

Instalação do Broker MQTT

Unidade 2 | Capítulo 3



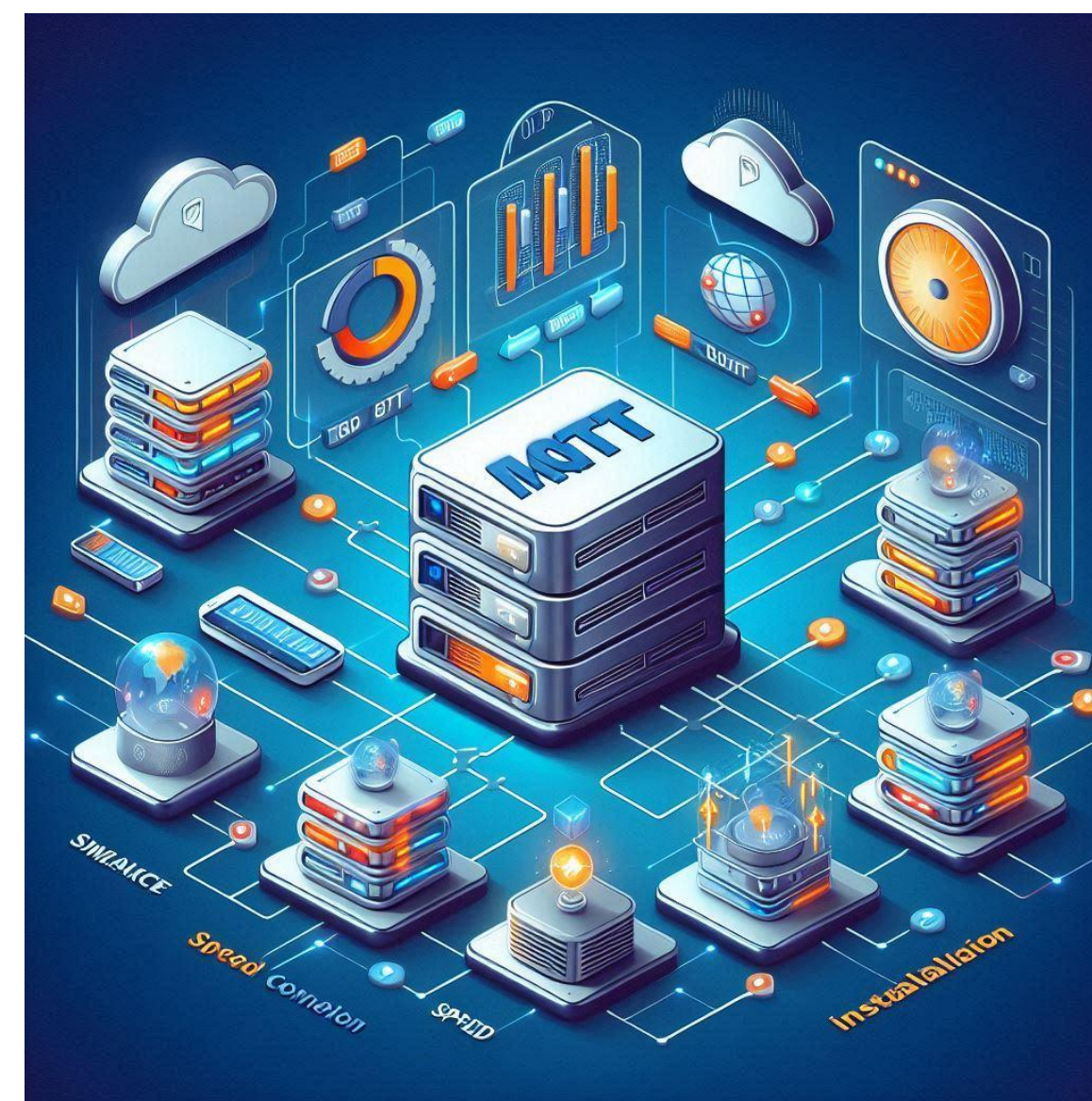
Iniciativa:



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Profa. Danúbia Soares Pires
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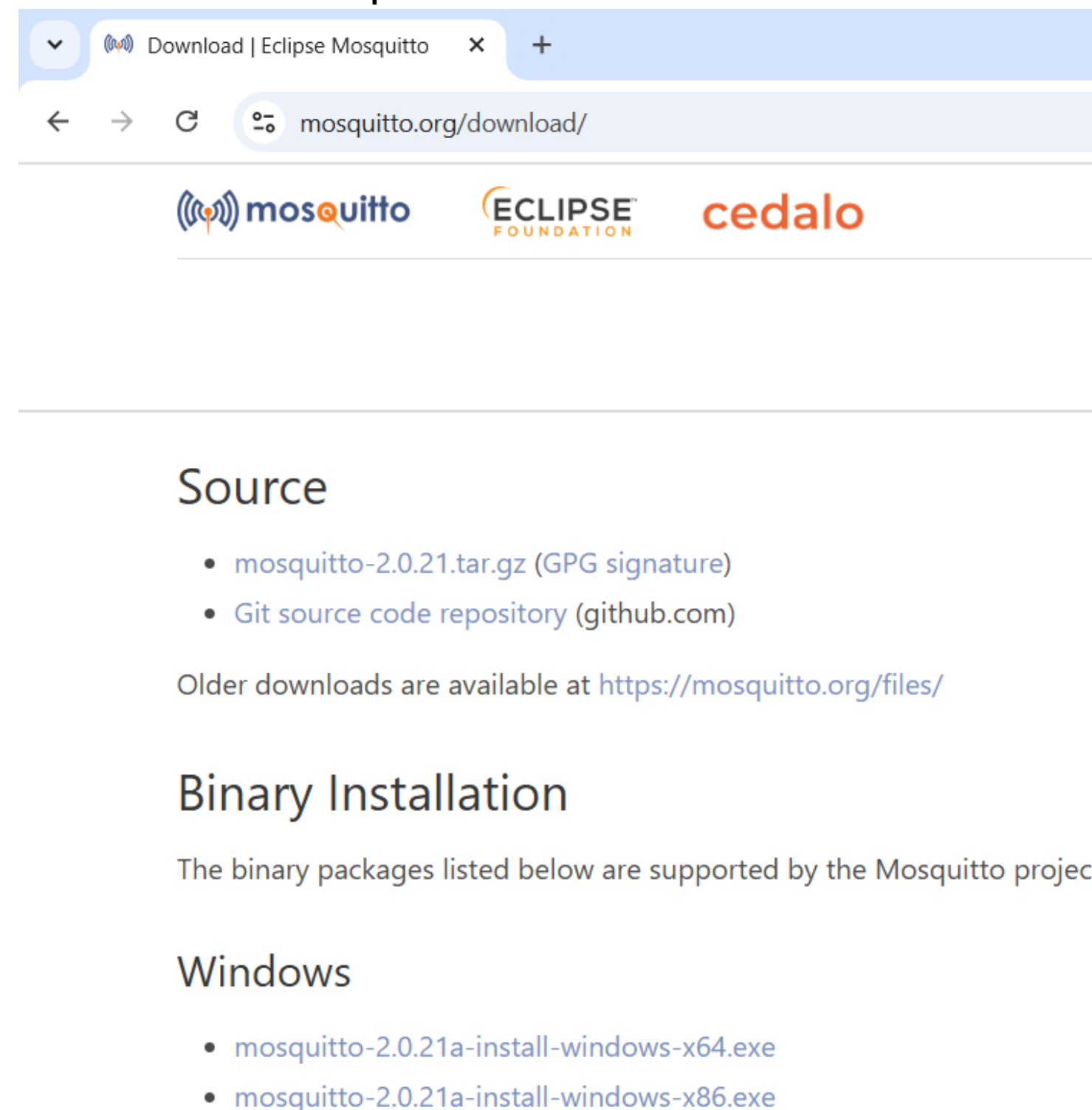
Broker Mosquitto

- Broker é responsável por receber a informação e enviar para outros dispositivos;
- No Mqtt o dispositivo mantém-se conectado ao servidor;
- No Mqtt mantém o IP conectado, tornando mais rápido;
- Não faz o uso do cabeçalho;

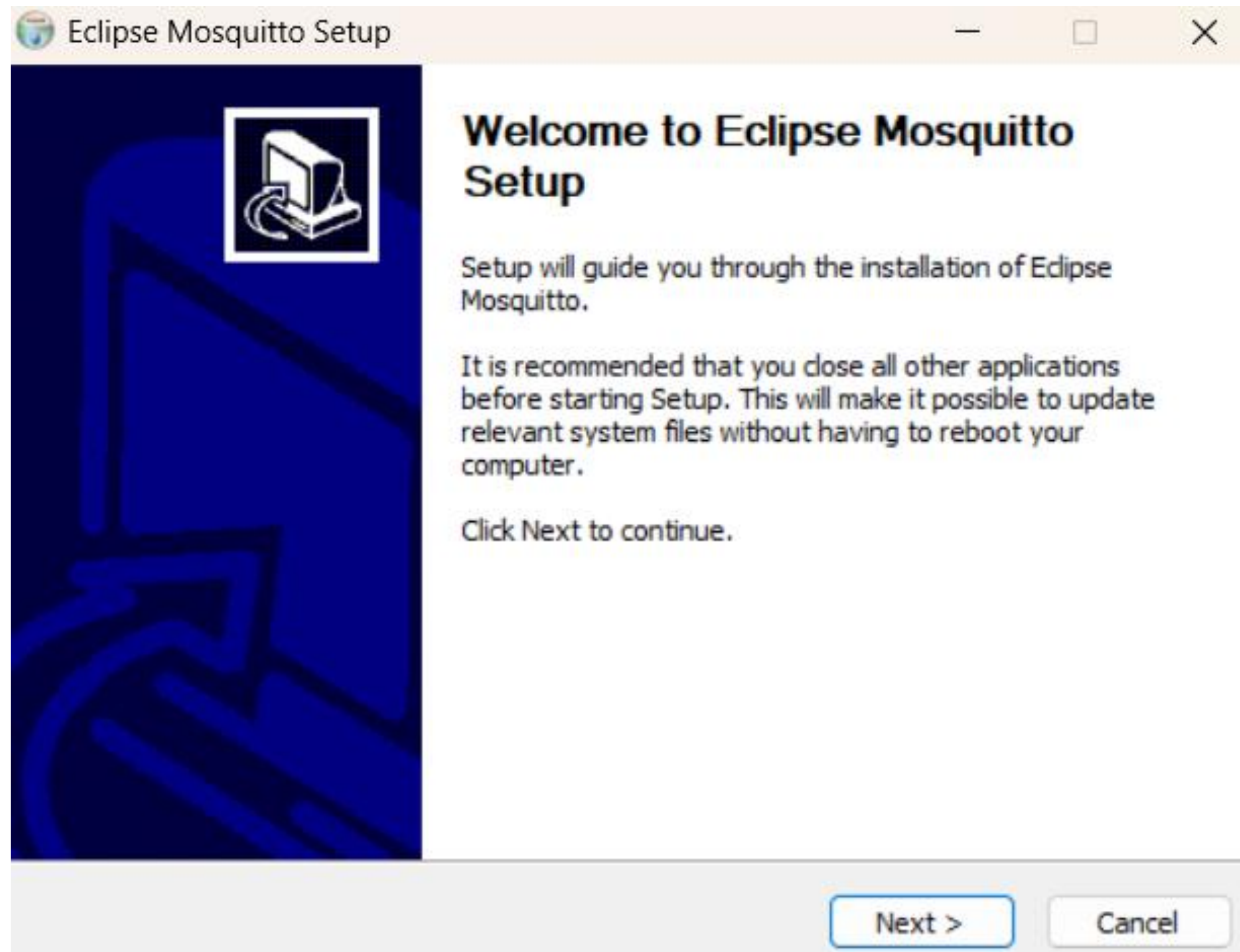


Instalação do Broker Mosquitto

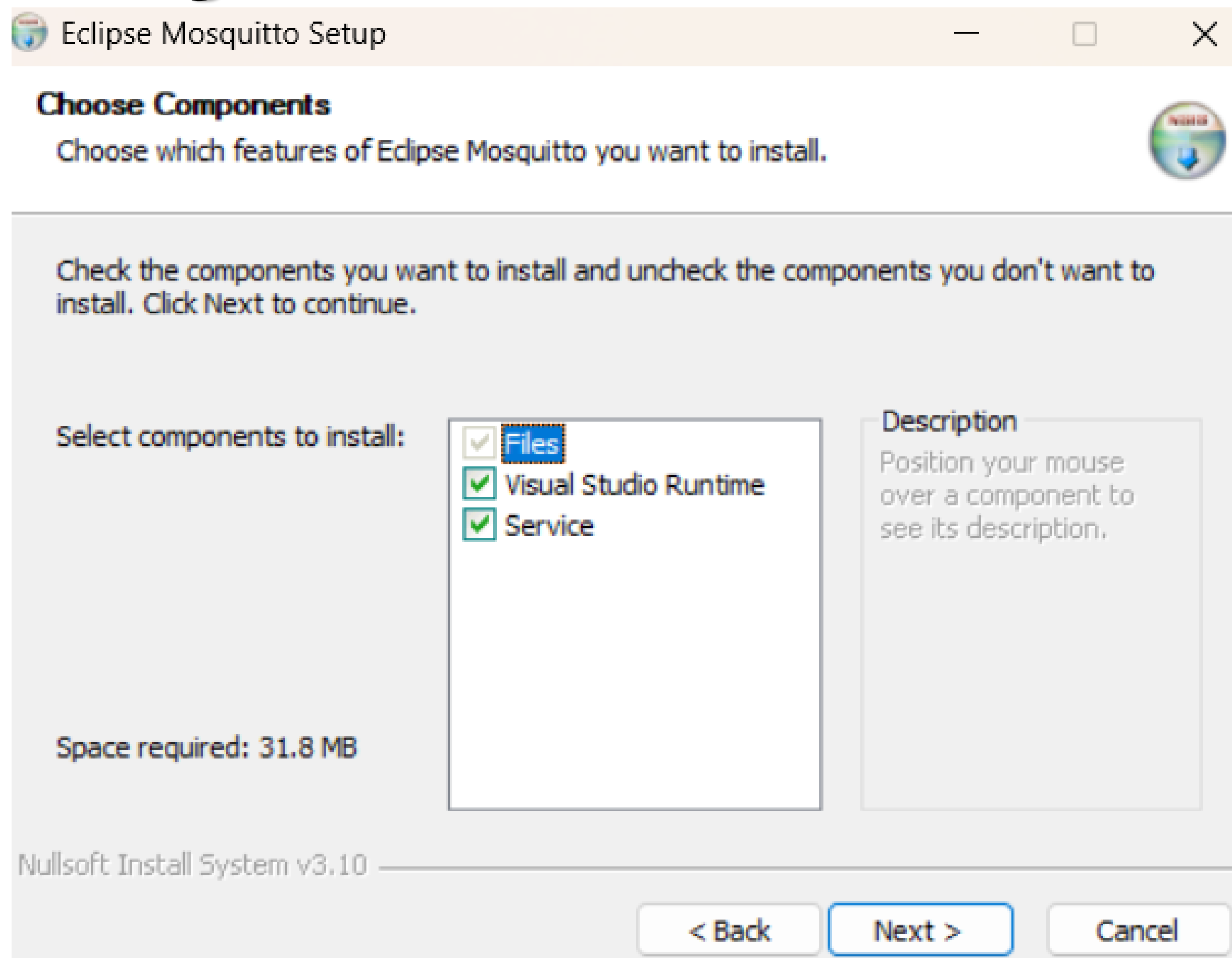
1. Acesse o site (<https://mosquitto.org/download/>) e escolha a instalação de acordo com o sistema operacional



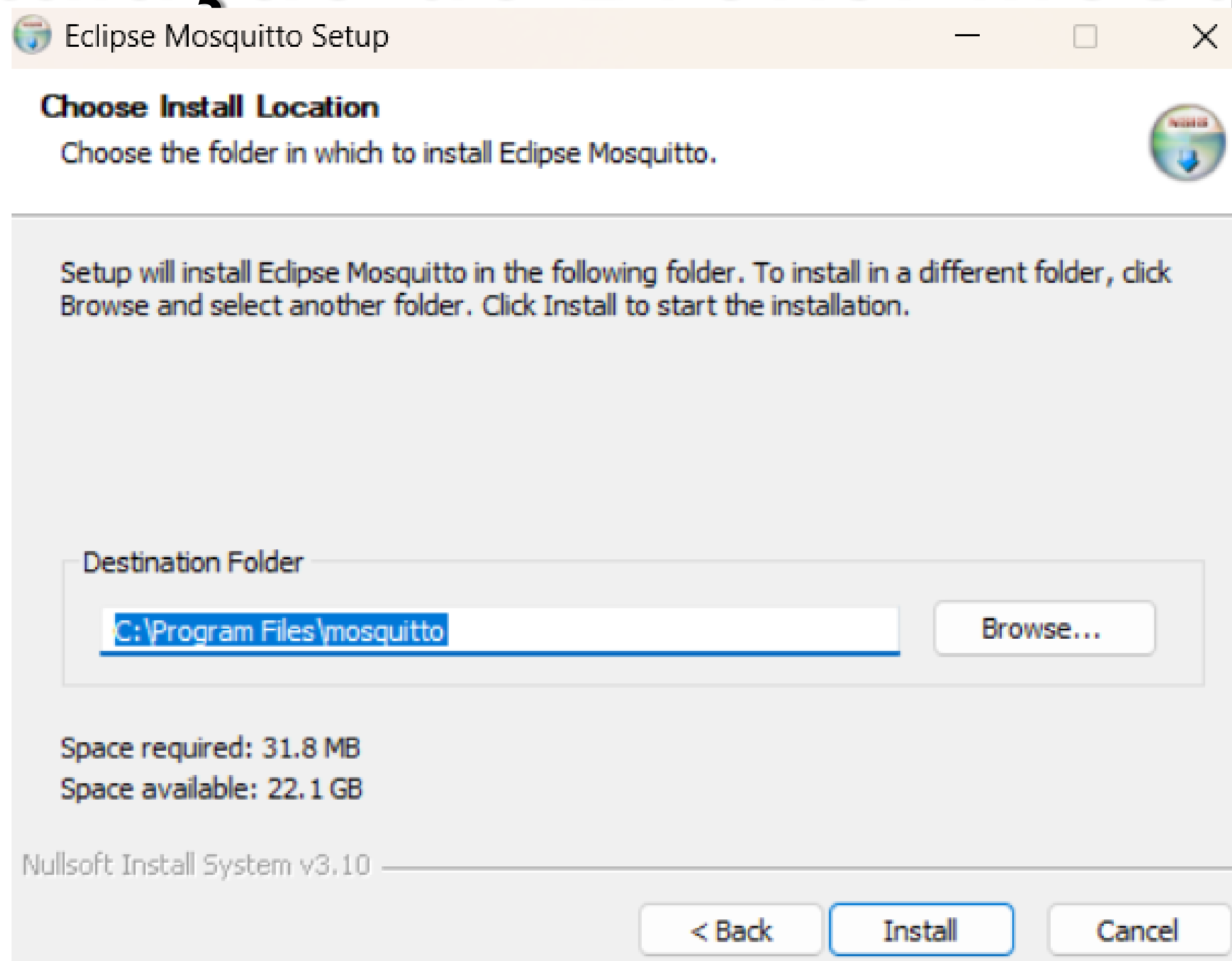
Instalação do Broker Mosquitto



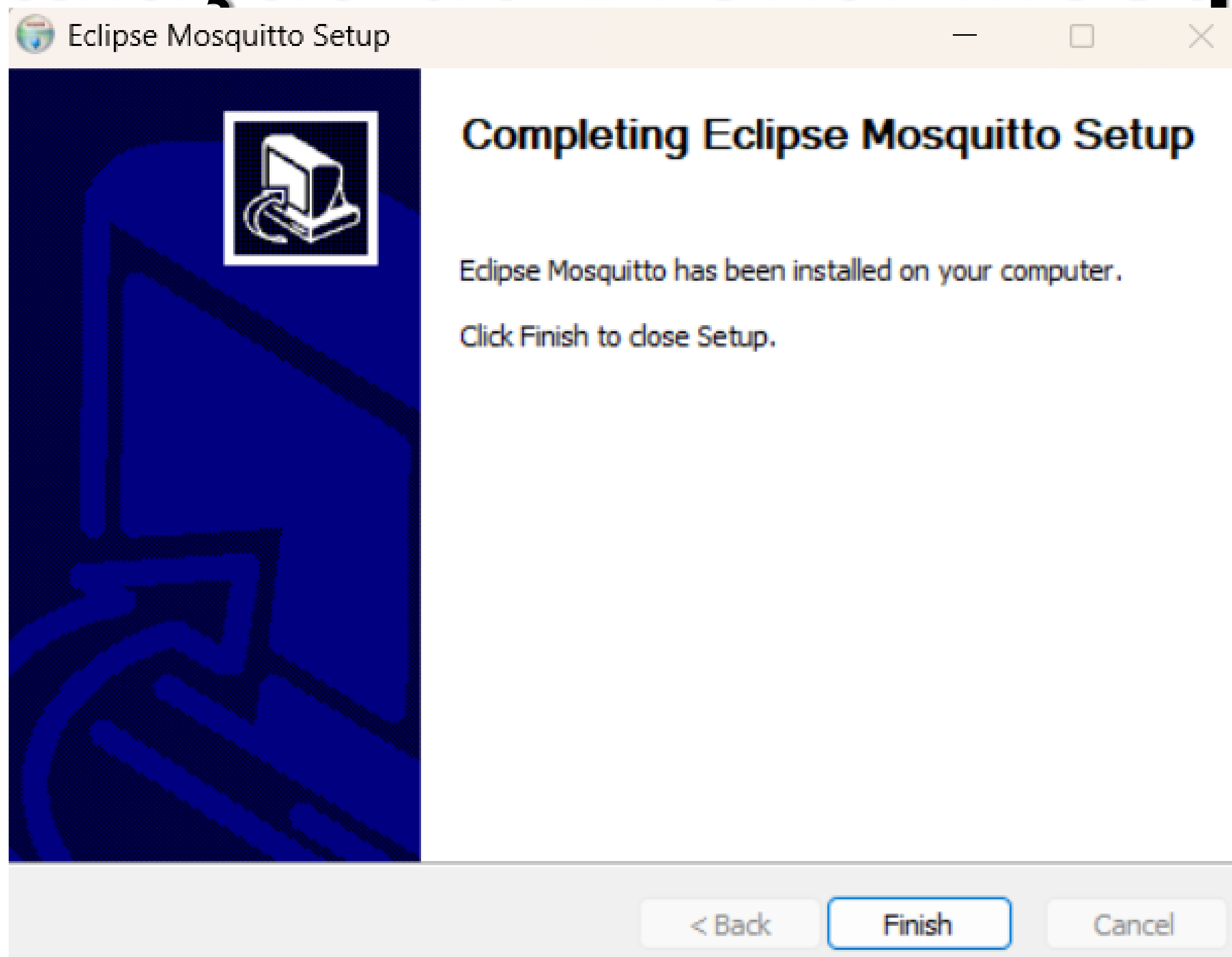
Instalação do Broker Mosquitto



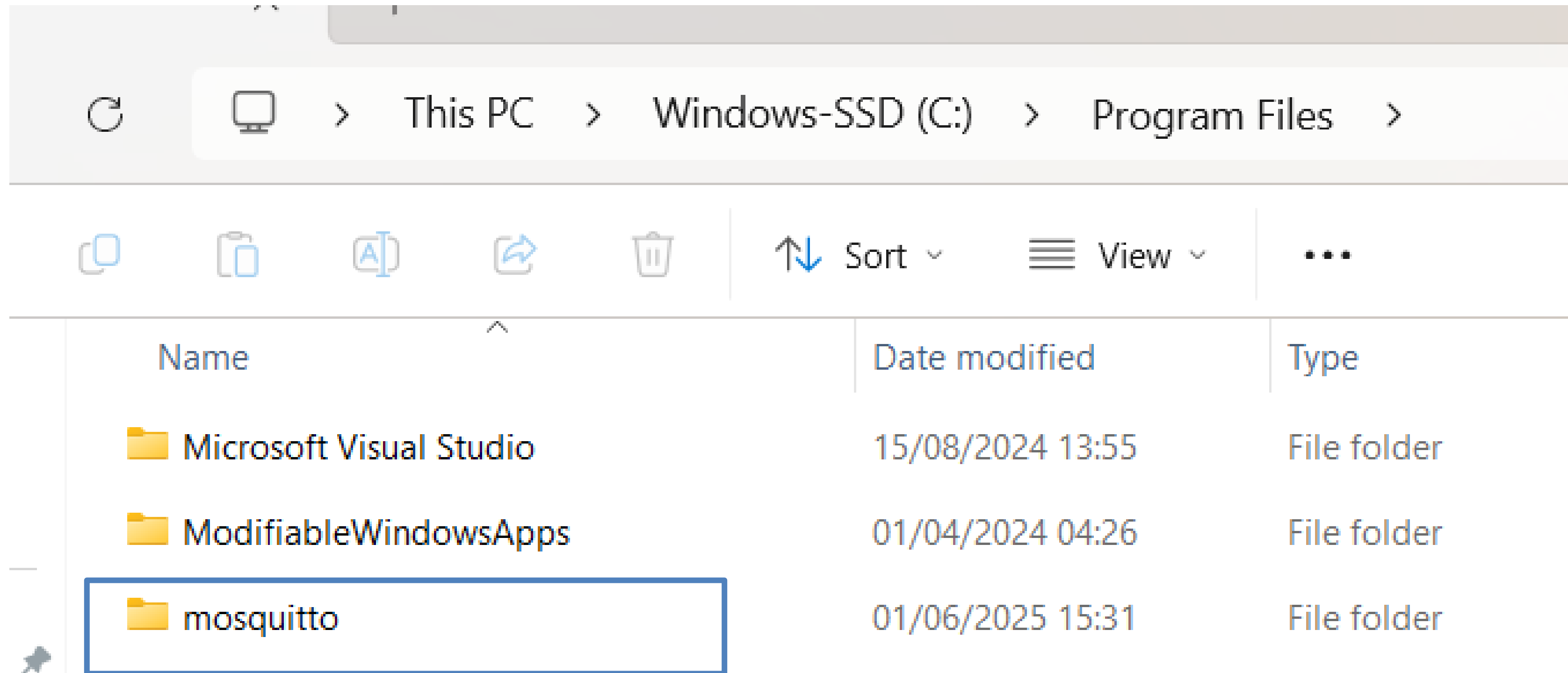
Instalação do Broker Mosquitto



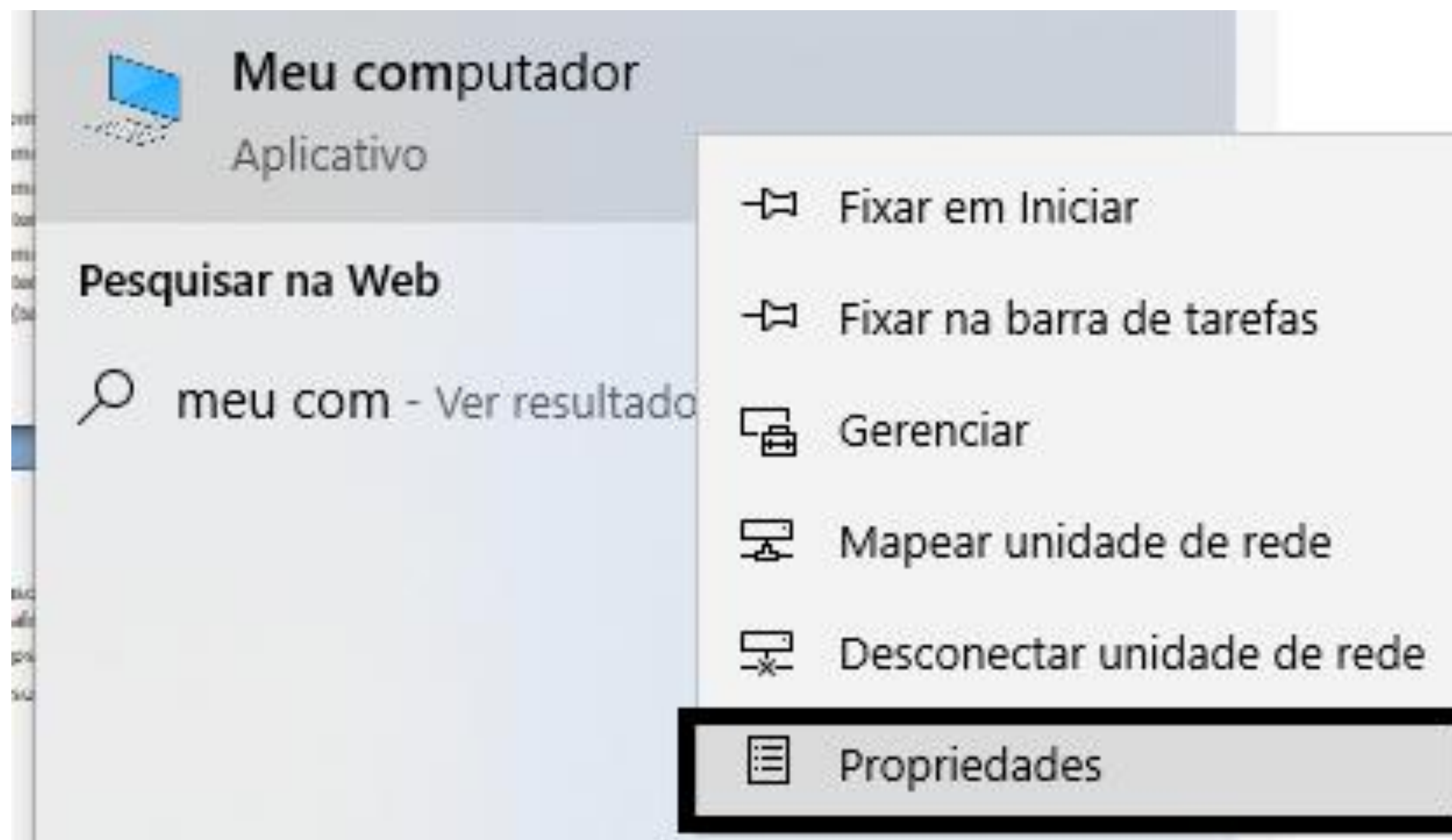
Instalação do Broker Mosquitto



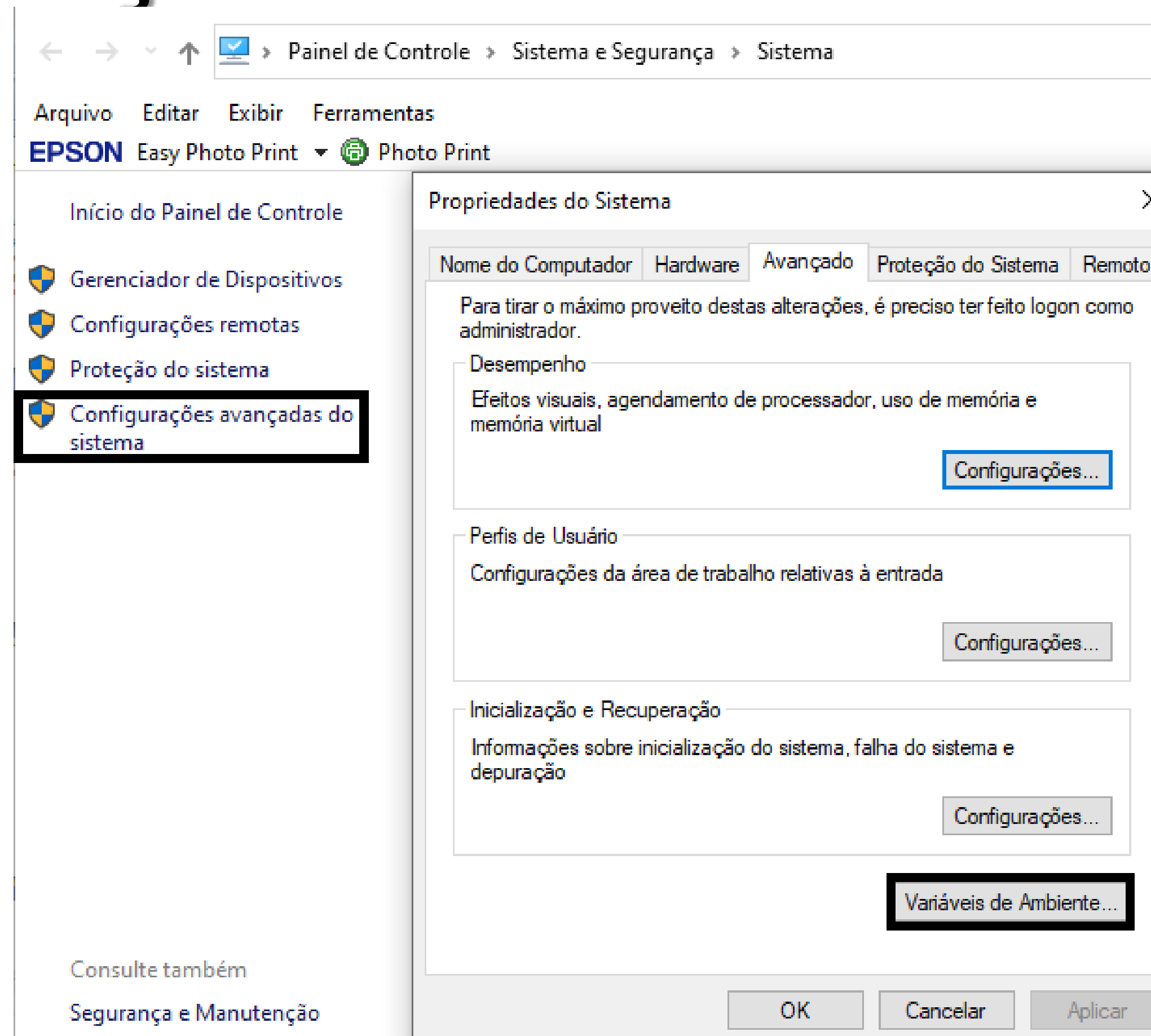
Instalação do Broker Mosquitto



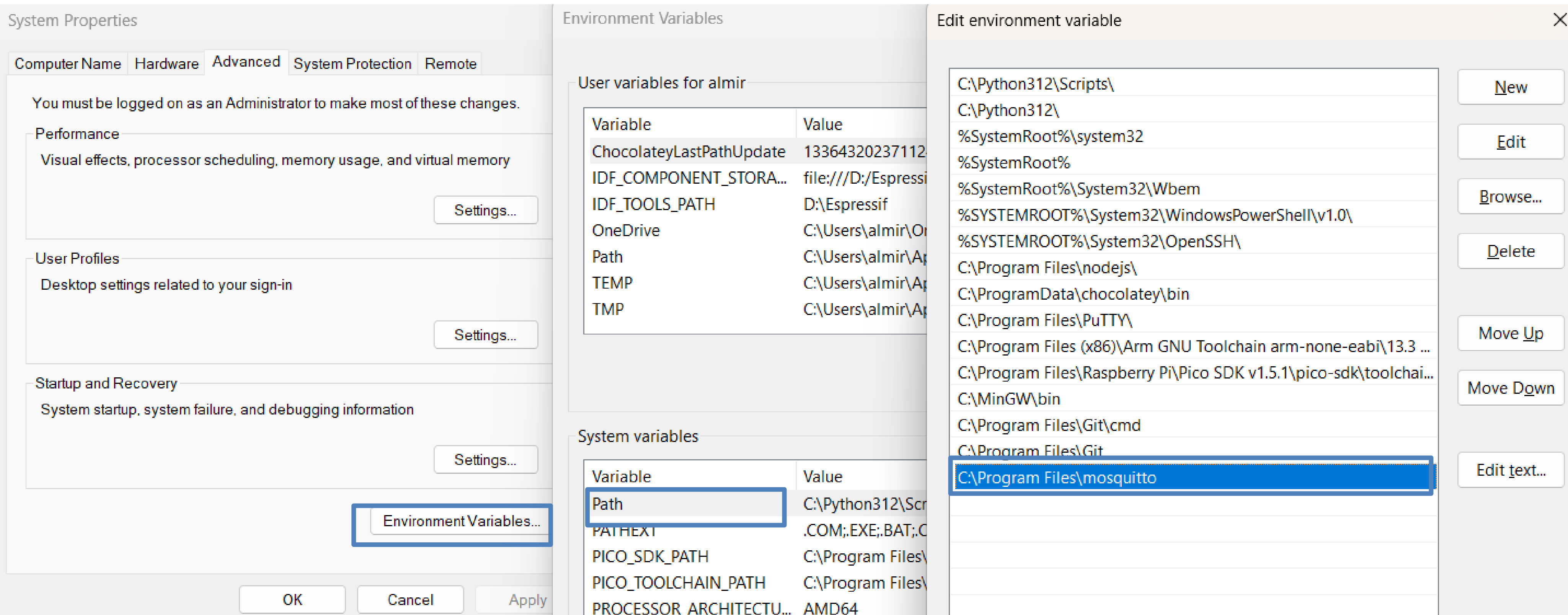
Instalação do Broker Mosquitto



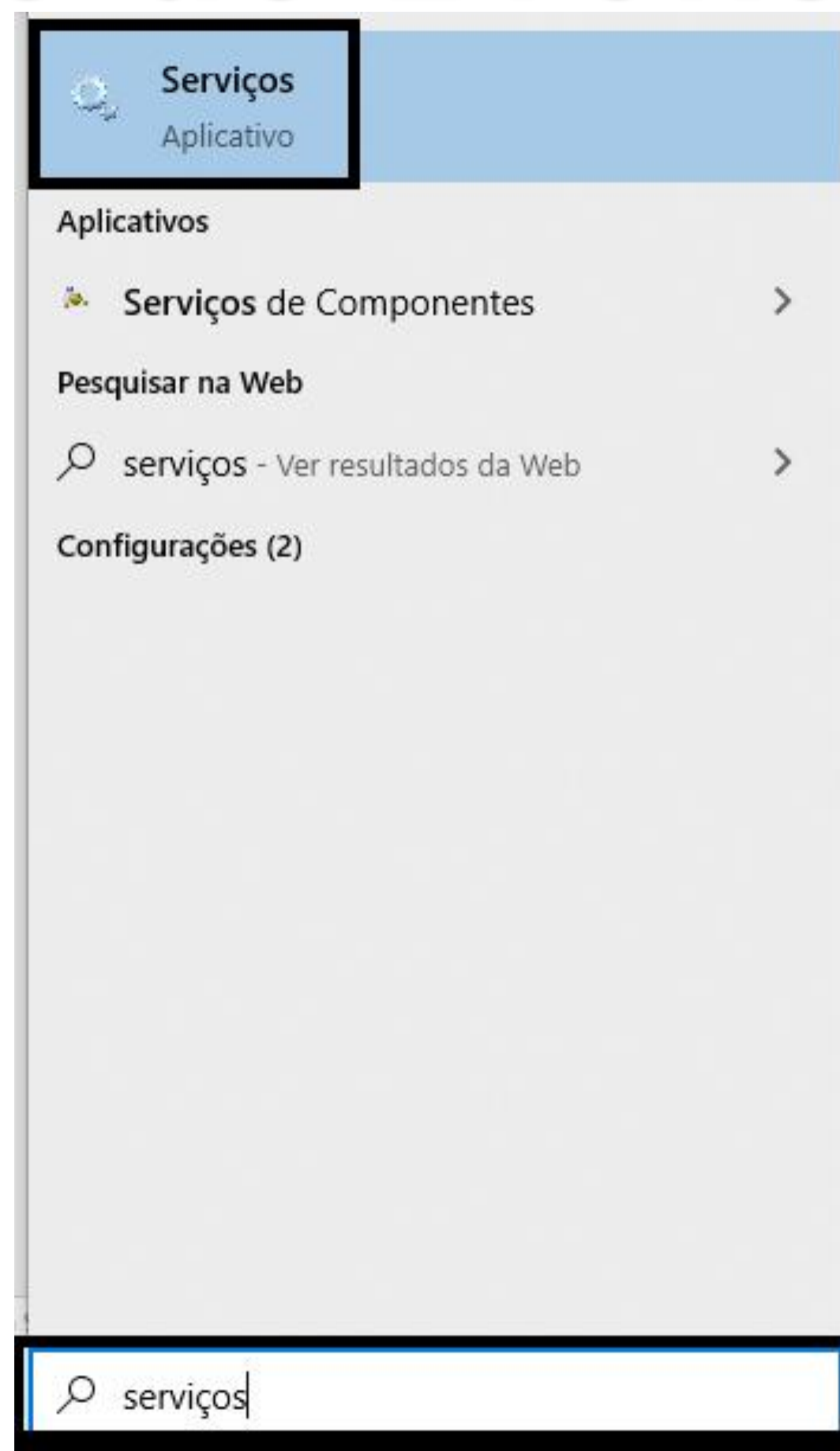
Instalação do Broker Mosquitto



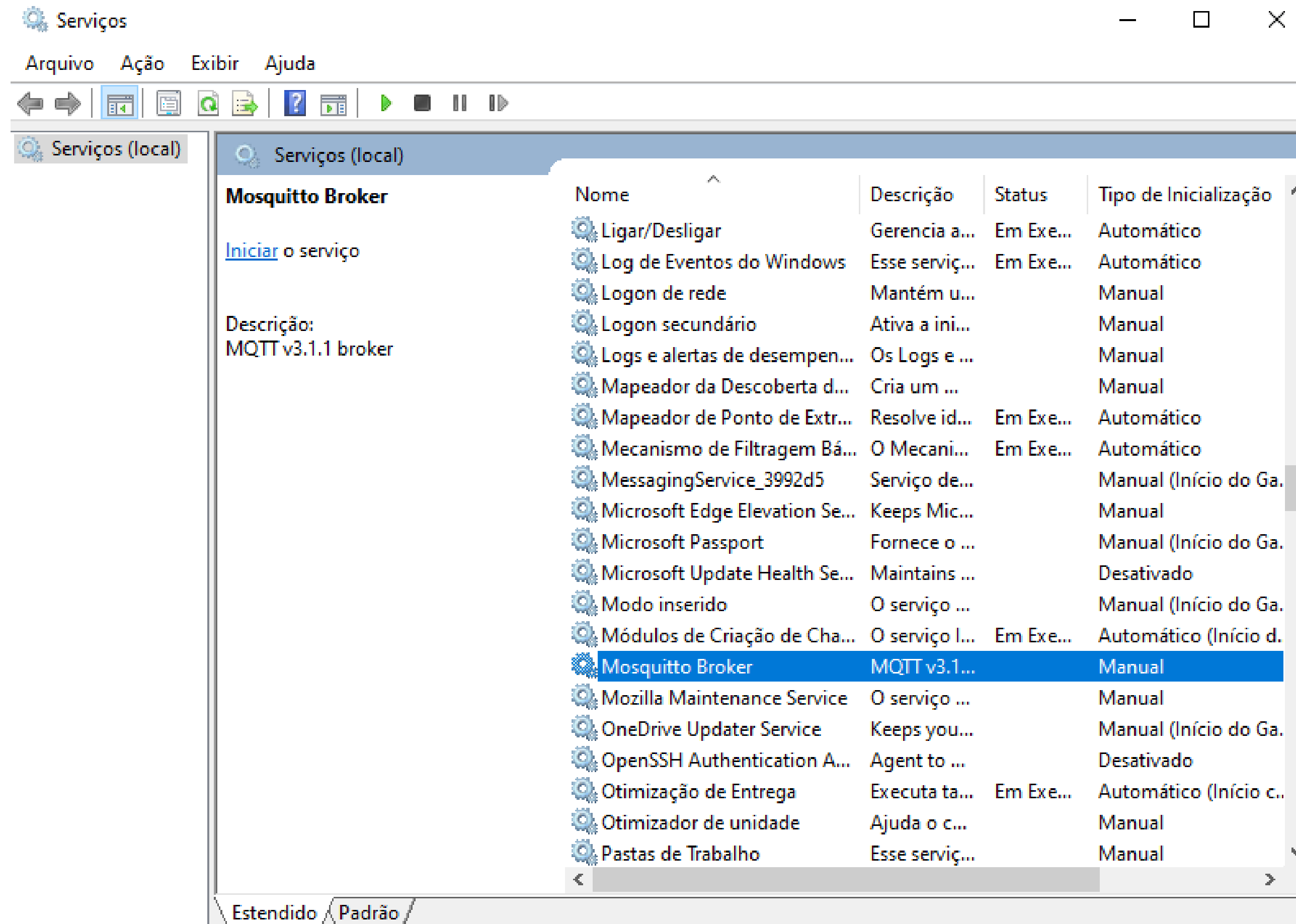
Instalação do Broker Mosquitto



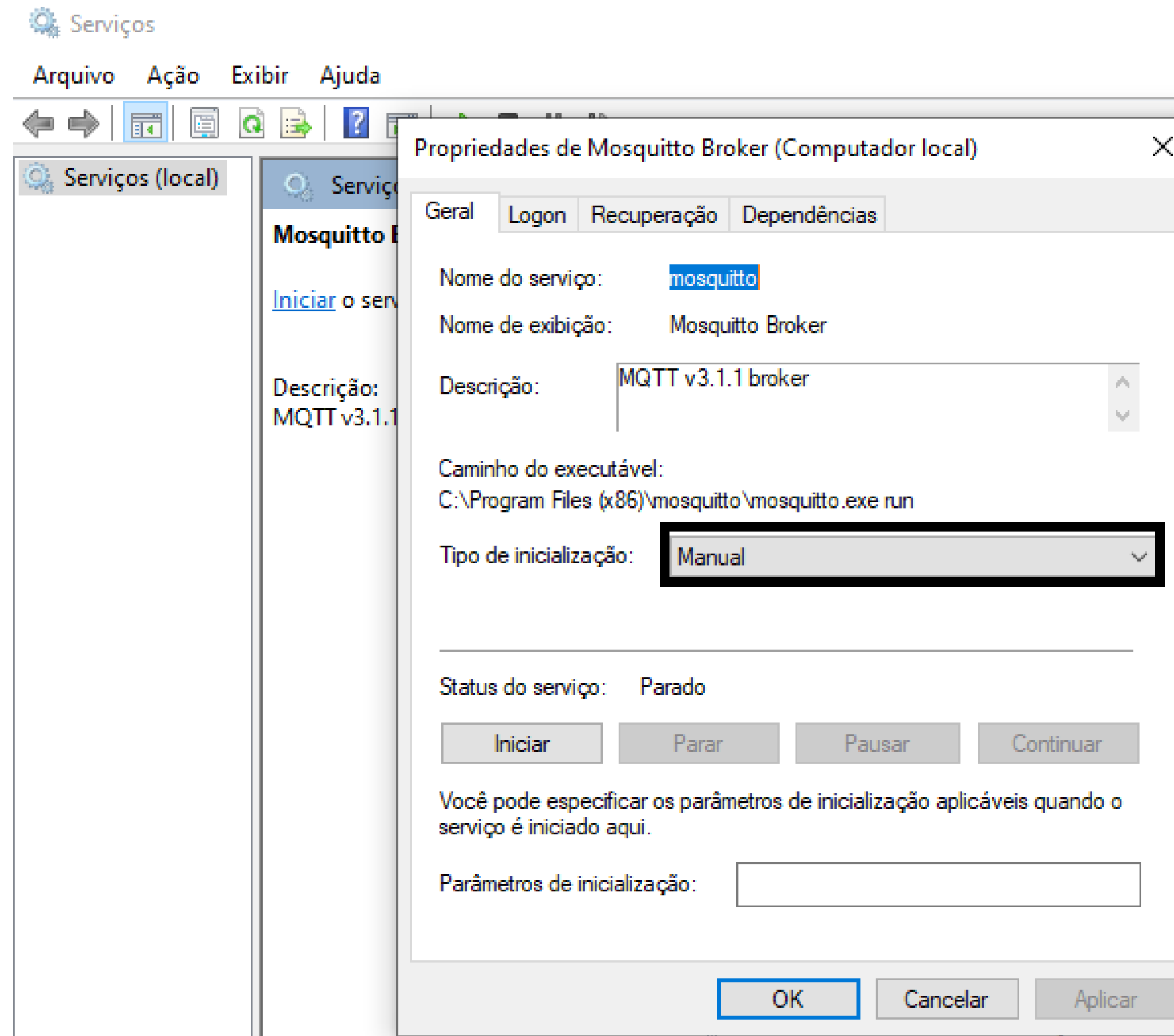
Instalação do Broker Mosquitto



Instalação do Broker Mosquitto



Instalação do Broker Mosquitto



Instalação do Broker Mosquitto

```
C:\Program Files\mosquitto>mosquitto --help  
mosquitto version 2.0.21
```

```
mosquitto is an MQTT v5.0/v3.1.1/v3.1 broker.
```

```
Usage: mosquitto [-c config_file] [-d] [-h] [-p port]
```

- c : specify the broker config file.
- d : put the broker into the background after starting.
- h : display this help.
- p : start the broker listening on the specified port.
Not recommended in conjunction with the -c option.
- v : verbose mode - enable all logging types. This overrides
any logging options given in the config file.

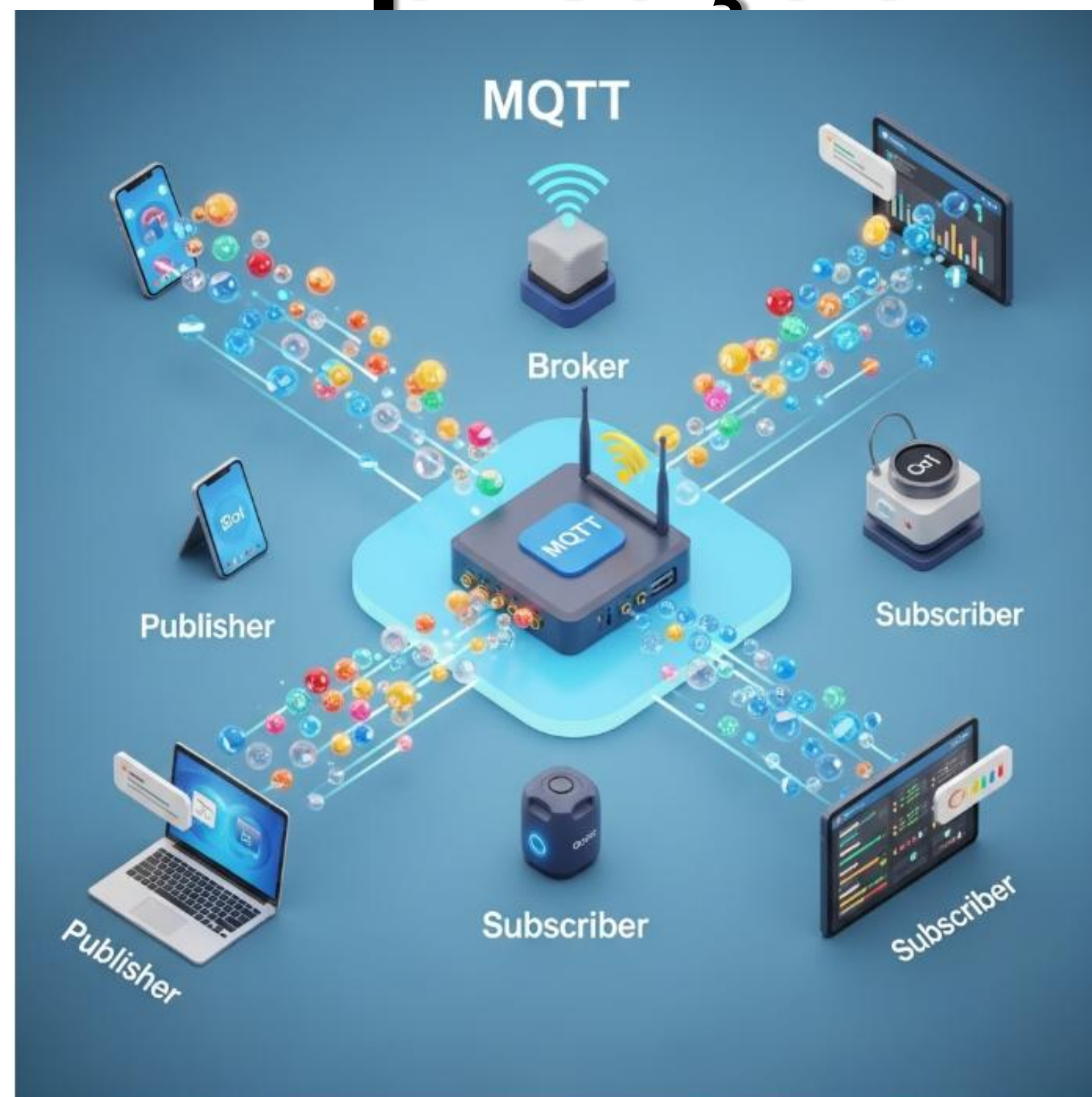
```
See https://mosquitto.org/ for more information.
```

Aplicação



Fonte: gerado por Gemini em 27/05/2025

Aplicação



Fonte: gerado por Gemini em 27/05/2025

Aplicação

1) Mosquitto.exe – broker MQTT responsável por todo gerenciamento das mensagens;

 `mosquitto.exe`

 `mosquitto_ctrl.exe`

2) Mosquitto_ctrl.exe – gerencia os usuários (adiciona, lista, remove)

 `mosquitto_passwd.exe`

 `mosquitto_pub.exe`

2) Mosquitto_passwd.exe – responsável pela criptografia das senhas de acesso

 `mosquitto_rr.exe`

 `mosquitto_sub.exe`

3) Mosquitto_pub.exe – cliente MQTT responsável pela publicação em um tópico

Aplicação

4) Mosquitto_rr.exe (Request_Response) – envia uma mensagem para um tópico e aguarda a sua resposta em outro tópico

5) Mosquitto_sub.exe – cliente MQTT responsável pela assinatura de um tópico

 `mosquitto.exe` `mosquitto_ctrl.exe` `mosquitto_passwd.exe` `mosquitto_pub.exe` `mosquitto_rr.exe` `mosquitto_sub.exe`

Comandos

- `mosquitto -v` -> inicia o mosquitto (port 1883)

```
C:\Program Files\mosquitto>mosquitto -v
1748806020: mosquitto version 2.0.21 starting
1748806020: Using default config.
1748806020: Starting in local only mode. Connections will only be possible from clients running on this machine.
1748806020: Create a configuration file which defines a listener to allow remote access.
1748806020: For more details see https://mosquitto.org/documentation/authentication-methods/
1748806020: Opening ipv4 listen socket on port 1883.
1748806020: Opening ipv6 listen socket on port 1883.
1748806020: mosquitto version 2.0.21 running
```

```
C:\Users\almir>mosquitto -v
1748808077: mosquitto version 2.0.21 starting
1748808077: Using default config.
1748808077: Starting in local only mode. Connections will only be possible from clients running on this machine.
1748808077: Create a configuration file which defines a listener to allow remote access.
1748808077: For more details see https://mosquitto.org/documentation/authentication-methods/
1748808077: Opening ipv4 listen socket on port 1883.
1748808077: Opening ipv6 listen socket on port 1883.
1748808077: mosquitto version 2.0.21 running
```


Comandos

- `mosquitto -c mosquitto.conf -v` -> inicia o mosquitto (port 1883)

```
C:\Program Files\mosquitto>mosquitto -c mosquitto.conf -v
1748806177: mosquitto version 2.0.21 starting
1748806177: Config loaded from mosquitto.conf.
1748806177: Opening ipv6 listen socket on port 1883.
1748806177: Opening ipv4 listen socket on port 1883.
1748806177: mosquitto version 2.0.21 running
```

```
C:\Users\almir>mosquitto -c mosquitto.conf -v
1748808157: Error: Unable to open config file mosquitto.conf.
```

Comandos

- `mosquitto_sub -h localhost -p 1883 -t temperatura -> assina no tópico (temperatura)`

```
C:\Users\almir>mosquitto_sub -h localhost -p 1883 -t temperatura
38
25
20
15
30
17
27
```

Comandos

- `mosquitto_pub -h localhost -p 1883 -t temperatura -m 38` -> publica no tópico (temperatura) o valor 38

```
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura -m 38  
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura -m 25  
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura -m 20  
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura -m 15  
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura -m 30  
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura -m 17  
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura -m 27
```

Comandos

```
Command Prompt - mosquitto x + v
C:\Users\almir>mosquitto_sub -h localhost -p 1883 -t temperatura
38
25
17
20
29
|

Command Prompt x + v
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 38

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 25

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 17

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 20














C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 29

C:\Program Files\mosquitto>

Command Prompt - mosquitto x + v
1748809016: Sending PUBLISH to auto-D3768926-C06D-D336-226A-6A5275E634B9 (d0, q0, r0, m0, 'temperatura', ... (2 bytes))
1748809016: Received DISCONNECT from auto-292E9EFA-A04D-8644-2DAF-7EC723C37E16
1748809016: Client auto-292E9EFA-A04D-8644-2DAF-7EC723C37E16 disconnected.
1748809028: New connection from ::1:57389 on port 1883.
1748809028: New client connected from ::1:57389 as auto-06528858-0923-D3A6-BAD6-4E7D1F14A837 (p2, c1, k60).
1748809028: No will message specified.
1748809028: Sending CONNACK to auto-06528858-0923-D3A6-BAD6-4E7D1F14A837 (0, 0)
1748809028: Received PUBLISH from auto-06528858-0923-D3A6-BAD6-4E7D1F14A837 (d0, q0, r0, m0, 'temperatura', ... (2 bytes))
1748809028: Sending PUBLISH to auto-D3768926-C06D-D336-226A-6A5275E634B9 (d0, q0, r0, m0, 'temperatura', ... (2 bytes))
1748809028: Received DISCONNECT from auto-06528858-0923-D3A6-BAD6-4E7D1F14A837
1748809028: Client auto-06528858-0923-D3A6-BAD6-4E7D1F14A837 disconnected.
1748809032: New connection from ::1:57392 on port 1883.
1748809032: New client connected from ::1:57392 as auto-F8D86C68-AC8A-6937-24D7-9DBD82EE7A20 (p2, c1, k60).
1748809032: No will message specified.
1748809032: Sending CONNACK to auto-F8D86C68-AC8A-6937-24D7-9DBD82EE7A20 (0, 0)
1748809032: Received PUBLISH from auto-F8D86C68-AC8A-6937-24D7-9DBD82EE7A20 (d0, q0, r0, m0, 'temperatura', ... (2 bytes))
1748809032: Sending PUBLISH to auto-D3768926-C06D-D336-226A-6A5275E634B9 (d0, q0, r0, m0, 'temperatura', ... (2 bytes))
1748809032: Received DISCONNECT from auto-F8D86C68-AC8A-6937-24D7-9DBD82EE7A20
1748809032: Client auto-F8D86C68-AC8A-6937-24D7-9DBD82EE7A20 disconnected.
1748809040: New connection from ::1:57396 on port 1883
```


Criação de usuário/senha

- Crie um arquivo “senha.pwd” dentro da pasta mosquito (C:\Program Files\mosquito) onde irá armazenar as informações do usuário e senha

  > This PC > Windows-SSD (C:) > Program Files > mosquito >			
      Sort ▾  View ▾ ...			
Name	Date modified	Type	Size
 senha.pwd	01/06/2025 17:36	PWD File	1 KB
 mosquito.conf	01/06/2025 17:35	CONF File	41 KB
 Uninstall.exe	01/06/2025 15:30	Application	71 KB
 mosquittopp.dll	08/03/2025 04:48	Application extens...	18 KB

Criação de usuário/senha

- Altere o arquivo mosquitto.conf -> password_file C:\Program Files\mosquitto\senha.pwd

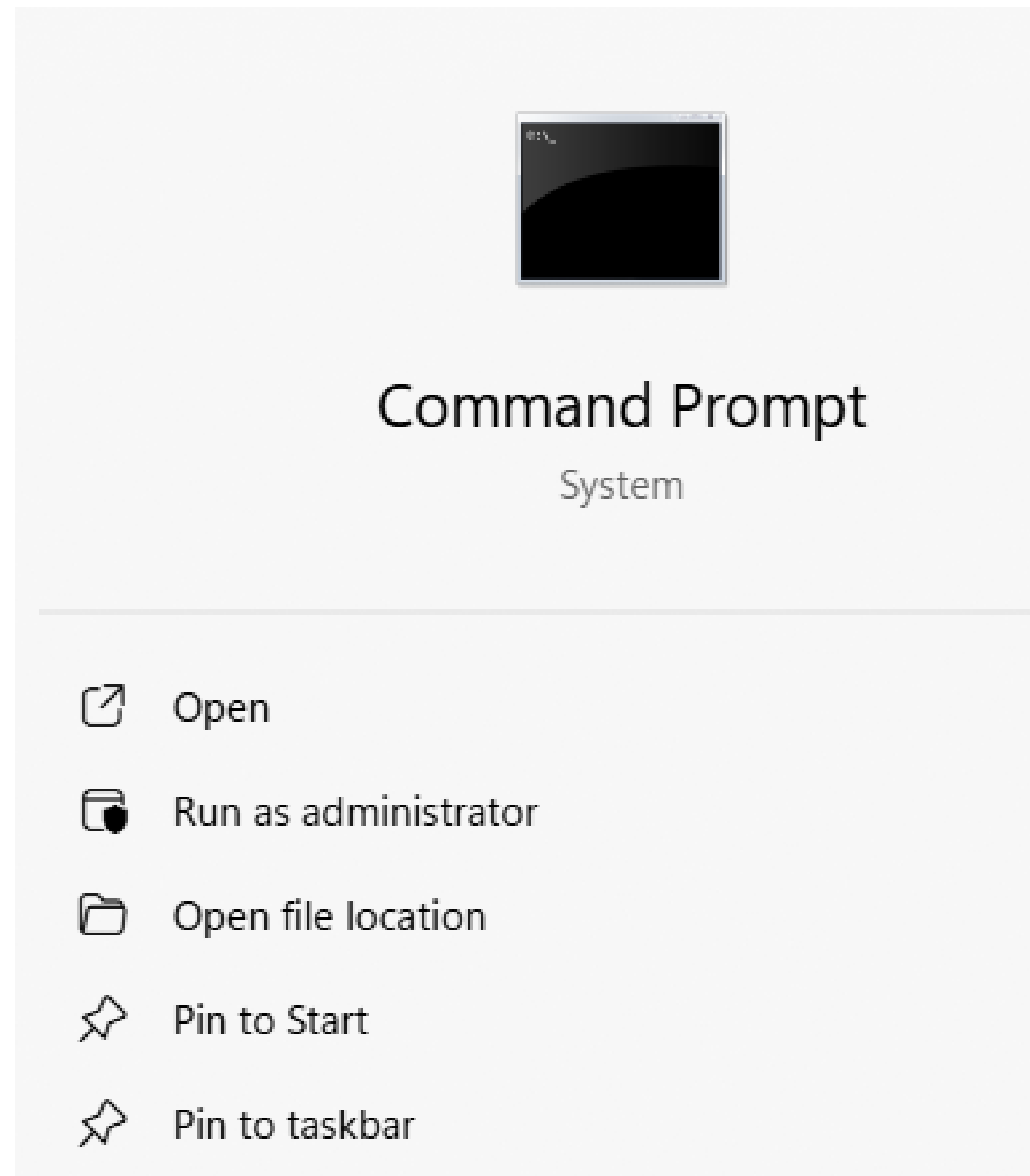
```
# Config file for mosquitto
#
# See mosquitto.conf(5) for more information.
#
# Default values are shown, uncomment to change.
#
# Use the # character to indicate a comment, but only if it is the
# very first character on the line.

# =====
# General configuration
# =====

listener 1883
allow_anonymous false
protocol mqtt
password_file C:\Program Files\mosquitto\senha.pwd
```

Criação de usuário/senha

- Execute como administrador o “cmd”



Criação de usuário/senha

- Antes de executar os comandos não esqueça de desativar o broker (mosquitto -v) através do comando "Ctrl C" garantindo que a nova configuração seja executada.

```
Command Prompt
1748811999: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812059: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812059: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812119: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812119: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812179: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812179: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812239: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812239: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812299: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812299: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812359: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812359: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812419: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812419: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812479: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812479: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812539: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812539: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812599: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812599: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812659: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812659: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812719: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812719: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812779: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812779: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812794: mosquitto version 2.0.21 terminating

C:\Program Files\mosquitto>mosquitto -c mosquitto.conf -v|
```

Criação de usuário/senha

- Ative o mosquitto.conf para que a nova configuração seja executada.

```
C:\Program Files\mosquitto>mosquitto -c mosquitto.conf -v
1748806177: mosquitto version 2.0.21 starting
1748806177: Config loaded from mosquitto.conf.
1748806177: Opening ipv6 listen socket on port 1883.
1748806177: Opening ipv4 listen socket on port 1883.
1748806177: mosquitto version 2.0.21 running
```


Criação de usuário/senha

- Crie um usuário e senha do administrador -> `mosquitto_passwd -c senha.pwd admin`

```
C:\Windows\System32>cd "C:\Program Files\mosquitto"
```

```
C:\Program Files\mosquitto>mosquitto_passwd -c senha.pwd admin  
Password:
```

```
Reenter password:
```

```
C:\Program Files\mosquitto>_
```

Criação de usuário/senha

- Criar usuário -> `mosquitto_passwd senha.pwd usuario1`

```
C:\Program Files\mosquitto>mosquitto_passwd senha.pwd usuario1
Password:

Reenter password:
```

- Deletar usuário (-D) -> `mosquitto_passwd -D senha.pwd usuario`

```
C:\Program Files\mosquitto>mosquitto_passwd -D senha.pwd usuario
```

```
1 admin:$7$101$D3YxoFpjuSMC7tHA$5XO5pzy0GM4kP6qo1mUgLGMgh
2 usuario:$7$101$zLWONNikv02XPvs7$EFQdlmTLcsnbKdhWbomCjYC
3 usuario1:$7$101$cyseVK0QXkHCiX+S$DyzhECwqg6+wYzTTTJJpL5
4
```

```
1 admin:$7$101$D3YxoFpjuSMC7tHA$5XO5pzy0GM
2 usuario1:$7$101$cyseVK0QXkHCiX+S$DyzhECw
3
```

Criação de usuário/senha

- Após a criação da senha e usuário não é mais possível enviar (pub) e nem receber (sub) os dados sem a devida autenticação

```
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura  
-m 29  
Connection error: Connection Refused: not authorised.  
Error: The connection was refused.
```

```
C:\Users\almir>mosquitto_sub -h localhost -p 1883 -t temperatura  
Connection error: Connection Refused: not authorised.
```

Criação de usuário/senha

- Comando com a definição do usuário "u" e a senha "P" agora é possível "publicar" (pub) -> `mosquitto_pub -h localhost -p 1883 -t temperatura -m 15 -u admin -P teste`

```
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura  
-m 29 -u admin -P teste
```

```
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura  
-m 15 -u admin -P teste
```

```
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura  
-m 20 -u admin -P teste
```

```
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura  
-m 30 -u admin -P teste
```

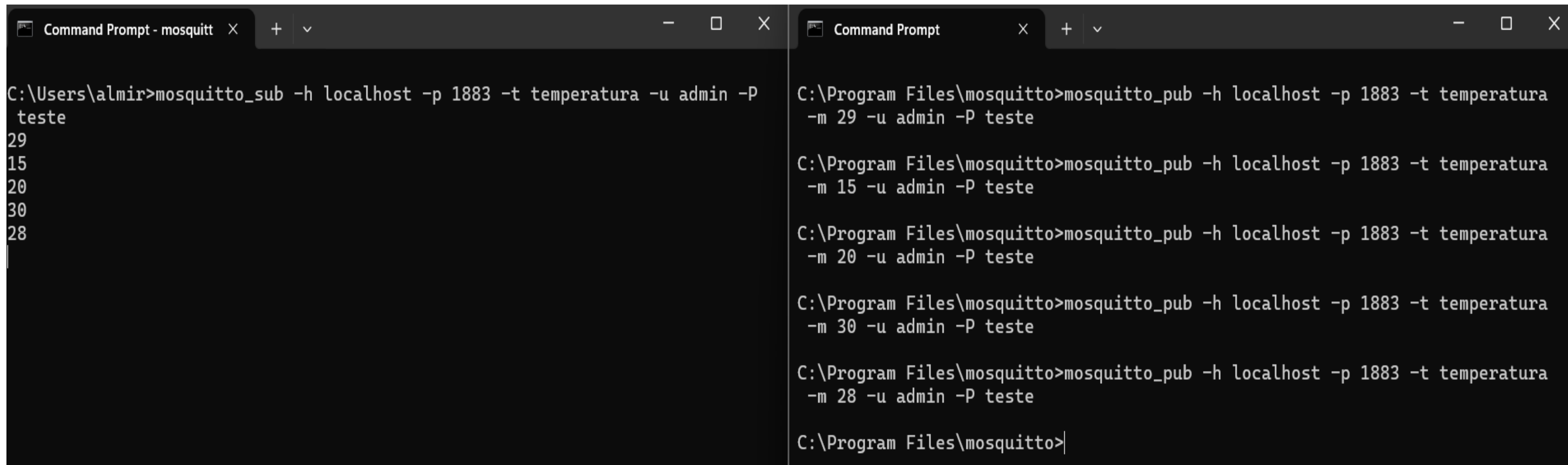
```
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura  
-m 28 -u admin -P teste
```

Criação de usuário/senha

- Comando com a definição do usuário "u" e a senha "P" agora é possível "assinar" um tópico (sub) -> `mosquitto_sub -h localhost -p 1883 -t temperatura -u admin -P teste`

```
C:\Users\almir>mosquitto_sub -h localhost -p 1883 -t temperatura -u admin -P
teste
29
15
20
30
28
```


Criação de usuário/senha



The image displays two side-by-side Windows Command Prompt windows. The left window, titled 'Command Prompt - mosquitt', shows a subscriber command and its output. The right window, titled 'Command Prompt', shows a series of publisher commands.

```
C:\Users\almir>mosquitto_sub -h localhost -p 1883 -t temperatura -u admin -P
teste
29
15
20
30
28
|

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 29 -u admin -P teste

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 15 -u admin -P teste

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 20 -u admin -P teste

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 30 -u admin -P teste

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura
-m 28 -u admin -P teste

C:\Program Files\mosquitto>
```

Lista de Controle de Acesso(acl)

×

« Program Files » mosquitto ▼ ↺ Search mosquitto 🔍

View folder ☰ ▼ ?

Name	Date modified	Type	Size
📁 devel	01/07/2024 12:03	File folder	
📄 acls.txt	01/06/2025 18:37	Documento de Te...	1
📄 ChangeLog.txt	08/03/2025 04:45	Documento de Te...	142
📄 README-windows.txt	08/03/2025 04:45	Documento de Te...	3

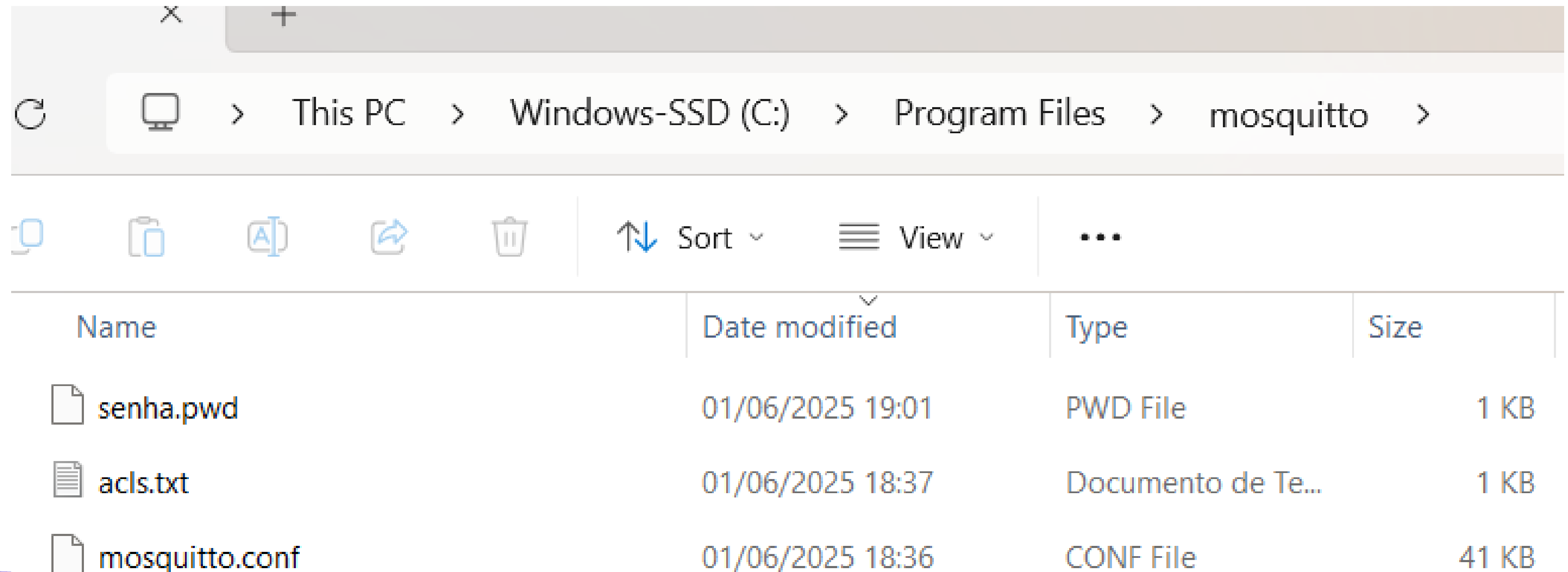
SD




acls.txt ▼

Normal text file (*.txt) ▼

Lista de Controle de Acesso(acl)

- Crie um arquivo "acls.acl" dentro da pasta mosquito (C:\Program Files\mosquito) onde irá armazenar as informações de permissão do usuário



Name	Date modified	Type	Size
 senha.pwd	01/06/2025 19:01	PWD File	1 KB
 acls.txt	01/06/2025 18:37	Documento de Te...	1 KB
 mosquito.conf	01/06/2025 18:36	CONF File	41 KB

Lista de Controle de Acesso(acl)

- Altere o arquivo mosquitto.conf -> acl_file C:\Program Files\mosquitto\acls.txt

```
1  # Config file for mosquitto
2  #
3  # See mosquitto.conf(5) for more information.
4  #
5  # Default values are shown, uncomment to change.
6  #
7  # Use the # character to indicate a comment, but only if it is the
8  # very first character on the line.
9
10 # =====
11 # General configuration
12 # =====
13
14 listener 1883
15 allow_anonymous false
16 protocol mqtt
17 password_file C:\Program Files\mosquitto\senha.pwd
18 acl_file C:\Program Files\mosquitto\acls.txt
```

Lista de Controle de Acesso(acl)

- Antes de executar os comandos não esqueça de desativar o broker (mosquitto -v) através do comando "Ctrl C" garantindo que a nova configuração seja executada.

```
Command Prompt
1748811999: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812059: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812059: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812119: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812119: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812179: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812179: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812239: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812239: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812299: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812299: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812359: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812359: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812419: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812419: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812479: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812479: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812539: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812539: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812599: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812599: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812659: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812659: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812719: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812719: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812779: Received PINGREQ from auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812779: Sending PINGRESP to auto-98F842FB-DCCC-ADD8-6AE4-72E6D3830EEC
1748812794: mosquitto version 2.0.21 terminating

C:\Program Files\mosquitto>mosquitto -c mosquitto.conf -v|
```


Lista de Controle de Acesso(acl)

- Ative o mosquitto.conf para que a nova configuração seja executada.

```
C:\Program Files\mosquitto>mosquitto -c mosquitto.conf -v
1748806177: mosquitto version 2.0.21 starting
1748806177: Config loaded from mosquitto.conf.
1748806177: Opening ipv6 listen socket on port 1883.
1748806177: Opening ipv4 listen socket on port 1883.
1748806177: mosquitto version 2.0.21 running
```

Lista de Controle de Acesso(acl)

- No arquivo "acls.txt" crie as regras de permissão (read ou write ou readwrite) de acordo com a aplicação.
- No exemplo abaixo o usuário 1 apenas tem acesso para leitura e escrita (readwrite) no tópico "temperatura".
- O administrador possui acesso a todos os tópicos "#".

```
1 user admin
2 topic readwrite #
3
4 user usuario1
5 topic readwrite temperatura
```

Lista de Controle de Acesso(acl)

- No exemplo abaixo o usuário 1 tenta realizar uma publicação no tópico "luminosidade", porém nenhum dado é recebido, logo em seguida é feito o envio de dado (pub) no tópico "temperatura" e é recebido com êxito.

```
C:\Users\almir>mosquitto_sub -h localhost -p 1883 -t luminosidade -u usuario1 -P teste
^C
C:\Users\almir>mosquitto_sub -h localhost -p 1883 -t temperatura -u usuario1 -P teste
28
|
```

```
C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t luminosidade -m 28 -u usuario1 -P teste

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -t temperatura -m 28 -u usuario1 -P teste

C:\Program Files\mosquitto>
```

Obrigado!

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