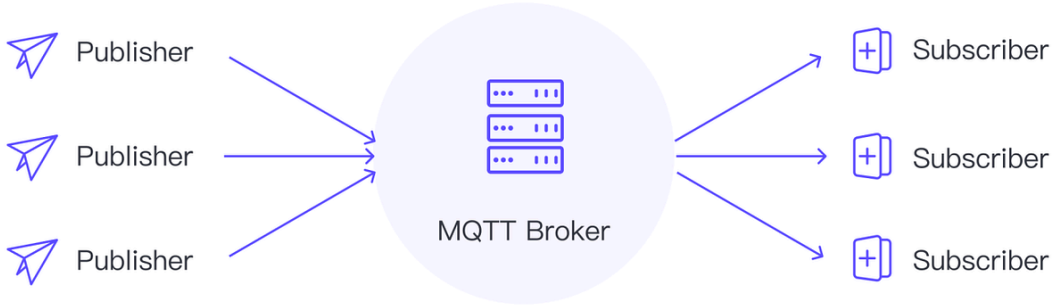
MQTT Quickstart Guide

Setting up the Broker



Zac Lynn

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Installing the Broker

1.) To begin go to https://mosquitto.org/download/ and download the broker for your operating system

2.) Run the installer and follow the on-screen prompts until the installation is finished

3.) To test the installation, first open the installation directory: the folder where the "mosquitto.conf" file is located. To test the broker open a terminal in the installation directory, and use the command shown below in Figure 1.

```
PS C:\Program Files\mosquitto> .\mosquitto -c ".\mosquitto.conf" -v
1697476715: mosquitto version 2.0.18 starting
1697476715: Config loaded from .\mosquitto.conf.
1697476715: Starting in local only mode. Connections will only be possible from clients running on this machine.
1697476715: Create a configuration file which defines a listener to allow remote access.
1697476715: For more details see https://mosquitto.org/documentation/authentication-methods/
1697476715: Opening ipv4 listen socket on port 1883.
1697476715: Opening ipv6 listen socket on port 1883.
1697476715: mosquitto version 2.0.18 running
```

Figure 1: Command to Start Broker

4.) Now to set a new configuration, create a new file in a different directory. Open the file with a text editor and paste the contents of Appendix A into the file. Make sure the file is saved as a .conf.

The example configuration file is a basic configuration with minimal security that allows any device that can access the IP of the broker to publish and subscribe. Now rerun the command in Figure 1 with the path of your configuration file replacing ".\mosquitto.conf".

Other Broker Options:

Many other settings can be set in the configuration file such as username and password authentication, memory limits to control buffer sizes, broker behavior for different events, and more. The full broker configuration documentation can be found here: https://mosquitto.org/man/mosquitto-conf-5.html

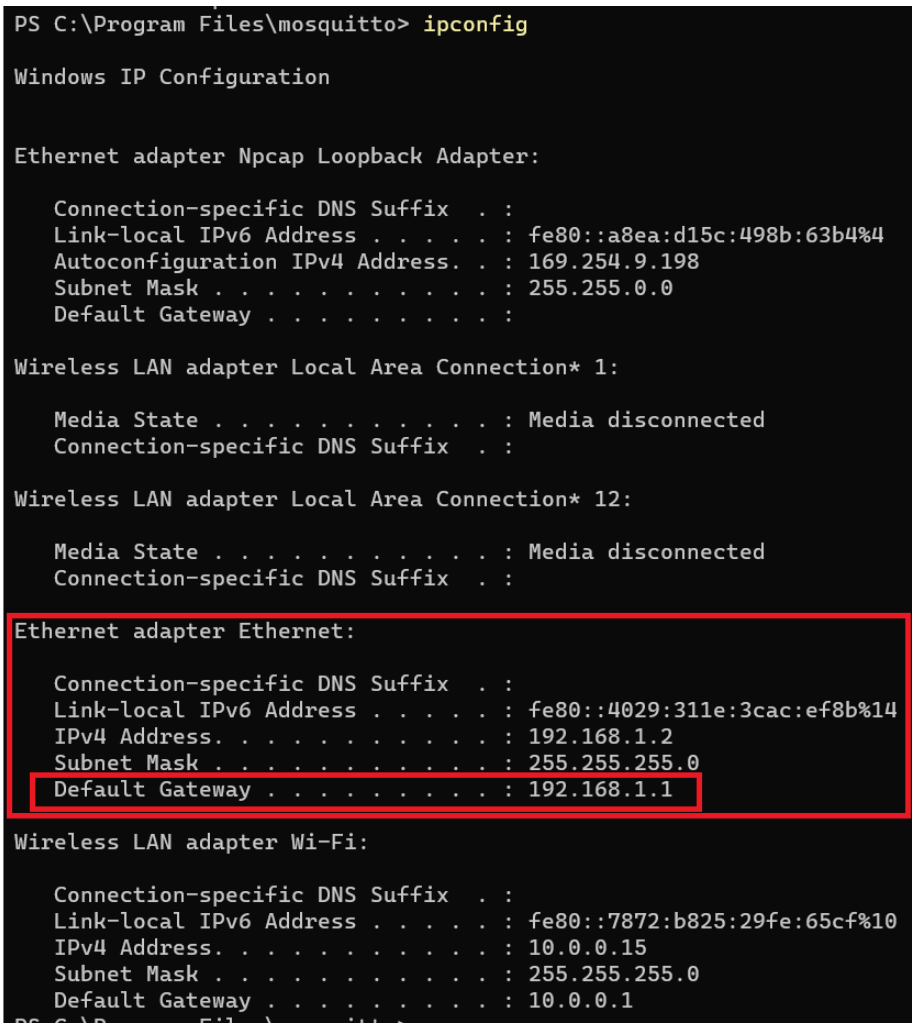
Other brokers exist besides Mosquito, any broker should work as long as it can connect with all of the devices. Public brokers may be an easier route for initial setups, but you do not always have control over the speed of public brokers and limitations will arise.

Setting up Local Network:

The local network will require a router, preferably one dedicated for this purpose. The Router will need to be setup so that the broker and sensors can communicate. For this to work, the broker IP must be 192.168.1.2.

1.) Plug the router in and connect ethernet cable to computer and to output port on the router. Be careful the ethernet cable connects to an output port on the router and not the internet input port.

2.) Use command ipconfig to list network adapters. Find ethernet adapter, and look for the default gateway. Usually 198.162.1.1



3.) Enter the IP address into a web browser and set up the router. Set the network name and password so it is easy to connect devices to it later.

4.) After completing the basic configurations, the IP address of the server device will need to be made static so that the sensors know what IP address to connect to without having to reprogram them. The server IP should be 192.168.1.2. If this is a new network, the first device to connect will be assigned that IP, but setting it as static will ensure we always have that IP.

    This link gives a tutorial on how to set a static IP on Windows. Make sure to set the static IP for the ethernet adapter.
    https://www.trendnet.com/press/resource-library/how-to-set-static-ip-address

5.) After setting the static IP, everything should be set to connect the wifi boards to the new network using the AT commands tutorial

Appendix A:

```
# Mosquitto MQTT Broker Configuration

# Listener - Default MQTT port
listener 1883

# Log settings
log_dest stdout
log_dest topic
log_type error
log_type warning
log_type notice
log_type information

# Security settings (optional)
allow_anonymous true

# Connection settings
max_connections 20

# MQTT protocol settings
max_inflight_messages 20
max_queued_messages 100
```