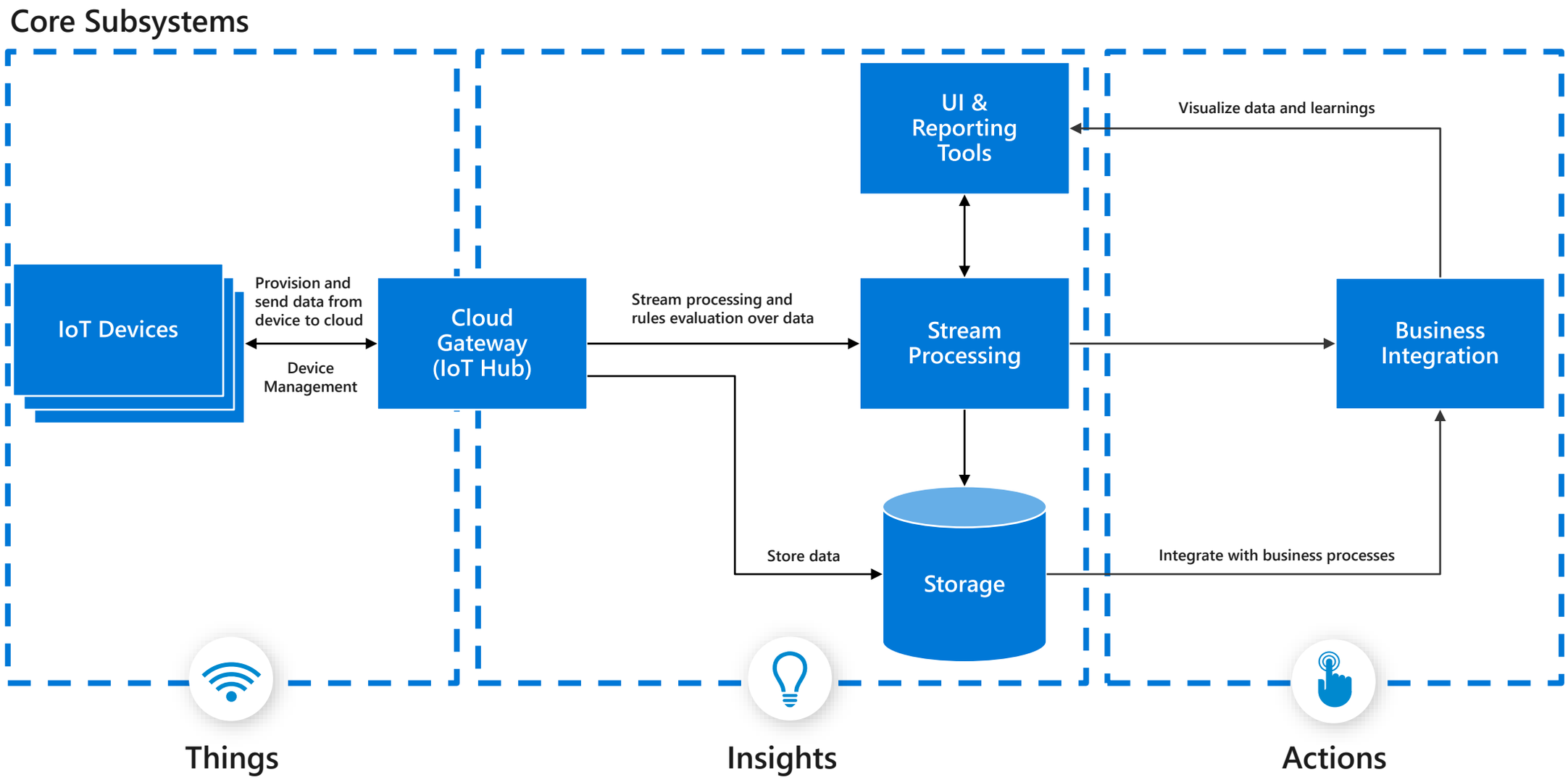
Microsoft Azure

Azure IoT

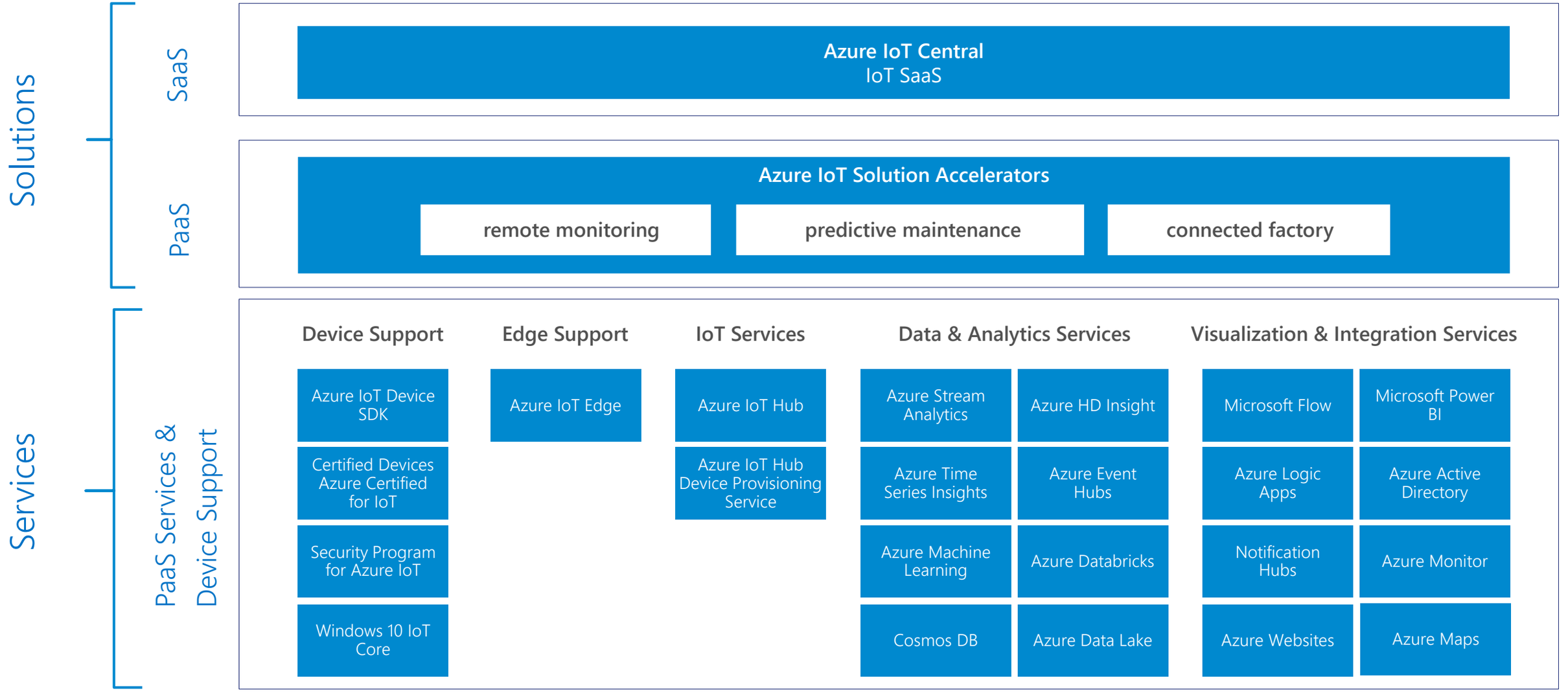
Transforming your business

© Microsoft Corporation. All rights reserved.

Azure IoT reference architecture



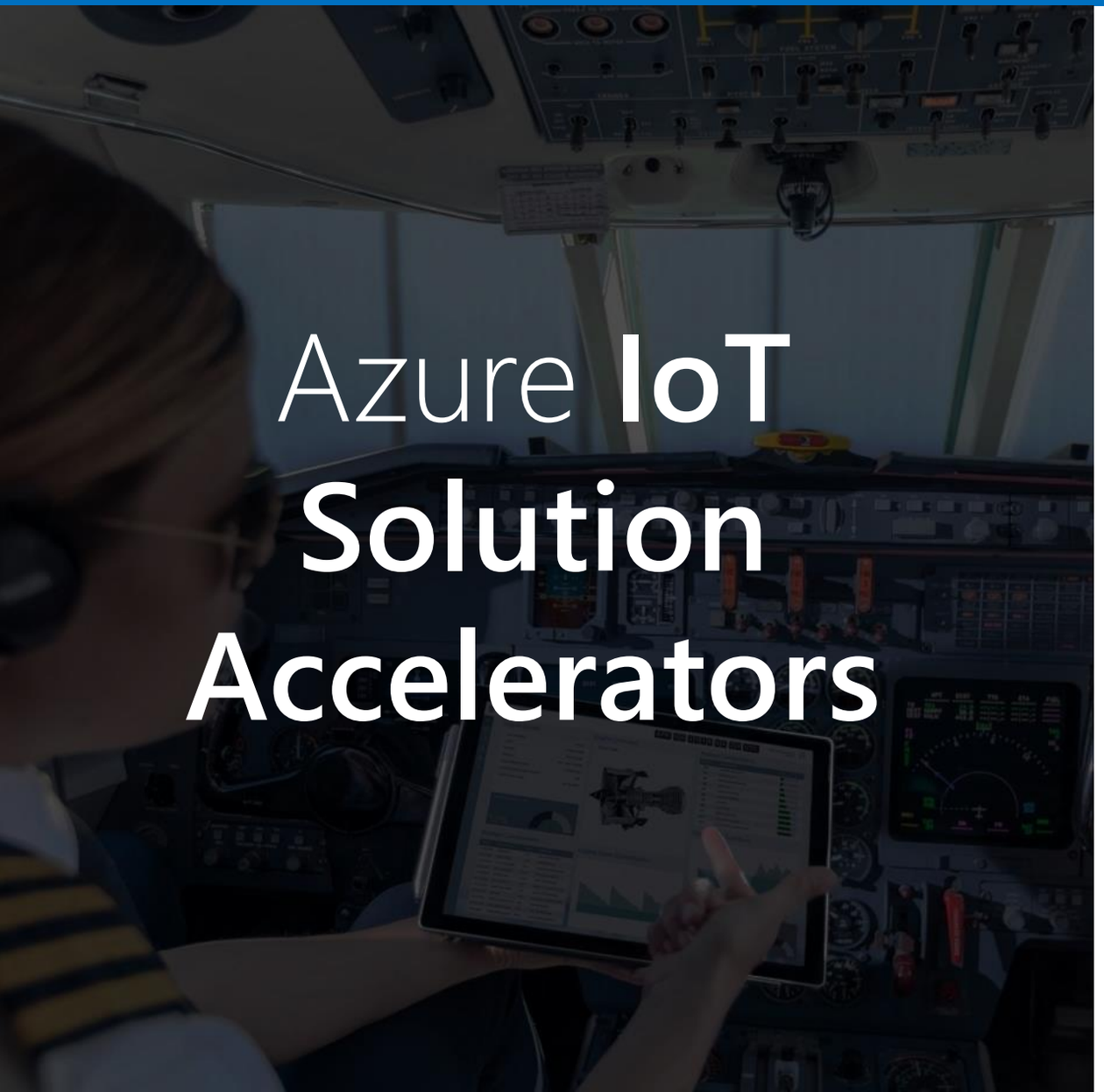
Comprehensive Set of Capabilities for IoT Solutions



Azure IoT Central

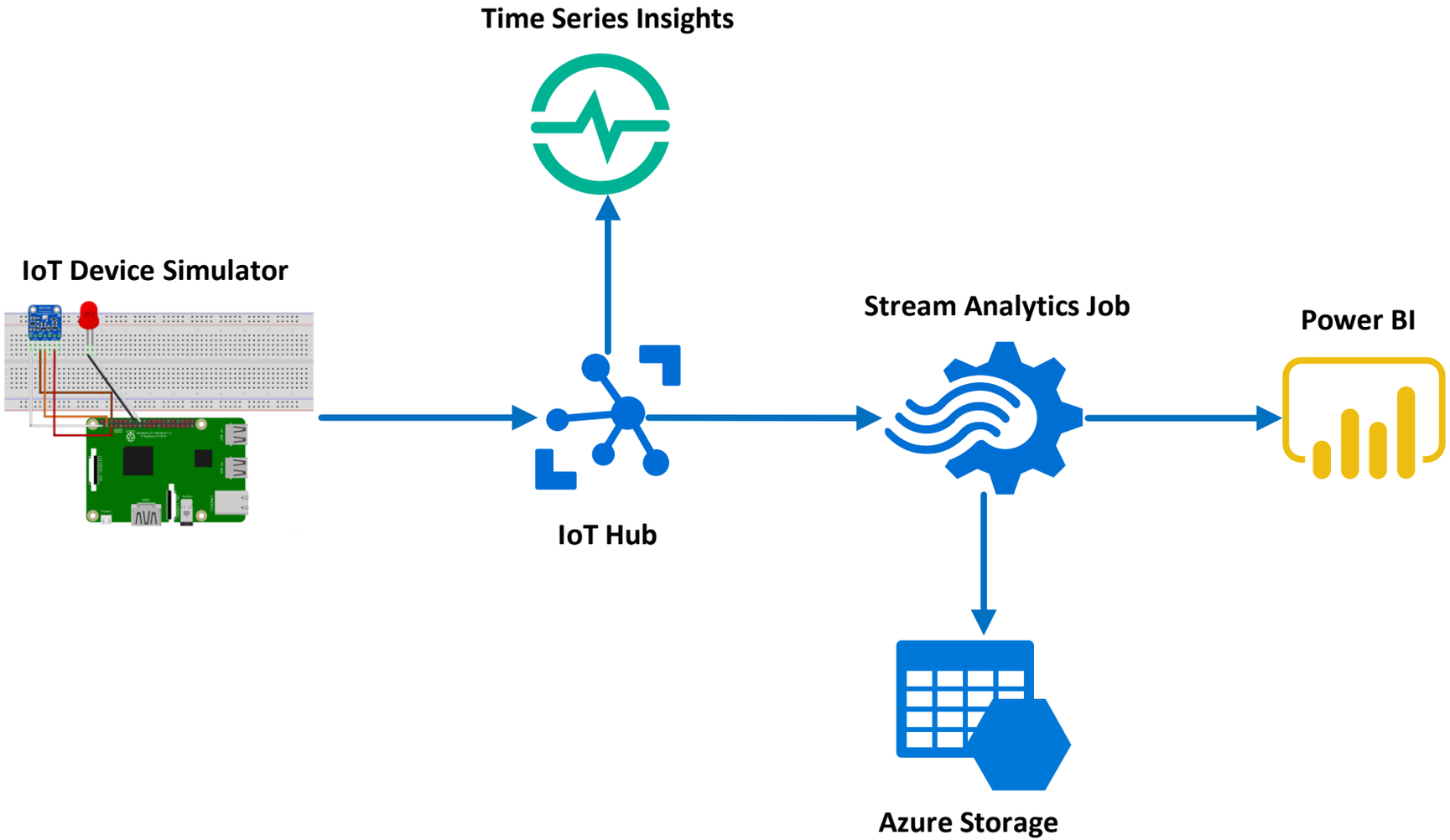
- Fully hosted and managed by Microsoft
- No cloud development expertise required
- Device connectivity and management
- Monitoring rules and triggered actions
- User roles and permissions
- Analytics, dashboards and visualization
- Risk-free trial with simplified pricing

Azure **IoT Solution Accelerators**

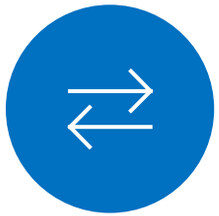


- End-to-end implementation
- Completely customizable
- Open-source microservices based architecture
- Device connectivity and management
- Dashboards, visualization and insights
- Workflow automation and integration
- Command and control
- Preconfigured solutions
  - Remote Monitoring
  - Connected Factory
  - Predictive Maintenance
  - Device Simulation

IoT Lab Architecture

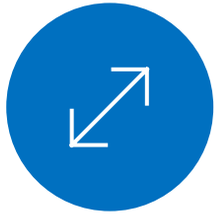


Azure IoT Hub



Bi-directional communication

- Millions of devices
- Multi-language, open source SDK
- HTTPS/AMQP/MQTT
- Send telemetry
- Receive commands
- Device management
- Device twins
- Queries and jobs



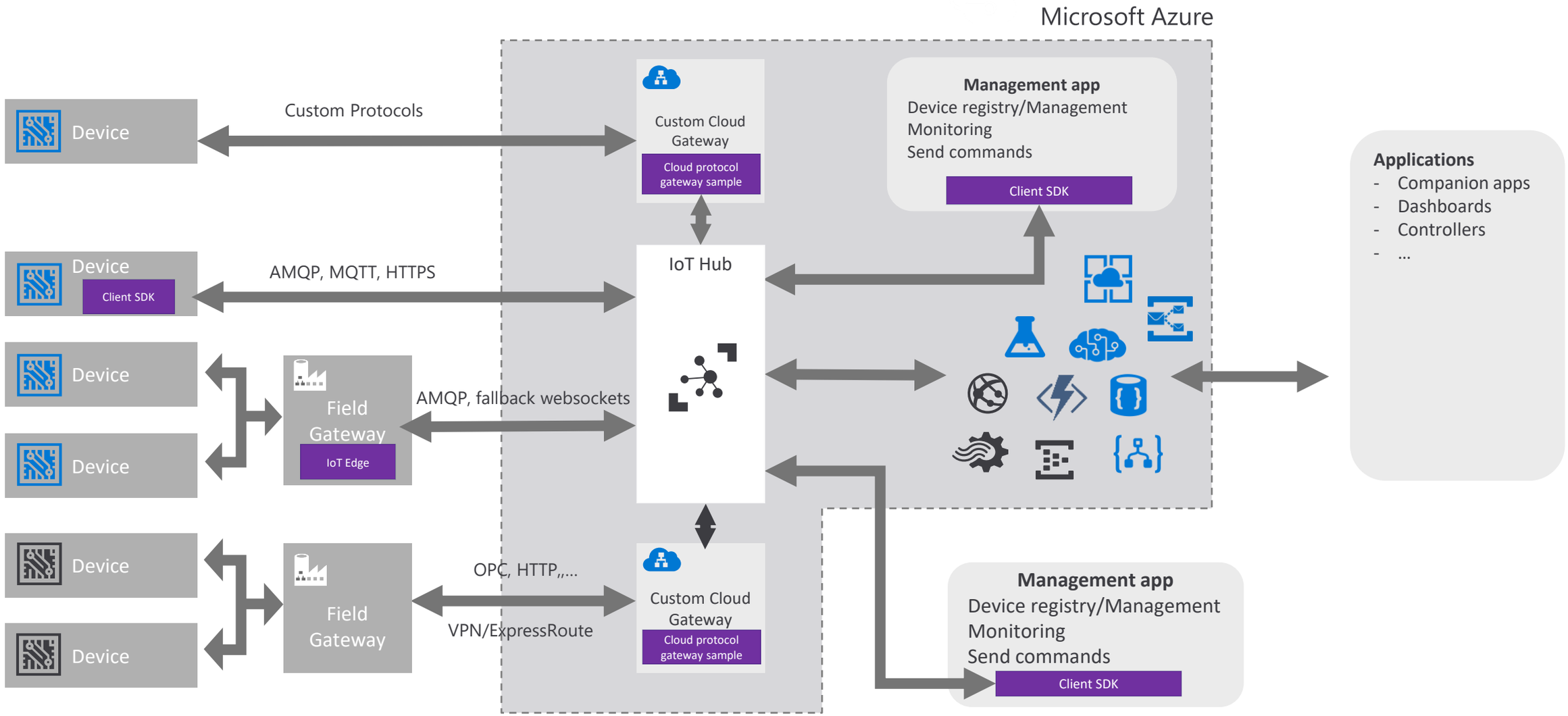
Enterprise scale and integration

- Billions of messages
- Scale up and down
- Declarative message routes
- File upload
- Web sockets and multiplexing
- Azure monitor
- Azure resource health
- Configuration management

End-to-end security

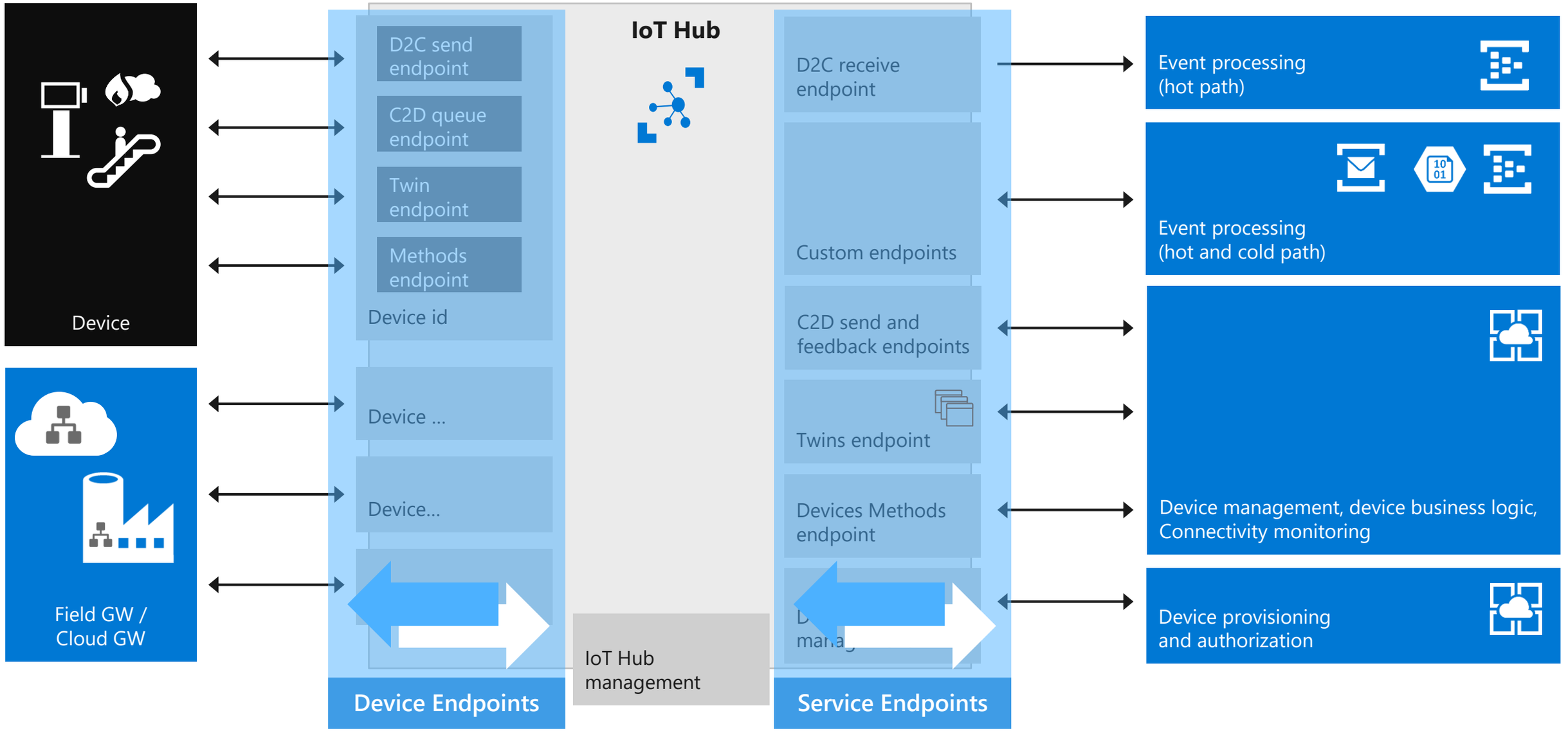
- Per device certificates
- Per device enable/disable
- TLS security
- X.509 support
- IP whitelisting/blacklisting
- Shared access polices
- Firmware/software updates

Azure IoT Hub



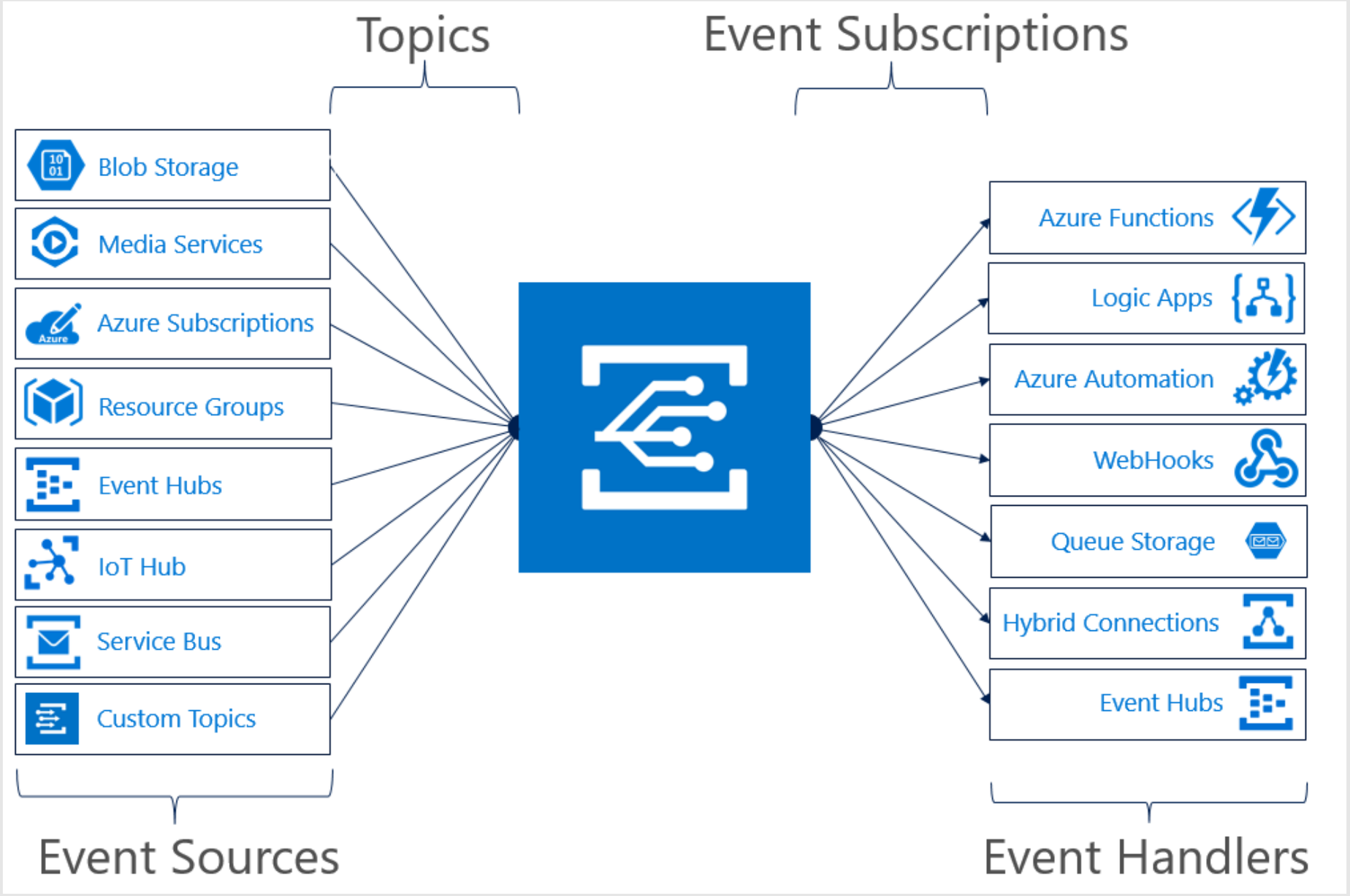
© Microsoft Corporation. All rights reserved.

IoT Hub Key Functions

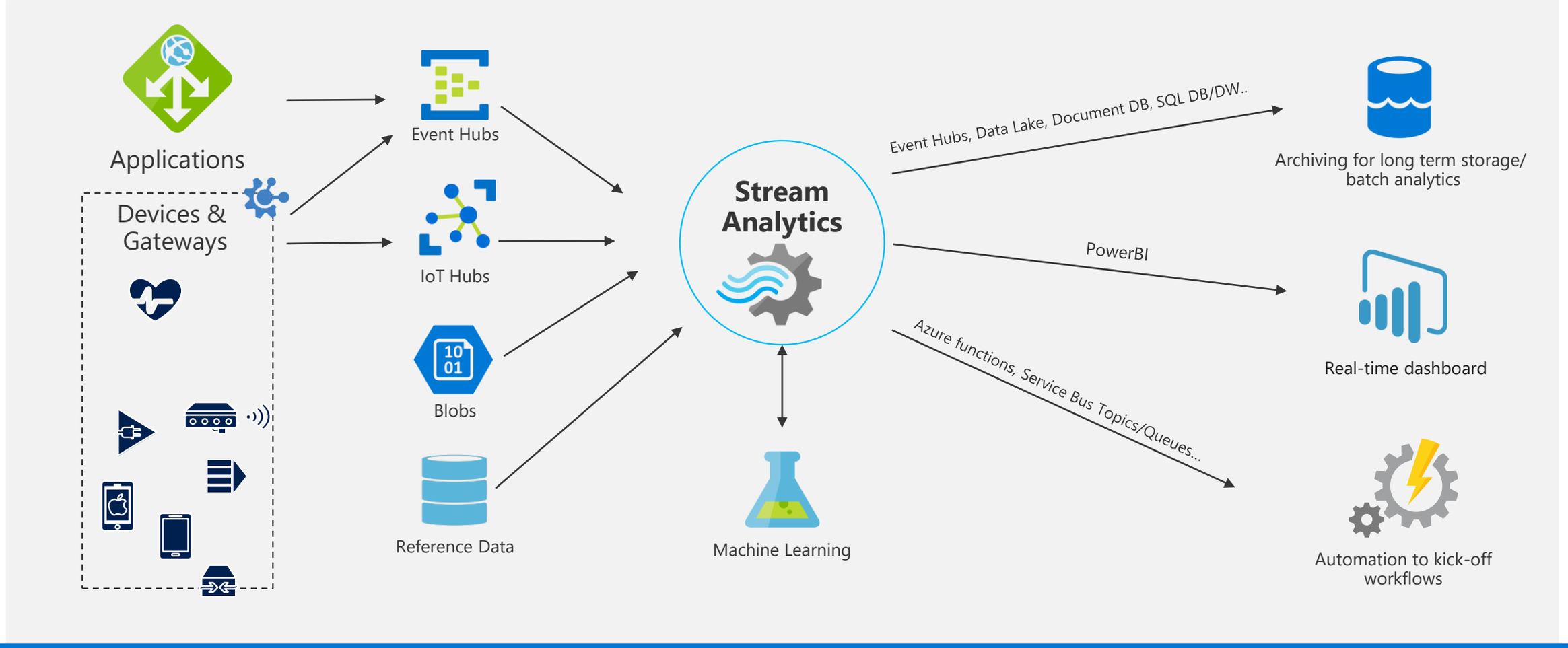


© Microsoft Corporation. All rights reserved.

IoT Hub as publisher on Event Grid



Azure Stream Analytics



Event production → Event Queuing & Stream Ingestion → Stream Analytics ↔ Storage & Batch Analysis → Presentation & Action

Azure Time Series Insights

Azure Time Series Insights (TSI) is a fully-managed service for the on-demand, interactive analytics of time series data.

Fully-integrated Data pipeline

Data parsing And indexing

Scalable Storage

Interactive Analytics

Visualization and APIs

Manufacturing

Oil & Gas

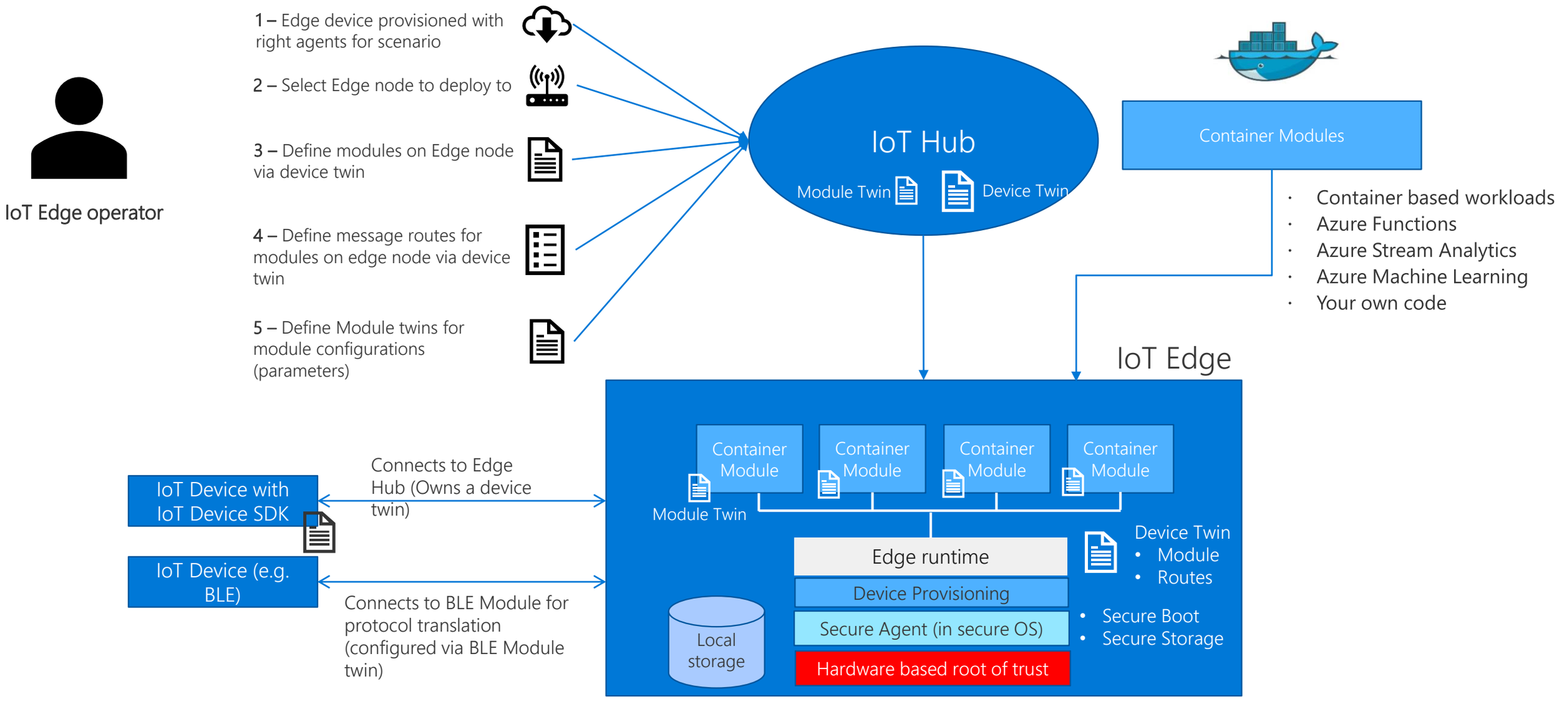
Power & Utility

Smart Building

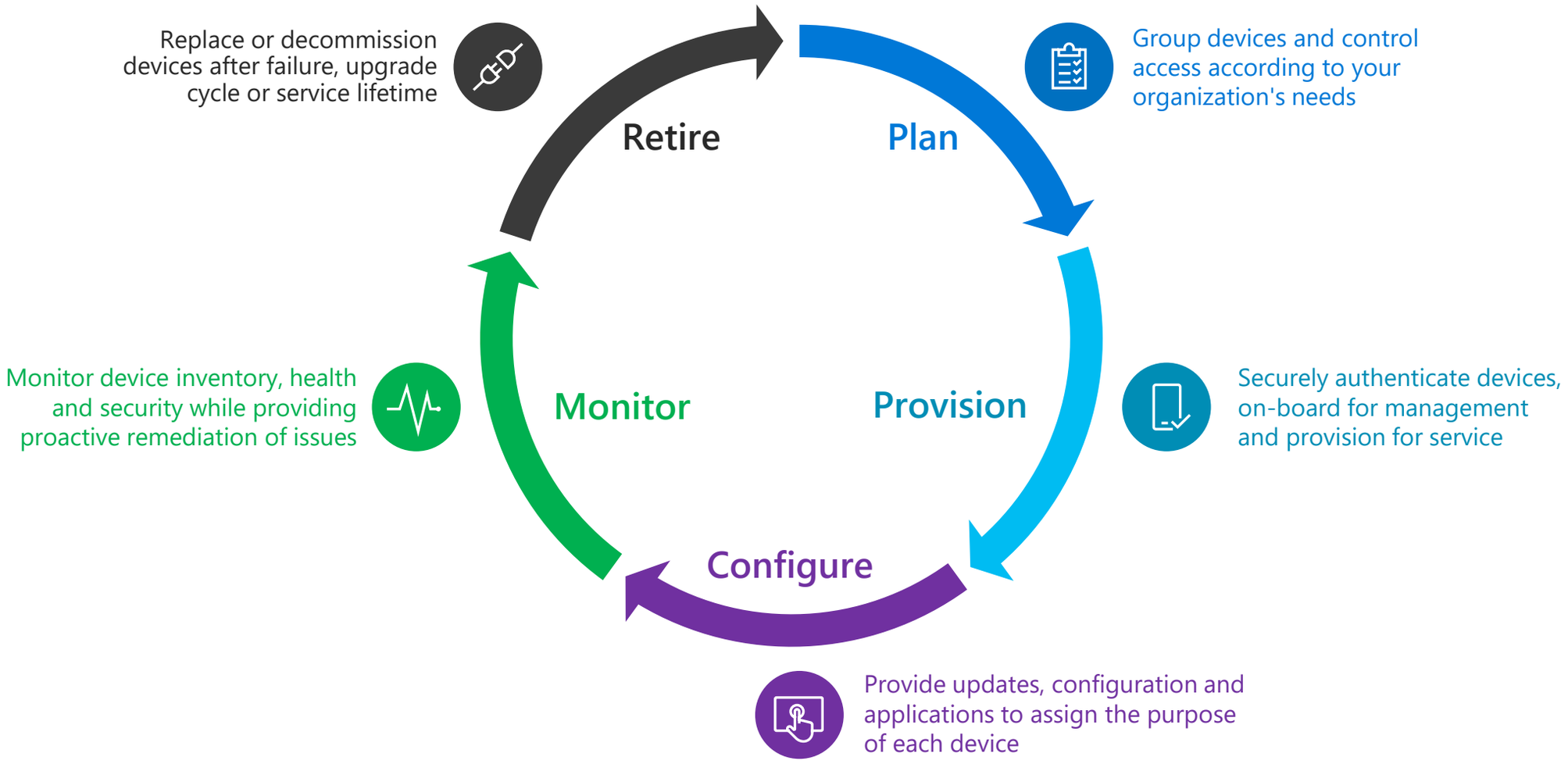
Smart Energy

Time-series data heavy apps

Azure IoT Edge

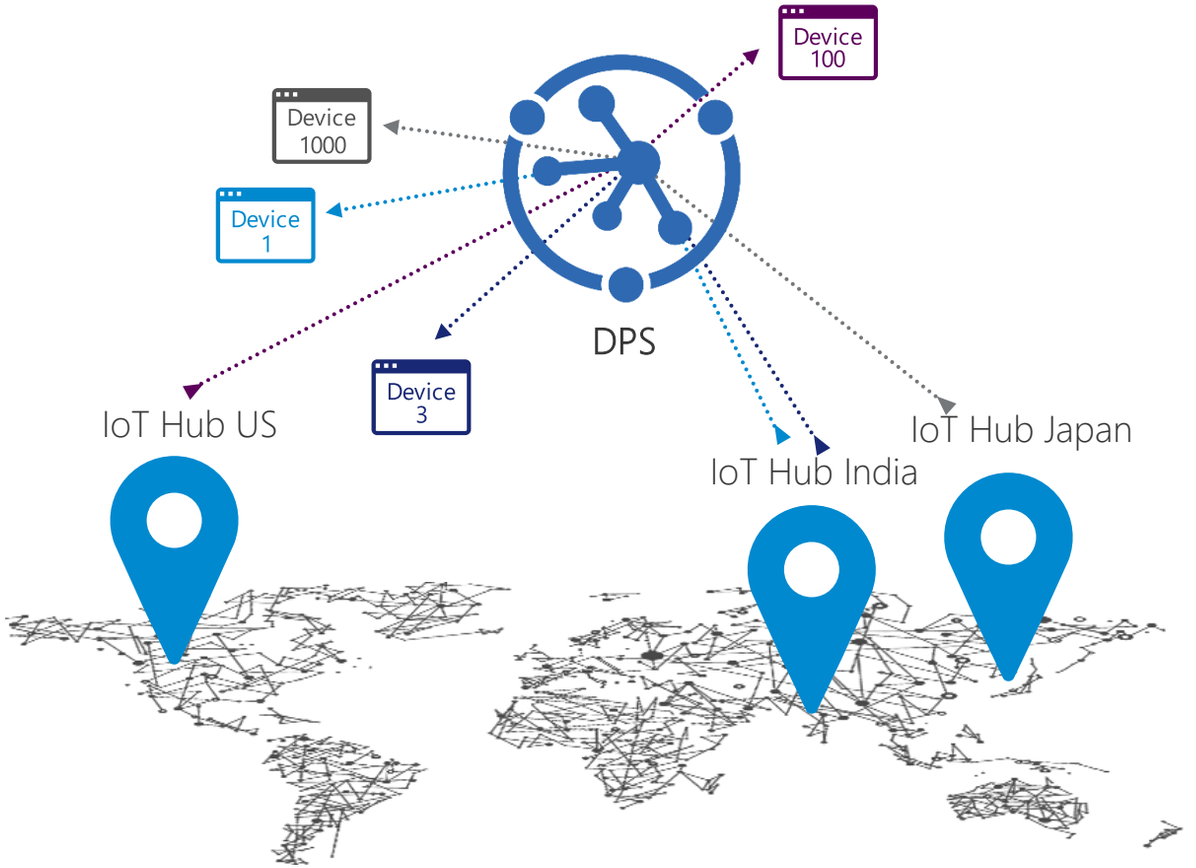


IoT Device Management Lifecycle



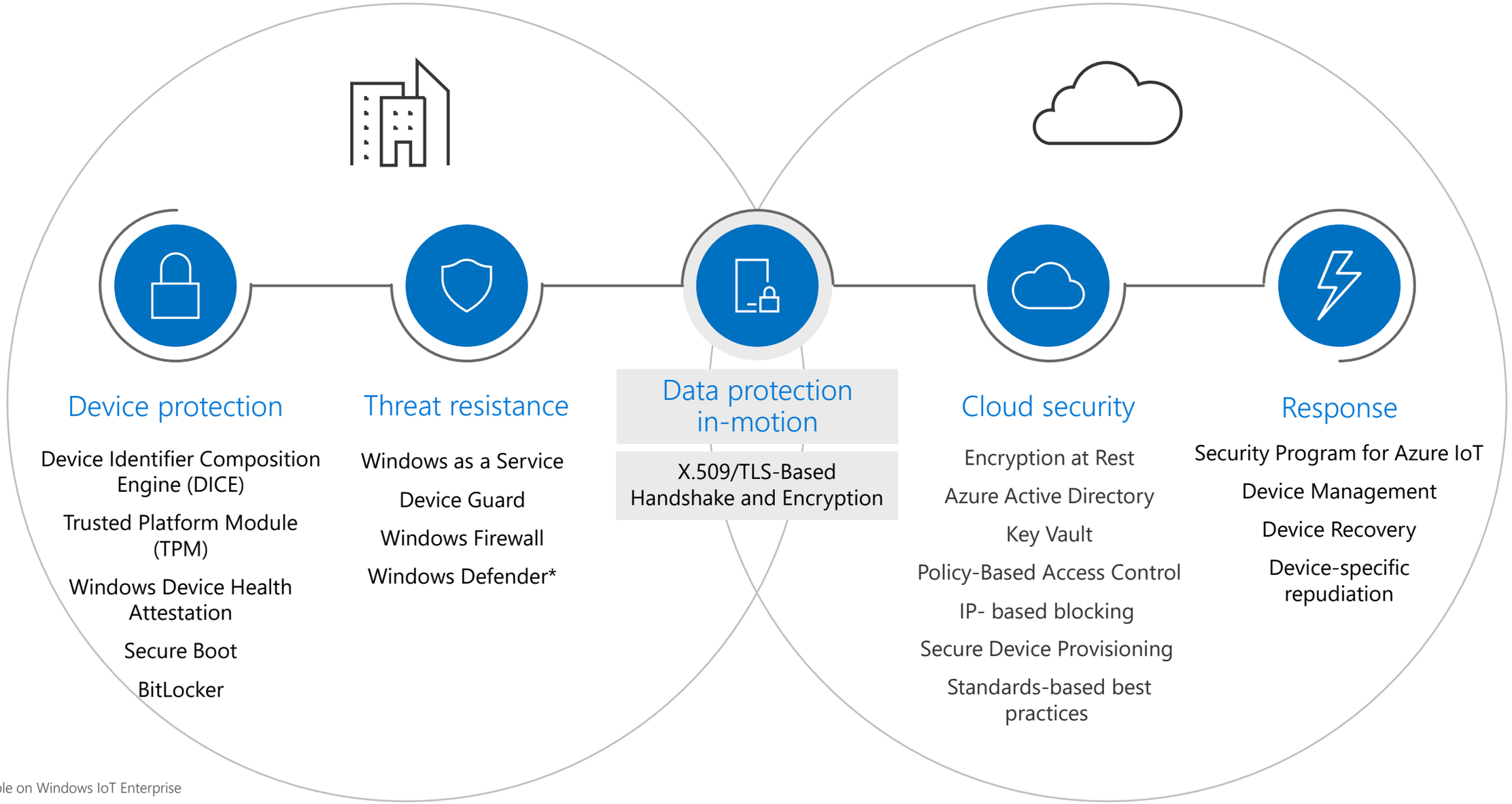
Azure IoT Hub Device Provisioning Service

- Simplify with zero touch provisioning
- Supports multiple locations
- Easiest way to mass-provision devices
- URL stability
- Enhanced security through HSM
- For any device compatible with IoT Hub
- Remove human error
- Minimize manual connection requirements
- Multitenancy support



DPS knows exactly which IoT Hub to connect and provision

Azure IoT Protection Stack



Device protection

Device Identifier Composition Engine (DICE)

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 Provisioning

Standards-based best practices

Response

Security Program for Azure IoT

Device Management

Device Recovery

Device-specific repudiation

*Only available on Windows IoT Enterprise

© 2020 Microsoft Corporation. All rights reserved. Microsoft, Windows, Windows Vista and other product names are or may be registered trademarks and/or trademarks in the U.S. and/or other countries.
The information herein is for informational purposes only and represents the current view of Microsoft Corporation as of the date of this presentation. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information provided after the date of this presentation. MICROSOFT MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE INFORMATION IN THIS PRESENTATION.