EE 193: Networked Embedded Systems

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20 February 2022~~2~~4

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Network layer model

Application layer

Transport layer

Internet layer

Data-link layer

Physical layer

HTTP(S)

The Hyper-Text Transport Protocol

MQTT

"Since 2013, MQTT does not stand for anything."

MQTT design principles

Simple updates and commands from one machine to another

Communication is "expensive"

- Minimize the amount of fluff - keep it very simple

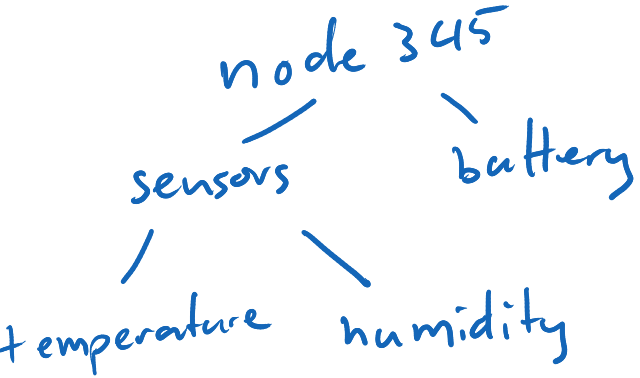
MQTT overview

Messages consist of a topic and a payload

`node345/sensors/temperature` `24.5`

topic

payload



MQTT design principles, continued

Many talkers, many listeners

But we're usually asleep, so listening is hard

Security happens elsewhere

MQTT overview

A central "broker" manages all the messages

A client can **publish** a message with a topic + payload

A client can **subscribe** to a topic

Or a group of topics, using the wildcard **'#'**

#/sensors/temperature

MQTT quality of service (QoS)

0: receiver will get the message **at most** once

1: receiver will get the message **at least** once

2: receiver will get the message **exactly** once

MQTT bonus: retain flag

If a publisher sets the retain flag to be 1,
then the broker keeps a copy around for any new subscribers

Logistics

Building boards today + tomorrow

Timing assignment (HW3) hard deadline Friday (2/23)

HW 4: Connect to WiFi and publish a message (2/27)
HW 5: I2C / SPI and ADC -> 48 hours of data (TBD)