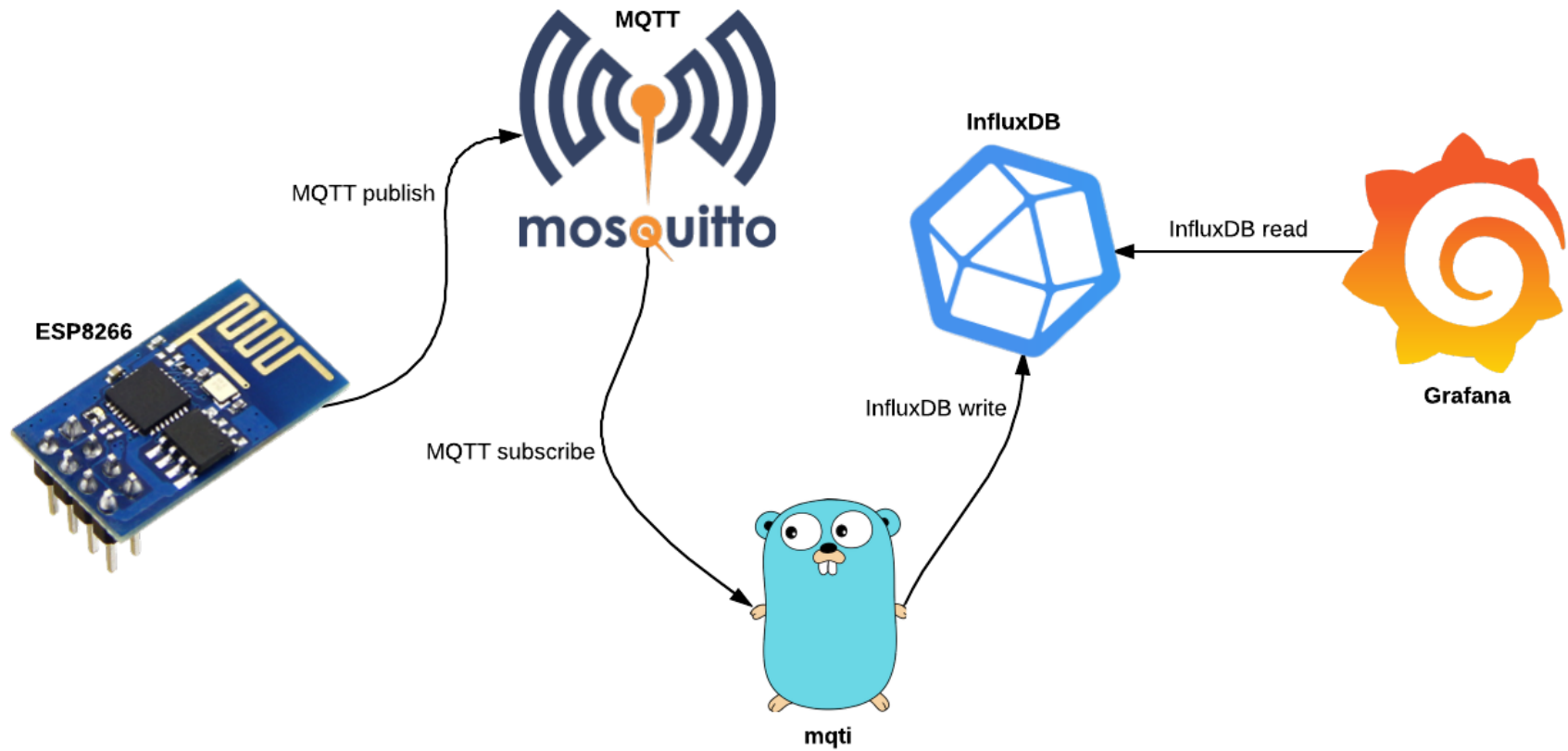


Visualising MQTT data using golang, InfluxDB and Grafana

Ash McKenzie, Golang Melbourne

July 4th, 2017



MQTT, officially

MQTT (MQ Telemetry Transport) is an ISO standard publish-subscribe-based "lightweight" messaging protocol for use on top of the TCP/IP protocol. It is designed for connections with remote locations where a "small code footprint" is required or the network bandwidth is limited.

en.wikipedia.org/wiki/MQTT

MQTT, in practice



- Pub/sub messaging protocol
- Very basic protocol, consisting of `Connect` , `Disconnect` , `Subscribe` , `UnSubscribe` and `Publish`
- Perfect for resource limited devices such as Raspberry Pi, Arduino
- Many implementations, [mosquitto](#) is fantastic
- Client libraries for Go, Ruby, Python, Java
- Latest specification is v3.1.1

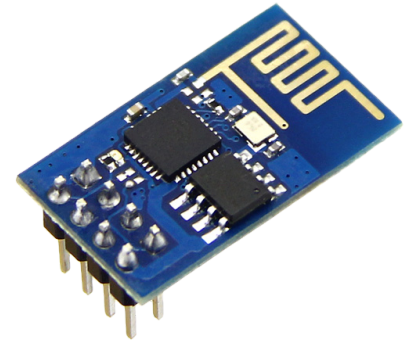
Mosquitto

- Open source, MQTT broker implementation
- Supports v3.1.x
- Written in C
- TLS, username/password support
- ACL restriction for topics
- [Docker image available](#) 🥰

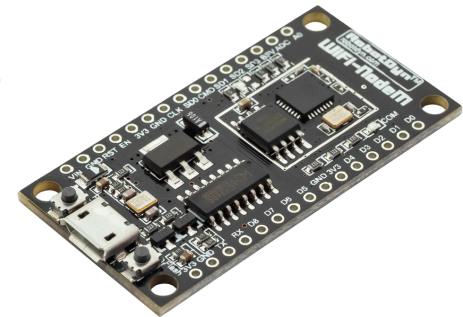
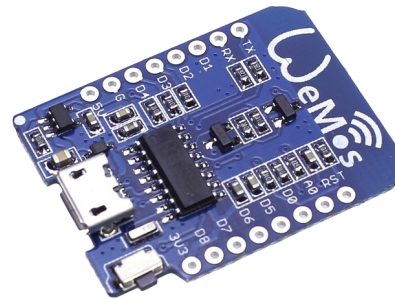


ESP8266

- Arduino compatible board
- Can also use Lua for some boards
- WIFI, deep sleep, interrupts, digital/analog IO
- Lots of variants with USB->serial included, more IO pins etc
- Easily publish MQTT messages with [MQTT library](#)
- Very cheap, ~\$3AUD 🤖 - checkout AliExpress 😊



ESP8266 - more variants



InfluxDB



- Open source, time series database
- Written in Go
- High throughput (claims of millions of data points per second)
- [Continuous Queries](#) (CQ) and [Retention Policies](#) (RP)
- SQL-like query syntax
- Flexible 'structure'
- Client libraries for Go, Ruby, Python, Java
- [Docker image available](#) 🥰

What is a time series database ?

A database that is optimised for time centric data, often including easy data retention and downsampling.

- The original; RRDtool (used by Nagios/Icinga, collectd, MRTG)
- Other notables:
 - Graphite (whisper)
 - OpenTSDB
 - Prometheus

mqti

MQTT subscriber that pumps data into InfluxDB.

github.com/ashmckenzie/go-mqti

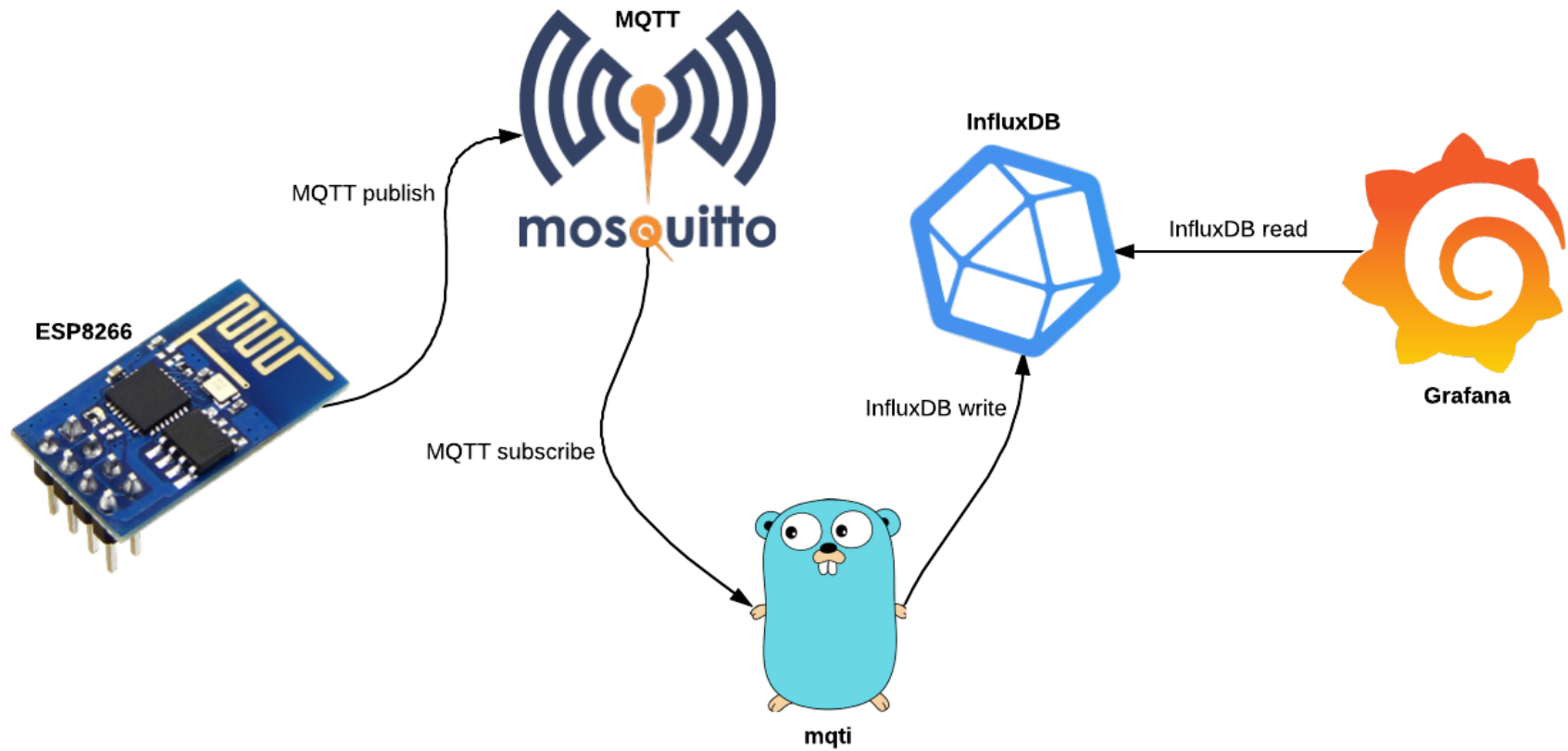
mqti features

- Written in Go
- MQTT v3.1.1 supported, TLS, username/password
- InfluxDB with TLS, username/password
- Consume MQTT messages and inspect (`watch`) or `forward`
- Filter MQTT messages with AND + OR expressions
- Write MQTT messages into InfluxDB including:
 - Adding tags based on MQTT fields (when payload is JSON)
 - Geohash support (e.g. messages generated by [Owntracks](#))
- [Docker image available](#) 🥰

Grafana



- Open source, time series analytics interface
- Beautiful UI, tonnes of options
- Supports InfluxDB, Graphite, Elastisearch, MySQL, OpenTSDB, Prometheus and CloudWatch
- Includes primitive alerting capabilities
- Plugin system with 75+ available currently
- [Docker image available](#) 🥰



Demo time 🙏

github.com/ashmckenzie/golang-melbourne-july-2017