

# Industrial IoT

*Eldert Grootenboer  
Cloud Solution Architect*



# Eldert Grootenboer

*Cloud Solution Architect*

*Microsoft Azure MVP*

*SME IoT*

*International Speaker*

*Blogger*

*Global Integration Bootcamp*

*Azure IoT Community*

*Published Author*

*TechNet / MSDN / GitHub*

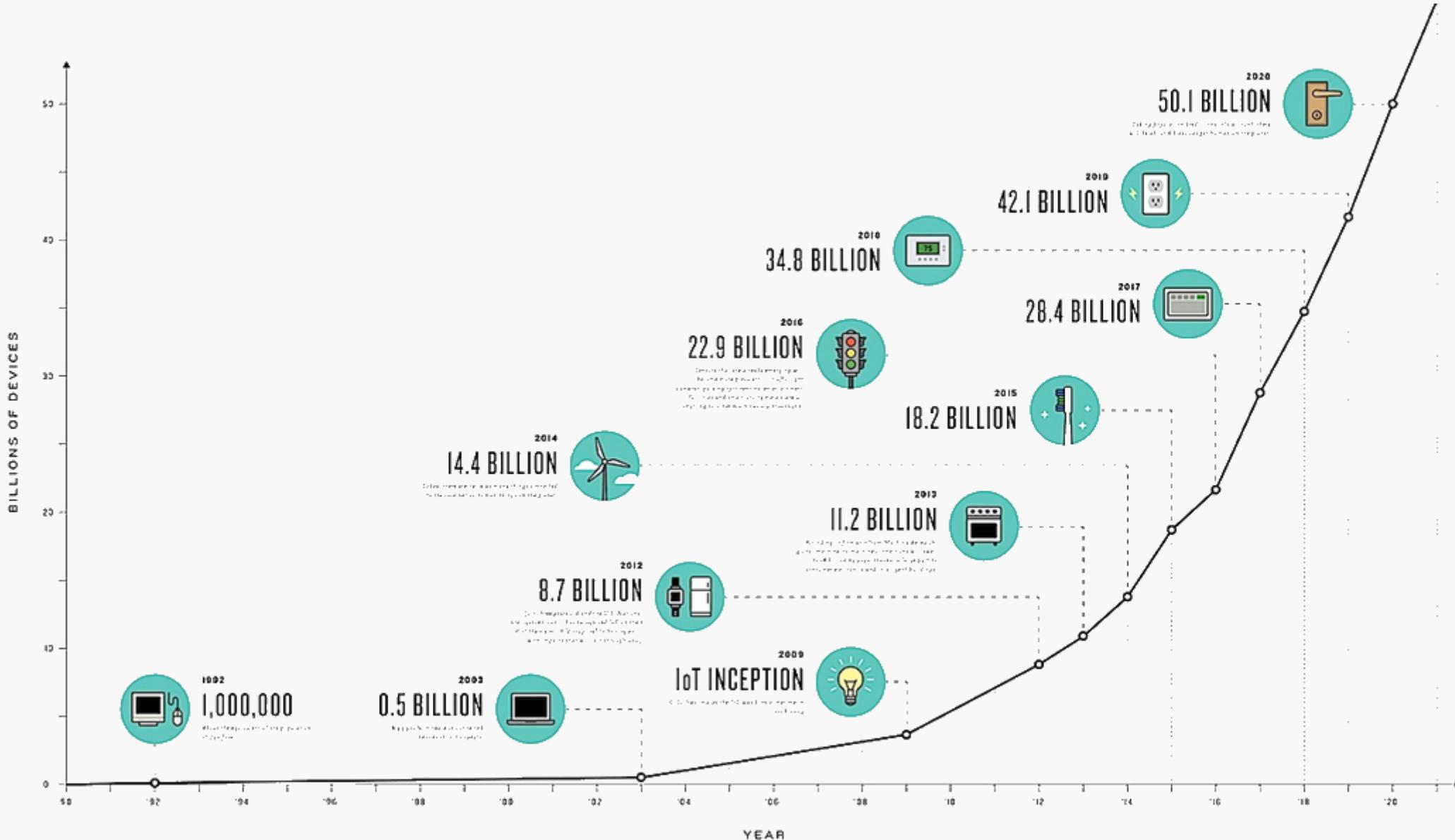
*Boat enthusiast*



# Everything Connected, Always



# The Numbers

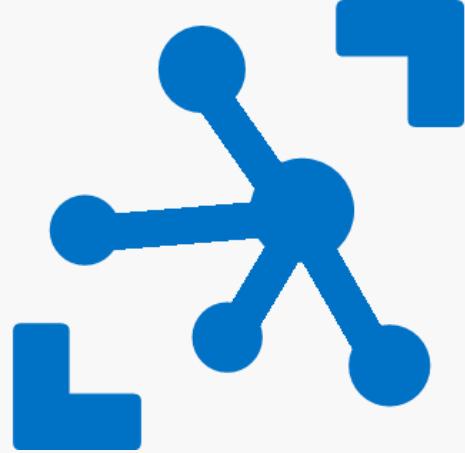


# A simple view of an IoT solution



# A more realistic view...





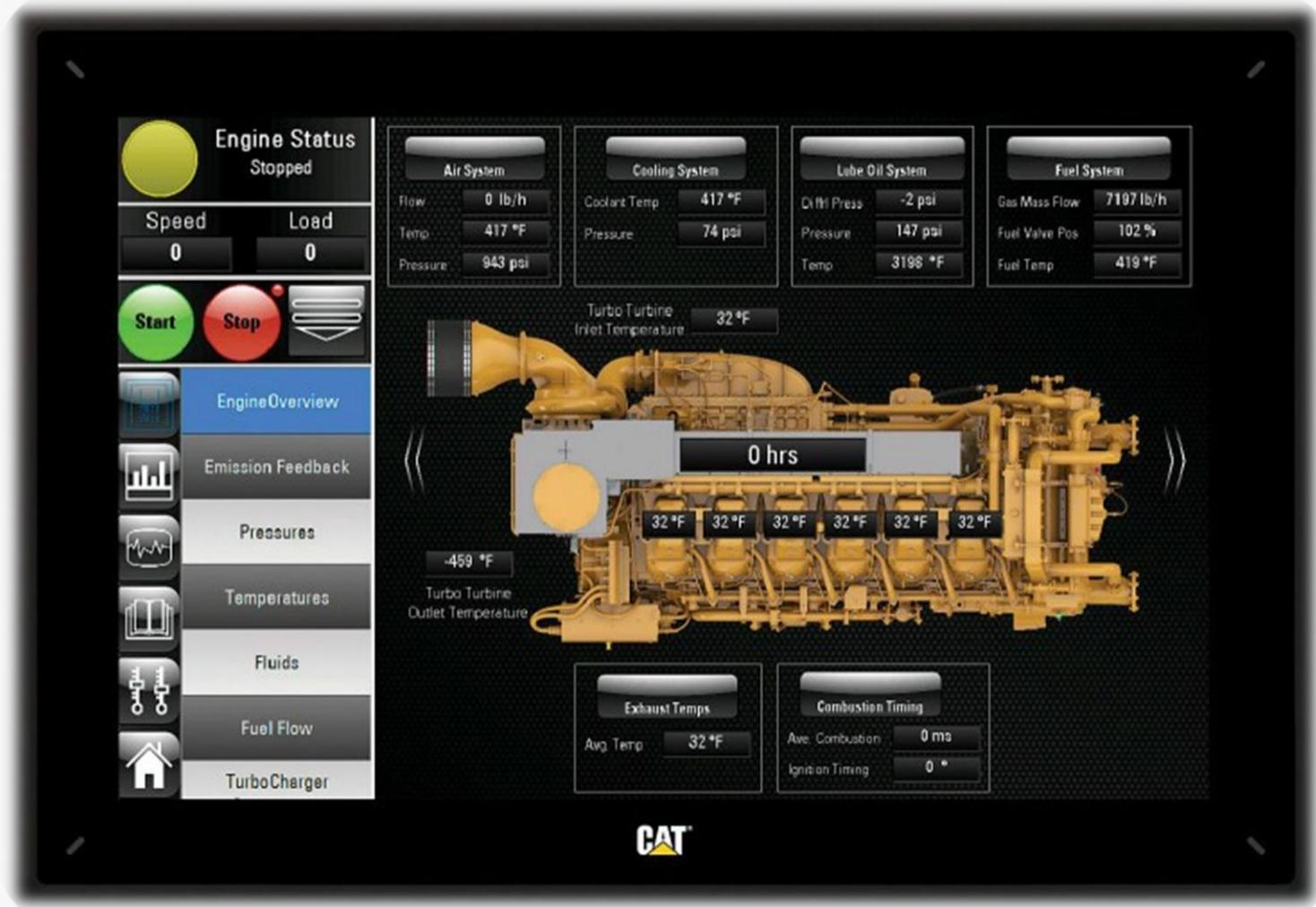
# Azure IoT Hub

# Scenario





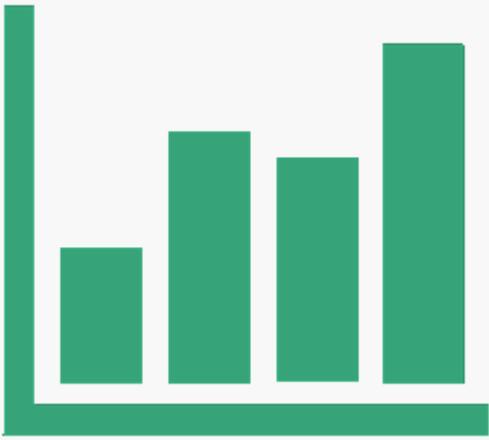






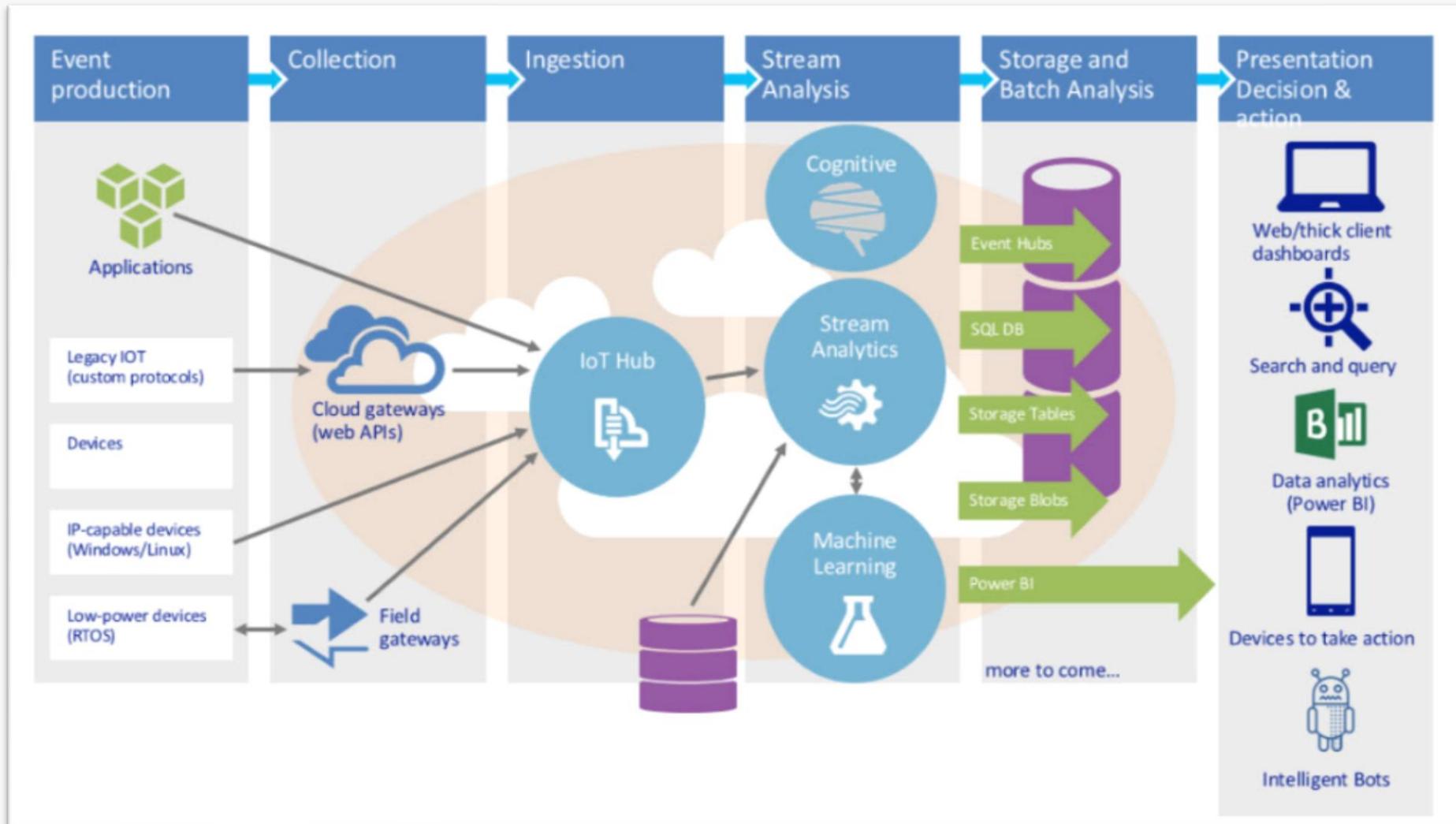


# What do we want?

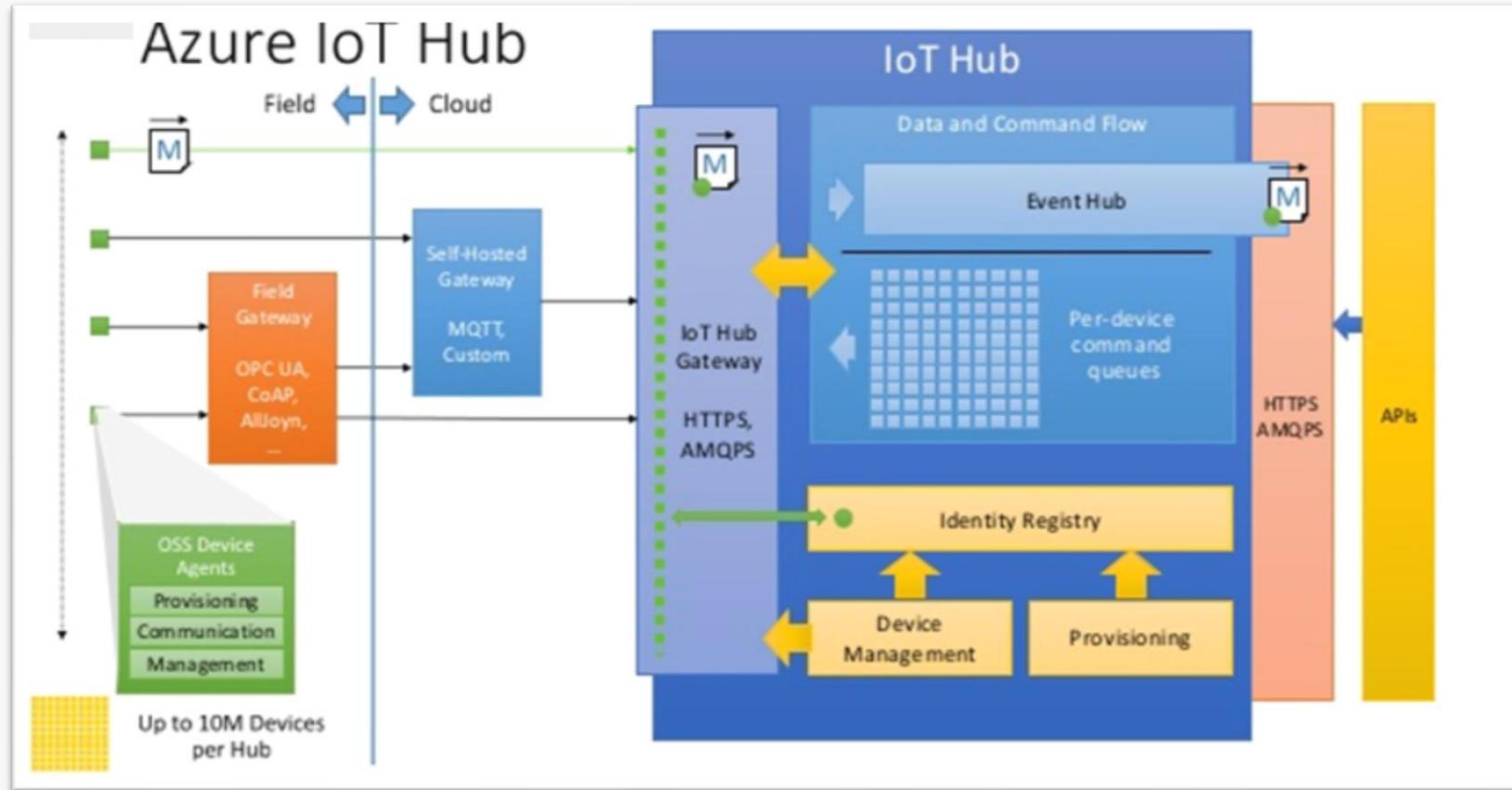


# Azure IoT

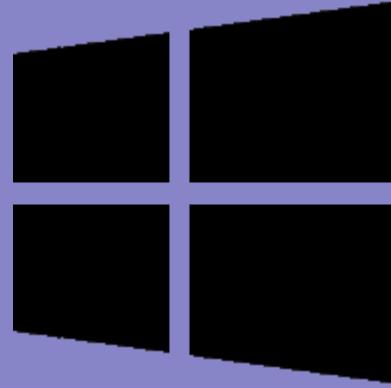
# IoT Architecture



# IoT Hub



# Platforms and Protocols



Microsoft  
.NET

 **AMQP**  
Advanced Message Queuing Protocol



HTML

node 

LINUX

  
Java

**MQTT**  
Message Queue Telemetry Transport

# Device Management

# Device Management



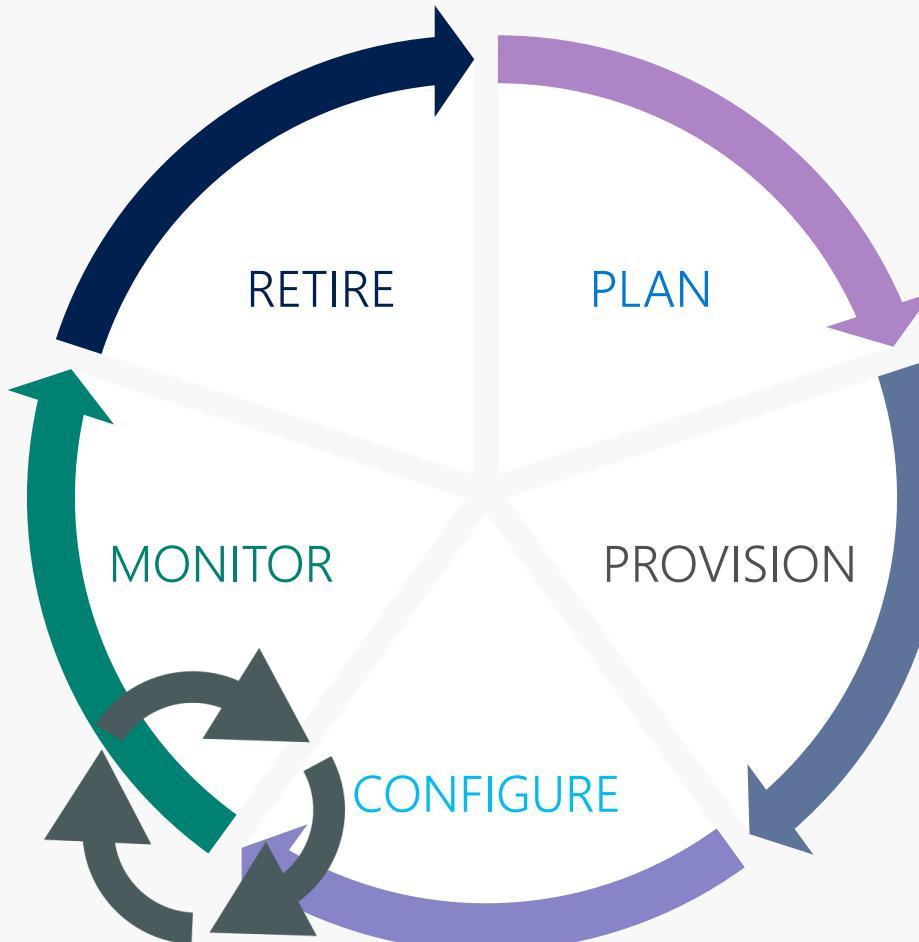
Replace or decommission devices after failure, upgrade cycle or service lifetime



Monitor device inventory, health & security while providing proactive remediation of issues



Provide updates, configuration & applications to assign the purpose of each device



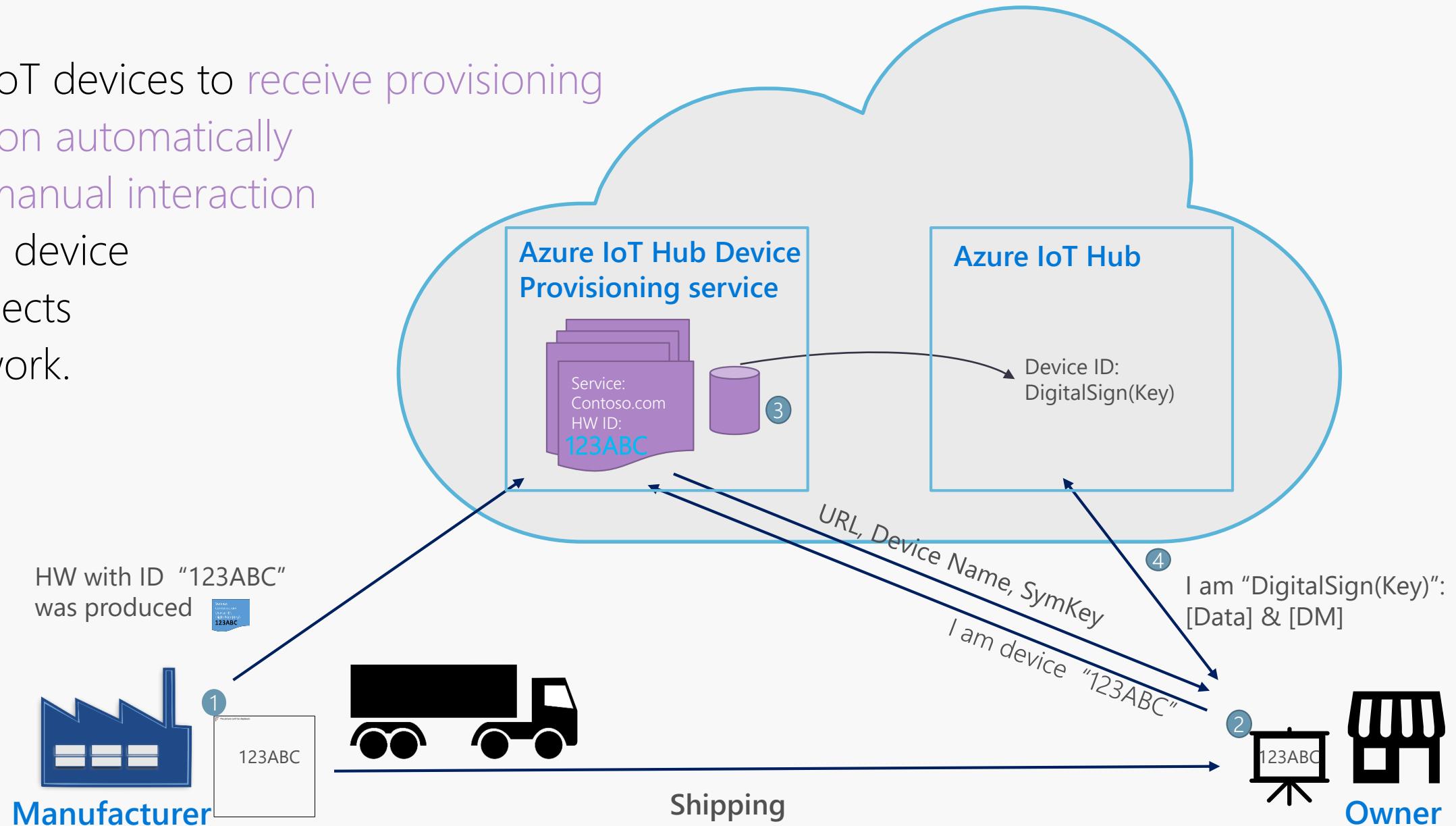
Group devices and control access according to your organization's needs



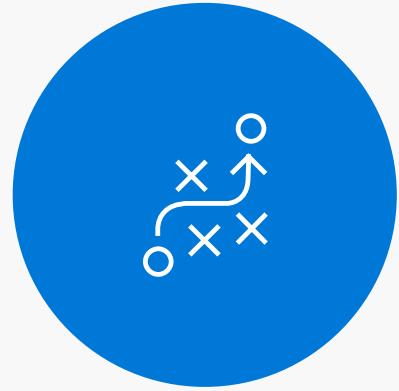
Securely authenticate devices, on-board for management and provision for service

# Device Provisioning Service

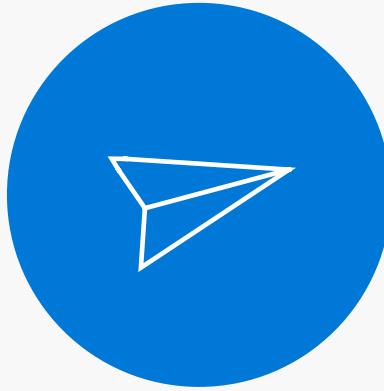
Enables IoT devices to receive provisioning information automatically without manual interaction when the device first connects to a network.



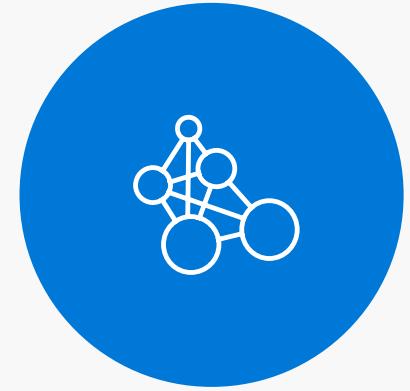
# Azure Event Grid



Fully-managed  
event routing



Near real-time event  
delivery at scale

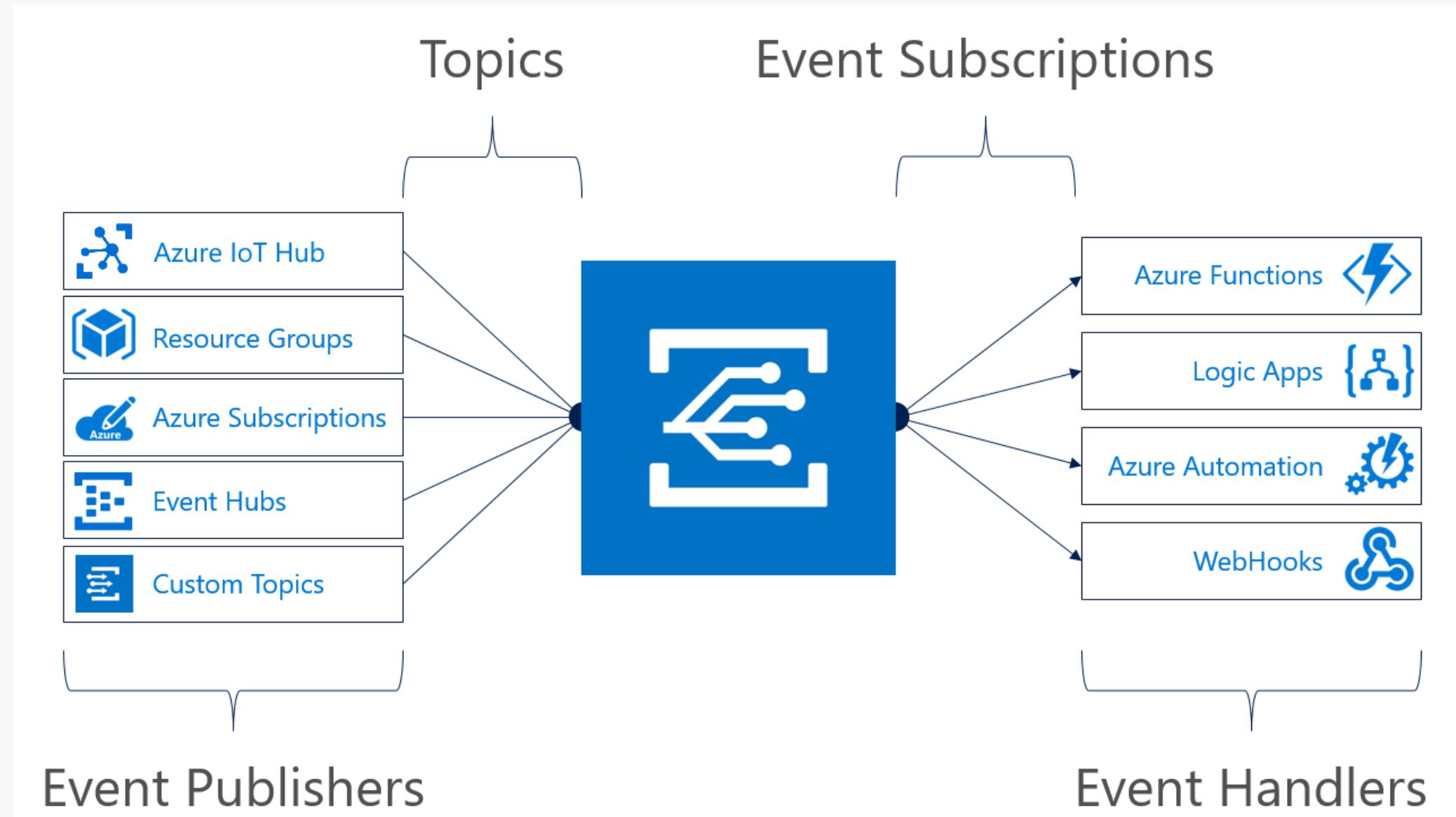


Broad coverage within  
Azure and beyond

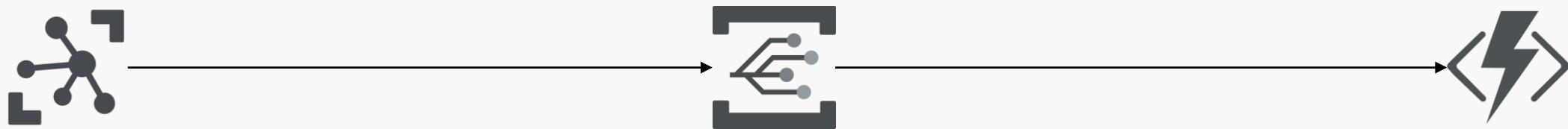
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Backbone of event-driven computing

# Event Grid Integration

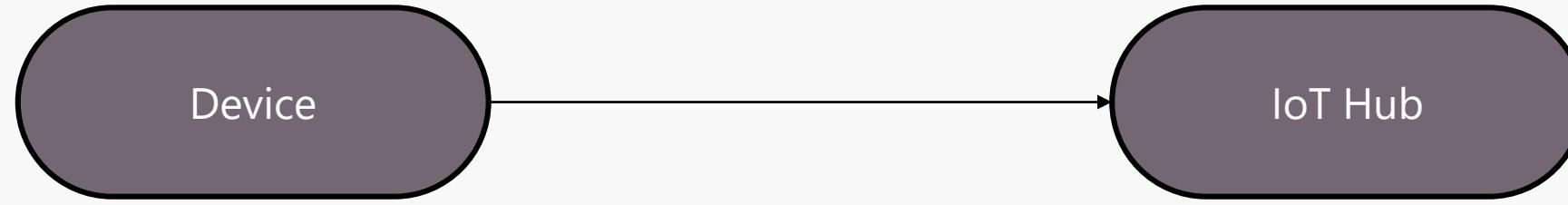


# Demo

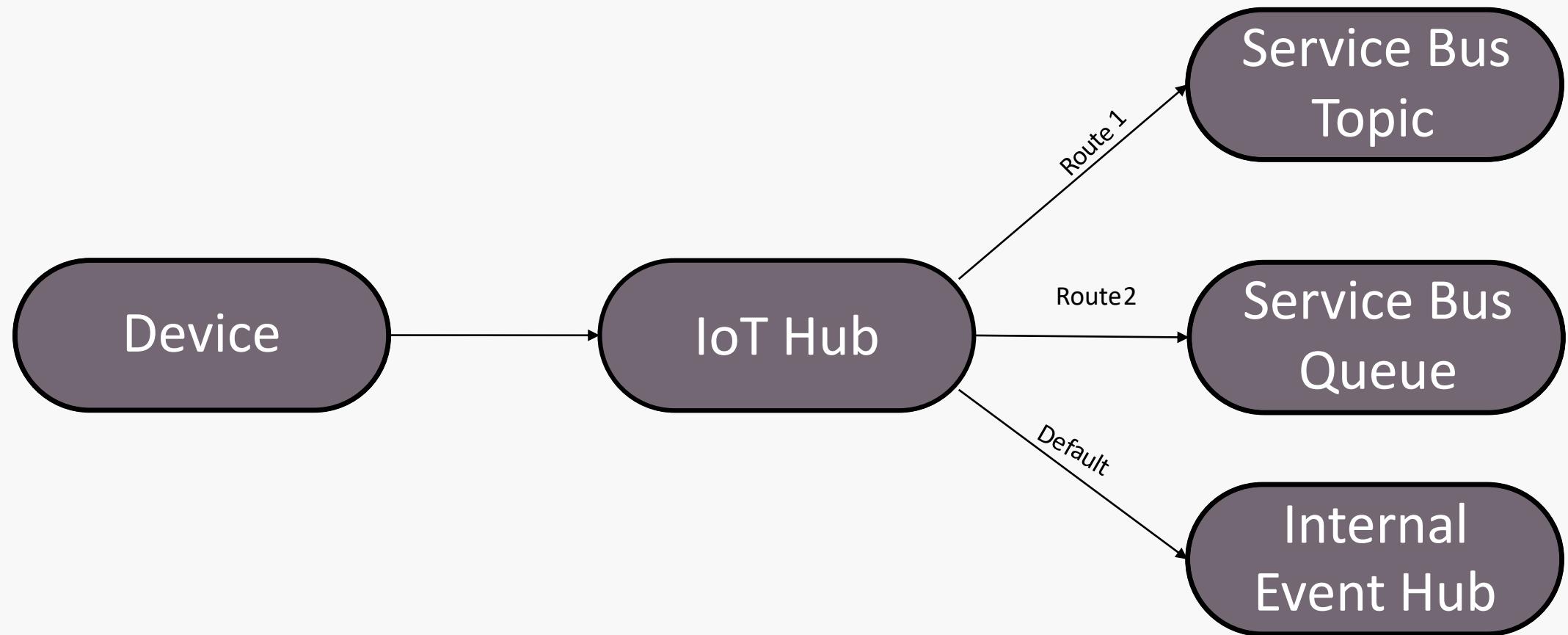


# IoT Hub Communication

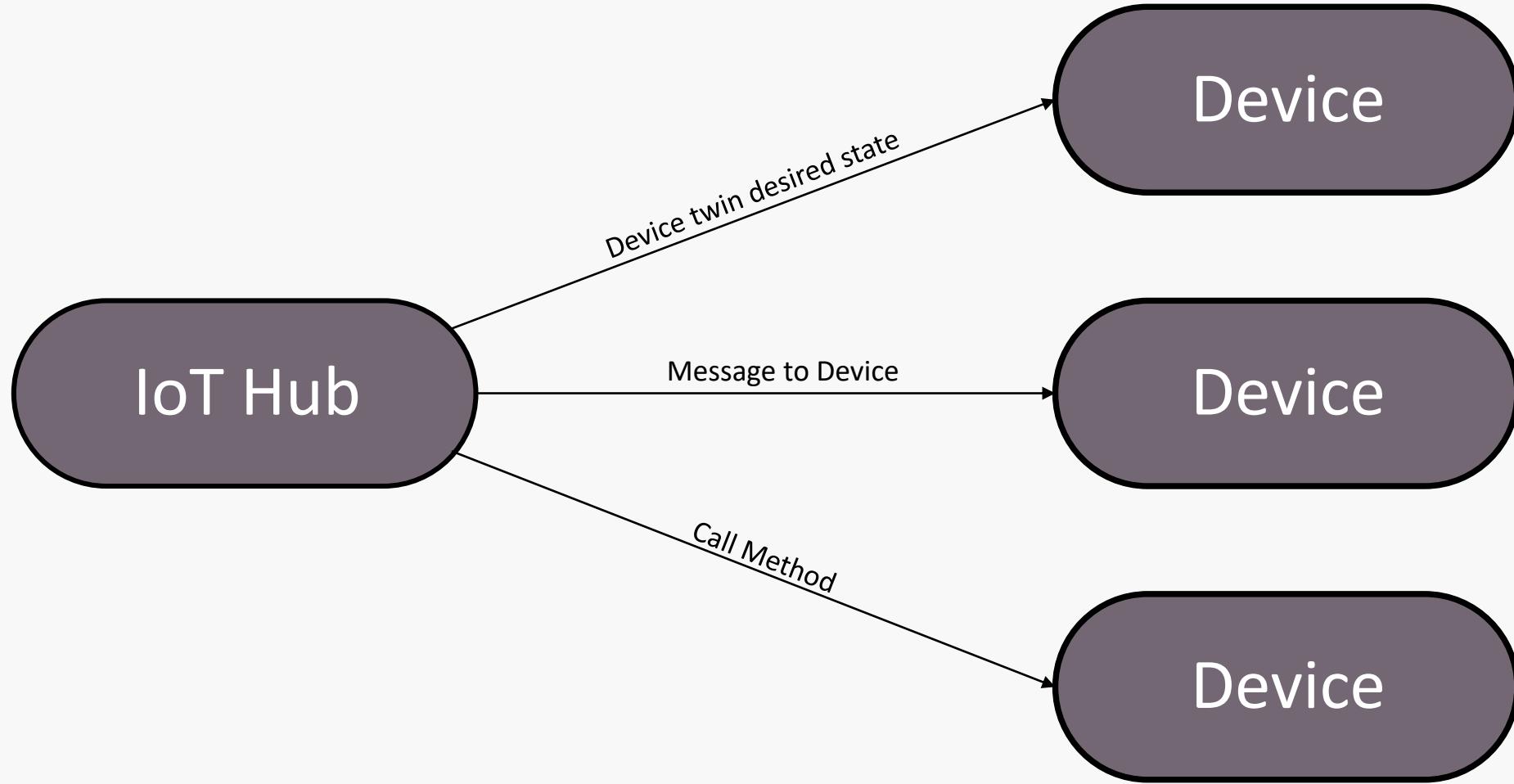
# Device To Cloud



# Routes



# Cloud To Device





Microsoft  
Dynamics 365<sup>TM</sup>

# Dynamics 365 Field Service

Hourly view

Initial public view

Filter & Map View

Map View Settings

Traffic

Legend: Gray Road

Search resources...

Brady Hannon  
Edgar Dominguez  
Efrain Schreiner  
Jorge Gault  
Joseph Gonsalves  
Kris Nakamura  
Luke Lundgren  
Matthew Everson  
Norbert Sandberg

Hours | View | Book | Actions | 11/17/2016 - 11/17/2016 | 4:00 AM 5:00 AM 6:00 AM 7:00 AM 8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM 6:00 PM 7:00 PM 8:00 PM 9:00 PM

11/17/2016

Work Order - Replace ... Duration: 2 hrs 1 min ✓ Work Order - Inspectio... Duration: 2 hrs 1 min Work Order - Fuse out Duration: 2 hrs 2 min

Work Order - 00001 Duration: 3 hrs 15 min

Work Order - Install Ne... Duration: 2 hrs 23 min Work Order - Camera is... Duration: 2 hrs 7 min Work Order - Website d... Duration: 2 hrs 28 min

Work Order - Min. Diag... Duration: 2 hrs 9 min Work Order - Measure... Duration: 2 hrs 6 min Work Order - Internet c... Duration: 2 hrs 13 min Work Order - Frame sha... Duration: 2 hrs 18 min

Work Order - Replace ... Duration: 2 hrs 17 min Work Order - Fan not w... Duration: 2 hrs 15 min Work Order - Hard disk... Duration: 2 hrs 13 min Work Order - Light bulbs Duration: 2 hrs 27 min

Work Order - Circuit Re... Duration: 2 hrs 19 min Work Order - 100% Cyc... Duration: 2 hrs 7 min Work Order - Data file c... Duration: 2 hrs 5 min Work Order - Water pr... Duration: 2 hrs

Work Order - Replace SL... Duration: 2 hrs 14 min Work Order - Broken T... Duration: 2 hrs 7 min Work Order - Thermostat... Duration: 2 hrs 9 min Work Order - Catalog L... Duration: 2 hrs

Work Order - Magnets... Duration: 2 hrs 12 min Work Order - MRI Sanit... Duration: 2 hrs 1 min Work Order - Replace ... Duration: 2 hrs 1 min

Booking Requirements

All Unscheduled Work Orders

Name	From Date	To Date	Duration	Priority	Territory	Time From Promised	Time To Promised	Status	Created On
00001			2 hrs	WA				Active	11/16/2016 10:49 AM
00002			2 hrs	WA				Active	11/16/2016 10:52 AM

# Dynamics 365 Connected Field Service



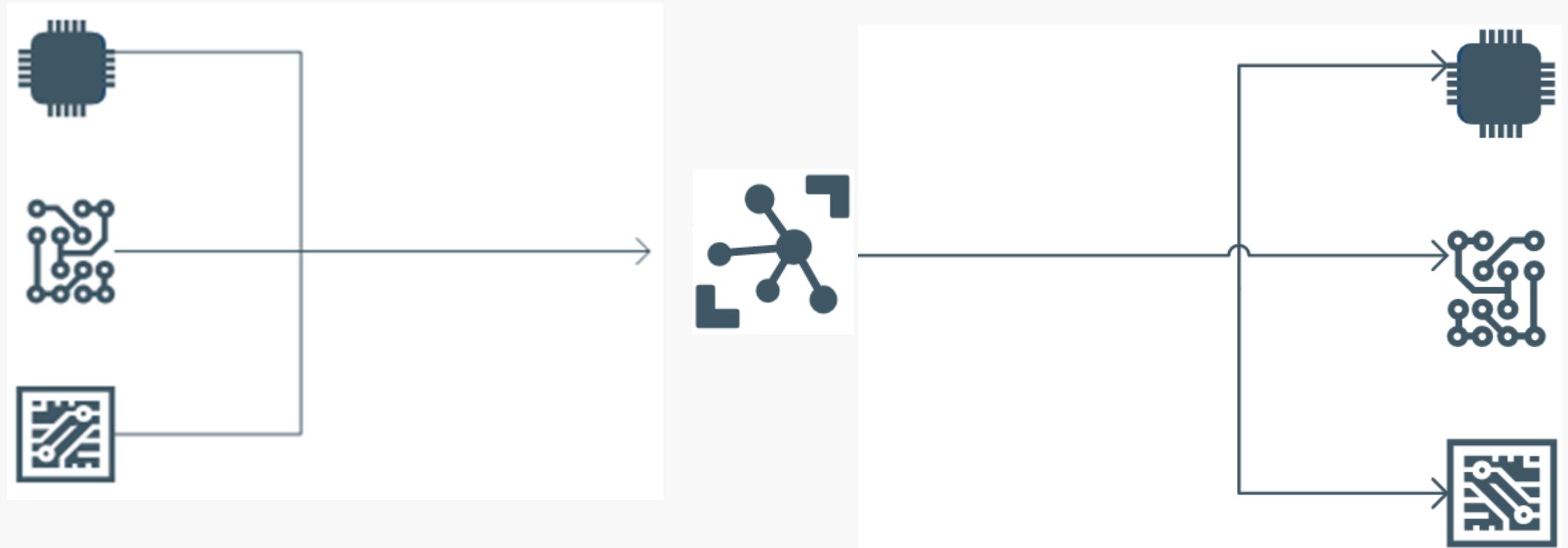
# Full Solution

 CRMHelperiothubdynamics36566a5a684ddc543d68991a29	App Service	iothubdynamics365
 CRM-To-IoT	Logic app	iothubdynamics365
 dynamicscrmonline	API Connection	iothubdynamics365
 iothubdynamics365421984316cf64efa82994d2	Stream Analytics job	iothubdynamics365
 iothubdynamics36579bb65b	Storage account	iothubdynamics365
 iothubdynamics36584ac1eb8a0634c629df0ad9	Stream Analytics job	iothubdynamics365
 iothubdynamics365fa98aa3784384cc08b37d4c11e7e6b9e	Service Bus	iothubdynamics365
 IoTHubiothubdynamics36538b10dd3608a4ef6b9d23d871c	App Service	iothubdynamics365
 IoT-To-CRM	Logic app	iothubdynamics365
 QueueMessageParseriothubdynamics365257ccee39bb044	App Service	iothubdynamics365
 SBMessage	API Connection	iothubdynamics365
 ServicePlan	App Service plan	iothubdynamics365
 Simulatoriothubdynamics3658d3d1318613f46eb9f4706c6	App Service	iothubdynamics365
 sqlsvr.iothubdynamics3653118e1ae2bf140eda35c43425f8	SQL server	iothubdynamics365
 dbwoi43h2wl4cdw	SQL database	iothubdynamics365
 IoTHubEldert	IoT Hub	IoTHubEldert

# Dynamics 365 Connected Field Service



# Demo

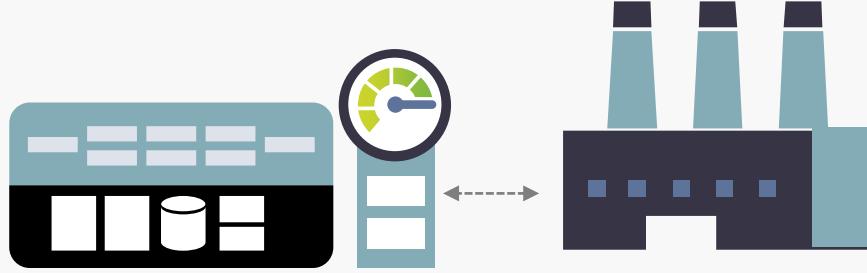
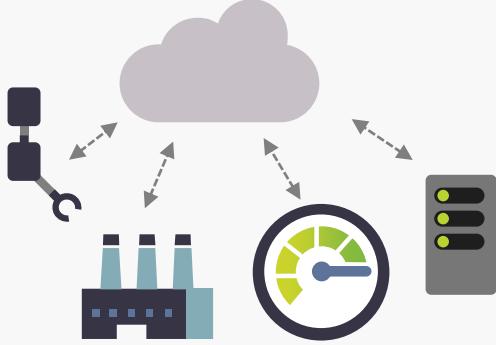


# IoT Edge

# On The Edge



# IoT in the Cloud and on the Edge



## IoT in the Cloud

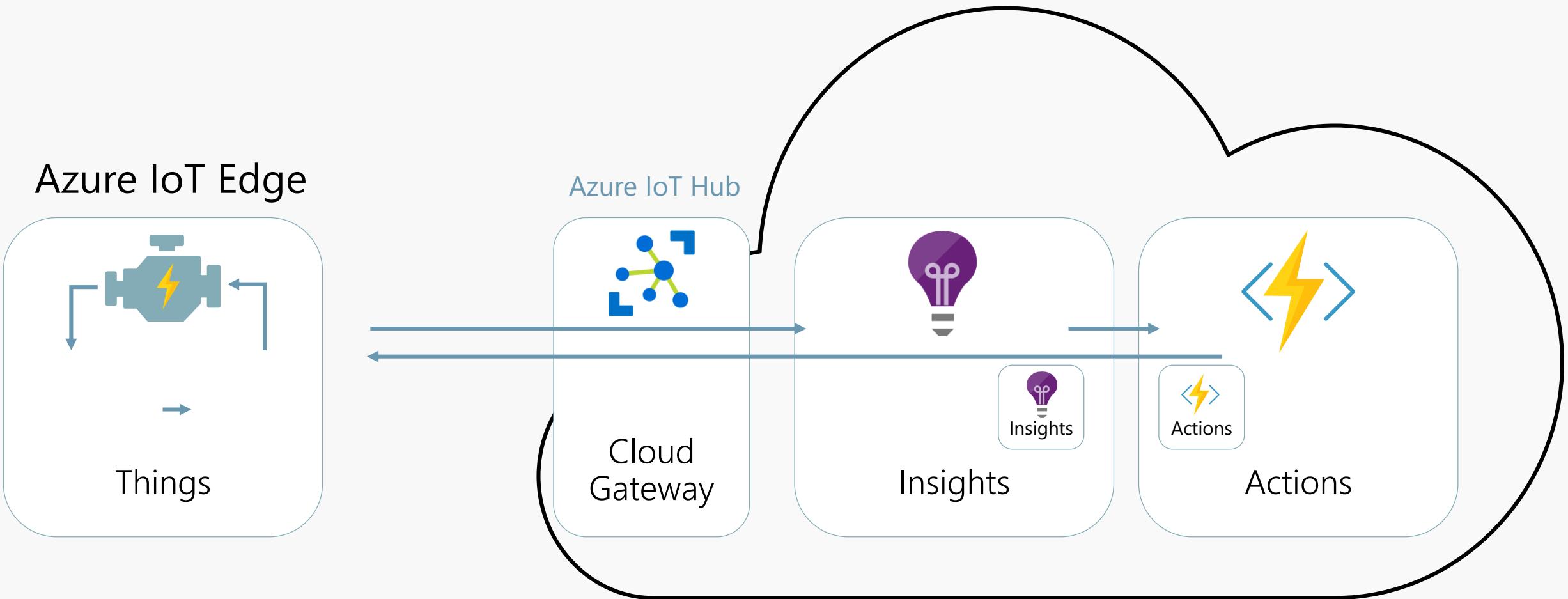
- Remote monitoring and management
- Merging remote data from multiple IoT devices
- Infinite compute and storage to train machine learning and other advanced AI tools

## IoT on the Edge

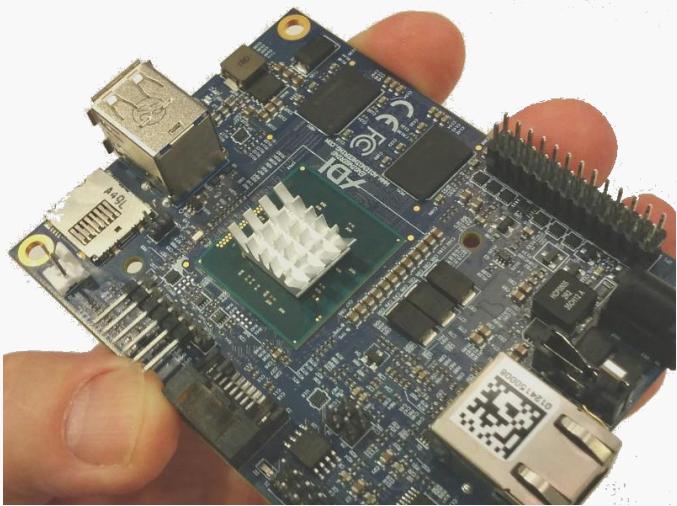
- Low latency tight control loops require near real-time response
- Protocol translation & data normalization
- Privacy of data and protection of IP

Symmetry

# IoT Pattern + Edge

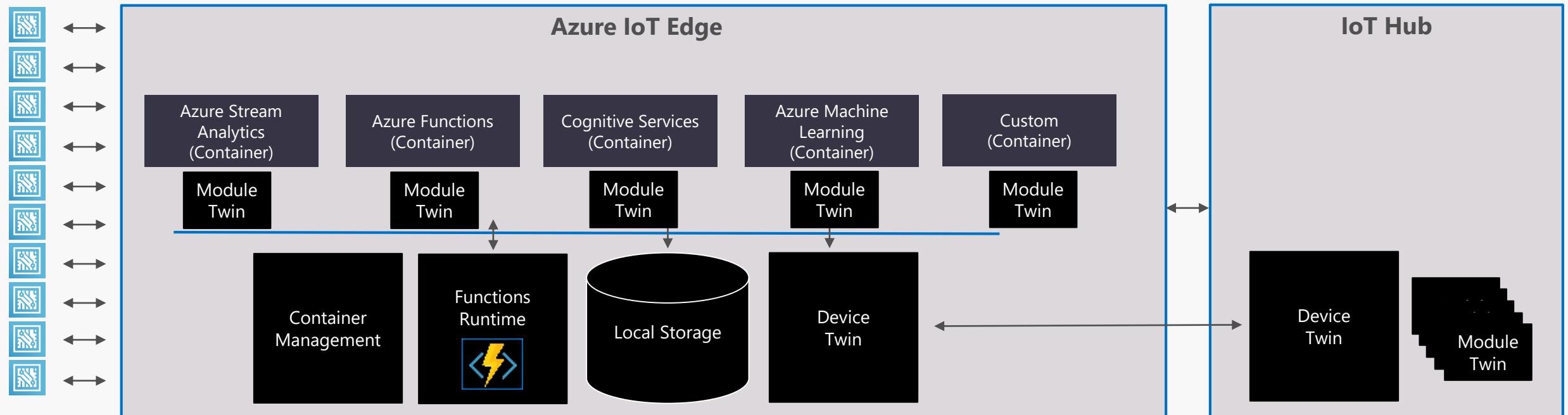


# Edge Device

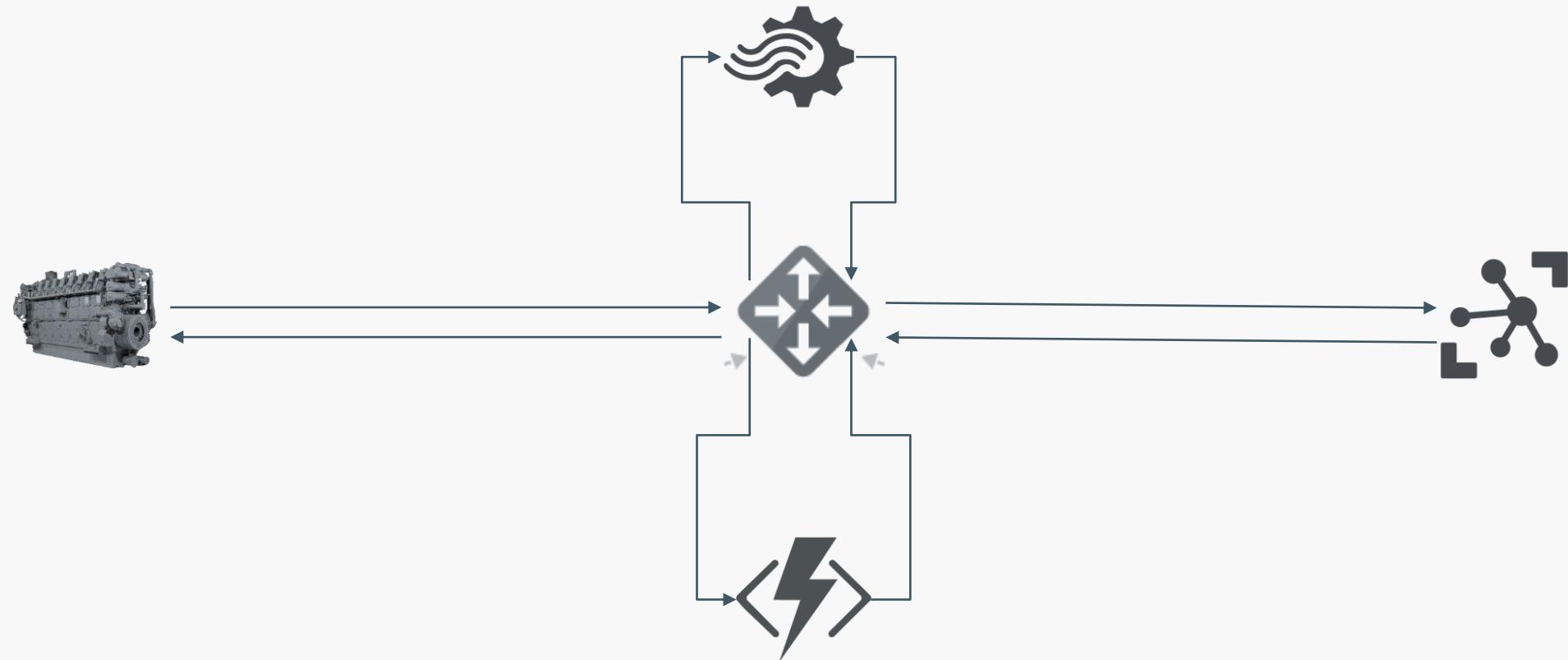


# Edge Device

- Container based modules
  - Azure Functions
  - Azure Stream Analytics
  - Azure Machine Learning
  - Cognitive Services
  - Cross-platform
- Offline / Synchronized Device Twins
  - Local Storage
  - Cloud Management & Deployment
  - High Availability / Fault Tolerance
  - Cloud Dev/Test Support



# Demo



# Key Takeaways

Easy	Easily connect and manage your IoT devices
Scalable	Establish bi-directional communication with billions of IoT devices
Business Ready	Leverage IoT through Dynamics 365
Extend	Get more business value by leveraging Azure services
Edge	Insights and actions on the edge

# Want more IoT?



15 Mei 2018

@

Motion 10

<http://www.azureiotcommunity.nl/>

# Thank You



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eldert.grootenboer@motion10.com



<http://blog.eldert.net/>



<http://blogs.biztalk360.com>

Think

Share

Move