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SUMMER EDITION

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Azure Sphere: Securing the Intelligent Edge with the seven properties of highly secured devices

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The MPU in your PC is 100x to 1000x more powerful than the MCU in your fridge.



MPU



MCU

Connected MCUs will change your customer relationships

- **How does** a consumer know the compressor in their fridge needs to be replaced?

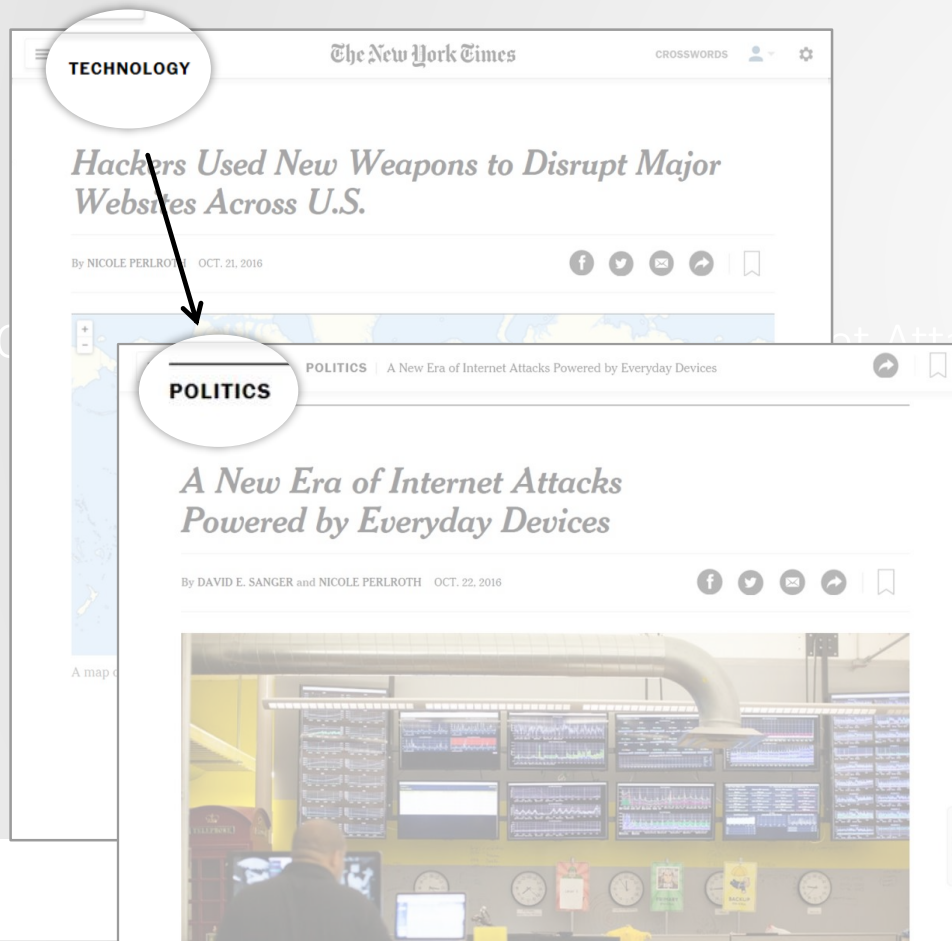


Option 1
Melted ice cream

Option 2
Predictive maintenance

Connected devices create **profoundly better** customer experiences.

And, expose your business to unequalled risks...



Device security is a socioeconomic concern

Day 1 the attack is Technology headline in NY Times
Day 2 the attack is Politics headline



The attack exploited well-understood weaknesses

Weak common passwords, no early detection, no remote update, etc.



Future attacks could be much larger

This attack was small; just 100k devices
Imagine a 100M-device attack



Future attacks could create huge liability exposure

Hackers could "brick" an entire product line in a day
Actuating devices could cause property damage or loss of life

A large, solid blue curved shape, resembling a thick arc or a partial circle, dominates the right side of the frame. It is set against a plain white background.

The internet security battle.
We've been fighting it for ***decades.***
We have experience to share.

Highly-secured connected devices require 7 properties



Hardware Root of Trust



Is your device's identity and software integrity secured by hardware?



Defense in Depth



Does your device remain protected if a security mechanism is defeated?



Small Trusted Computing Base



Is your device's TCB protected from bugs in other code?



Dynamic Compartments



Can your device's security protections improve after deployment?



Certificate-Based Authentication



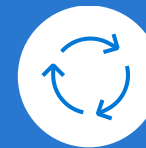
Does your device use certificates instead of passwords for authentication?



Failure Reporting



Does your device report back about failures and anomalies?



Renewable Security



Does your device's software update automatically?

<https://aka.ms/7properties>



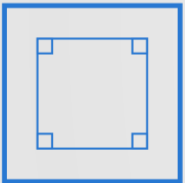
= Silicon support required



= OS support required



= Cloud Service support required



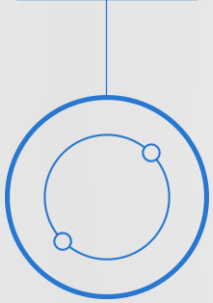
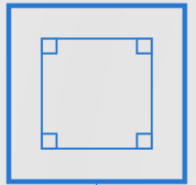
Some properties
depend only on
hardware support

Hardware Root of Trust

Unforgeable cryptographic
keys generated and protected
by hardware

*Is your device's identity
and software integrity
secured by hardware?*

- Hardware to protect **Device Identity**
- Hardware to **Secure Boot**
- Hardware to attest **System Integrity**



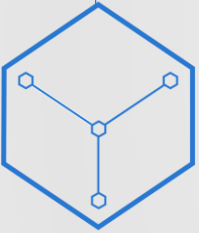
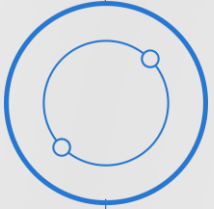
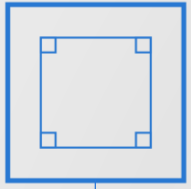
Some properties
depend on hardware
and software

Dynamic Compartments

Internal barriers limit the
reach of any single failure

*Can your device's security
protections improve
after it is deployed?*

- Hardware to **Create Barriers**
- Software to **Configure Compartments**



Some properties depend
on hardware, software
and cloud

Renewable Security

Device security renewed to
overcome evolving threats and
security breaches.

*Does your device's software
update automatically?*

- Cloud to **Provide Updates**
- Software to **Apply Updates**
- Hardware to **Prevent Rollback**

Azure Sphere empowers manufacturers to create highly-secured, connected MCU devices

SECURITY

Every device built with Azure Sphere is secured by Microsoft.

For its 10 year lifetime.

PRODUCTIVITY

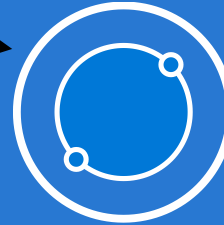
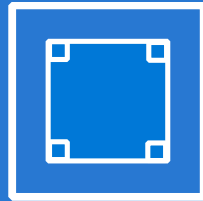
The Azure Sphere developer experience shortens OEM time to market.

OPPORTUNITY

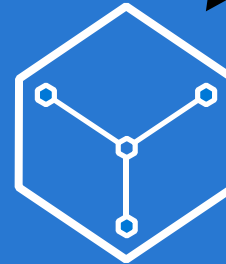
Azure Sphere empowers OEMs to create new customer experiences and business models.

Azure Sphere is an end-to-end solution for securing MCU powered devices

New **Azure Sphere certified MCUs**, from silicon partners, with built-in Microsoft security technology provide connectivity and a dependable **hardware root of trust**.



New **Azure Sphere OS** secured by Microsoft for the devices 10-year lifetime to create **a trustworthy platform** for new IoT experiences



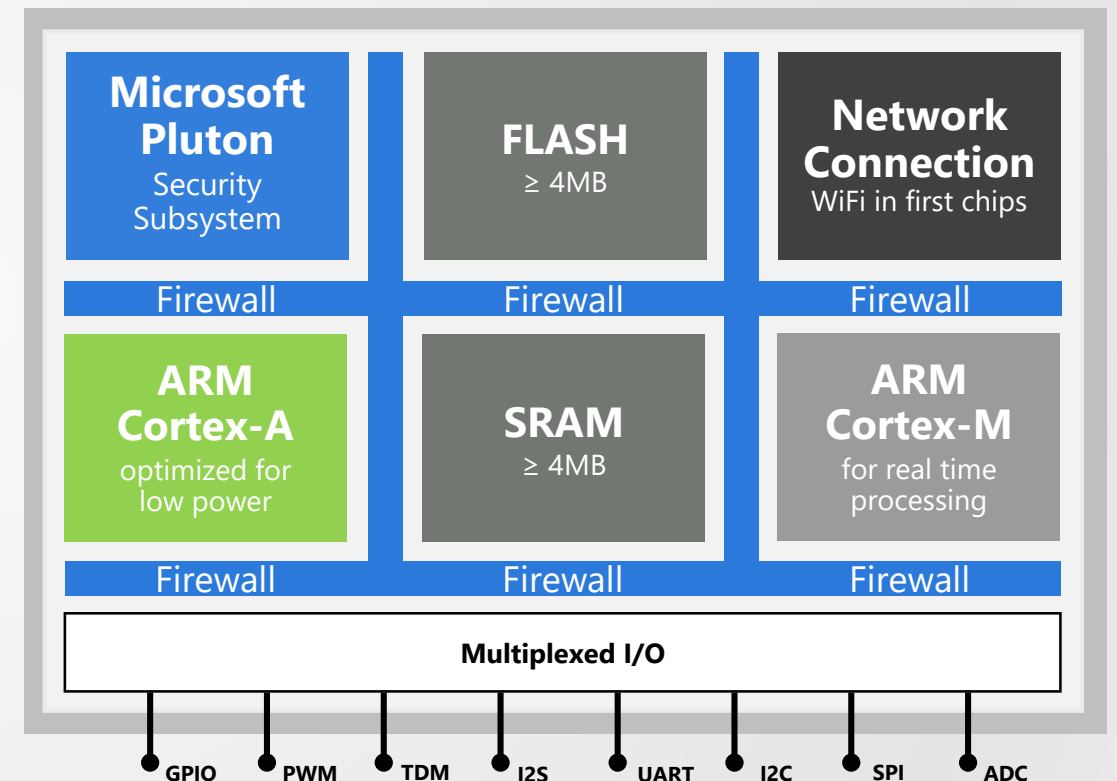
The **Azure Sphere Security Service** guards every Azure Sphere device; it **brokers trust** for device-to-device and device-to-cloud communication, **detects emerging threats**, and **renews device security**.

Azure Sphere certified 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

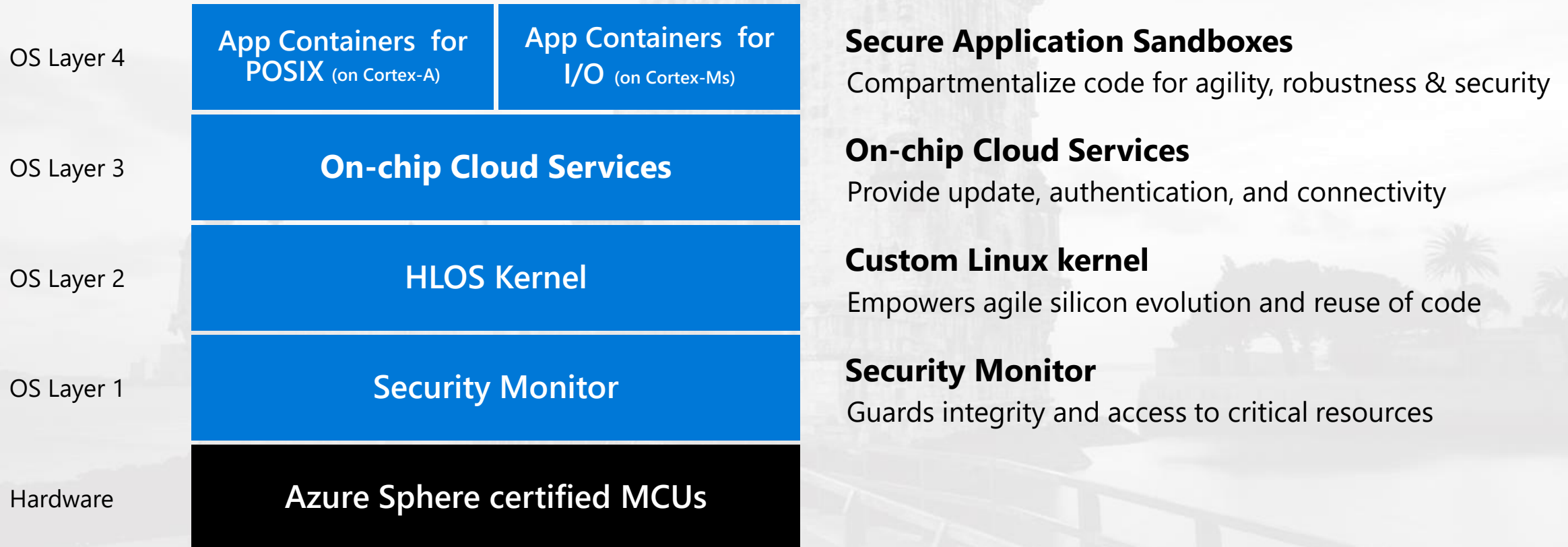


Our Silicon Partners



The Azure Sphere OS is optimized for IoT, Security and MCU agility

Azure Sphere OS Architecture



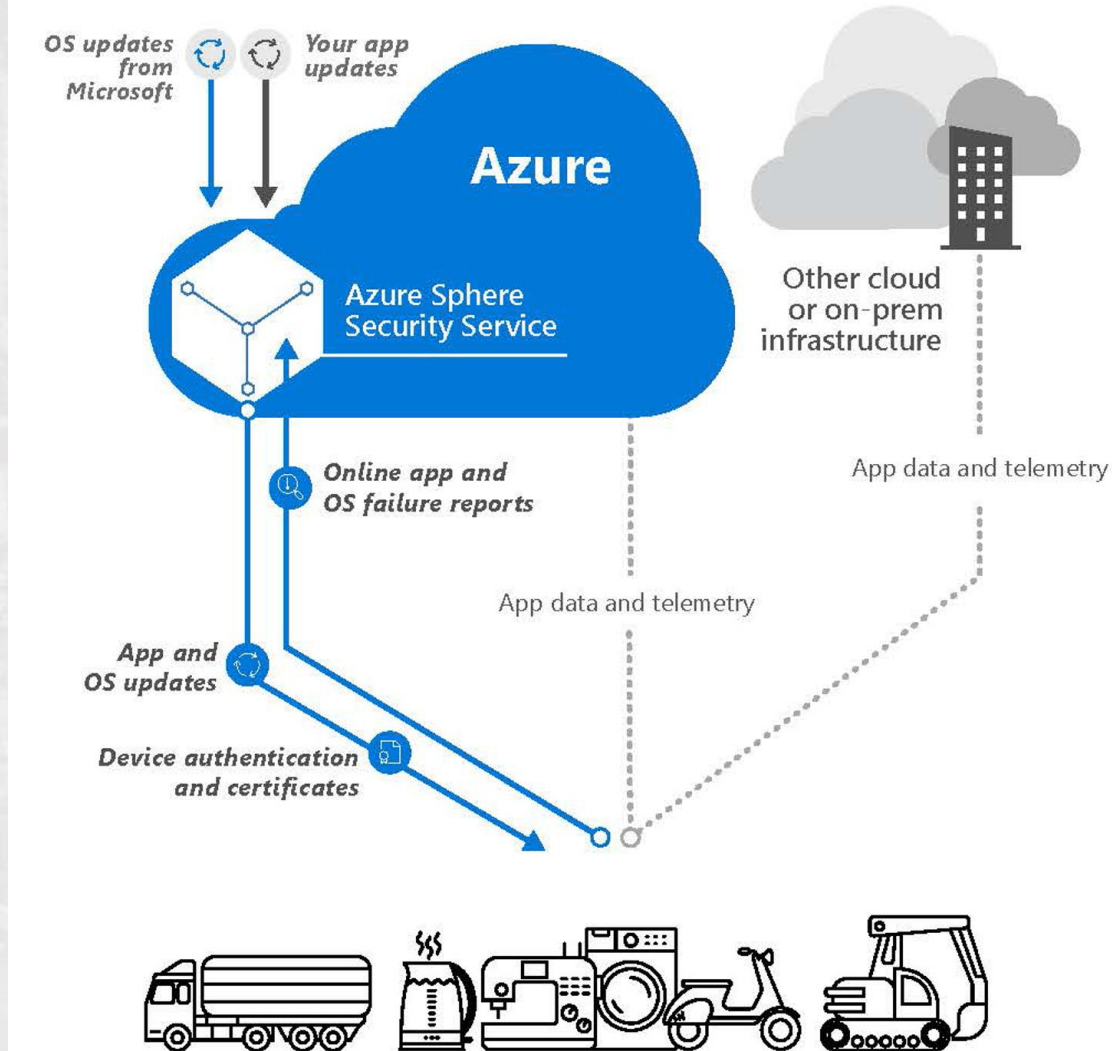
The Azure Sphere Security Service connects and protects every Azure Sphere device

Protects your devices and your customers with certificate-based authentication of all communication

Detects emerging security threats through automated processing of on-device failures

Responds to threats with fully automated on-device updates of OS

Allows for easy deployment of software updates to Azure Sphere powered devices



Modernize MCU development with Azure Sphere and Visual Studio

Simplify development

Focus your device development effort on the value you want to create

Streamline debugging

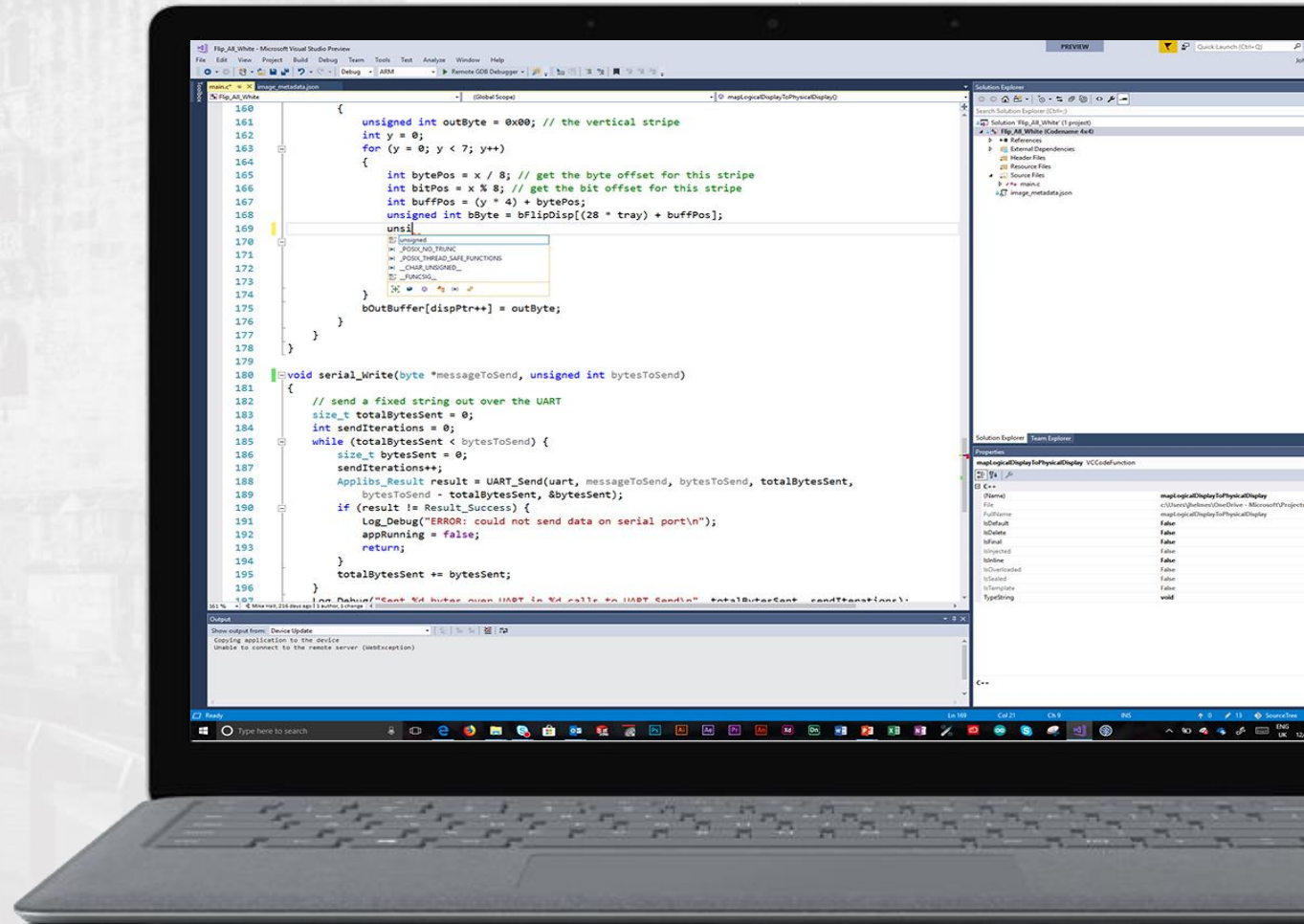
Experience interactive, context-aware debugging across device and cloud

Collaborate across your team

Apply tool-assisted collaboration across your entire development organization

Simplify Azure connect

Connect your Azure Sphere devices quickly and easily to Azure IoT



Three components.
One low price.
No subscription required.

An Azure Sphere certified MCU

The Azure Sphere Security Service
for 10 years

The Azure Sphere OS
with 10 years of on-device updates

Azure Sphere is open

Open to any MCU manufacturer
Pluton security subsystem licensed royalty **free**
for use in any chip*

Open to any cloud
Azure Sphere devices are free to connect to
Azure or any other cloud, proprietary or public
for application data

Open to any innovation
MCU manufacturers are free to innovate with
GPL'd OSS Linux kernel code base

* Azure Sphere branding requires an Azure Sphere chip with Azure Sphere OS and Azure Sphere Security Service



SECURITY

Peace of mind

Protect your products and customers with our turnkey, 7 property security solution that protects, detects and responds to threats dynamically so you're always prepared.



PRODUCTIVITY

Faster time to market

Lower overhead and increase team efficiency with tools that deliver productivity and dramatically optimize development and maintenance of your device and experiences.



OPPORTUNITY

The future is now

Transform engagement your products and customer strategies, and enable new revenue streams with connected crossover chips powerful enough to create next generation experiences.

A large, solid blue curved shape that starts from the bottom left and sweeps upwards and to the right, filling the right half of the frame. It has a smooth, organic edge.

The first devices with Azure Sphere certified MCUs
on shelf in LATE 2018

Azure Sphere development kits include everything you need to get started prototyping and developing Azure Sphere applications.

Pre-order yours today at

www.microsoft.com/azuresphere





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AT THE ENTRANCE AFTER THE LAST SESSION OF THE DAY



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Thanks

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