

Partner Case Study: Innodisk Corporation

Pauline Hsiao Azure Sphere Solution Sales Microsoft



Azure Sphere

An end-to-end solution for securely connecting existing equipment and to create new IoT devices with built-in security. Put the power of Microsoft's expertise to work for you everyday.

- Azure Sphere certified chips
- The Azure Sphere Operating System
- The Azure Sphere Security Service
- Azure Sphere Ongoing Servicing



Over 10 years of security and OS updates delivered directly to each device by Microsoft

MT3620: volume production Azure Sphere MCU

Price competitive multicore MCU for device control and connectivity

CPUs		ARM Cortex A7 (500MHz) + 2 x Cortex M4 (192MHz)
RAM		4MB
Flash		16MB (8MB Runtime Firmware + 8MB Backup Firmware)
Connectivity		WiFi 802.11 b/g/n, dual band: 2.4GHz, 5GHz
Microsoft Security		Firewalls, Crypto Accelerator: AES-256, SHA-2, ECC, RSA2K, e-Fused private and public keys, attestation,
I/O	GPIO	24, 4 configurable as PWM
	SPI	6 configurable
	12C	
	UART	
	ADC	8 Channels, 12bit SAR, 2M sample/sec
I2S/TDM		I2S (2 interfaces) or TDM (4 channels)
Package		DR-QFN 164
Target Price		MCU + OS + 13 Year Azure Sphere Services < \$10



A Socket to Azure and Azure IoT

The Azure Sphere Security Service guards every Azure Sphere device. It renews security, identifies emerging threats, and brokers trust between device, cloud, and other endpoints.

Protecting devices with certificate-based authentication

Guaranteeing device authenticity and running only your genuine software

Getting insight into device and application failure and visibility into emerging threats

Deploys app updates to your Azure Sphere powered devices



Azure Sphere gives you choice. You can connect data from any cloud, proprietary or public, or even to your on-prem infrastructure to the Azure Sphere Security Service.

Informing your app with data Storing telemetry and insights Providing customer information Housing commerce and other transactions

Breakthrough in IoT Device Management

Johnny Wu | 吳志清 IPA BU |智能週邊應用事業處 11-20-2019







AGENDA

The future of Intelligent IoT

Challenge of Device Management

New device management architecture in IoT

Enabling IoT Device Management



Key Challenge in IoT DM





Lack of Security issue

Lack of Management

Unplanned Downtime and Outages



Cost of Downtime



Portion of IT cost that are include after inital purchase



Average portion of annual revenue that a small business spends on IT





Average time spent by employees each week in attempting to fix device problems

Common Problem Issue in IoT



They system is plugged in but not actively running



The operating system is not loaded (software or boot fail)



The Software-base management agent is not available.



Out-of-band Management

The out-of-band management provides access and control of IT assets outside of the production network.



Microsoft Azure Sphere

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- InnoAGE TM SSD 1.5" SATA SSD InnoAGE

The World's 1st Hybrid SSD with Azure Sphere Inside

InnoAGE Features



2.5" SSD

Remote Management

- Independent OS and platform to recovery system
- Support Wi-Fi and Ethernet connectivity to Azure Could

Data Analysis

- Error Correction
- FW update
- iAnalyzer
- SSD Lifespan monitoring
- Extended IO: GPIO/UART/SPI

Data Security

- AES 256bits Key
- Quick Erase
- Write Protect
- Security Erase
- Destroy

Reliability

- Capacity: 64GB-1TB
- Temp.: -40′C to 85′C
- PLP Protection
- Anti-shock/vibration



Edge to Cloud System Architecture





InnoAGE – Block Diagram

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Digital I/O Interface External reserved GPIO / UART / SPI

Independence Management Channel Support Wi-Fi and Ethernet connectivity to Azure Could

FW Level Data Management

Independent OS and platform to recovery system



InnoAGE – Dashboard



Out of Band Management

- AES 256bits Key / Quick Erase /Write Protect
- OS backup and Recovery

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On-chip Cloud Services Provide update, authentication, and connectivity

SSD Prediction & Management

Support in band an OOB to predict the remainin lifespan of SSDs and devices maintenance



InnoAGE Series





- Capacity: 64GB to 1TB
- Transfer rate: SATA III
- Seq. Read/Write: 560/330 MB/s (max.)
- 4KB Ran. Read/Write: 80K/71K (max.)
- Dimension: 69.8x100.0x6.8 mm
- Operating Temp. : 0'C~70'C/-40'C~85'C
- Flash Endurance: 3,000 P/E times

- Capacity: 64GB to 512GB
- Transfer rate: SATA III
- Module Key: B+M
- Seq. Read/Write: 560/330 MB/s (max.)
- 4KB Ran. Read/Write: 80K/71K (max.)
- Dimension: 22.0x80.0x3.5 mm
- Operating Temp. : 0'C~70'C/-40'C~85'C
- Flash Endurance: 3,000 P/E times

Case Study : Smart Factory



The challenge:

Difficult in integration with varied machines

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- Lacking of real-time System health status monitoring tool
- Real-time inventory data report
- Battery run-time prediction and maintenance
 - 24/7 operation with limit down-time requested



Facial access control device convenient for logistic personnel to keep hands-free

POS integration camera video to avoid theft and customize customer profile



InnoAGE

Microsoft

Azure Spher

Enabling IoT Device Management

Security in Mind

– We create a secure data transmission channel.

Simply and Easy deployment

- All of the function base on hardware level

Increased available

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- Support out of band management and heterogeneous platform
- **Reduce time to market**
 - Integration with Microsoft Azure service

Innodisk Corporation



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