

From the Edge to the Cloud. Transforming Industries with IoT

Ant+ Symposium

Terry Mandin
October 3, 2018

Video – FarmersEdge

<https://customers.microsoft.com/en-us/story/farmers-edge-azure-iot-hub-canada>

\$5B IoT investment announcement

Microsoft will invest \$5 billion in IoT. Here's why.

Apr 4, 2018 | Julia White, CVP Microsoft Azure



Microsoft's planned financial investment demonstrates business commitment as a priority for innovation, research and development

Our goal is to simplify the IoT journey so that any customer – no matter where they are starting – can create trusted, connected solutions that improve business experiences as well as our daily lives. To that end, we are dedicating even more resources to research and development in key areas for IoT, including securing the Internet of Things, creating tools and intelligent services to develop for IoT and the edge, and growing our partner ecosystem.

Challenges to build an Azure IoT application



Time-consuming
to get started



Challenging
to customize



Security
is a challenge

Azure IoT approach to help you build IoT applications



Fast
start in minutes



Open and Flexible
for customization



Secure
end-to-end

Azure IoT Central



Fully hosted and managed by Microsoft



No cloud development expertise required



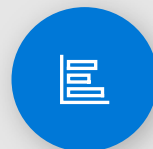
Device connectivity and management



Monitoring rules and triggered actions



User roles and permissions

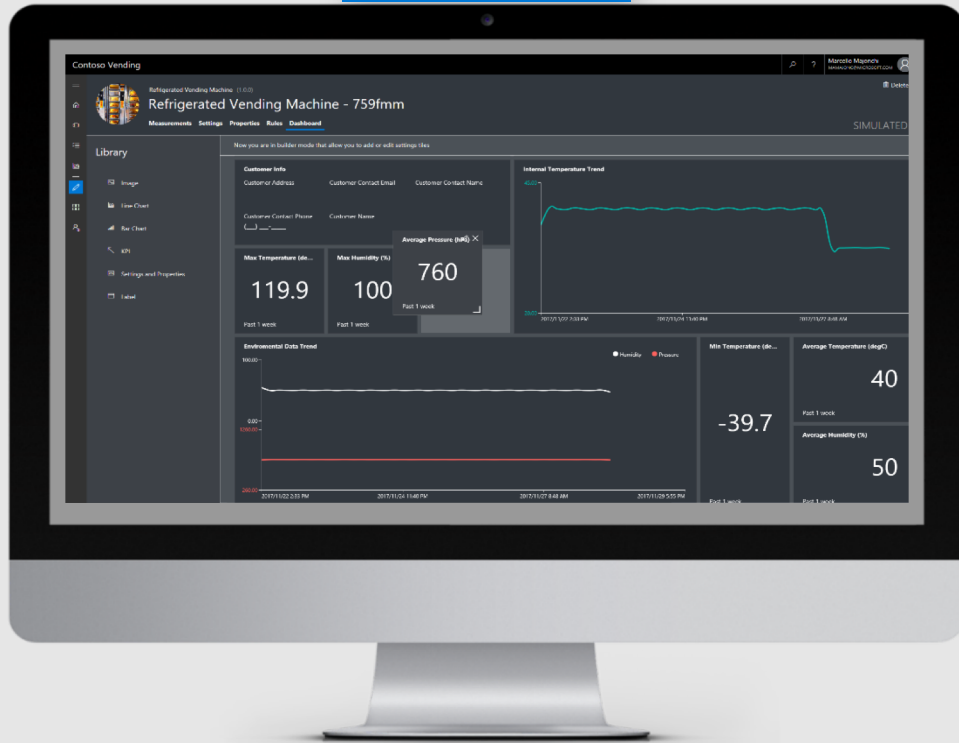


Analytics, dashboards and visualization



Risk-free trial with simplified pricing

Builder



Product Modeler



Rules Workflows



Device settings

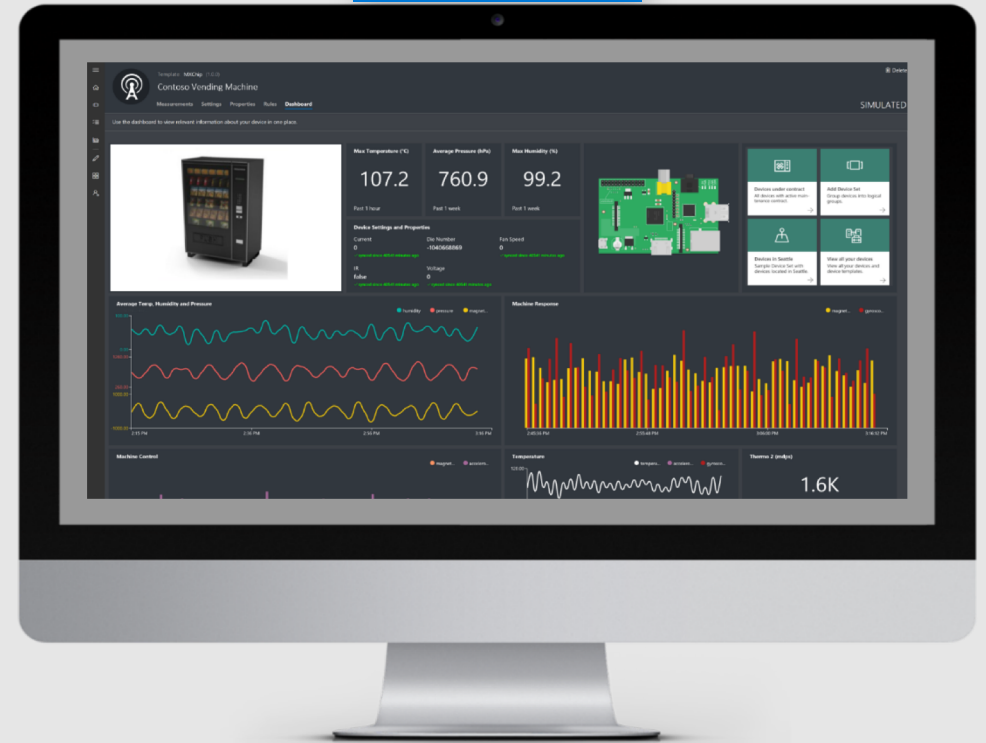


User and identity management



Template Management

Operator



Device management



Time-series Insights



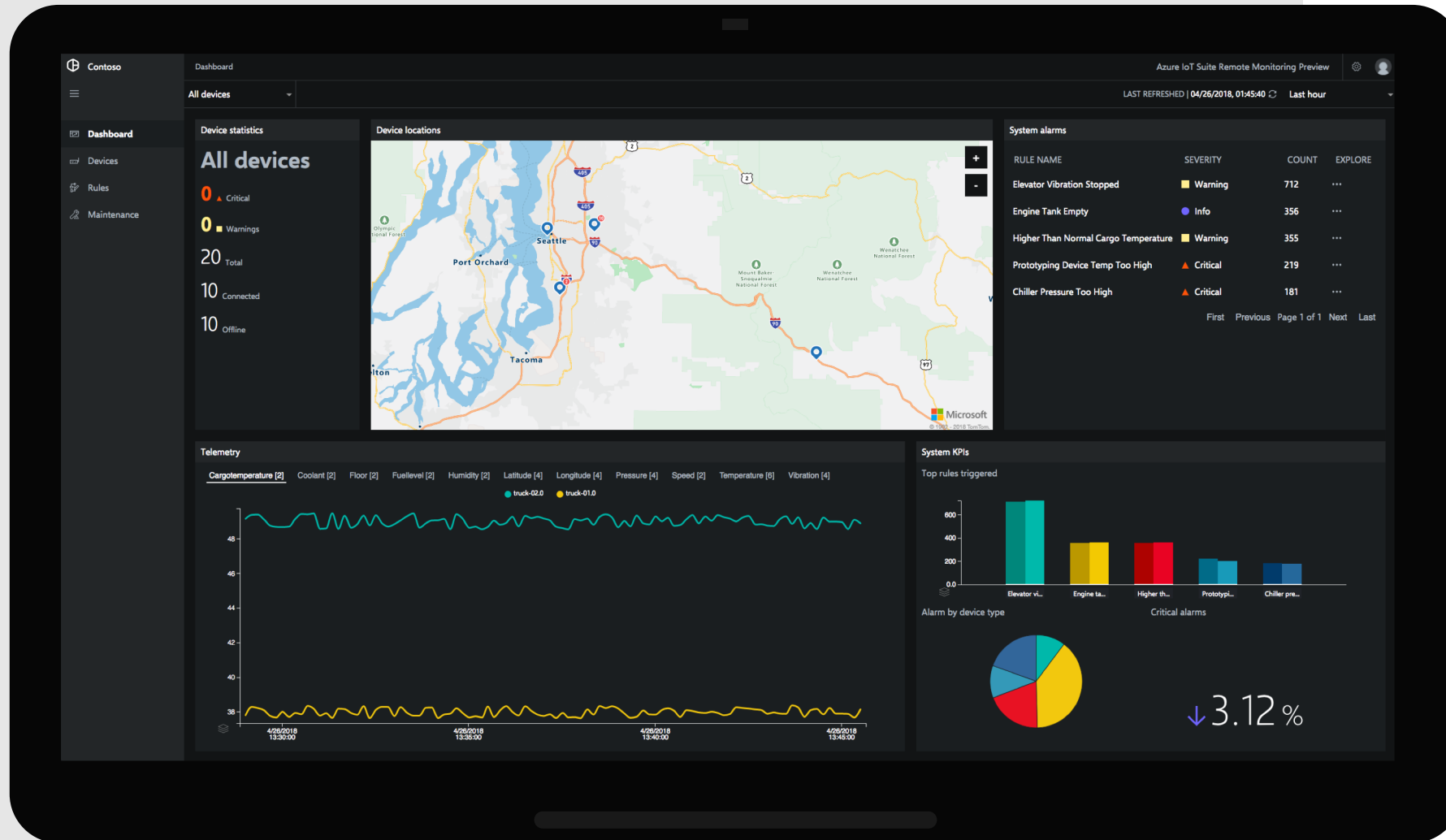
Analytics & dashboards




Alerts and actions


Azure IoT solution accelerators


Remote Monitoring





 Device Connectivity & Management

 Data Ingestion and Command & Control

 Stream Processing & Predictive Analytics

 Workflow Automation and Integration

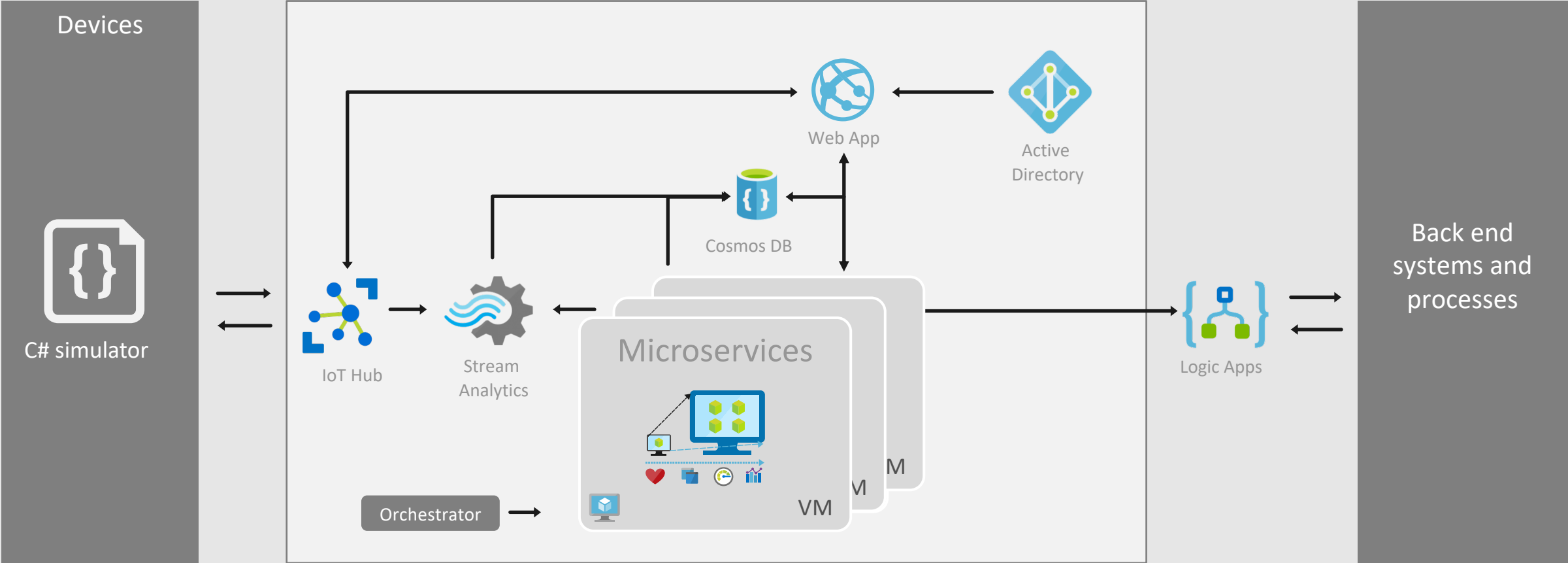
 Dashboards and Visualization

 Open-sourced, microservices-based architecture

 .NET & Java

Customizing Azure IoT solution accelerators

Microservices are fully customizable specially as you scale your IoT application



Remote Monitoring architecture

Connecting Devices to Azure

Azure IoT Hub



Enterprise scale and integration

Millions of devices

Multi-language, open source SDK

HTTPS/AMQP/MQTT

Send telemetry

Receive commands

Device management

Device twins

Queries and jobs



End-to-end

Billions of messages

Scale up and down

Declarative message routes

File upload

Web sockets and multiplexing

Azure monitor

Azure resource health

Configuration management security



Bi-directional communication

Per device certificates

Per device enable/disable

TLS security

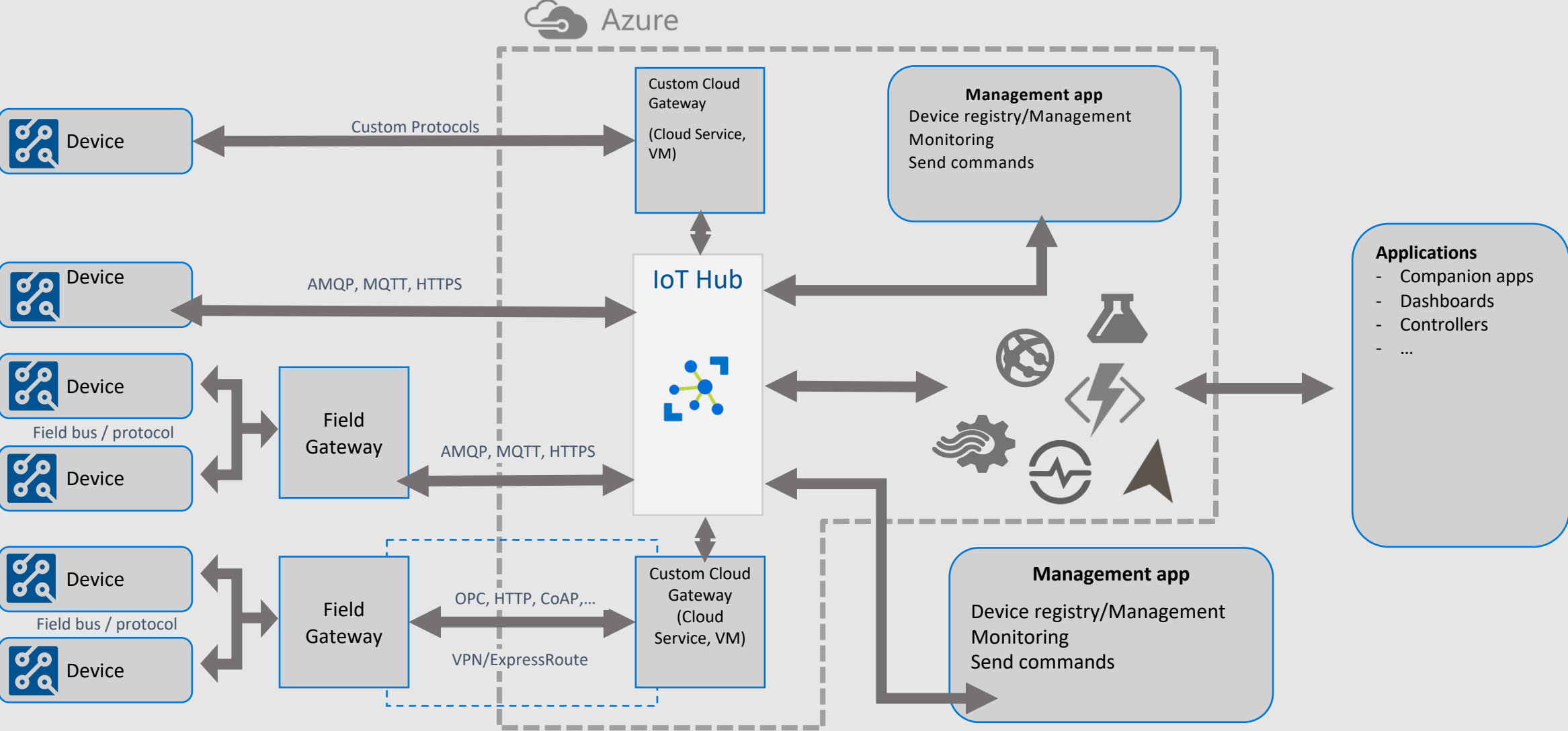
X.509 support

IP whitelisting/blacklisting

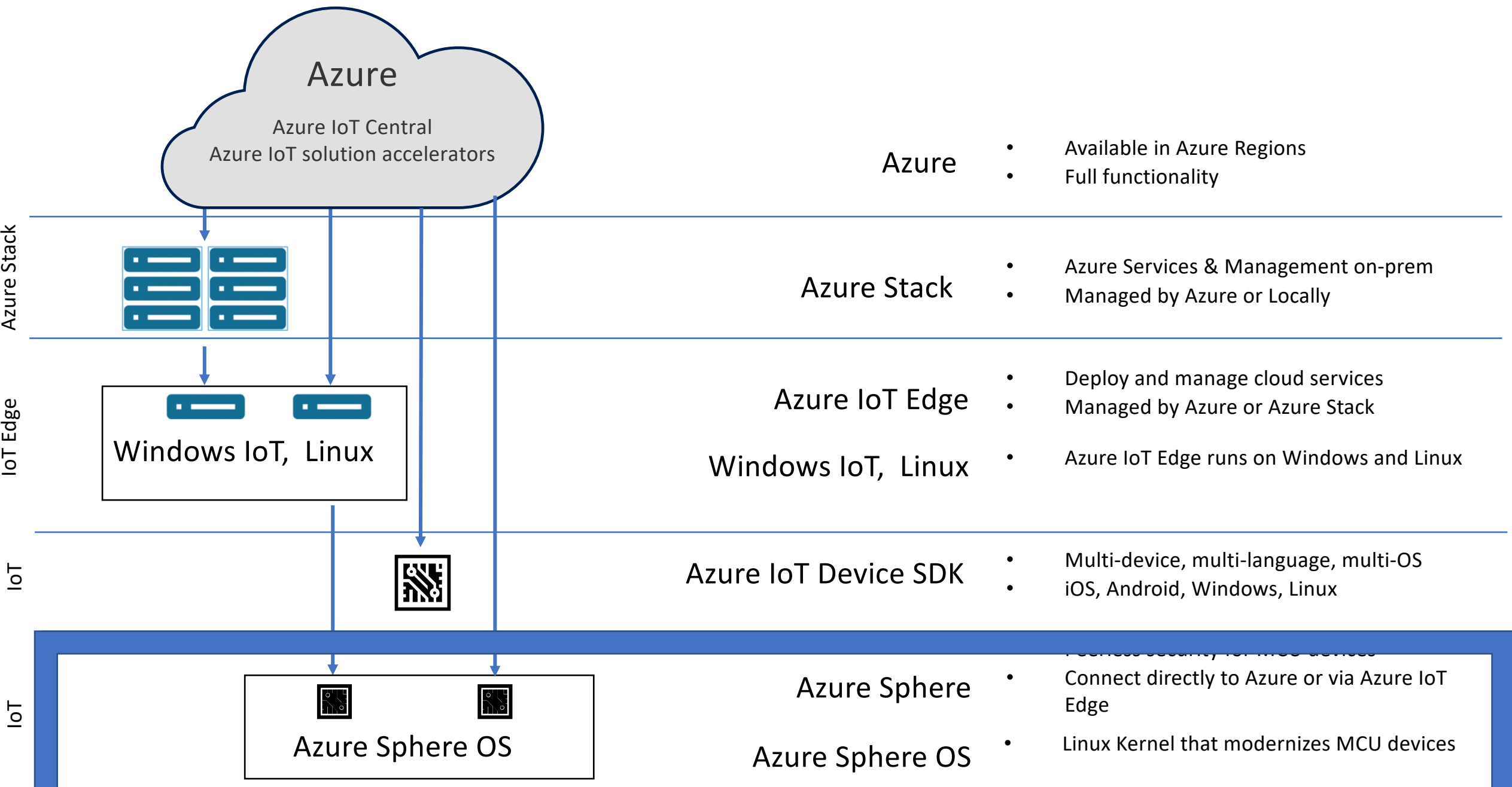
Shared access policies

Firmware/software updates

Azure IoT Hub detail architecture



Azure, Azure Stack, IoT Edge and IoT



Azure

Azure IoT Central
Azure IoT solution accelerators

Azure

- Available in Azure Regions
- Full functionality

Azure Stack

- Azure Services & Management on-prem
- Managed by Azure or Locally

Azure IoT Edge

- Deploy and manage cloud services
- Managed by Azure or Azure Stack

Windows IoT, Linux

- Azure IoT Edge runs on Windows and Linux

Azure IoT Device SDK

- Multi-device, multi-language, multi-OS
- iOS, Android, Windows, Linux

Azure Sphere

- Connect directly to Azure or via Azure IoT Edge

Azure Sphere OS

- Linux Kernel that modernizes MCU devices

Azure Sphere OS

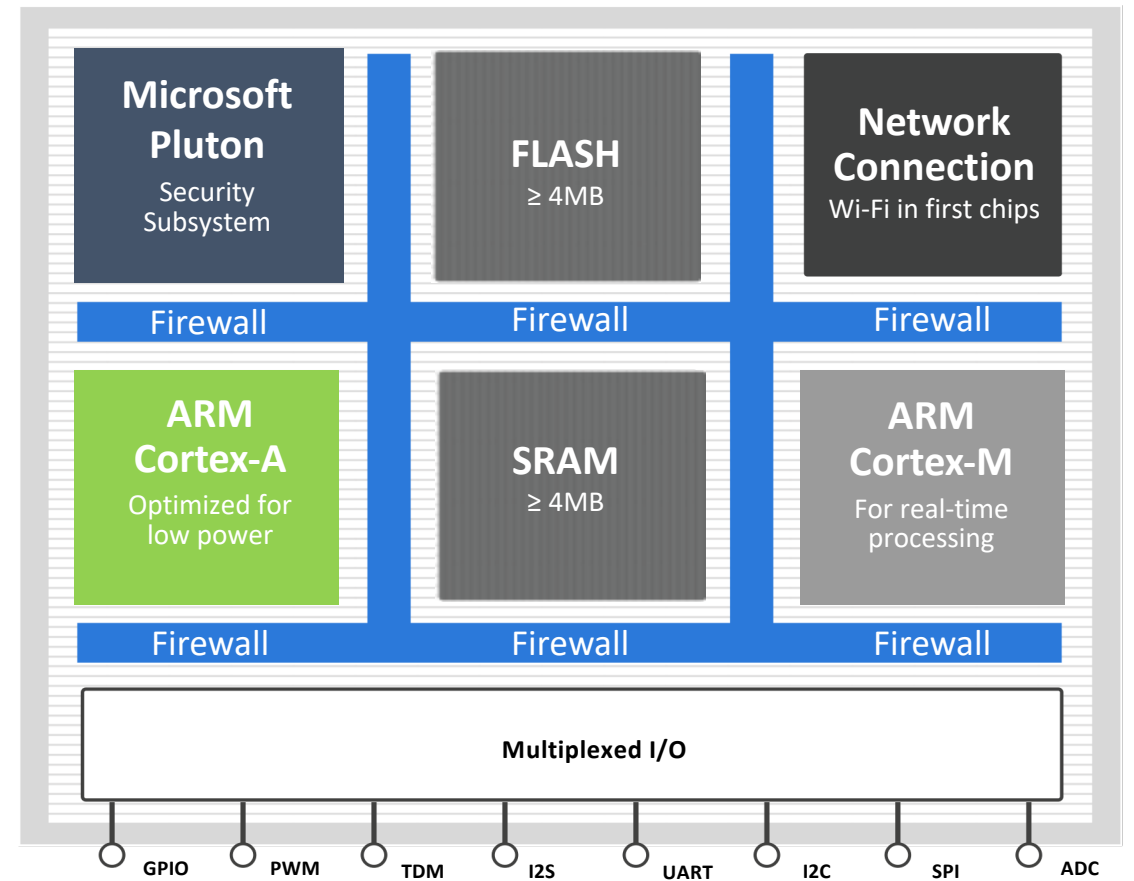
Azure Sphere MCUs create a secured root of trust for connected, intelligence edge devices

CONNECTED with built-in networking

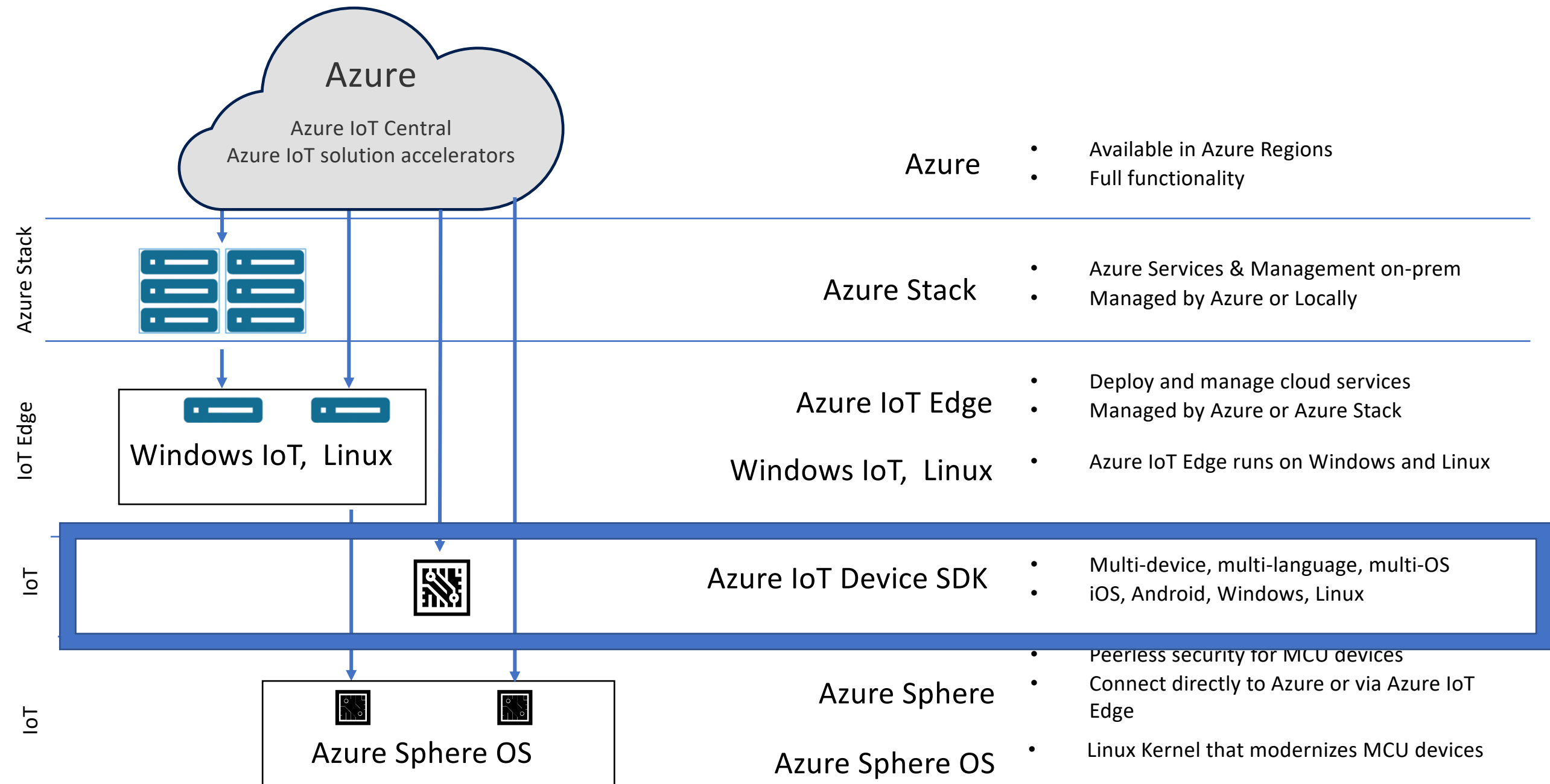
SECURED with built-in Microsoft silicon security technology including the Pluton Security Subsystem

CROSSOVER Cortex-A processing power brought to MCUs for the first time

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Azure, Azure Stack, IoT Edge and IoT



SDK Library

SDK, agent libraries

Easily accessible libraries in GitHub

Cross platform support

Choose real time OS, platform and language

Connect IP, and non-IP devices

Support for direct connection devices and resource strained or non-IP devices via gateway and field protocols

Open source framework

Develop custom agents for your devices

Secure communication

Simple and secure D2C and C2D connectivity for messaging, device management and command and control

OS support

RTOS, Linux, Windows, Android, iOS etc.

Azure IoT Device Catalog

Azure Certified for IoT device catalog

Partner Dashboard

Browse Devices

Certified devices and starter kits

Microsoft Azure

Certified

Tell us what you are looking for




Become a Partner

Learn More

- ▶ Azure IoT Edge
- ▶ Microsoft Azure IoT Starter Kit
- ▶ Industry
- ▶ Device Type
- ▶ Tested Built-in Sensors
- ▶ Operating System
- ▶ Connectivity
- ▶ Secure Hardware
- ▶ Device Security Services
- ▶ I/O Hardware Interfaces
- ▶ Chip Manufacturers



Azure IoT Starter Kit
CEC1x02DevBoard




Azure IoT Starter Kit
Industrial IoT Starter Kit




Azure IoT Starter Kit
Grove Starter Kit for Azure IoT Edge


Azure IoT Starter Kit
teXXmo IoT Button





Azure IoT Starter Kit
ARK-1123H





Azure IoT Starter Kit
Meshium




Azure IoT Starter Kit
MXChip IoT DevKit




Azure IoT Starter Kit
IoT Wi-Fi node based on STM32 NUCLEOL476RG



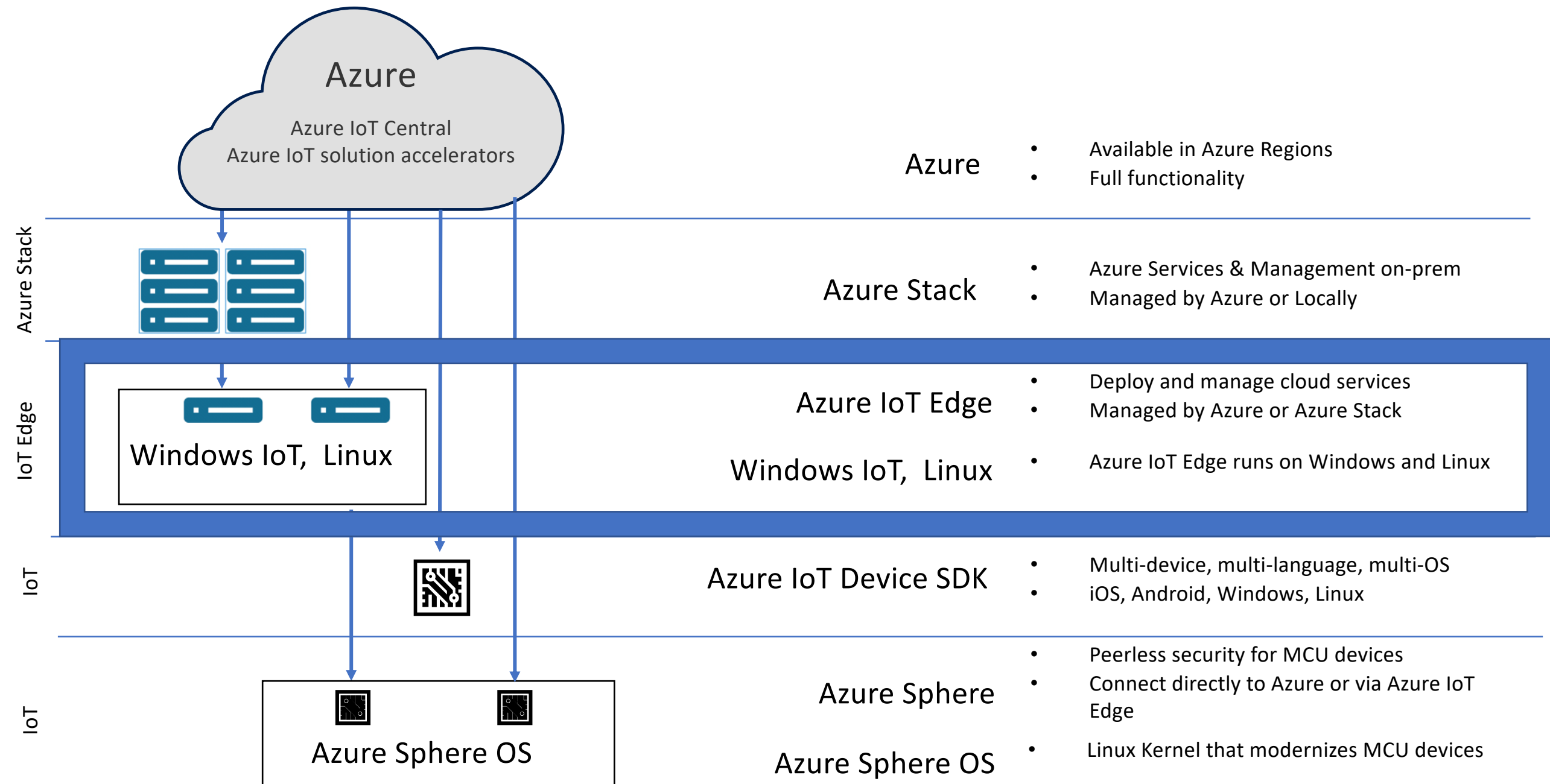
Azure IoT Starter Kit
Amplified-FATBOX-G3



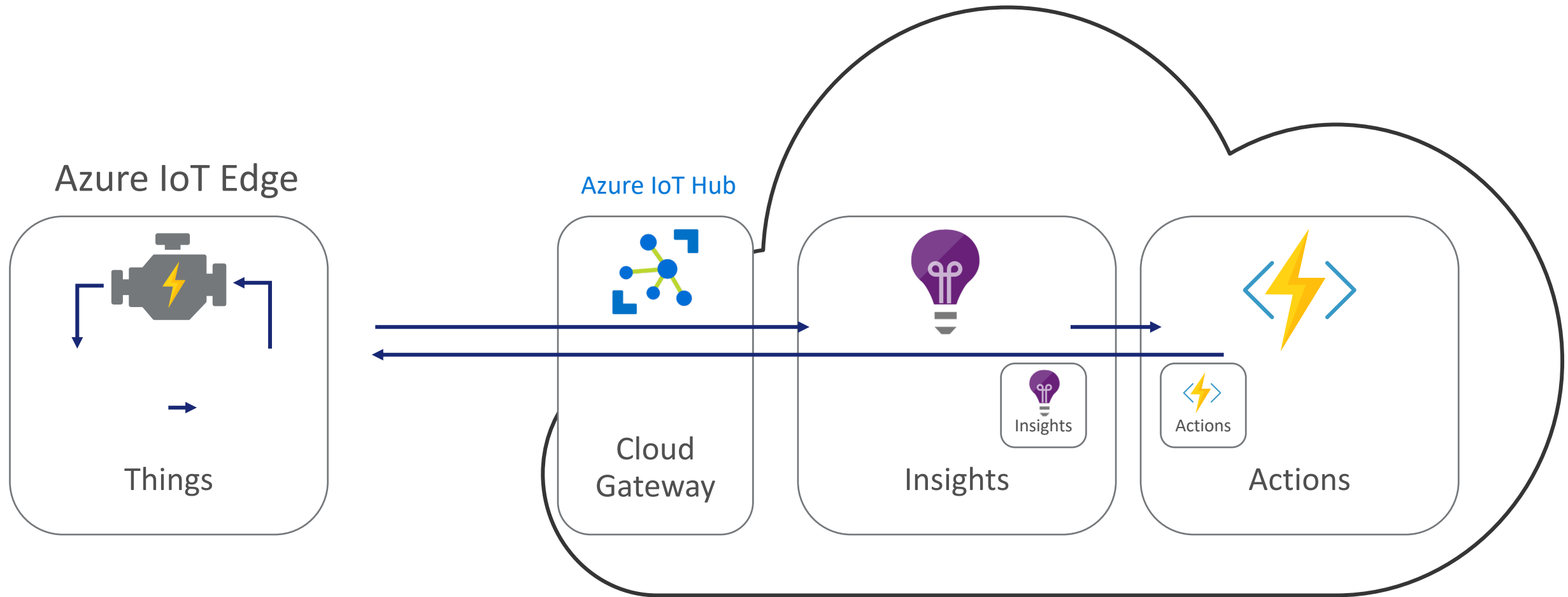
Azure IoT Starter Kit
M5Stack lot kit



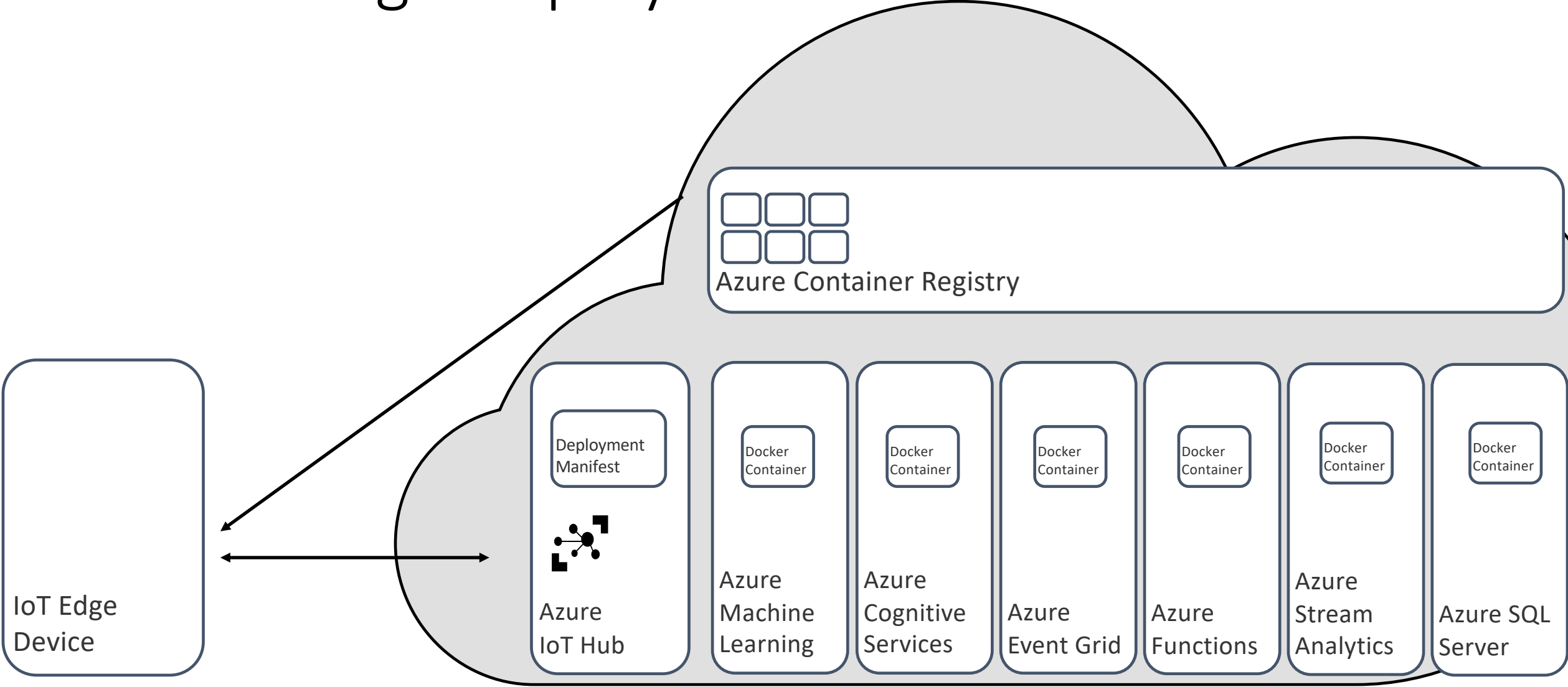
Azure, Azure Stack, IoT Edge and IoT



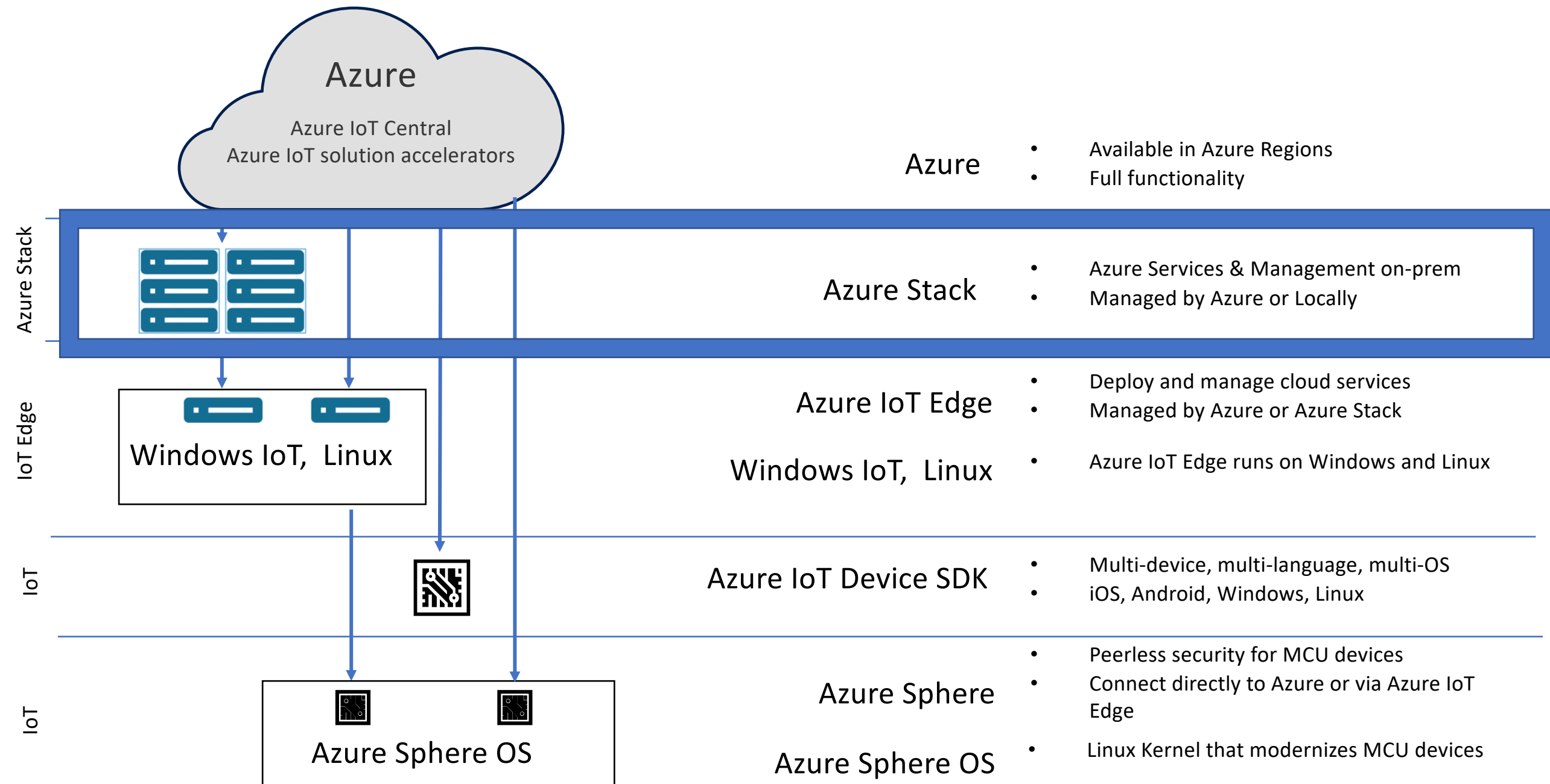
IoT Pattern + Edge



Azure IoT Edge Deployment



Azure, Azure Stack, IoT Edge and IoT



End to End Security with Azure IoT Hub and Azure IoT solution accelerators

Securely connect millions of devices... ..over a secure internet connection... ..to Microsoft Azure – built with security from the ground up



Device Security

X.509 Certificate Based Identity and Attestation
Device Provisioning, Authorization & Management
Support for Diverse Hardware Secure Modules



Connection Security

X.509/TLS-Based Handshake and Encryption



Cloud Security

Azure Security Center | Azure Active Directory
Key Vault | Policy-Based Access Control

Azure IoT Hub security controls

Three device attestation and authentication Methods with policy based access controls



Access Controls

- Permission based
- Role based
- Action based
- Per device granularity

DEMO

AI & IoT Insider Lab



**Microsoft
IoT & AI
Insider Labs**

Develop your
IoT and AI
solution with
help from Microsoft

<https://www.microsoftiotinsiderlabs.com/>

Video – PCL

<https://customers.microsoft.com/en-us/story/pcl-construction-professional-services-azure>

Get started today

Ready to BUILD IoT Applications?

Find everything you need to develop advanced IoT apps using familiar languages and tools.

[Build IoT apps](#)

Looking to USE an IoT Solution?

Use managed and industry-specific solutions to get started quickly and easily.

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[Azure IoT solutions accelerators product page](#)

[Azure IoT Hub product page](#)

[IoT School](#)





<https://ca.linkedin.com/in/terry-mandin>