從嵌入式系統轉型至物聯網的轉變及挑戰

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亞洲區業務技術策略經理
Microsoft Corp.

Microsoft
Microsoft mission

Empower every person and every organization on the planet to achieve more

Mobile-first, cloud-first
Microsoft IoT Value

Windows

Azure IoT

Better Together
Seeing AI app - Nadella intro from Build 2016 conference

https://www.youtube.com/watch?v=rVF2duPVUTY
# Microsoft Cognitive Services

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<tr>
<th>Vision</th>
<th>Speech</th>
<th>Language</th>
<th>Knowledge</th>
<th>Search</th>
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<td>Computer Vision</td>
<td>Custom Recognition</td>
<td>Spell Check</td>
<td>Academic Knowledge</td>
<td>Bing Web Search</td>
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<td>Bing Speech</td>
<td>Language Understanding Intelligent Service</td>
<td>Entity Linking</td>
<td>Bing Image Search</td>
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<td>Face</td>
<td>Speaker Recognition</td>
<td>Text Analytics</td>
<td>Knowledge Exploration</td>
<td>Bing Video Search</td>
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<td>Video</td>
<td>RT Translation</td>
<td>Web Language Model</td>
<td>Recommendations</td>
<td>Bing News Search</td>
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[microsoft.com/cognitive]
Azure IoT Hub

- Capability of the Azure IoT Suite
- Bi-directional device <-> cloud
- Up to 10 million devices
- Telemetry ingestion
- Command & control
- Device registry & identity
- Device Management
- HTTP/AMQP
- Extensible protocol support / MQTT
IoT Device & Cloud Patterns

Device Connectivity & Management
- Field Gateway
- Protocol Adaptation
- RTOS, Linux, Windows, Android, iOS

Analytics & Operationalized Insights
- Batch Analytics & Visualizations
  - Azure HDInsight, AzureML, Power BI, Azure Data Factory, Azure Data Lake
- Hot Path Analytics
  - Azure Stream Analytics, Azure HDInsight Storm
- Hot Path Business Logic
  - Service Fabric & Actor Framework

Presentation & Business Connectivity
- Device Explorer Tool
- Protocol Adaptation
- Event Hubs & Azure IoT Hub
- Cloud Gateway
- Hot Path Business Logic
- Azure IoT SDK
- GitHub

- App Service, Websites
- Microsoft Dynamics
- BizTalk Server
- Dynamics, BizTalk Services, Notification Hubs, Logic Apps
- Presentation & Business Connectivity
### Available OS platforms & languages

<table>
<thead>
<tr>
<th>OS Platforms</th>
<th>Languages</th>
<th>Protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Linux/Unix OS platforms</strong></td>
<td><strong>C</strong>&lt;br&gt;Java/ Java Script&lt;br&gt;C#&lt;br&gt;Python&lt;br&gt;Node.js</td>
<td><strong>HTTPS</strong>&lt;br&gt;<strong>AMQP</strong>&lt;br&gt;<strong>MQTT</strong></td>
</tr>
<tr>
<td>Debian Linux</td>
<td>Windows Desktop</td>
<td>Mbed</td>
</tr>
<tr>
<td>Fedora Linux</td>
<td>Windows IoT Core</td>
<td>Mbed</td>
</tr>
<tr>
<td>Raspbian Linux</td>
<td>Windows Server</td>
<td>Mbed</td>
</tr>
<tr>
<td>Ubuntu Linux</td>
<td></td>
<td>Mbed</td>
</tr>
<tr>
<td>Yocto Linux</td>
<td></td>
<td>Mbed</td>
</tr>
</tbody>
</table>

- Porting support provided for other OS platforms not listed
- More OS Platforms are added on a monthly basis
Azure Certified for IoT partners

<table>
<thead>
<tr>
<th>Intel</th>
<th>Texas Instruments</th>
<th>Freescale</th>
<th>Libelium</th>
<th>Minnowboard.org</th>
<th>Adlink</th>
</tr>
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<tbody>
<tr>
<td>Raspberry Pi</td>
<td>Arrow Electronics, Inc.</td>
<td>Hewlett Packard Enterprise</td>
<td>Samsung ARTIK™</td>
<td>TrexDCAS®</td>
<td>SOTEC</td>
</tr>
<tr>
<td>Arduino</td>
<td>Advantech</td>
<td>Dell</td>
<td>Tesselhap</td>
<td>Ilevia</td>
<td>IEI</td>
</tr>
<tr>
<td>e-con Systems</td>
<td>Embedded Systems</td>
<td>Axiomtek</td>
<td>Resin.io</td>
<td>Seeed</td>
<td>SUF</td>
</tr>
<tr>
<td>Toradex</td>
<td>Trueverit</td>
<td>Nexcom</td>
<td>ACME Systems</td>
<td>More partners joining every week...</td>
<td></td>
</tr>
</tbody>
</table>
One app, multiple device classes

PC and Tablet | Xbox | Mobile | IoT Core
---|---|---|---
UWP
Xamarin Approach

Shared C# Business Logic
(Portable Class Library)

- iOS C# UI
- Android C# UI
- Windows C# UI

Shared C# codebase • 100% native API access • High performance
Interoperability Via Standards

Alljoyn and Allseen Alliance

- Alljoyn, overseen by the non-profit Linux Foundation “AllSeen Alliance”, is an open source communication framework that enables apps and devices to communicate regardless of connection specifics and OS platform.
- Microsoft is a premier member of the AllSeen Alliance.

OCF and IoTivity

- Open Connectivity Foundation (OCF) is a member organization aiming to achieve ‘de facto’ standards in market
- IoTivity is an open source project sponsored by the Linux Foundation that demonstrates OCF standards

Microsoft’s Vision

- A common language for IoT that remains compatible with existing industry efforts on AllJoyn and OIC-IoTivity.
- Powerful standards-based discovery, schemas & introspection, security and bridging
Microsoft IoT Value

Windows

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