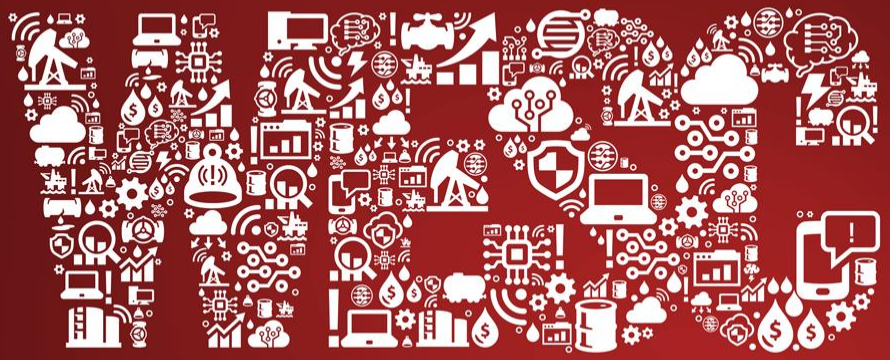

CygNet IoT: Collect, manage, distribute at the Edge

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Weatherford®

AGENDA

1. What is the Edge and MQTT?
2. Why should I care?
3. MQTT Brokers
4. Where does CygNet fit in?
5. Security
6. Publishing data
7. What about the data center?
8. As simple or complex as you want
9. Demo

What is the Edge?

Single well

Group of wells

Facility

…

- Enhanced compute power (relative to RTU/PLC)
  - Low power
- Proximity to industrial hardware
- Potentially geographically remote
- Limited connectivity?

What is MQTT?

- It is an application layer protocol
- Built on top of TCP
- Publish/Subscribe
- Topic and payload

- It is one of the common protocols used to communicate with the edge

- Attend break out, ‘CygNet IoT enabled: MQTT support’

Why should I care?

- Industry direction
- Next generation of optimization
- Data availability
  - Communication failures
  - Buffer/Batch
  - High frequency polling

What does this have to do with CygNet?

- CygNet was IoT before IoT was cool

- Why should I care now
  - Publish/Subscribe benefits
  - Tools available
  - Vendor support

What is CygNet doing?

- Publishing to MQTT brokers in 9.2
  - Sparkplug B format (Protocol Buffers)
  - Encryption
  - Authentication
  - QoS
  - Message buffering

What is an MQTT broker?

- Simply, a process that does work
  - Windows, Linux, …
  - In the cloud, on premise
  - On the edge
- Manages incoming TCP/IP connections
- Manages subscribers and publishers
- Routes data to and from clients based on topics

Brokers

- HiveMQ, Mosquitto, VerneMQ, EMQ, Paho, …

WHAT BROKER DO YOU USE, OR ARE LOOKING AT?

What CygNet data can be published?

- Today…
  - Realtime values / Points records
- Tomorrow…
  - Everything that makes sense

Publishing real-time values

- Interval
  - Collection Interval
  - Publish
    - On data change
    - On data change + interval
- Data buffering
  - Failed messages will be resent

How is my published data structured?

- Today
  - Sparkplug format using Google protocol buffers
- Tomorrow
  - JSON
  - Sparkplug in JSON format

- Protocol buffers is smaller why JSON?

Birth, Death, LWT

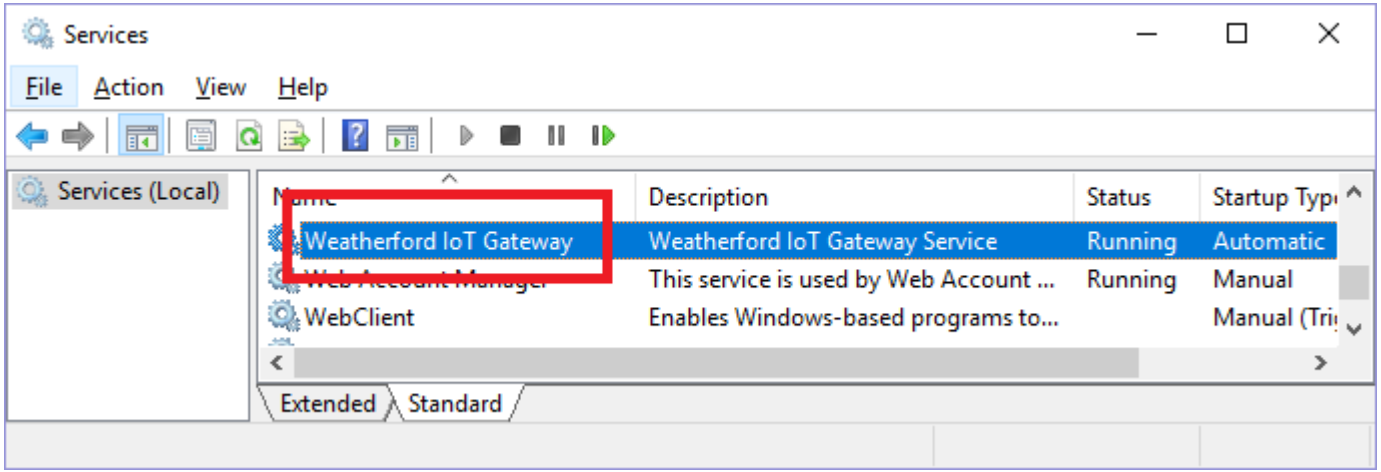
- All initial values on device birth
- Notification when device gracefully disconnects
- LWT message sent during ungraceful connection loss
  - Broker issued message

Security? Yes.

- Standing on the shoulders of giants
  - Broker defined authentication
  - TLS 1.2 Encryption

What's included?

- IoT Gateway / Publisher
  - Windows service
  - On or near CygNet host
- Published Data
  - Realtime values
  - Timestamps, status, …



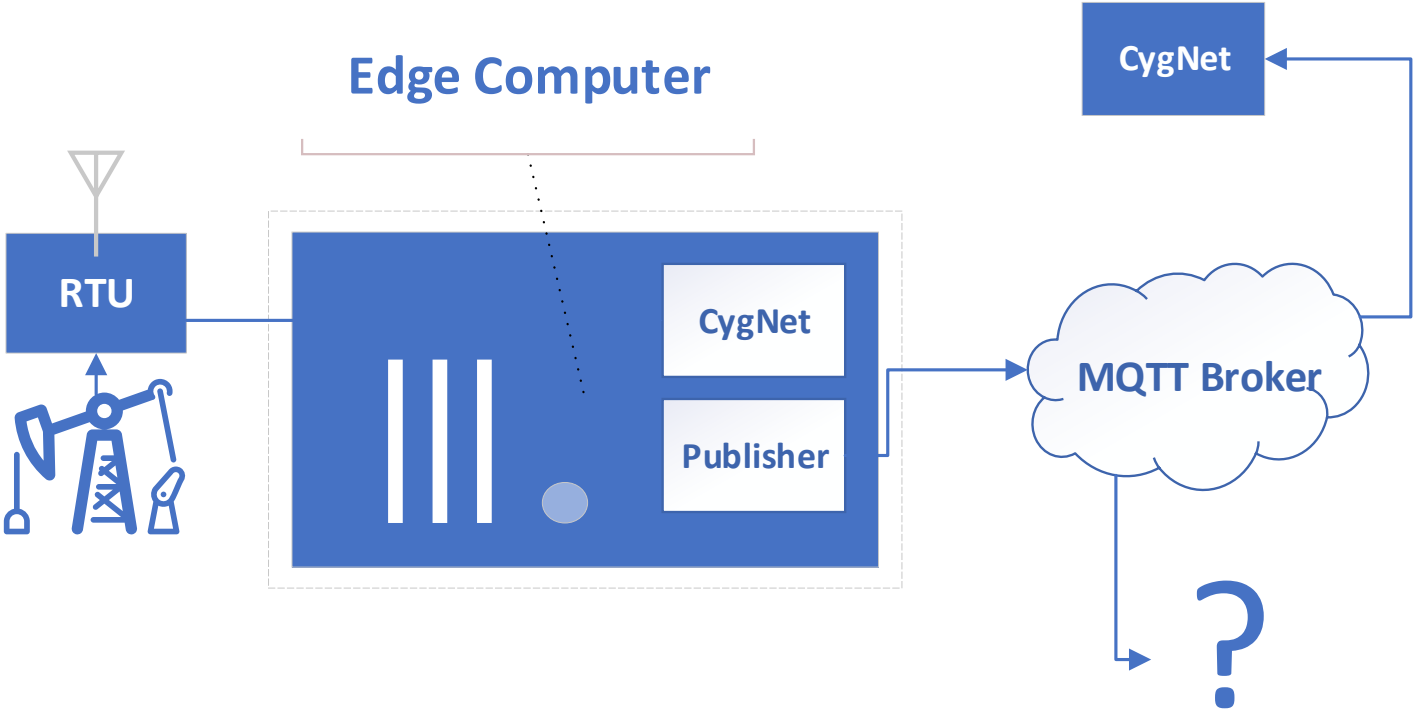
What about the data center?

- Publishing to an MQTT broker, not just for the edge.
- Building on top of CygNet means your legacy field can be IoT enabled without major investment or change.
- Enormous potential to make CygNet data available to all.
- Cloud providers
  - Data ingestion tools
  - Complex processing and routing

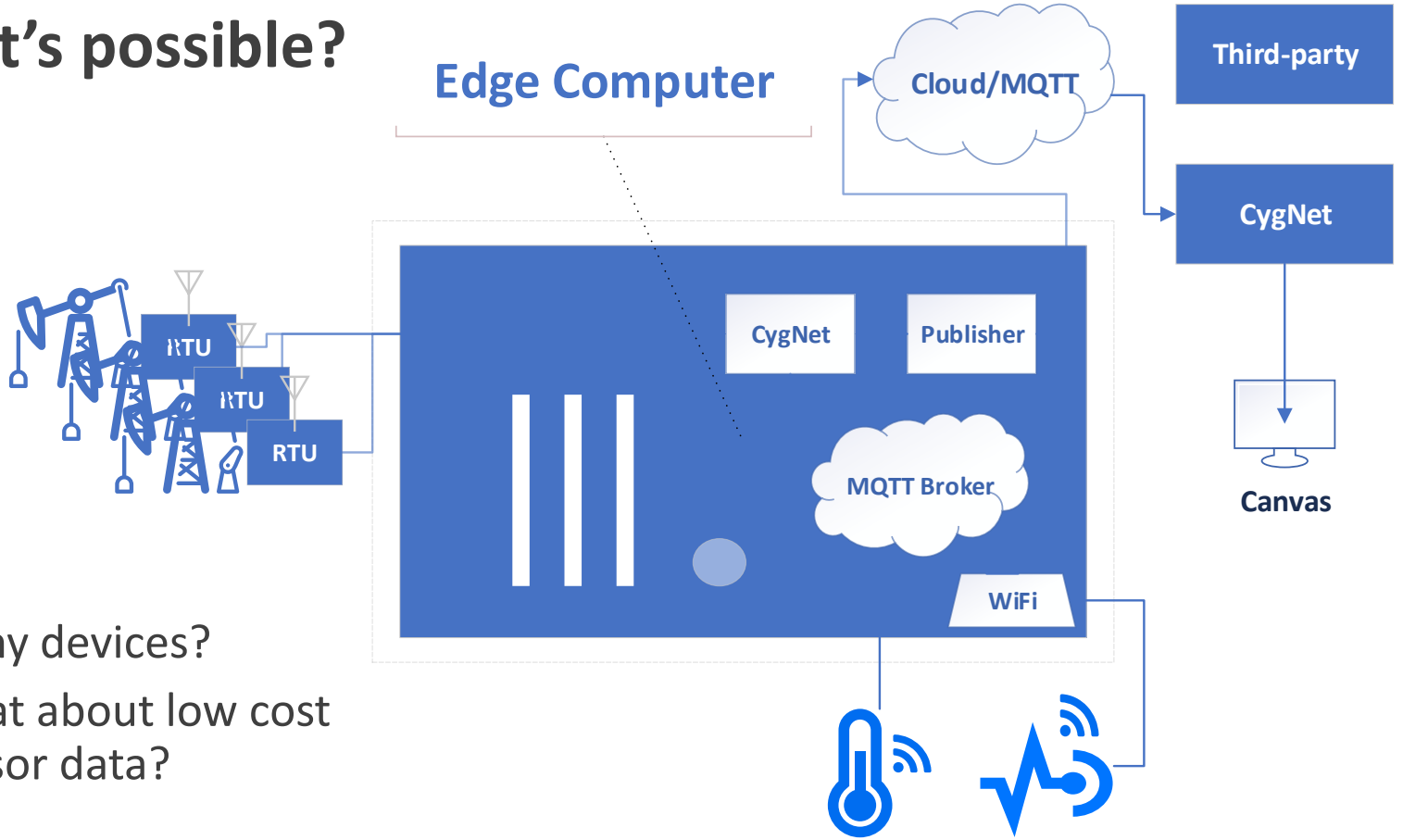
What can I publish?

- Simple routing back to CygNet
  - Simple broker
- Complex cloud provider
  - Data Warehouse
  - Pre processing
  - Many destinations

Simple use case



What's possible?

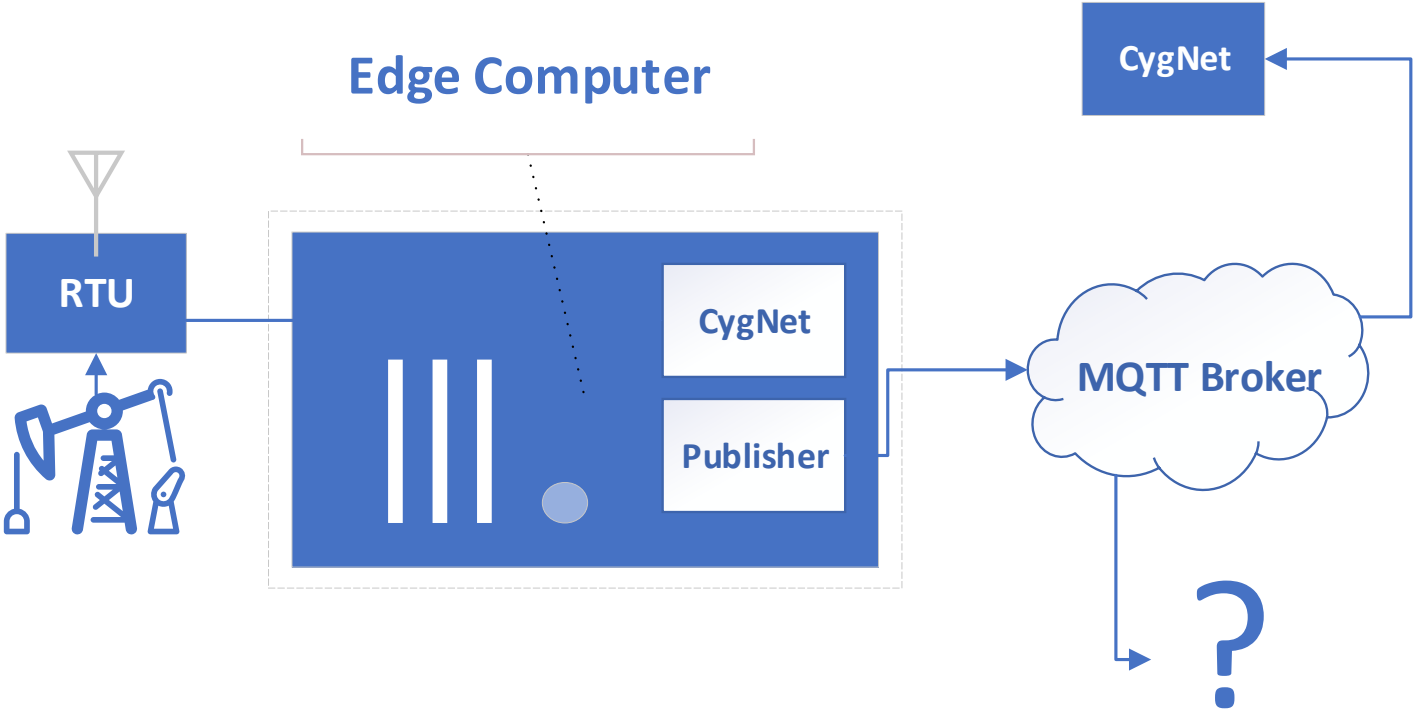


- Many devices?
- What about low cost sensor data?

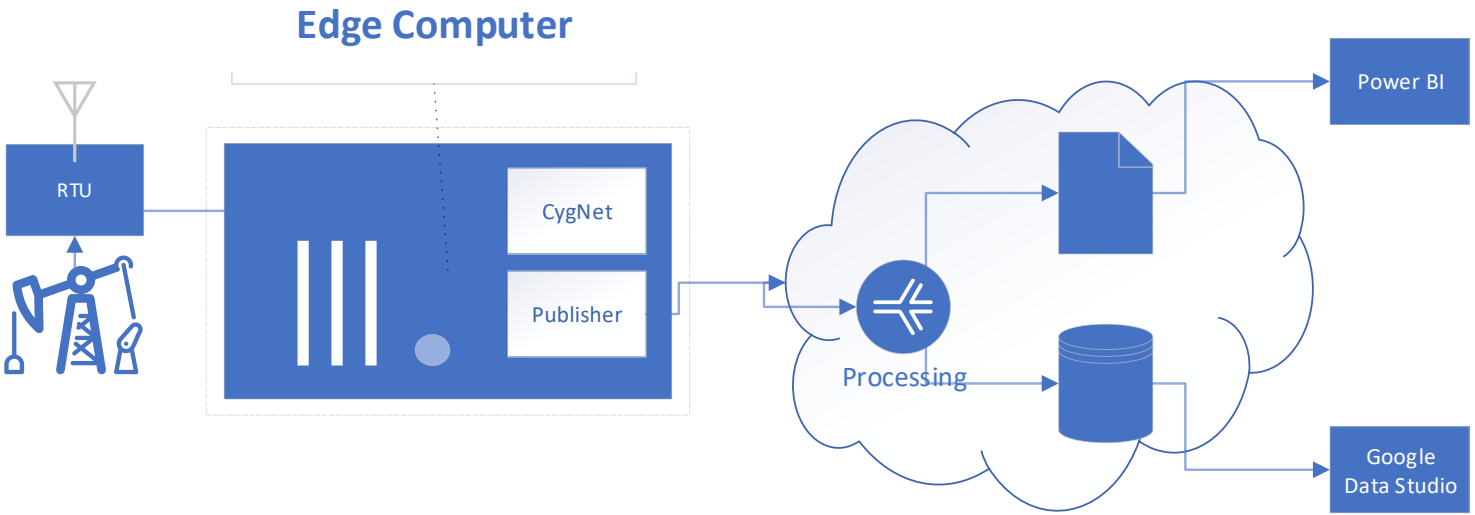
DEMO

Publishing data to CygNet or the “Cloud”

Simple use case



Theoretical cloud use cases



THANK YOU