

IoT Virtual Bootcamp

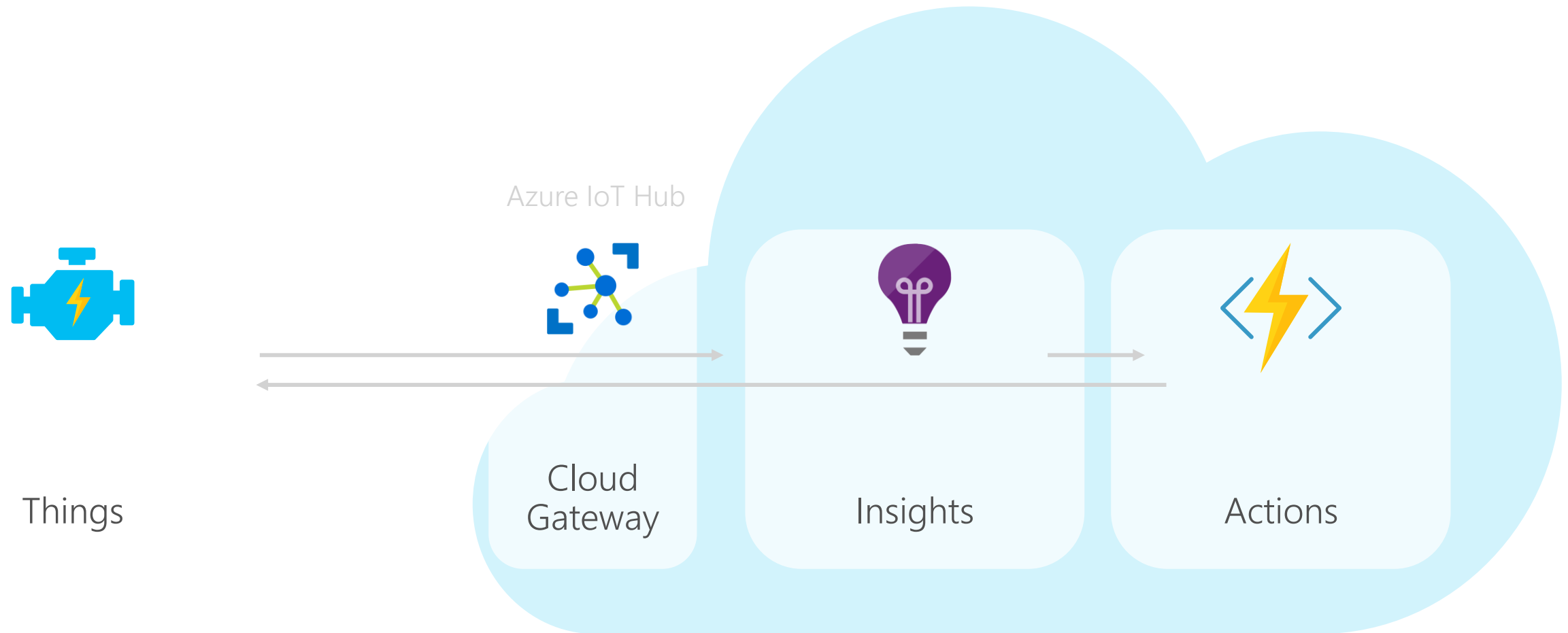
December
12 – 14, 2017



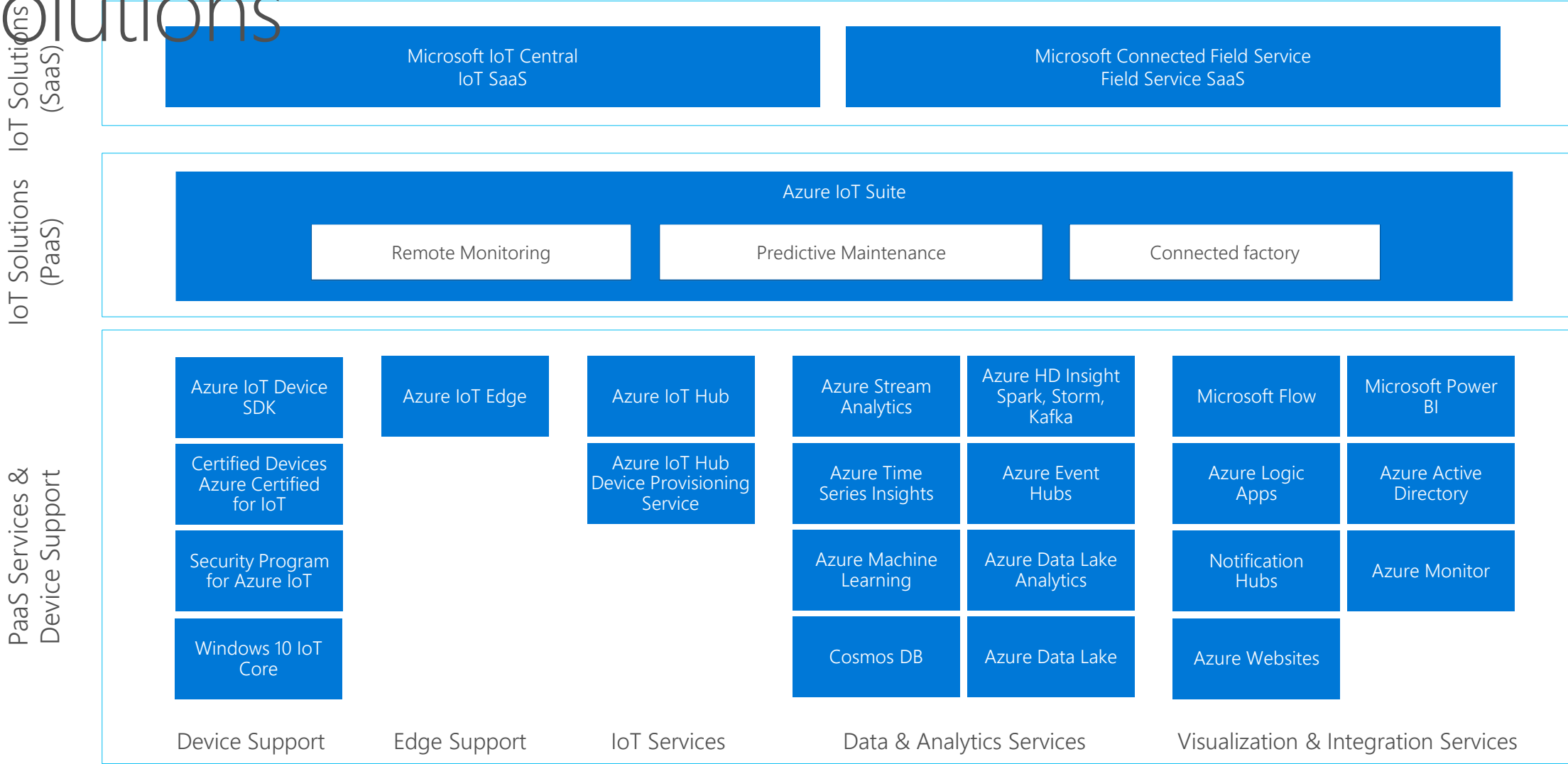
Building Reliable IoT Solutions in the Cloud - Quickly

Chris Segura – Azure IoT Ecosystem
Twitter: @IoTHybridCloud

IoT Solutions Have a Common Pattern



Comprehensive Set of Capabilities for IoT Solutions



Microsoft is simplifying IoT

Azure IoT Suite

Preconfigured solutions for common IoT scenarios



Remote Monitoring | Predictive Maintenance | Connected Factory

Microsoft IoT Central

Fully managed IoT SaaS
No cloud solution expertise required



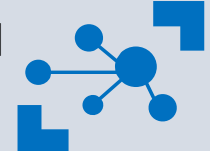
Azure IoT Hub Device Provisioning Service

Fully managed service for securely provisioning devices at scale



Azure IoT Hub

IoT cloud gateway, secure, bi-directional communication with billions of devices sending trillions of messages



Azure Time Series Insights

Explore and analyze time series data fast, and at scale with a fully managed offering



Azure IoT Edge

Securely distribute cloud intelligence locally, and at scale



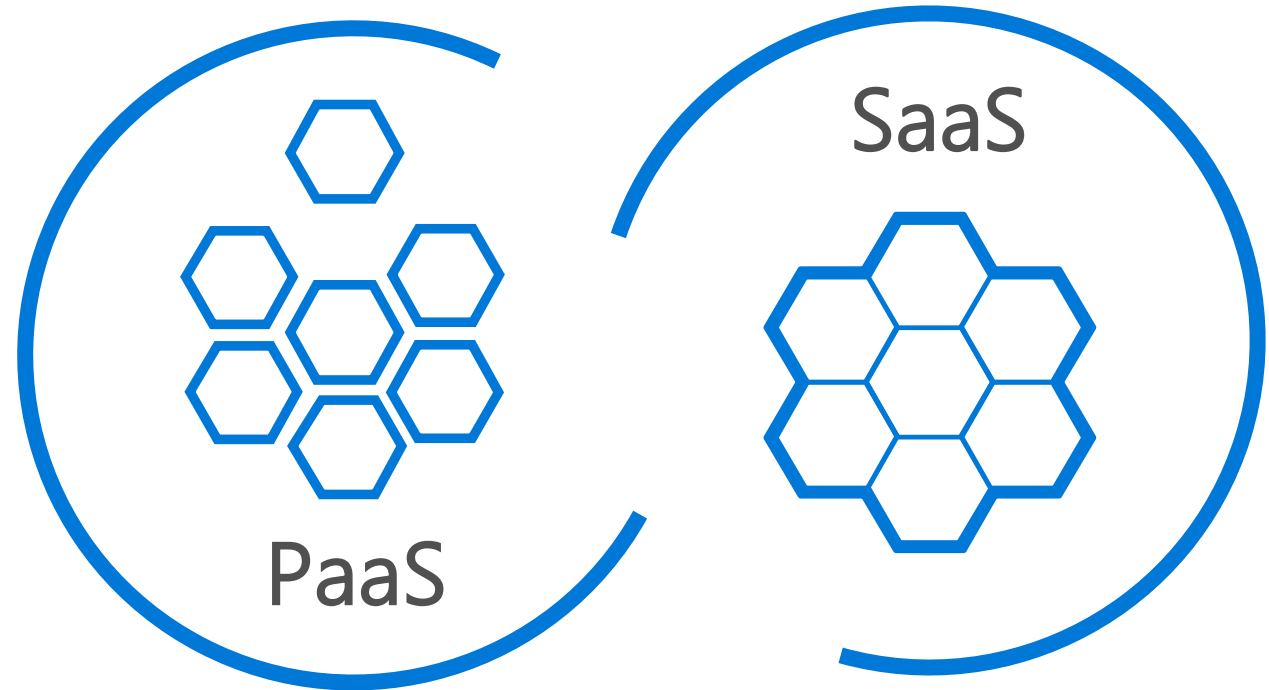
Microsoft Offers Two Approaches to IoT Solutions

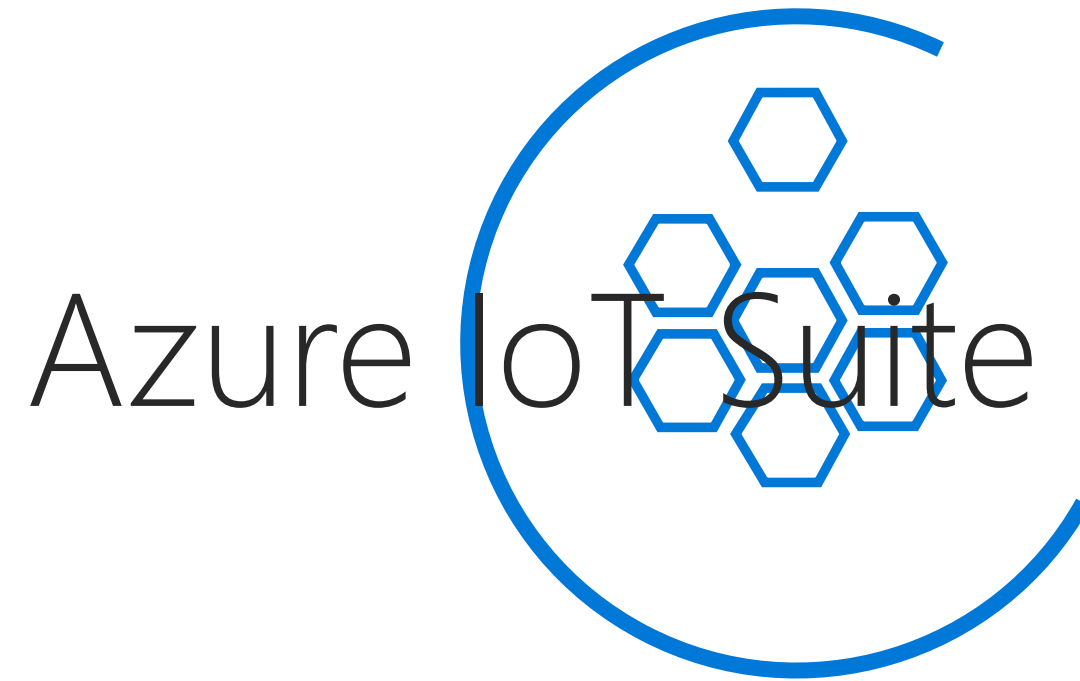
PaaS – Azure IoT Suite

- Ideal for solutions that require ultimate control
- Preconfigured solutions
- Open source – customizable \ extensible
- Deploy in minutes
- Accelerate time to value

SaaS – Microsoft IoT Central

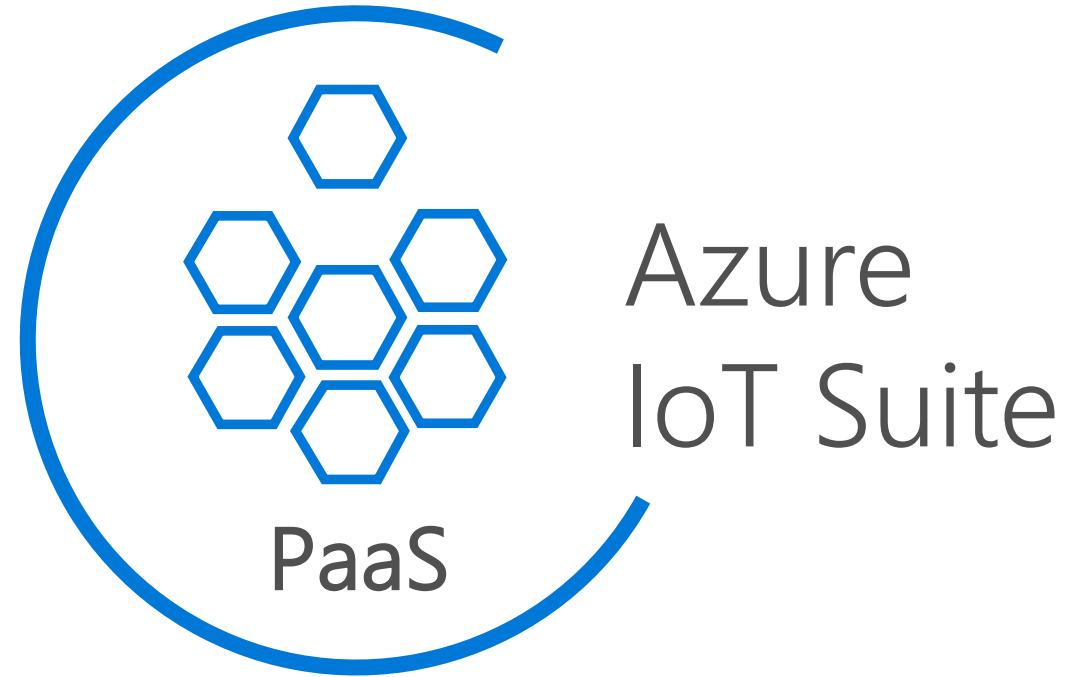
- Ideal for straightforward IoT needs
- No cloud solution development expertise required
- Configurable to your needs
- Fully managed by Microsoft





3 Goals when we started Azure IoT Suite

1. Minutes to 'WOW'
2. Easily build a POC
3. Customize, Extend, & Scale



Azure IoT Suite Today

Three independent solutions

Solution types



Remote monitoring

Connect and monitor your devices to analyze untapped data and improve business outcomes by automating processes.

Select



Connected factory

Accelerate your journey to Industrie 4.0 – connect, monitor and control industrial devices for insights using OPC UA to drive operational productivity and profitability.

Select



Predictive maintenance

Anticipate maintenance needs and avoid unscheduled downtime by connecting and monitoring your devices for predictive maintenance.

Select

www.azureiotsuite.com

Open source code

The screenshot displays the GitHub repository for 'Azure / azure-iot-remote-monitoring'. The repository has 149 watchers, 180 stars, and 192 forks. It shows 1,326 commits, 101 branches, 7 releases, and 41 contributors. The commit history table is as follows:

Commit	Message	Time
xzsheng Merge branch 'master' of https://github.com/Azure/azure-iot-remote-monitoring		Latest commit 05e6948 26 days ago
.nuget	Add default Nuget source	a year ago
Common	Bug fix of checking multiple Azure Powershell modules	26 days ago
DeviceAdministration	Refine icon for default simulator and the device twin download link	26 days ago
Docs	Fix broken link (#425)	a month ago
EventProcessor/EventProcessor.WebJob	[BugFix] Failed to pick deviceId from system property	2 months ago
Simulator/Simulator.WebJob	Improve the fault tolerance of device connection failure	2 months ago
UnitTests	add device twin json download feature	a month ago
WebJobHost	Improve the fault tolerance of device connection failure	2 months ago
.gitattributes	Initial commit	2 years ago
.gitignore	Adjust code according to comment	5 months ago
AppRolesForManifest.txt	Initial commit	2 years ago
CodeCoverage.runsettings	RM 1.5 - merge to master (#387)	10 months ago
Common_Props.proj	Initial commit	2 years ago
README.md	Fix markdown syntax in the README file (#419)	a month ago


<https://github.com/Azure/azure-iot-predictive-maintenance>

<https://github.com/Azure/azure-iot-connected-factory>

<https://github.com/Azure/azure-iot-remote-monitoring>

Provisioning a Solution

www.azureiotsuite.com



Preview

Remote monitoring

Connect and monitor your devices to analyze untapped data and improve business outcomes by automating processes.

Preview highlights include:

- Redesigned user interface
- Microservices-based architecture
- Availability in both .NET and Java
- View an [interactive demo](#)

Select

Create Remote monitoring solution

Solution details

When to use this deployment:

Basic deployment is geared toward showcasing the solution. To reduce the cost of this demonstration, all of the microservices are deployed in a single virtual machine; this is not considered a production-ready architecture.

Our Standard deployment option should be used when you are ready to customize a production-ready architecture, built for scale and extensibility.

Creating a Basic solution will result in the following Azure services being provisioned into your Azure subscription at cost:

- 1 Azure Active Directory application
- 1 Virtual Machine (Standard D1 V2 (1 core, 3.5 GB memory))
- 1 IoT Hub (S1 - Basic tier)
- 1 Cosmos DB Account (Standard)
- 1 Storage account (Standard-GRS)
- 1 Web Application

To learn more about our deployment options visit our [GitHub repository](#)

Approximate Cost:

The cost of the solution is an aggregate of the cost of the underlying Azure services. Pricing information for these services can be found [here](#). Usage amounts and billing details for your subscription can be found in the [Azure Portal](#).

In addition to the above Azure services, creating a solution will result in your being signed up for a subscription to the following Azure Marketplace offering(s), which are subject to the following terms:

[Bing Maps API for Enterprise \(Internal Website Transactions Level 1\): terms of use](#) and [privacy statement](#).

Deployment option

- ☒ Basic
☐ Standard

Language

- ☒ .NET
☐ Java

Solution name

DemoEnvironment

Subscription

Azure IoT Devices Product Team

Region

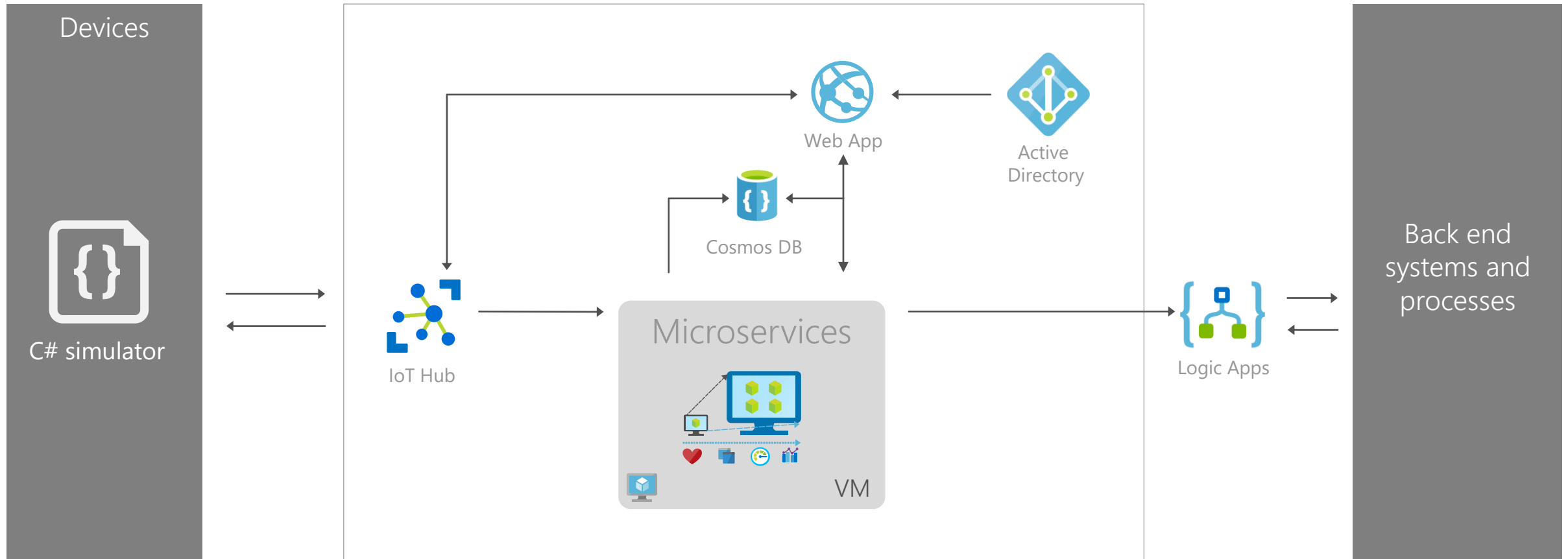
West US

Create solution

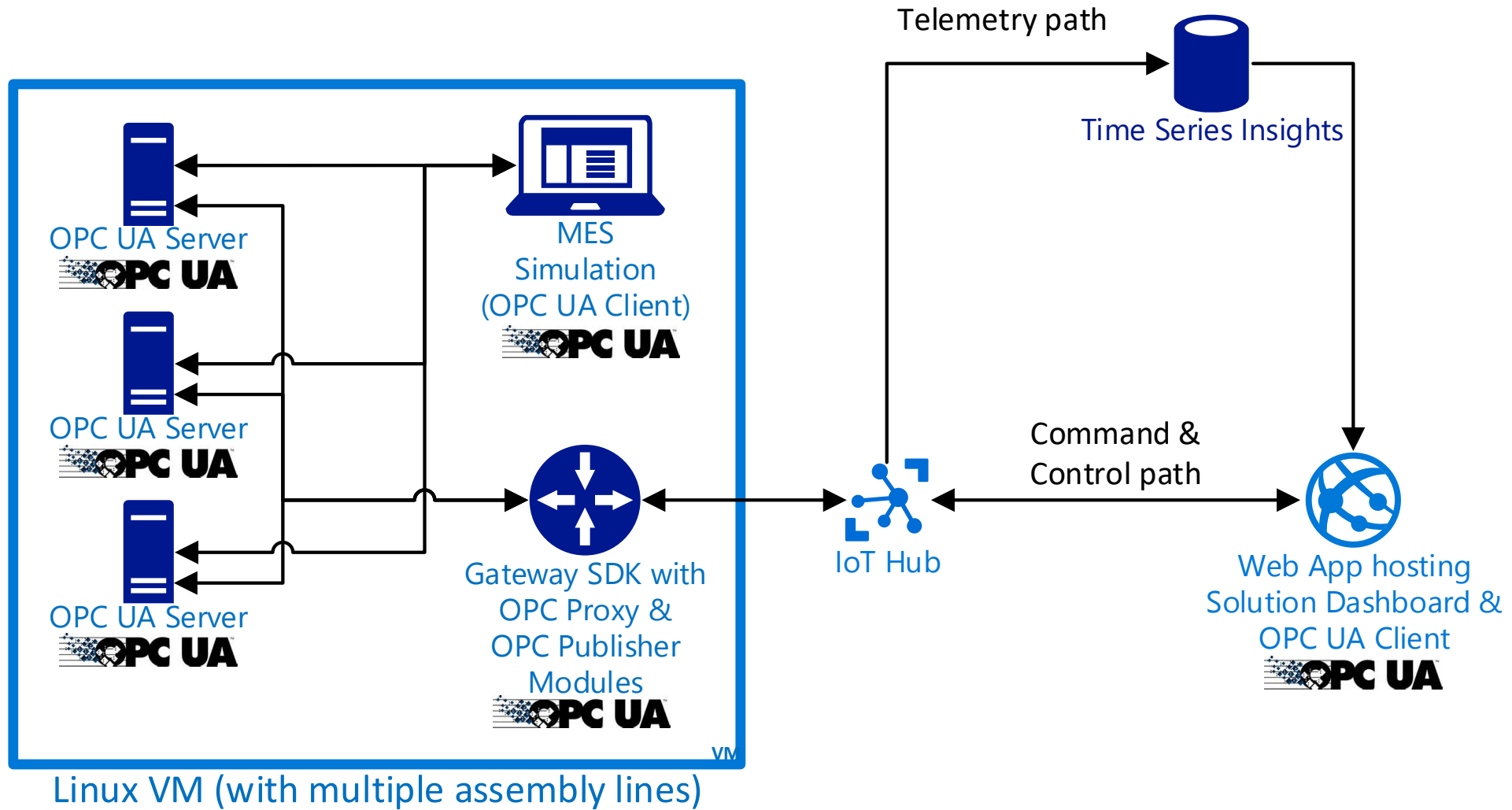
Cancel



Azure IoT Suite Remote Monitoring – Basic Deployment



Azure IoT Suite Connected Factory Architecture



Demo

"Make it agile and scalable"

Microservices + Containers

GOALS

Agile & Scalable

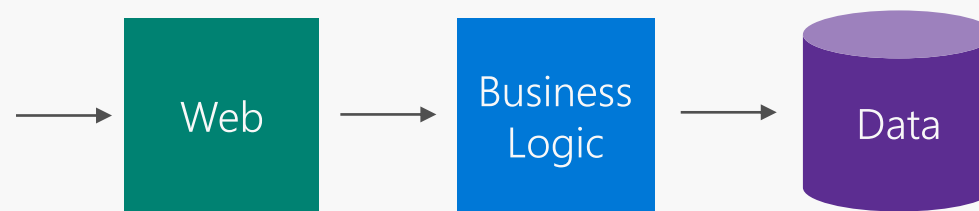
- Microservices Architecture
- Scalable Deployment Option

Application Models

Monolithic

HW Influenced – scale, performance (caching)

Static – little incentive to decompose



3-Tier Monolithic Application

Microservices

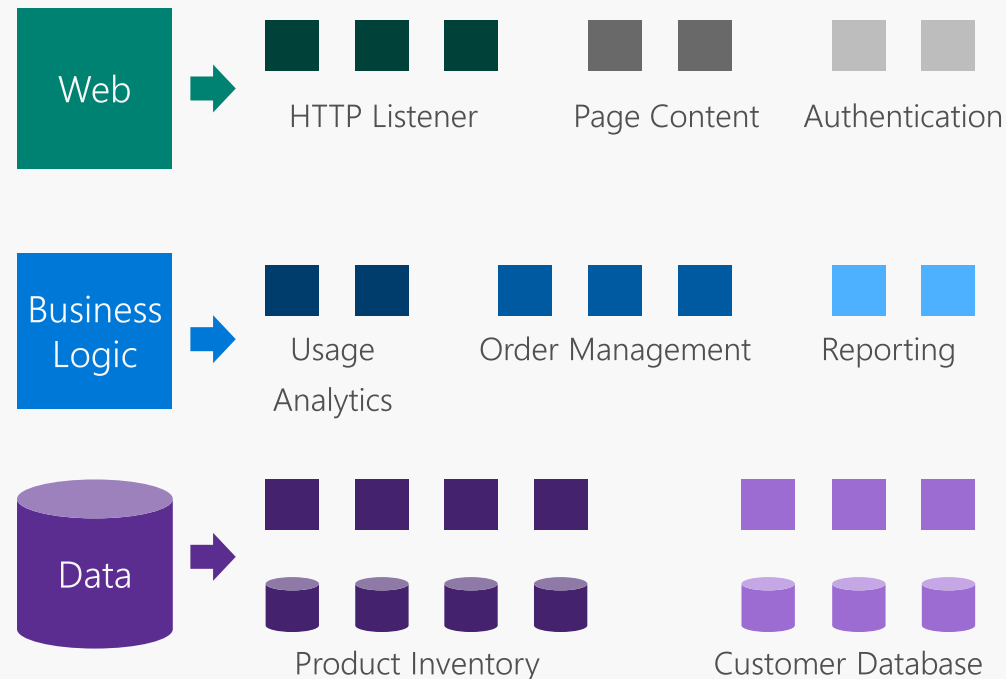
Agility, Scale, Reliability

Deliver Isolated Value

Well defined contracts (RESTful interfaces)

Versioned Independently

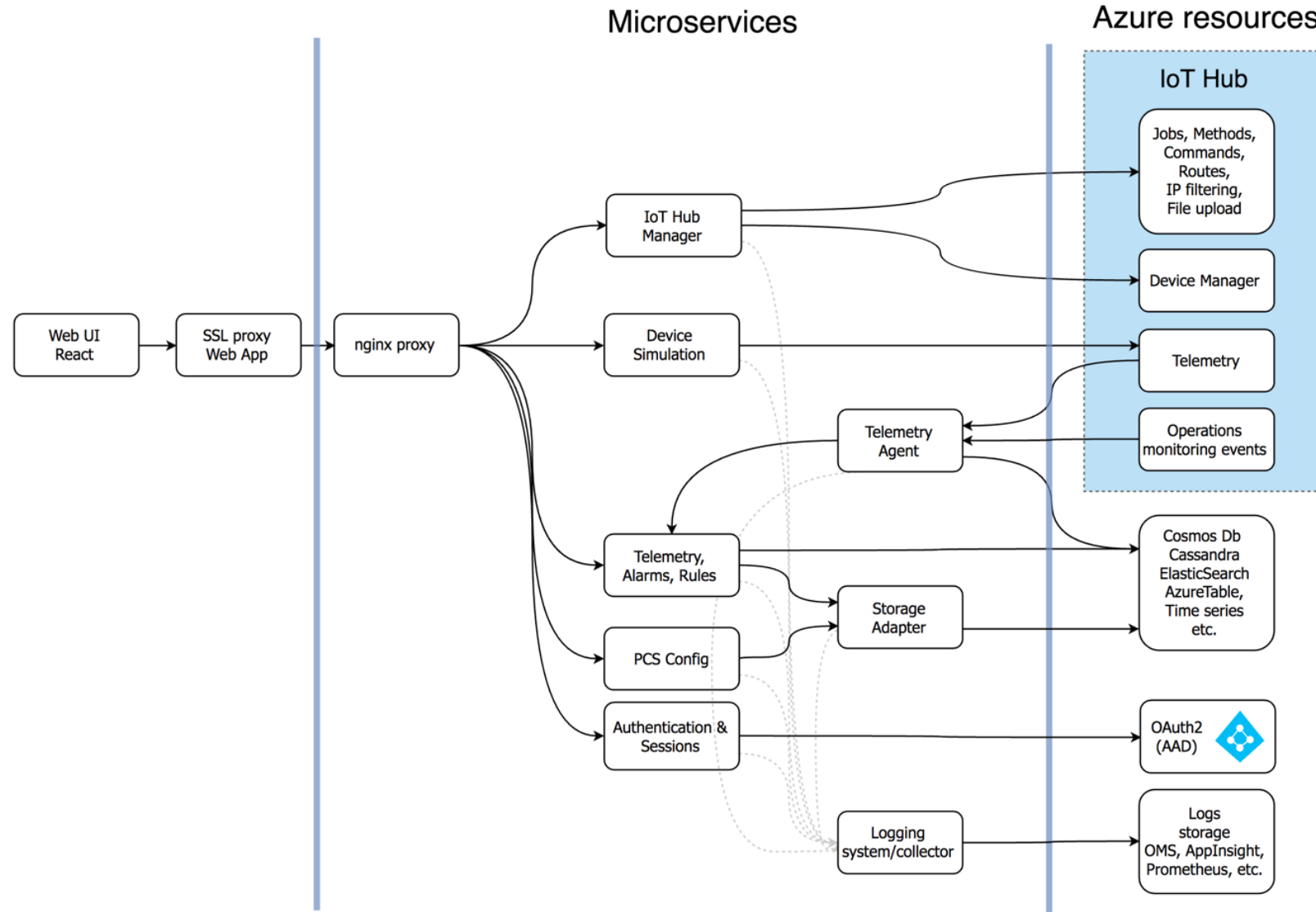
Loose Coupling → Rapid Evolution



Breaking the Monolith into Microservices



Remote Monitoring Microservices Architecture



"Make it customizable"

Developer Enablement

GOALS

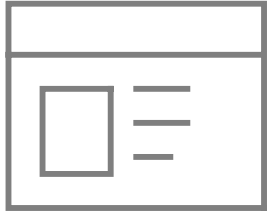


Customizable

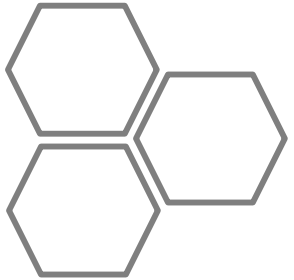
- Flexible UX (React)
- Microservices in .NET and Java
- Azure and/or OSS Services



Customization at Three Layers



Application Layer



Microservices Layer



Cloud Services Layer



Azure IoT Suite Learning Map

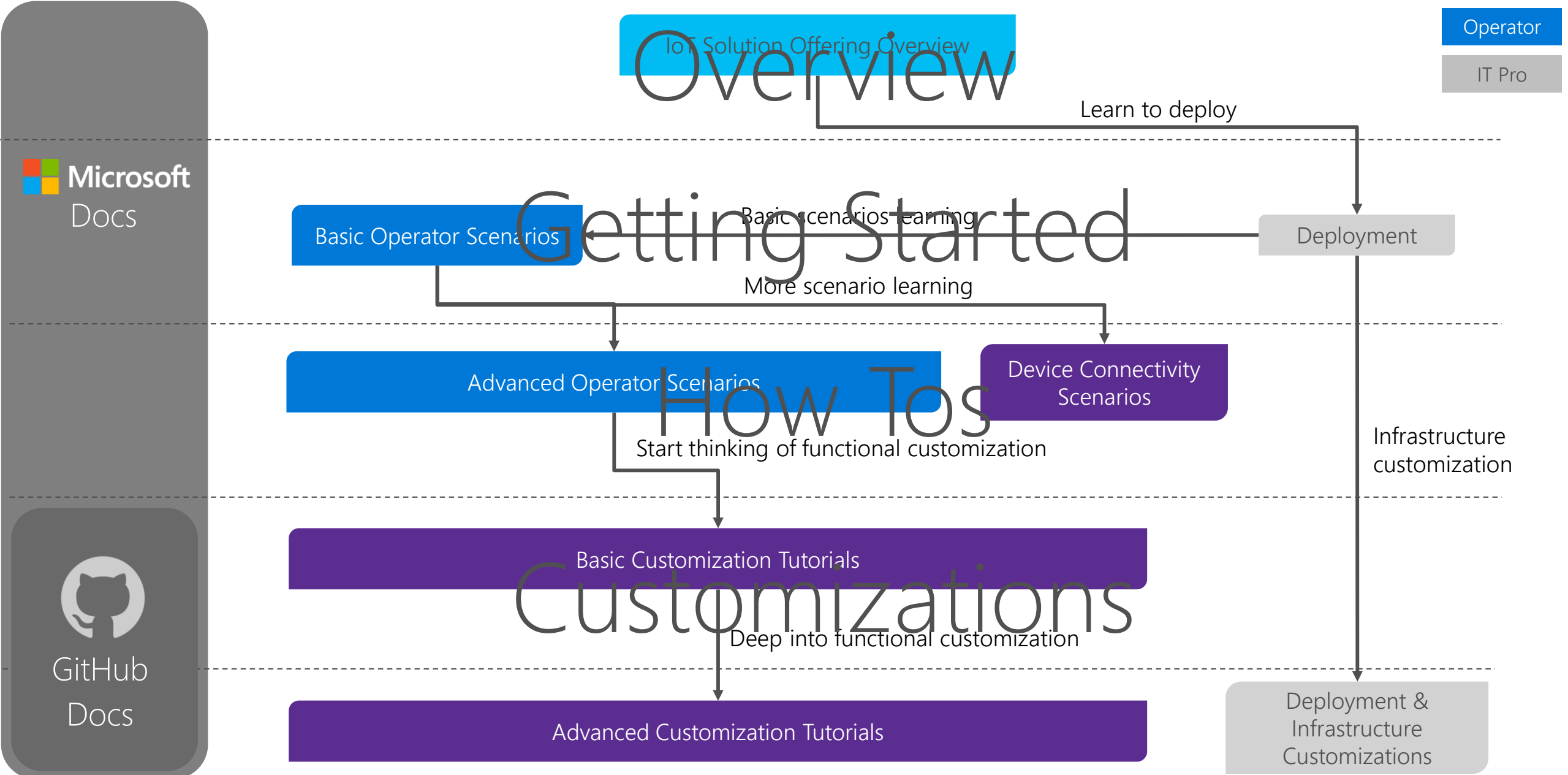
Key target persona

Architect

Developer

Operator

IT Pro



Azure IoT Central

GOALS

Speed Time to Market

Streamline
Operations/Management

Leverage Proven
Technologies

But building an IoT solution can be a challenge



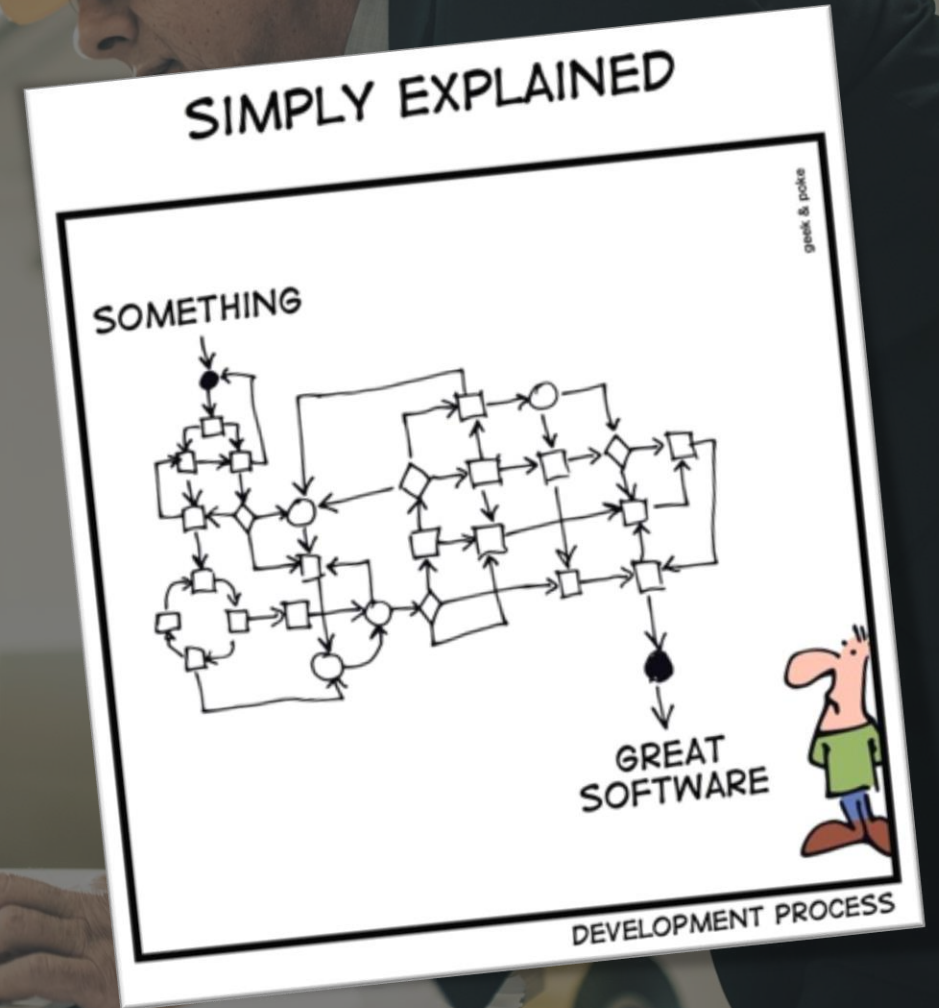
Time-consuming setup and integration



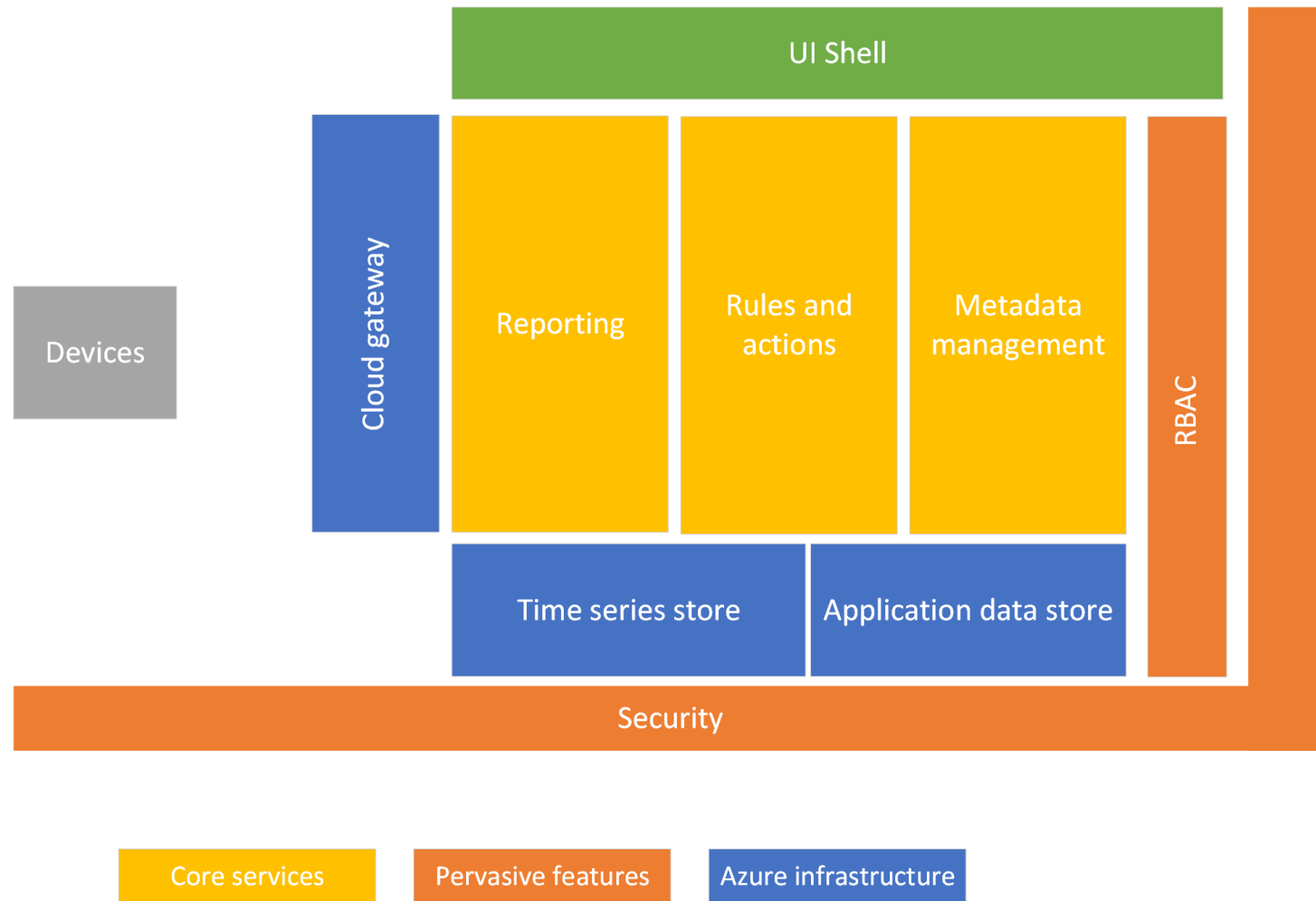
New skill sets



Heavy up-front investment



Marketeecture



A person wearing a headset is seen from the side, holding a tablet. The tablet displays a dashboard with various charts and data. The background is a cockpit with various instruments and controls.

Features

Connectivity Hub & Telemetry ingestion

Connects a variety of devices to the cloud through an open platform

Device management

Enables understanding, control, and optimization of investments

Analytics & dashboards

Provide simple and consumable reports and visualizations for any platform

Rules engine

Real time data processing

Time-series insights

Identify trends among millions of IoT events

Digital twin management

Enables actionable insights through modeling and simulation

User and identity management

Delivers customized levels of permissions across users and protect from unauthorized access

Q&A ?

Type your question into the Q&A module & we will answer them in sequence

IoT Virtual Bootcamp

December
12 – 14, 2017

