

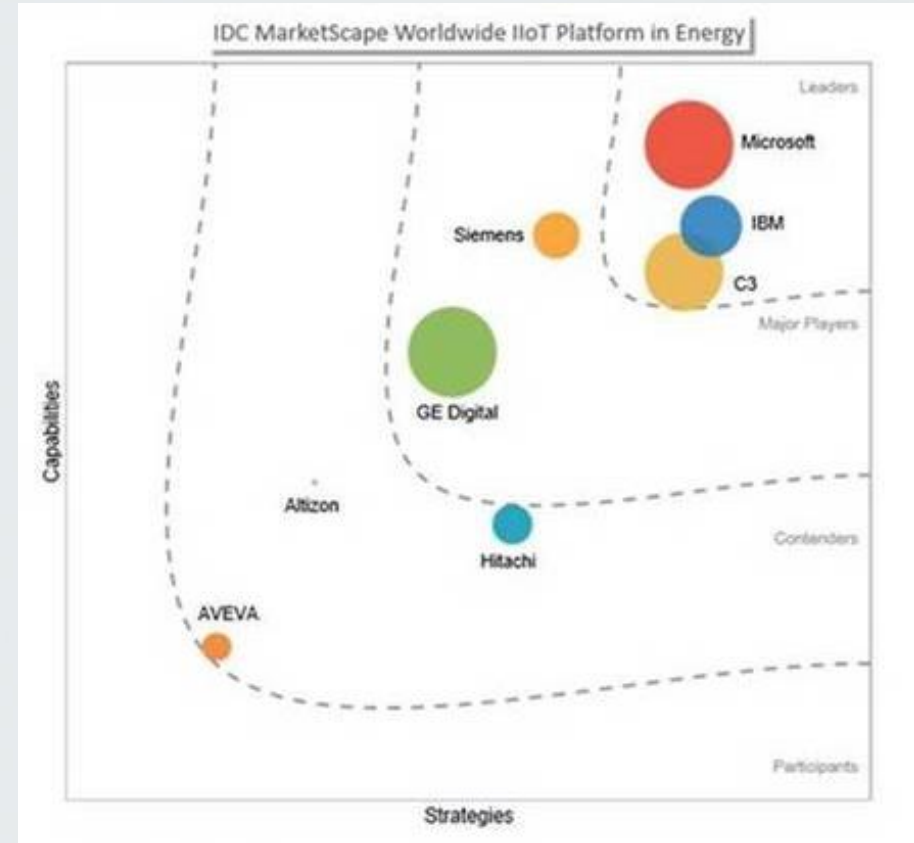
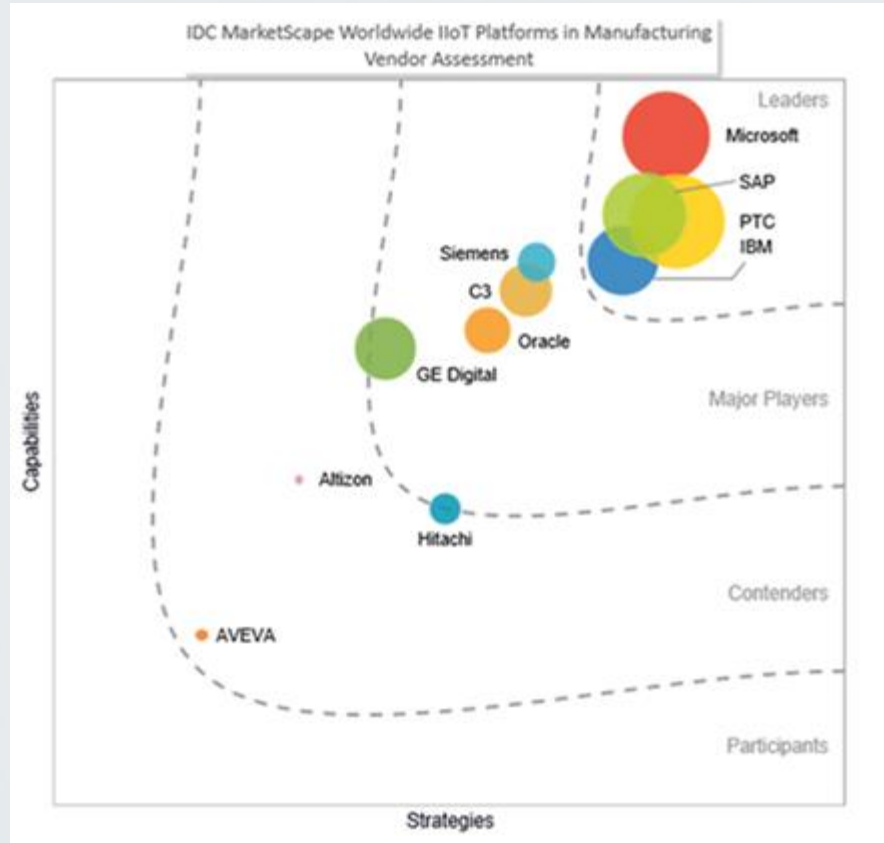


IoT

Tim Symonds
IoT Technical Specialist

Top Industrial IoT Platform

IDC MarketScape Analysis - Energy and Manufacturing



Platform Services

Security & Management

- Security Center
- Portal
- Azure Active Directory
- Azure AD B2C
- Multi-Factor Authentication
- Automation
- Scheduler
- Key Vault
- Store/Marketplace
- VM Image Gallery & VM Depot

Media & CDN

- Media Services
- Media Analytics
- Content Delivery Network

Integration

- API Management
- BizTalk Services
- Logic Apps
- Service Bus
- Event Grid

Compute Services

- Kubernetes Service
- VM Scale Sets
- Container Instances
- RemoteApp
- Container Registry
- Batch
- Dev/Test Lab

Application Platform

- Web Apps
- Mobile Apps
- API Apps
- Cloud Services
- Service Fabric
- Notification Hubs
- Functions

Developer Services

- Visual Studio VS Code
- Mobile Engagement
- DevOps & Pipelines
- Xamarin
- Application Insights
- HockeyApp

- SQL Database Edge
- SQL Database & Managed Instance
- SQL Server Stretch Database
- Data
- CosmosDB
- Redis Cache
- MySQL
- PostgreSQL
- MariaDB
- Database Migration Service
- Table Storage

- Cognitive Services
- Bot Service
- Intelligence
- Azure Cognitive Search
- Machine Learning Service

- HDInsight
- Analysis Services
- Data Catalog
- DataBricks
- Synapse Analytics
- IoT Hub
- IoT Central
- IoT Edge
- Event Hubs
- Time Series Insights
- Data Factory
- Stream Analytics
- Power BI Embedded
- Digital Twins
- Data Lake Store

Hybrid Cloud

- Azure AD Health Monitoring
- AD Privileged Identity Management
- Domain Services
- Backup
- Operational Analytics
- Import/Export
- Azure Site Recovery
- StorSimple
- Azure Stack & Stack Edge
- Azure ARC

Infrastructure Services

Compute

- Virtual Machines
- Containers

Storage

- Data Lake Store
- Data Share
- Blob
- Files
- Disk
- Tables
- Queues

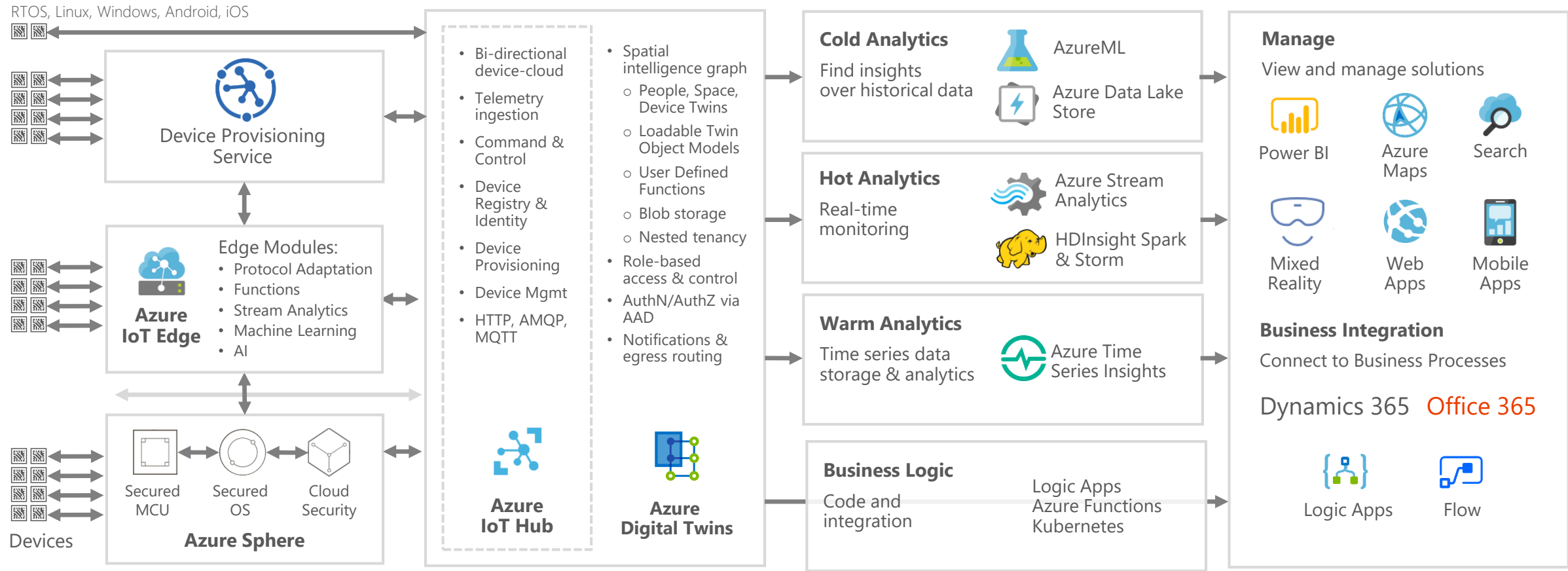
Networking

- Virtual Network
- Load Balancer
- DNS
- Express Route
- Traffic Manager
- VPN Gateway
- App Gateway

Datacenter Infrastructure (58 Regions)



Azure IoT End-to-End Platform



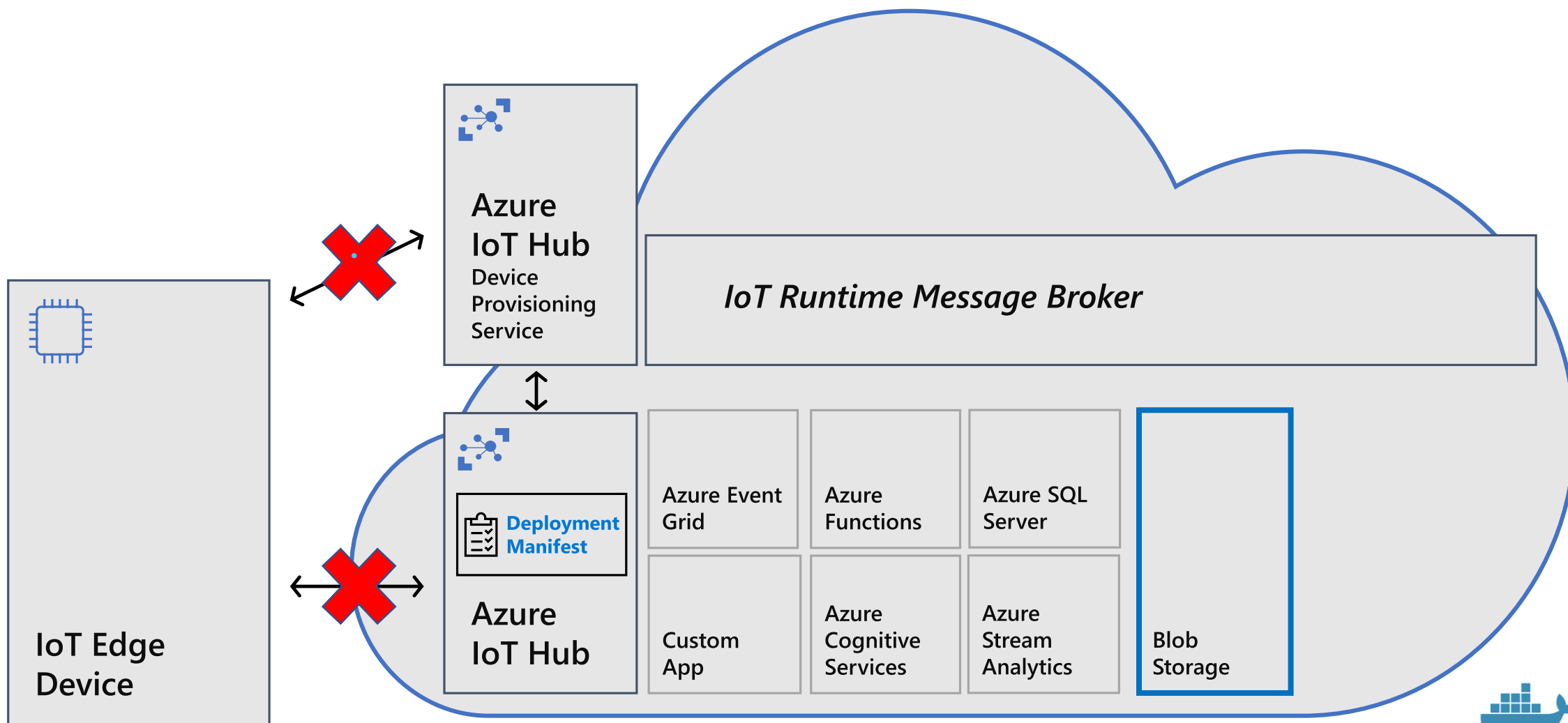
THINGS

INSIGHTS

ACTIONS

IoT Capability	IoT Hub standard tier	IoT Hub basic tier	Event Hubs
Device-to-cloud messaging	✓	✓	✓
Protocols: HTTPS, AMQP, AMQP over webSockets	✓	✓	✓
Protocols: MQTT, MQTT over webSockets	✓	✓	
Per-device identity	✓	✓	• Command and Control
File upload from devices	✓	✓	• Security Centre
Device Provisioning Service	✓	✓	• HA/DR
Cloud-to-device messaging	✓		• Message enrichment
Device twin and device management	✓		• Certificate management
Device streams (preview)	✓		• DPS
IoT Edge	✓		• Query Devices
			• Device Twins
			• Digital Twins
			• IoT Edge

Azure IoT Edge deployment



IoT Updates

General



Vnet Support (IoT Hub)

AZ220 – IoT Dev Cert

Digital Twins – v2

Azure IoT Edge



Azure Stack Edge GA

Offline Access GA

Blob Storage

Rugged Edge

Azure IoT Central



IoT Central Industry Vertical

IoT Central Azure Maps GA

IoT Central Australia GA

Pricing updates

Azure IoT Hub



IoT Hub HA GA

IoT Hub Message Enrichment

IoT Hub ADLS Gen 2

IoT Hub Security Centre

IoT Hub to Azure Data Explorer

IoT Hub to Event Grid

IoT Firmware Updates

IoT Hub, Edge and SDKs enables TLS 1.2

Tools of the trade

Raspberry Pi simulator



Device Explorer

```
1 /*  
2 * IoT Hub Raspberry Pi NodeJS - MI  
3 */  
4  
5 const wpi = require('wiring-pi');  
6 const Client = require('azure-iot-  
7 const Message = require('azure-iot-  
8 const Protocol = require('azure-iot-  
9 const BME280 = require('bme280-sen-  
10  
11 const BME280_OPTION = {  
12   i2cBusNo: 1, // defaults to 1  
13   i2caddress: BME280.BME280_DEFAULT  
14 };  
15  
16 const connectionString = 'HostName=  
17 const LEDPin = 4;  
18  
19 var sendingMessage = false;  
20 var messageId = 0;  
21 var client, sensor;  
22 var blinkLEDTimeout = null;  
23  
24 function getMessage(cb) {  
25   messageId++;  
26   sensor.readSensorData()  
27   .then(function (data) {  
28     cb(JSON.stringify({  
29       messageId: messageId,  
30       deviceId: '110203',  
31       measureTimestamp: new Date  
32         .toLocaleDateString(),  
33       tempMin: 15,  
34       tempMax: 35,  
35       tempTarget: 20,  
36       humidity: data.humidity,  
37       humidityMin: 30,  
38       humidityMax: 100,  
39       humidityTarget: 70,  
40       pressure: data.pressure_hPa  
41     })); data.temperature_C > 30);  
42   })  
43 }  
44 .catch(function (err) {  
45   console.error('Failed to read  
46  
47  
Run Reset  
Click 'Run' button to run the sample code.  
Click 'Stop' button to stop the sample code.  
Click 'Reset' to reset the code. We keep you
```

Device Explorer Twin

Configuration Management Data Messages To Device Call Method on Device

Connection Information

IoT Hub Connection String:

HostName=iothub-7etpy.azure-devices.net;SharedAccessKeyName=iothubowner;SharedAccessKey=EibwqWh3geYaOXbJqz1bHFx

Protocol Gateway HostName:

Update

Shared Access Signature

Key Name: iothubowner

Key Value: EibwqWh3geYaOXbJqz1bHFxi68n+6fp7aSILCWed2PA=

Target: iothub-7etpy.azure-devices.net

TTL (Days): 365

Generate SAS

<https://github.com/Azure/azure-iot-sdk-csharp/releases/download/2019-9-11/SetupDeviceExplorer.msi>

<https://azure-samples.github.io/raspberry-pi-web-simulator/>