AMQ Messaging-as-a-Service Workshop

Building an IoT solution

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Who are we?

@lulf

- Principal Software Engineer @ Red Hat
  - Messaging & IoT team
- Working on enmasse.io
- Enjoys creating bugs that I can fix later

@ppatierno

- Principal Software Engineer @ Red Hat
  - Messaging & IoT team
- Lead/Committer @ Eclipse Foundation
  - Hono, Paho and Vert.x projects
- Microsoft MVP Azure/IoT
- Enjoys finding bugs that Ulf can fix later
Outline

What we will do today

- Introduce AMQ Online
- Workshop - IoT
Messaging in the cloud
Cloud provider limitations

- Freedom of choice
  - On-premise or in the cloud
  - Ability to choose which cloud
  - Open Standards protocols allows users to choose client freely
- Migrating from one to the other can be complex
AMQ Online
Cloud-agnostic messaging at scale

- Open source cloud messaging running on Kubernetes and OpenShift
- Based on enmasse.io project
Protocol support

- AMQP 1.0
- MQTT
- OpenWire and CORE*
- More to come/on demand

* using the ‘brokered’ address space type
Security

- Mutual TLS between all components
- External TLS for clients
- Pluggable authentication and authorization backend
Integration

- Red Hat SSO (Keycloak) for authentication and authorization
- Prometheus endpoints available for monitoring and alerting
- Native support for OpenShift resources
  - Via OpenShift Aggregated API Server *
- Ansible for installing and upgrading
- Open protocols makes integration easy
  - Apache Spark
  - Eclipse Hono (IoT)

* not yet released
Workshop - IoT
What makes an IoT platform?

### IoT Core Services
- Authentication & Authorization
- Device Registration
- Device Provisioning

### Business Services
- Monitoring
- Real time streaming
- Machine Learning
- …
IoT Communication Patterns

Telemetry

Notifications

Inquiries

Commands

Publish/Subscribe

Request/Reply
IoT in the Cloud

- Microsoft Azure
  - IoT Hub
- Amazon Web Services
  - AWS IoT
- Google
  - IoT Core
- IBM
  - Watson IoT
Workshop IoT application
Workshop steps

1. Provision messaging
2. Create addresses
3. Deploy spark & bind to messaging
4. Deploy thermostat & bind to messaging
5. Run simulated IoT devices
Who wants to try?
Workshop info

- OpenShift cluster: https://openshift.amqonlineworkshop.com:8443