Partner Practice Enablement
Cloud Application Development
Day 1

Mathieu Benoit – CSA App Dev
OCP Canada - January 2018

ocp | One Commercial Partner

Microsoft

Trainer as Code

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{
        "firstName": "Mathieu",
        "lastName": "Benoit",
        "city": "Quebec",
        "country": "Canada",
        "company": "Microsoft",
        "role": "Cloud Solution Architect",
        "gitHub": "mathieu-benoit",
        "blog": "aka.ms/mabenoit",
        "misc": [
                "software development",
                "cloud + web + mobile",
                "agile & devops enthusiast",
                "continuous learning"
        ]
}
```

GitHub account

Personal blog

Introduce yourself

Name

Role – Dev/IT - Company

Experience with Azure – Level?

Web / Mobile / Cloud

Which technologies: .NET / Java / Other

ALM/DevOps tools

AWS

Expectation with this training

Objectives & Takeaways

Objectives → Be inter-active!

Train The Trainer - TTT

Get you excited! ☺

Introduce and cover most of the Azure Cloud App Dev capabilities (L100) – 25%

Illustrate with demos (L200) – 25%

Practice with Hands-on Labs (L300) – 50%

Takeaways → Be evangelist!

Think Cloud App Dev and PaaS offers first

Spread the words, help and train your teammates, managers and customers

Make more concrete your L300 by practicing

3 days!

Day 1
App Service & Serverless

- ✓ Introduction
- ✓ App Service
- ✓ Web App
- ✓ Mobile App
- ✓ API App
- ✓ Functions
- ✓ Event Grid
- ✓ Logic App

+ Hands-on Lab

Day 2
Media, Storage & Containers

- ✓ Media, CDN, Cognitive Services
- ✓ Storage, Databases, Redis, Search
- ✓ Containers
- ✓ Service Fabric
- ✓ API Management

+ Hands-on Lab

Day 3
DevOps & VSTS

- ✓ Resource Groups
- ✓ ARM Templates
- ✓ Dev/Test Lab
- ✓ DevOps
- ✓ VSTS
- ✓ Application Insights, OMS
- ✓ Further resources

+ Hands-on Lab

Day 1

App Service & Serverless

- ✓ Introduction

- ✓ App Service
- ✓ Web App
- ✓ Mobile App
- ✓ API App
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- ✓ Event Grid
- ✓ Logic App

+ Hands-on Lab

Day 1's Agenda

8:30AM – Registration and Breakfast

9:00AM – Session Starts

[1h30] Introduction – App Service – Web App

10:30AM – Break

10:45AM – Session Continues

[1h45] API App – Mobile App – Logic & Function Apps

+ Wrap up

12:30PM – Lunch

1:30PM – Session Resumes

[3h30] Accounts setup + Hands-On Lab

+ Wrap up

5:00PM – Session Ends

Microsoft mission

Empower every person and every organization on the planet to achieve more

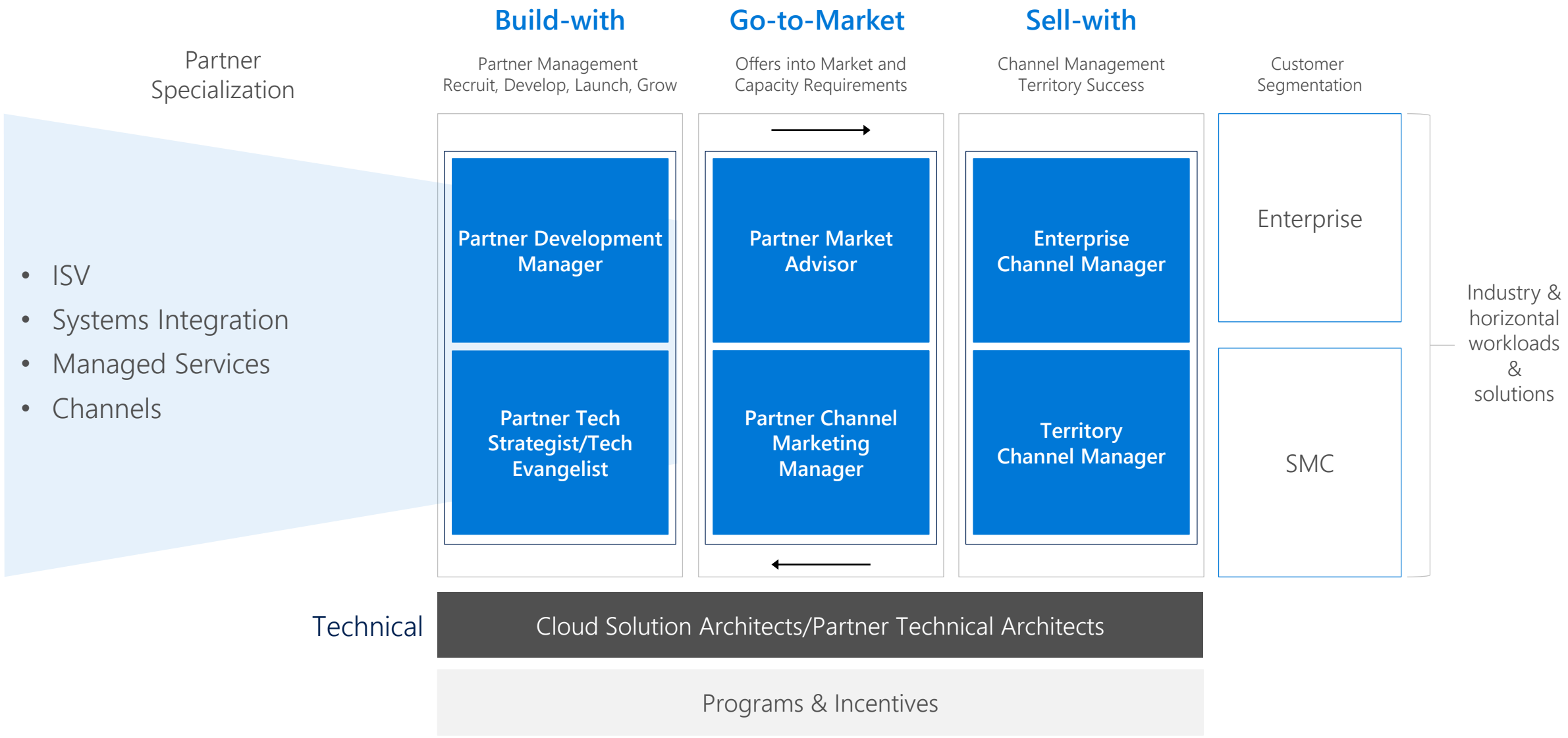

"As a culture, we are moving from a group of people who know it all to a group of people who want to **learn it all.**"
-Satya Nadella

Partner led
today and tomorrow

"Microsoft has always been a partner led company and will always be a partner led company."

— Satya Nadella, CEO

One Commercial Partner Operating Model



Who is a partner for CAD?

A partner who knows how to write apps

Skill 1: DevOps (ALM)

Helping customers to define, build, manage, and continuously deliver solutions on premise and in the cloud

Skill 2: Modernizing apps

Migrating on-prem apps to cloud (internal or customer facing apps). Total refactoring or hybrid cloud apps

Skill 3: Web, Mobile, Media

New apps or new features for existing apps, e-commerce, cross-platform mobile, bots, media, cognitive services

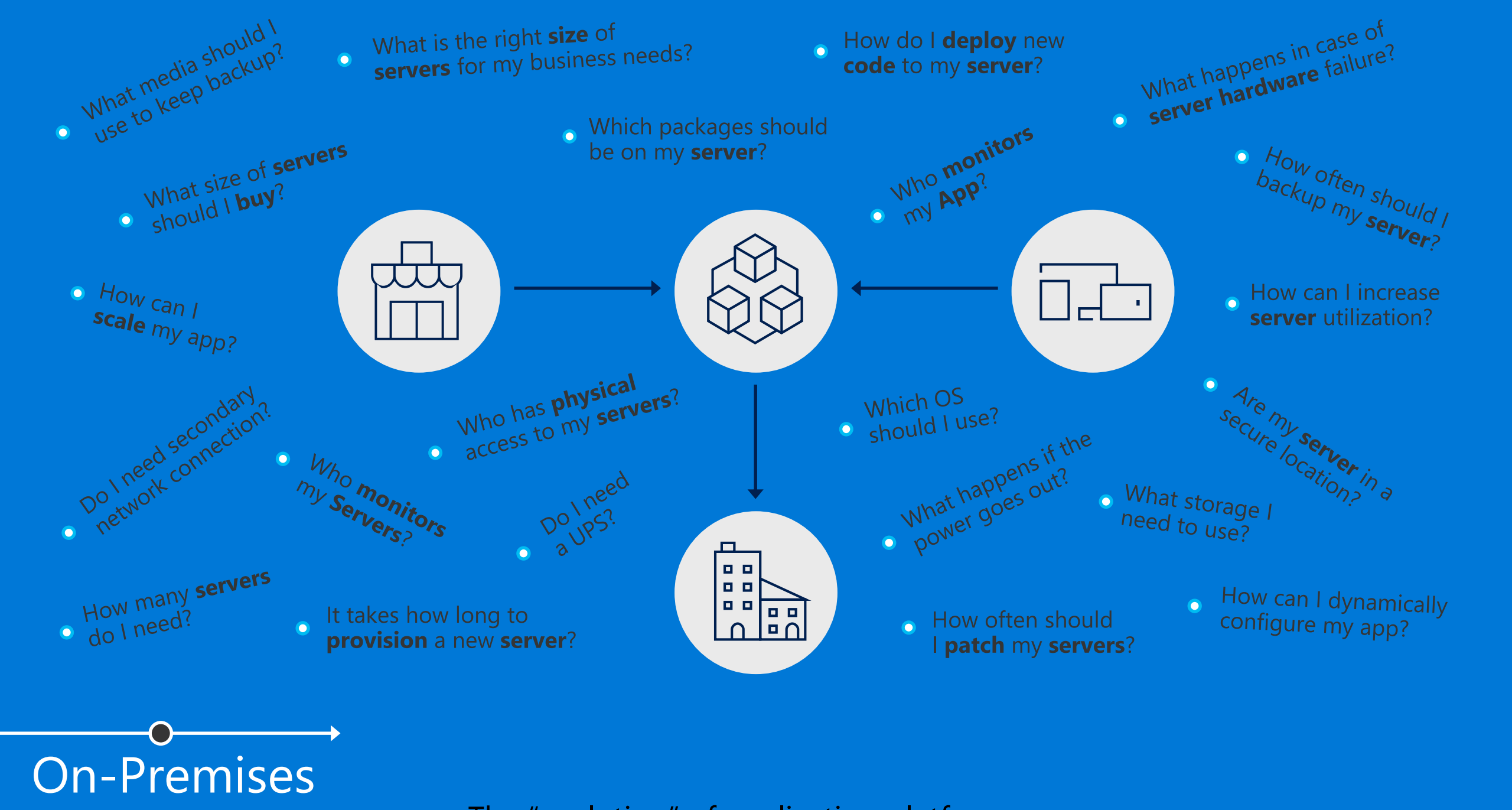
Skill 4: Hybrid app integration

"Hooking Stuff Together" using Azure services, EAI, B2B

Who has experience with? How deep?

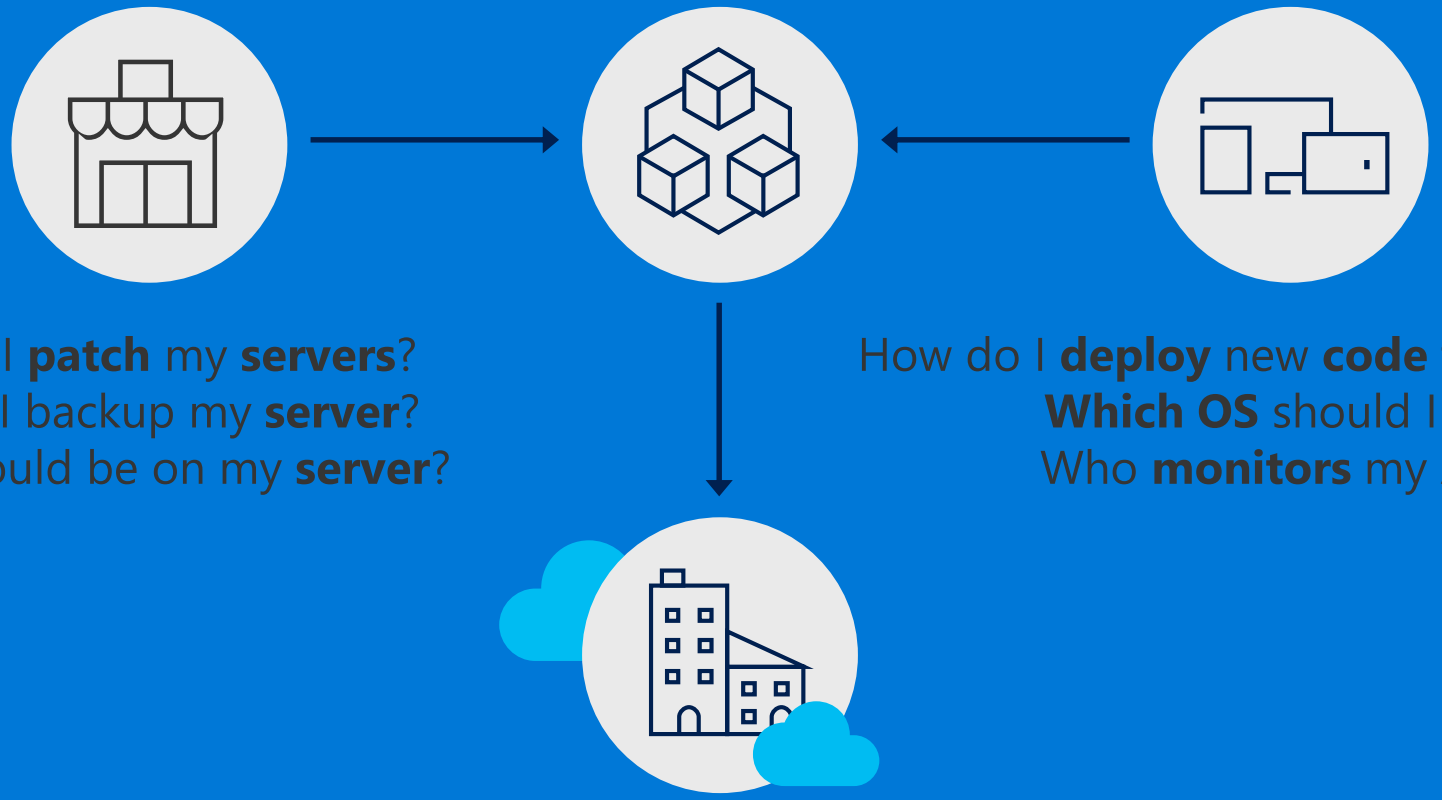
Azure Web App
API App
Function App
Logic App
Mobile App

The changing world of app/api development.



The “evolution” of application platforms

What is the right **size** of **servers** for my business needs?
How can I increase **server** utilization?
How many **servers** do I need?
How can I **scale** my app?



How often should I **patch** my **servers**?
How often should I backup my **server**?
Which packages should be on my **server**?

How do I **deploy** new **code** to my **server**?
Which OS should I use?
Who **monitors** my App?

On-Premises → IaaS

The “evolution” of application platforms

What is the right **size** of **“servers”** for my business needs?
How can I increase **“server”** utilization?
How many **“servers”** do I need?
How can I **scale** my app?

On-Premises — IaaS — PaaS

The “evolution” of application platforms

How do I **architect** my app?

Serverless, the platform for next gen apps

On-Premises — IaaS — PaaS — Serverless

The “evolution” of application platforms

Balance of responsibility

Balance of control and responsibility depends on the category of the service

MOVE-IN READY

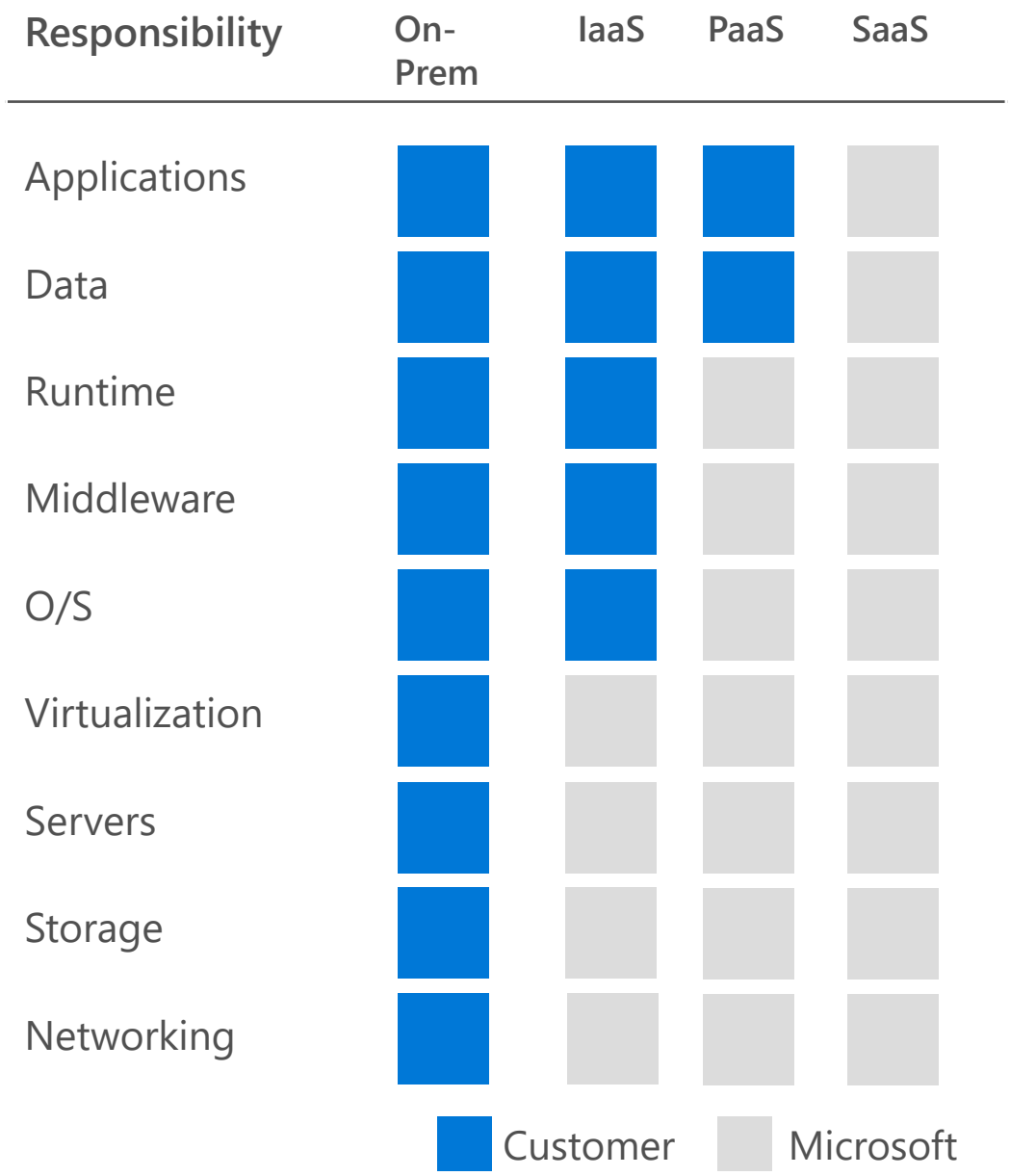
Use immediately with minimal configuration

SOME ASSEMBLY REQUIRED

Existing services are a starting point, with additional configuration for a custom fit

BUILD FROM THE GROUND UP

Building blocks, create your own solution or apps from scratch



Let's say your app is a car…

IaaS

…you can own and operate your own car

PaaS

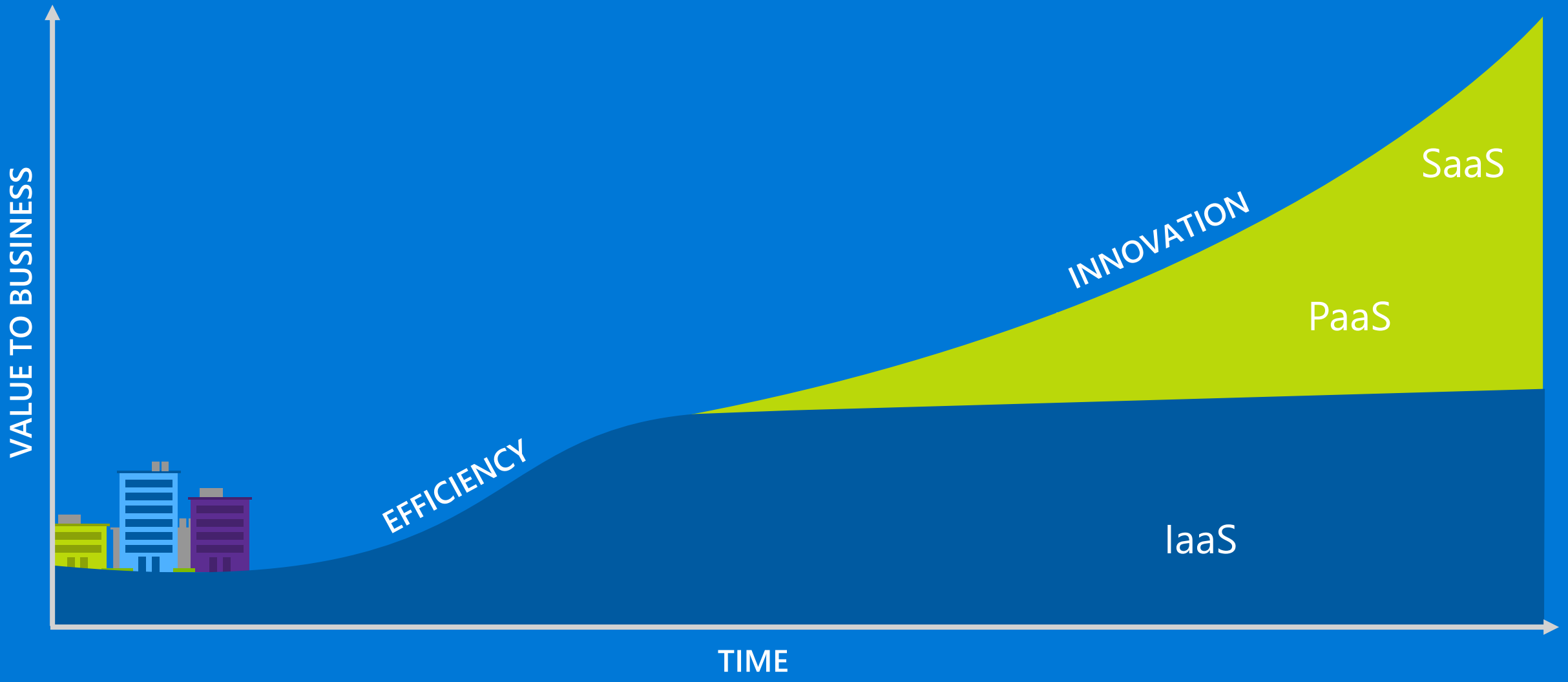
…you can rent a car

…you can create innovative apps using an application platform

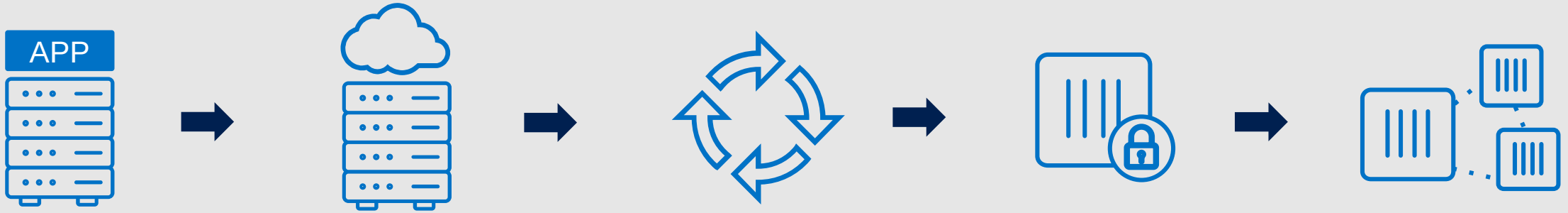
SaaS

…you can take a taxi

From infrastructure to innovation



From traditional app to modern app



Existing Application

Modern Infrastructure

Move to the cloud as VMs or Containers or refresh HW.

Modern Methodologies

Implement CI/CD and automation.

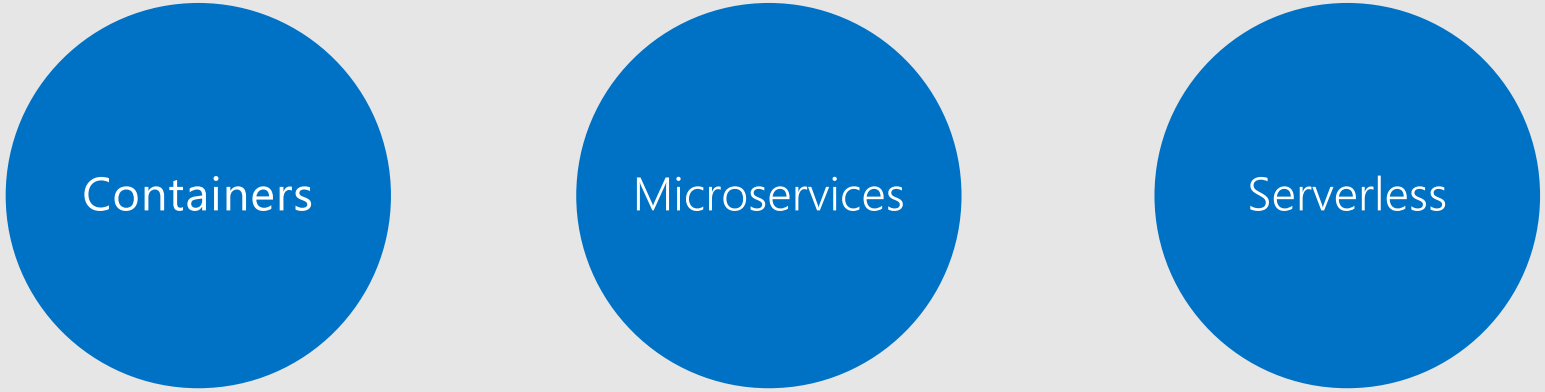
Containerize Applications

Re-architect apps for scale with containers.

Modern Microservices

Add new services or start peeling off services from monolithic code.

App modernization options



The breadth of Microsoft Azure.


39
Azure regions
More than AWS and
Google combined

The breadth of Azure

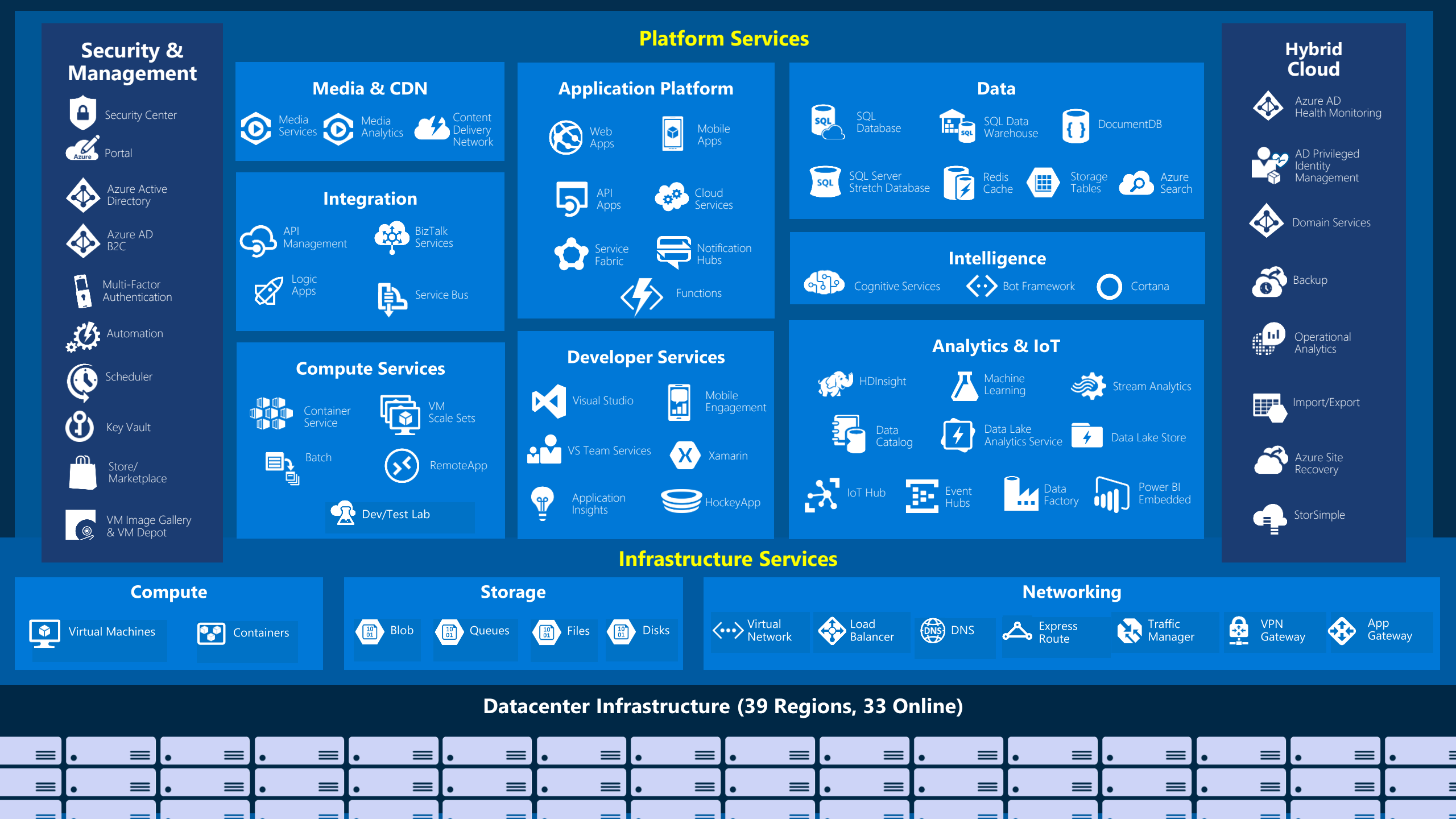
60+ services and growing

Compose highly functional apps

Maximize app lifecycle efficiency

Leverage enterprise grade services

Limitless possibilities


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
Compute Services
Container Service
VM Scale Sets
Batch
RemoteApp
Dev/Test Lab
Application Platform
Web Apps
Mobile Apps
API Apps
Cloud Services
Service Fabric
Notification Hubs
Functions
Developer Services
Visual Studio
Mobile Engagement
VS Team Services
Xamarin
Application Insights
HockeyApp
Data
SQL Database
SQL Data Warehouse
DocumentDB
SQL Server Stretch Database
Redis Cache
Storage Tables
Azure Search
Intelligence
Cognitive Services
Bot Framework
Cortana
Analytics & IoT
HDInsight
Machine Learning
Stream Analytics
Data Catalog
Data Lake Analytics Service
Data Lake Store
IoT Hub
Event Hubs
Data Factory
Power BI Embedded
Hybrid Cloud
Azure AD Health Monitoring
AD Privileged Identity Management
Domain Services
Backup
Operational Analytics
Import/Export
Azure Site Recovery
StorSimple
Infrastructure Services
Compute
Virtual Machines
Containers
Storage
Blob
Queues
Files
Disks
Networking
Virtual Network
Load Balancer
DNS
Express Route
Traffic Manager
VPN Gateway
App Gateway
Datacenter Infrastructure (39 Regions, 33 Online)

Azure is an open cloud

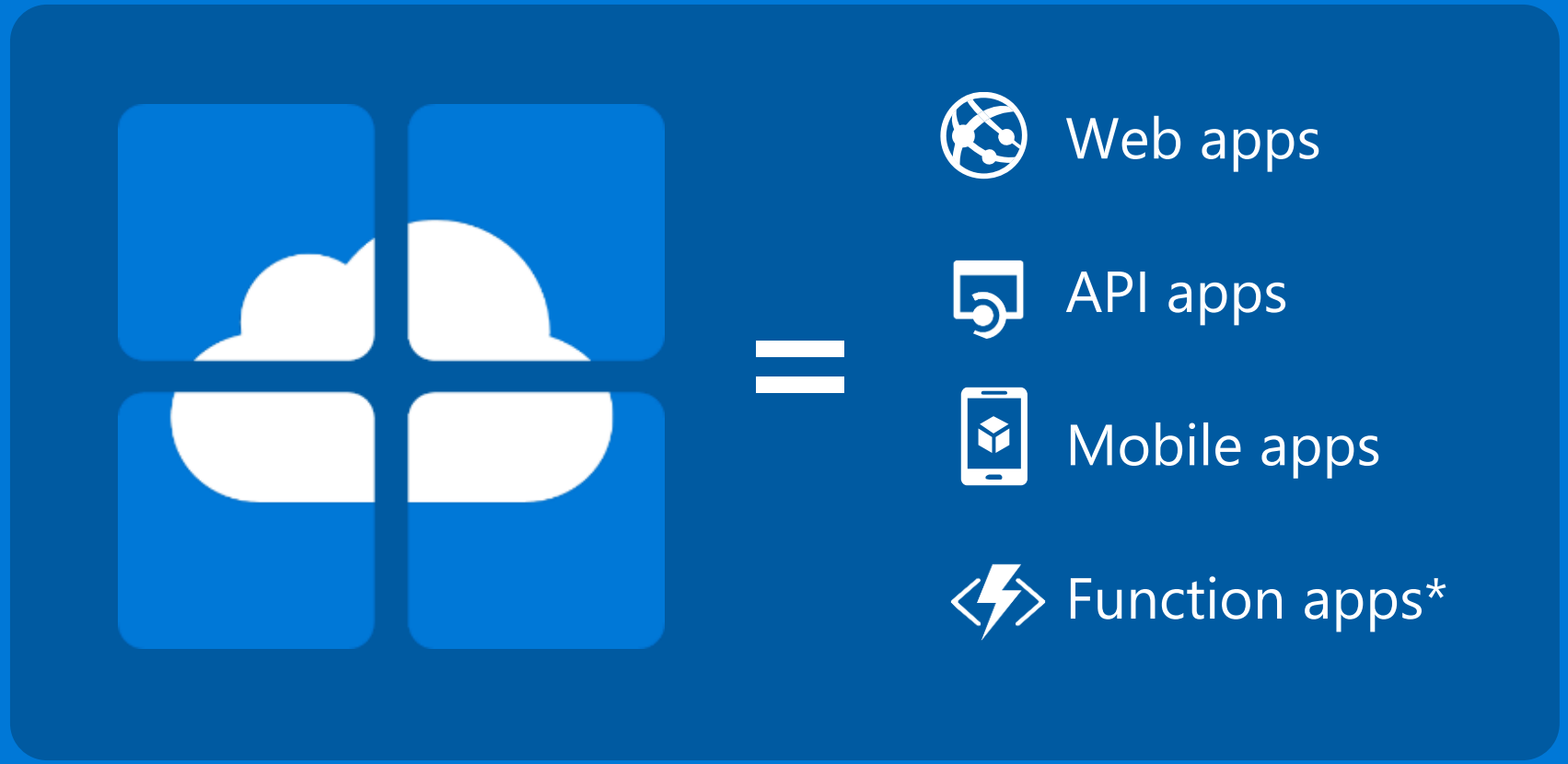
DevOps	Nagios, Vagrant, Grunt, Gradle, Clients, Xamarin, Apache Cordova
Management	Chef, puppet labs, Ansible, SaltStack, mist.io, libcloud, Scalr Cloud Management
Applications	Joomla!, Drupal, PaaS & Devops, Cloud Foundry, OpenShift, apprenda, Jelastic
App frameworks and tools	php, nodeJS, Java, Ruby, IntelliJ IDEA, eclipse
Databases and middleware	hadoop, redis, cleardb, cloudera, MySQL, mongoDB, Couchbase
Infrastructure	redhat, suse, bitnami, Oracle Linux, FreeBSD, docker

Azure App Service

A complete api/web/mobile offer!

Azure App Service

Build and scale great web and mobile apps



Azure App Service

Enterprise-grade apps

Global data center footprint

Hybrid support

AAD integrated

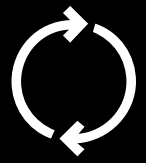
Secure + compliant

Fully managed platform

Built-in auto scale and load balancing

High availability with auto-patching

Reduced operations costs



Backup and recovery

High productivity development

.NET, Java, PHP, Node, and Python

Staging and deployment

Testing in production

App gallery marketplace

App Service Core Capabilities

Enterprise grade

Designed for secure mission-critical applications

Premium Tier
App Service Environments
Hybrid Connections / VPN Support
Scheduled Backup
Azure Active Directory Integration
Site Resiliency, HA, and DR
Web Jobs
Role Base Access Control
Audit / Compliance
Enterprise Migration
Client Certs
Redis Caching
IP Restrictions/ SSL
Web Sockets
SQL, MySQL, DocDB, & Mongo

Fully managed

Optimized for Availability and Automatic scale

Automated Deployment
AutoScale
Built-in Load Balancing
WW Datacenter Coverage
End Point Monitoring & Alerts
DR Site Support
WildCard Support
Dedicated IP address
HTTP Compression
WebJobs
Premium WordPress
Sticky Sessions
App Service Environment

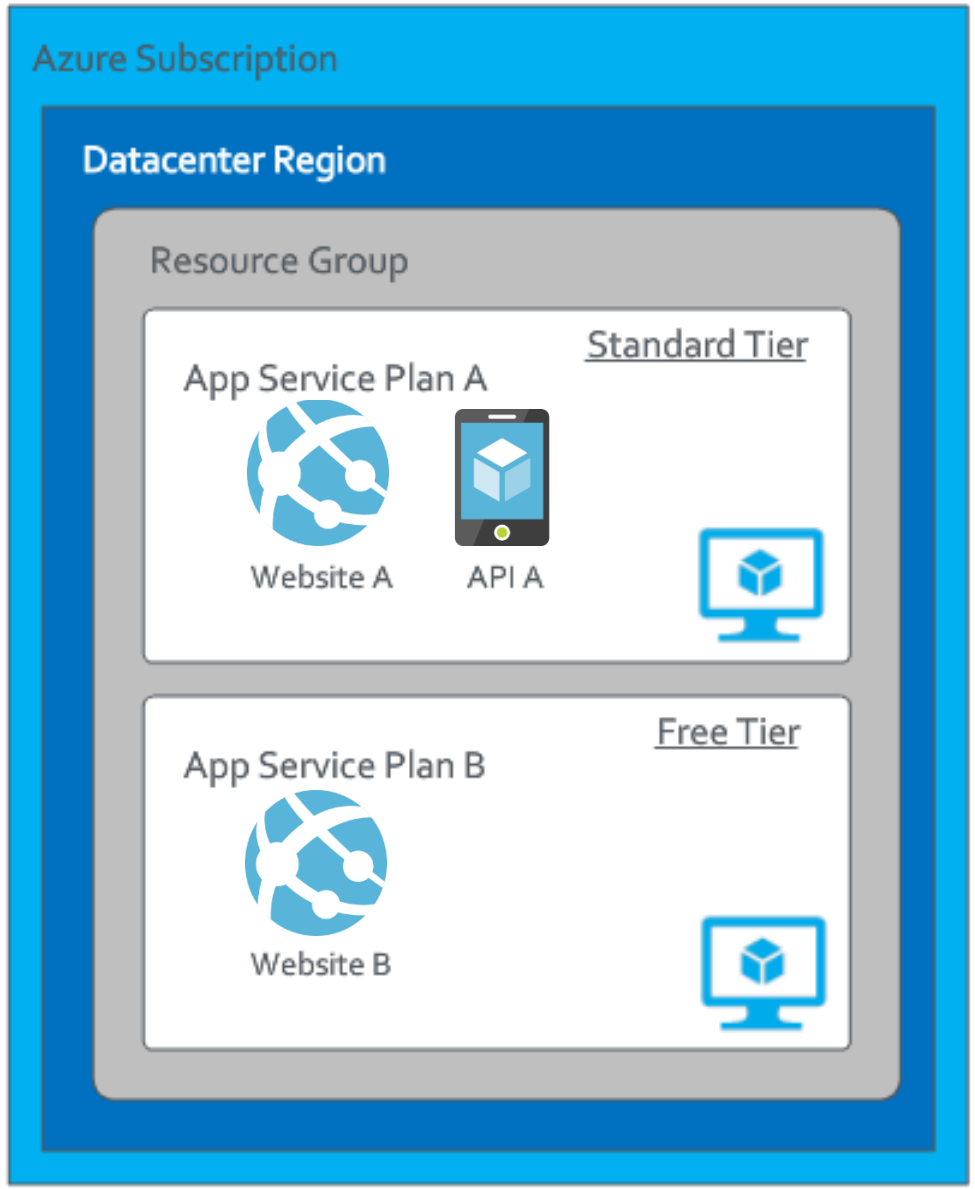
Built for DevOps

Agility through Continuous Deployment

Remote Debugging w/ Visual Studio
Site Staging Slots
Traffic Routing
Continuous Integration/Deployment
Git, Visual Studio Online and GitHub
App & Site Diagnostics
OS & Framework Patching
Site Extensions Gallery
NET, PHP, Python, Node, Java
Framework Installer
Browser-based editing
Auto-Healing
Logging and Auditing
Admin-Site
Support Site Extension

App Service Plan

- Web apps need to be in the same subscription, resource group and region to share a app service plan
- A web app can only be associated with one app service plan
- All web apps that use the same app service plan will be placed on the same resource hardware
- You can have multiple app service plans in a single resource group to allow for different capacity needs



Scaling Up vs. Scaling Out

Scale Up

Vary the VM size

1 Core w/ 1.75 GB RAM
2 Cores w/ 3.5 GB RAM
4 Cores w/ 7 GB RAM

Scale Out

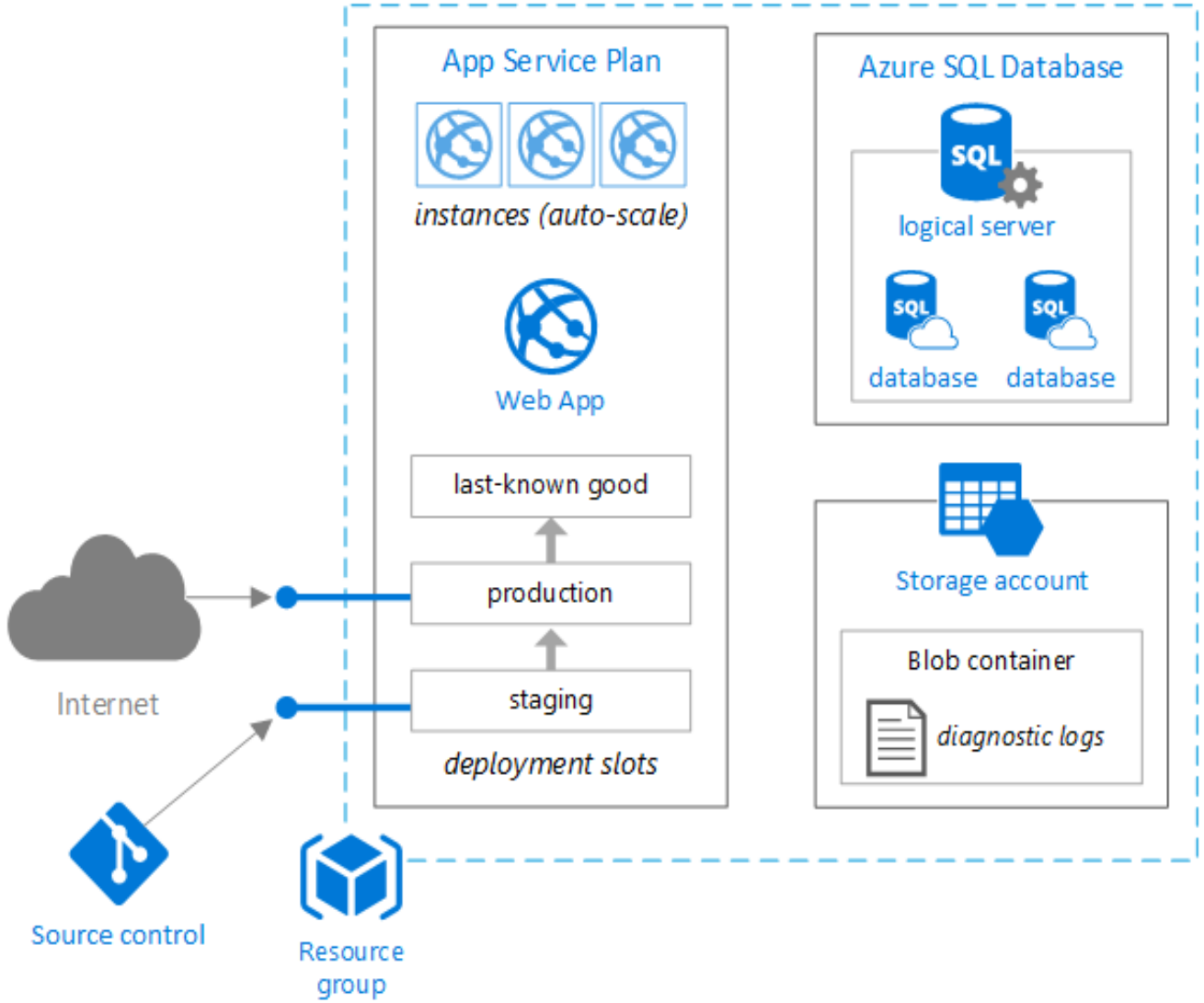
Vary the VM count

Max 3 instances*
Max 10 instances
*Max 20/50** instances*

Slots and Deployment Recommendation

- Use primary App for production
- Use a slot for deployment

- Optional: create last-known-good slot
  - Code change → SC → Stage → Production
  - After swap older Prod → Stage → LKG



App Service networking features

To your app

Default
Shared inbound IP <appname>.azurewebsites.net

App assigned IP address
Public IP address only used by your app

IP Restrictions
Restrict access to your app at an IP level

ILB App Service Environment
Private IP address in your Azure Virtual Network

From your app

Default
Access only internet addressable IPs

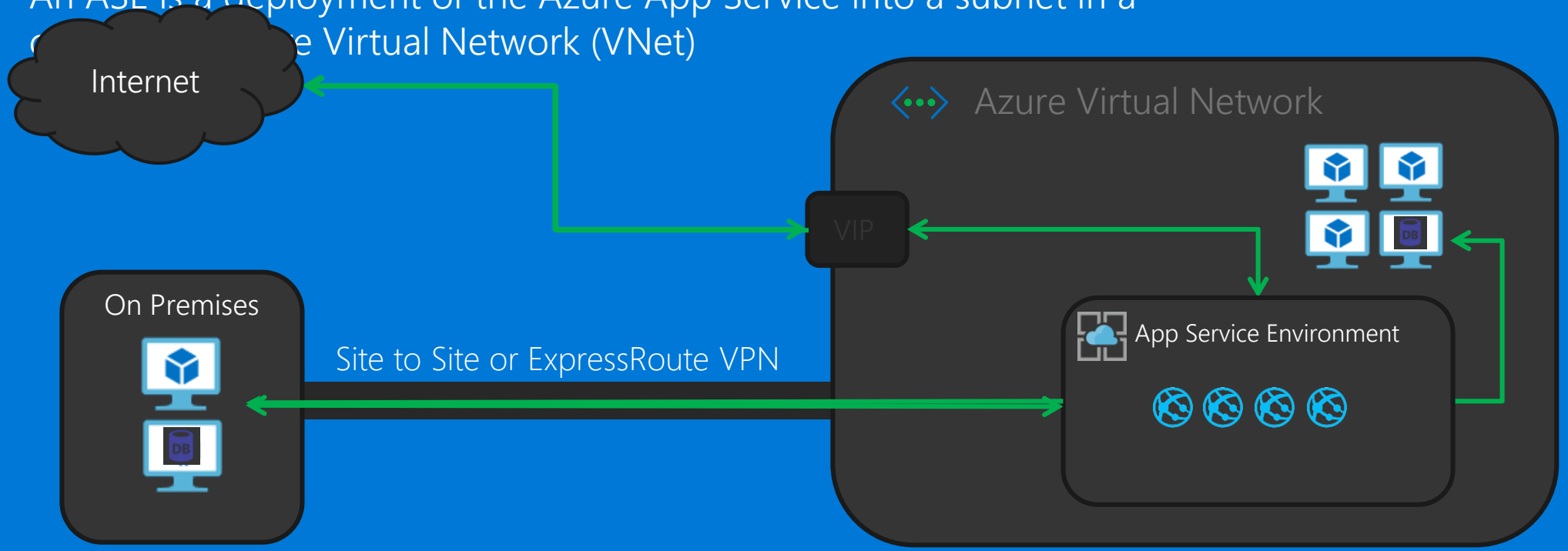
VNet Integration
Access Azure Virtual Network private IPs

Hybrid Connections
Access TCP endpoints in any network

App Service Environment
Operate in a customer controlled network

App Service Environment (ASE)

An ASE is a deployment of the Azure App Service into a subnet in a
e Virtual Network (VNet)



Web App

The way to go with your digital web solutions!

App Service

Web Apps

API Apps

Mobile Apps

Functions

DevOps productivity

Source code control integration

CI/CD build and deploy

Staged deployments with slots

Auto scale on demand

Monitoring and alerting

Application templates

Umbraco

Orchard

Episerver

WordPress

DNN Platform

Joomla

Drupal

Multiple languages and frameworks

ASP.NET

ASP.NET Core 1.0

Java

python

nodeJS

php

Enterprise workloads

SOC 2

ISO/IEC 27018

PCI-DSS

Industry standards

Global scale

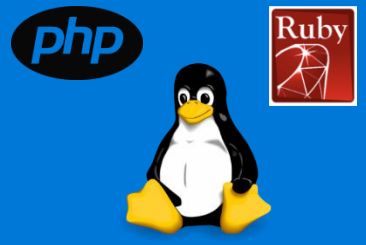
Corporate connectivity

Azure Active Directory

Dedicated environments

Web App comes to Linux (w/ container support)

Bring your code



.NET Core nodeJS

Bring your containers

Web App for Containers

- ✓ Deploy to Azure in seconds
- ✓ Scale easily on demand
- ✓ Designed for your agile web development needs

Demo: App Service Plan & Web App

From the portal, go through the blades

- Create an empty Web App from the portal
  https://portal.azure.com/#create/Microsoft.WebSite
- App Deployment
- Slots
- App Settings
- Scale Up versus Scale Out
- Console, Advanced Tools and App Service Editor
- Performance Test

From within Visual Studio

- Create a new ASP.NET Core web app project
- Publish
- Attach Debugger (in Debug mode)

→ App Service Plan pricing

API App

Expose your APIs!

App Service

Web Apps

API Apps

Mobile Apps

Functions

API fundamentals

Swagger
API Metadata

CORS enablement

Authentication / Access Control

EasyAuth

Service Principle
Authentication

API Consumption

Client SDK
Generation

Logic Apps

Power Apps

Flows

Integration with API Management

Demo: API App

From the portal, go through the blades

- Create empty API App from the portal
  https://portal.azure.com/#create/Microsoft.ApiApp
- Common features
- Specific features: API Definition, CORS

From within Visual Studio

- Create new ASP.NET Core web api project
- Publish

Mobile App

Stronger backend for smarter clients!

App Service

Web Apps

API Apps

Mobile Apps

Functions

Offline sync

SQL

User authentication

Facebook

Twitter

Microsoft

Google

Azure Active Directory

Push notifications

Apple iOS OSX

Android

Windows

Kindle

In-App

Data connections

Azure SQL database

Mongo DB

Document DB

Office 365

Azure tables

Demo: Mobile App

From the portal, go through the blades

- Create empty Mobile App from the portal
  https://portal.azure.com/#create/Microsoft.Zumo
- Common features
- Specific features: Quickstart, Easy table, Easy API, Data connections

From within Visual Studio

- Create new project from Visual Studio – Web App (Azure Mobile App)

App Service

Web Apps

Mobile Apps

API Apps

Functions

Event-driven

Timer

Data processing

WebHook + API

Bind into services

Azure Blob Storage

Azure Queues

Azure Service Bus

OneDrive

Dropbox

Box

Google Drive

Accelerate development

Local development

Integrated DevOps

Package management

Function monitoring

Languages supported

C#

F#

JavaScript

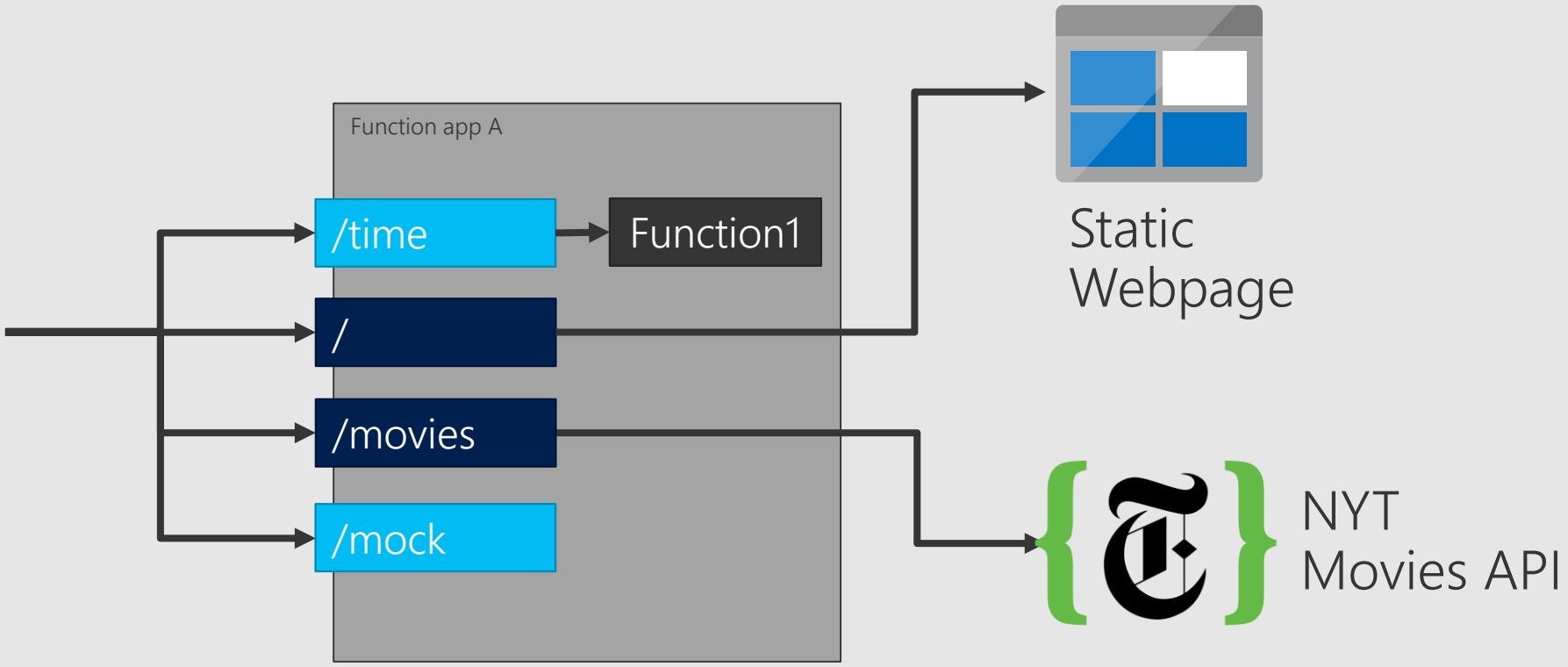
PHP

PowerShell

Bash

Batch

Azure Function Proxies



Demo: Functions

Create an empty Functions

https://portal.azure.com/#create/Microsoft.FunctionApp

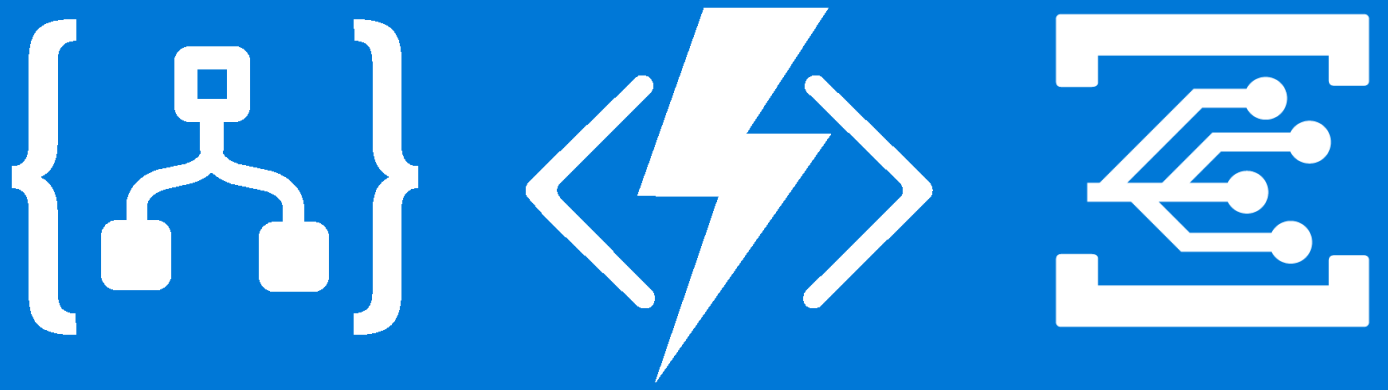
Create a Functions triggered by Blob (in C# or JavaScript)
Upload a file in Blob
Watch the Monitor blade – logs, etc.
See common platform features

Create, deploy locally, publish on Azure and debug from Visual Studio

Azure Functions Proxies

- Re-route
- Mock

→ Azure Functions pricing

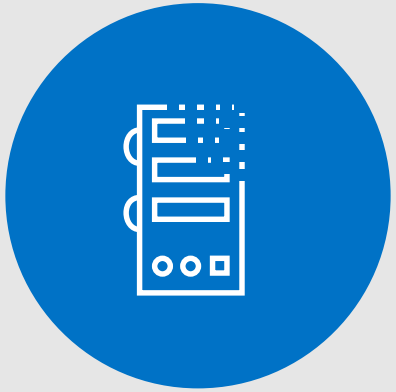


Serverless

Logic Apps - Functions - Event Grid

Focus on business logic: cheaper, faster and serverless!

What is Serverless?



Abstraction
of servers

Event-driven
instant scale

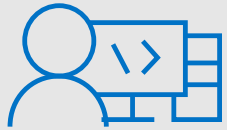
Micro-billing

Benefits of Serverless

Build apps faster!

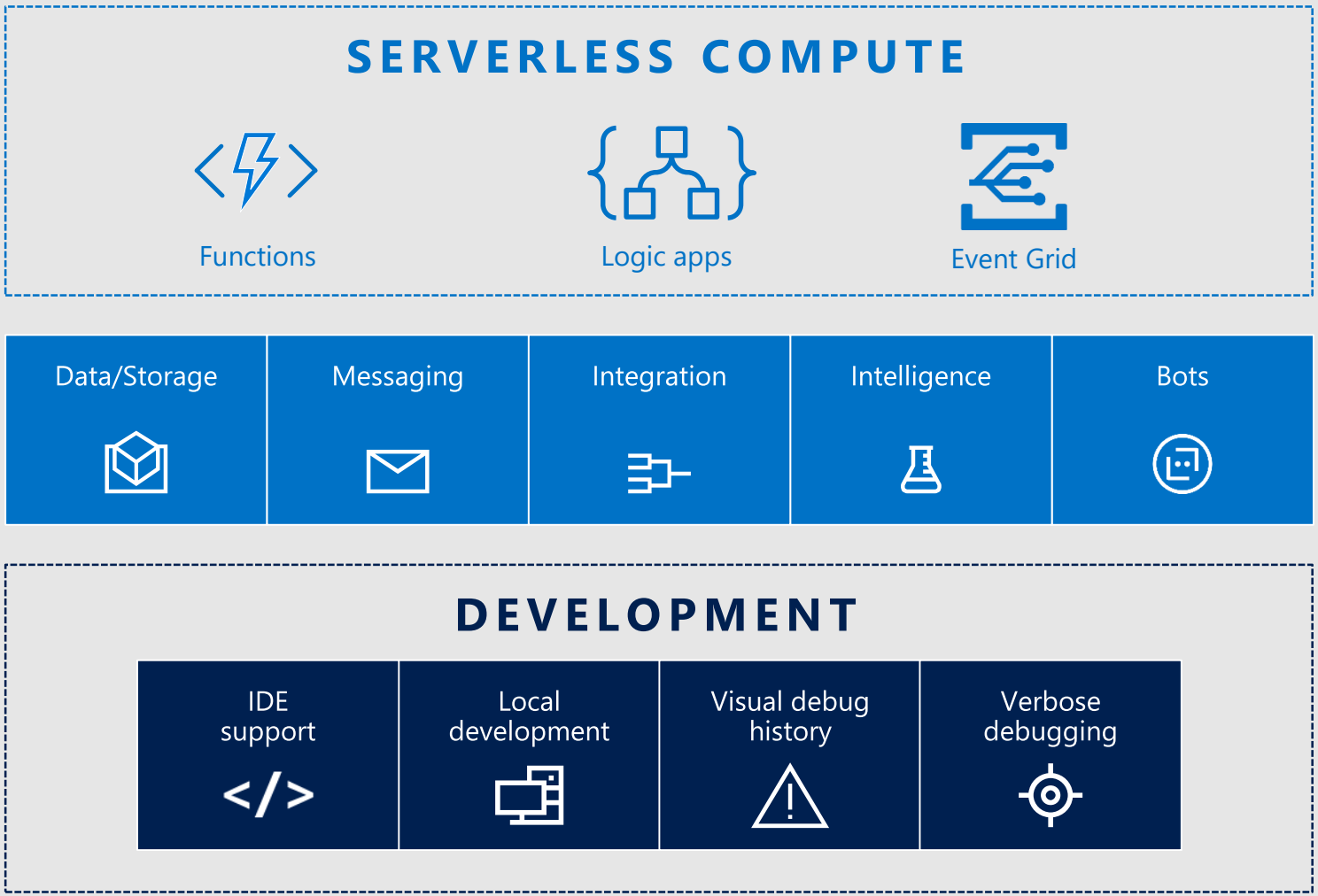
Manage apps, not servers

Scales automatically



150+ Connectors

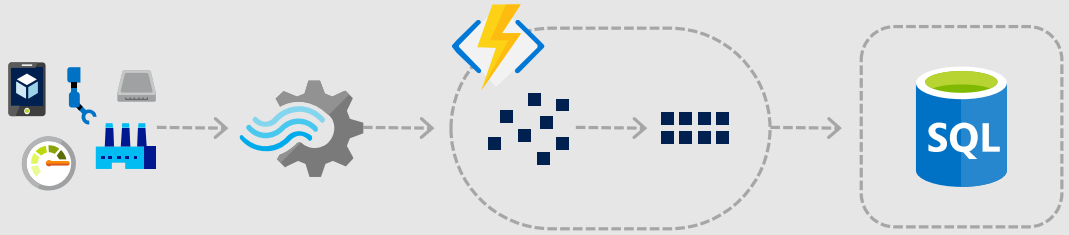
Serverless application platform components



- Real-time stream analytics
- SaaS event processing
- Web app architecture
- Real-time bot messaging

For anything that needs to respond to events

Real-time stream processing

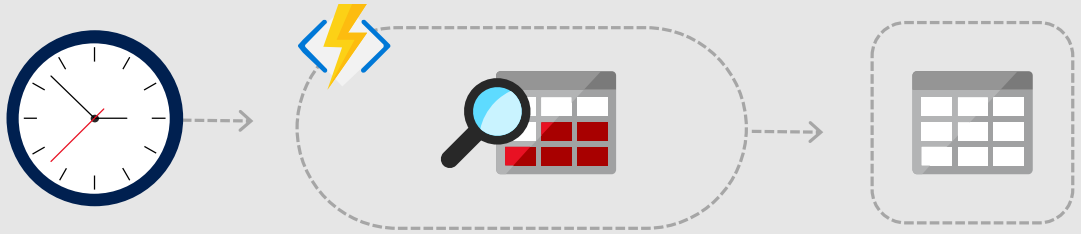


Millions of devices feed into Stream Analytics

Transform to structured data

Store data in SQL Online

Timer-based processing



Every 15 minutes

Find and clean invalid data

Clean table

Mobile app backends

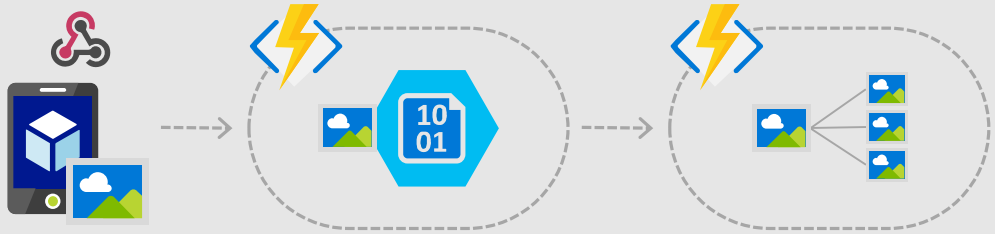
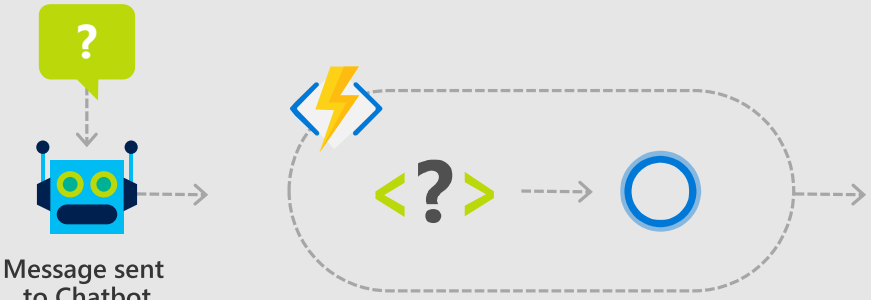


Photo taken and WebHook called

Stores in blob storage

Produces scaled images

Real-time bot messaging



Message sent to Chatbot

Cortana Analytics answers questions

Chatbot sends response

Azure Event Grid

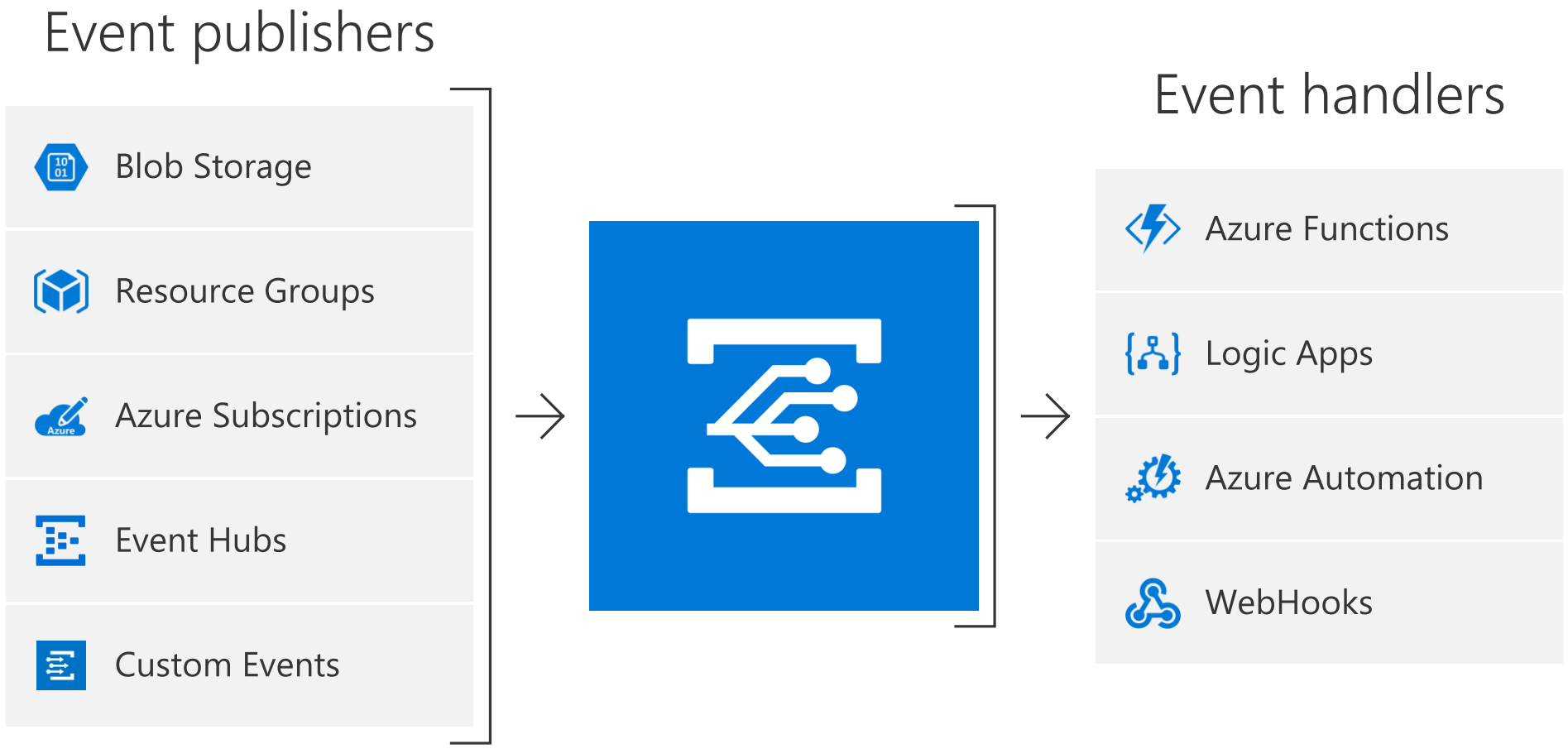
Fully-managed
event routing

Near real-time event
delivery at scale

Broad coverage within
Azure and beyond

Backbone of event-driven computing

Manage all events in one place



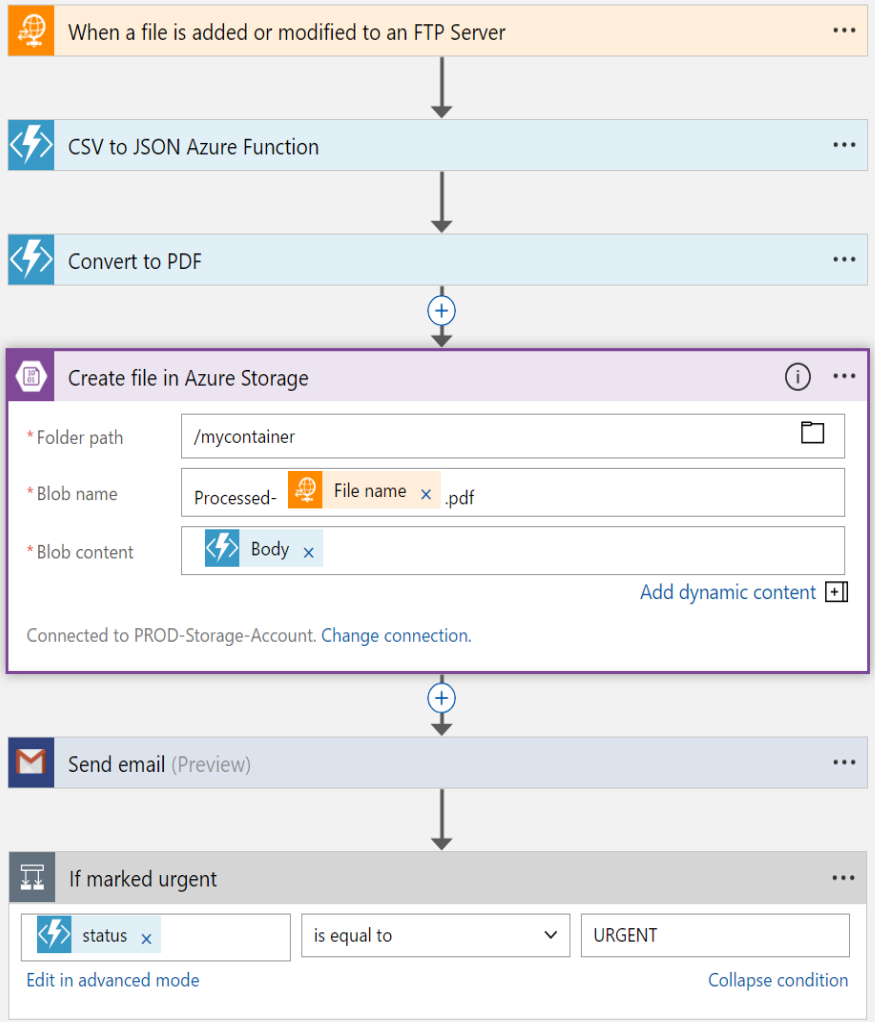
Logic Apps

Visually design workflows in the cloud

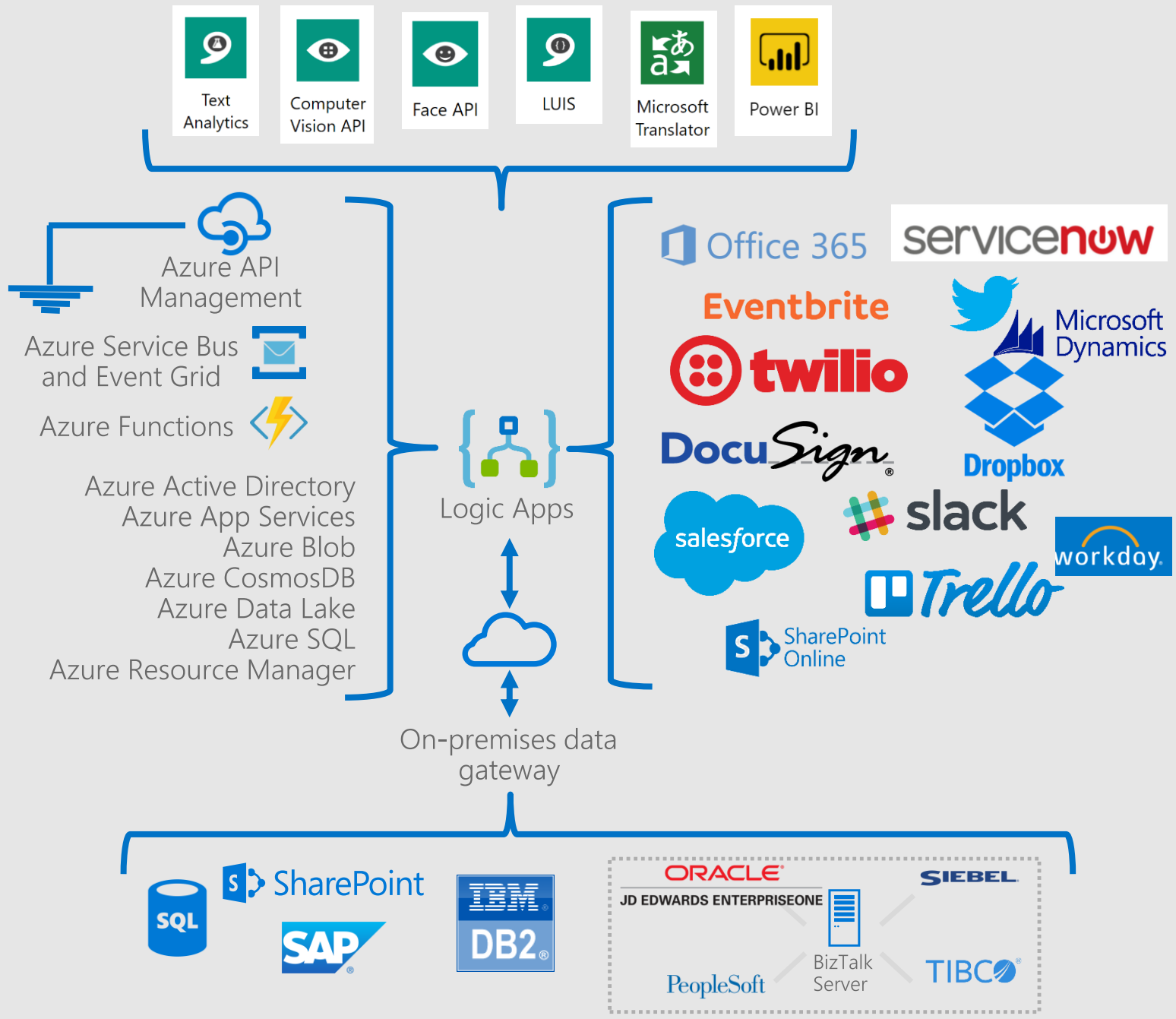
Express logic through powerful control flow

Connect disparate functions and APIs

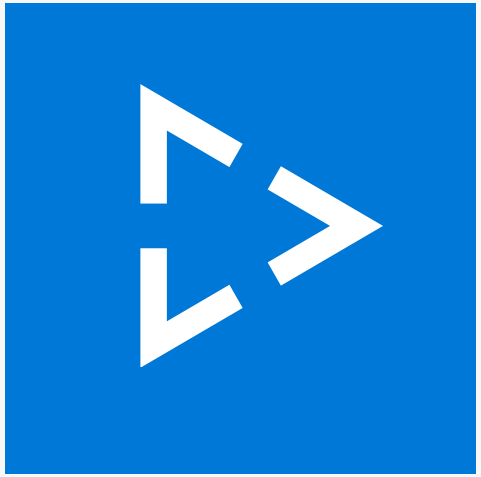
Utilize declarative definition to work with CI/CD

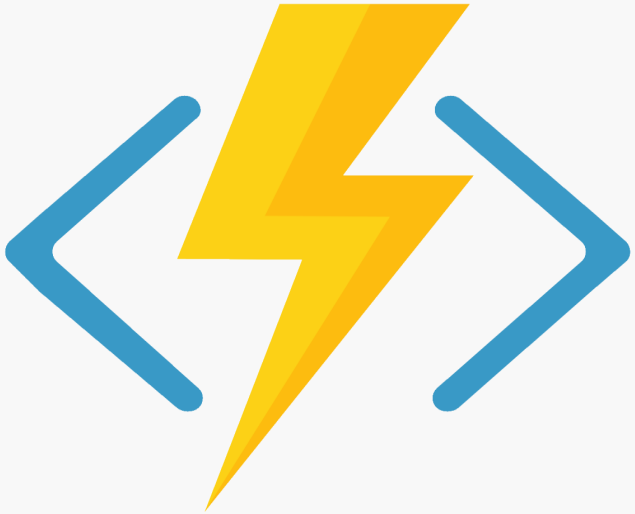


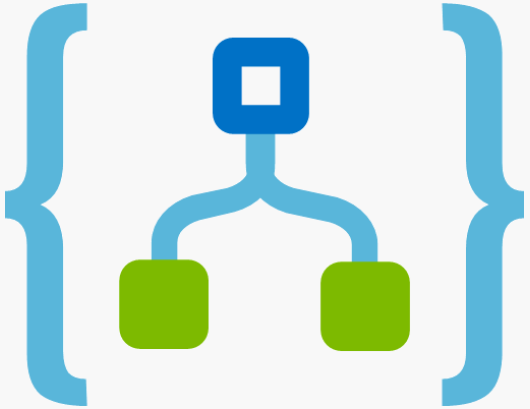
Logic Apps connectors - ~200 and growing, build your own



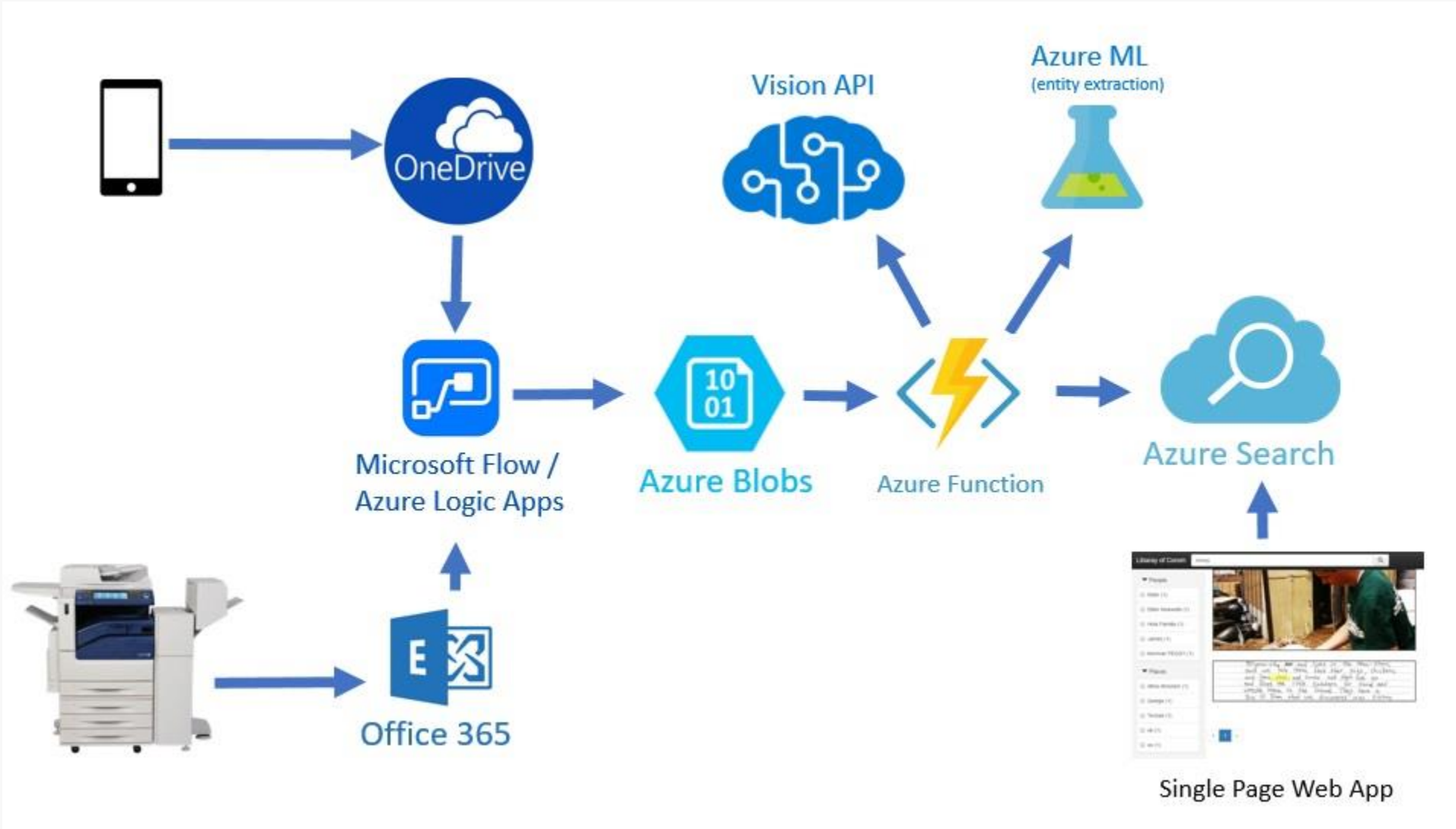
Checkout the story about Jeff Hollan's doorbell!







Checkout the Library of Corom! + JFK Files example



Demo: Logic App

Create a Logic App from the Azure portal

https://portal.azure.com/#create/Microsoft.EmptyWorkflow

From within the portal show an existing Logic App

- Trigger: Twitter
- Action: Email

Show other capabilities in Designer

Logic App Code View

Versions

API Connections

From Overview

- Run Trigger
- History
- Run details

→ Logic Apps pricing

Wrap up

App Service & Serverless

- ✓ Introduction

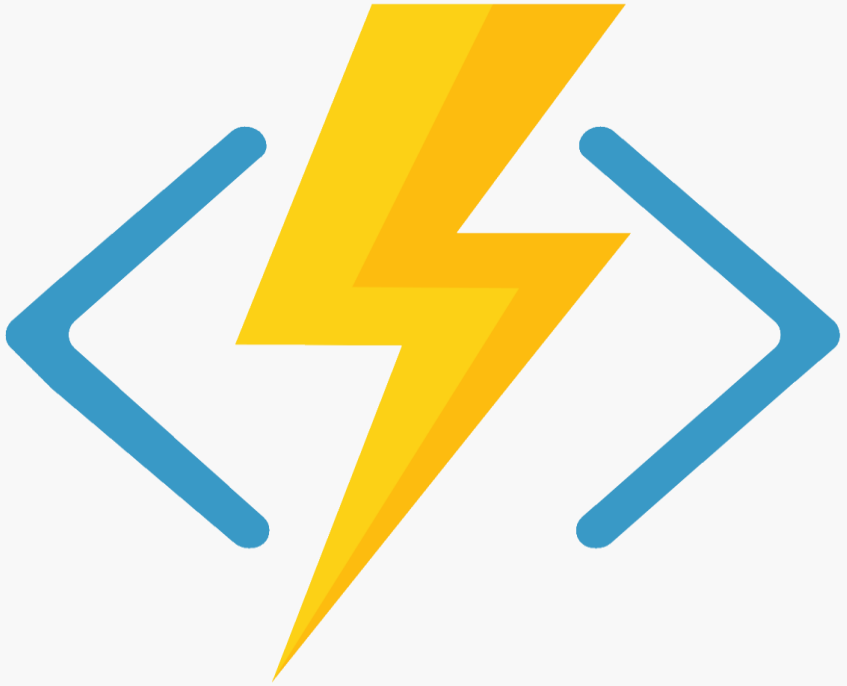
- ✓ App Service
- ✓ Web App
- ✓ Mobile App
- ✓ API App
- ✓ Functions
- ✓ Event Grid
- ✓ Logic App

+ Hands-on Lab

Get started and reach out!

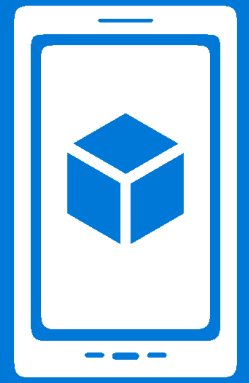
Try App Service – https://tryappservice.azure.com

Try Functions – https://functions.azure.com/try

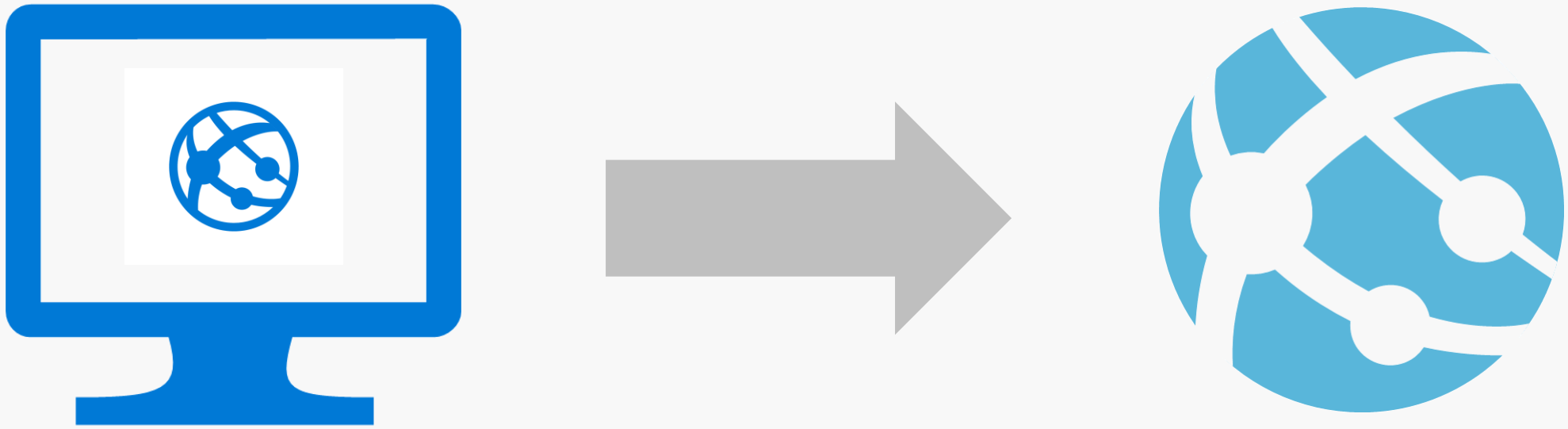


Learning Paths

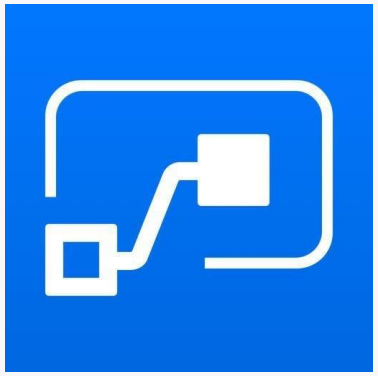
- Mobile App
- Web App

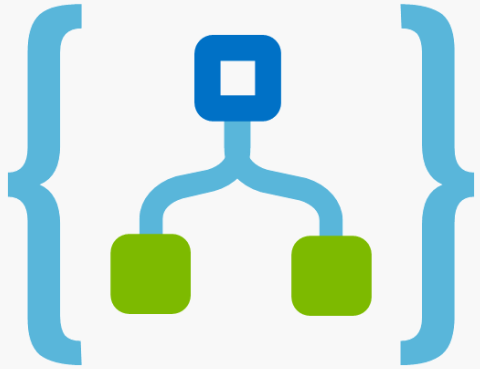


Azure Web App Migration Assistant tool



Choose between Flow, Logic Apps, Functions and WebJobs





Resources

Deep Dive into Azure App Service – A Platform to Build Modern Applications
https://mva.microsoft.com/en-US/training-courses/deep-dive-into-azure-app-service-a-platform-to-build-modern-applications-16828

Cloud Application Development
https://mva.microsoft.com/en-US/training-courses/cloud-application-development-17172

Using Azure Functions to Build Nanoservices
https://mva.microsoft.com/en-US/training-courses/using-azure-functions-to-build-nanoservices-16765

Mastering Azure App Service Part 1 – Building Azure Logic Apps
https://mva.microsoft.com/en-US/training-courses/mastering-azure-app-service-part-1-building-azure-logic-apps-16829

Mastering Azure App Service Part 2 – Building Azure API Apps
https://mva.microsoft.com/en-US/training-courses/mastering-azure-app-service-part-2-building-azure-api-apps-16830

Mastering Azure App Service Part 3 – Building Azure Web Apps
https://mva.microsoft.com/en-US/training-courses/mastering-azure-app-service-part-3-building-azure-web-apps-16835

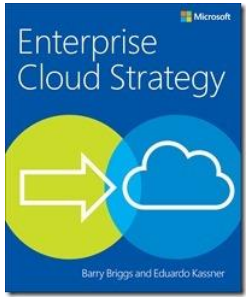
Mastering Azure App Service Part 4 – Building Azure Mobile Apps
https://mva.microsoft.com/en-US/training-courses/mastering-azure-app-service-part-4-building-azure-mobile-apps-16836

Microsoft Azure on EdX
https://www.edx.org/course/?search_query=azure&school=Microsoft%3A%20Microsoft

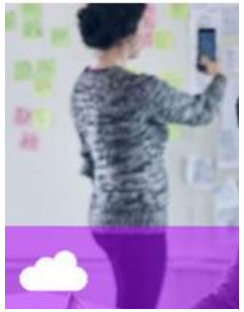
Architecture guidance

- Know the limits of each service
- Know the SLA of each service
- Know the price of each service
- Know the regions where you could host each service
- Know the compliances of the Azure platform
- Know the Azure PaaS Security Best Practices and the Azure Security Services and Technologies
- Automate early and always with ARM Templates and for example with Visual Studio Team Services
- Don't reinvent the wheel, check out these Azure samples!
- Get inspired from the Microsoft Technical Case Studies and the Azure Solution Architectures and make amazing architecture diagrams with these icons
- Are you an AWS expert? Take a look at this service mapping page
- Are you a Java expert? Take a look at the Java Developer Center

Free e-books

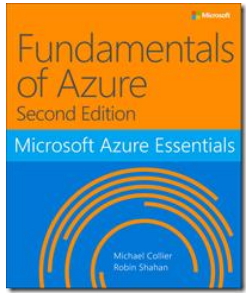


Enterprise Cloud Strategy (2nd edition)



Cloud Practice Playbooks

Cloud Application Architecture Guide



Fundamentals (2nd edition)

Azure Developer Guide (2nd edition)

Web Apps for Devs

https://aka.ms/cloudappdevplaybook

Questions

Answers

Hands-on labs
Day 1
3 options!

Microsoft

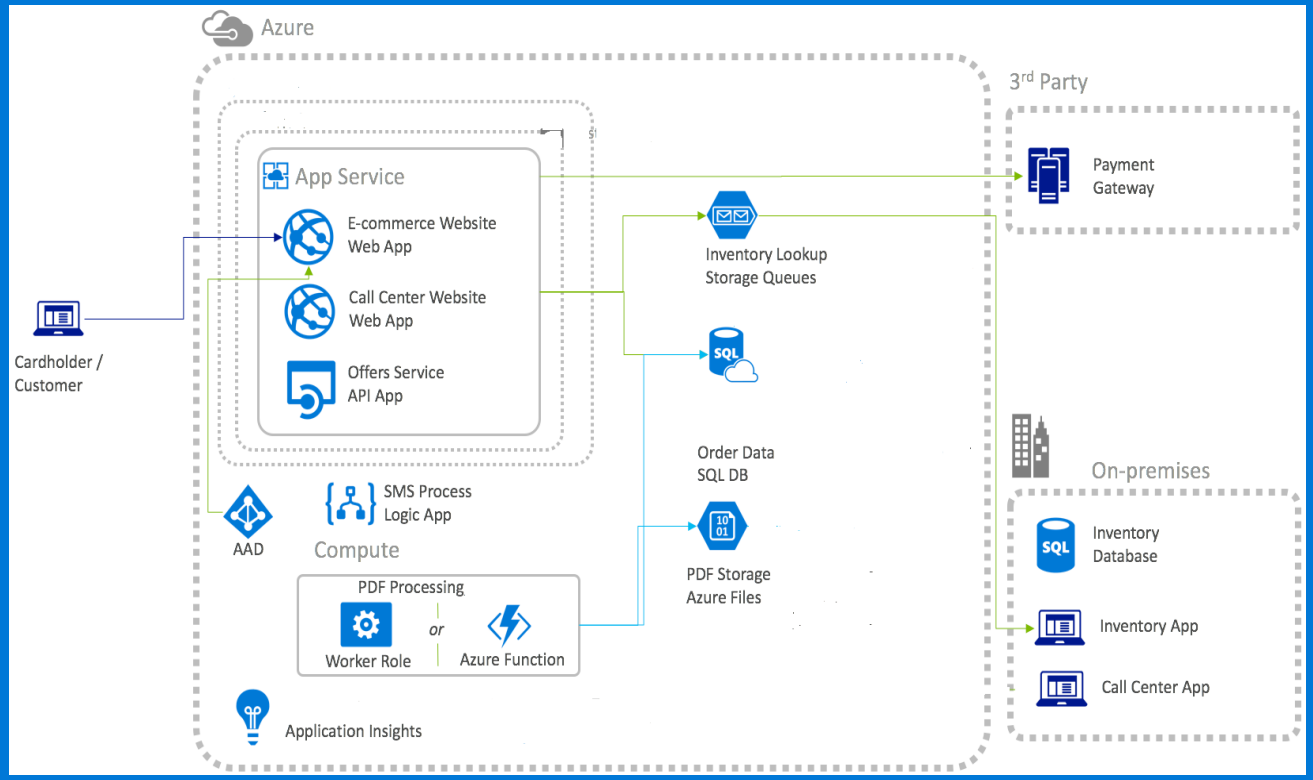
1 - Modern Cloud Apps – 3h

Configure an e-commerce solution with Web and API Apps (App Service) and SQL Database

Instrument and monitor the application with App Insights

Automate backend services using Functions and Logic Apps

Configure web apps for authentication with Azure AD



2 - Optimized Architecture – 2h30

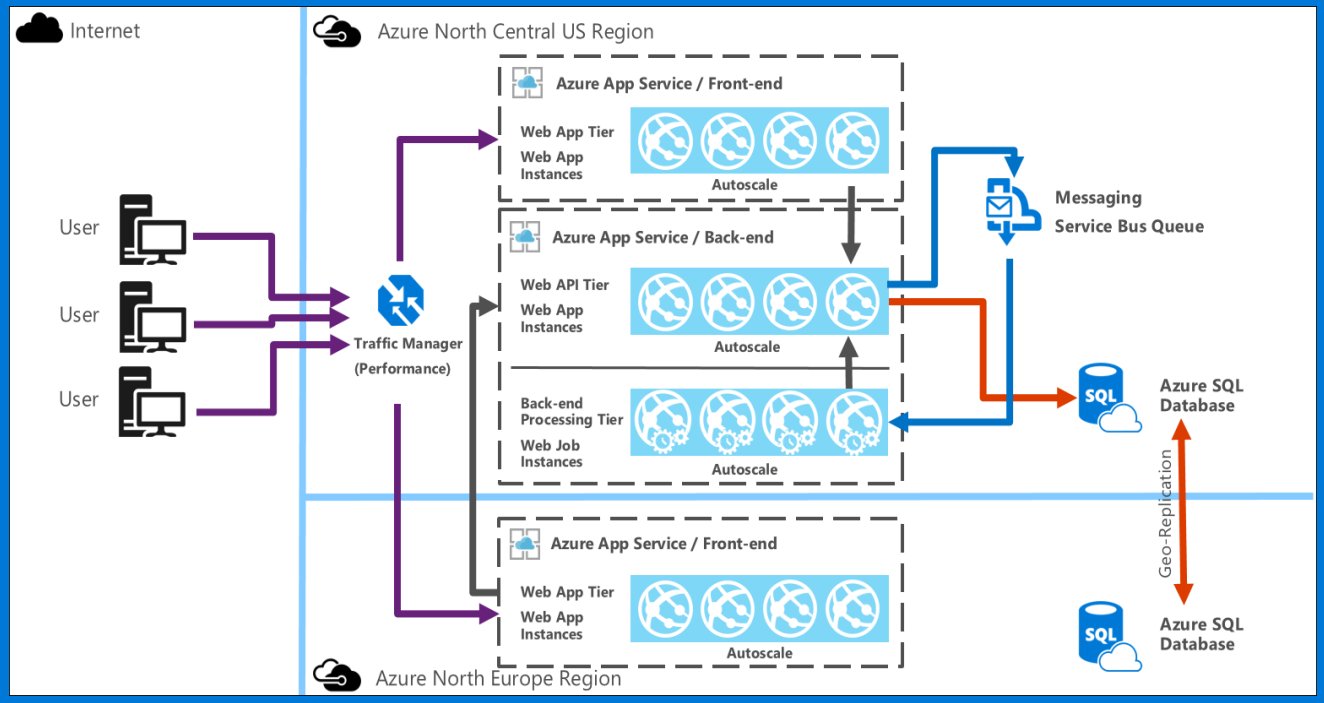
Deploy an Azure IaaS optimized

Compare cost between Azure IaaS versus Azure PaaS

Deploy Web and API Apps (App Service) to modernize the solution

Setup SQL Database geo-replication

Configure multi-region deployment with Traffic Manager



3 - Serverless Architecture – 2h

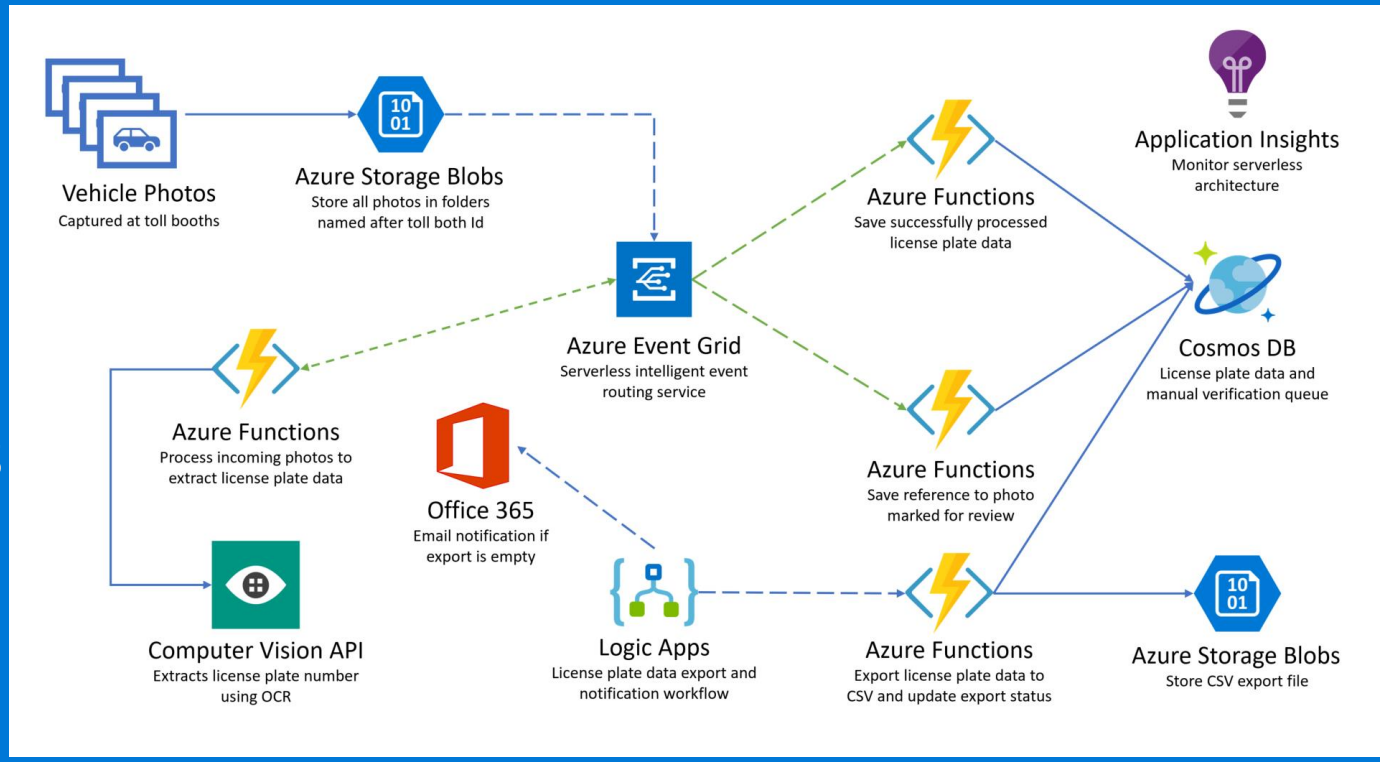
Use a series of Azure Functions that independently scale

Use Computer Vision algorithms

Provision CosmosDB, EventGrid topics subscription and Logic Apps workflow

Use App Insights to monitor the serverless topology

Implement Continuous Deployment DevOps process



Questions

Answers