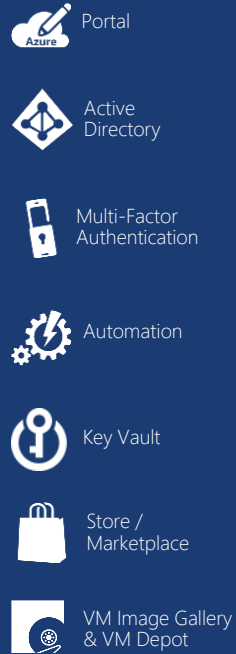


Platform Services

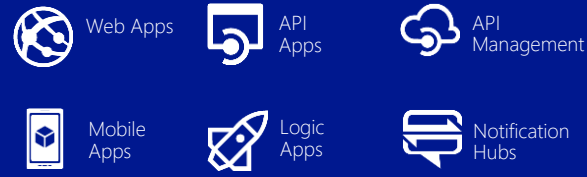
Security & Management



Compute



Web and Mobile



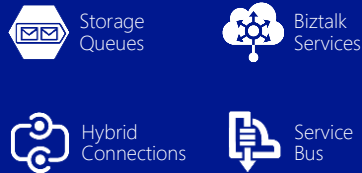
Developer Services



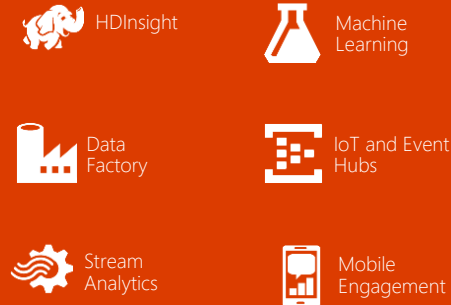
Hybrid Operations



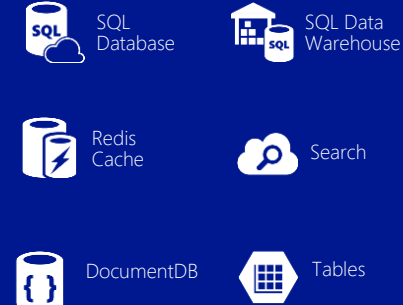
Integration



Analytics & IoT



Data



Media & CDN



Infrastructure Services

Compute



Storage



Networking

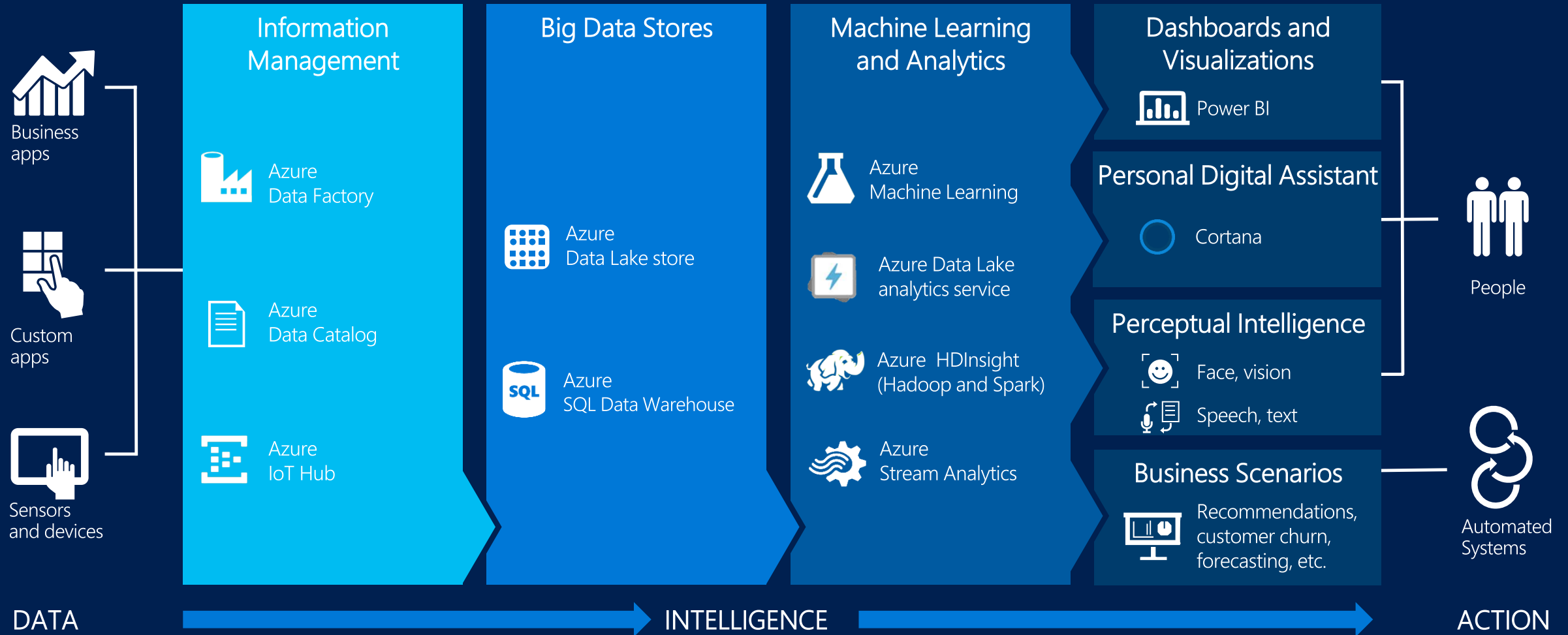


Datacenter Infrastructure (24 Regions, 19 Online)



Analytics and IoT

Transform data into intelligent action



Introducing Azure IoT Suite

Connect and scale
with efficiency

Analyze and act
on new data

Integrate and transform
business processes



101010101101000110100010111

10101001110100101



Business Systems



Real-time
operating
systems

And
more

Analytics

Device Registry

Rules and Actions

Dashboards & Visualization

SAP

Microsoft
Dynamics

ORACLE

salesforce

IBM DB2

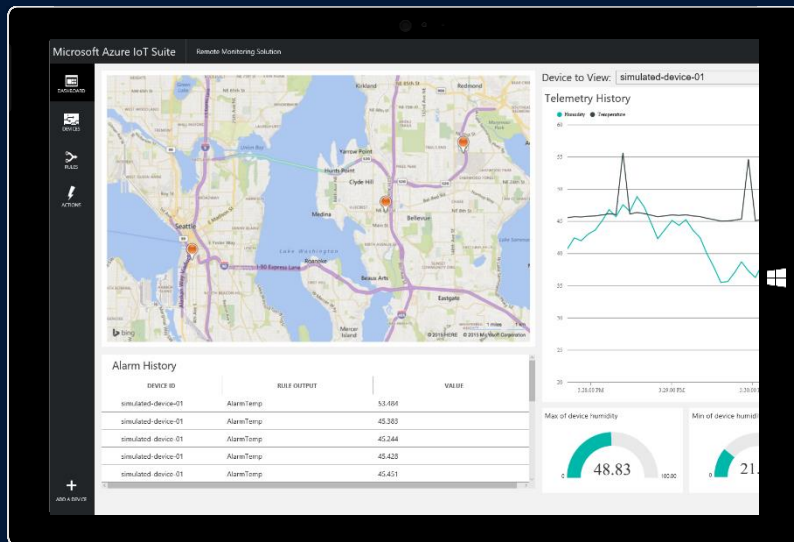
WebSphere

Informix
software

Office 365

Tailor Azure IoT Suite to your needs using preconfigured solutions

Start quickly with preconfigured solutions



- Get started in minutes
- Modify existing rules and alerts
- Add your devices and begin tailor to your needs

Finish with your Internet of Things application



- Fine-tuned to specific assets and processes
- Highly visual for your real-time operational data
- Integrate with back-end systems

Azure IoT Suite Scenarios

Solution types



Predictive maintenance

Anticipate maintenance needs and avoid unscheduled downtime by connecting and monitoring your devices for predictive maintenance.



Remote monitoring

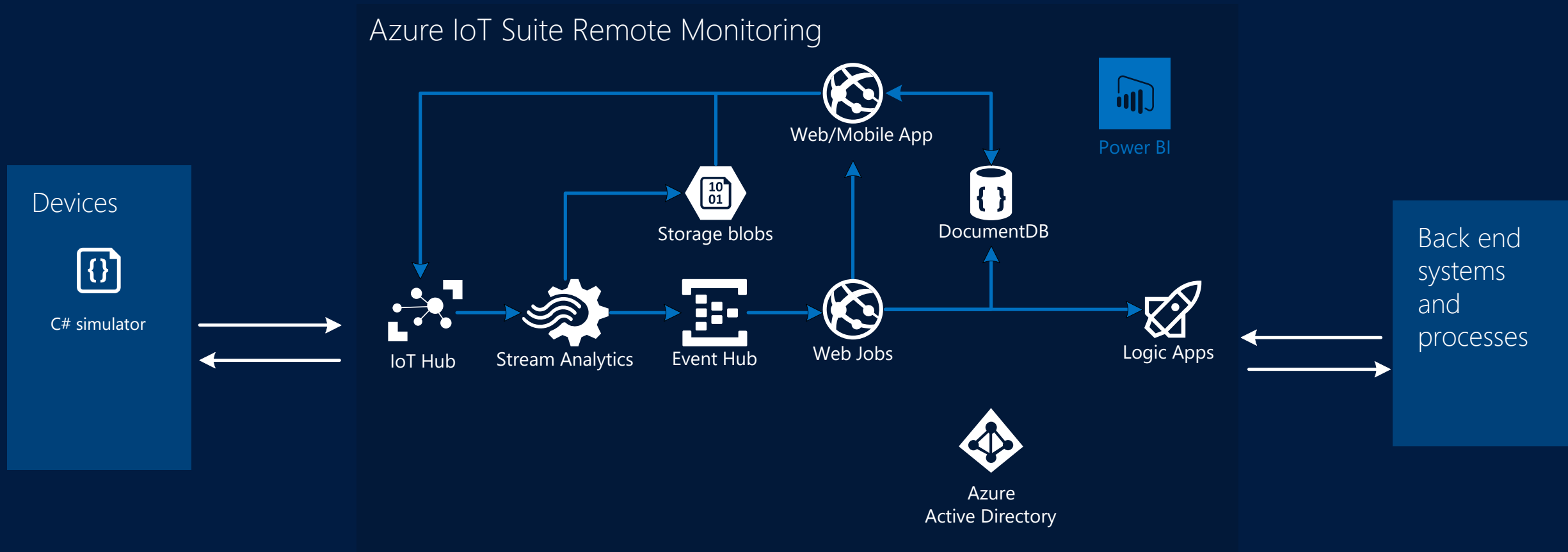
Connect and monitor your devices to analyze untapped data and improve business outcomes by automating processes.

<http://www.microsoftazureiotsuite.com/demos/predictivemaintenance>

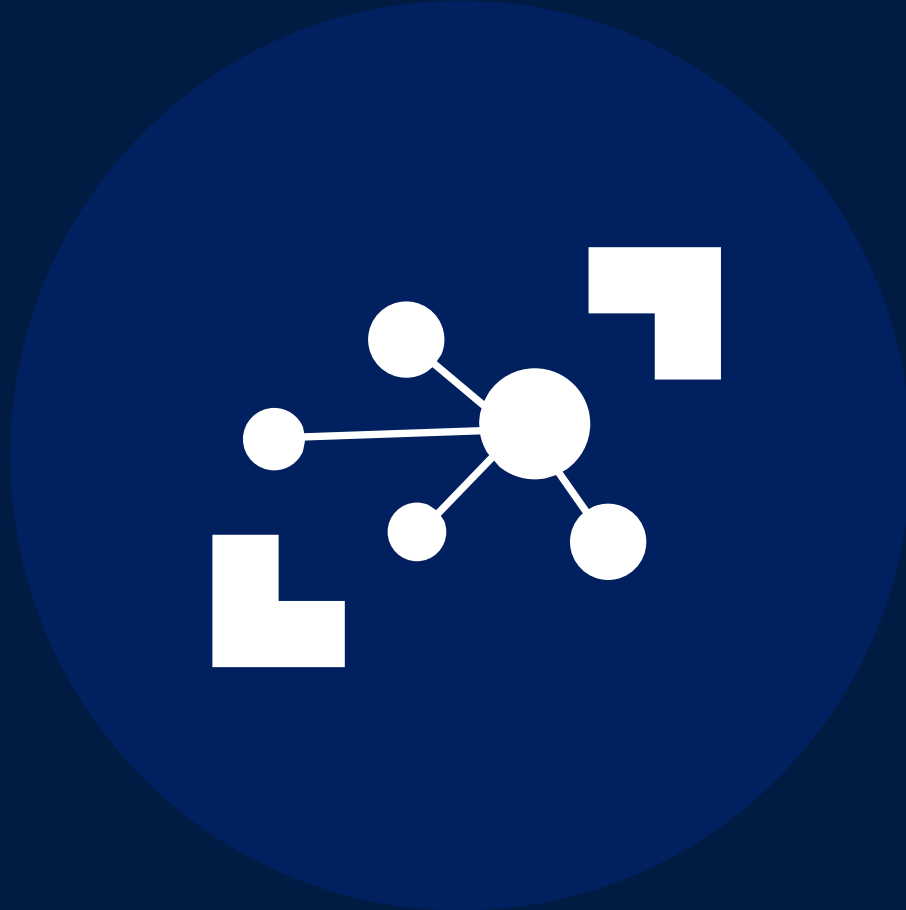
<http://www.microsoftazureiotsuite.com/demos/remotemonitoring>

<https://www.azureiotsuite.com/>

What you get with remote monitoring preconfigured solution




Connect & Control
Azure IoT Hub





DASHBOARD


DEVICES


RULES


ACTIONS


ADD A DEVICE

> FIND DEVICES

Devices List (4)

STATUS	DEVICE ID	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FIRMWARE	PLATFORM	PROCESSOR
Running	SampleDevice001_363	Contoso Inc.	MD-183	SER5094	1.43	Plat-9	i3-938
Running	SampleDevice002_363	Contoso Inc.	MD-762	SER7925	1.0	Plat-30	i3-245
Running	SampleDevice003_363	Contoso Inc.	MD-161	SER4940	1.1	Plat-59	i3-371
Running	SampleDevice004_363	Contoso Inc.	MD-192	SER4277	1.54	Plat-48	i3-792

> DEVICE DETAILS

Actions

- [Disable Device](#)
- [Add Rule...](#)
- [Commands](#)

Device Properties

[Edit](#)

DEVICEID

SampleDevice001_363

HOSTNAME

RMsolution.azure-devices.net

HUBENABLEDSTATE

True

CREATEDTIME

09/29/2015, 9:14:38 AM

DEVICESTATE

normal

UPDATEDTIME

09/29/2015, 9:16:19 AM

MANUFACTURER

Contoso Inc.

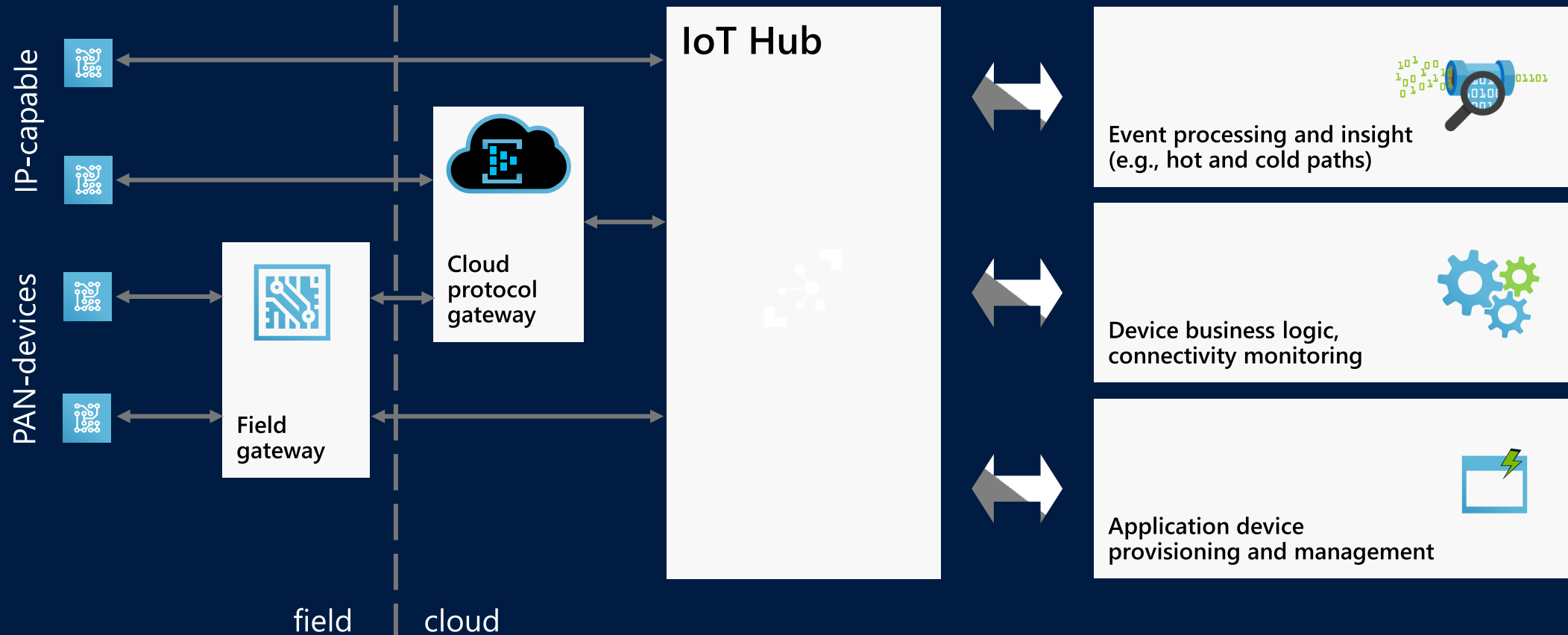
MODELNUMBER

MD-183

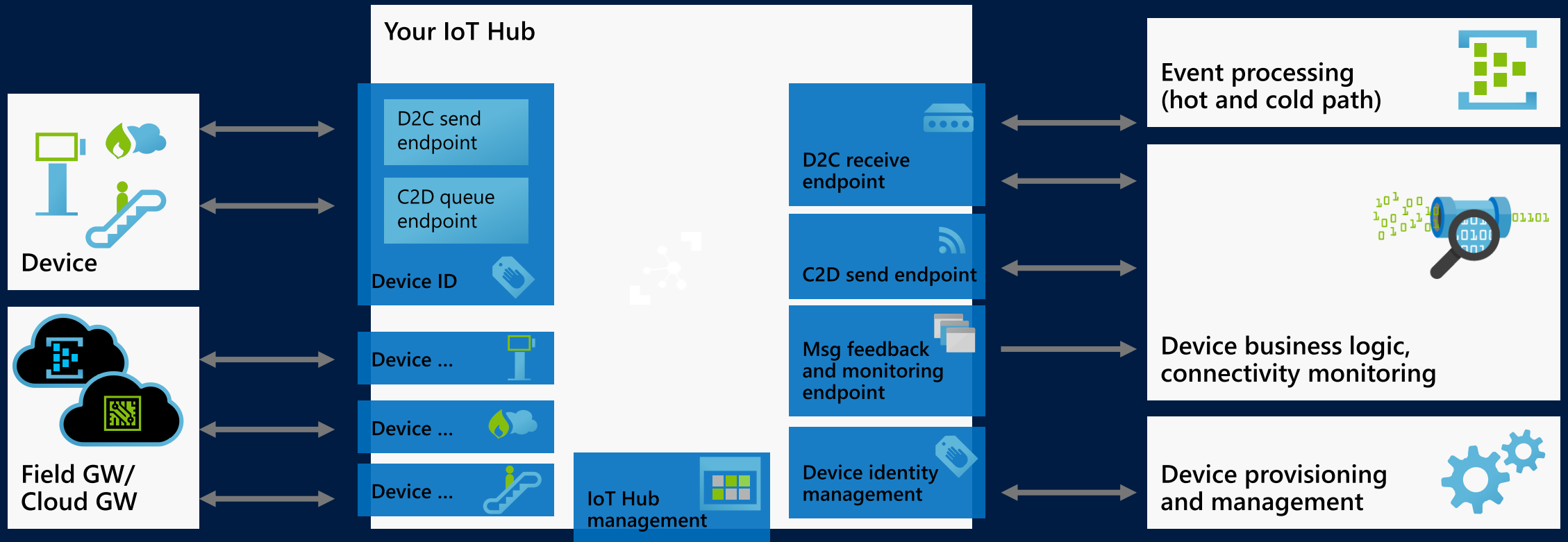
SERIALNUMBER

SER5094

Connect your devices to Azure



IoT Hub endpoints



Azure IoT Hub

Designed for IoT

Connect up to 10 million devices

Service assisted communications

Secure bi-directional communication

Command and control

Cloud-scale messaging

Device-to-cloud and Cloud-to-device

Durable messages (at least once semantics)

Cloud-facing telemetry ingestion

Delivery receipts, expired messages

Device communication errors

Per-device authentication

Individual device identities and credentials

Connection multiplexing

Single device-cloud connection for all communications (C2D, D2C)

Multi-protocol support

Natively supports AMQP, HTTP

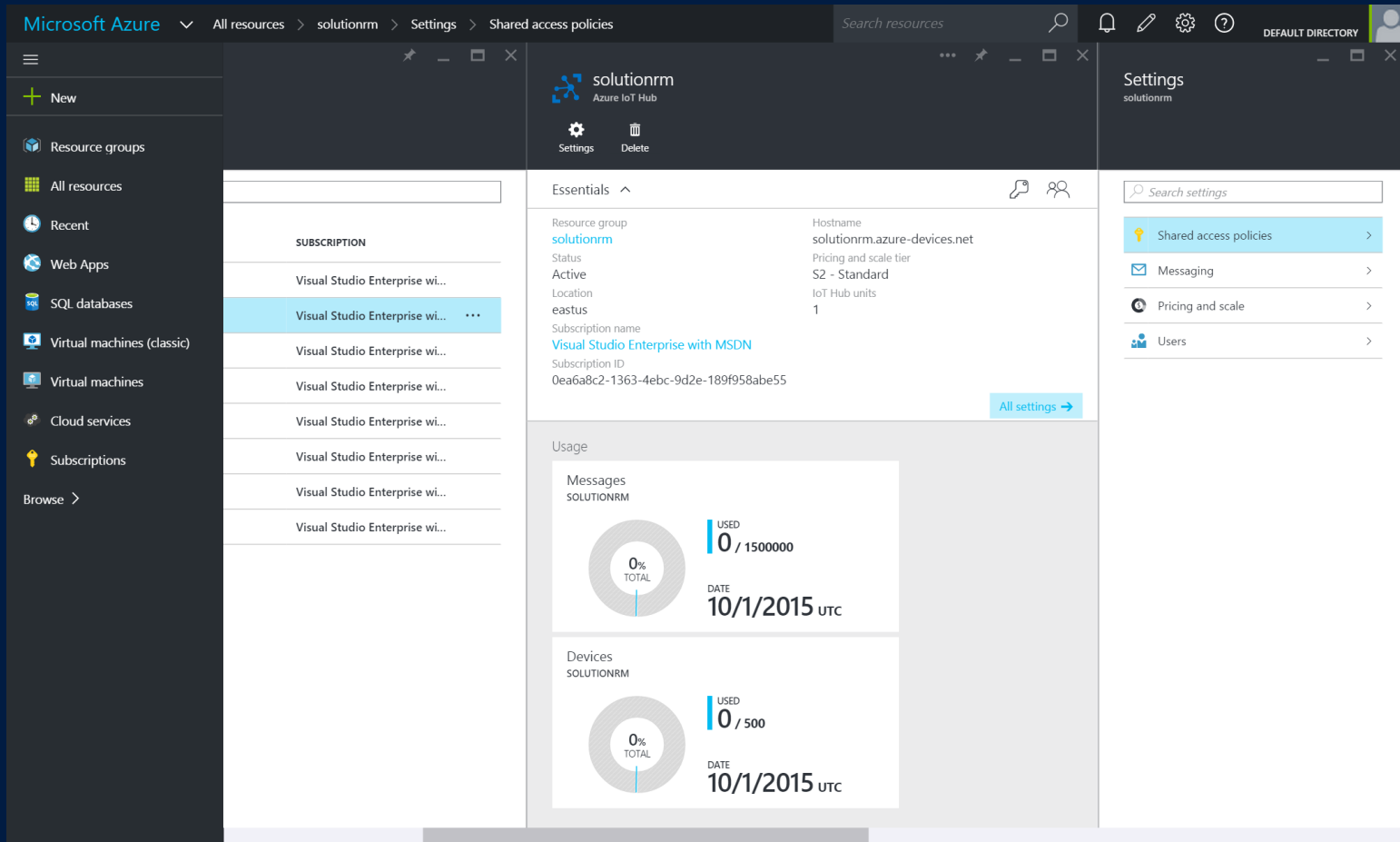
Designed for extensibility to custom protocols

Multi-platform

Device SDKs available for multiple platforms (e.g. RTOS, Linux, Windows)

Multi-platform Service SDK.

Manage IoT Hub in Azure portal



Simple navigation

Management of devices, volume and scaling made easy through the IoT Hub settings in the Azure Management Portal

Event Processing
Azure Stream
Analytics



Rules (4)

STATUS	RULE ID	DEVICE ID	DATA FIELD	OPERATOR	THRESHOLD	RULE OUTPUT
Enabled	0e0d533c-87e5-47a8-a1d6-0fc8c149199a	Intel	Temperature	>	45	AlarmTemp
Disabled	6a842d60-4513-4a91-b997-ca126da46eef	SampleDevice001_84	Humidity	>	75	AlarmHumidity
Enabled	804f7e84-b41c-4c1b-a123-76fe4f305d1a	SampleDevice001_84	Temperature	>	45	AlarmTemp
Enabled	f613050a-24a8-4d22-b28a-5776b75e7a3a	TexasInstruments	Humidity	>	88	AlarmHumidity

> Properties

Device Properties

DEVICE ID
Intel

Rule Status

Disable Rule

Rule Properties

Edit

DATA FIELD
Temperature

OPERATOR
>

THRESHOLD
45

RULE OUTPUT
AlarmTemp

Real time event processing

Uncover real time insights

Perform real time analytics across multiple streams

Rapid Deployment

Use simple SQL syntax, auto distributed for scale

Mission critical reliability

Fully managed, low latency, high throughput

Create real time alerts

Flag alerts and alarms for attention

High volume

Analyze millions of data points per second

Highly scalable

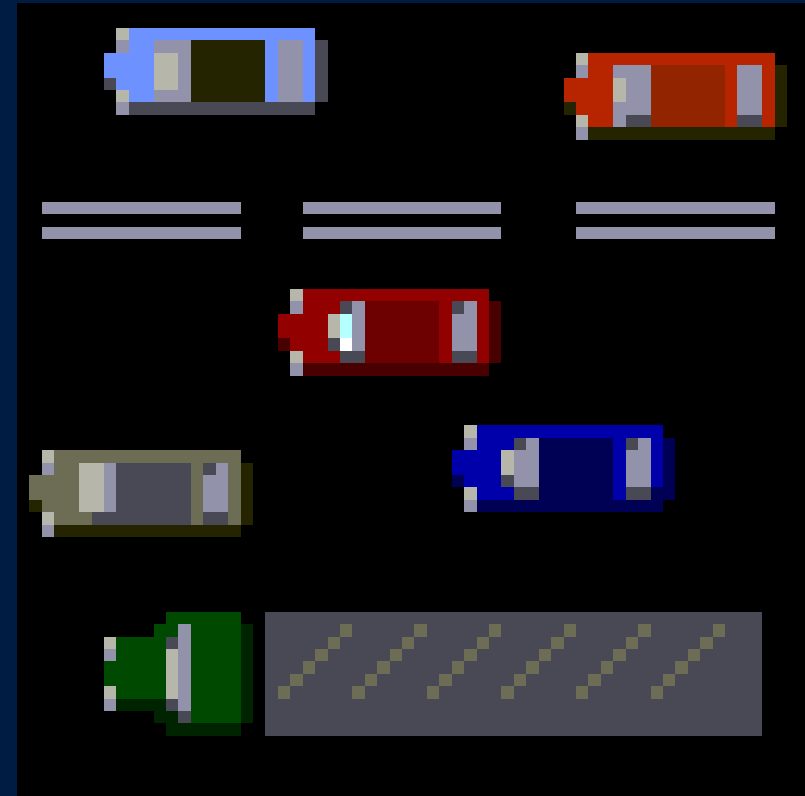
Enterprise grade, predictable solution.

Working with Streaming Data

Data at Rest

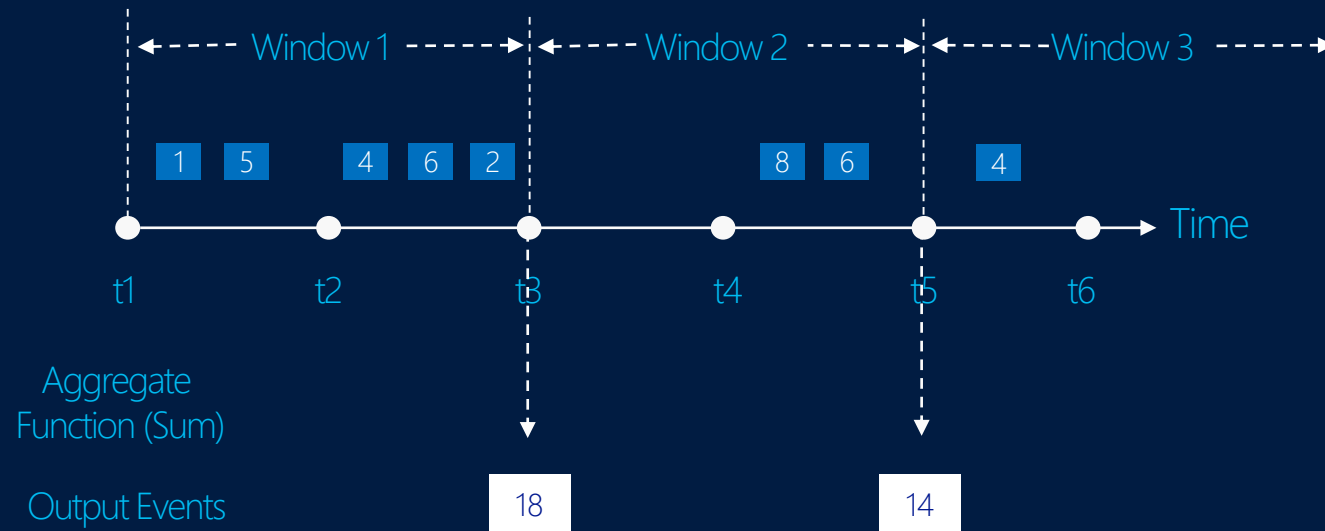


Data in Motion



Windowing Concepts

- Windows can be **tumbling**, **hopping**, or **sliding**
- Windows are fixed length
- Must be used in a **GROUP BY** clause



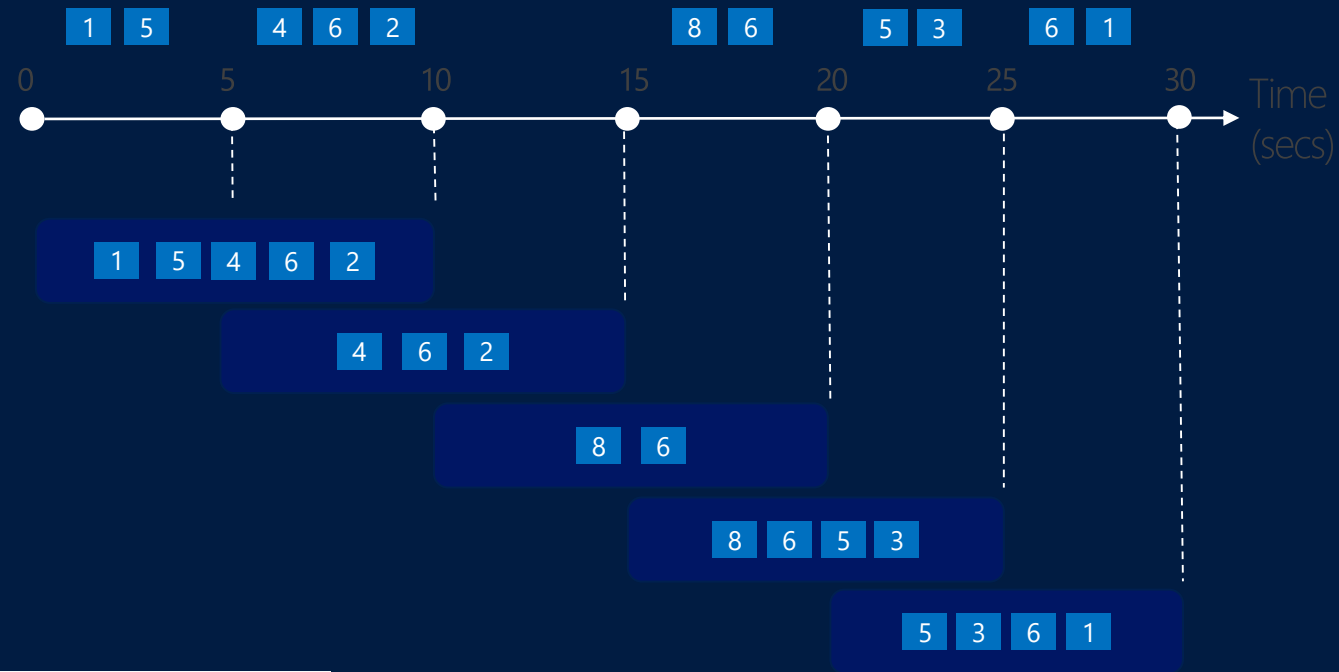
- Output event will have the timestamp of the end of the window

Hopping Windows

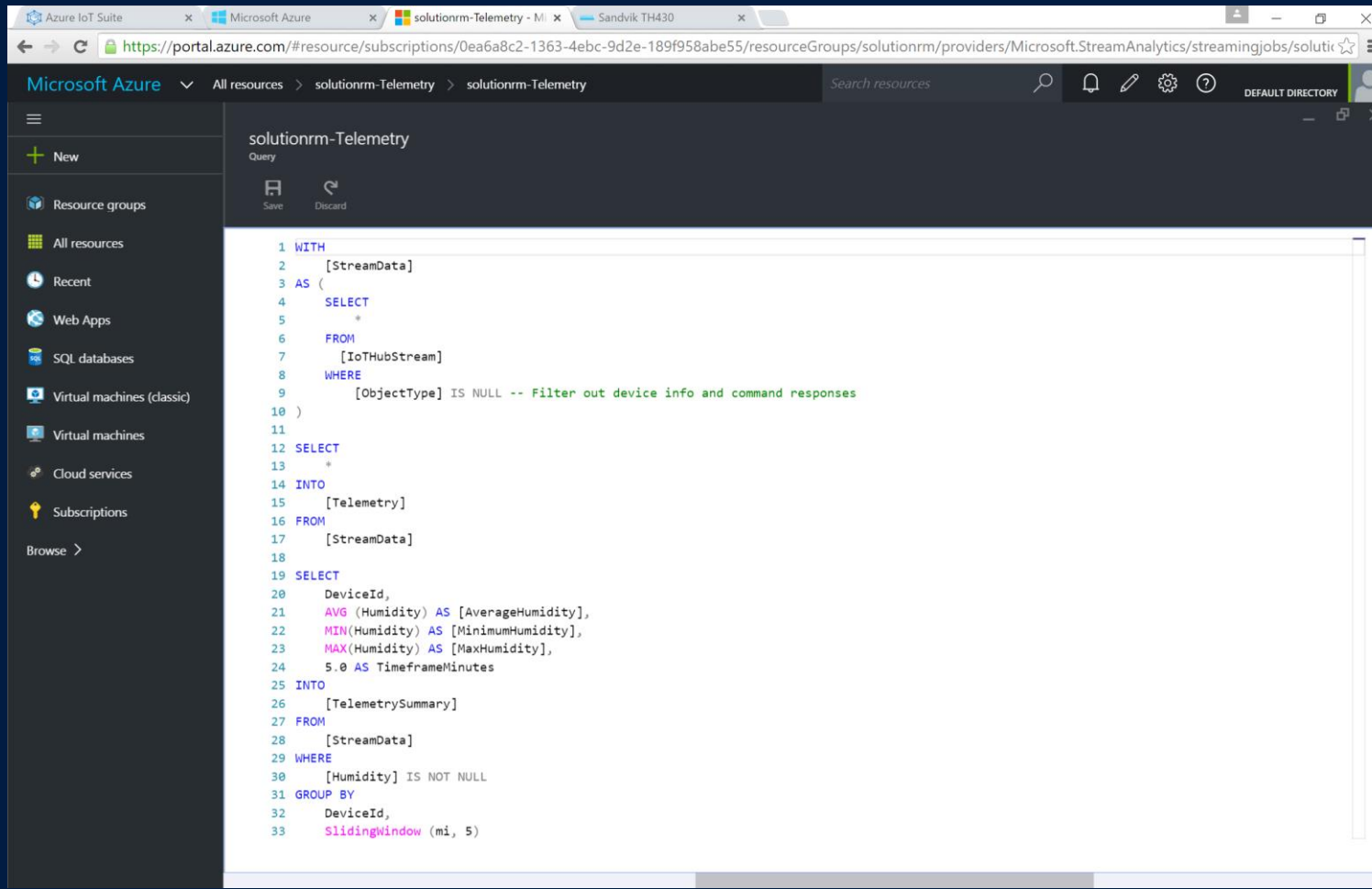
"Every 5 seconds give me the count of tweets over the last 10 seconds"

```
SELECT Topic, Count(*) AS TotalTweets
FROM TwitterStream
TIMESTAMP BY CreatedAt
GROUP BY Topic, HoppingWindow(second, 10, 5)
```

A 10-second Hopping Window with a 5-second "Hop"



Add or edit jobs using simple ASA interface



Rule based interface

Simple implementation and rule development using ASA UI.

Multi-channel

Analyze multiple channels of information simultaneously, in real time.

Data Visualization Power BI



Data visualization with PowerBI

Highly accessible analytics

Cloud based dashboard and analytics tool,

360° view of business KPI's

Customize dashboards to address concerns and performance metrics.

Cross platform support

View data via web platform, on any device

Pre-built dashboards

Utilize standard dashboards for rapid deployment, based on popular solution demands.

Real time capabilities

Ingest, analyze and display data as it happens

Secure access

Secure, live communication with data source

Query data







Intuitive, natural language query tool

Integrated systems







Integrate with other business systems and enrich device data with intelligence from other business systems, eg: CRM, ERP

Power BI Overview

Data sources

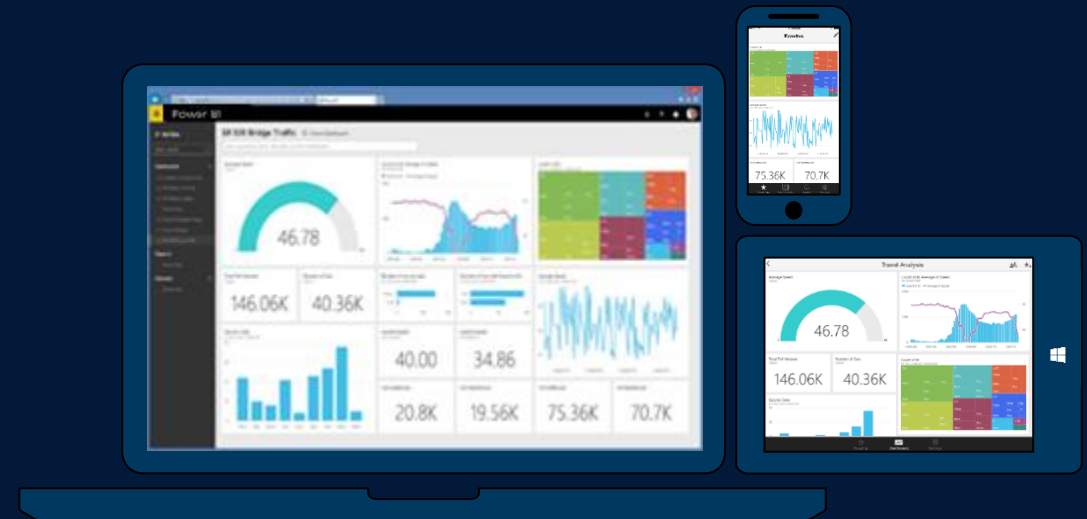
-  SaaS solutions
e.g. Marketo, Salesforce, GitHub, Google analytics
-  On-premises data
e.g. Analysis Services
-  Organizational content packs
Corporate data sources or external data services
-  Azure services
Azure SQL, Stream Analytics...
-  Excel files
Workbook data / data models
-  Power BI Desktop files
Data from files, databases, Azure, and other sources

Power BI service

-  Content packs
-  Live dashboards
-  Visualizations
-  Reports
-  Datasets
-  Data refresh

 Natural language query

 Sharing & collaboration



Data visualization with PowerBI

Rich visuals

Standard and custom graphing options

Custom dashboards

Build heat maps and visually track data

External data

Integrate external data feeds to add value to device data, or pull in external information such as weather or market information.

