CLOUD DEVELOPER DAYS

Start your journey with **Serverless on Azure**

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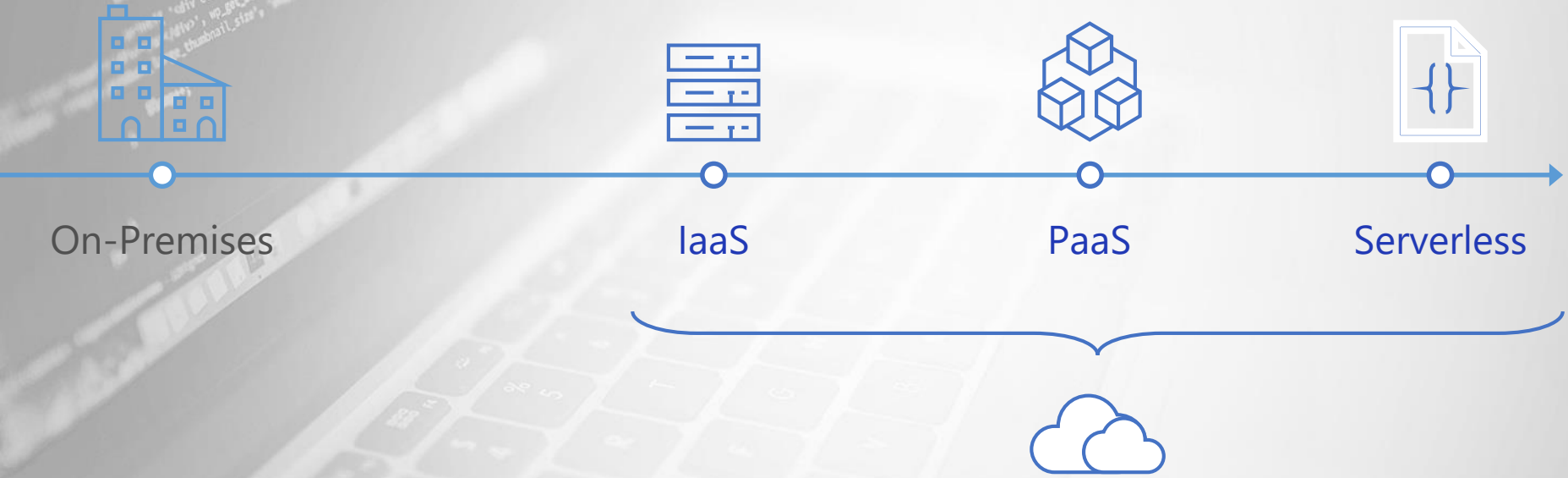
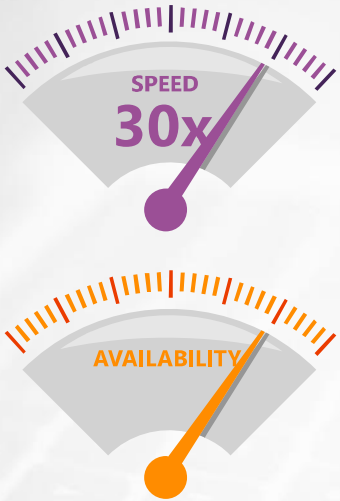
- @DariuszPorowski

The evolution of application platforms

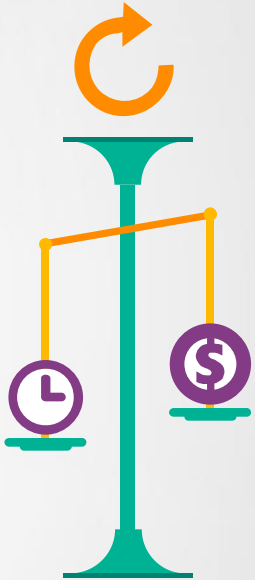


What is serverless?

Abstraction
of servers



Event-driven /
instant scale



Micro-billing

Serverless application platform components

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Development

- IDE support
- Integrated DevOps
- Local development
- Monitoring
- Visual Debug History

Platform

Functions

- Developer productivity
- Triggers and Bindings
- Flexible deployment options

Logic apps

- Visual designer
- 100+ connectors
- Functions orchestration

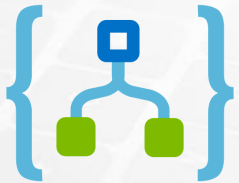
Event Grid

- Manage all events in one place
- Near real-time delivery
- Broad coverage

Database | Storage | Security & Access Control | IoT | Analytics | Intelligence

When should I consider serverless?

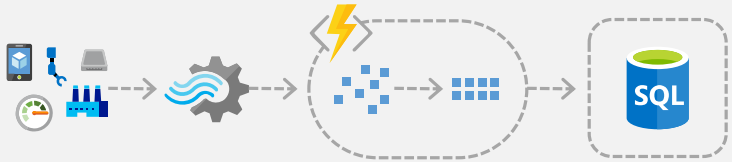
- You need some action to occur whenever an event happens
- This is a task I don’t need full control of the underlying system
- Have some acceptance of latency variability



Scenarios for Serverless

Anything that needs to respond to events!

Real-time stream processing



Millions of devices feed into Stream Analytics

Transform to structured data

Store data in SQL DB

Timer-based processing

Every 15 minutes

Find and clean invalid data

Clean table

Backends (Mobile/IoT/Web)

Photo taken and WebHook called

Stores in blob storage

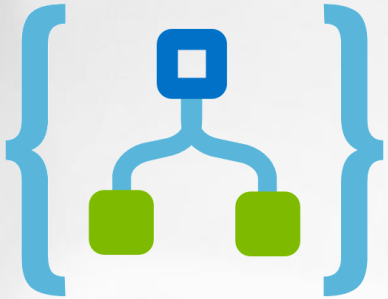
Produces scaled images

Real-time bot messaging

Message sent to Chatbot

Cortana Analytics answers questions

Chatbot sends response

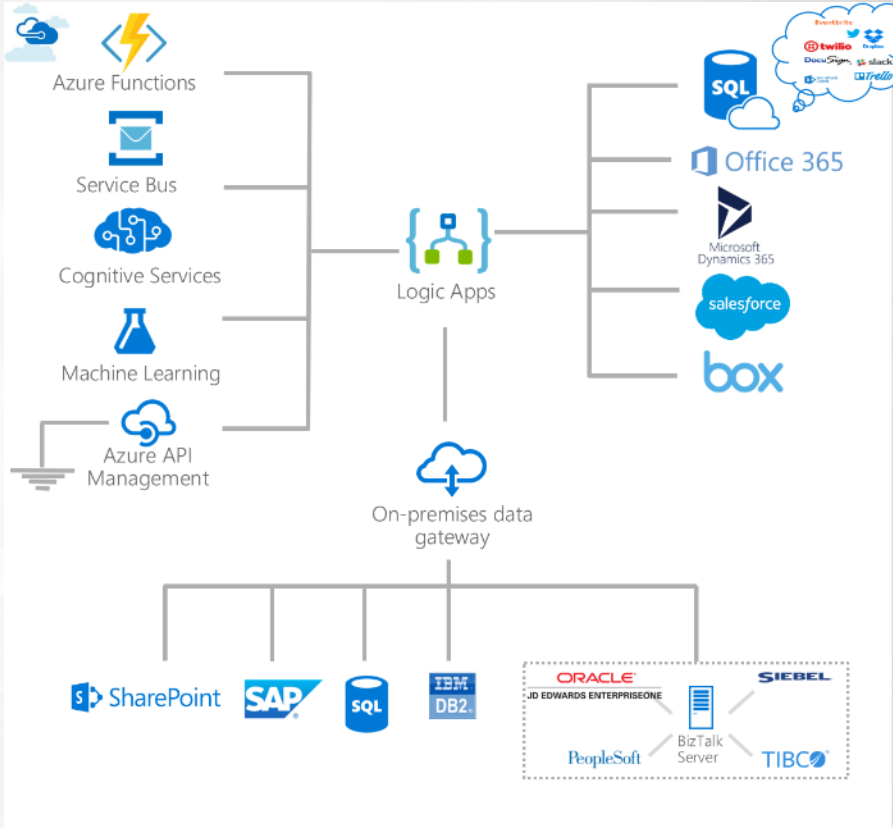


Azure Logic Apps

Automate the access and use of data across clouds without writing code

Azure Logic Apps

- Connect on-premises, hybrid and cloud applications
- Run mission-critical, complex integration scenarios with ease
- Build “smart” integrations leveraging Machine Learning/Cognitive Services



Triggers and Actions

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Triggers

- Recurrence / Schedule
- Polling
- Webhook
- Request

Actions

- Invoke services
- Control behavior
- Message Handling
- Flow Control

Connected with over 200 connectors

Cloud APIs and platform functionality

Office 365

Azure

Microsoft Dynamics 365

Over 200 out of box connectors

- SaaS, on-prem, protocols, B2B and message manipulation

Hybrid connectivity

Hosted and managed within the platform

Scales to meet your needs

First class designer experience

API connections

Authenticate once and reuse

Differentiate connection configuration

Simple to deploy

Portal experience for managing API Connections

Custom Connectors

Access any REST/SOAP API

Cloud or on-premises

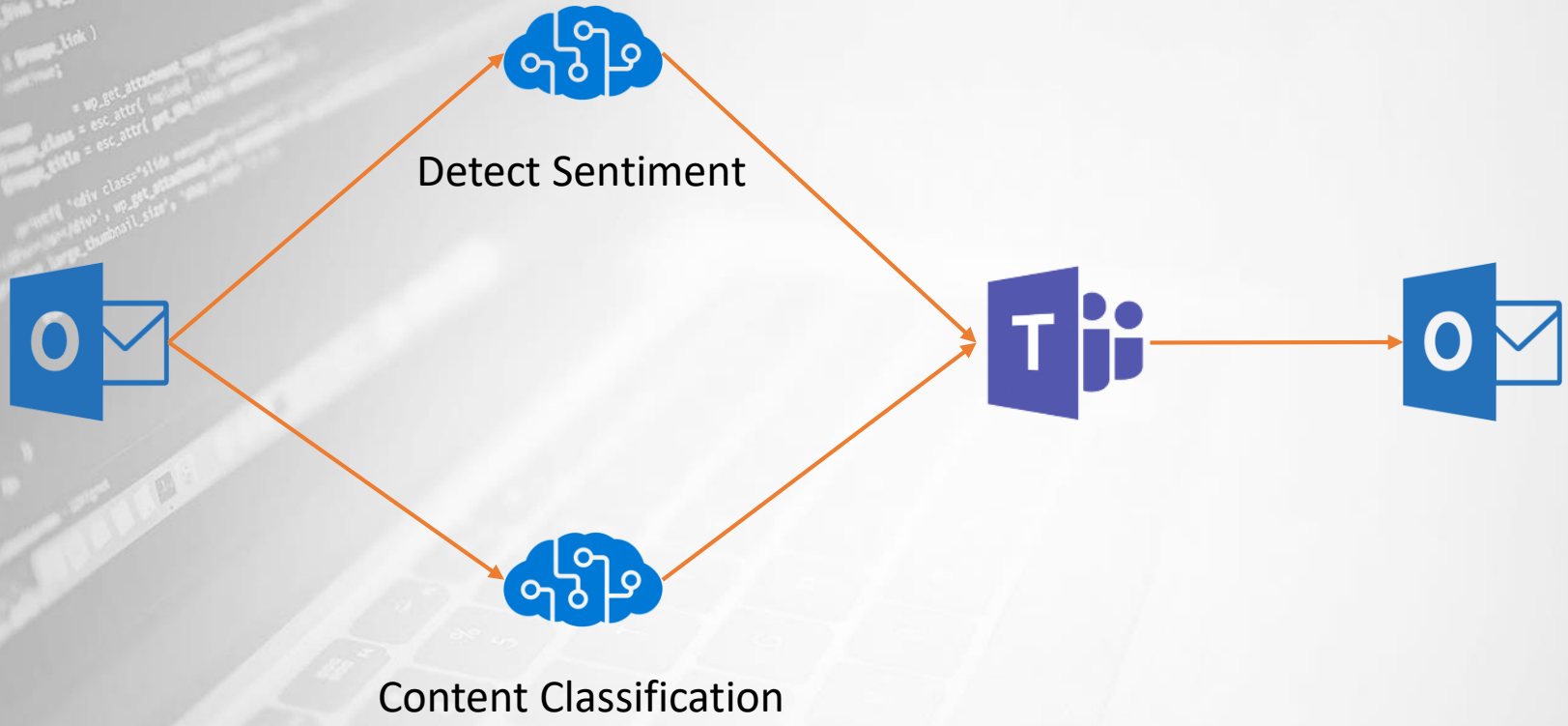
Simple creation wizard

Connections and managed secrets

First class designer experience

DEMO

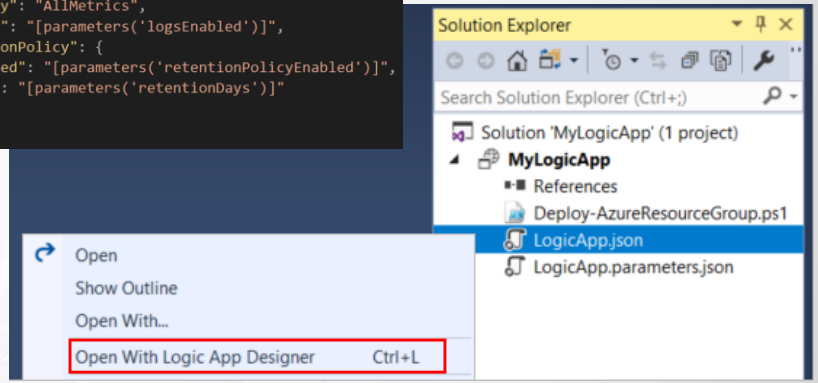
E-mail sentiment analysis and content classification


Detect Sentiment
Content Classification

Useful stuff

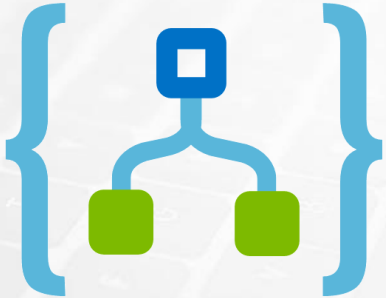
- Monitoring
  - Azure Log Analytics
  - ARM Template
- Development
  - Azure Resource Group project
  - Azure Logic Apps Tools for Visual Studio 2015/2017

```
"resources": [
  {
    "apiVersion": "[parameters('diagnosticsApiVersion')]",
    "type": "providers/diagnosticSettings",
    "name": "[variables('diagnosticName')]",
    "properties": {
      "storageAccountId": null,
      "serviceBusRuleId": null,
      "workspaceId": "[variables('omsWorkspaceResourceId')]",
      "eventHubAuthorizationRuleId": null,
      "eventHubName": null,
      "metrics": [
        {
          "timeGrain": "AllMetrics",
          "category": "AllMetrics",
          "enabled": "[parameters('logsEnabled')]",
          "retentionPolicy": {
            "enabled": "[parameters('retentionPolicyEnabled')]",
            "days": "[parameters('retentionDays')]"
          }
        }
      ],
```



References

- Logic Apps Documentation: aka.ms/LogicApps-docs
- Logic Apps Ideas: aka.ms/LogicApps-wish



Azure Functions

Process events with stateless serverless code

Functions

Develop locally using best of class developer tools

Boost productivity through triggers and bindings

Choose from a variety of programming languages

Integrate with existing DevOps processes

Code

Azure Functions

+

Events & Data

Triggers and Bindings

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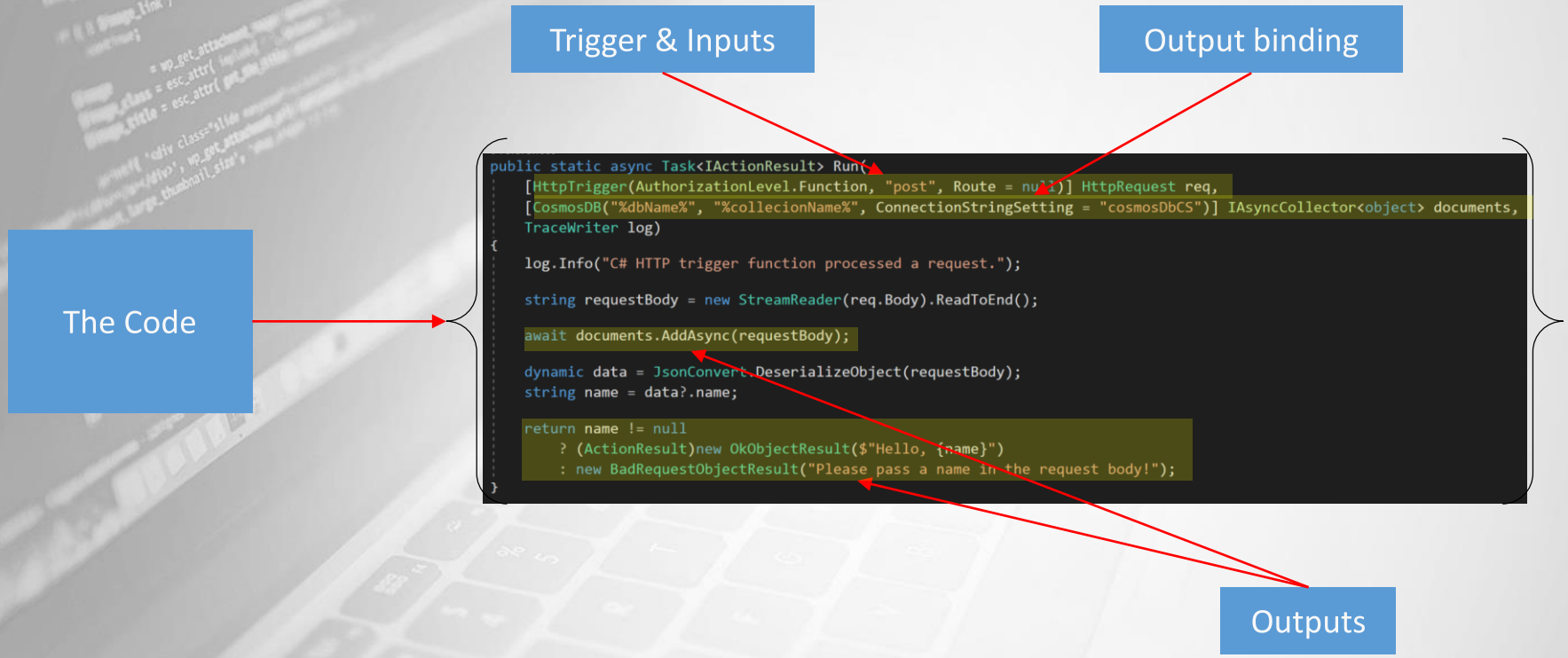
Triggers

- Event source that starts the function. One per function.

Bindings

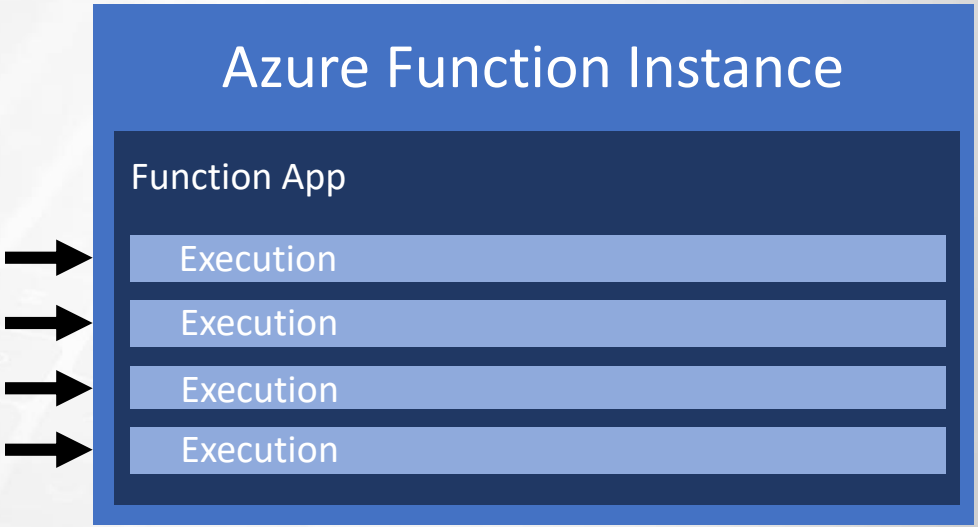
- **Input** – Data that is pulled in at the start of an execution. Can have multiple.
- **Output** – Data that is pushed out after an execution. Can have multiple.

Azure Functions programming model



Share resources across executions

- Azure Functions automatically adds **instances** as needed
- A single **instance** can process multiple requests (over time and at once)
- Leverage this by sharing certain code resources across executions (HttpClient, EventHubClient, etc.)



Share resources across executions

- Every single execution has to instantiate and dispose of HttpClient
- This is a **very** common anti-pattern
- Will result in function running out of available sockets
- aka.ms/antipattern

```
public static void MyFunction(...) {
    using(var client = new HttpClient()) {
        client.PostAsync(...);
    }
}
```

Share resources across executions

- Single HttpClient instantiated once when a function is initialized

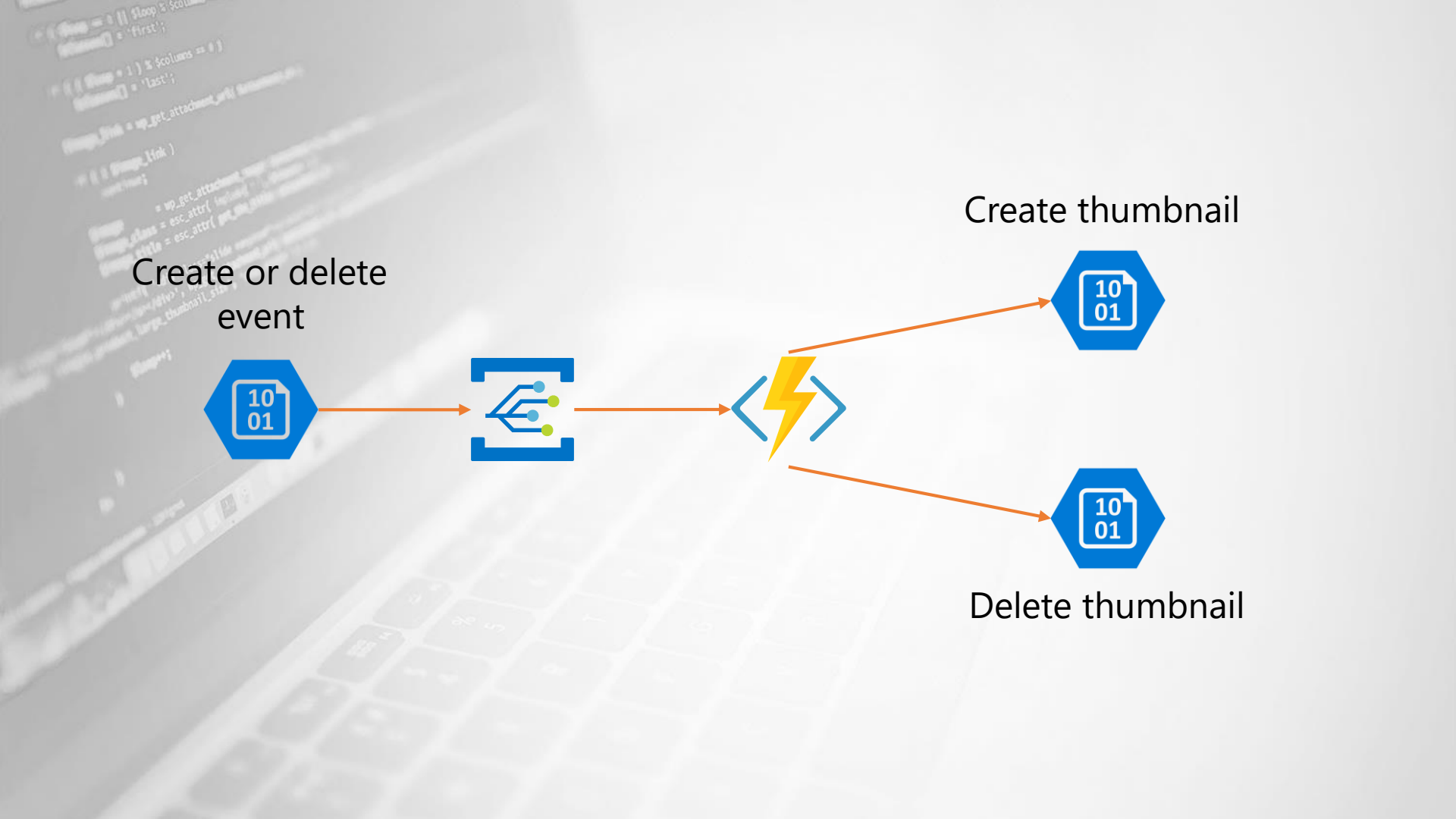
```
private static HttpClient client = new HttpClient();

public static void MyFunction(...) {
   client.PostAsync(...);
}
```

- Can be re-used safely across executions (over time and in parallel)

- Same pattern holds true for other state or clients shared across executions

DEMO

Image processing on a blob storage


Create or delete event
Create thumbnail
Delete thumbnail

References

- Functions Documentation: aka.ms/Functions-docs
- Functions Ideas: aka.ms/Functions-wish
- Try Functions functions.azure.com/try

Azure Functions Proxies

Single endpoint for multiple resources

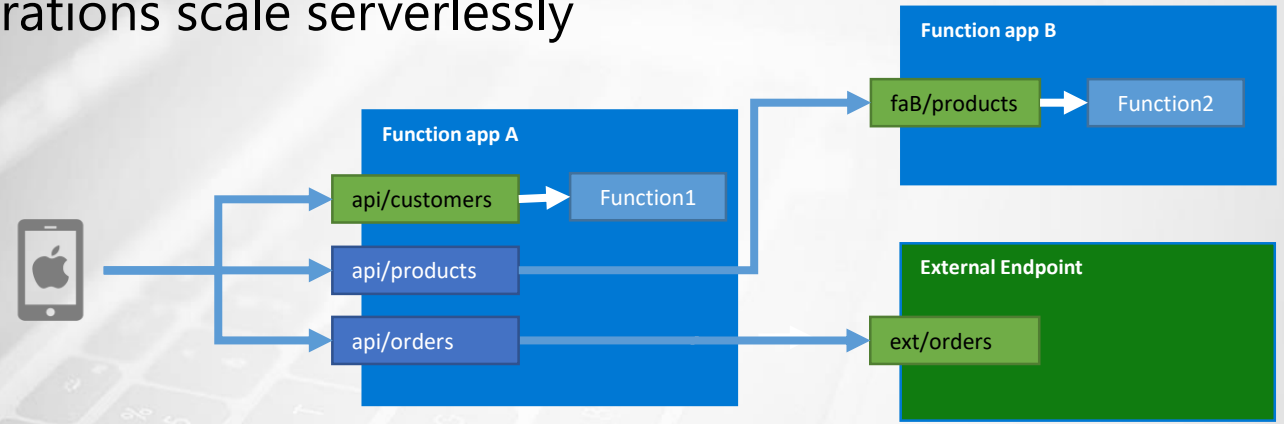
Azure Functions Proxies

- Lightweight reverse proxy built into a Function App
- Full control over the API surface
- Ability to modify request/responses

Deployment and management isolation

Simplify your APIs

- Proxies recap
  - Break down your API into multiple function apps (microservice architectures)
  - Routing operations scale serverlessly

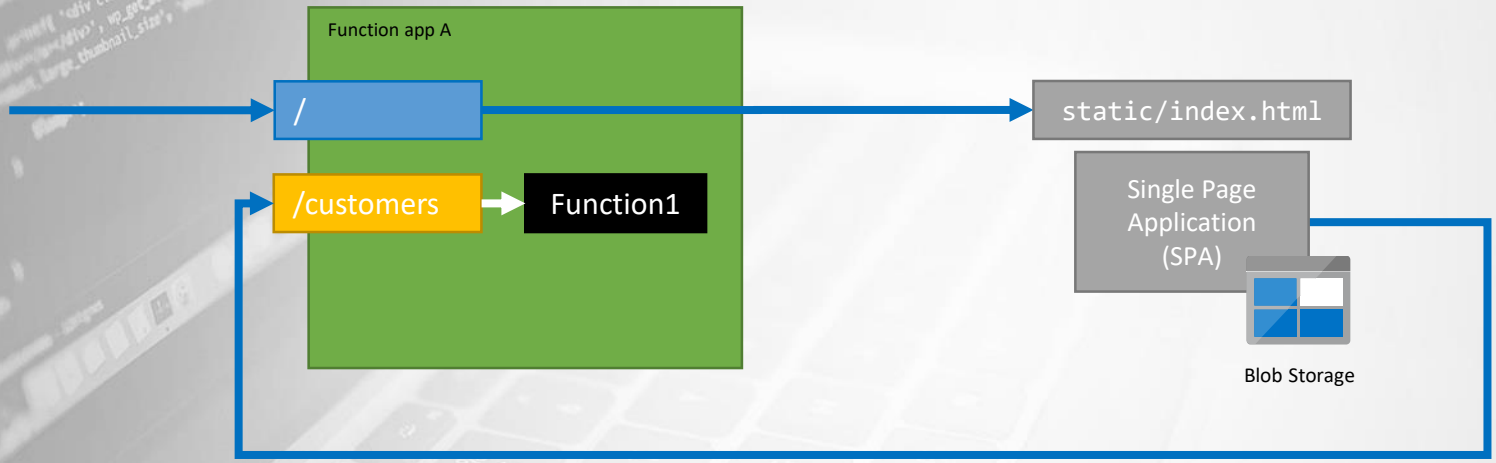


- Proxies in V2 runtime
  - Now available in West US 2 region, very soon worldwide

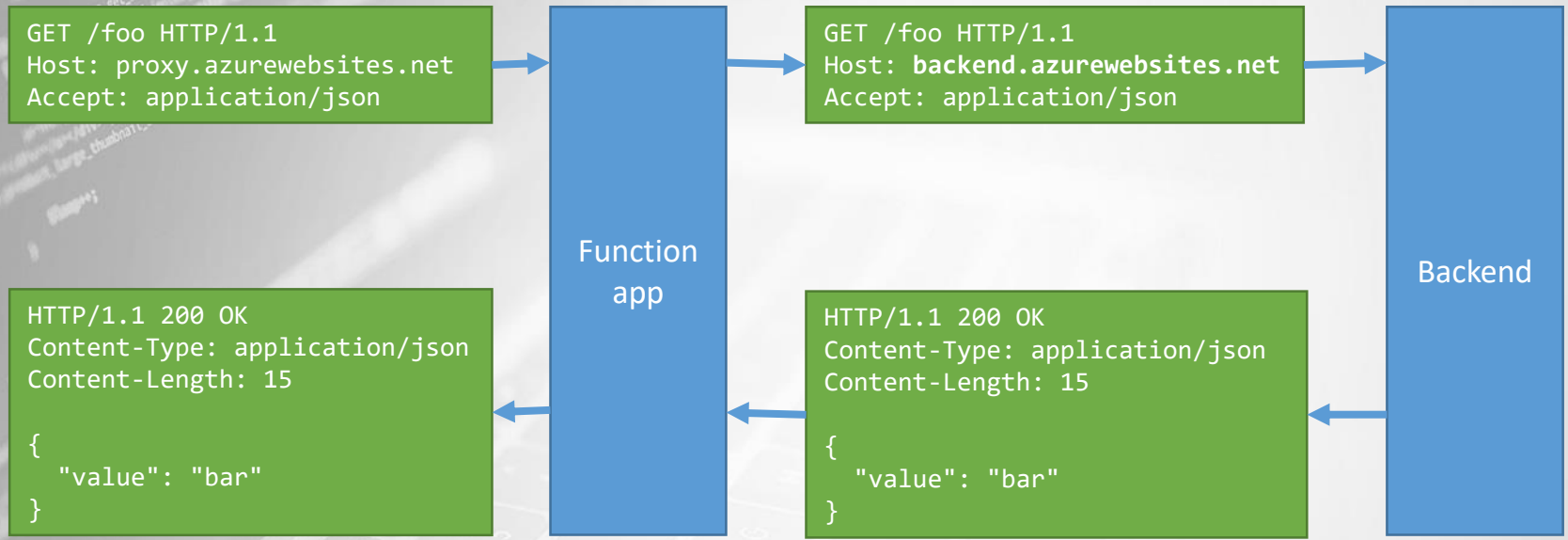
New file on site root: **proxies.json**

```
{
    "$schema": "http://json.schemastore.org/proxies",
    "proxies": {
        "proxy1": {
            "matchCondition": {
                "methods": [],
                "route": "/api/{test}"
            },
            "backendUri": "https://contoso.azurewebsites.net/api/{test}"
        }
    }
}
```

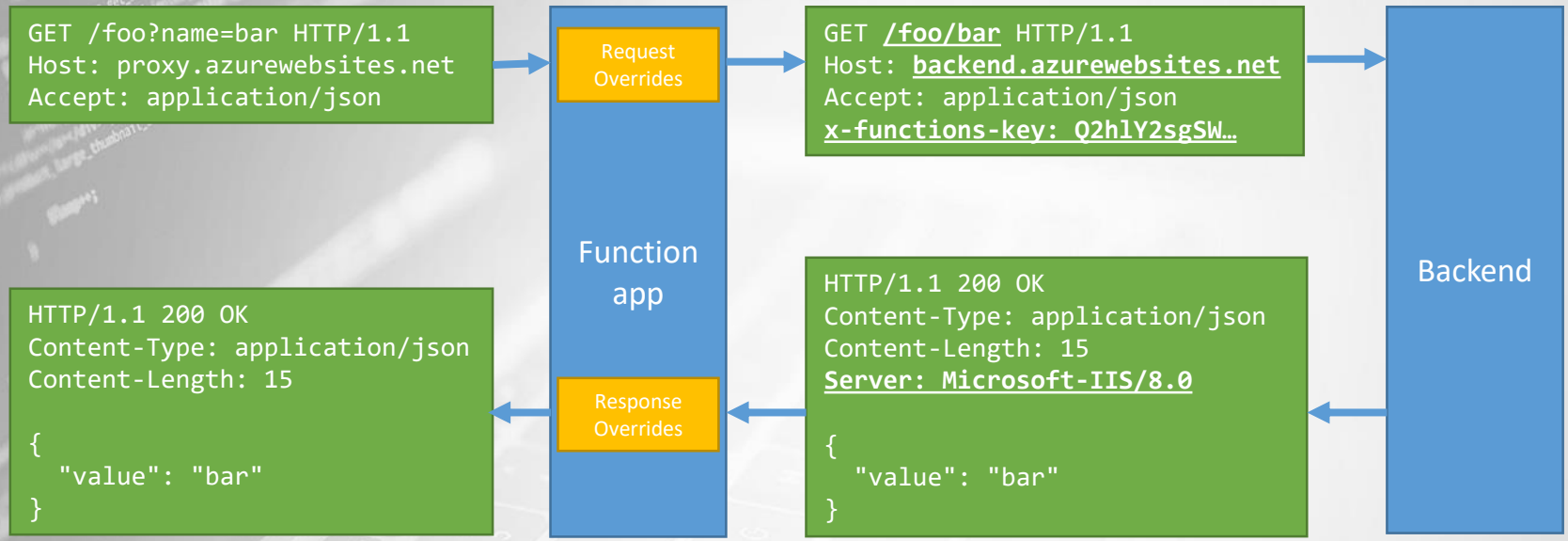
Serverless UI



Proxy execution pipeline



Transforming request / response data



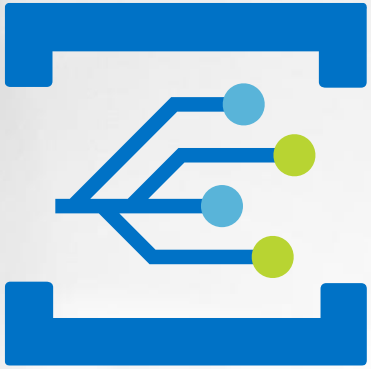
Creating mock APIs

DEMO

One serverless endpoint for various backends

References

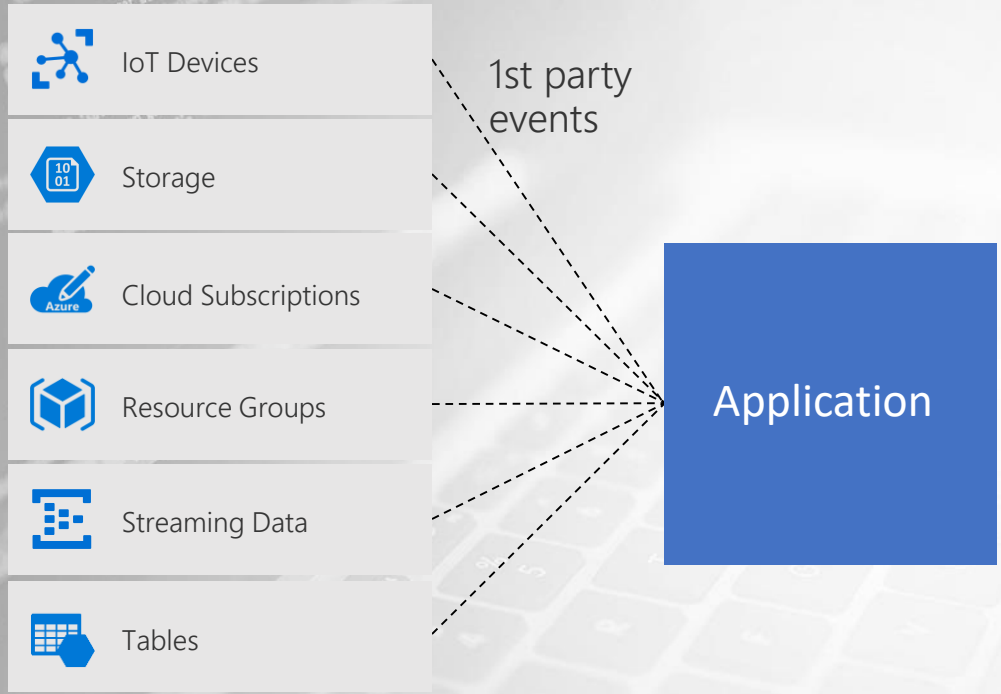
- Functions Proxies docs: aka.ms/FunctionsProxies-docs



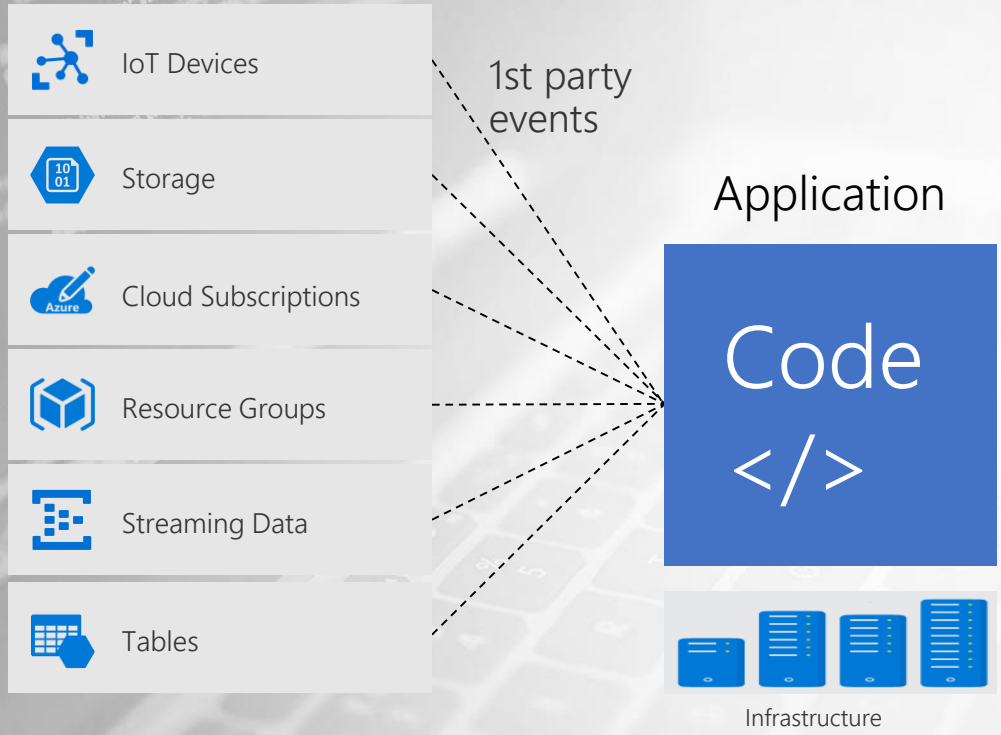
Azure Event Grid

Backbone of event-driven computing

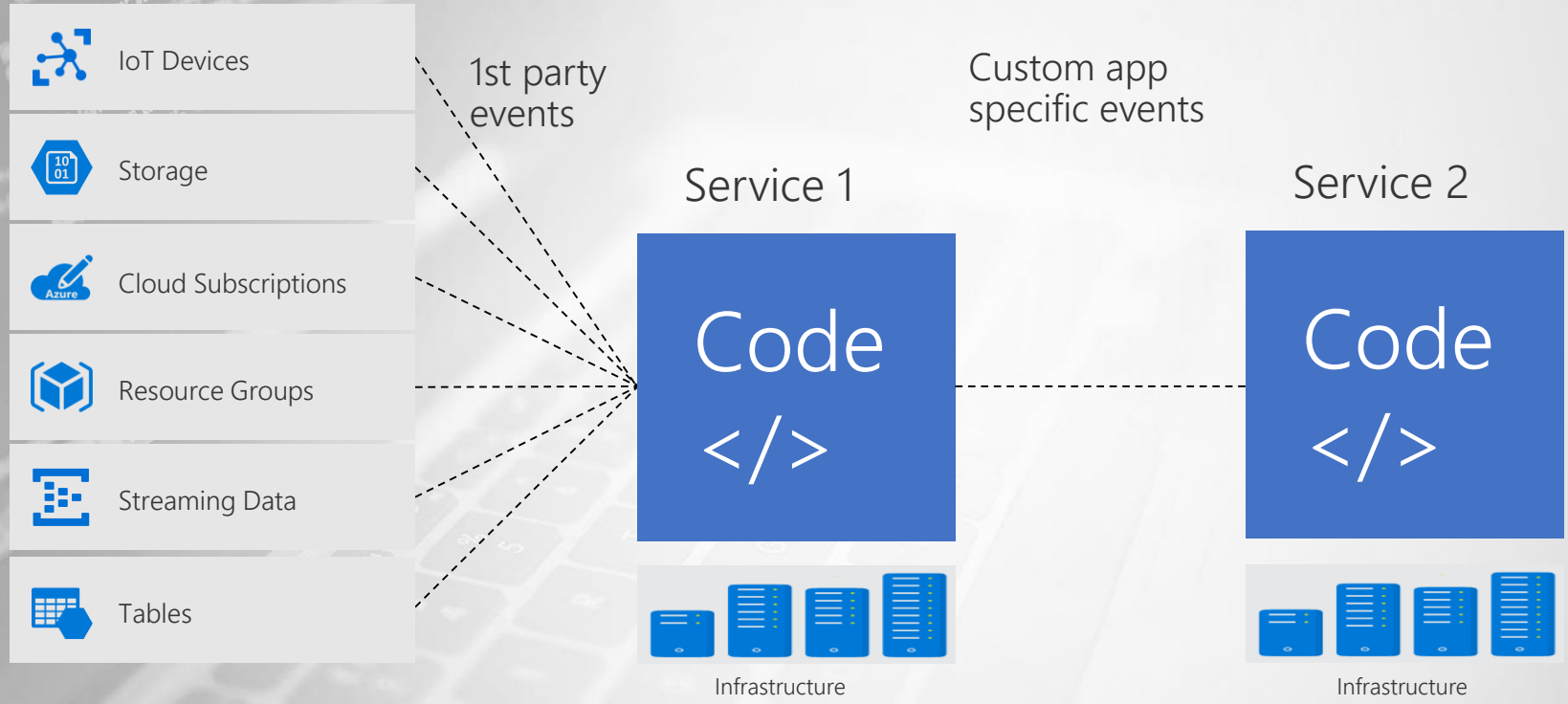
Discovering events is expensive



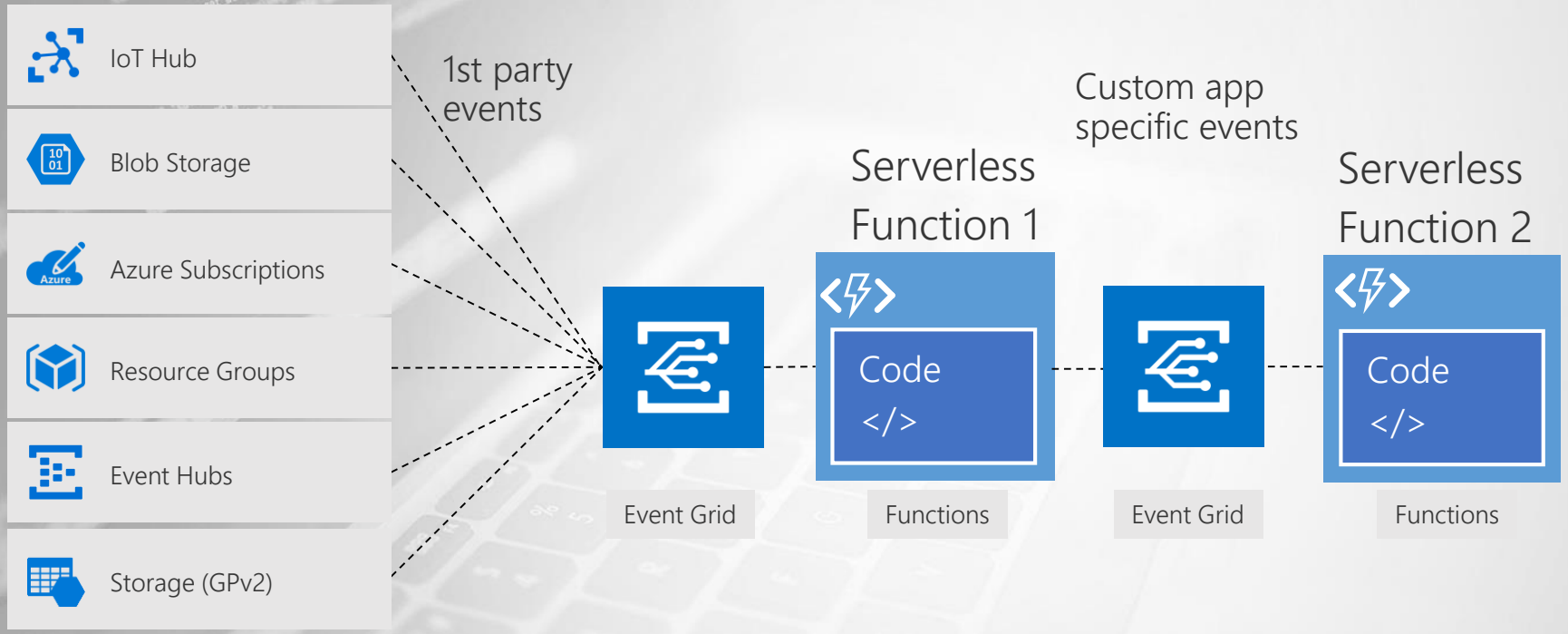
Processing events is cumbersome



Communication between app components is complicated

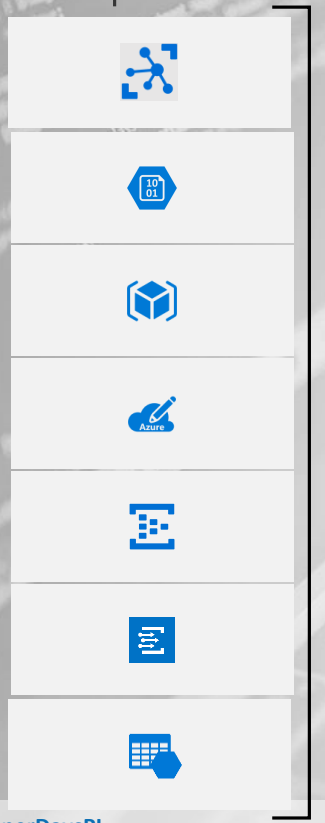


What if it could be simpler?



Manage all events in one place

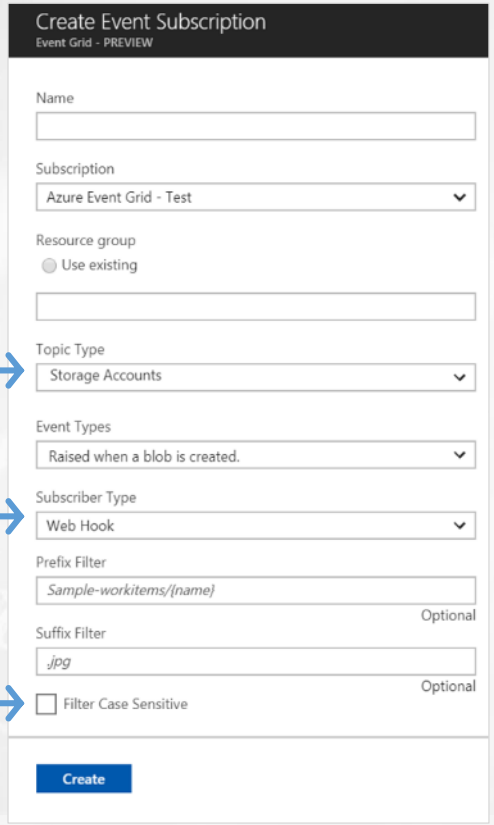
Event publishers



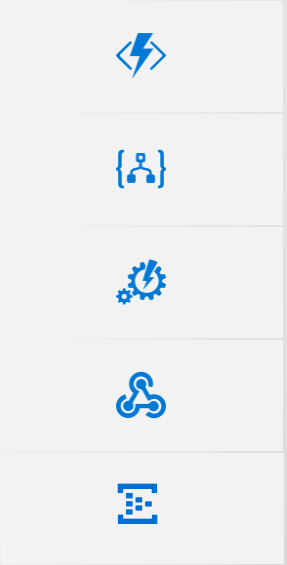
Subscribe to pre-defined system events in Azure or create your own custom topics

Route events to any end-points, Azure or even beyond

Enable filtering and efficient routing of events



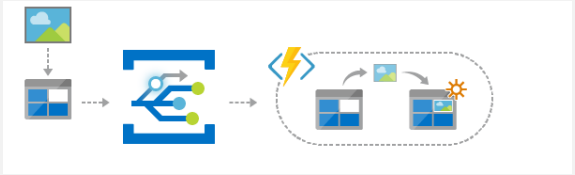
Event handlers



Scenarios

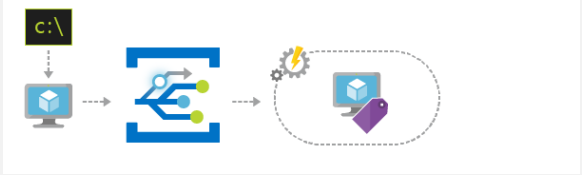
Serverless apps

Instantly trigger a serverless function to run analysis when a new file is added to a blob storage container.



Ops automation

Speed up automation and simplify policy enforcement by notifying Azure Automation when underlying infrastructure is provisioned

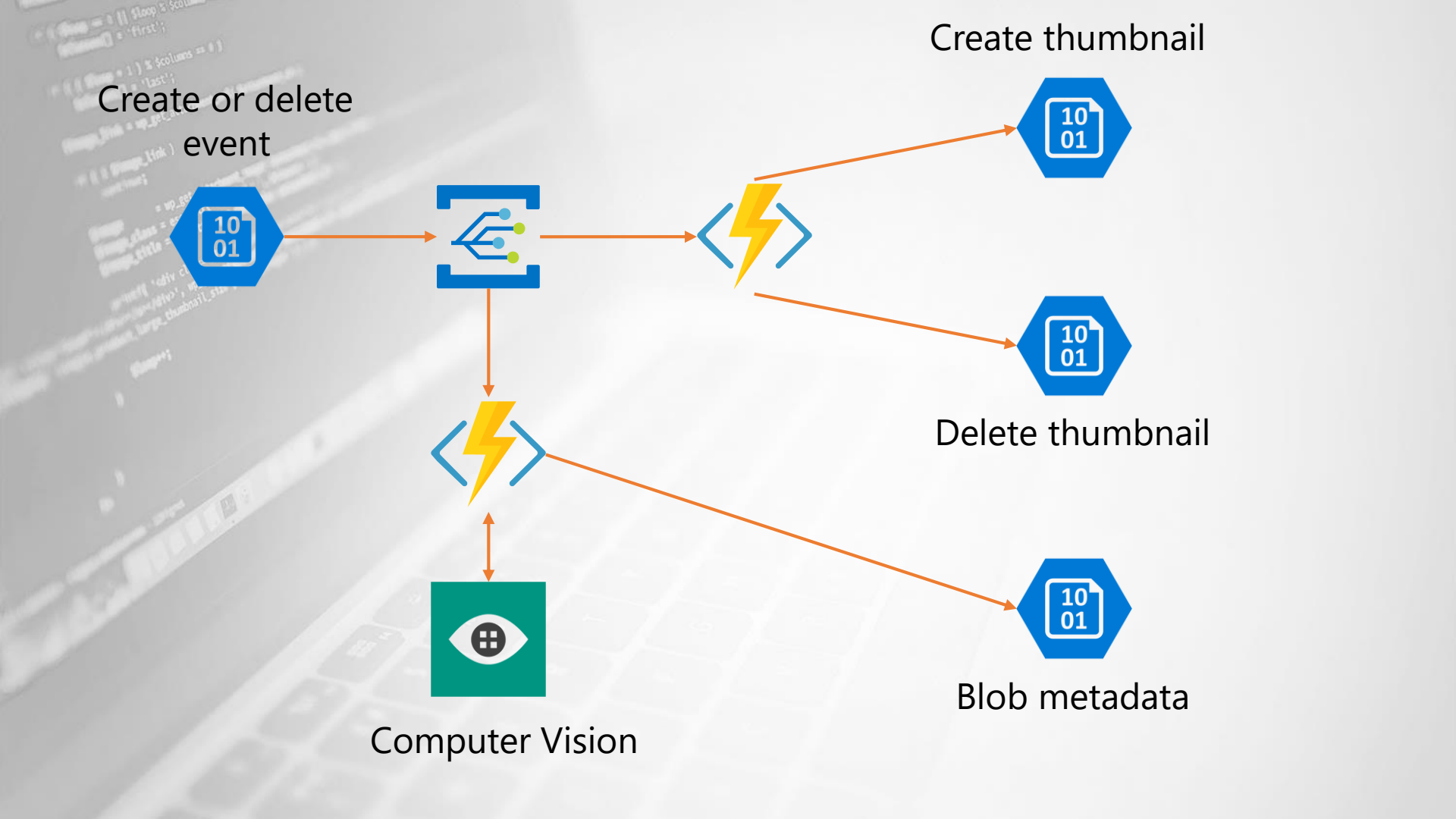


Application integration

Connect your app with other services. Create an application topic to route your app's event data to any desired destination

DEMO

One event, multiple actions – focus on logic


Create thumbnail
Create or delete event
Delete thumbnail
Computer Vision
Blob metadata

References

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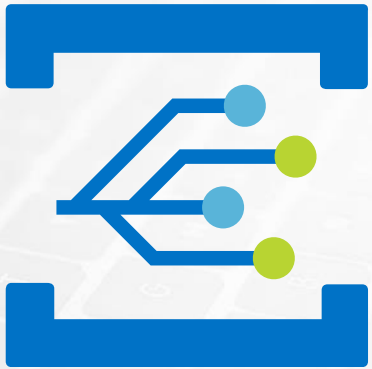
- Event Grid Ideas: aka.ms/EventGrid-wish



Tech-Acceleration.com

- Containers and Microservices
- Serverless
- Artificial Intelligence and Bots
- Internet of Things
- Machine Learning and Big Data

OpenHack
Serverless

- 5 – 7 June 2018, London
- 3 days challenge-based hands on hacking with **Azure Serverless** technologies

aka.ms/OpenHackServerlessLondon

- May 2 – August 2, 2018
- Azure IoT Hub + Azure Functions
- Prizes
  - **1st US$ 10.000**
  - 2nd US$ 6.000
  - 3rd US$ 3.000
  - Popular: US$ 1.000

AzureHacks.devpost.com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