macedonian.net user group

REAL-TIME SERVERLESS APPLICATION ON AZURE

DARKO MILEVSKI

Azure Saturday 2019

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Welcome!!

PLEASE SILENCE YOUR MOBILE PHONES
AND
WE TAKE OFF..

Agenda

Serverless and Paas

Introduction to Serverless and PaaS

01

IoT Hub

Ingest Data From Devices and store in Cosmos DB with Azure Functions

02

Real Time Notification

Iot Hub and EventGrid

03

Real Time Notification

IoT Hub, Stream Analytics and Alerts

04

Serverless and PaaS

Serverless

- Serverless compute can be thought of as a function as a service (FaaS), or a microservice that is hosted on a cloud platform
- Your business logic runs as functions and you don't have to manually provision or scale infrastructure. The cloud provider manages infrastructure.
- The two most common approaches are Azure Logic Apps and Azure Functions

PaaS

- Platform as a service (PaaS) is a complete development and deployment environment in the cloud
- A development platform allowing to develop, run and manage applications without complexity of building and maintaining infrastructure
- Azure Managed Services like App Service, Cosmos DB, Storage, Event Hub, IoT Hub, Analytics and more…

Serverless

Web apps

Web apps that scale with your business

Mobile apps

Build mobile apps for any device

Logic apps

Automate business processes across SaaS and on-premises

API apps

Easily build and consume APIs in the cloud

Functions

A serverless event based experience to accelerate your development.

Azure SignalR Service

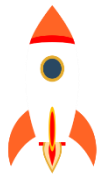
Azure IoT Hub

STORY

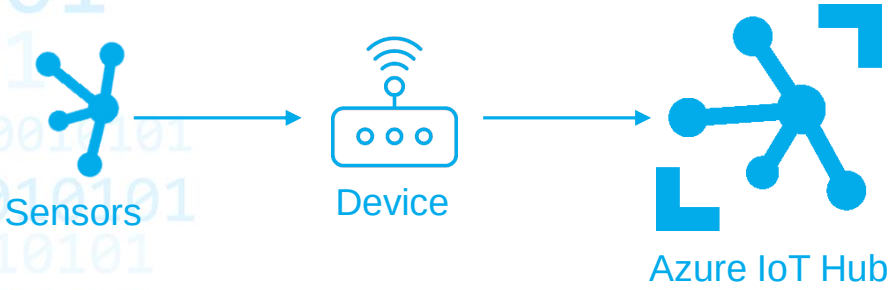
Serverless and PaaS

Scenario / Requirement

- Customer that has factories all over the world
- There are many sensors in these factories and customer wants to collect and centralize all these telemetry data in the cloud
- These sensors are connected (wired up) into devices which have internet connection and can send data
- They have many data so they need a scalable storage solution for their data. They plan to analyze this data later
- New Sensors and Devices are added in the factories and solution administrator/s want to be notified each time new device is added
- Telemetry data is sent to the cloud and process managers and engineers need to be notified if some sensor reading exceeds some value
- Built on the Cloud



Solution Design



What is Azure IoT Hub?

Scale your solution

IoT Hub scales to millions of simultaneously connected devices and millions of events per second to support your IoT workloads

Secure your communications

IoT Hub gives you a secure communication channel for your devices to send data: Per-device authentication, Multiple authentication types support

Route device data

Built-in message routing functionality gives you flexibility to set up automatic rules-based message fan-out

Integrate other services

You can integrate IoT Hub with other Azure services to build complete, end-to-end solutions: Functions, Event Grid, Logic Apps, ML, Stream Analytics,…

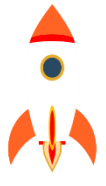
Highly available

There's a 99.9% SLA on Iot Hub

Connect your devices

IoT SDK supports languages like C, C#, Java, Python, Node.js and following protocols HTTPS, AMQP, MQTT

IoT Hub is a managed service, hosted in the cloud, that acts as a central message hub for bi-directional communication between your IoT application and the devices it manages.



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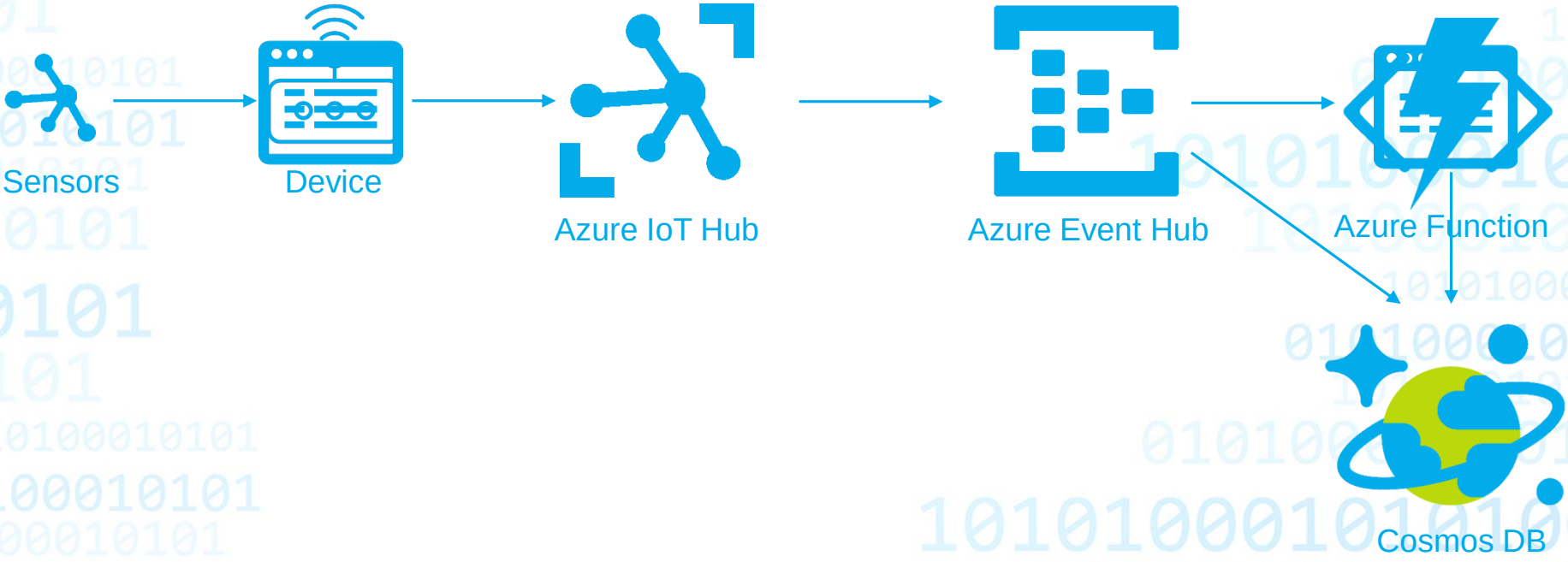

Azure Services

used so far in this scenario

Event Hub

Notification

Azure Event Hubs is a Big Data streaming platform and event ingestion service, capable of receiving and processing millions of events per second. Event Hubs can process and store events, data, or telemetry produced by distributed software and devices.

Functions

Compute / Code

Azure Functions is a serverless compute service that enables you to run code on-demand without having to explicitly provision or manage infrastructure. Use Azure Functions to run a script or piece of code in response to a variety of events.

Cosmos DB

Data Storage

Azure Cosmos DB is a globally distributed, multi-model database service that supports document, key-value, wide-column, and graph databases. It provide low latency, elastic scalability of throughput, well-defined semantics for data consistency, and high availability.

DEMO

IoT Hub, Devices, Functions
and CosmosDB

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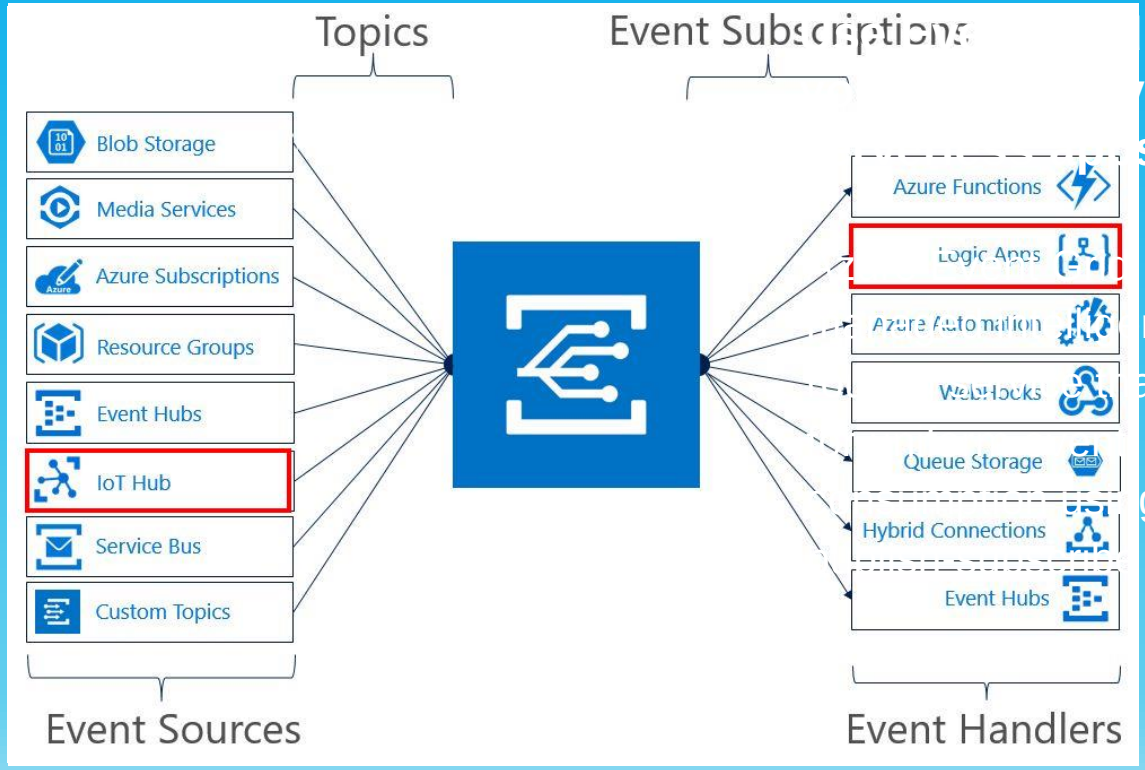
IoT Hub With Event Grid

Integrate IoT Hub Events



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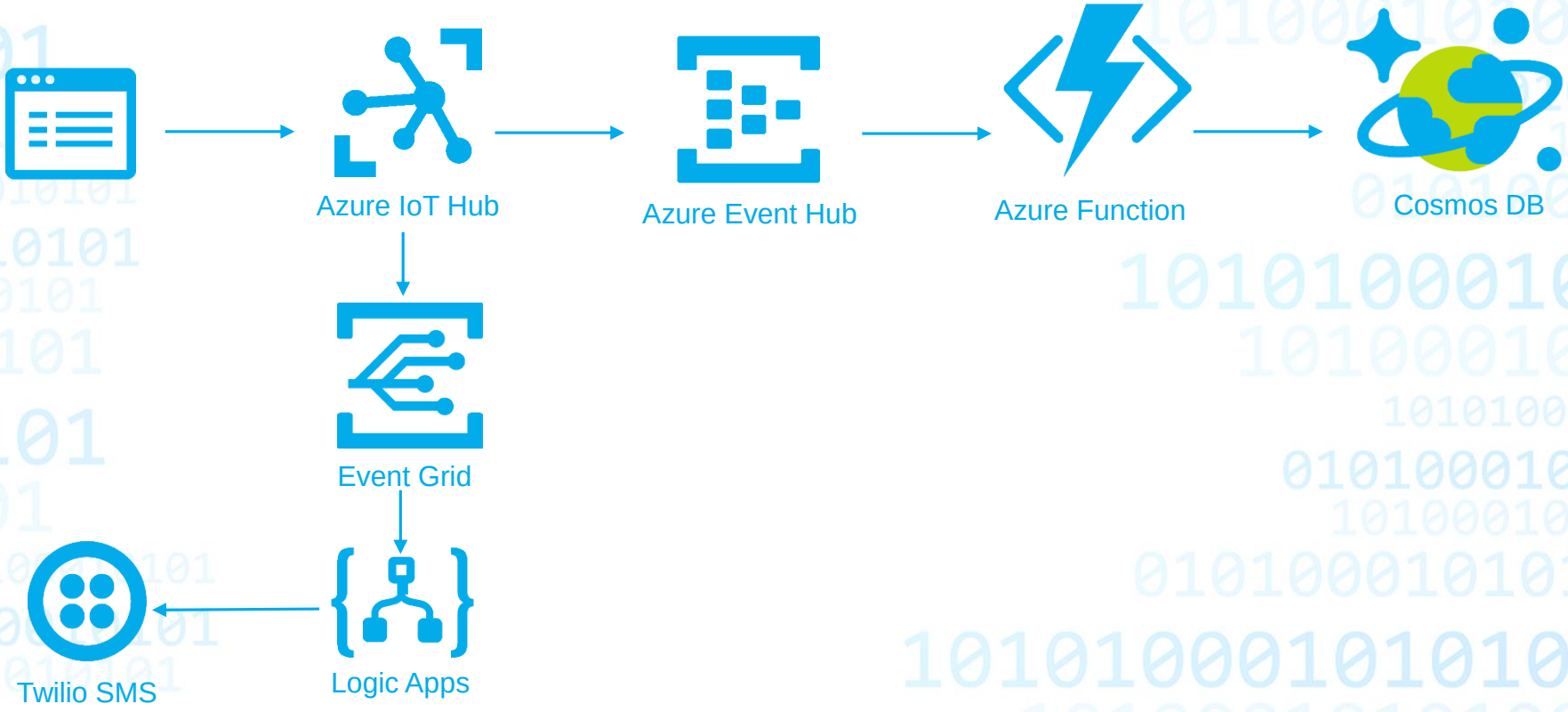

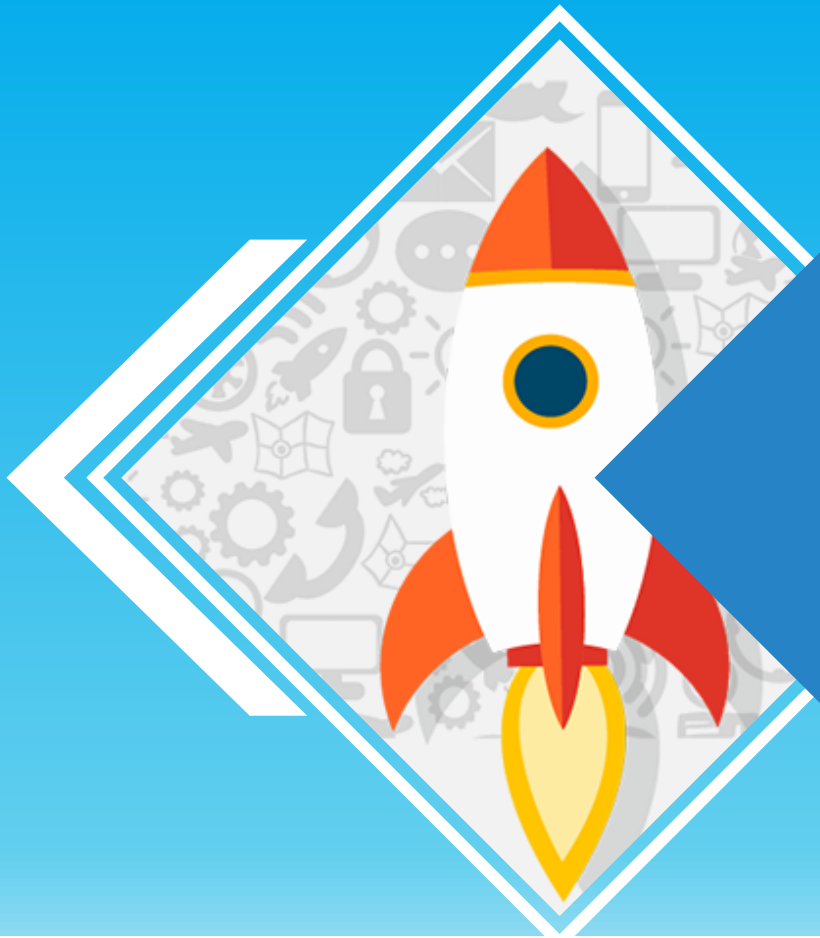

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IoT Hub, Add Device,
Logic apps and SMS Notification

Scenario / Requirement

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Azure Stream Analytics

Analyze telemetry as it arrive

Ingest Data From IoT Hub

All data that came from IoT hub is streamed directly as input into Stream Analytics Job

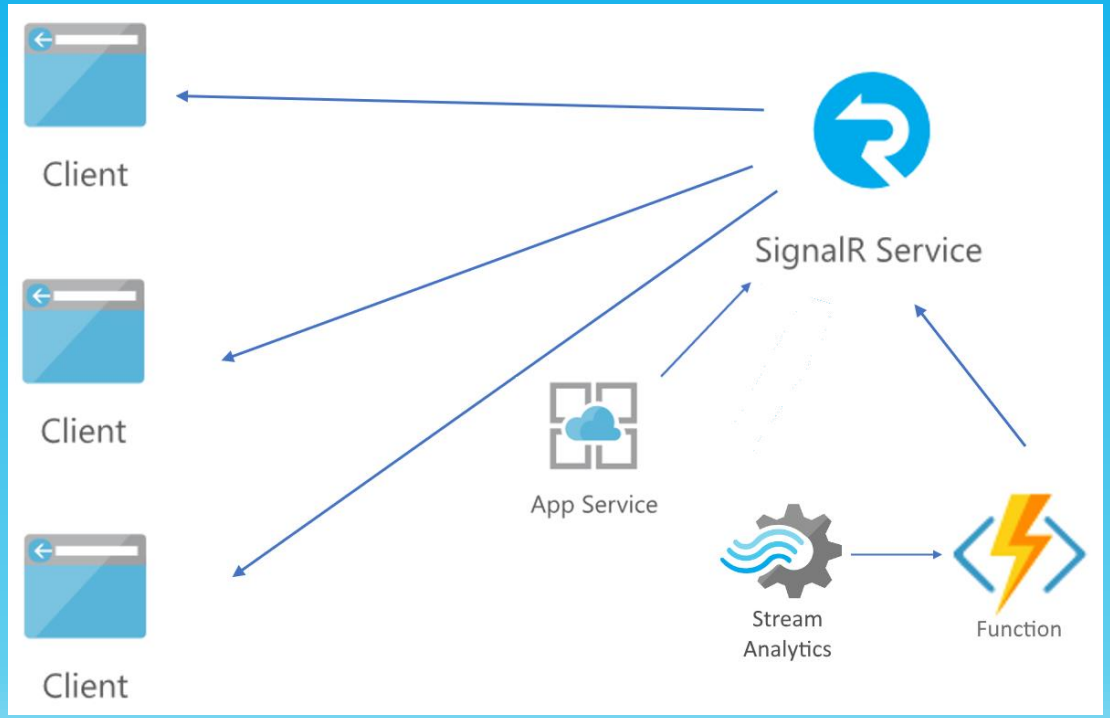
Analyze data on predefined Time Window

Some Sensor value is analyzed as Average value on predefined time frame (TimeWindow)

Alerting (Output)

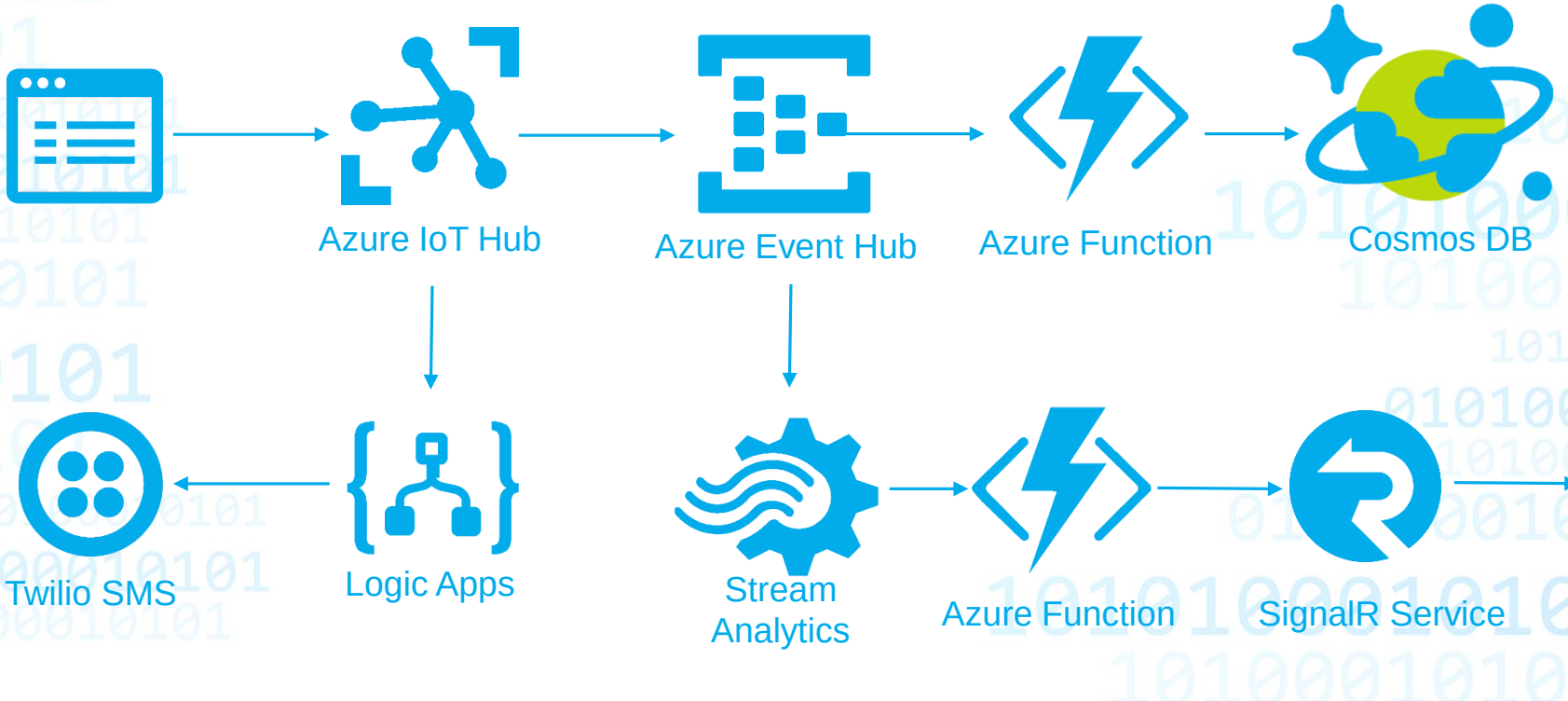
Define Output based on Analyzed Data. If some Average value in Time Frame exceed threshold

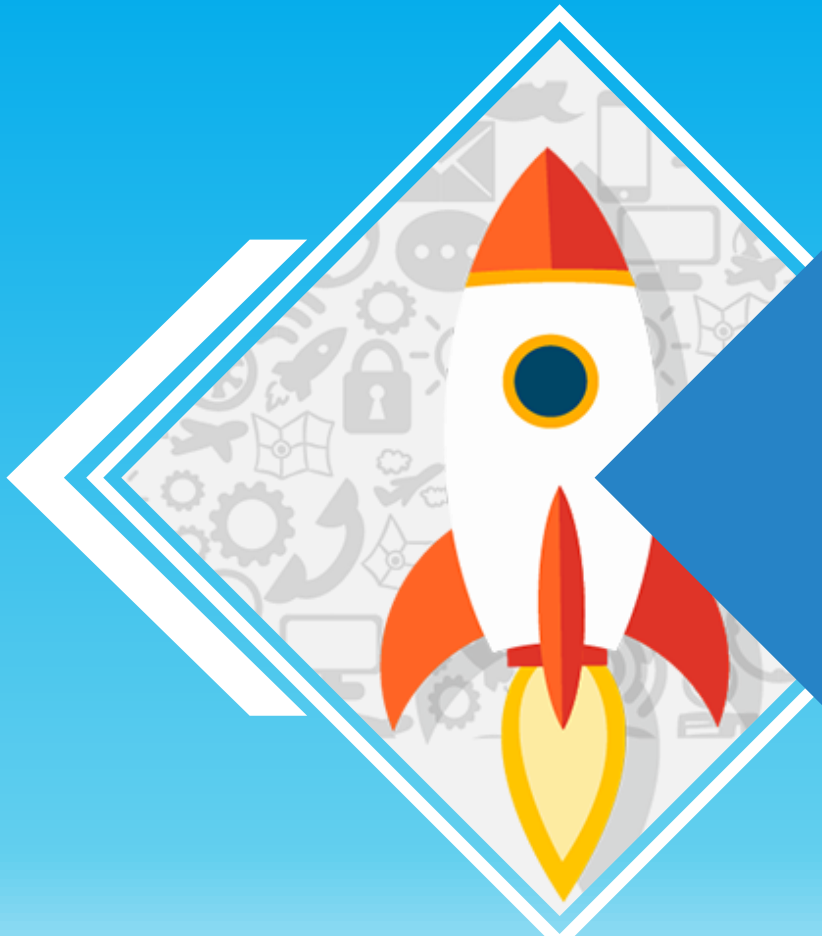
Azure SignalR Service



- Quickly and easily build real-time communications into your web application
- Focus on your core business instead of managing infrastructure
- Take advantage of the full spectrum of Azure services. Integration with Functions, Storage, Analytics and more..

Solution Design





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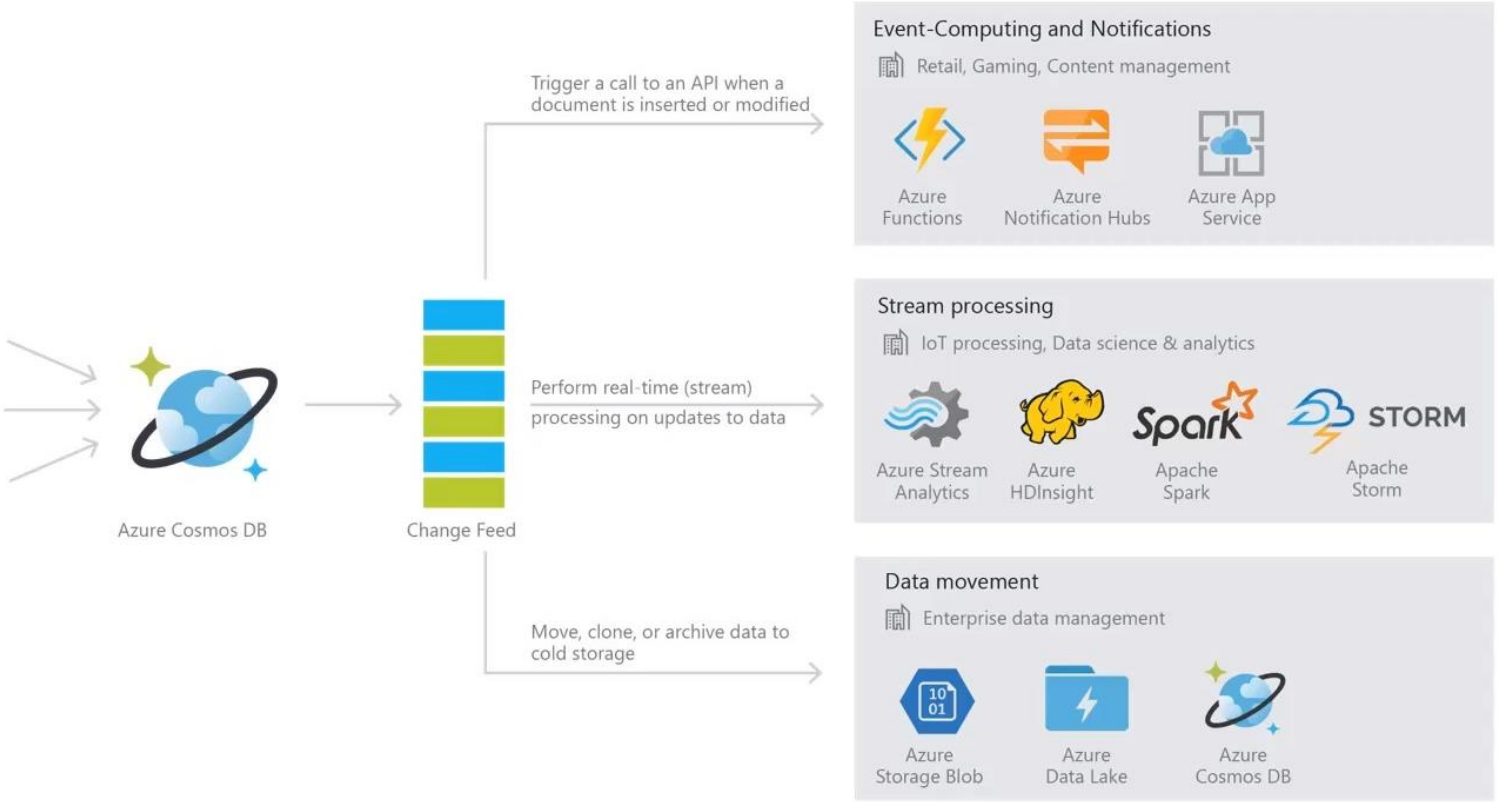
Stream Analytics
SingalR Service

Cosmos DB Change Feed



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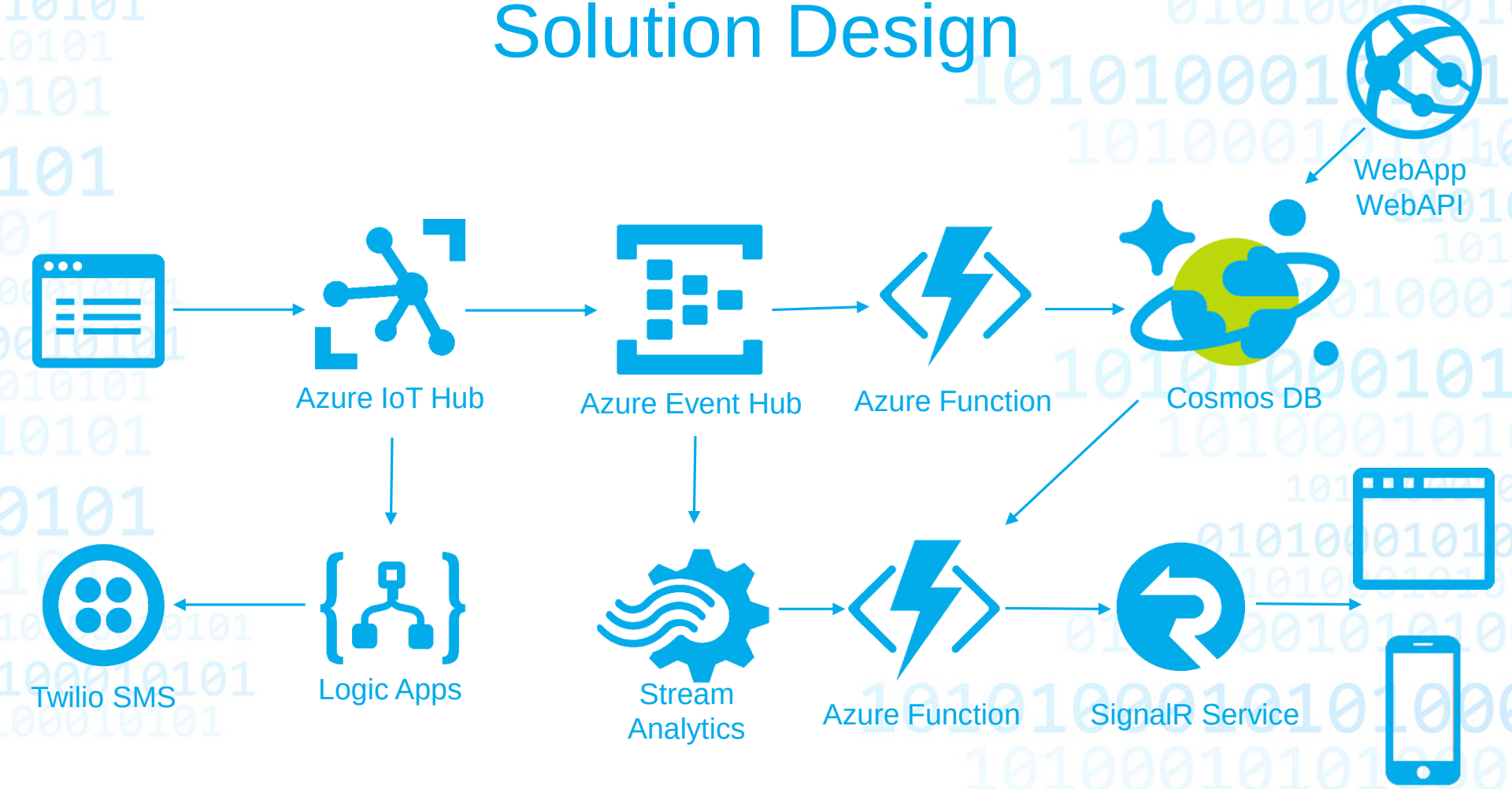

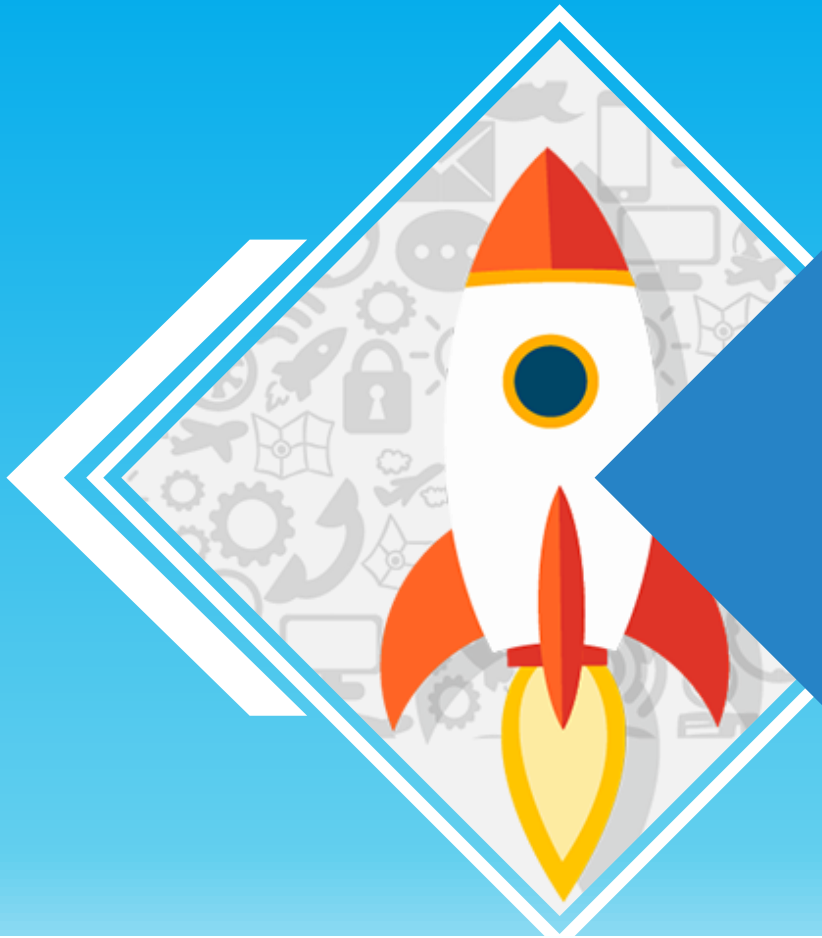

DEMO

Cosmos DB Change Feed
SignalR Service

Wrap up

Q&A

Thank you

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