Building Modular IoT Gateways
~ with Open Source Technology ~

William Berry
Sr. SDE - Developer Experience
Makers
Consumer
Commercial
What is this “Gateway” you speak of?
The 4 5 7 10 V s

VOLUME

VELOCITY

VARIETY
Gateways

- Security & Isolation
- Integrations
- Cloud Offload
- Edge Computing
- Batching & Compression
Where Does the Gateway Go?
Azure IoT Reference Architecture

- **Device Connectivity**
  - IP capable devices
  - Existing IoT devices
  - Resource constrained devices

- **Data Processing, Analytics and Management**
  - Stream Processing and Analytics (hot and cold paths)
  - Application Business Logic
  - Device Provisioning and Management

- **Presentation & Business Connectivity**
  - Solution UX
  - Business Integration Connectors and Gateway(s)

Where does the gateway go?
- Azure IoT Reference Architecture
- Device Provisioning and Management

- **Presentation & Business Connectivity**
  - Personal mobile devices
  - Business systems

- **Device Connectivity**
  - Field Gateway

Data Path
- Optional solution component
- IoT solution component
IoT Field Systems w/ Style ...
Azure IoT Gateway SDK

- Open Source
- Cross Platform (Linux & Windows)
- Runs on lots of hardware
- Written in ANSI C (C99)
Azure IoT Gateway SDK (cont.)

- Customizable & Plugable Architecture
- Module Bindings for Java, .NET, NodeJS
- IoTHub Module supports AMQP, MQTT & HTTP
- Module Communication via Message Broker
- Buffering and Batching
Gateway Concepts

Scenario: Connect a legacy device
(upload telemetry from a device that does not speak an internet ready protocol)
Gateway architecture

Sample architecture
Looks Awesome! How Do I Get Started?

**What do I do?**

- Write Modules
- Configure Data Pipeline
  - JSON Configuration
  - Define Modules & Loaders
  - Link Modules
- Deploy

**What’s in the Box?**

- Logger
- IoTHub Module
- BLE
- Identity Module
- Community Modules
  - OPC-UA
  - MODBUS
  - BACnet
  - CoAP (coming soon!)
Demo Time!
Resources

git clone https://github.com/Azure/azure-iot-gateway-sdk

API reference

Built in modules
  • https://github.com/Azure/azure-iot-gateway-sdk/tree/master/modules

Community modules
  • https://github.com/Azure/azure-iot-gateway-sdk#featured-modules
It’s OSS, so what can you contribute?
Bill Berry
@williamberryiii
williamberryiii.com