Microsoft

A Brief Journey from Device to Action …

hackster.io

IoT Virtual Bootcamp

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http://aka.ms/IoTVirtualBootcamp

Hardware Partners :

adafruit

Windows 10 IoT

Maarten Struys

Agenda

Operating System Intro

Windows 10 IoT overview

- Productive
- Connected
- Trusted

Summary

Operating Systems

An Operating System is a piece of software that connects computer hardware, peripherals and users

An Operating System is an abstraction layer to make it easier to develop applications

Examples: Linux, Windows, Android, iOS

Operating Systems Characteristics

Multitasking

Ability to run multiple processes concurrent, giving them repeated time slices

Multi-user

Allows multiple users to use the same hardware simultaneously

Embedded

Runs on an embedded system, most often operate with a limited number of HW resources

Real-time

Guarantees to process events or data by a specific moment in time

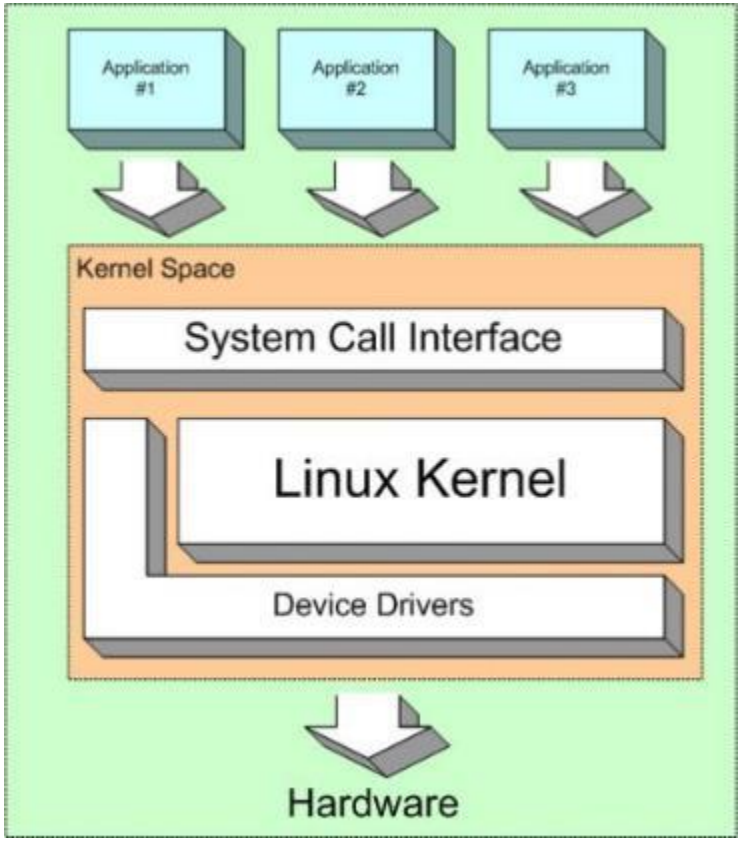
Linux high level overview

A family of open source operating systems (distributions)

Runs on many different hardware platforms

Low HW demand

Has a bit of a learning curve

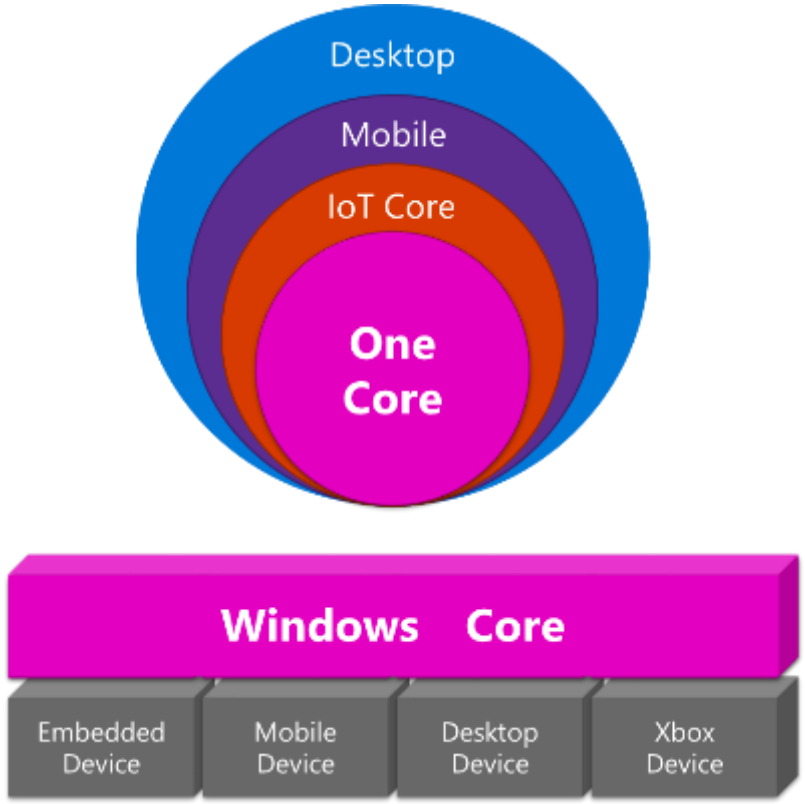


Windows 10 high level overview

One Core shared by different Windows 10 versions

Runs on different hardware platforms

Apps (UWP) and device drivers (UWD) work on different Windows versions without code changes

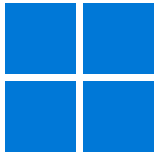


Windows 10 IoT

Faster time-to-market

Intelligent security

Intelligent edge



Integrated with cloud offering

Build

Building a Windows device is as easy as building an app

Windows ‘just works’, built-in security, connectivity and NUI options

Hundreds of samples, docs, and great tooling to guide you

Familiar development environment with best in class dev tools

Shell lockdown/OEM customization and a robust set of language-locales

Familiar tools, familiar processes

Microsoft provides the tooling and services to bring your app to market faster

One toolset; one app
Support for C#, HTML/JS, C++, and more
Device-aware runtime light up

One Dev Center
Flexible device family targeting
Detailed analytic reports

Existing code welcome
Desktop applications
Mobile websites
Cross-platform apps (e.g. Unity, Xamarin)

Windows 10 IoT Innovations

New Platforms & SoCs

Intel Apollo Lake & RPi3 SOMs

Azure IoT Hub Device Provisioning

Fully extensible at scale

Azure IoT Hub Device Mgmt.

Fully extensible at scale

Project "Rome"

Remote device communication

New Controls & Embedded Features

Modern Connected Standby, on-SoC PWM, NFC, and more

Productization Resources

Mfg Guide, Recovery solution, Packaging tools

Turn-key Security

Device Guard for IoT, BitLocker, & Secure Boot

App Servicing via Store

Service your apps with Microsoft Store

Windows 10 IoT editions

Windows 10 IoT Enterprise

Minimum Requirements
1 GHz or faster X86 or X64 CPU
1 GB RAM (2 GB for 64-bit)
16 GB Storage (20 GB for 64-bit)

Powerful Industry Devices

Advanced Lockdown capabilities

Rich user experience

Win32 and UWP apps

Windows 10 IoT Core

Minimum requirements
Supported X86, X64 or ARM CPU
512 MB RAM
2 GB storage

Small Footprint and Low-Cost Smart Things

UWP app experience

Small Hardware Footprint

Optimized for devices with and without displays

For details see https://docs.microsoft.com/windows-hardware/design/minimum/minimum-hardware-requirements-overview

Building Devices

with Windows Embedded Mode

"Embedded" Mode

Access to system settings and capabilities	APIs to access busses	Background services for long running tasks

Connect

Bringing the Intelligent Edge to the Intelligent Cloud for a complete solution

Azure IoT shines brightest on Windows

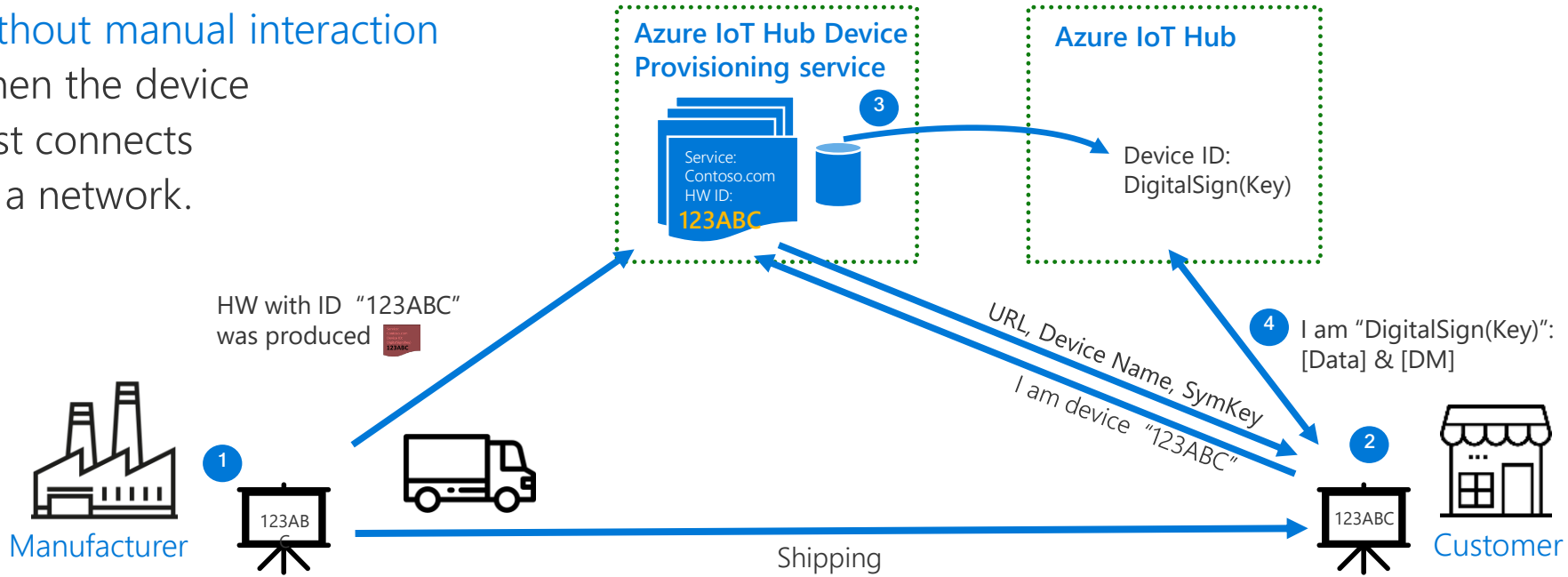
Built-in connectivity with Azure IoT provides advanced capabilities including ML

Key technologies like OPC-UA, and OCF work great with Windows

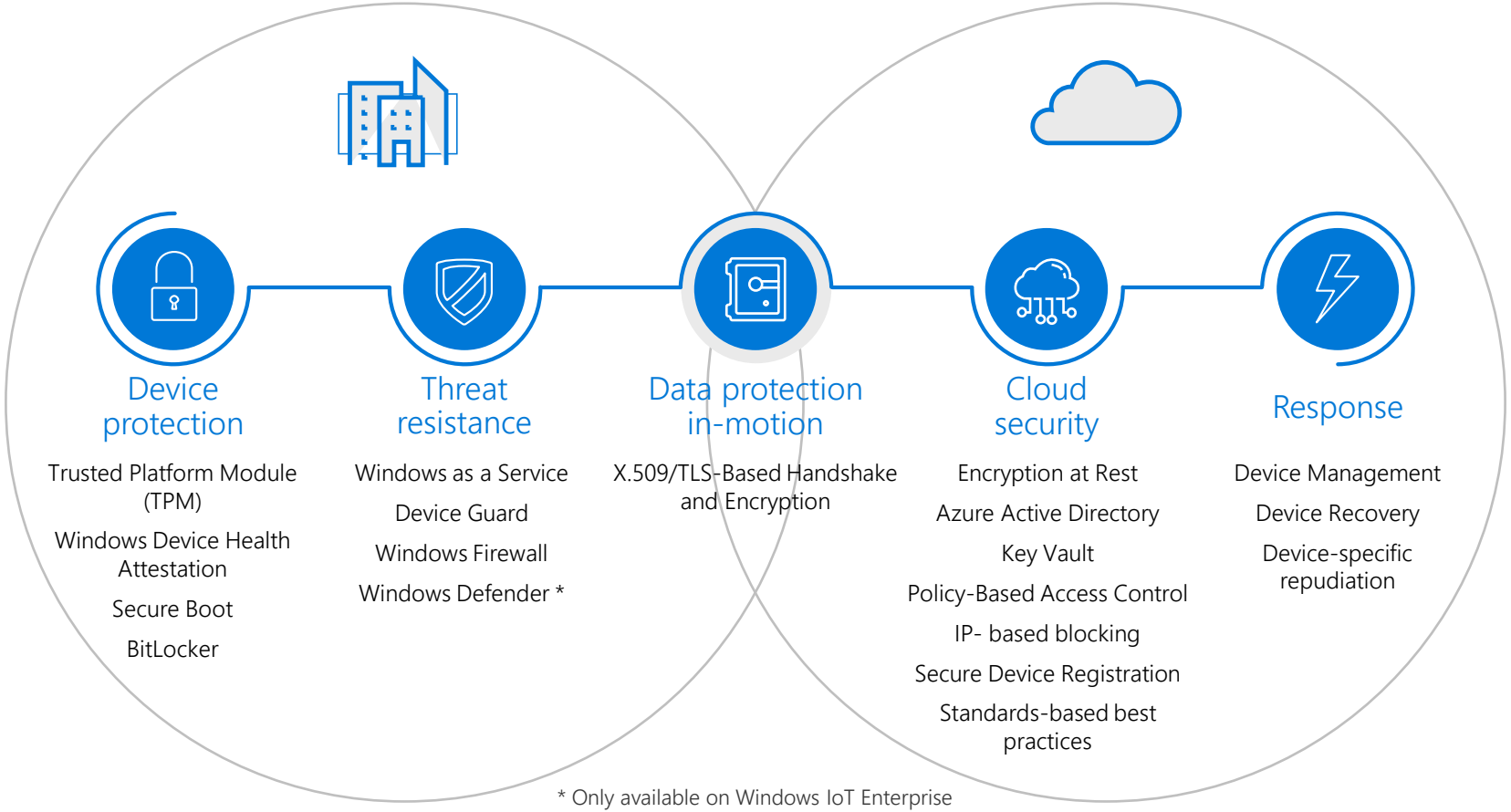
Able to connect to a wide variety of disparate existing devices

Provisioning and Managing devices at scale

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



Trusted



Device protection

Trusted Platform Module (TPM)

Windows Device Health Attestation

Secure Boot

BitLocker

Threat resistance

Windows as a Service

Device Guard

Windows Firewall

Windows Defender *

Data protection in-motion

X.509/TLS-Based Handshake and Encryption

Cloud security

Encryption at Rest

Azure Active Directory

Key Vault

Policy-Based Access Control

IP- based blocking

Secure Device Registration

Standards-based best practices

Response

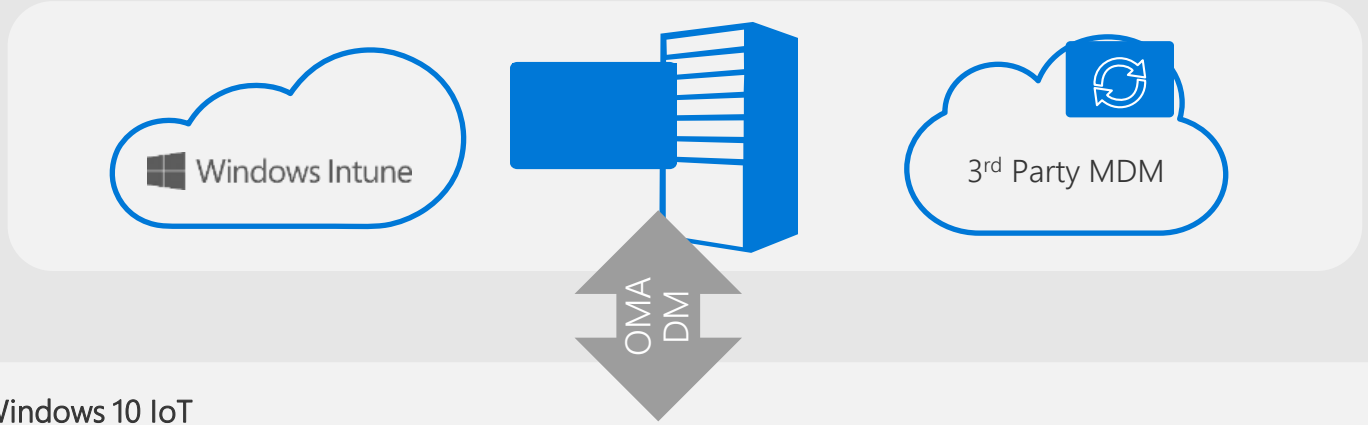
Device Management

Device Recovery

Device-specific repudiation

* Only available on Windows IoT Enterprise

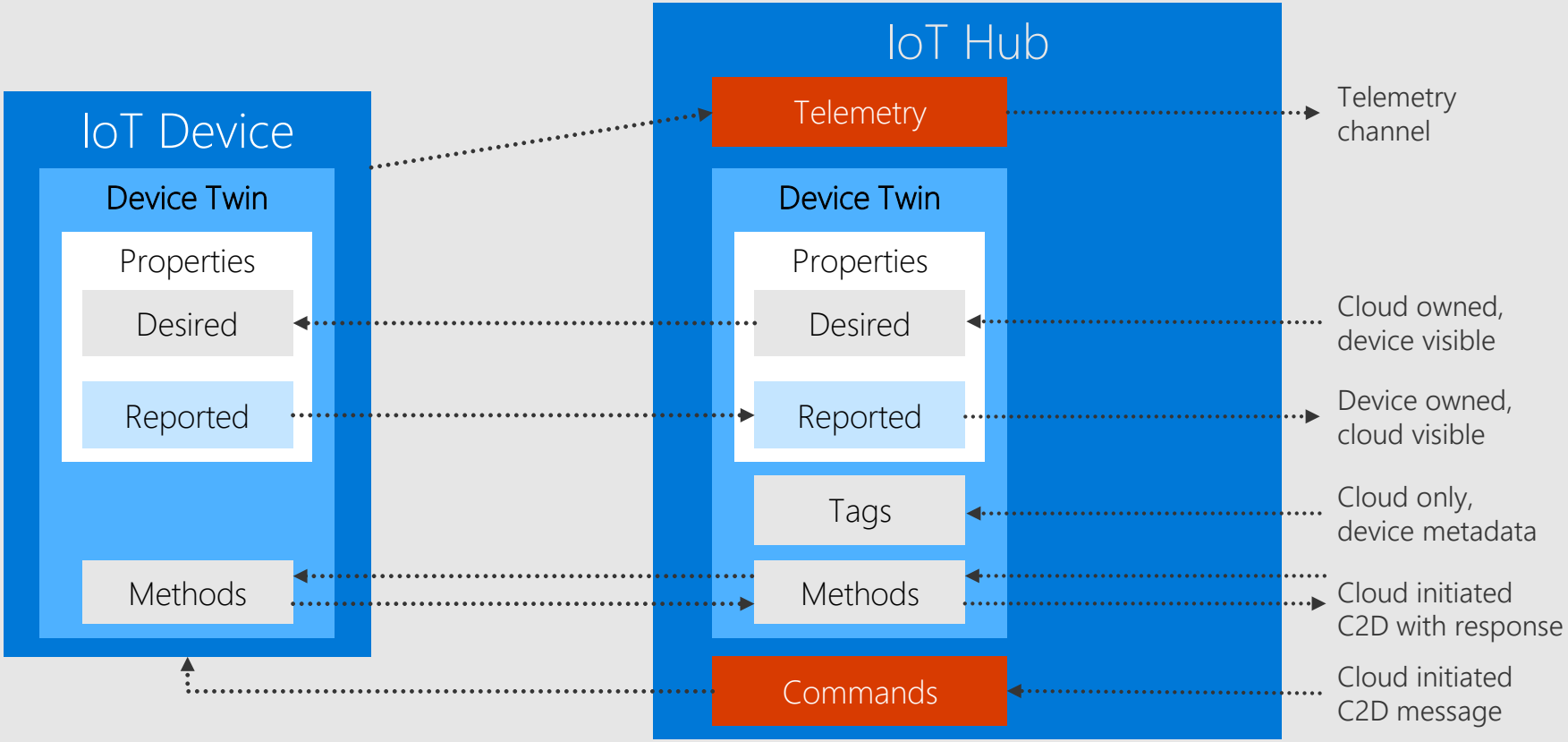
Consistent Device Management
for all Windows 10 IoT devices



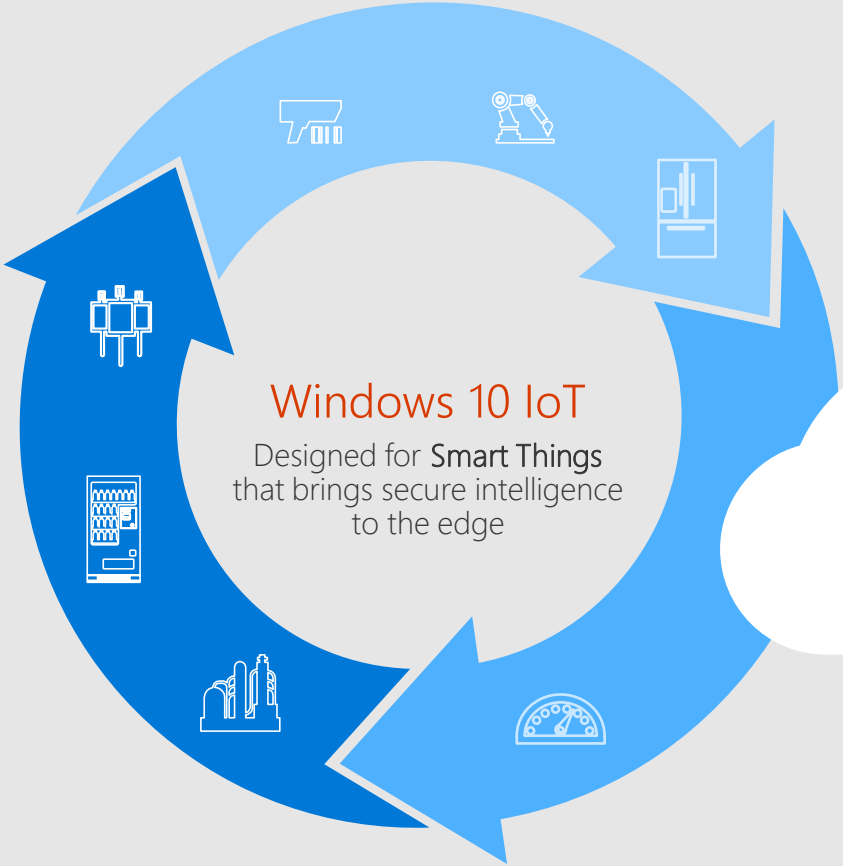
One Windows Platform

- Converged MDM Stack
- Converged Servicing Stack
- Common CSPs

Manage devices at scale with Azure IoT



Why Microsoft for Internet of Things?



Windows 10 IoT

Designed for **Smart Things** that brings secure intelligence to the edge

Azure IoT

The **Cloud Solution** designed to easily connect devices and analyze data to help transform your business