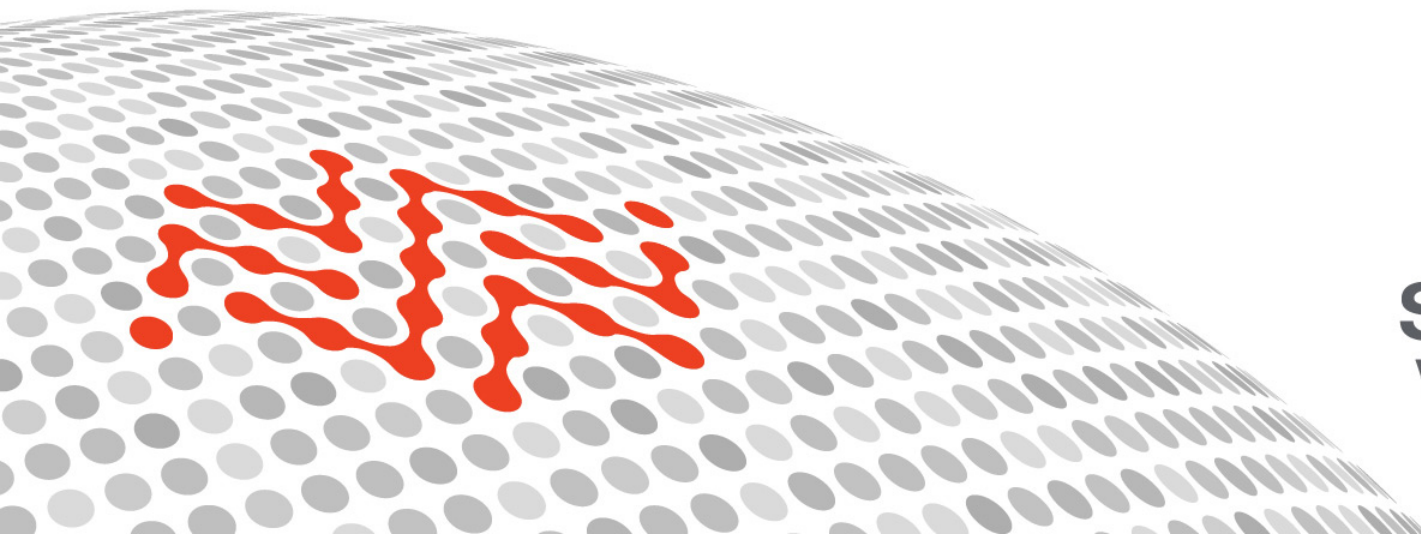


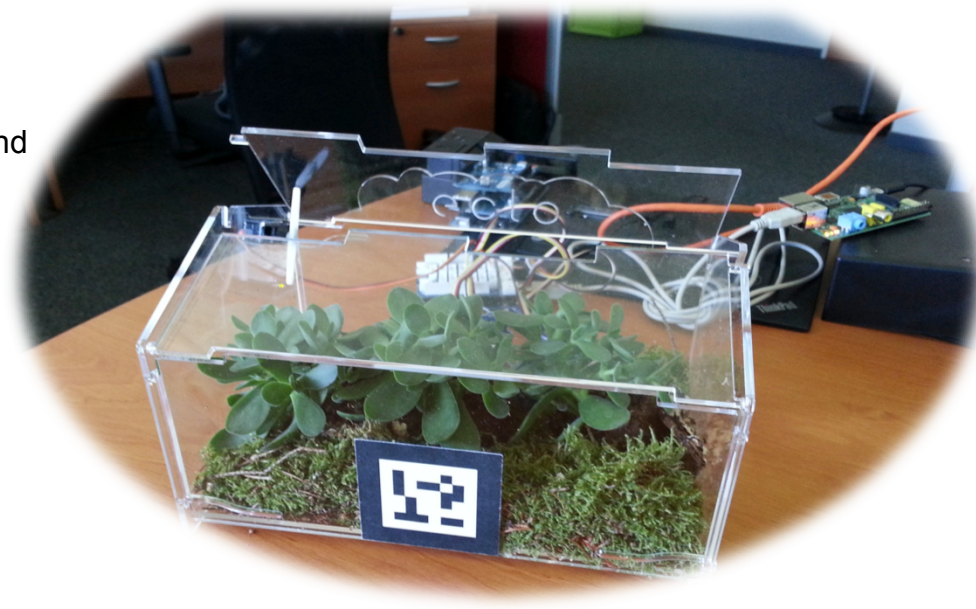
How to send data to AirVantage Cloud using MQTT

R. Jacolin - 2014



Greenhouse application

- Greenhouse application description
 - Data:
 - Temperature: int
 - Humidity: float
 - Luminosity: float
 - Command:
 - TurnOn Light: command

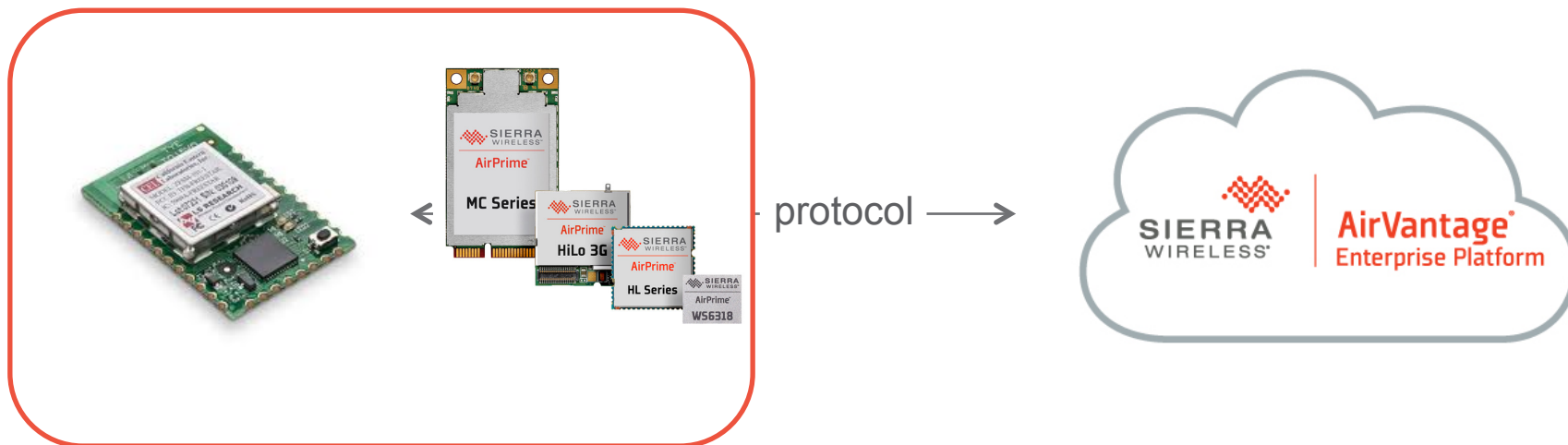


Use case view

- OpenAT module with a business application



- Radio Module + (linux) host cpu with business applications



Challenges

- Constrained devices
- Bi-directional
- Scalability
- Unreliable & costly Networks
- Push Messaging
- Security
- Simple
- ...

MQTT

- Based on top of TCP
- Minimal Overhead
- Binary
- Simple
- Publish/subscribe architecture
- Designed for unreliable networks
- Widely supported including companies like IBM, Facebook

MQTT History



MQTT implementation



- Open Source
- “Reference Implementation”
- Many languages: C, C++, Java, lua, ...
- Active community

Connecting to AirVantage

- Use IMEI as device identification
- Define a username/password as a IMEI/password as a basic security mechanism
- Ping the server
- Serialize your data (see next slides)
- Declare your communication with AVMS (see next slides)

Sending data to AirVantage

- Publish data in ``<device-id>/messages/json``

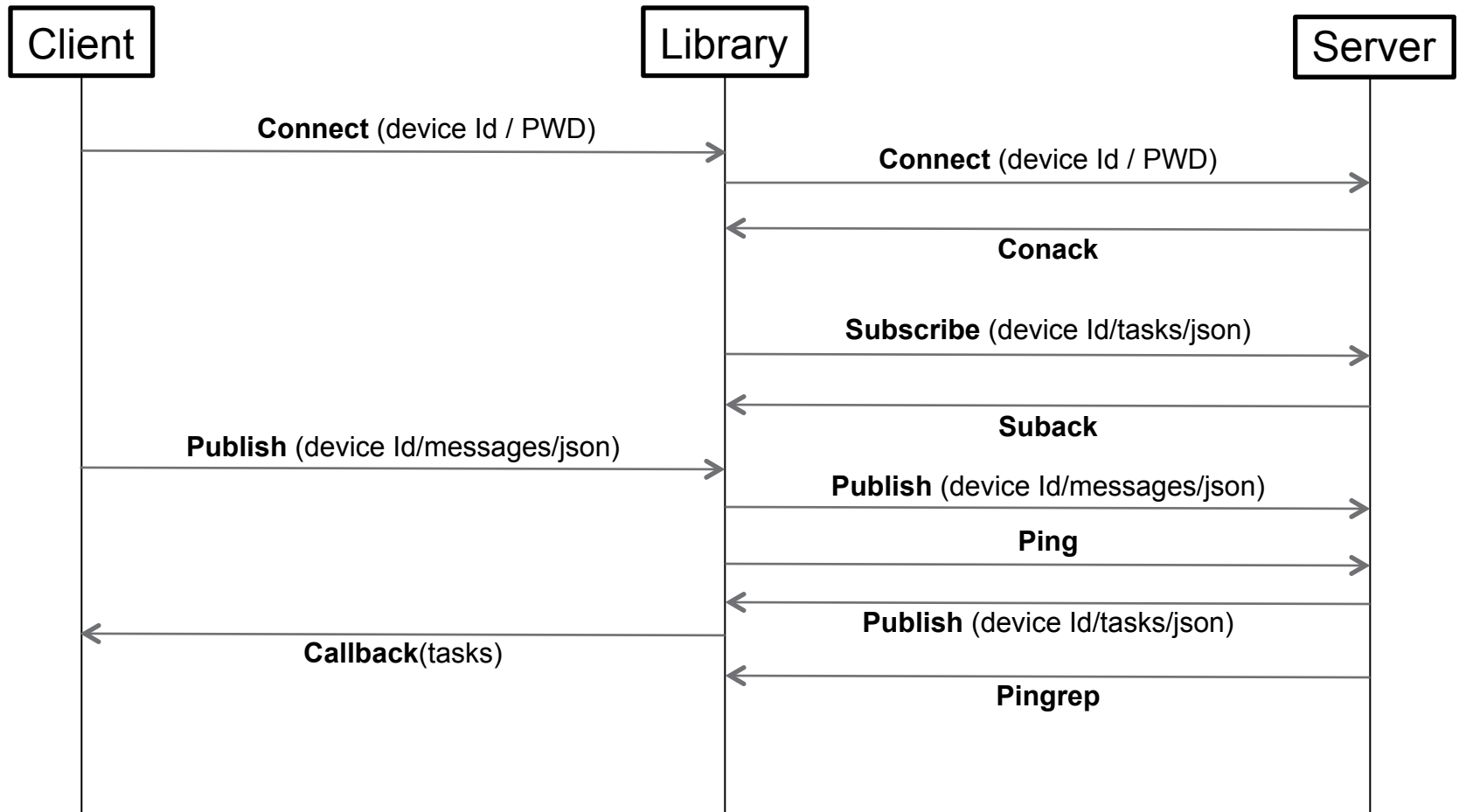
```
[
  {"machine.temperature":
    [ {"timestamp" : 1401978021000, "value" : "25"},
      {"timestamp" : 1401978031000, "value" : "26"},
      {"timestamp" : 1401978041000, "value" : "27"}]
  }
]
```

Receive tasks from AirVantage

- Subscribe to ``<device-id>/tasks/json``

```
[
  {
    "uid":"3863fccf9a1a48af99c8bfcfbf01c6b7f",
    "timestamp":1401902872564,
    "command":
      {
        "id":"machine.TurnOn",
        "params":{"Light":false}
      }
  }
]
```

Communication with AirVantage

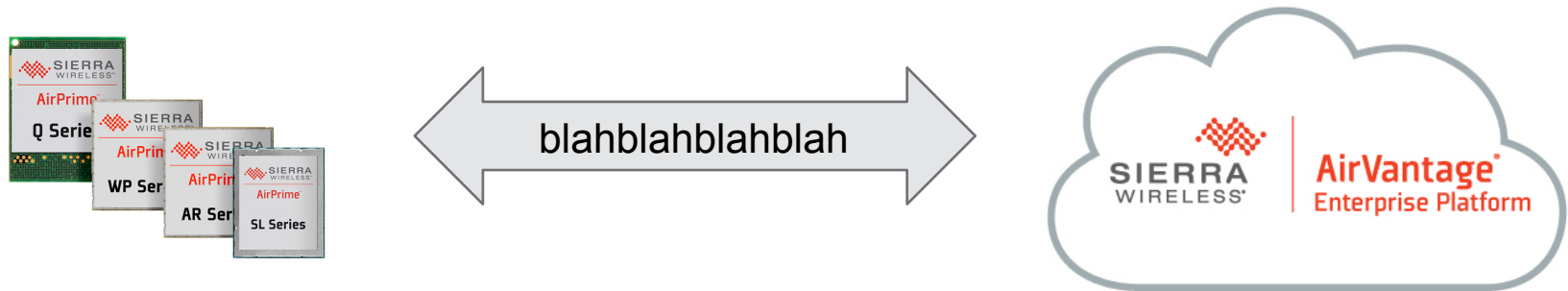


What is an application for AirVantage?



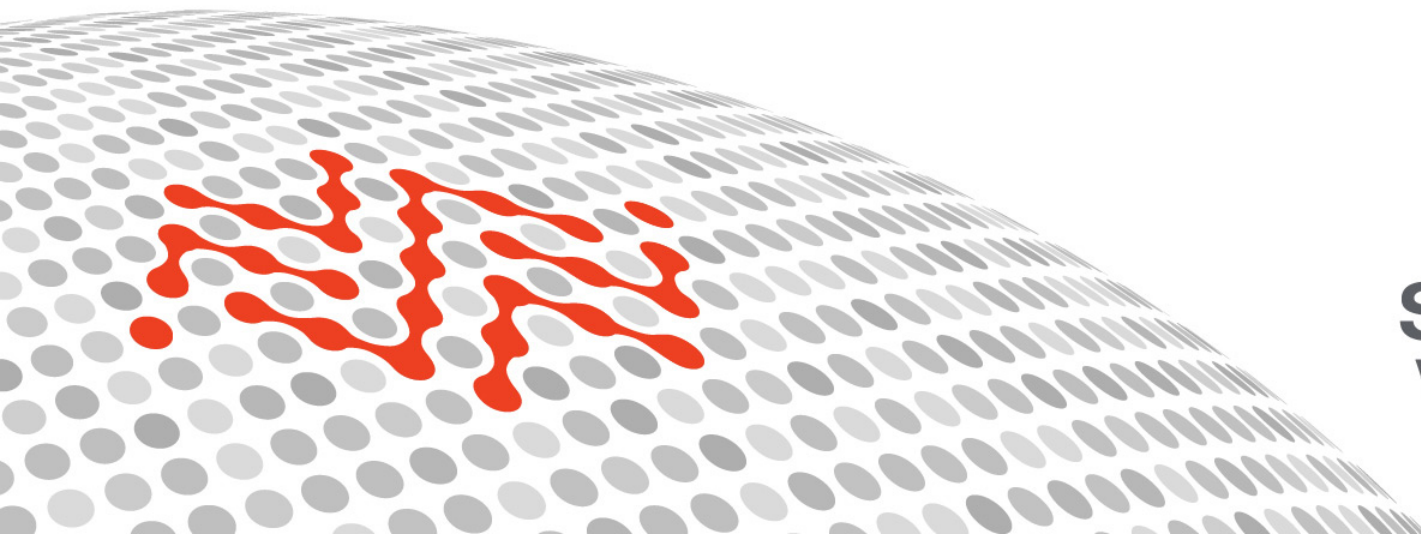
- An application package contains:
 - An application model
 - Binaries (optional)

What is an application model?



- Application **data** sent to the server
 - String, integer, float, boolean
- **Communication** protocol
 - How I'm going to communicate with AirVantage
- **Actions** available from server
 - What specific actions my application accepts

What's next?



Explore, interact & contribute

MQTT Resources <http://mqtt.org>

MQTT Specification

<http://public.dhe.ibm.com/software/dw/webservices/ws-mqtt/mqtt-v3r1.html>

Developer Guide <https://doc.airvantage.net/display/USERGUIDE/Developer+Guide>

Developer Forum <http://forum.sierrawireless.com/viewforum.php?f=141>

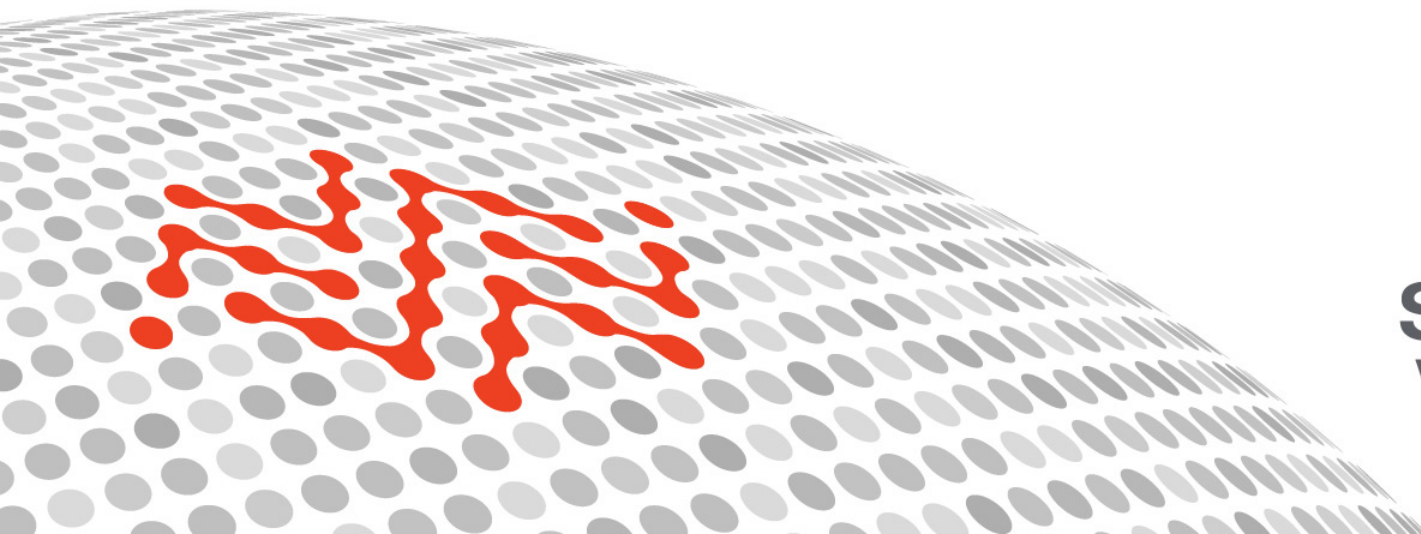


Q&A

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Thank You



Why http is not suitable?

- Http is too verbose



- Easy (basic?)
- Widely-known
- Request/Response