

MQTT Examples Running on RP2040 PicoW

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Why MQTT?

- MQTT stands for Message Queuing Telemetry Transport
- A lightweight protocol that runs over TCP/IP well suited for IoT contexts
- Perfect for ECE 4760!

Publish/Subscribe

- Messages are published to a topic and sent to devices subscribed to that topic.
- The broker receives all the messages published by the clients connected in the network and allocates the messages accordingly.

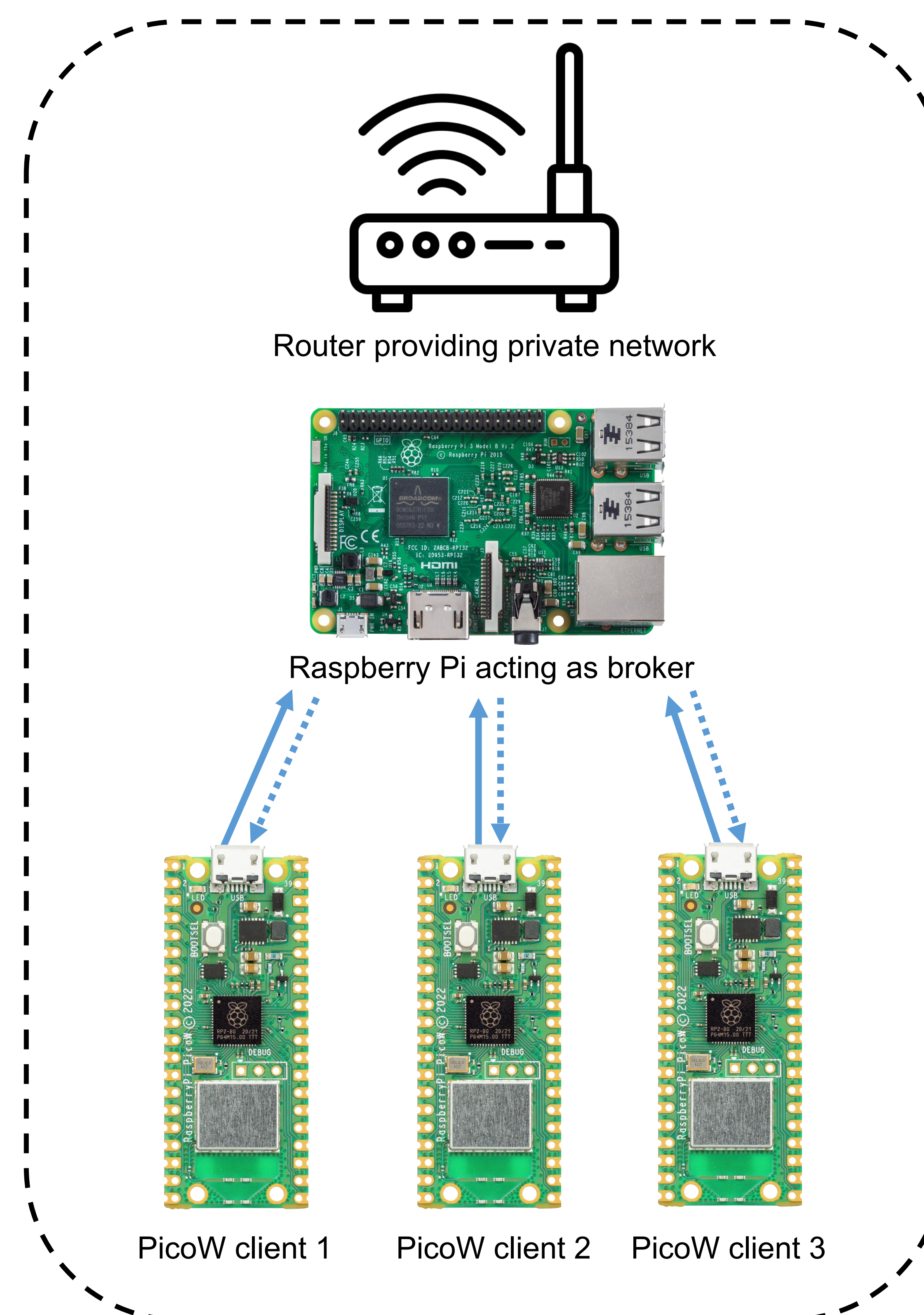
```
mqtt client starting
Device name picoe661

Connected to Wifi
Warning: Not using TLS
IP address of this device 10.64.217.179
Connecting to mqtt server at 10.64.217.19
Publishing 27.14 to /picoe661/temperature
Publishing 26.67 to /picoe661/temperature
Publishing 27.14 to /picoe661/temperature
```

PicoW client publishing to temperature topic under its unique device name. Any device subscribed to topic /picoe661/temperature will receive these messages.

System Overview

- **Goal:** multiple PicoW clients communicating with each other via the Raspberry Pi broker on an isolated network



Potential ECE 4760 Labs

- Class-Wide Interactive LED Display
- Multi-Player VGA Maze Game
- Class-Wide Hide and Seek Game
 - Examples: Marco Polo, Mummy Tag, Sardines

Future Work

- Integrate router for private network usage
- Write up MQTT and infrastructure set-up as ECE 4760 handout

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