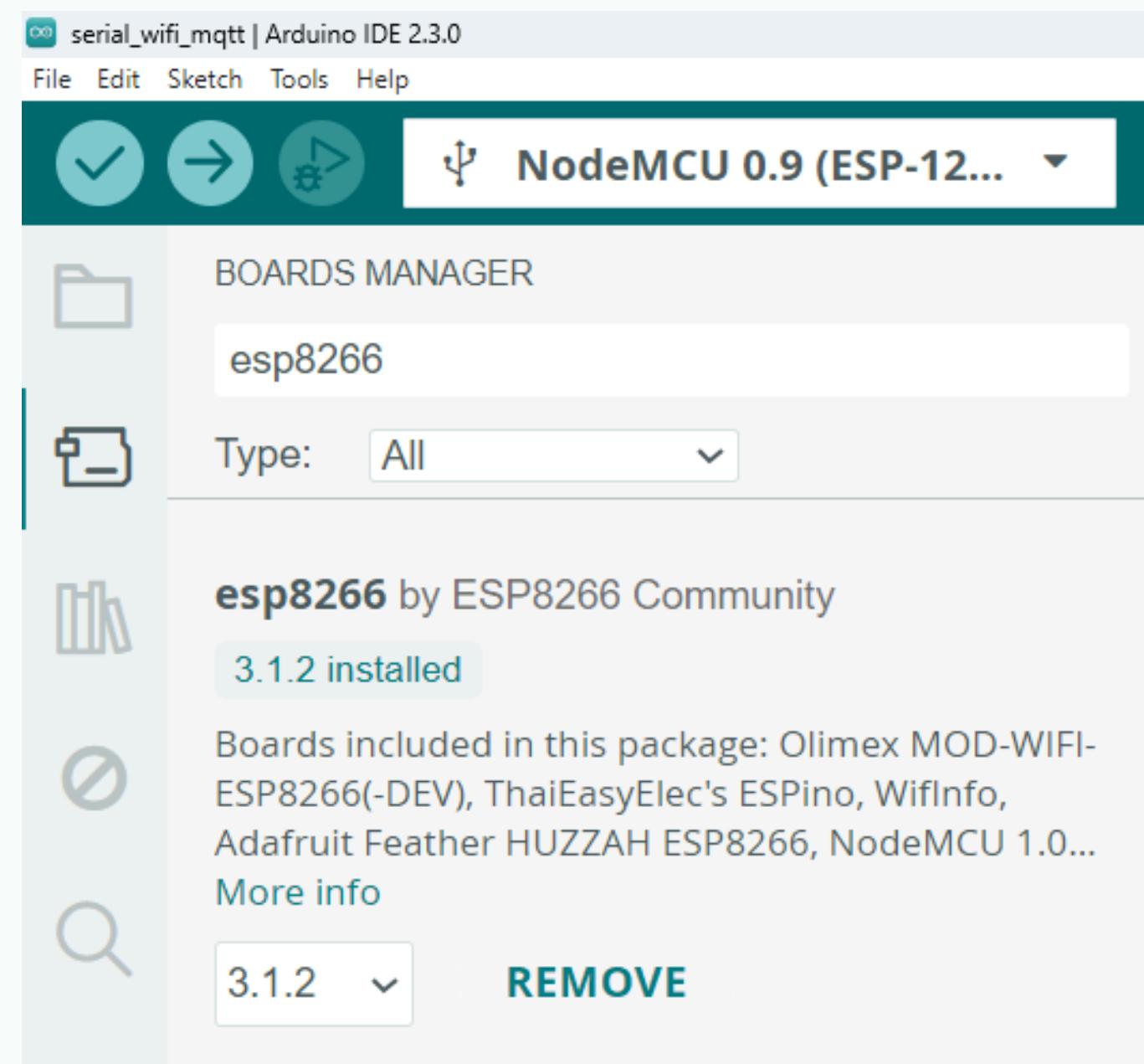
File > Preferences - Agregar la siguiente URL para placas adicionales:



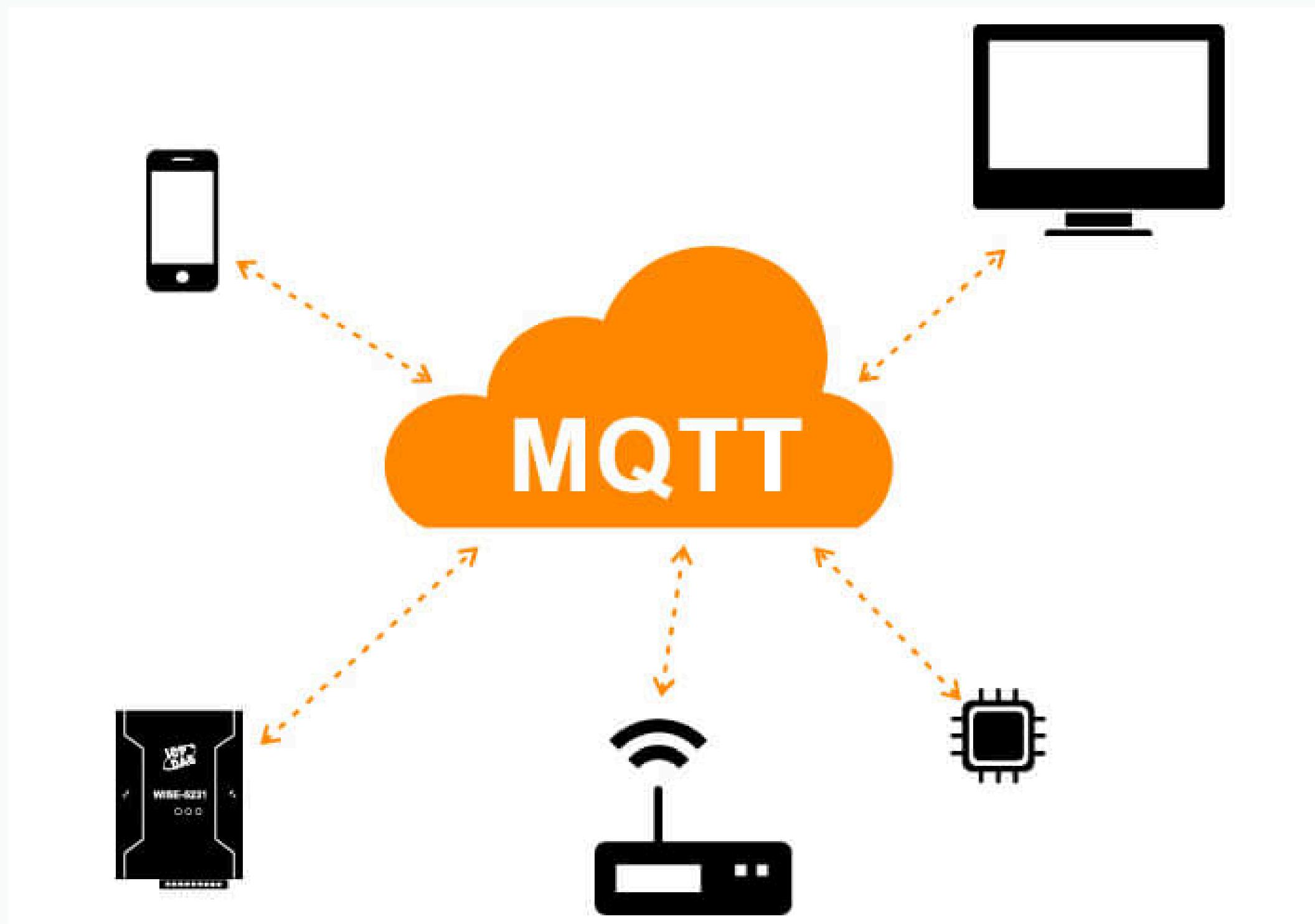
https://arduino.esp8266.com/stable/package_esp8266com_index.json

Configuraciones Arduino IDE

Tools > Board: > Boards Manager - Instalar la siguiente placa: esp8266 by ESP8266 Community



MQTT



MQTT

MQTT

- **MQTT (Message Queuing Telemetry Transport):** Es un protocolo ligero de mensajería que permite la comunicación entre dispositivos conectados a Internet (IoT), ideal para redes con ancho de banda limitado o intermitente.
- **Publicación:** Es cuando un dispositivo (o cliente) envía un mensaje a un "tema" específico. No se necesita conocer quién recibirá el mensaje.
- **Suscripción:** Es cuando un dispositivo (o cliente) se registra para recibir los mensajes publicados en un "tema" específico.



MQTT

- **Topic (Tópico/Tema):** Es el canal o ruta a través del cual se envían y reciben los mensajes. Cada "tema" organiza la comunicación en categorías para facilitar el intercambio de mensajes.
- **Broker:** Es el servidor que recibe los mensajes publicados y los distribuye a los clientes suscritos a los temas correspondientes.
- **QoS (Quality of Service):** Es un parámetro que define el nivel de confiabilidad del mensaje en su transmisión. Por ejemplo, asegura que el mensaje llegue al menos una vez o exactamente una vez.

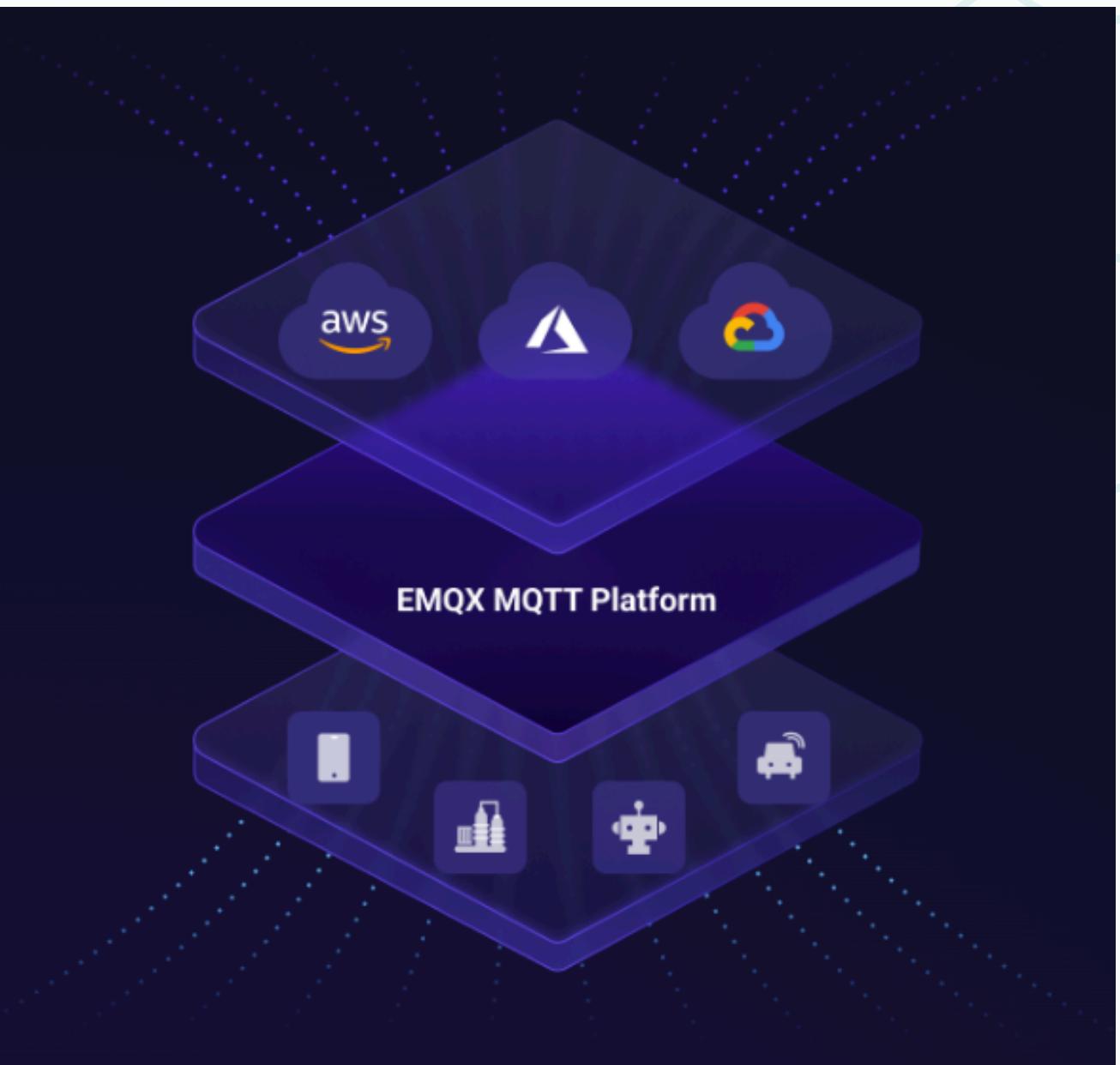


EMQX

Plataforma MQTT para necesidades IoT
Empresarial

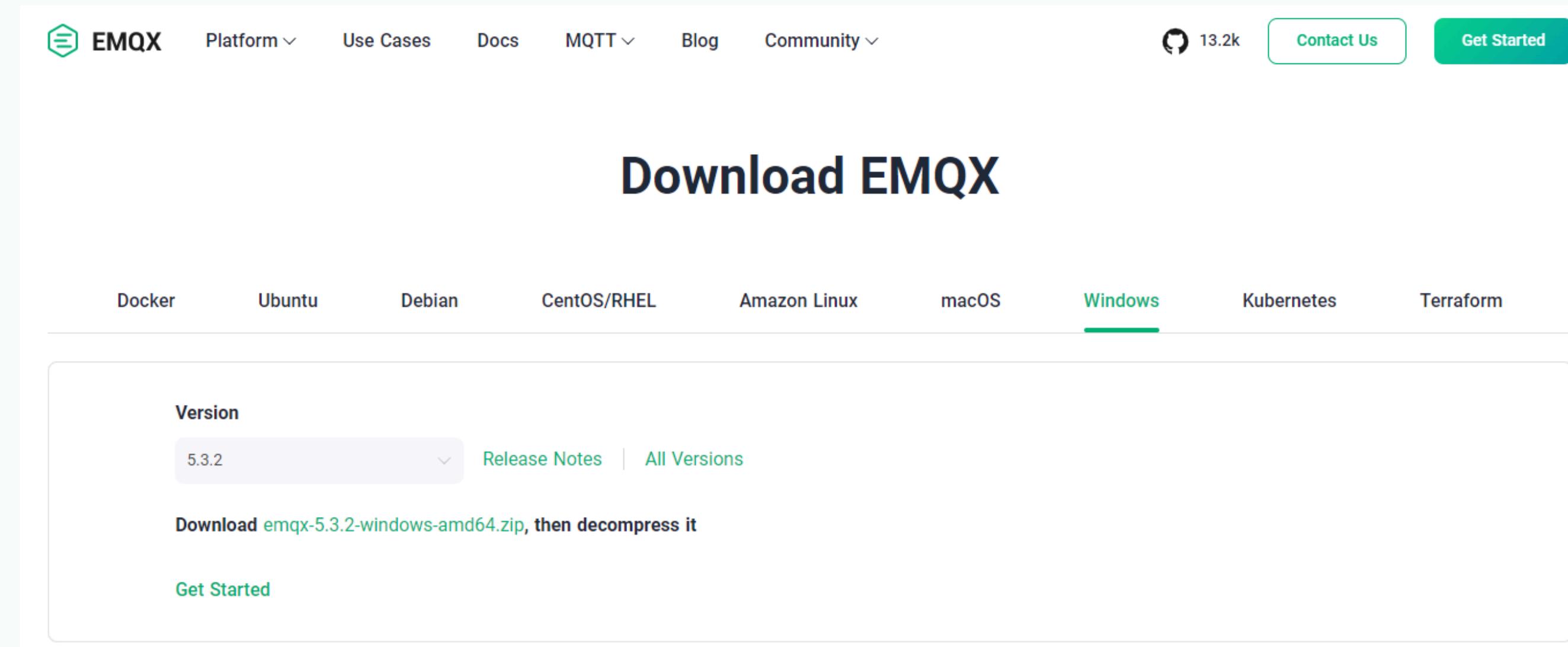
The screenshot shows the EMQX website homepage with a dark background. At the top, there is a navigation bar with links for Platform, Pricing, Solutions, Resources, Company, a search icon, Sign In, Download, and Contact Us. The main headline reads "The One MQTT Platform for All Your Needs" followed by "Enterprise IoT". Below the headline are two call-to-action buttons: "Enterprise Free Trial →" and "Start For Free in Cloud →". At the bottom, there are five data cards with the following information:

- 500+** Enterprise Customers Globally
- 40M+** Product Downloads & Rapidly Counting
- 60K+** Clusters Deployed Globally
- 25+** Regions across AWS, Azure, and Google Cloud
- 100M+** Connections supported by a single cluster



Descargar Servidor EMQX

Para una implementación completa de MQTT a través del Servidor EMQX
(Controlar nuestro propio Broker)



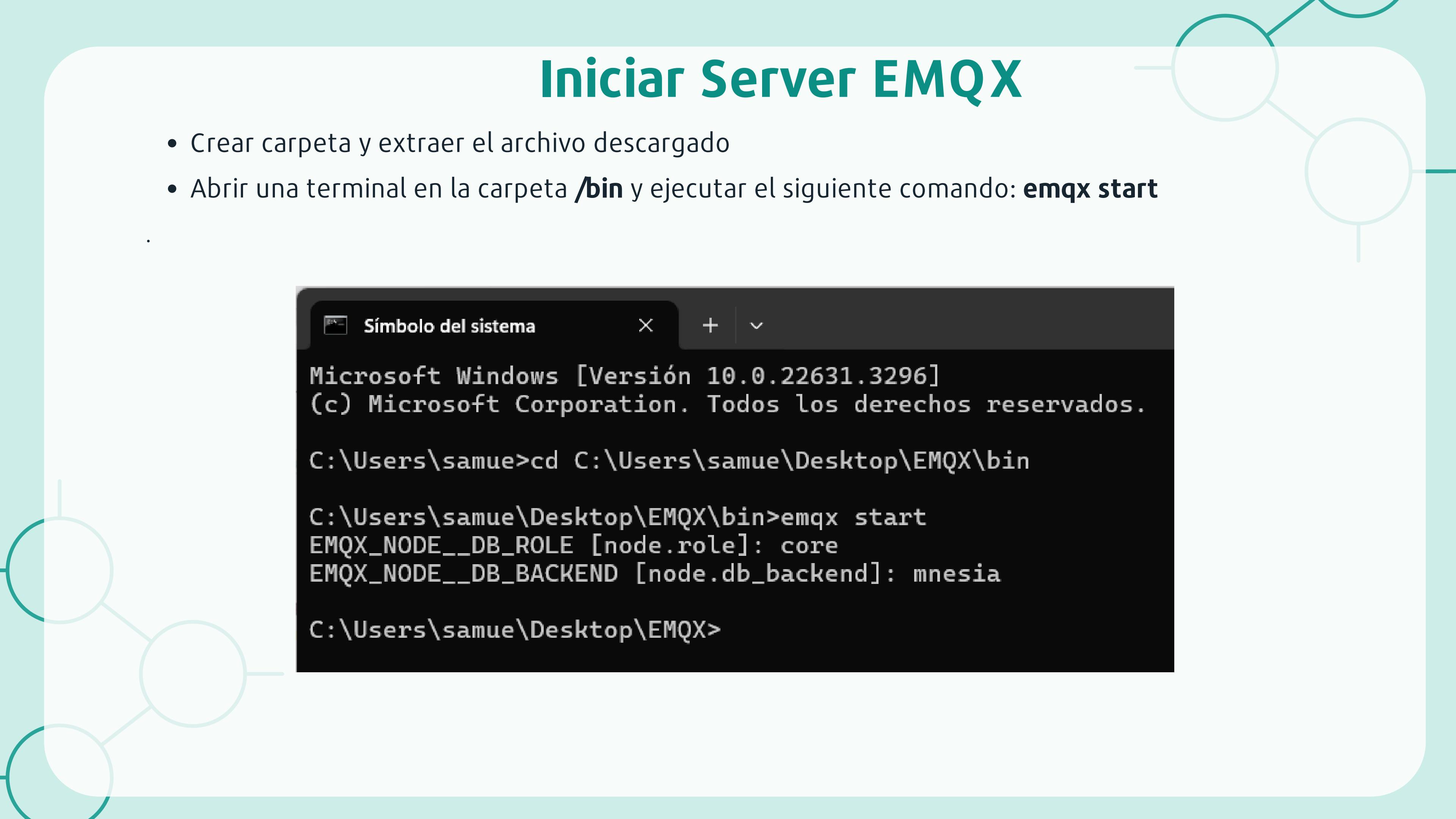
The screenshot shows the EMQX website's download section for the Windows platform. At the top, there is a navigation bar with links for EMQX, Platform, Use Cases, Docs, MQTT, Blog, and Community. On the right side of the header, there is a user icon showing 13.2k and buttons for Contact Us and Get Started. Below the header, the title "Download EMQX" is centered. Underneath it, there is a horizontal menu with options: Docker, Ubuntu, Debian, CentOS/RHEL, Amazon Linux, macOS, Windows (which is highlighted with a green underline), Kubernetes, and Terraform. A large callout box is positioned over the Windows section, containing a "Version" dropdown set to "5.3.2", a "Release Notes" link, and an "All Versions" link. Below these, there is a link to download "emqx-5.3.2-windows-amd64.zip" and a "Get Started" button.

<https://www.emqx.io/downloads>

<https://mqtx.app/downloads>

Iniciar Server EMQX

- Crear carpeta y extraer el archivo descargado
- Abrir una terminal en la carpeta **/bin** y ejecutar el siguiente comando: **emqx start**



```
Símbolo del sistema × + ▾
Microsoft Windows [Versión 10.0.22631.3296]
(c) Microsoft Corporation. Todos los derechos reservados.

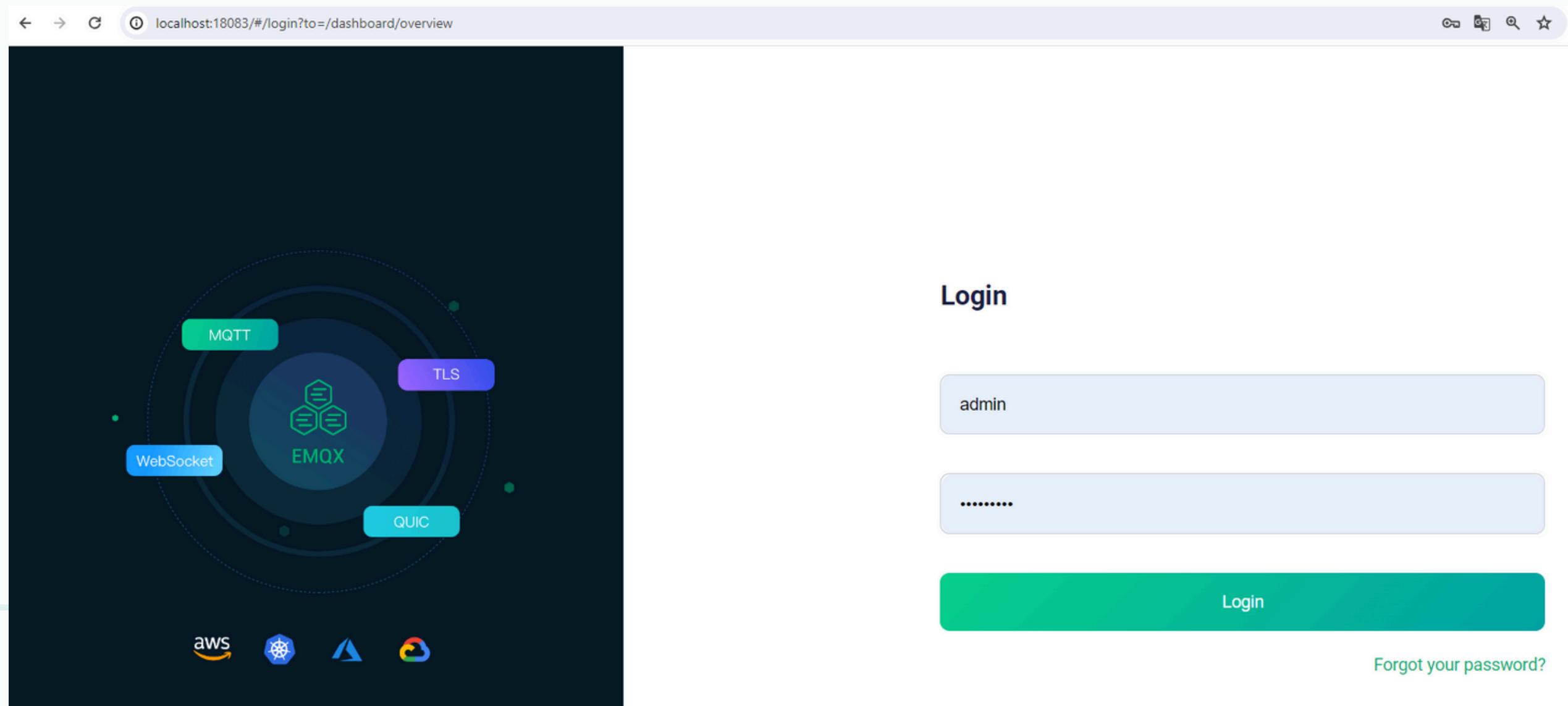
C:\Users\samue>cd C:\Users\samue\Desktop\EMQX\bin

C:\Users\samue\Desktop\EMQX\bin>emqx start
EMQX_NODE__DB_ROLE [node.role]: core
EMQX_NODE__DB_BACKEND [node.db_backend]: mnesia

C:\Users\samue\Desktop\EMQX>
```

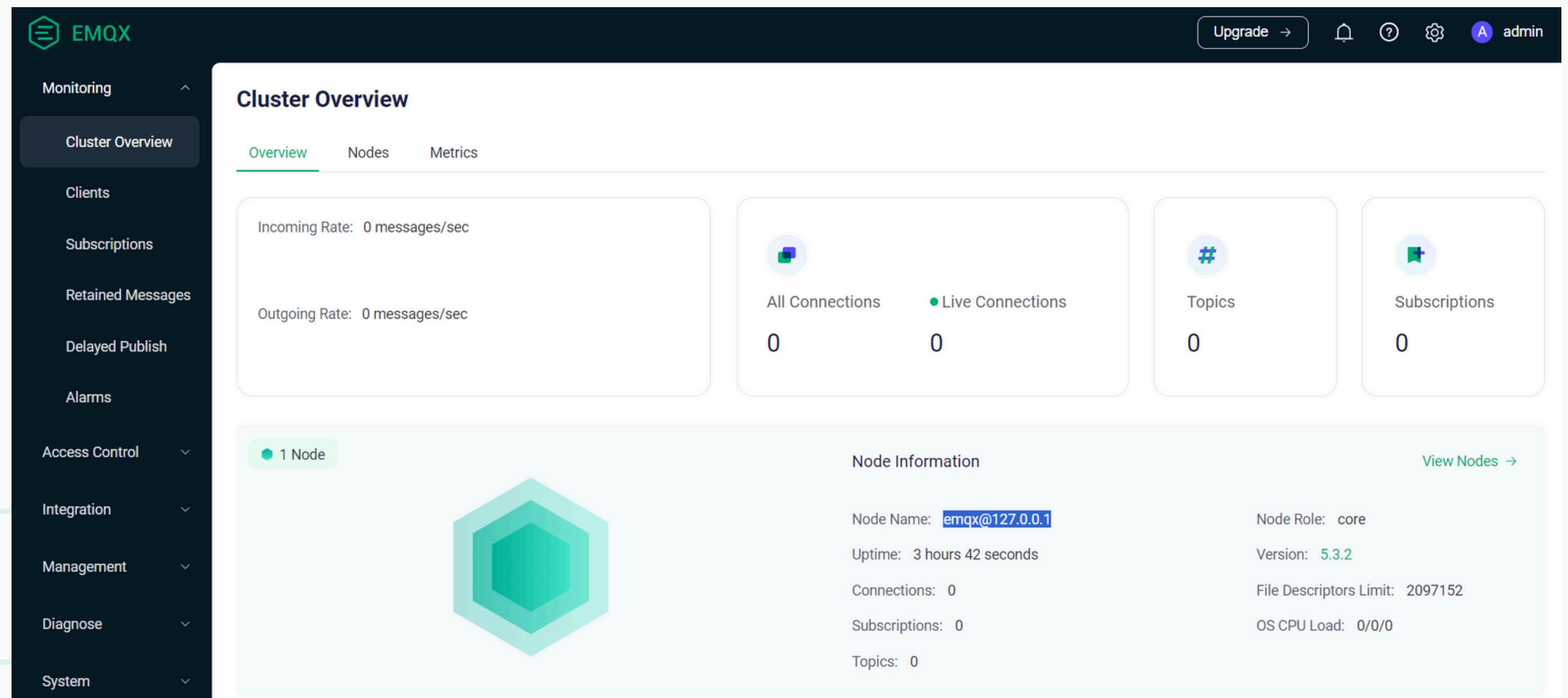
Dashboard EMQX

- Con el server ya iniciado navegar a la siguiente url local: **http://localhost:18083/**
- Credenciales por defecto:
 - user: admin
 - password: public



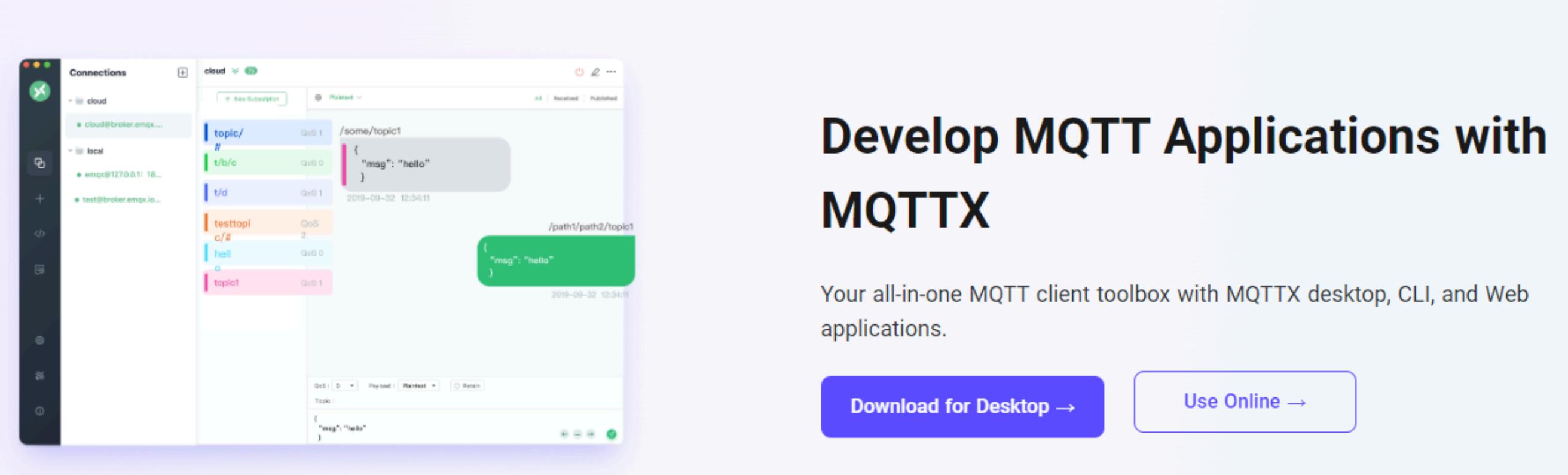
Conexion EMQX

- Datos de conexión:
 - host: emqx@127.0.0.1
 - port: 8083



The screenshot shows the EMQX Cluster Overview dashboard. The left sidebar has a 'Monitoring' section with 'Cluster Overview' selected, and other options like 'Clients', 'Subscriptions', etc. The main area is titled 'Cluster Overview' with tabs for 'Overview', 'Nodes', and 'Metrics'. It displays various metrics such as Incoming Rate, Outgoing Rate, All Connections, Live Connections, Topics, and Subscriptions. Below this is a large hexagonal graphic with the text '1 Node'. To the right is a 'Node Information' panel showing details for the single node: Node Name: emqx@127.0.0.1, Node Role: core, Version: 5.3.2, Uptime: 3 hours 42 seconds, File Descriptors Limit: 2097152, OS CPU Load: 0/0/0, Connections: 0, Subscriptions: 0, and Topics: 0. There is also a 'View Nodes →' link.

Cliente EMQX - Broker Público

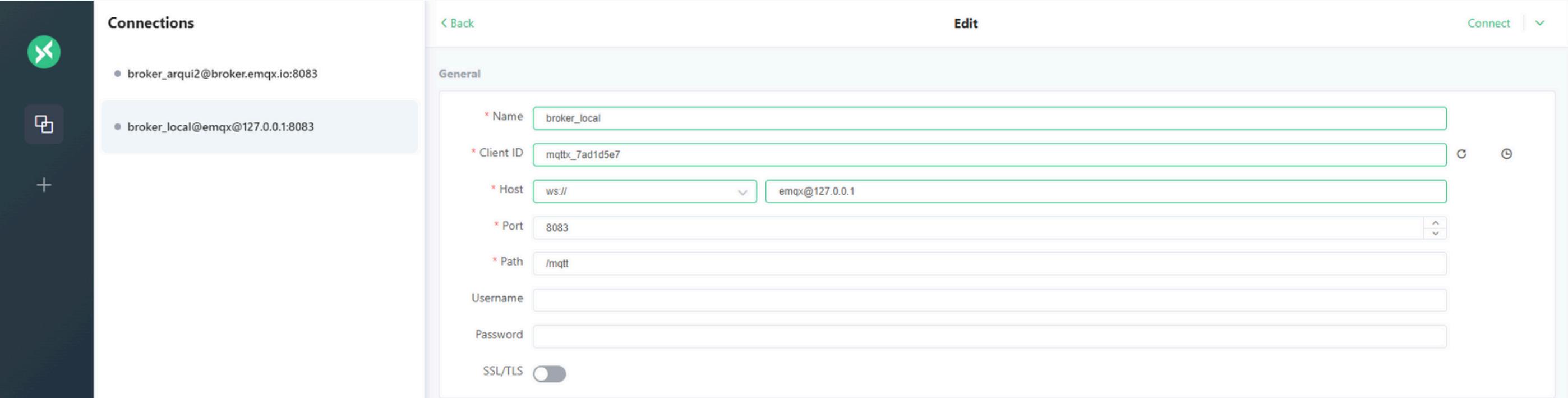


The screenshot shows the MQTTX desktop application interface. On the left, a sidebar titled "Connections" lists "cloud" and "local" sections. Under "cloud", there is a connection to "cloud@broker.emqx.io". Under "local", there are connections to "emqx@127.0.0.1:18083" and "test@broker.emqx.io". The main panel displays a message list with various topics and their payloads. A message from "topic1" is selected, showing its payload: {"msg": "hello"}. Below the message list is a message editor with fields for Topic, QoS, Retain, and Payload.

Develop MQTT Applications with
MQTTX

Your all-in-one MQTT client toolbox with MQTTX desktop, CLI, and Web applications.

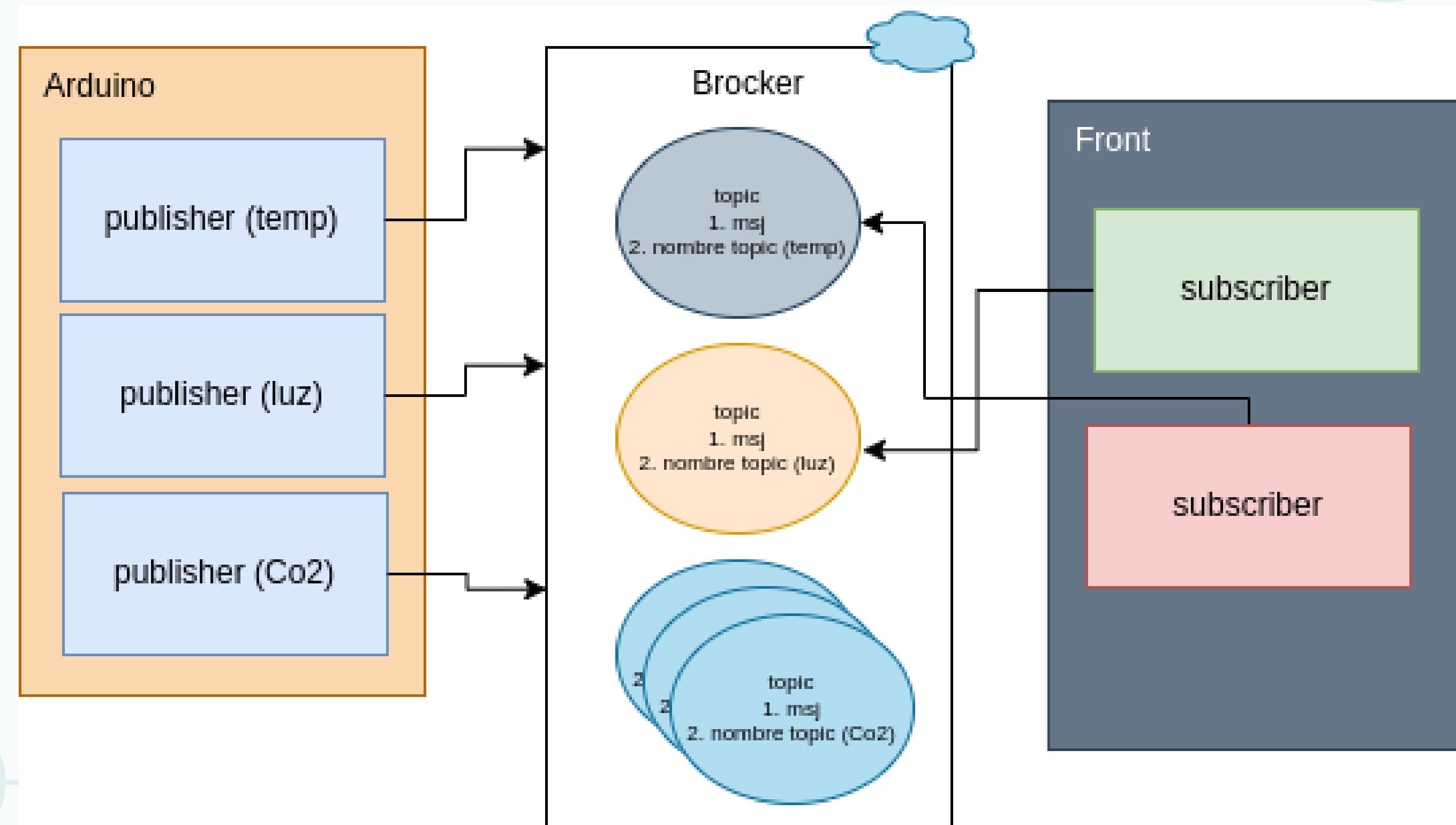
[Download for Desktop →](#) [Use Online →](#)



The screenshot shows the MQTTX online client interface. On the left, a sidebar titled "Connections" lists two connections: "broker_arqui2@broker.emqx.io:8083" and "broker_local@emqx@127.0.0.1:8083". The main panel is titled "Edit" and shows the configuration for "broker_local". The "General" tab is selected, displaying fields for Name (broker_local), Client ID (mqtx_7ad1d5e7), Host (ws://emqx@127.0.0.1), Port (8083), Path (/mqtt), Username, Password, and SSL/TLS toggle. There is also a "Connect" button at the top right.

<http://www.emqx.io/online-mqtt-client>

MQTT



IMPLEMENTACIÓN

Almacenamiento IOT Cloud con MQTT

Arquitectura de computadoras y ensambladores 2

GRACIAS

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